

MELBOURNE AIRPORT RAIL

MAR STATE LAND TRAFFIC & TRANSPORT IMPACT ASSESSMENT

MAR-AJM-PWD-PWD-REP-XTR-NAP-0001724

13 September 2021

Revision D

Prepared for Rail Projects Victoria





Document Control Record

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Australia

Document Details						
Project Title	Melbourne Airport Rail					
Document Title	MAR State Land Traffic & Transport Impact Assessment					
Document ID	MAR-AJM-PWD-PWD-REP-XTR-NAP-0001724			Contract No.	CMS450111	
File Path	https://geodocs.ajmfv.com/sites/vrip/WIPLibrary/MAR-AJM-PWD-PWD-REP-XTR-NAP-0001724.docx					
Client	Rail Projects Victoria			Client Contact	James Plant	
Rev	Date	Revision Details/Status	Prepared By	Author	Verifier	Approver
A	29/03/2021	Issued to RPV	Gillian Austin Tabitha Yeoh	Gillian Austin	Terry Lau	Ruth Macdonald
B	09/07/2021	Issued to RPV	Gillian Austin	Gillian Austin	Terry Lau	Ruth Macdonald
C	06/09/2021	Issued to RPV	Gillian Austin	Gillian Austin	Terry Lau	Ruth Macdonald
D	13/09/2021	Issued to RPV	Gillian Austin	Gillian Austin	Terry Lau	Ruth Macdonald
Current Revision	D					

Approval			
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This document should be read in full and no excerpts are to be taken as representative of the findings.

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Table of Abbreviations

Table 1.1 Table of Abbreviations

AADT	Average annual daily traffic volume
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AJM-JV	Aurecon Jacobs Mott Macdonald Joint Venture
ARTC	Australian Rail Track Corporation
AWS	Airport Works Section
BCC	Brimbank City Council
CBD	Central Business District
CLIC	City Look and Inner Core
CMP	Construction Management Plan
COR	The Corridor Section (planning approval nomenclature)
CPTED	Crime Prevention Through Environmental Design
CSR	Combined services route
DDA	Disability Discrimination Act
DOMINO	The Detailed Operational Model for Intersection and Network Optimisation
DOS	Degree of Saturation
DOT	Department of Transport
GVM	Gross Vehicle Mass
HIRA	Human Impact Route Assessment
HV	Heavy vehicle
km	Kilometre(s)
kph	Kilometres per hour
m	Metre(s)
MAR	Melbourne Airport Rail
MTP	Metro Tunnel Project
MVCC	Moonee Valley City Council
NEIC	National Employment and Innovation Cluster
NPR	Network Planning Requirement
OHLE	Overhead line equipment
PBN	Principal Bicycle Network
POS	Pedestrian operated signal
PTV	Public Transport Victoria
RMA	The Road Management Act 2004
RPV	Rail Projects Victoria
RSA	Road Safety Audit
SCATS	Sydney Coordinated Adaptive Traffic System
SCC	Strategic Cycling Corridor
SSA	Safe Systems Assessment
SUN	The Sunshine Section (planning approval nomenclature)



AADT	Average annual daily traffic volume
SUP	shared use path
the Impact Assessment OR TIA	MAR State Land Traffic and Transport Impact Assessment
the Project	The MAR project
TMP	Traffic Management Plan
VITM	Victorian Integrated Transport Model
vpd	Vehicles per day
vph	Vehicles per hour
v/c	Volume to capacity ratio

1. Executive Summary

The Melbourne Airport Rail (MAR) project involves the delivery of new rail infrastructure between Sunshine and Melbourne Airport that will provide a rail-based option to access Melbourne Airport by 2029.

As part of the project some non rail based transport infrastructure will also be delivered, these will include:

- A shared use path (SUP) on the Sunbury to Sunshine Strategic Cycling Corridor (SCC) linking the current SUP that terminates at Albion Station to the start of on road cycle and footpath infrastructure on St Albans Road north of Gilmour Road
- A SUP on the Keilor East to Melbourne Airport SCC linking the M80 Trail up to the existing Airport Drive SUP north of Sharps Road

These new sections of infrastructure, as well as the improvements for sustainable access and end of trip facilities at Albion, will contribute to driving more healthy means for residents to move around and between suburbs along the future MAR rail corridor.

This impact assessment considers the impact of the project on the wider transport network within State land, namely between Sunshine and Sharps Road, Tullamarine. The MAR State Land Traffic and Transport Impact Assessment (TIA) does not cover the impact of the project on the wider rail network but concentrates on legacy and construction impacts to active transport, bus and road networks.

The key elements of the project that are being reported on and assessed include:

- Changes to station car parking at Sunshine and Albion, triggered because of works at Albion Station
- Permanent or legacy changes to the active transport and road networks triggered or delivered by the project, noting that the project is not anticipated to have any legacy impact to the bus network
- High level assessment of construction impacts including additional traffic and likely road disruptions based on the current information available and noting that construction planning for the project is generally still in its infancy and will be developed further.

Given the nature of the MAR project (the Project) works, there are anticipated to be no significant long-term negative legacy impacts and minor impacts will be able to be addressed during detailed design phases.

Construction impacts to the road and active transport networks will occur in the short term due to road disruptions required to facilitate construction works and the movement of construction vehicles to key sites. Traffic management plans will be developed to manage these impacts, once there is a better understanding of timing and scale of impacts. Plans will identify traffic management strategies including diversions routes that will recognise base and diverted transport needs as well as amenity issues to local communities.

1.1 Legacy Impacts

1.1.1 Legacy Impacts

The project will result in the following changes to patronage at Albion and Sunshine Stations at the design year of 2036:

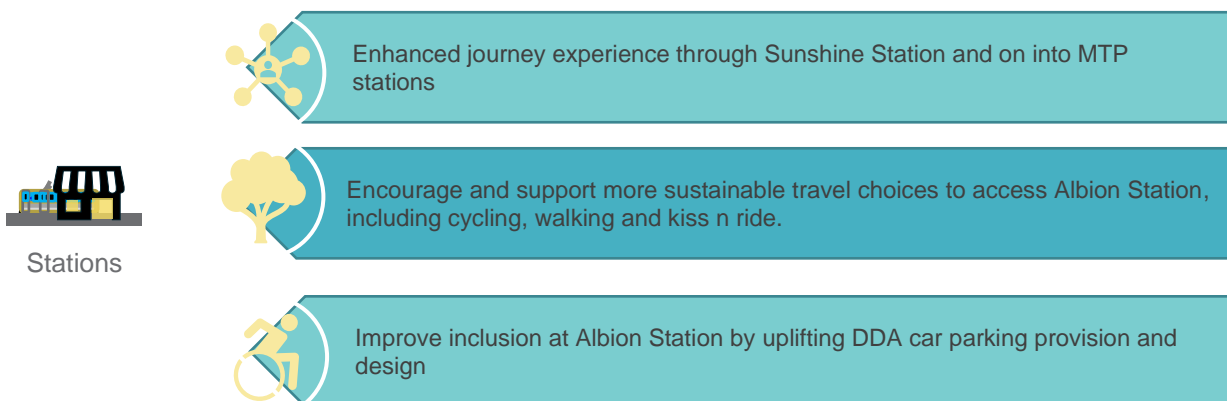
- Attraction of 900 additional patrons per day to Sunshine Station, equating to 6% more than would access the station if MAR was not constructed, with 300 anticipated between 7am and 9am, primarily comprising walk and bus mode transfers (excludes transferring passengers).
- A negligible shift in passengers from Albion to Sunshine Station for rail network entry by some car mode travellers due to the relocation of approximately 70 car parking spaces from Albion to Sunshine

In addition, the legacy will enhance the rail journey experience with:

- Enhanced station interchange facilities at Sunshine including a second paid concourse with additional vertical transport options including escalators, Disability Discrimination Act (DDA) compliant platforms and improved weather protection in the form of additional canopies

- A direct link without transfer for passengers to new stations provided by the Metro Tunnel Project (MTP) including Arden, Parkville, State Library, Town Hall and Anzac on through to Caulfield and the Pakenham and Cranbourne lines
- Increased bike parking at Albion Station with one parkiteer and separate hoop facilities on both sides of the corridor and improved forecourt for pedestrian movements to and from the wider Albion area
- Increased DDA parking supplies at both Albion and Sunshine Stations to negate current insufficiencies in supply compared to current standards. All existing and future DDA spaces will be provided or upgraded to meet AS2890.6 design requirements
- Inclusion of Kiss & Ride parking at Albion Station, which currently does not provide these parking facilities
- Completion of the existing Albion gap in the Sunbury to Sunshine SCC to provide a continuous link from Sunshine to St Albans Road including:
 - > Provision of SUP on St Albans Road from Gilmour Road, over the rail corridor to Albion Station
 - > Provision of SUP along the eastern boundary of Albion Station to link into the existing SUP south of the station
- Upgrading the southern and eastern links of the Calder Freeway over rail and under road active transport corridor connections to be fully compliant for shared use (bicycle and pedestrian)
- Providing a new SUP compliant rail corridor crossing at Fullarton Road
- Completing the Keilor East gap in the Keilor East to Melbourne Airport SCC between Fullarton Road and Sharps Road including:
 - > Construction of a new path through the Steele Creek Tributary reserve area between M80 Trail and Tullamarine Park Road
 - > A connection under Airport Drive to the south of Tullamarine Park Road with a pedestrian operated signal to cross Tullamarine Park Road
 - > A SUP connection along the east side of Airport Drive to Sharps Road aligned to connect to the existing Airport Drive SUP facility

Overall, it is considered that the combination of the new infrastructure will:





Networks



Enhance the Strategic Cycling Corridor Network in the northern suburbs by closing key gaps at St Albans Road, Steele Creek Tributary Reserve and Airport Drive



Improve safety for cyclists on Sunbury to Sunshine SCC where infrastructure is not currently provided such as St Albans Road bridge and Albion Station Car Park



Provide a more viable healthy and sustainable transport option for employees and visitors to Melbourne Airport and Melbourne Airport Business Park, with new off-road connections to existing infrastructure



Increase activity transport connectivity between Keilor East, Airport West and Keilor Park

The Project will trigger a need to replace three active transport connections across the rail corridor and the proposed mitigation is considered reasonable and appropriate as follows:

- > Barwon Avenue underpass and Drake Street level crossing
MAR will upgrade and rationalise the current Albion – Jacana line crossing points to deliver a safe, elevated active transport link over the rail corridor which will meet primary desire lines for walking and cycling.
- > M80 Trail under Calder Freeway and Fullarton Road
The SUP will be relocated to the south east side of the rail corridor to allow for MAR rail tracks, this will include upgrades to the existing rail active transport overpasses either side of the road corridors and the pedestrian underpass of the road to compliant SUP designs. The works will result in a minor increase to the connectivity of the M80 SCC at Calder Freeway but will benefit cycle connectivity between Keilor East and Airport West and Airport West and Keilor Park.
- > Anderson Road Southern SUP
Will be replaced with a new SUP located just to the south of the current alignment, effectively replacing like with like.

The Project design will be developed and refined through the finalisation of the reference design and then tender process. Minor risks have been provisionally identified and provided for information in Appendix E prior to formal Environmental Risk Assessment. It is noted that all risks are anticipated to be managed as part of the design process and to not trigger major changes to the Project Scope or construction expectations.

1.2 Construction Impacts

Construction planning for the project is currently underway, however preliminary information has been provided and has been considered within this TIA. It is noted that comprehensive modelling of construction has not been completed across the all Project sections and full construction scenarios but will continue to be developed and documented in formal modelling reports. Summary of modelling done to date has been considered within the TIA.

Based on the information to date, the project has been divided into a series of construction zones and the following is concluded:

- Construction activity will peak across the Sunshine and Corridor Sections from the end of 2023 through to the start of 2025
- Compared to other major transport infrastructure works in Melbourne, such as the MTP, construction traffic generation is relatively modest with only five out of the 15 construction areas anticipated to generate 40 or more truck movements a day (includes arrivals and departures) outside short intense peak activity demand periods. Three of these sites would typically generate less than this but may include intense periods when truck movements are closer to 100 vehicle movements per day.
- Workforce requirements have not been advised but based on similar truck requirements to workforce as identified for MTP would equate to be between 20 and 160 workers per construction zone, which conservatively could equate to approximately 20 to 160 arrivals by car in the morning and 20 to 160 departures in the afternoon
- Construction trips typically do not coincide with road network peak hours, with workforces generally arriving and departing before the wider road network peaks and truck movements generally scheduled to occur between peaks
- Some construction areas will need to manage over dimensional vehicle deliveries, particularly associated with viaduct and bridge works and this will need to be subject to further investigation
- Overall construction traffic is not anticipated to have a material impact on the operation of the road network, however access to individual sites will need further consideration when more information is available including:
 - > Gilmour Road South construction area, with relation to road space land take requirements
 - > Albion Station eastern car park and corridor construction area, with relation to the breakdown of different construction vehicle access requirements and daily quantum of larger vehicles
 - > Chaplin Reserve construction area, with relation to the timing of this site's residential development and need to access MAR construction sites through the area
- The major construction impact of the project will occur due to road disruptions and closures required to facilitate access to works areas, including the need to locate large plant and to provide suitable clearance to works area, particularly bridges

Network Disruptions During Construction

Active Transport

The project construction area will extend across areas of the active transport network. The key areas of potential impacts and the current proposed strategy to manage are:

- Sunbury to Sunshine SCC between Albion and Sunshine – signed detour routes either through Albion or via Sunshine.
- Anderson Road southern crossing – detours via existing pedestrian operated signals and HV McKay Memorial Gardens and Bridge
- Albion – Jacana Corridor crossings – works to be staged to retain at least one existing crossing until the new overpass is construction
- Maribyrnong River Trail – construction areas will aim to be contained clear of the existing path as there are no suitable easily accessible local diversion to re-route the path. Further data will be required to understand the path usage.
- M80 SCC Trail at Calder Freeway / Fullarton Road – works to be staged to retain ability to continue trail either to the north or south of the rail corridor

Public Transport

Construction works will impact bus routes with some services needing to be diverted. Discussions with the Department of Transport (DOT) and bus operators will be undertaken to identify appropriate routes. Bus routes that may need to be diverted include:

- Bus Route 482 if full closure of Tullamarine Park Road is necessary
- Bus Routes 465 and 478 if full closures of Fullarton Road are required
- Smart Bus Route 903 which may be impacted by multiple closures including:
 - > Keilor Park Drive
 - > McIntyre Road
- Night bus Route 941
- Bus Routes 426 and 456 which will need to be diverted for a significant period of time due to the closure of the Ballarat Road Service Road, impacting a small number of stops but generally still able to serve the same community and primary destinations as at present
- Bus Route 215 which would need to divert with the closure of Ballarat Road over three weekends

A bus plan will need to be developed in consultation with Public Transport Victoria (PTV) and bus operators to finalise diversion routes and bus stop relocations.

Road Disruption Impacts

Full mesoscopic modelling has not been completed for all periods and all components of construction. Preliminary understanding of roads likely to be impacted by road disruptions has been undertaken on current stage modelling. Modelling is based on DOT model, which was developed prior to the advent of Covid-19 which has had major impacts on travel movements. The long term impacts of Covid-19 on travel are not known at this time.

It should be noted that this modelling is conservative and reflects natural driver redistribution choices which would be made prior to outside influences such as detour signage, communication and messaging, which typically would be expected as part of any major construction project.

Based on this modelling the key road disruption impact risks have been identified at this stage as follows:

Sunshine Section

- The full closure of Ballarat Road over a weekend is likely to result in the most widespread impacts to the road network. However, at this stage this anticipated to occur for only three weekends during the entire construction programme
- Ballarat Road single lane closures, Anderson Road full closures and McIntyre Road closures will also have a significant impact across the network
- Perth Avenue, Adelaide Street, Forrest Street are the key local streets that may experience noticeable changes in performance during multiple construction road disruption scenarios. However, this may be able to be minimised with the adoption of appropriate travel demand management techniques developed in consultation with the community and local stakeholders
- Furlong Road is an arterial road that provides access to Sunshine Hospital and would also experience noticeable impacts from multiple construction disruption requirements

Corridor Section

- Closures (single and full) on McIntyre Road will have the widest impact on the operation of the surrounding road network, impacting traffic flow to some extent on multiple roads
- Closures (single and full) on the Calder Freeway on and/or off ramps connecting to the M80 south-westbound lanes and a shuttle type operation on Fullarton Road will also impact multiple roads

- The single lane closure of Airport Drive in each direction, narrowing of lanes on the M80 and slow lane closure on the M80 in the south-westbound direction would have little impact to traffic performance across the wider network

A preliminary indication of roads likely to be impacted by roads disruptions is provided in the form of “heat” charts (see Figure 8-15 and 8-16). Modelling of the PM peak and completion of the AM peak model where it is still to be calibrated and validated will need to be undertaken.

Travel demand management (TDM) plans and Construction Management Plans will be prepared to identify management strategies and any upgrade requirements that are necessary to manage increased traffic from key major road disruptions. These have been identified alongside potential risks information in Appendix F prior to a formal Environmental Risk Assessment.

TDM work is anticipated to comprise the development of a suite of physical, wayfinding and communication strategies based on the four R principles of Travel Demand that have been adopted in both NSW and Victoria to manage major project impacts during construction. These measures will aim to:

- Remode – encourage local population to use more sustainable and efficient modes of transport including active transport and buses
- Retime – encourage flexibility in journey times, flattening out the peak curve for vehicle movements
- Reroute – signage and detouring to move traffic to preferred routes
- Reduce – encourage journeys not to be made

2. Introduction

The Aurecon Jacobs Mott Macdonald Joint Venture (AJM-JV) has been engaged by Rail Projects Victoria (RPV) to prepare a TIA for the State land component of the project.

2.1 Purpose

The purpose of this TIA is to document the legacy and construction impacts (as can be determined at this stage of work) of the project on the wider road and path based transport network.

In particular, the TIA will include the following:

- Documentation of the base conditions within the project area for both a construction assessment year and a post project delivery year Identify legacy transport benefits that will be delivered out of the project
- Assess the legacy transport impacts of the project for a period four/five years after the planned project completion date, where necessary
- Document and assess peak construction activity for individual construction sites and consider site access, as necessary
- Recommend potential mitigation or next steps which could assist in managing any adverse temporary or permanent impacts

2.2 Methodology

The preparation of the Impact Assessment included the following:

- Review of the scope of works and mapping presented in the 'MAR Corridor and Sunshine Sections Project Description for Environmental Specialists' (MAR-AJM-PWD-PWD-MEM-XLP-NAP-0001505, Revision C) (the Project Description)
- Collation and documentation of existing conditions data based on previously collected traffic data, desktop analysis and site visits
- Consideration of long term or legacy impacts of the project focussed on the non-rail transport networks
- Assessment of construction traffic impacts based on preliminary guidance of construction traffic requirements and potential road disruptions that will be required to facilitate construction

2.3 Assumptions and Limitations

The following assumptions and limitations apply to the Impact Assessment:

- The Impact Assessment relates only to public and privately owned State land and does not consider Commonwealth-owned land or the 'Airport' sections, as Commonwealth land is not subject to Victoria's legislative framework. Impact Assessments associated with Commonwealth land i.e. Australian Pacific Airports (Melbourne) Pty Ltd (APAM) land, will form part of a separate suite of impact assessments
- The Impact Assessment is based on the scope of works detailed in the Project Description and State Project Land is based on MAR 'Project Land' Boundary Map Revision A.7 (MAR-AJM-PWD-PWD-MAP-XLP-MMN-0111172).
- Construction information as provided to AJM-JV by RPV over the course of the project and summarised within MAR-AJM-PWD-PWD-MEM-XTR-NAP-0002059 and confirmed or updated by RPV in their response received 9th June 2021

3. Background

3.1 Strategic Context

The MAR Project (the Project) is a once-in-a-generation transformation of Victoria's transport network, connecting Melbourne Airport's Integrated Terminal Precinct with a rail service for the first time.

Melbourne Airport handled more than 37 million passenger movements in 2018-19¹ and by 2038, this figure is projected to almost double to more than 67 million², which is an average growth of 3.2% per annum. Transport connectivity from Melbourne Airport to Melbourne's Central Business District (CBD) is currently limited to the Tullamarine Freeway, and therefore, the Victorian Government is committed to delivering an efficient, competitive alternative to cater for the ongoing increase in passenger numbers at Melbourne Airport.

In 2002, the Victorian Government considered possible corridor and alignment options for a Melbourne Airport Rail Link, ultimately selecting the Sunshine route as the preferred option. At this time, land was reserved between the Albion-Jacana rail corridor and extending through to Sharps Road, Tullamarine for the construction of a rail link.

In 2018, the Victorian Government released the Melbourne Airport Rail Link Sunshine Route Strategic Appraisal, which confirmed that the Sunshine route remains the best solution for an airport rail link. The Sunshine route would provide superior connections to regional Victoria, Melbourne's growth areas in the north and west and Melbourne's south eastern suburbs and could be delivered sooner and at a significantly lower cost than other route options.

3.2 State Project Land

The State Project Land defines the land within which the Project components and construction activities are planned to be contained. It sets out the full extent of land identified as potentially required for the delivery of the Project.

The Project Land encompasses all State land areas that would be used for permanent structures and temporary construction areas. It provides the basis for and informs the Impact Assessment

Project Land relevant to State-based approvals generally includes:

- Land between Sharps Road and the Albion-Jacana rail corridor, including land crossing the M80 Freeway
- The existing Albion-Jacana rail corridor generally between Jacana and Albion Stations
- Land around Sunshine and Albion Stations, including the existing rail corridor
- Land required for the Project from Jacana Station in the north-east to Newport Station in the south-west and Middle Footscray Station in the east. This largely includes the Albion-Jacana rail corridor via Sunshine and Albion stations and land required for a new rail corridor between Sharps Road and the Albion-Jacana rail corridor.

The extent of the State Project Land is shown in Figure 3-1.

3.3 Main Works Scope

The main works for the Project consists of the construction of a heavy rail link between a new railway station at Melbourne Airport and Melbourne CBD, via the Albion-Jacana rail corridor, Sunshine Station and connecting to the new tunnels provided via the MTP.

¹ https://www.bitre.gov.au/publications/ongoing/airport_traffic_data

² <https://www.melbourneairport.com.au/Corporate/Planning-projects/Master-plan>

3.3.1 Project Sections

The main works for the Project comprise of three geographically distinct sections. The sections are summarised in Table 3.1 and the location of the sections are shown Table 3.1

Table 3.1 Summary of Project sections

Section	Summary
Airport section Not considered in State land approvals.	The Airport section generally includes all land relevant to the Project between Sharps Road, Tullamarine and Melbourne Airport and is located on Commonwealth owned land and is subject to a separate approvals process under the <i>Commonwealth Airports Act 1996</i>
Corridor section	The COR section generally includes the Albion-Jacana rail corridor between Jacana Station and south of Barwon Avenue, Sunshine North, as well as land between Sharps Road, Tullamarine and the Albion-Jacana rail corridor.
Sunshine section	The SUN section generally includes the existing rail corridor between Barwon Avenue, Sunshine North and Middle Footscray Station. The SUN Section also includes the Sunbury rail corridor to Ginifer Station and the Brooklyn freight corridor to Newport Station.

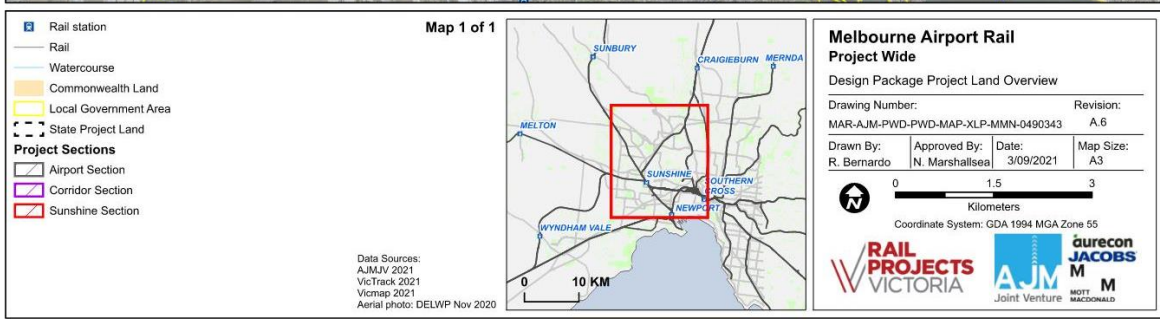
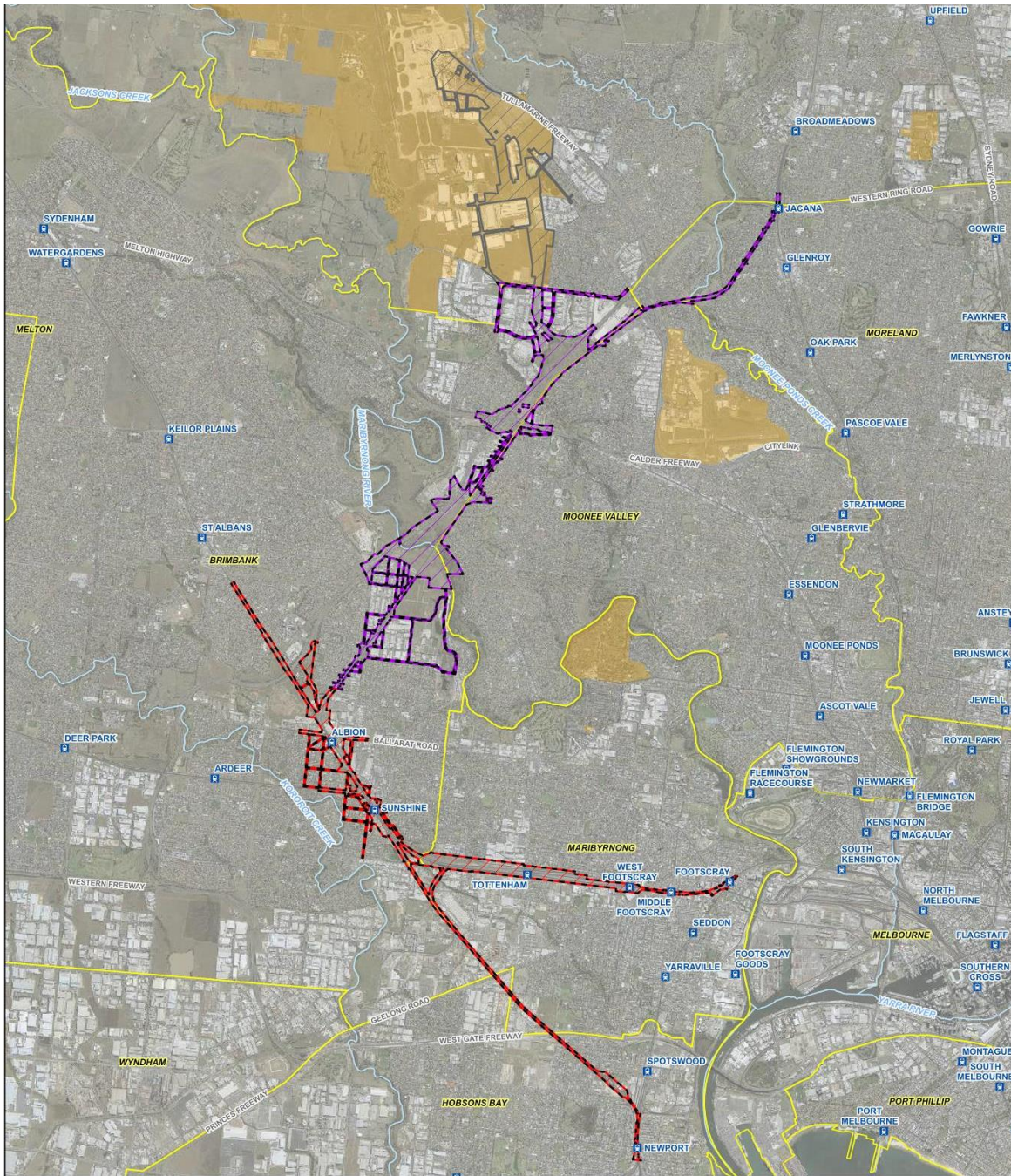


Figure 3-1 Sections of the Project Overview

3.4 Corridor Section Summary


The COR section of the Project includes the following main works:

- Construction of the new MAR tracks, comprising an approximately 8 km dual track railway and associated overhead line equipment (OHLE), combined services route (CSR) and track drainage works, including:
 - > A 2.3 km long elevated twin track viaduct structure between Sharps Road, Tullamarine and the Albion-Jacana rail corridor, crossing Steele Creek and the Western Ring Road including emergency and maintenance access points.
 - > New at-grade MAR tracks within the existing Albion-Jacana rail corridor, located on the Western side of the existing Australian Rail Track Corporation (ARTC) tracks.
 - > An elevated twin track viaduct structure across the Maribyrnong River valley, adjacent to the Western side of the existing state significant heritage bridge.
 - > Slewing of ARTC tracks between Keilor Park Drive and the Calder Freeway.
- Signalling works along the Albion-Jacana rail corridor between Jacana Station and Barwon Avenue, Sunshine North and within the new MAR corridor North of the Western Ring Road.
- Construction of an intake supply substation at Terror Street or the Northeast area of Brimbank Park and two traction substations at Fullarton Road and within the McIntyre Sidings, Sunshine North.
- Construction of two new Digital Train Radio System (DTRS) facilities one North or South of Keilor Park Drive, Keilor East and a second at Airport Drive, Tullamarine.
- Diversion, relocation and replacement works associated with utilities and underground services, including the existing ARTC CSR, high voltage (HV) transmission lines and numerous miscellaneous assets
- Protection works associated with the Exxon Mobil jet fuel pipeline along the Albion-Jacana rail corridor.
- Modifications to existing structures, including structural modifications and strengthening works at Calder Freeway inbound and outbound bridges, Fullarton Road bridge, Western Ring Road on-ramp and off-ramp bridges, Keilor Park Drive and McIntyre Road bridges.
- Replacement of shared use path (SUP) connections at Calder Freeway / Fullarton Road, provision of a new SUP overpass at Cranbourne Avenue, and provision of a Strategic Cycling Corridor link between Western Ring Road and Airport Drive via Steele Creek.
- The provision of retention basins at several locations along the Albion-Jacana rail corridor
- Establishment of temporary construction laydown areas, site offices, worksites, storage, parking areas and access roads

3.5 Sunshine Section Summary

The SUN section of the Project includes the following main works:

- Construction of a new 1.8 km long MAR twin track viaduct structure, including associated OHLE and CSR between Sunshine Station and the Albion-Jacana corridor, crossing Anderson Road, Ballarat Road, the Sunbury rail corridor, St Albans Road and Stony Creek.
- Signalling works, including the installation of trackside equipment along the Sunbury line towards Ginifer Station, along the Brooklyn freight corridor towards Newport Station, and along the Western rail corridor to West Footscray Station.
- Modifications to the tracks, formation, drainage, CSR, OHLE and signalling equipment for the MAR, Sunbury and Bendigo tracks from Albion to the beginning of the Jacana freight corridor
- Modifications to the Western and Eastern Albion Station forecourts and car parks.

- 
- Modifications to Sunshine Station, including modifications to platforms, the Sunshine Station western car park and the construction of a new concourse.
 - Modifications to the existing Sunshine and Sunshine West substations
 - Diversion, relocation and protection of existing utilities and underground services.

Establishment of temporary construction laydown areas, site offices, worksites, storage, parking areas and access roads

Transport Policy and Guideline Context

4.1 State and Overall Policy

The DOT develops policy, legislation and regulations on behalf of the Minister for Transport Infrastructure and the Suburban Rail Loop and the Minister for Public Transport, Roads and Road Safety.

The two key Acts in relation to the TIA for MAR are *Transport Integration Act 2010* and *Road Management Act 2004*.

4.1.1 Transport Integration Act 2010

The *Transport Integration Act* came into effect in July 2010 and provided a decision-making framework to ensure that decisions affecting the transport network are made in line with the aspirations and objectives of the state. The Act informs DOT’s vision for:

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

Under the Act, strategic planning decisions must have regard to the impact of the planning on the transport objectives of the State through the designation of planning authorities as ‘interface bodies’. The assessment of projects must also consider a range of triple bottom line principles including costs and benefits and value for money.

The Act requires that the now DOT undertake integrated transport planning to guide the development of the transport network.

The strategic transport planning undertaken for the project is set out within a MAR Integrated Transport Plan³, Business Case and Urban Design Strategy, which fit into the state planning framework as indicated in Figure 4-1.

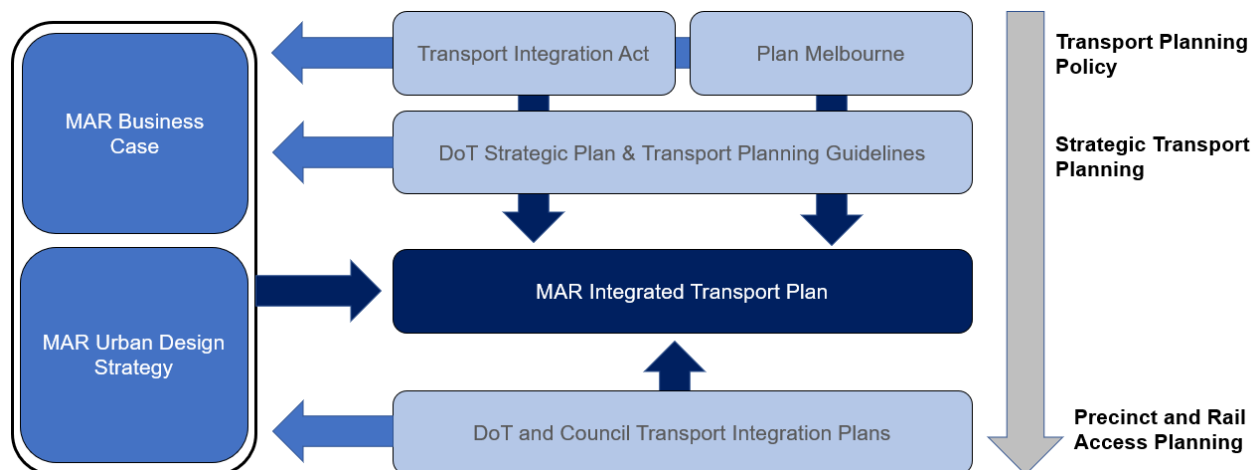


Figure 4-1: Integrated and strategic planning undertaken for MAR

4.1.2 Road Management Act 2004

The *Road Management Act 2004* (RMA) provides the statutory framework for DOT and local government to manage the Victorian road network and the coordination of road reserves for roadways, pathways, infrastructure and similar purposes.

³ This is an internal document that has been prepared to demonstrate the project meets DOT requirements. Extracts will be used to assist with Stakeholder engagement

Approval or 'consent' is typically required from the coordinating road authority to undertake works on, in or under any road⁴.

The RMA is based on four principles:

- *Clear allocation of road asset ownership and management*
- *Established processes and accountabilities for policy decisions and performance standards*
- *Provision operational powers to achieve targets and performance standards*
- *Clarification of civil liability laws for the management of roads*

This TIA for MAR covers the project's legacy and construction impacts on both arterial and municipal roads therefore the key road asset owners whose 'consent' will need to be sought are:

- DOT
- Brimbank City Council (BCC)
- Moonee Valley City Council (MVCC)

A list of key transport assets that may be impacted as part of the Project are provided within Appendix A.

Discussions in progress with DOT and will be undertaken with the relevant Councils regarding impacts as soon as possible.

4.2 Other Strategic Documents

Other strategic documents that have informed the final scope of the project including beyond the need to construct a rail line to the airport are summarised in Figure 4-2 to Figure 4-4 below and Appendix B



Figure 4-2: Strategic documents that have informed the overall project development

⁴ The definition of a 'road' under the act includes the full reserve from boundary line to boundary line.



Figure 4-3: Strategic documents that have informed the active transport elements of MAR project



Figure 4-4: Strategic documents that have informed elements of the project around Sunshine and Albion

4.3 Victorian Planning Provisions and Local Planning Provisions

The project is located within the municipalities of Hobsons Bay, Maribyrnong, Brimbank, Moonee Valley, Moreland and Hume and is subject to their local planning schemes. The respective planning schemes set out the relevant planning controls which determine whether planning approval is required for the use and/or development of land. These controls include zones, overlays, and particular and general provisions. The

Planning and Environment Act 1987 is relevant to the project as land use planning studies have shown that a variety of approvals are triggered by the proposed works.

There are a variety of pathways via which planning approval may be obtained for rail projects. The planning approval pathway for the project will be confirmed through further consultation with DELWP.

4.3.1 VPP - Clause 18

Clause 18 covers Transport strategy within the VPP, with Clause 18.01 addressing Land Use and Transport objective and Clause 18.02 addressing Movement Network objectives⁵.

The overall objective of the Clause is that *Planning should ensure an integrated and sustainable transport system that provides access to social and economic opportunities, facilitates economic prosperity, contributes to environmental sustainability, coordinates reliable movements of people and goods, and is safe.*"

MAR Project

MAR will provide a new element to the transport system of the state that will link the Airport and airport employment precinct with the Sunshine National Economic Innovative Cluster (NEIC) and the employment zones of the CBD.

It will provide a more sustainable means to move people between these economic centres than can currently occur.



Figure 4-5: Clause 18 of the VPP Reflected in Elements of the State Land Project Scope


⁵ Clauses 18.03, 18.04 and 18.05 are not relevant to the details of the state land component of the project scope.

4.3.2 Local Planning Provisions

The majority of State land project area falls within the municipality of Brimbank. Clause 21.10 of the Brimbank Planning Scheme sets out six local transport related objectives related to sustainable transport, road network and car parking. Elements of the Project will respond well to at least three of the objectives of the Clause:


Clause 21.10-1

- *Objective 1 – To improve access to sustainable transport options*
- *Objective 2 – To develop a variety of sustainable transport options for the movement of people and goods within and through the municipality*

MAR Project 	<p>Will improve access to and develop a variety of sustainable transport options for the movement or people by:</p> <ul style="list-style-type: none">• Delivering additional SUPs to help expand the SCC network in the municipality and in particular the Sunbury to Sunshine SCC and the Keilor East to Melbourne Airport SCC• Provide a more pedestrian focused access to Albion Station for local residents• Provide end of trip cycle parking at Albion Station• Provide a more sustainable mode of transport choice for people from and through the municipality travelling to and from the Airport than is currently available <p>Refer to Section 7 for more detailed information on the Project's legacy benefits.</p>
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Clause 21.10-3

- *Objective 3 – To ensure that the location and function of car parking spaces are safe for pedestrians and motorists*

MAR Project 	<p>Will improve the function of Albion Station car parks for pedestrians and other uses by:</p> <ul style="list-style-type: none">• Provide a more pedestrian focused access to Albion Station, DDA compliant and Kiss & Ride spaces located closer to the station entrance <p>Refer to Section 7 for more detailed information on the Project's legacy benefits.</p>
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5. Methodology

5.1 Introduction

The delivery of a new rail link between Sunshine and Melbourne Airport would have the following principal transport effects:

- Permanent change to the journey choice options for people travelling to and from Melbourne Airport, facilitating direct rail access or single transfer rail access to Melbourne Airport from across the rail network
- Change the level of car parking at Albion and Sunshine Station but not the net provision for this corridor
- Modest increase in passengers accessing rail services at Sunshine Station but significant increase to the level of passenger transfers at Sunshine Station as western metropolitan passengers, regional V/Line passengers and direct Southern Cross passengers transfer to and from MAR services at this location
- Contribute to the completion of gaps in the active transport network including:
 - > Sunbury Rail Corridor between Albion Station and Ginifer Station
 - > Steele Creek / M80 Trail to Airport Drive
- Temporary impacts on the road and rail networks during construction

The methodology is designed to assess the impacts of these changes on the non-rail transport network, and consists of:

- Establishing an understanding of the current transport system within the project area
- Confirming and understanding the impacts of changes to existing conditions that are expected to be introduced prior to the construction and operation of MAR
- Describing the elements of the Project on municipal and state transport networks during construction and operational phases of the infrastructure
- Assessing the likely effects during the peak construction phase by comparison of the proposed construction transport arrangements (i.e. the estimated amount of construction trips generated by the project and planned disruptions to the network) and the operation if MAR was not being built
- Assessing the likely effects during MAR operational phase by comparison of MAR legacy case and a No Project Case where impacts trigger the need for further analysis

5.2 Assessment Impact Area

5.2.1 Legacy Impacts

Legacy negative impacts associated with the Project are anticipated to be limited because:

- The current project scope incorporates only two exit / entry nodes to the rail network, Sunshine Station and Melbourne Airport
- No additional rail or designated Melbourne Airport parking will be provided at Sunshine Station

However, there are locations along the project where there will be a permanent change to the part of the transport network.

These locations are indicated in Figure 5-1 and Figure 5-2 are discussed further in Section 7.



Figure 5-1: Locations of Permanent Changes to the Wider Transport Network Following MAR under Corridor Section

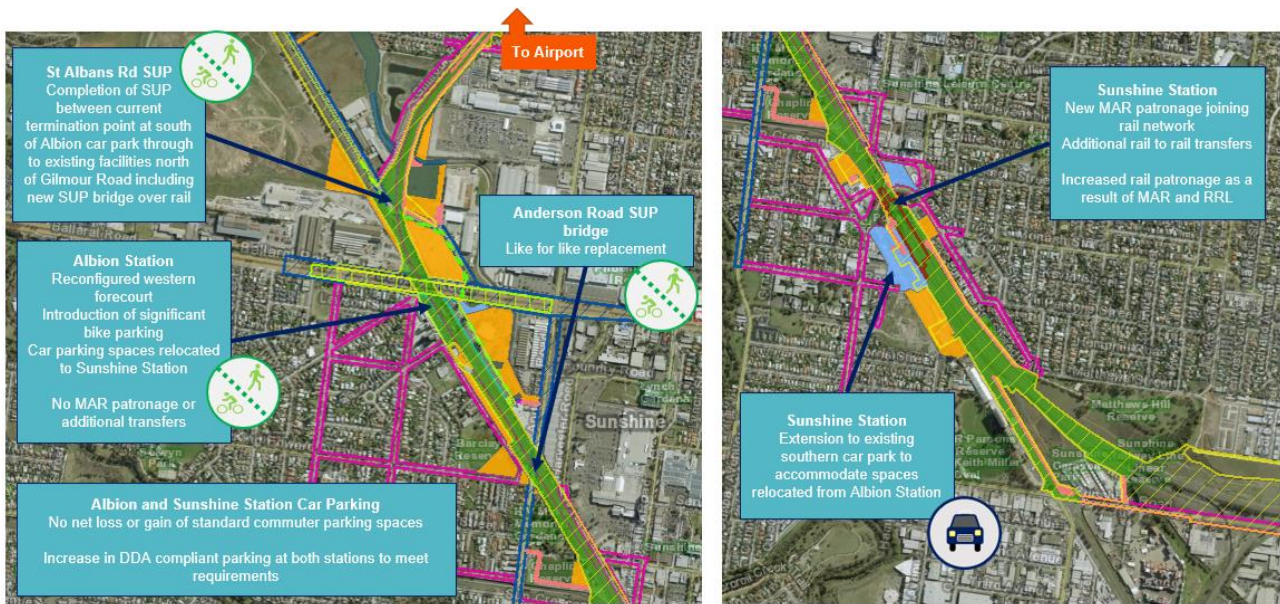


Figure 5-2: Locations of Permanent Changes to the Wider Transport Network Following MAR under Sunshine Package

5.2.2 Construction Impact Areas

The transport construction impact for the Project will be focussed around:

- Quantity and distribution of construction driven traffic movements and parking requirements
- Transport network disruptions due to link closures or capacity reductions required to facilitate construction areas, works and movements

Construction will be undertaken in a series of packages but for the purpose of assessing the impact these sections have been divided into a series of construction areas, serviced by one of more laydown sites.

Preliminary construction (truck) requirements have been provided by RPV for each construction area. Workforce requirements have not been advised at this time; however a preliminary assessment has been made based on workforce to truck ratios identified within the Transport Impact Assessment undertaken for the MTP.

Likely road disruptions have been provided by RPV but are still to be discussed and agreed with the appropriate stakeholders. Where possible major arterial road closures have been limited to night or weekend closures, however some roads will need to be closed or partially closed during peak periods.

A summary of expected general road network disruptions is provided as Appendix G and Appendix H.

5.3 Assessment Years

At the time of writing, models of the road network likely to be impacted by the MAR works are in various stages of development and agreement with DOT.

Therefore, impact assessment processes will vary across the project area to reflect the available analysis. Ultimately, the project will include separate reporting of traffic modelling processes, calibration, validation, stakeholder engagement and analysis.

Where modelling is not available for the purpose of this assessment, impact analysis will be provided based on first principle traffic engineering knowledge using documented growth trends, movement patterns and typical capacity characteristics identified from a variety of sources including DOT Open Data Traffic Volume Portal, DOT Traffic Profile Viewer, Austroads Guides and preliminary modelling tools.

5.3.1 Construction Assessment Year

The Project's construction is currently planned to formally commence in 2022 with a target completion date of 2029, representing a seven-year construction period.

The adopted construction assessment year for any wider impact assessment is 2026, which represents:

- Approximately mid-way through construction
- A conservative approach given that peak construction activity will vary across the network between 2023 and 2027
- Alignment with the DOT Victorian Integrated Transport Model (VITM) modelling years

It is noted that the adopted construction year represents one of the peak years of activity under current construction scheduling. To simplify and to allow flexibility in terms of how changes in scheduling or works are assessed on the road network, the year 2026 will provide a balance between assessing key construction activity, likely disruptions against sections of the network and likely growth that will occur in the network usage over a seven-year period.

5.3.2 Legacy Impact Assessment Year

The target completion date for MAR is 2029, where the legacy impact of the project on the wider transport network needs to be assessed and the assessment year of 2036 has been adopted which:

- Is seven years after the completion date allowing traffic patterns to settle following construction and opening
- Aligns with DOT VITM years to avoid the need to interpolate between VITM models
- Is conservative compared with other major projects such as MTP and Melbourne Airport Elevated Road, which assess post project traffic impacts five years after completion

At this stage of the assessment, mesoscopic modelling has not been completed and high-level analysis indicates that the operational impact will generally be minor.


5.4 Modelling of Impacts

5.4.1 Modelling Tools

Throughout the course of the development of the project, multiple modelling tools and techniques have been adopted to best fit the complexity of scenarios and output requirements. These include:

- **VITM**
Is the State Government's strategic transport model. VITM has been used by DOT and adapted by AJM-JV to identify broad patronage projections and demands for each of the stations within or impacted by the Project for multiple forecast years, including a base year of 2018.
- **ClicSIM**
Is a passenger simulation model of the Melbourne rail system originally developed to assess the capacity of the City Look and Inner Core (CLIC) stations then later the MTP.

The model simulates the passenger activity on trains moving through the rail network showing boardings and alightings, train loadings and travel times. For the Project the model has been used to understand pedestrian flows in and out of Sunshine and transfers within the station. The tool has been used to inform design and results are included within specific pedestrian model reporting rather than this TIA.
- **The Detailed Operational Model for Intersection and Network Optimisation (DOMINO)**
Is a Visum based platform that has been prepared by DOT to provide a tool to assess the impact of changes to infrastructure and/or operation of parts of the road network on the wider network.



The mesoscopic model allows dynamic impacts to be reproduced and has been used to indicate how traffic may re-route during construction and hence repercussions on the network in terms of queuing and delays. Whilst findings from this model is included where available in this report the separate Mesoscopic Modelling Report that was also prepared by AJM-JV⁶ will provide more comprehensive documentation of the modelling undertaken.

- **Sidra**

Is a widely known traffic model used to assess the performance of individual intersections and small networks. This has been used to consider isolated intersection or access operations.

- **Austrroads Guide to Traffic Management Part 3: Transport Study and Analysis Methods**

This document includes high level techniques that have been adopted to provide preliminary impact review where alternative more sophisticated modelling is not warranted.

5.4.2 Technical Modelling Standards and Guidelines

Final mesoscopic modelling is being undertaken in line with the DOT's *Transport Modelling Guidelines, Volume 5*. It should be noted however that some deviations to the Guidelines may need to be incorporated due to model set up occurring during the 2020 COVID-19 pandemic. These will be explained more fully in the Mesoscopic Modelling Report, when it is finalised.

5.4.3 Stakeholder Engagement

Stakeholder engagement will be reported on and incorporated in the design once completed.

⁶ AJM Document ID: MAR-AJM-PWD-PWD-REP-XTR-NAP-0001648, Revision C, May 2021

6. Existing Conditions

6.1 Introduction

In preparing this transport impact assessment, desktop assessments were undertaken to collate data and prepare an understanding of base conditions. Data was sourced from Local and State Government sources, including Google Earth, DOT Open Data Traffic Volume Portal, Sydney Coordinated Adaptive Traffic System (SCATS) traffic data and surveys undertaken prior to 2020.

The location of the project corridor interfaces with many different transport networks within State land. As with all rail corridors it can be a source of severance with interfaces generally provided as grade separated crossings, which limits direct long-term impacts but could potentially increase construction impacts due to lack of alternatives.

The corridor context for the different transport hierarchies as determined under DOT's Movement and Place Framework is shown in Figure 6-1 to Figure 6-3. The classification of transport network (ranging from one to five for each mode, including general traffic, freight, bus, tram, walking and cycling, where '1' equates to a state significant corridor and '5' equates to a locally significant corridor) is provided as below.

These plans assist in identifying key risk points for the Project.

Movement Hierarchy – General Traffic (GT) and Freight (F)

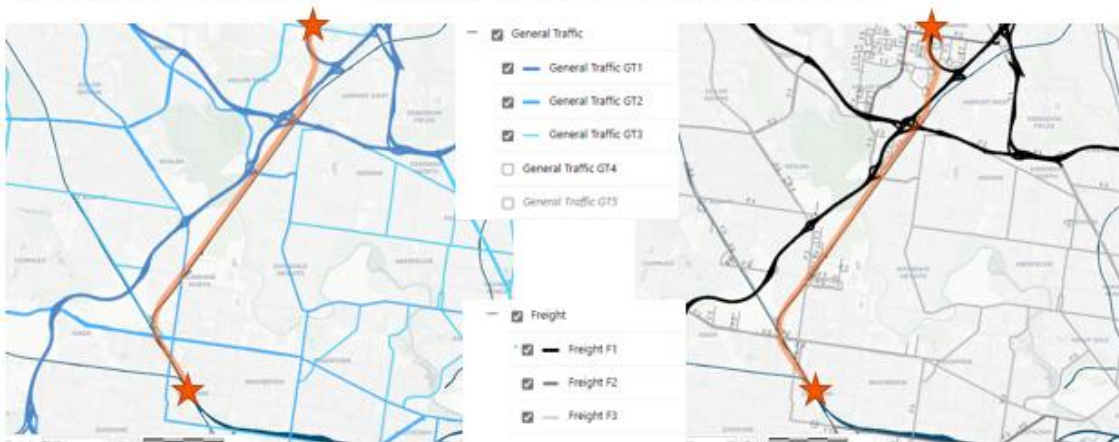


Figure 6-1 Project context within the General Traffic and Freight Network Hierarchy

Movement Hierarchy – Bus (B), Tram (T) and Rail (R)

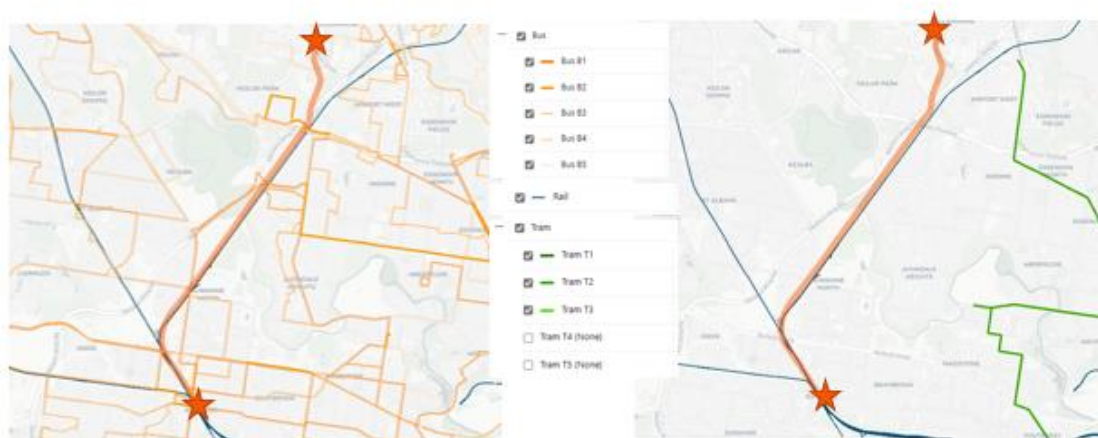


Figure 6-2 Project context within the Public Transport Network Hierarchy

Movement Hierarchy – Walking (W) and Cycling (C)

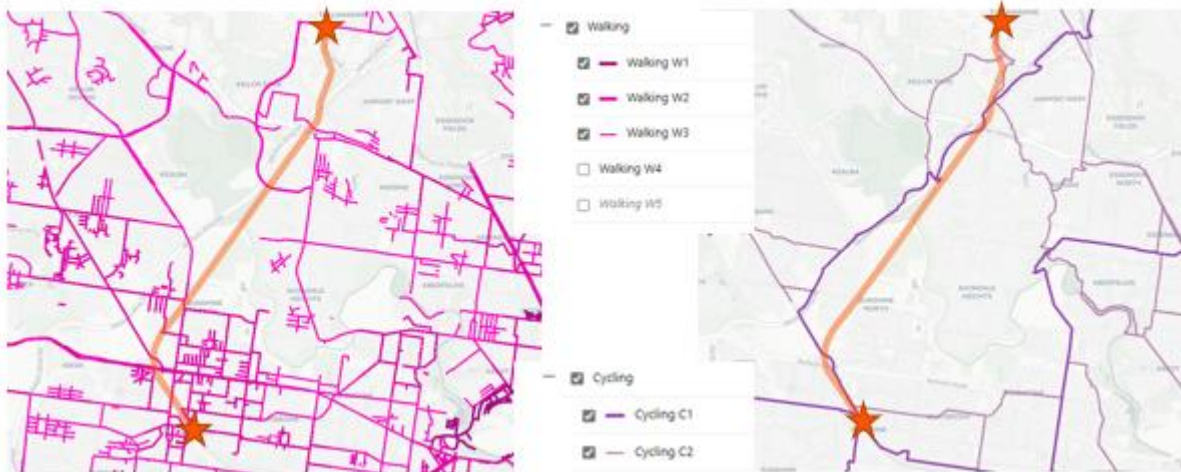


Figure 6-3: Project context within the Active Transport Network Hierarchy

6.2 Corridor Section

The COR section for the Project extends from Sharps Road in Tullamarine via the existing Albion-Jacana rail corridor accommodating the ARTC tracks before terminating in the vicinity of Barwon Avenue, Sunshine North. Existing transport conditions within the corridor area, including the average annual daily traffic (AADT) volumes and heavy vehicle (HV) proportions are summarised below.

6.2.1 Active Transport Network

Trails and Paths

The COR area of the Project does not encompass an existing parallel active transport corridor however it will interface with cycle and pedestrian footpaths that pass back and forth across the corridor. These are summarised below along with their classification under Movement and Place and whether the trail forms part of the Principal Bicycle Network (PBN) including whether it is part of the SCC network.

M80 Trail (SUP)



The M80 Trail is a dedicated SUP that broadly follows the path of the M80 connecting the western and northern suburbs from Federation Trail through to the Greensborough bypass. The trail is a slightly meandering trail which crosses back and forth over the freeway along its length. Cycling the trail would include riding disruptions where the trail crosses major at-grade arterials roads and users are required to dismount to use zebra facilities and wait for signal changes. The route is designated as a SCC, part of the PBN and has a C1 classification under Movement and Place. It is noted that although it is a shared path, the route does not appear to have been allocated a walking (W) ranking under Movement and Place.

The trail crosses or runs in the vicinity of the project area between Maribrynong River and Airport Drive, with the most likely section for impacts between Keilor East and Airport Drive. Counts undertaken along the trail indicates the following usage, described in the next few paragraphs.

Calder Freeway / Fullarton Road

At Calder Freeway / Fullarton Road the current trail diverges from the alignment of the M80 and utilises the existing rail corridor to pass under the Calder Freeway and Fullarton Road bridges. The path maintains its

existing 3m width and provides a minimum 3m headroom⁷, a fenced embankment transitions the ground from the SUP to the existing ARTC tracks approximately 9m to the south east.

Connections are provided to the south west of the road bridges between the M80 Trail and suburbs of Keilor East and Airport West. Rail corridor crossing is facilitated by a protected narrow (approx. 2.4m) SUP bridge which links the M80 trail to Borva Drive and Wonganella Drive in Keilor East. A 2m wide footpath underpass with minimum 2.5m head clearance⁷ is provided along the south eastern side of the corridor providing a link into Airport West.

Counts of M80 Trail usage at this point undertaken in February 2019 indicated approximately 50 users a day on both a weekday (noting the weather was hot but wet) and weekend (noting that the weather on Saturday was cooler but dry). Predominate use was by bike accounting for 85% of daily users during both the weekday and weekend. It is noted that counts of the footpath underpass on the other side of the rail corridor were lower at 32 and 14 on a weekday and weekend respectively.

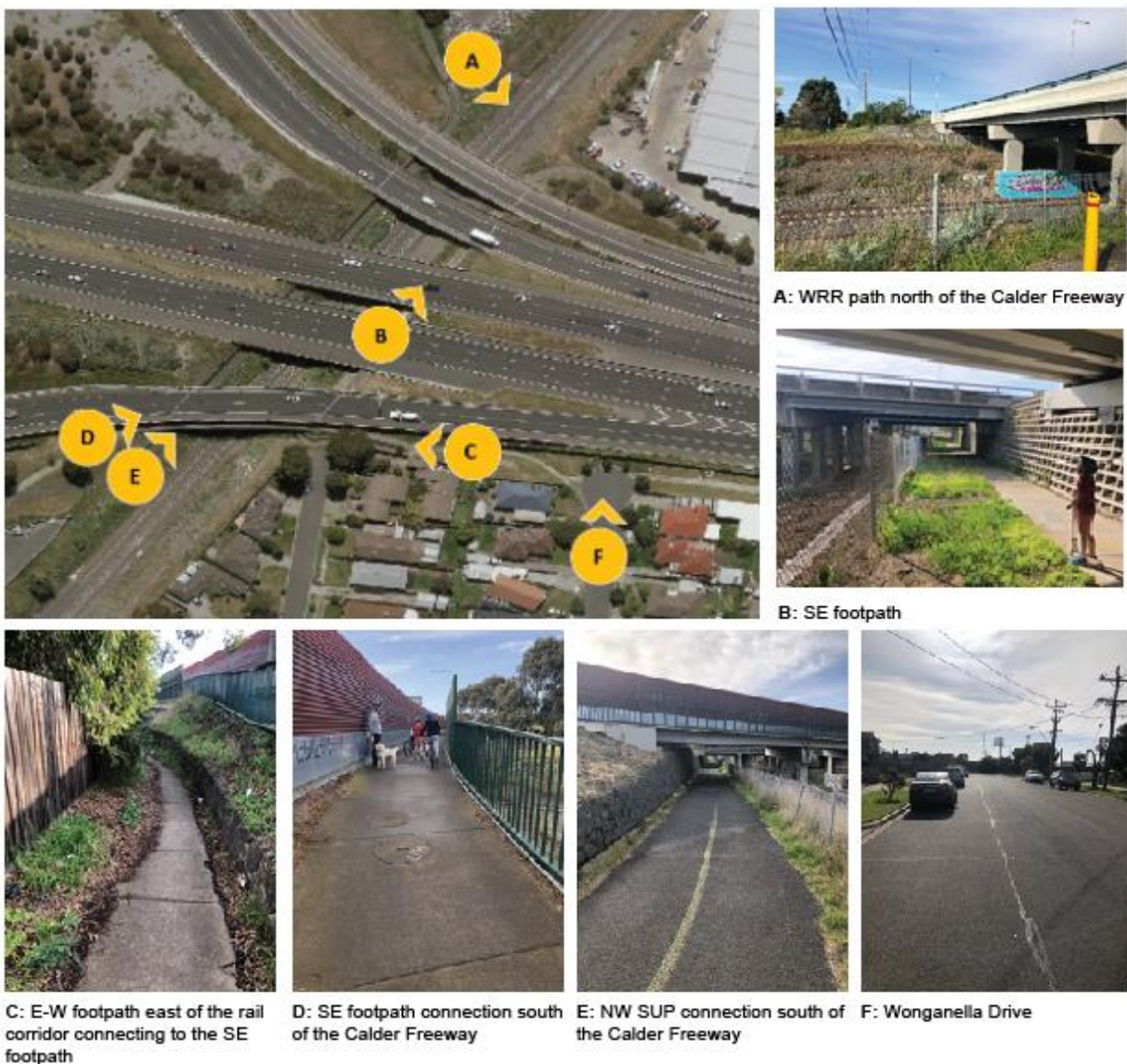


Figure 6-4: M80 Trail connections through to Keilor East and the footpath link through to Airport West

⁷ Information extracted from VicRoads Drawing 402844 A.

The project will trigger a minor change to the route at the Calder Freeway / Fullarton Road crossing and will impact access to sections during construction around the area where the MAR corridor is anticipated to cross the M80.

Steele Creek Crossing

The M80 Trail crosses Steele Creek by means of a SUP bridge suspended off the road bridge, the path then diverges from the road alignment in order to accommodate clearances to the power transmission towers and loop underneath Westfield Drive. There is an access link to Westfield Drive on the approach to the Airport Drive roundabout.

The Project will impact access to the trail in the vicinity of the viaduct pier construction to the south of M80 freeway but is anticipated to have no negative legacy impact to the trail.

Maribyrnong River Trail (SUP)

PBN

The Maribyrnong River Trail is a SUP that runs from the central business district (CBD) along the Maribyrnong River, including underneath the existing ARTC and hence the future MAR Maribyrnong River viaduct crossings.

The trail appears to be primarily a recreational trail meandering along the river rather than providing direct linkage between suburbs. Access to the trail in the vicinity of the existing and future viaducts is limited due limited river crossings (M80 trail approximately 900m upstream from the ARTC bridge and Avondale Heights crossing or Solomon Ford 3-5km downstream) and steep topography to adjacent residential areas.

The trail is part of the PBN but is not a SCC and current maps indicate that it has not been classified within the Movement and Place framework for either cycling or walking.

The Project will impact access to the trail in the vicinity of the proposed river crossing as part of construction but is anticipated to have no negative legacy impact to the trail.

Steele Creek Trail (SUP)

C2

PBN

The Steele Creek Trail is part of a proposed strategic cycling corridor that will link Keilor East to Melbourne Airport. The corridor has limited completed sections and much is proposed to be delivered as part of the Project. The section of the SCC that will be delivered by MAR under the Corridor section will link the M80 Trail to the completed section of the link located adjacent to Airport Drive between Sharps Road and Mercer Drive.

At present there are no current facilities for cyclists, however the link is categorised as a C2 link within the Movement and Place framework.

Corridor Crossings

In addition to the major trails considered above there are seven active transport interfaces where the future MAR corridor will be crossed. Five of these are incorporated by means of footpaths and SUPs located in the road reserve and the remaining two are removed from road crossings.

- Sharps Road – road level at-grade signalised crossings within the traffic signals
- Fullarton Road – footpath incorporated to the north of the road bridge
- Calder Freeway – 2.4m wide SUP bridge suspended to the south of the on-ramp
- Keilor Park Drive – footpath incorporated to the north of the road bridge
- McIntyre Road – footpath incorporated to the west of the road bridge

PBN

PBN

PBN & SCC

PBN

- Drake Street – level crossing
- Barwon Avenue - underpass

PBN

Drake Street and Barwon Avenue Rail Crossings

The Drake Street and Barwon Avenue rail corridors provide link the two areas of Sunshine North that are segregated by the rail corridor between Furlong Road and St Albans / Ballarat Road. The crossings are located approximately 350m (Drake Street) and 730m (Barwon Avenue) of the McIntyre Road bridge.

The Drake Street rail crossing is a passive level crossing with signage but no gates or warning signals helping to manage safety. It is used by approximately 110 people per day.

The Barwon Avenue rail crossing is an underpass linking the PBN designated roads of Barwon Avenue and Urana Avenue. The crossing also aligns well with a pedestrian operated signal (POS) of McIntyre Road approximately 350m to the east. The crossing is used by approximately 100 people per day.



Figure 6-5: Barwon Avenue underpass and Drake Street level crossing

6.2.2 Public Transport Network

The current rail within the corridor section of the project area are ARTC tracks and therefore not a passenger service.

Other public transport networks are limited with seven bus services using roads that would interface the corridor section, as indicated in Table 6.1.

Table 6.1: Bus services in COR section that run proximate to the Project and works area

Bus Services Proximate to MAR Corridor Potential for Temporary (T) and / or Permanent (P) Impacts			
<p>Route 482 Airport West to Melbourne Airport Weekday services only 60 minute peak frequency Interface: Tullamarine Park Rd bus stop approximately 150m from viaduct route</p>	T	<p>Route 483 Sunbury to Moonee Ponds Weekday and weekend services 60 minute peak frequency Interface: Calder Freeway through route (no stops)</p>	None
<p>Route 465 Essendon Station to Keilor Park Weekday and weekend services 20 minute peak frequency Interface: Fullarton Rd bus stop approximately 150m from Fullarton Rd bridge</p>	T	<p>Route 903 Orbital Smart Bus Weekday and weekend services 15 minute peak frequency Interface: Keilor Park Dr bridge stop located approximately 500m from works Interface 2: McIntyre Rd bridge stop located approximately 150m from works</p>	None
<p>Route 476 Moonee Ponds to Watergardens Weekday and weekend services 40 minute peak frequency Interface: Fullarton Rd bus stop approximately 150m from Fullarton Rd bridge</p>	T	<p>Route 408 St Albans to Highpoint Weekday and weekend services 15 minute peak frequency Interface: McIntyre Rd bridge stop located approximately 200m from works</p>	None
<p>Route 941 – Night bus Weekend Night services Hourly frequency Interface: McIntyre Rd bridge stop located approximately 150m from works</p>			T

6.2.3 Road Network

Sharps Road

 **AADT 17,000, HV 16%⁸**

Sharps Road forms the northern boundary of the COR section of the Project. The road's highest function is as a freight link (F2) with moderate significant role for both general traffic and pedestrian traffic. It is noted that the current categorisation within the cycling network is as local route, although partial on road bike lanes are provided to the west of Airport Drive. Sharps Road has only one PTV bus route operating between Tullamarine Park Road and the M80 (i.e. falling outside the project area), which is the 482 – Airport West SC-Melbourne Airport via South Centre Road, which has a peak service frequency of 60 minutes.

The road is constructed as a four-lane, divided road with two lanes in either direction widening to provide turning lanes at the signalised intersection with Airport Drive. The road is subject to a 70kph posted speed restriction. 2019 SCATS data suggest that the road caters for approximately 13,100 vehicles travelling westbound and 9,000 vehicles travelling eastbound.

The Project crosses Sharps Road at its intersection with Airport Drive.

Airport Drive

 **AADT 26,000, HV 14%¹⁰**

The continuation of Airport Drive, south of Sharps Road provides a direct link between APAM's land (Melbourne Airport and Melbourne Airport Business Park) and the M80. The road is located within a wide 70 to 80m wide corridor and comprises of two 7.4m wide carriageways accommodating two lanes and unsealed shoulders, with a central median ranging from approximately 2.5m to 25m. The road provides no direct access to local streets or properties however, both the north and southbound carriageways include 150m long truck rest stops. The road is subject to an 80kph posted speed restriction

Based on the existing Movement and Place classification the road has high functioning role for both general traffic and freight networks with a moderate to high function role for cycling although at present there are no specific facilities south of the Sharps Road / Airport Drive intersection. Public transport or walking functions are not identified for the link, noting that there are no footpaths along this section of Airport Drive.

The Project runs partly through the road reservation from Tullamarine Park Road up to Sharps Road.

Tullamarine Park Road

 **AADT 8000, HV N/A¹⁰**

Tullamarine Park Road is a municipal industrial collector road that completes a loop between Sharps Road and Keilor Park Drive providing access to industrial areas on either side of the road.

The road comprises of a divided carriageway with two traffic lanes in each direction separated by a central median that is approximately 10m wide. Median breaks are located along the length of the road facilitating unsignalized right turns into local streets. Footpaths are provided on both sides of the road.

The road has a relatively low function role for general traffic with a moderate role in the freight network, it is subject to a 60kph speed restriction. Although not provided with a public transport hierarchy it caters for one bus route (route 482) with stops located on both carriageways in the vicinity of Beverage Drive.

The Project crosses Tullamarine Park Road approximately 90m west of the Airport Drive bridge crossing of the road. The associated SUP works to the Project are located at the Airport Drive bridge.

⁸ Source: DOT Traffic Volume Open Data Hub

M80 Western Ring Road



AADT

75,000 (North-eastbound)

61,000 (South-westbound)

HV 13%10

The M80 is a major freeway corridor connecting the northern suburbs and western suburbs to wider freeway network (e.g. the Calder Freeway and Tullamarine Freeway). In the vicinity of the Project (i.e. around the Steele Creek North Drain located between the Calder Freeway and Airport Drive interchanges) the single carriageway bridge has five lanes travelling northeast bound and five lanes travelling southwest bound, with both directions comprising of one exit, one shared exit and thru and three thru lanes.

The road is a primary freight corridor (F1) with a just as significant role for both general traffic and cyclists using the existing M80 Trail that runs along the east side of the road at this location. The M80 Trail in the vicinity of MAR is a 3m, bi-directional SUP that currently provides a direct connection to the Steele Creek path running on the outskirts of Keilor Park.

The Project crosses over the M80 and is likely to trigger both partial and full temporary road closures during construction.

Fullarton Road



AADT 5600, HV N/A10

Fullarton Road is a municipal controlled connector road that links the communities of Keilor Park with Airport West and Keilor East and provides connections for these communities to the freeway network (i.e. the Calder Freeway and M80). In the vicinity of the Project the road crosses the rail corridor by means of a single carriageway bridge comprising one lane in each direction. A footpath is provided adjacent to the eastbound lane and a sealed shoulder adjacent to the westbound lane.

The road is identified with a B2 function in the public transport network catering for two bus routes (465 – Essendon Station-Keilor Park via East Keilor and 476 – Watergardens-Moonee Ponds via Keilor which have a peak frequency of 20 minutes and 40 minutes respectively). No stops are located within 150m of the existing rail corridor.

The Project passes under Fullarton Road and will trigger works to the existing footpath to the north.

Calder Freeway On Ramp



AADT 23,000, HV 3%10

The Calder Freeway on ramp runs broadly parallel to Fullarton Road across the rail corridor. It comprises of a 12m wide deck accommodating two traffic lanes with a 1m shoulder along the offside and a 3m shoulder on the near side. The Project passes under the ramp and does not trigger any need for major bridge works but may trigger upgrades to barriers and introduction of anti-throw screens.

Calder Freeway



AADT 47,000, HV 4%10

The Calder Freeway is a primary arterial route in the project area that comprises of two separate carriageway bridges over the rail corridor. Each bridge accommodates three traffic lanes in each direction with near side and offside sealed shoulders between 2.5 and 6.5m (approximately) in width. The Project passes under Calder Freeway it does not trigger any need for major bridge works but may trigger upgrades to barriers and introduction of anti-throw screens.

Calder Freeway Off Ramp

F1 GT1 AADT 20,000, HV 4%⁹

The Calder Freeway Off Ramp comprises of two traffic lanes with a 1m shoulder on the offside traffic lane and a 3m wide hard shoulder across the bridge. The Project passes under the ramp and does not trigger any need for major bridge works but may trigger upgrades to barriers and introduction of anti-throw screens.

Terror Street

W4 GT5 AADT likely LOW
%HV likely to be relatively high given uses

Terror Street is a municipal controlled local road with one lane in each direction off Fullarton Road that provides access to the manufacturing site situated between the M8 and the Albion-Jacana rail corridor. There is only one 1m footpath adjacent to the southbound lane. Running adjacent on one side, crossing Terror Street via a priority-controlled crossing point and running on the other side of the road is the existing M80 Trail, which is a 3m, bi-directional SUP.

The road is specified as a low traffic and walking function with no other significant mode function, however the cycling 1 (C1) category M80 Trail crosses the road at-grade approximately 110 metres north of Fullarton Road.

The road will be used to provide access to the construction areas for the Fullarton Road / Calder Freeway works and M80 SUP works.

Keilor Park Drive

W2 F2 GT2 AADT 20,000, HV 6%¹⁰

Keilor Park Drive is an arterial road commencing in Keilor East that provides direct access to the Slater Parade industrial area, M80, Calder Freeway, Keilor Park and Melbourne Airport Business Park. Around the Albion-Jacana rail corridor it is a single, divided carriageway bridge with two thru lanes travelling in each direction. At this point, there are also two short left and right turn westbound lanes tying into the Keilor Park Drive / Slater Parade signalised intersection. A 2m footpath is provided adjacent to the outer eastbound lane.

The road section between the M80 and Milleara Road is identified as a bus 3 (B3) category and only caters for one PTV bus route, which is the 903 – Altona-Mordialloc (Smart Bus) which has a peak frequency of 15 minutes. However, the bus stop is located outside of the Project area.

The Project passes under Keilor Park Drive it does not trigger any need for major bridge works but may trigger upgrades to barriers and introduction of anti-throw screens.

McIntyre Road

W2 B3 F3 GT2 AADT 26,000, HV 7%¹¹

McIntyre Road is an arterial road located between the M80 and Ballarat Road in Sunshine North. In the vicinity of the Albion-Jacana rail corridor, it is a single, divided carriageway bridge with two traffic lanes in each direction. There is only one 1.5m footpath running adjacent to the outer northbound lane. At present, two PTV bus routes (i.e. the 903 and 941 – City-Footscray-Sunshine North-Taylors Lakes-Watergardens (Night Bus), however the closest bus stop is located south of the McIntyre Road bridge at the Gee Street intersection.

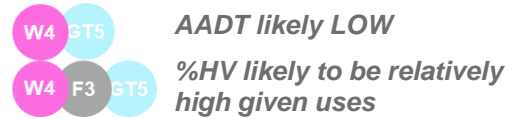
The Project passes under McIntyre Road it does not trigger any need for major bridge works but may trigger upgrades to barriers and introduction of anti-throw screens.

⁹ Estimated from VicRoads Open Data Portal Information

¹⁰ Estimated from VicRoads Open Data Portal Information

¹¹ Estimated from VicRoads Open Data Portal Information

Baldwin Avenue / Balfour Avenue
Whitehall Avenue / Maida Avenue

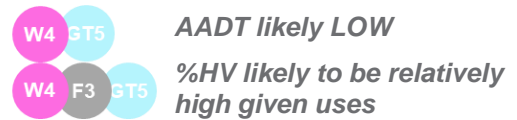


Baldwin Avenue, Balfour Avenue, Whitehall Avenue and Maida Avenue are key local streets that serve the Sunshine North Industrial area bounded between McIntyre Road, the Jacana Rail Corridor (project area), Maribyrnong River and the M80.

The roads are typical industrial type streets comprising wide single carriageways of between 9-10m, with intermittent footpaths. In general, the status of these roads within the overall network hierarchies are low however of note is that Whitehall Avenue and Maida Avenue are designated with freight 3 (F3) categories.

The roads will have a role in providing access to Project construction sites associated with the Maribyrnong River crossing.

Cromer Avenue
Rothay Avenue

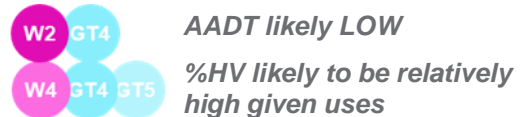


Cromer Avenue and Rothay Avenue are local connector streets for the southern area of the Sunshine North Industrial area.

The roads are typical industrial type streets comprising wide single carriageways of between eight and nine metres. In general, the status of these roads within the overall network hierarchies are low however Rothay Avenue has been designated with an F3 freight function.

The roads will have a role in providing access to project construction sites associated with the McIntyre Road bridge works.

Urana Avenue
Gilmour Road



Urana Avenue and Gilmour Road are local collector streets that abut the rail corridor serving the Sunshine North residential area bounded by the Jacana Rail Corridor, Furlong Road, M80 and St Albans Road. Both streets are recognised as a minor general traffic role, i.e. are in the general traffic 4 (GT4) category and connect in the vicinity of Barwon Avenue underpass.

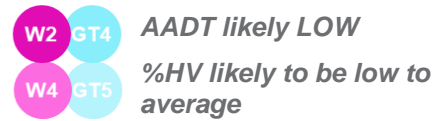
Urana Avenue provides connection to the north and Furlong Road and is a 7m single, undivided carriageway with one traffic lane in each direction with bicycle sharrows and 1m footpaths on either side. It is designated as a walking 2 (W2) function in the walking network hierarchy.

The road will be used to provide access to the rail corridor and in particular the Cranbourne Avenue overpass works area.

Gilmour Road provides connection to the south and St Albans Road and is a single, undivided carriageway at 8.5m with one traffic lane in each direction with bicycle sharrows. Whilst categorised as a GT4 level road at its northern end between Cary Street and St Albans Road it is categorised with a GT5 function. Between Clayton Street and Cary Street there are 1m footpaths on either side of the road, however this reduces to just one 1.5m footpath running along the east side of Gilmour Road south of Cary Street through to St Albans Road. This eastern footpath leads to an existing rail underpass connecting to Barwon Avenue, as such the link is considered to have a W2 function.

Gilmour Road will have a function in providing access, including crane access for viaduct works associated with MAR.

Barwon Avenue Cranbourne Avenue



Barwon Avenue and Cranbourne Avenue are parallel cul-de-sacs that run from McIntyre Road to the Jacana rail corridor. Barwon Avenue has residential uses to one side and industrial uses to the south whilst Cranbourne Avenue has residential uses running along both sides. A short section of local shops fronting McIntyre Road run between the two streets. A pedestrian operated signal across McIntyre Road is located approximately 30m north of Barwon Avenue and 60m south of Cranbourne Avenue. Short term parking is not permitted on the south side of Barwon Avenue and limited to one hour on the north side. On Cranbourne Avenue parking is limited to two hours on the south side but is unrestricted on the north side.


Both streets are approximately 7m in width, footpaths are provided on both sides along Cranbourne Avenue and on the north side of Barwon Avenue. Barwon Avenue has pavement marking indicating a shared cycle / vehicle carriageway aligning with the current rail corridor underpass. Barwon Avenue is categorised with a GT4 and W2 function whilst Cranbourne Avenue is categorised as a GT5 and W4 function.

The Project will include the decommissioning of the Barwon Avenue pedestrian underpass and replacement with an overpass at Cranbourne Avenue.

6.2.4 Crash Statistics

Crash statistics for the transport network interfacing with the corridor route have been downloaded from DOT's Open Data Portal.

The data indicates that in the last five years there have been a total of 34 crash incidents on roads in the vicinity of the COR section of works, the majority of which are motor vehicle based, one incident is understood to also involve a cyclists. A summary follows and the results are tabulated in more detail in Appendix C. It is noted that crashstats indicates no fatalities within the recorded period, and an even split between serious and non serious injuries, with 60% of the serious injuries occurring on the freeway. Where serious injuries occurred the number of crashes that included one or more serious injuries is denoted in brackets.

- Airport Drive / Sharps Road intersection | 3 incidents
- Tullamarine Park Road (between Beveridge Drive and Allied Drive) | 3 (1s) incidents
- M80 between Steele Creek crossing and Airport Drive ramps | 16 (10s) incidents
- Fullarton Road (vicinity of Roberts Road intersection) | 1 (1s) incident
- Calder Freeway on and off ramps within 100m of works | 1 (1s) incidents
- Keilor Park Drive (Slater Parade to Border Drive Reserve) | 4 (1s) incidents, including 1 x 
- McIntyre Road (between Furlong Road and Berkshire Road) | 6 (4s) incidents

6.3 Sunshine Section

The SUN component of the Project extends up track¹² of the Barwon Avenue underpass through Albion Station towards Sunshine where it merges with the MTP to access the CBD. In terms of transport impacts outside the rail corridor the project will not have any impact to the up track of Sunshine Station so for the purpose of this TIA, Sunshine Station and immediate surrounds forms the southern limit of the study.

Existing transport conditions within the corridor area are summarised below.

¹² Up track – means closer to Melbourne CBD, Down track means further from Melbourne CBD.

6.3.1 Active Transport Network

Tracks and Trails

The main trail which largely runs parallel to the rail corridor in the Sunshine section area is the existing Sunbury to Sunshine SCC which is described in more detail below.

Sunbury to Sunshine SCC (SUP)

C1

PBN SCC

The Sunbury to Sunshine SCC follows the rail corridor alignment along the eastern side. The trail commences further east of Sunshine Station around West Footscray Station (Cross Street) which utilises bicycle friendly roads up to Ashley Street / Rupert Street where a largely continuous, dedicated 3m SUP commences, continuing westwards via:

- Sunshine Station (between the eastern car park and rail tracks)
- Harvester Road (users are required to cross Hampshire Road)
- The Anderson Road overpass
- Albion Station eastern car park
- Ballarat Road Service Road
- St Albans Road towards the direction of Sunbury. St Albans Road also provides access to the existing M80 Trail north of the M80

Note that the trail through the Albion Station eastern car park and Ballarat Road Service Road is not along a dedicated off road path. Additionally, between Lot 215 on St Albans Road and St Albans Road / Gilmour Road intersection, cyclists are required to use the on road cycle lanes provided on both sides of the road. The route is designated as a SCC, part of the PBN and has a C1 classification under Movement and Place. It is noted that although it is a shared path, the route does not appear to have been allocated a walking (W) ranking under Movement and Place between Ballarat Road Service Road and Devonshire Road, as well as between Sunshine Station and Matthews Hill Reserve.

Corridor Crossings

In addition to the major trail considered above there are five active transport interfaces where the future MAR corridor will be crossed and are incorporated by means of footpaths and SUPs.

- St Albans Road – road level is above-grade, via a single road bridge which also accommodates a footpath which forms part of the Sunbury to Sunshine SCC PBN
- Albion Station – pedestrian underpass
- Anderson Road – road level is at-grade, two SUPs are located on either side of the rail corridor overpass crossing Anderson Road. The southern SUP overpass connects to Talmage Street, HV McKay Memorial Gardens and Anderson Road active transport facilities. The northern overpass connects to the Sunshine Rail / Sunbury Rail Corridor trail and Anderson Road active transport facilities PBN
- Chaplin Reserve-Devonshire Road – pedestrian overpass footpath incorporated to the north of the road bridge
- Sunshine Station – pedestrian overpass (part of station concourse)

6.3.2 Public Transport Network

The current rail within the SUN section of the project area caters for the following rail services:

- Sunbury (metropolitan line)
- Bendigo (regional line)

- Ballarat / Melton (regional line)
- Geelong / Wyndham Vale (regional line)
- Interstate (passenger)
- Freight (ARTC track)

Other public transport networks are limited with four bus services using roads that would interface the SUN package, as indicated in Table 6.2.

Table 6.2 Bus services in SUN section that run proximate to the Project and works area

Bus Services Proximate to MAR Corridor Potential for Temporary (T) and / or Permanent (P) Impacts			
Route 215 Caroline to Highpoint SC Nearest stop approximately 150m from works Weekday and weekend services 60 minute peak frequency Interface: Ballarat Rd bus stop approximate 150m from works	T	Route 426 Sunshine Station to Melton Weekday and weekend services 40 minute peak frequency Interface: Ballarat Rd Service Rds / Sydney St in vicinity of Albion Station	T/P
Route 456 Sunshine Station to Melton Weekday and weekend services 40 minute peak frequency Interface: Ballarat Rd Service Rds / Sydney St in vicinity of Albion Station	T/P	Route 216 Sunshine Station to City Weekday and weekend services 15 minute peak frequency Interface: Monash St / Station Place	T

6.3.3 Road Network

St Albans Road

 **AADT 8700, HV 7%¹³**

St Albans Road is an arterial road running broadly alongside the Sunbury rail corridor between St Albans and Ballarat Road / Anderson Road / McIntyre Road traffic signals in Sunshine North. At its southern end the road splits with all northbound traffic and southbound traffic heading to Anderson Road or Ballarat Road west having to loop under the height restricted (4.5m clearance) Ballarat Road Bridge before connecting into the traffic signals. Southbound traffic heading to Ballarat Road eastbound or McIntyre Road runs parallel to Ballarat Road to form a separate ahead and left turn approach at the traffic signals.

North of the road bridge (i.e. crossing over the Albion-Jacana rail corridor), the undivided road has one through general traffic lane in each direction, short turn lanes providing access to local roads prior to Furlong Road, one 1m on road cycle lanes in each direction, and one 1.5m footpath running along one side of the road. Around the bridge area, St Albans Road narrows to one traffic lane in each direction and a footpath running on the south side of the road. No existing cycling facilities are provided across the rail corridor or along the section between the corridor and Ballarat Road.

Despite the lack of facilities at the southern end St Albans Road is a key walking and cycling corridor (W2 and C1 respectively) and forms part of the Sunbury to Sunshine Rail SCC route.

The MAR scope includes widening the existing road bridge to accommodate the MAR tracks and is likely to result in temporary road closures at this section during construction. Improved cycling facilities will also be delivered as part of the Project.

Ballarat Road

 **AADT 42,000, HV 5%¹³**

Ballarat Road is an arterial road which directly connects to the M80 and Western Freeway, as well as provides access to Albion, Sunshine, Braybrook and Maidstone areas. The road is a key general traffic corridor (GT2), freight link (F3) and bus corridor (B3). The Project will span across Ballarat Road to the west of the existing rail corridor, which passes underneath the road. The current rail corridor overpass comprises separate road bridges accommodating two traffic lanes with the northern bridge accommodating eastbound movements and the southern bridge accommodating westbound movements. No footpaths or specific cycle facilities are provided within the bridge cross sections.

The Project will have no significant permanent impact on the operation of Ballarat Road although as the viaduct will cross the road and will have piers abutting the current road some construction impacts are likely.

Ballarat Road Service Road West of Rail Corridor

 **AADT 300, HV TBC %¹³**

West of the rail corridor Ballarat Road has service roads that provide access to properties both north and south of the road. On the approach to the rail corridor the northern service road is a one way (eastbound) road providing access to the ARC facility after which it loops under Ballarat Road to enable both general traffic and bus services from the west to exit Ballarat Road via a safer left turn movement and access Albion and then Sunshine via Sydney Street. This service road is classified with a significant (W2) walking function and includes a 1m footpath running along the northern side. Unrestricted parking is also permitted on the along the north side of the road.

The southern service road caters for westbound traffic running between Sydney Street and Adelaide Street from where traffic can join by means of an unsignalised intersection both the east and westbound carriageways of Ballarat Road. This section of the road includes a footpath along the southern kerb abutting the largely residential properties that are accessed from the road.

The Project will not have any permanent impact on these service roads however during construction disruptions are anticipated.

¹³ Traffic data will need to be sourced for this road due to current anticipated disruptions. Current volumes are estimated from 2018 preliminary MAR Mesoscopic Model

Anderson Road



AADT 18,000, HV 9%¹³

Anderson Road is a north-south aligned arterial road located between Ballarat Road and Wright Street in Sunshine, with an interface to the project rail corridor approximately 500 metres south of Ballarat Road and 600m up track of Albion Station.

The road and rail corridors were grade separated in 2013/14 with the road level dropping to pass under the rail corridor. The road underpass comprises a divided carriageway with two lanes in each direction with a raised footpath to the west and a raised sup to the east. SUP bridges abut either side of the rail bridges to provide grade separated pedestrian and cycling crossing of the road.

The Project will require additional tracks on new bridges to be constructed to the south of the existing rail bridges, which will trigger a requirement to rebuild the southern SUP bridge over the road. These major construction elements are anticipated to result in some disruption during construction.

Harvester Road



AADT 18,000, HV 9%¹³

Harvester Road is a municipal sub arterial road that runs east of and parallel with Anderson Road between Ballarat Road and the rail corridor. At the rail corridor the road alignment follows the corridor alignment down to Sunshine where it connects directly into Hampshire Road northbound lane and Dickson Street, to the north east of the bus interchange area.

The road is a divided carriageway with two lanes in each direction at its northern end and facilitates right turns into Ballarat Road for both Harvester Road and Anderson Road traffic, given the current right turn ban at the intersection of Anderson and Ballarat Roads. At its southern end, relatively recent works (2018) to improve the Sunbury to Sunshine Strategic Corridor have resulted in the two northbound traffic lanes being consolidated into a single through lane with turning lanes which facilitated the provision of a 3m off road SUP connection up to Anderson Road overpass.

Under the Movement and Place framework the road is categorised with GT5 and W4 functions north of Devonshire Road and a GT4, W2 and B4 function to the south.

The Project will have no permanent material impact on the road, however, works in the rail corridor may trigger some disruption.

Sydney Street



AADT TBC, %HV likely to be low given existing truck ban

Sydney Street is a municipal controlled collector road spanning between Ballarat Road and Forrest Street in Albion. The road is primarily a residential street, which has a 6-tonne Gross Vehicle Mass (GVM) ban (Council vehicles excepted), that functions as a key local access route to Albion Station. Proximate to the Project, Sydney Street intersects with Ballarat Road Service Road eastbound and westbound lanes as well as Derrimut Street. The intersection has recently been converted to a roundabout and provides access to the station car park and bus interchange. The road is 10m wide and has one traffic lane per direction, as well as 1m footpaths on either side. At present, PTV bus routes 426 and 456 traverse Sydney Street, which stop at the existing bus stop underneath the Ballarat Road bridge.

The Project may result in minor changes as part of the proposed changes to the western forecourt of Albion Station. During construction this road may experience increases in movements as a result of construction traffic accessing sites.

Adelaide Street



AADT TBC¹⁴, %HV likely to be low given existing truck ban

Adelaide Street is a municipal controlled collector road that runs parallel to Sydney Street between Ballarat Road and Forrest Street. At its northern end it runs along the eastern boundary Albion Primary School, spanning between Ballarat Road and Forrest Street in Albion. The road is approximately 10m in width accommodating a 3m traffic lane and a 2.4m marked cycle lane in each direction. Parking is permitted on both sides of the road within the cycle lane limited to one hour between Derrimut Street and Ballarat Road (proximate to the school) but is generally unrestricted to the south. Google imagery suggests vehicles regularly park on either side of the road effectively forcing cyclists to use traffic lanes.

The road is subject to a 40kph posted speed restricted for most of its length and includes road humps and raised intersections to restrict speeds along its length. The road also has a 6-tonne GVM ban (Council vehicles excepted)

Under Movement and Place the road is categorised as a GT5 general traffic route, whilst the northern end has a W2 function the southern end has a W4 function. The road is not allocated a cycling categorisation despite the presence of cycle lanes.

Adelaide Street is removed from the Project however it may experience changes in use during construction due to potential disruption to other streets.

Talmage Street



AADT likely LOW

Ferguson Street

%HV likely to be low to average

Talmage Street and Ferguson Street are municipal controlled local roads that provide an access loop between Sydney Street and King Edward Avenue for properties that face the Mills (Ferguson Street) or the rail corridor (Talmage Street). The road is 6.5m, undivided, with one traffic lane in each direction and a 1m footpath running on the south side and west sides. Parking is permitted on both sides of the streets, although the physical width of the road is unlikely to be sufficient to enable a service vehicle or emergency vehicle to pass easily between two parked vehicles if both are abutting the kerb.

Non-residential properties with direct access from these roads include Victory Grace Church of Australia, Sunshine City Club, Sunshine Baseball Club including the Barclay Reserve and residential properties.

The Project may deliver minor changes to these streets as part of the reorientation of Albion Station western forecourt. Increase demand for on street car parking may also be triggered with the new entry to the station forecourt. During construction the streets may be a key access route.

Hampshire Road



North of rail corridor:

AADT 25,000, HV 6%¹⁴

South of rail corridor:

AADT 15,000, HV 6%¹⁴

Hampshire Road is a municipal sub arterial road, that runs north from Wright Street, crossing the rail corridor at Sunshine Station and passing through Sunshine primary activity centre to Ballarat Road.

North of the rail corridor (i.e. north of its intersection with Dickson Street), the road is approximately 11.5m wide at its narrowest point accommodating one traffic lane in each direction and one additional lane in each direction for on street parking. Parking is permitted on both sides of the road limited to half an hour to one hour between Dickson Street and Devonshire Road. The road is subject to a 40kph posted speed restricted for most of its length and includes road pedestrian crossings to restrict speeds along its length. Currently there are on road cycle lanes on each side of the road between the parking lane and traffic lane between Devonshire Road and Hampshire Crescent immediately south of Ballarat Road.

¹⁴ Traffic data may need to be sourced for the road when confirming diversion routes

Crossing the rail corridor, Hampshire Road comprises of two road bridges: one 6m bridge carrying only one northbound traffic lane connecting to Hampshire Road and Harvester Road, and one 11.5m bridge carrying one eastbound traffic lane connecting to Station Place and Withers Street, and two westbound traffic lanes connecting to Hampshire Road south of Sunshine Station, consolidated into one road bridge spanning approximately 17m. No footpaths are provided along this section of Hampshire Road.

South of the rail corridor (i.e. south of its intersection with Sun Crescent), Hampshire Road has between one to two traffic lanes in each direction. The outer traffic lane across different midblock sections differs in function: it is either utilised as an additional traffic lane, bus-only lane, on street parking lane or a bicycle-friendly traffic lane with sharrows. There is currently an off road SUP on the eastern side of the road in the between Derby Road and Wright Street where the road terminates. At present, Hampshire Road which has a B2 and B3 classification north and south of Sunshine Station respectively, services PTV bus routes 220, 408, 903 and 942 (Night Bus) north of the station and PTV bus routes 428, 429 and 903 south of the station. The closest bus stop to the Project area is south of the Hampshire Road bridge at the Hampshire Road / Corio Street intersection.

The Project may result in minor bridge works to accommodate the western station entrance. During construction this road may experience increases in movements as a result of construction traffic accessing sites.

Durham Road

B2 **GT4** **AADT 9,500, HV 6%¹⁴**

Durham Road is an east-west aligned arterial road located between Sun Crescent and Derby Road that connects residents based in Sunshine West (i.e. west of the Kororoit Creek) to Sunshine Station. The road is approximately 12m wide and has one general traffic lane in each direction and on street parking bays/lane/bus stops in each direction. Footpaths are located on either side of the road. Durham Road (which has a B2 classification) currently caters for eight PTV bus routes (400, 420, 422, 426, 427, 456, 471, 942 (Night Bus)). The closest bus stop to the Project area is immediately west of the Sun Crescent and Durham Road roundabout.

During construction of the Project this street may be a key access route.

Sun Crescent

B3 **GT4** **AADT 5,400, HV 6%¹⁴**
GT5 **AADT likely LOW, %HV likely to be low**

Derby Road

Sun Crescent is a state-controlled east-west aligned collector road and Derby Road is a municipal controlled east-west aligned road that provide local residents with access to the Sunshine Station western entrance and car park via City Place. Sun Crescent becomes City Place east of the Hampshire Road roundabout. Derby Road provides access to City Place via Hampshire Road, as well as Sunshine Primary School which is located on the corner of Derby Road and Hampshire Road. Sun Crescent and Derby Road are both approximately 12m wide and have one general traffic lane in each direction and on street parking bays/lane in each direction. Footpaths are located on either side of both roads. Sun Crescent (which has a B3 classification) currently caters for PTV bus routes 400, 422, 427 and 456 which all include a loop section with Durham Rad and Anderson Road. The closest bus stop to the Project area is just north of the Sun Crescent and Durham Road intersection. Derby Road has currently does not have any public transport services utilising the road.


During construction of the Project both streets may be a key access route.

Station Place B3 W3

W3 **B3** **AADT 7,200, HV 6%¹⁴**

Monash Street B3

Station Place and Monash Street are state controlled generally east-west aligned roads located east of the rail corridor, providing Sunshine and Braybrook residents with direct access to the Sunshine Station eastern entrance and car park, the Hampshire Road bridge and Hampshire Road shopping strip in Sunshine. Both roads are approximately 12m wide, accommodating one general traffic lane in each direction, and space for an additional lane in each direction used by vehicles parked on the street and buses stopping to pick up





passengers. Monash Street also has a 1m cycle lane in each direction (commencing east of Martin Street), noting that the cycle lanes utilise the existing road space shared by on street parking and bus stops. West of Withers Street intersection (i.e. Station Place), the road currently caters for 15 PTV bus services (i.e. routes 216, 420, 429, 220, 422, 456, 400, 426, 471, 408, 427, 903, 410, 428 and 942) where the road splits into several one-way bus-only lanes at the Sunshine Station bus interchange. Monash Street currently only caters for one PTV bus route (216), with the closest bus stop being located at Monash Street / Whitty Street intersection.

During construction of the Project both streets may be a key access route.

6.3.4 Crash Statistics

Crash statistics for the transport network interfacing with the Sunshine to Albion route have been downloaded from DOT's Open Data Portal and are summarised below and tabulated in Appendix C.

Proximate to the project area, 33 incidents were recorded over the last five years proximate to the project or major areas of construction, no fatalities were recorded however over half were classified as serious (denoted (Ys)), primarily those on Ballarat Road.

- St Albans Road (between M80 and Ballarat Road) | 6 (1s) incidents, including  
- Ballarat Road (between Perth Avenue and Harvester Road) | 18 (11s) incidents
- Anderson Road (between within 100m of works) | 5 (2s) incidents
- Harvester Road (section of road adjacent to rail corridor) | 3 (1s) incidents
- Derby Road east of Hampshire Road | 1 (1s) incident

Project Legacy Benefits and Impact Risks

7.1 Overview

The Project is primarily a rail project and will provide an alternative mode of transport for people travelling between Melbourne CBD and Melbourne Airport, therefore it will have an overall positive impact on the wider road network, with some Melbourne Airport visitor cohorts shifting from private car / taxi travel to and from the terminal to more sustainable rail mode.

The Project will include interfaces with the wider transport network and, as with other major projects provides an opportunity to deliver other infrastructure, the latter of which can increase the positive benefit of the Project.

This section will summarise additional positive impacts delivered as part of the project and review the impact of the delivered new infrastructure on interfaces with the wider transport network.

7.2 Project Legacy Benefits

7.2.1 Airport Travel Shift from Road Based Vehicles to Rail

VITM modelling of the project has indicated that MAR on opening will cater for approximately 18,200¹⁵ patrons per day which would otherwise travel to and from the precinct via either car, taxi or bus on the road network, this is anticipated to increase to approaching 30,000 passengers per day by 2041.

From information set out within the Melbourne Airport Masterplan and interpolated to meet MAR Day One years it is estimated that without MAR some 113,400 vehicle trips could be generated airport passengers on a typical busy day, excluding current bus services as identified in the Masterplan this would relate to approximately 112,700 private, taxi, ride share and rental car trips.

A study by Houston Kemp Economists – Car Parking and Ground Access – Market Power Assessment¹⁶, sets annual modal share data which suggests that 19% of passengers to and from the terminal travel by bus (skybus, chartered and regional).

Using this data and adopting, in the absence of any specific data on air travel group sizes, a group size of 1.2 passengers per taxi, ride share or pick up / drop off and 3 passengers per parked or rented car a future typical busy day passenger trip volume has been estimated at approximately 227,000 movements.

Assuming, approximately half of bus trips to or from the airport transfer to MAR it is considered that potentially 30% of MAR passengers would have previously undertaken a trip via car, taxi or ride share. Based on the split of these different car movements as per the HKE assessment and the adopted group sizes this could suggest that because of the MAR project some 9700 vehicle trips per day would not be generated by the Airport compared to if the project did not occur.

It should be noted that this is a very simple analysis based on publicly available information and does not take into account potential other savings associated with employees that may use the MAR service or other infrastructure provided as part of the project.

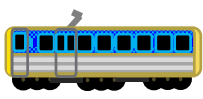
Roads where this mode shift could represent a measurable reduction in demand would be the main access routes to Melbourne Airport and include:

- Tullamarine Freeway and Melbourne Airport off and on ramps
- Terminal Drive
- Airport Drive
- Keilor Park Drive

¹⁵ Source: AJM Document ID: MAR-AJM-PWD-REP-XTR-NAP-0001493 – *Demand Forecasting Report Revision B, Dec 2020*

¹⁶ Houston Kemp Economists – Car Parking and Ground Access – market Power Assessment Public version of the document dated 29th August 2018

MAR RAIL SERVICE



Contribute to alleviating road congestion on routes to and from Melbourne Airport



Increase the proportion of traffic movements generated by Melbourne Airport undertaken by more efficient and more sustainable modes

Detailed analysis of the overall transport network benefits of the project has been identified and documented throughout the Business Case process.

7.2.2 New Active Transport Infrastructure

The Project will include two major sections of new active transport infrastructure that would be delivered within State land.

East Keilor to Melbourne Airport SCC State land gap closure

The East Keilor to Melbourne Airport SCC is an identified off road corridor within the PBN. The current path provision is limited to an off road SUP alongside Airport Drive between Sharps Road and Mercer Drive. Connection to this constructed section of the SUP is poor with intermittent provision of on road facilities along Sharps Road at the southern end of the SUP and no facilities or connections at the north end.

The full Project provides an opportunity to complete the corridor between East Keilor and Melbourne Airport with the closure of the gap between Sharps Road and East Keilor, covered within the State land area of the Project.

The current proposals will include the construction of a new path from the M80 Trail / Steele Creek SUP trails under the M80, traversing the topographically and environmentally challenging Steele Creek Tributary Reserve to Tullamarine Park Road, as with the current alignment proposed, as indicated in Figure 7-1.

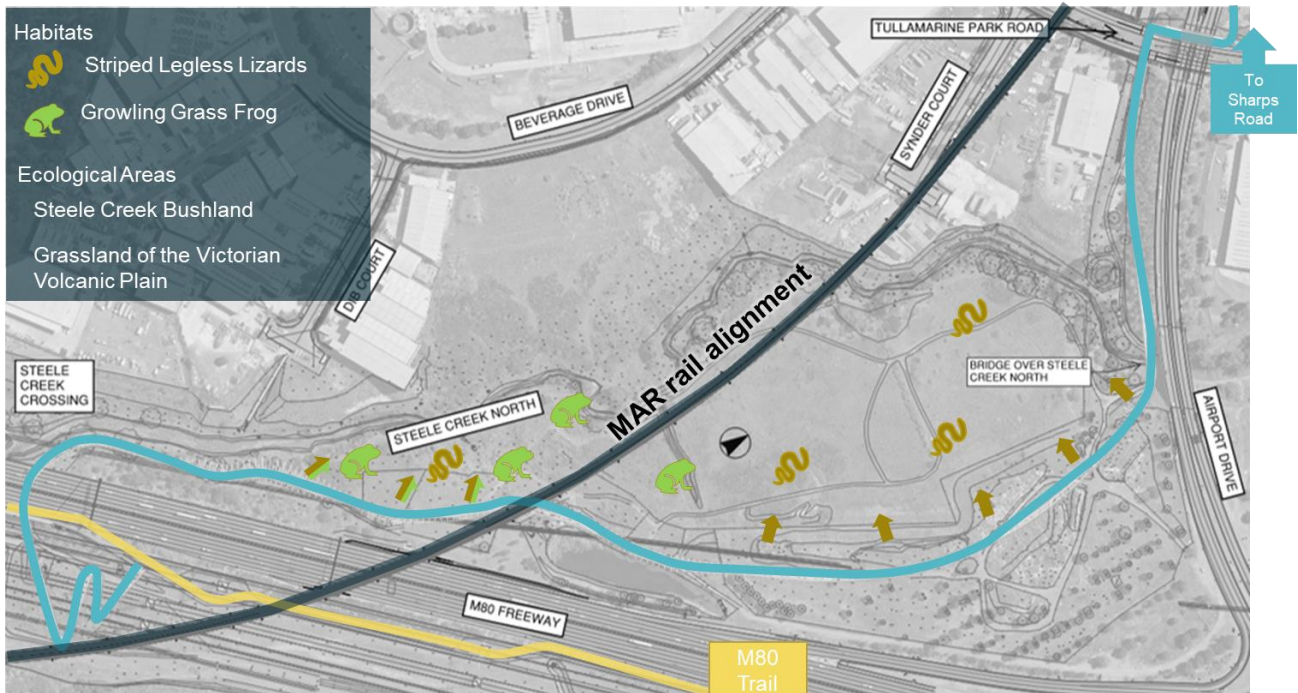


Figure 7-1: Potential Steele Creek SCC connection between M80 Trail and Tullamarine Park Road

The path will cross Tullamarine Park Road at-grade via a new pedestrian operated signal. North of the road, the SUP route is proposed to pass under Airport Drive via a new widened SUP incorporated on the north side of the Tullamarine Park Road underpass to run along the eastern side of Airport Drive up to Sharps Road. The alignment of the SUP to Airport Drive has been discussed between RPV and DOT and AJM-JV have been advised that an eastern alignment to Airport Drive is preferred as this would more directly align with the continuation of the path up to Mercer Drive. At Sharps Road connection to the existing Airport Drive SUP to Mercer Drive will be facilitated through the existing pedestrian facilities within the Sharps Road / Airport Drive traffic signals.

The truck rest areas available from both the north and southbound carriageways of Airport Drive will be retained although potentially they may be reconfigured to accommodate the SUP and carriageway realignment.

The path will provide an alternative access route for cyclists which will provide for many an entirely off road connection from the wider active transport network and local residential areas up to Melbourne Airport, this is likely to be of primary benefit to employees of Melbourne Airport, rather than passengers. In addition, the entire path will provide a connection for longer recreational cycle routes linking the M80 Trail to the partially completed Broadmeadows to Melbourne Airport Trail.

CLOSURE OF KEILOR EAST TO MELBOURNE AIRPORT SCC GAP



May encourage employees within Melbourne Airport Precinct to change mode to more sustainable and healthy choices



Provides a safe route to and from existing SCC on Airport Drive avoiding heavily trafficked roads



Will increase the connectivity of the current SCC and active transport network in the north

Albion Station to St Albans Road Connection

The Sunbury to Sunshine SCC is identified to run broadly parallel to the Sunbury rail corridor. The current shared path provision is good, comprising a 3m off road SUP from Sunshine terminating at the southern corner of the Albion Station eastern car park. Cyclists are then required to self-manage their route through the car park to St Albans Road. North of Albion Station the corridor does not have any specific cycle facilities until on road cycle lanes are provided north of Gilmour Road. The lack of designated and clear cycle facilities through the Albion Station car park, under Ballarat Road bridge and across St Albans Road bridge are potentially hazardous areas for cyclists, due to the nature of traffic movements (reverse manoeuvres in the car park) and the proximity of arterial traffic at both bridges.

The Project provides the opportunity to construct dedicated off road SUP paths from the south of Albion Station car park, under Ballarat Road bridge and adjacent to St Albans Road bridge to provide separation of all active transport modes and vehicle traffic.

The SUP will comprise a refuge crossing of St Albans Road to the north of Gilmour Road which will provide a level of protection for cyclists and pedestrians transitioning from the south bound on road cycle lane, eastern footpath and the SUP as well as facilitate crossing to and from Gilmour Road, clear of right turning vehicles from St Albans Road.

It is noted that cyclists from Gilmour Road would legally be required to dismount and use the short section of footpath to the refuge, as current land boundaries and infrastructure do not support the conversion of the existing footpath into a SUP.

CLOSURE OF SUP GAP IN SCC



Contributes to the completion of an identified SCC



Improves the safety for cyclists crossing St Albans Road bridge across the rail corridor and through Albion Station Car Park



May contribute to encouraging a modal shift to cycle for Albion Station users, particularly from the north

7.2.3 Station Improvements

Albion Station Western and Eastern Forecourt Improvements

Significant new station infrastructure at Albion Station associated with MAR is not required. However, the rail viaduct will traverse the station area which triggers changes to the station forecourt and has therefore been used as an opportunity to redesign both the eastern and western car parks to provide improved DDA compliance and better address the needs of local residents encouraging sustainable travel choices to and from the station.

The project will reconfigure the western car park to facilitate better pedestrian connectivity to the local residential population and reconfigure and relocate car parks in the eastern car park to improve tree canopy, facilitate an SUP and increase DDA compliance. Details of the changes to Albion are:

- Enhanced, plaza type entrance to station on both sides of the corridor.
- Improved walking and cycling access to and from the existing station to Ferguson Street, which will better serve the primary walk in residential catchment to the south west, including upgrades to the footpaths on Ferguson Street
- Provide a one-way Kiss & Ride and specified user group parking aisle running north to south within the western car park between Sydney Road and Ferguson Street
- Provide DDA compliant parking, by increasing the supply of DDA spaces to meet the Network Planning Requirement (NPR) of four spaces for the first 100 car parks and two spaces per 100 car parks thereafter, and ensuring design of spaces meets requirements of AS2890.6-2009
- Significantly increase bicycle parking facilities including the provision of two parkiteers (secure bicycle parking) and hoop style racks, with capacity to accommodate, as a minimum, 6% of 2036 AM peak period patronage
- Landscaping throughout both car parks

The change to parking conditions at Albion Station will result in the loss of approximately 70 spaces at the station as summarised in Table 7.1. These spaces will be relocated to Sunshine Station car park.

Table 7.1 Changes to Albion Station car parking

	Existing		Proposed	
	Compliant Design	Non-Compliant Design	Compliant	NET CHANGE
Commuter Car Parks	613		544	-69
Accessible Spaces	1 to 5 ¹	0 to 7 ²	12 ³	+7
Staff Spaces	0		2	+2
Kiss & Ride	0	0	6	+6
	614 to 618		564	-54




	Existing		Proposed	
	Compliant Design	Non-Compliant Design	Compliant	NET CHANGE
Bicycle Parking	Negligible	Negligible	2 x Parkiteers Min of 34 additional hoops	
Notes				
1	Source: parking inventory survey. Western car park 103 commuter bays and three 2.4m bays marked DDA with no shared space. Eastern car park 510 commuter bays and a bank of DDA spaces which could be interpreted as five non-compliant spaces (as is suggested by occupancy surveys showing all spaces occupied) or three DDA compliant spaces with shared spaces in between.			
2	Reflects potential abuse of DDA spaces.			
3	The proposed provision is a much greater provision of this type of parking than at present and approaches the DDA provision requirements of four spaces for the first 100 commuter spaces and two spaces per 100 commuter spaces thereafter.			


Albion Station car parking currently reaches capacity between 8am and 9am, however the western car park reaches capacity much earlier than the eastern car park and is approximately 90% full by 6am and 100% full at 7am.

With the removal of approximately 70 spaces from the eastern car park, it is expected that the eastern car park will reach capacity earlier than at present at just after 8am (based on current occupancy patterns). Approximately 70 vehicles that currently park in the eastern Albion car park between 8am and 9am would no longer find a spot at Albion. The Albion trips would either need to divert to relocated spaces within Sunshine, consider alternate parking arrangement or potential change mode noting that the project will also deliver significant cycle infrastructure accessing and at Albion Station which may make this mode more viable and attractive.


However, if all the displaced vehicles then continue to Sunshine this could result in an additional 70 vehicles per hour diverting from the Albion eastern car park down Anderson Road turning left into Sun Crescent before accessing the additional car parking at Sunshine, from Hampshire Road north. This route choice has been validated using Visum.

ALBION STATION FORECOURT WORKS







Improve the operation of the car park for all users by providing compliant parking bays and specific parking areas for different needs



Reduces car / pedestrian conflicts within station car parks



Provide station end of trip facilities that will encourage more sustainable travel to the site



Uplifts DDA car parking provision to approach Network Planning Requirements and design requirements of AS2890.6

Sunshine Station

Sunshine Station will be an intermediate entry and exit node to the MAR service and will act as a transfer node for passengers particularly between the regional rail network and Airport Services.

The project does not include a major refurbishment of the station precinct, however within the station itself the project will extend existing platform lengths to accommodate new rolling stock, enhance the transfer

capacity within the station with the provision of improved vertical transport including escalators and a second paid concourse at the southern end of the platforms, upgrade platforms to be DDA compliant and increase canopy coverage. Outside the station the project will include a small extension to the station car park to the south west to facilitate spaces relocated from Albion Station and increase DDA compliance. Future works to the station are expected as part of separate projects associated with the Western Rail Plan so are not considered as part of this planning assessment.

VITM modelling¹⁷ has been undertaken to understand MAR patronage for a design year of 2036 and is summarised in Appendix D.

The modelling indicates that passenger transfer movements between rail services which would remain internal to the Station paid area are anticipated to increase by approximately 1,600 movements in both the AM and PM two-hour peak periods with the introduction of MAR. Additional movements attracted to the station as a result of MAR are anticipated to equate to 900 additional entries to Sunshine Station per day, with 300 additional entries in the AM two-hour peak (see Table 7.2). The VITM modal share indicates that during peak network hours MAR will generate primarily bus and walking/cycling trips.

It is important to note that whilst VITM modelling indicates that potentially by 2036 there would be an increase in demand for car parking at Sunshine Station this is not associated with MAR but rather a natural result of increased patronage on the existing metropolitan rail network. Whether this demand occurs at Sunshine, elsewhere or not all will depend on future standard commuter car parking supplies and other access mode provisions across the rail corridors and is not affected by MAR.

Table 7.2 Access Mode Shares – Sunshine Station (Daily and AM peak station entries only)

Time Period Access Mode		Day 1 ¹	Base Case ² (no MAR)	Design Year ³	Net Change
		2028	2036		
AM Peak (7-9am)	Walk/Cycle	800	1,100	1,200	+100
	Bus	900	1,400	1,600	+200
	Drive (Park and Ride)	600	700	700	-
	Drive (Kiss and Ride)	500	600	600	-
	AM Peak Total	2,800	3,800	4,100	+300
Daily	Walk/Cycle	3,700	4,900	5,000	+100
	Bus	4,600	6,400	7,000	+600
	Drive (Park and Ride)	1,300	1,500	1,600	+100
	Drive (Kiss and Ride)	1,000	1,200	1,300	+100
	Daily Total	10,700	14,000	14,900	+900

Definitions:

¹ Day 1 – Opening year patronage

² Base Case (No Mar) – Anticipated patronage that would occur at the Station in the Design Year of 2036 if MAR was not constructed

³ Design Year – For Sunshine a 2036 Design Year has been adopted, this is less than the 10 years typically adopted (and adopted for the Airport Station) for developments but in the case of Sunshine represents the period that the station will need to operate satisfactorily until the next major upgrade likely triggered by Western Rail Plan works.

Source: VITM (2036 Base Scenario: MARCS_360003F0, 2036 Project Scenario: MARCS_360002F0)

Pedestrian modelling of the additional patronage has and will continue to be undertaken to ensure that station facilities and space are adequate to accommodate the additional pedestrian movements in and out of the station as well as transferring between platforms.

¹⁷ Demand Forecasting Report for Design – AJM-PWD-PWD-REP-XTR-NAP-0001493

Externally, Table 7.2 indicates that during the AM two-hour peak period MAR would generate approximately 200 additional bus patrons. The station is well serviced by buses with the existing Sunshine Bus Interchange located within 100m of the station entrance and catering for over 150 buses¹⁸ covering 13 routes within that period. Assuming MAR patrons are distributed across routes and services this would suggest under two additional passengers per bus.

Outside MAR services, but as a result of works at Albion Station, the project will off-set approximately 70¹⁹ parking spaces from Albion to Sunshine. It is proposed to provide these parking spaces within land located immediately to the west of the existing Sunshine southern car park. The spaces will be accessed from the Sunshine car park, with a secondary access provided off Derby Road.

No additional commuter spaces will be provided for MAR passengers and no existing parking will be lost however additional accessible parking will be facilitated to uplift the existing supply of eight DDA spaces (four on the east and four on the west) to meet recommended DDA provisions of four spaces for the first 100 spaces plus two spaces per 100 thereafter. These additional spaces will be accommodated in the Sunshine southern car park, resulting with the relocated parking in an increase of 72 spaces within this car park.

The change in car parking at Sunshine Station is summarised in Table 7.3.

Table 7.3 Changes to Sunshine Station Car Parking Under MAR Scope

	Existing Sunshine Station Parking Not Impacted under MAR		MAR Scope Area – Sunshine Station South Car Park (west of rail corridor)		
	Northern Car Park	Eastern Car Park	Existing	Future	NET CHANGE
Commuter Car Parks	289	97	103	172	+69
Accessible Commuter Spaces	2	4	4	6 ¹	+2
Staff Spaces	0	6	0	0	0
Kiss & Ride	0	5	0	0	0
Taxi	0	5	2	2	0
	291	117	109	180	+71
Bicycle Parking		Parkiteer and hoops	Parkiteer and hoops	Parkiteer and hoops	No change
Notes:					
¹ Accessible parking uplifted to account for offset spaces from Albion and shortfall in current DDA rail parking provision at Sunshine compared to NPR guidelines.					

Occupancy surveys of Sunshine Station’s three car parks indicate two out of the three parks have capacity at 7am, with only the southern car park being at capacity. Commuter capacity within all three car parks generally reaches capacity by 8am.

Given current occupancy data suggests that the southern car park is typically at capacity well before the reduced Albion capacity is reached, then the additional spaces may result in a relocation of some vehicles that have historically used the northern car park into the southern car park prior to 8am. This would release northern car park spaces between 8am and 9am which could be used by relocated vehicles from Albion and / or vehicles that historically parked on-street. If the latter, then this provides capacity for on street parking that could be used by vehicles that previously parked at Albion.

The impact of the relocated car parking has been assessed using Visum and Sidra analysis of the car park entry with Hampshire Road. The analysis indicated that approximately 70 additional vehicles would approach Sunshine car parks from Hampshire Road north and pass through the roundabout with Sun Crescent from where vehicles would either turn left into Sunshine Station southern car park or right into Sun Crescent and

¹⁸ Sunshine Station Audit – SUN-AJM-PWD_PWD-REP-XTR_NAP-0000325 REVA

¹⁹ Subject to change based on final layouts within Albion.

hence the northern car park. The Sidra indicated that the additional 70 vehicle movements access Sunshine Station car parks would have no material impact on the operation of the intersection, with the results summarised below. It is noted that in all scenarios, queuing on the western leg, Sun Crescent, exceed the capacity of the link with queues extending beyond the capacity of the short leg between the Hampshire Road roundabout and Durham Road roundabout.


Table 7.4 Sidra analysis of the impact of an additional 67 parking spaces provided at Sunshine Station south – AM peak


	2036 AM Peak – Base Assessment			2036 AM Peak – Additional Vehicles to Southern Car Park			2036 AM Peak – Additional Vehicles to Northern Car Park		
	DOS	Average Delay	95%ile Queue	DOS	Average Delay	95%ile Queue	DOS	Average Delay	95%ile Queue
Hampshire Road South	0.63	10s	50m	0.62	10s	49m	0.66	12s	58m
City Place	0.05	12s	2m	0.12	11s	6m	0.13	13s	6m
Hampshire Road North	0.41	7s	25m	0.40	7s	23m	0.42	7s	26m
Sun Crescent	0.76	51s	88m	0.75	47s	84m	0.77	51s	90m

The impact of the additional parking spaces during the PM peak will need to be tested when PM modelling is completed during the latter half of 2021.


However based on the above, and given that hourly movements out of a station car park tends to be less concentrated than the ingress it is anticipated that MAR project would have no material impact on the surrounding transport networks at Sunshine Station.

SUNSHINE STATION CAR PARK






Enhanced passenger experience for transfers within Sunshine Station



Increased car parking facilitates the ability to improve Albion Station including pedestrian access orientation to the west and relocation of the SCC route outside car parking circulation areas



Uplift the DDA parking provision to meet NPR requirements

7.3 Project Interface Impact Mitigation

In addition to the new infrastructure that is proposed the Project would have some impacts at interfaces with other transport networks.

Where possible these impacts have been mitigated to provide similar and for some users improved conditions. The primary interface locations where the project includes significant mitigation measures are:

- M80 SCC underpass of the Calder Freeway / M80 interchange and Fullarton Road
- Albion-Jacana rail corridor pedestrian crossings
- Anderson Road Overpass

7.3.1 M80 SCC Trail

The M80 Trail currently utilises the ARTC rail corridor to provide a grade separated crossing of Fullarton Road and the Calder Freeway / M80 interchange. The Project will construct new MAR tracks to the west of the existing ARTC tracks utilising space that is currently used for the M80 Trail.

Relocating the SUP outside the rail corridor would be complex and result in significant impacts to the high order road bridges.

It is therefore proposed to reroute the M80 trail to cross the road corridor to the south of the rail corridor. To achieve this the project will:

- Upgrade the existing rail corridor crossing (SUP bridge) to provide a wider 3m path connecting to the existing footpath underpass
- Widen the existing footpath underpass to the south of the rail corridor to comply with SUP requirements
- Cantilever a new SUP path off Fullarton Road Bridge
- Connect Fullarton Road Bridge SUP to M80 Trail prior to crossing Terror Street

The works will result in a minor extension of the M80 Trail of approximately 300m however will maintain safe grade separated crossing of both rail and road corridors. In the context of the wider M80 Trail this is unlikely to have a significant impact on the attractiveness or usability of the trail.

Furthermore, the works provide clear benefits to the wider active transport network by:

- Improving cycle connection to the M80 Trail for residents of Keilor East and Airport West, this would include safety due to works to improve visibility and width of paths on the eastern side of the rail corridor and northern side of the road corridor
- Improving active transport connectivity between Keilor East and Airport West

Calder Freeway and Fullarton Road Crossing



Improves active transport connectivity between suburbs to the east of the rail corridor with links to the M80 Trail



Improve safety of the existing eastern and northern crossing facilities

The works also future proof for potential active transport corridors to the intermediate station.

7.3.2 Albion-Jacana Rail Corridor Crossings, Sunshine North

It is likely that residents both east and west areas of the Albion-Jacana rail corridor will be crossing the corridor to access local destinations. Key desire lines of these cross corridor movements are indicated in Figure 7-2.

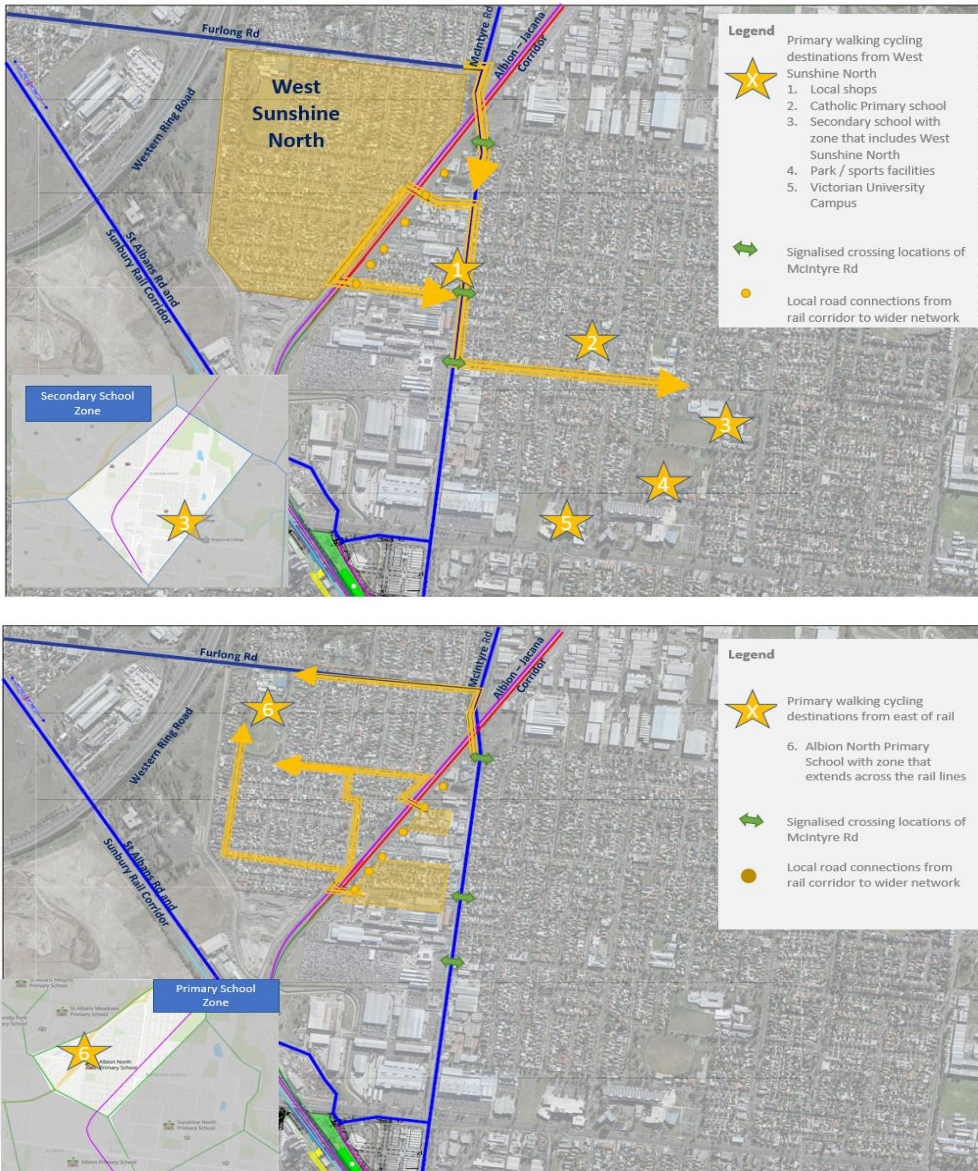


Figure 7-2: Active transport cross corridor destinations and desire lines

The corridor is also used by the Exxon Mobile Fuel Line which is a key fuel supply line serving Melbourne Airport.

The connectivity of the communities either side of the corridor at Sunshine North is managed through a pedestrian level crossing at Drake Street and an underpass at Barwon Avenue. To the north west of the corridor access to both crossings is directly via the local residential road network (Mansfield Avenue and Gilmour Road). To the south east of the corridor connection to the wider network is via the local streets of Drake Street and Barwon Avenue and then via existing signalised crossings of McIntyre Road which is a four-lane arterial catering for approximately 26,000 vehicles per day (vpd).

Current pedestrian facilities are:

- POS located 30m north of Barwon Avenue and 290m south of Drake Street
- Pedestrian facilities incorporated in the McIntyre Road / Berkshire Road intersection, approximately 210m north of Drake Street

The Barwon Avenue underpass connects two W2 level walking routes under the Movement and Place framework and aligns well with local shops located between Barwon Avenue and Cranbourne Avenue and the POS on McIntyre Road. The Drake Street level crossing is a passive pedestrian crossing (controlled through signage only) and links two lower order W4 level walking routes under Movement and Place. Surveys were undertaken in February 2019 indicating approximately 100 movements per day at each rail crossing.

Between McIntyre Road and St Albans Road, the Project will:

- Increase the frequency of trains using the corridor which would have an impact on the aggregate safety of the at-grade crossings at Drake Street
- Widen the active corridor with construction of new tracks to beyond the current extent of the two crossing facilities

For the safety reason above and in line with general policies to aim to reduce and remove level crossings the Project will not reinstate the Drake Street at-grade level crossings. Design complexities associated with the Exxon Mobile Fuel line the Barwon Avenue underpass means that this crossing will also not be reinstated.

It is therefore proposed to provide a new cross corridor connection by the construction of a single SUP compliant overpass between Urana Avenue / Gilmour Avenue and Cranbourne Avenue, approximately 100m from the Barwon Avenue and 280m from the Drake Street current crossings.

The location of the proposed crossing will have no material impact on connectivity of local communities as it will:

- Continue to be closely aligned to the key desire lines to community destinations on each side of the corridor
- Connect to McIntyre Road, adjacent to the local shops and approximately 60m from the existing POS and 90m from the nearest bus stops
- Be directly accessible from the W2 level walking route via Urana Avenue and will provide connection to the eastern W2 network via the existing McIntyre Road POS with little deviation
- Incorporate a fully residential street to connect active transport users between the rail corridor crossing and McIntyre Road, which is likely to be lower trafficked and / or less likely to include heavy vehicles than either Drake Street or Barwon Avenue that have both residential and industrial uses along their frontages
- Provide a form of corridor crossing that can more easily meet Crime Prevention Through Environmental Design (CPTED) guidance in relation to passive surveillance of users

Cranbourne Avenue SUP Crossing



Maintain cross corridor connectivity for active transport user desire lines similar to existing facilities



Relocates active transport users from McIntyre Road connections which include industrial uses to a solely residential street

7.3.3 Anderson Road Southern SUP crossing

The current active transport crossing of Anderson Road comprises SUP compliant road overpasses on both the north and south side of the existing rail corridor with a connecting footpath and SUP running under the rail corridor on the west and east side of the road respectively.

The Project will require the construction of new rail overbridges south of the existing rail tracks, which means that the existing southern SUP bridge will need to be removed.

It is proposed to reinstate the corridor crossing with the construction of a new SUP to the south of the new rail overbridges. The new SUP bridge will broadly tie into the existing path network on either side of the road corridor and will have no material impact on journey lengths or path connectivity.

Based on the reinstatement of the southern SUP bridge the MAR corridor will ultimately have no material impact on active transport at Anderson Road.

Anderson Road Crossing



SUP bridge and connections reinstated with no material increase in path length

7.4 Legacy Risks and Impact Mitigation

While the Project will provide an overall transport benefit for most local transport networks and users, as with all major infrastructure projects some elements of the project scope may include impacts that may create risk of negative impacts on local transport networks and users that may need to be appropriately mitigated. Where these have not yet been fully mitigated through design to date, they will be appropriately managed through the reference design process generally in line with environmental processes as outlined in AS/NZS ISO 31000-2018.

Under AS/NZS ISO 31000, the full process would require stakeholder engagement, monitoring and review. At this time specific transport impact assessment engagement is yet to be undertaken due to the stage of the design process and limited ability to conduct extensive stakeholder engagement through earlier stages of the project, due to COVID-19 restrictions.

A preliminary analysis has been undertaken to identify potential risks to date and relate them to the level of impact that may or may not need to be mitigated. This initial analysis is provided in Appendix E for information.

Construction Impacts

8.1 Construction Overview

Construction of the entire Project is expected to occur over a seven-year period between 2022 and 2029. Construction activities will be delivered into a series of sections, featuring multiple construction sites or areas, of which two would cover works in State Land. These sections are:

- **Sunshine Section**

Covering works between Sunshine and the end of the viaduct across Albion Station to where MAR returns to grade on the Albion-Jacana rail corridor. It is noted that the construction planning for this area aligns well with the extent of the Sunshine and Albion area as defined for planning.

- **Corridor Section**

All at-grade sections of track along the Albion-Jacana rail corridor, including crossing the Maribyrnong River. This section also includes the viaduct section of track that runs over the M80 and along Airport Drive into APAM land and SCC link between Steele Creek and Sharps Road

- **Airport Works Section (not covered in this report)**

The Airport construction section covers the works from where the track traverses from state lane onto Commonwealth land north of Sharps Road through to the airport. It includes continuation of the viaduct up to the airport terminals, construction of a new station and completion of the East Keilor to Melbourne Airport Strategic Cycling Corridor between Mercer Drive and the airport. Traffic impacts associated with these construction activities are included within Major Development Plans considered in the Commonwealth land approval framework and are not covered in this report.

Construction transport impacts on the wider network primarily result from road disruption along existing links ranging from capacity reductions to closures and additional traffic movements associated with works site, in particular increases in truck movements.

At the time of writing the construction advice is preliminary and it is expected that it will evolve and develop over time. All construction impacts will need to be managed through Construction Management Plans (CMP) however this TIA provides an initial assessment of the scale of anticipated impacts.

Graphic representation of construction activities for the Corridor and Sunshine sections are provided in Appendix G and H.

8.2 Construction Traffic

8.2.1 Truck Traffic

Analysis of the primary construction traffic tasks required to deliver MAR through State controlled land suggest that the works will primarily take place from the final quarter of 2022 through to the end of the second quarter of 2027.

The project is expected to require a significant volume of trucks either bringing material or removing material, however these would be split across 15 different construction areas within State land over the course of the build. Truck requirements were based on assuming an average 25²⁰ working days a month, to provide typical average daily truck requirements for each site. Some sites that may not have a flat profile and where significant peaks are anticipated at periods during the primary active phase, peak demands have been advised by RPV. Given the early stage of construction truck requirements these daily truck movements have been rounded up to the nearest ten movements to provide a preliminary generation profile across the projects State land component work programme, indicated in Figure 8-1.

²⁰ AJM-JV have been advised to assume a Monday to Saturday Construction Week

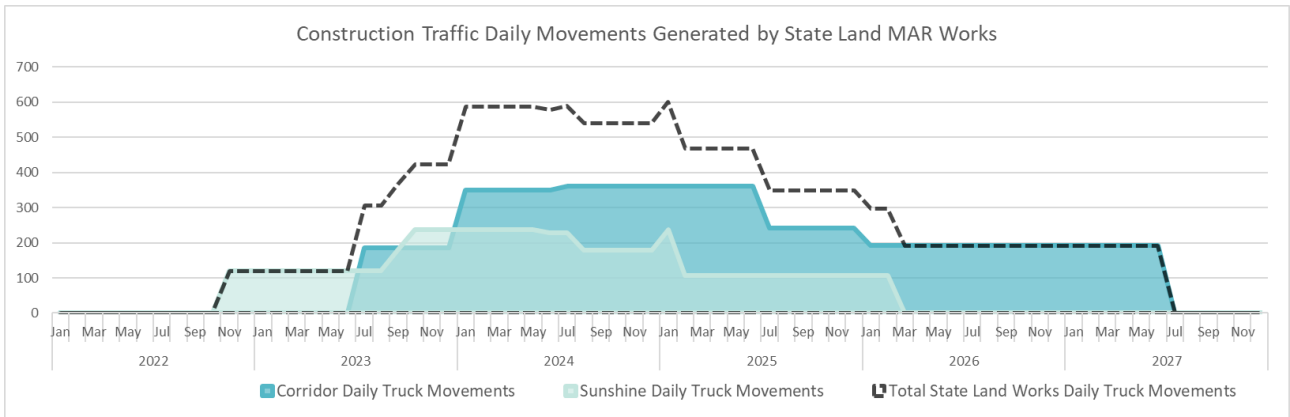


Figure 8-1: Construction Truck Traffic Movements Associated with State land MAR works

Based on current information, construction of the project would begin at the southern end around Sunshine section, with construction works associated with the corridor following. Peak truck construction movements for Sunshine areas of work are anticipated to occur mid-2023 to mid-2024 and for the Corridor section areas of work mid-2024 to mid-2025, peak for the whole state component of MAR will occur at the start of 2025.

At peak activity the Sunshine section is expected to generate on average 240 truck movements per day across multiple construction areas while the Corridor will generate a further 360 truck movements per day across fifteen active construction areas at the same time.

For the purpose of this assessment it has been assumed that the majority of Airport section works would occur after the Sunshine section peak construction periods are complete.

8.2.2 Construction Workforce

Information on the workforce required to construct MAR is not available at the time of writing, therefore in the absence of this a preliminary assessment has been undertaken assuming that workforce is related to material movements into and out of a construction site. A ratio between workforce and construction truck requirements has been calculated using data identified for the Metro Tunnel Project which suggests that the workforce requirement for a construction site is 2.38 times the construction truck task. Indicative workforce numbers are indicated in Table 8.1.

Table 8.1: Construction Workforce

Construction Area	Average Daily Truck Requirements During Peak Activity	Sites where short intense peak truck activity demands	Peak Indicative Workforce for each section
Sunshine section			
Sunshine Station Eastern Car Park	20	50	50 - 120
Sunshine Station Western Car Park	20	50	50 - 120
Chaplin Reserve <i>(includes the Sunshine Station Northern Car Park site)</i>	20	50	50 - 120
Harvester Road	20	n/a	50
Talmage Street and Ballarat Road Service Road <i>(includes the Anderson Road East, Anderson Road West and Barclay Reserve, and Albion Station Eastern Car Park sites)</i>	40	50	100 - 120
St Albans Road South	8	n/a	20
Gilmour Road South	16	n/a	50
Corridor section			

Construction Area	Average Daily Truck Requirements During Peak Activity	Sites where short intense peak truck activity demands	Peak Indicative Workforce for each section
Sunshine North Residential Area <i>(includes the Stony Creek site)</i>	16	n/a	50
Sunshine North Industrial Area	16		50
Balfour Avenue / approach to River	10		30
Maribyrnong River South-west	20		60
Keilor Park Drive / Maribyrnong River North-east	55		160
M80 S & Fullarton Road / Calder Freeway	20		60
Steele Creek Reserve & M80 North	17		50
Airport Drive <i>(includes the Tullamarine Park Road site)</i>	16		50
<p>NOTE</p> <p>Information is peak activity per site. Different site will have different schedule of construction activity. Peak movements across the corridor are currently anticipated to occur in June 2024 and primarily result from activity in the Sunshine / Albion area, peak activity for the Corridor is anticipated to occur in 2026</p>			

Conservatively assuming that the construction workforce would exhibit a 1.1 person car occupancy and 90% car modal share with two trips per day the workforce daily traffic movements at peak activity is anticipated to equate to approximately 1,500 to 2,500 vehicle trips per day across the network.

Given the transient nature of construction workforces, moving from site to site, it is likely that many of MAR workforce trips would not be entirely new to the wider network but would reflect a shift in destinations as labour moves on from one workplace to the next.

On a local level in the immediate vicinity of construction sites, the workforce may represent additional trips and therefore the indicative peak workforce for each construction site and will be provided in discussion for the relevant construction areas. However, standard construction site operating hours generally avoid road network peak and it is anticipated that MAR construction sites will typically generate workforce traffic movements before the morning peak and either before or after the evening road network peak depending on final shifts.

8.3 Road Disruptions

The MAR construction interfaces with roads which are under the jurisdiction of BCC, MVCC or arterial roads under the jurisdiction of DOT. Potential disruptions to key roads in the vicinity of the works have been considered.


Current construction programming for the sections as provided by RPV has been compiled and plotted across the full construction period and is provided as Figure 8-2.

The diagram indicates the expected time frame of different road treatments needed to facilitate the different stages of construction tasks at road interfaces along the corridor.

It is noted that at this point in the construction planning broad six month periods have been identified for tasks that may impact roads, this does not necessarily mean that a road will be impacted for the entire quarter or half year but rather in many cases the disruption will occur over a shorter period at some point during that time. Therefore although some road closure requirements coincide across multiple roads this does not necessarily mean that in real time two roads will be closed at the same time, but rather in that six month period it is likely that both roads will have some closure periods.

It should also be noted that the state of construction planning varies per site, with some areas having been considered in more detail both in terms of construction tasks and impacts than others.

Discussion on the impact of road disruptions for each road is provided in the following section.



It is noted that modelling of construction impacts is underway but has not been fully completed at the time of writing. The current stage of construction disruption modelling is preliminary and adopts road capacity as the primary means to distribute traffic. In practice, strategies including detour signage and messaging will influence drivers route choices and can be used to encourage the use of more appropriate arterial links over local links. Impacts to local roads as identified in this TIA are therefore considered to be conservative.

Impacts have been assessed based on the best available information and range from the use of a calibrated and validated AM peak model to an understanding of likely impacts using first principle traffic engineering practices as discussed in Austroads Guide to Traffic Management Part 3.

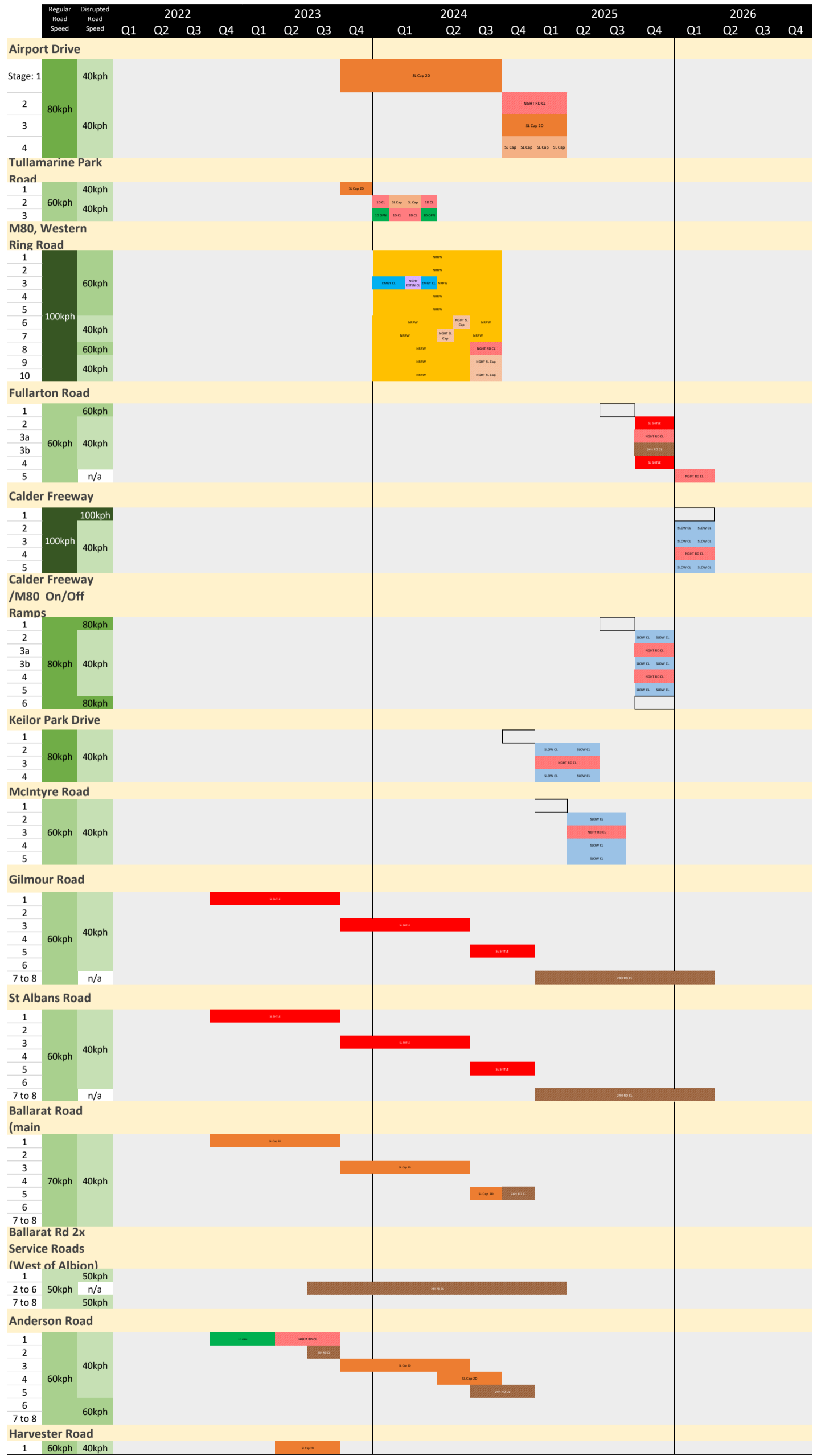
This document suggests that where no parking is permitted a single traffic lane can typically cater for up to 900 vehicles per hour (vph), with potential up to 1,200vph subject to specific conditions. For the purpose of this assessment the following generic capacities have been adopted where modelling is not available:

- No turning movements proximate or within immediate construction zones 1,000vph per lane
- Potential for some turning movements proximate to construction zone 900vph per lane

In terms of diversion routes, it is noted only preliminary routes have been identified to date, but final construction diversion strategies will need to be developed with consideration to:

- Diverted traffic levels and types
- Periods traffic will be diverted
- The road hierarchy and expected user profile of routes
- Modelling of base and diverted traffic using domino modelling
- New tools developed as part of the MTP works, including the Human Impact Route Assessment (HIRA) toolkit.

Impacts to public transport networks including route diversions and stop relocations will need to be discussed and agreed with DOT.



LEGEND

Road Lane Configurations

- SL Cap** (Light Orange) - Reduced capacity to single lane within carriageway
- SL Cap 2D** (Dark Orange) - Reduced capacity to single lane on both carriageways/directions
- DL Cap** (Brown) - Reduced capacity to two lanes in one direction
- NGHT RD CL** (Pink) - Night time full road closure
- 24H RD CL** (Dark Grey) - 24 hour full road closure
- SL SHTLE** (Red) - One lane shuttle operation
- 1D CL** (Light Pink) - Full closure of one carriageway/direction, while the other carriageway/direction remains full/bart
- 1D OPN** (Green) - Full closure of one carriageway/direction, while the other carriageway/direction remains full/bart
- NRRW** (Yellow) - Narrow Lanes
- EMGY CL** (Light Blue) - Emergency lane closure
- SLOW CL** (Blue) - Slow lane closure
- NGHT EXTLN CL** (Purple) - Night time slip lane/exit lane closure
- NGHT SL Cap** (Light Orange with diagonal lines) - Night time part road closure (reduced capacity to a single lane within carriageway)

Road Speeds

- 40kph** (Light Green)
- 60kph** (Medium Green)
- 80kph** (Dark Green)
- 100kph** (Very Dark Green)

Figure 8-2: Preliminary Construction Road Disruption Staging

8.4 Corridor Section Construction Area Breakdowns

For the purpose of understanding traffic impacts, the Corridor section has been divided into eight broad construction areas as indicated in Figure 8-3.

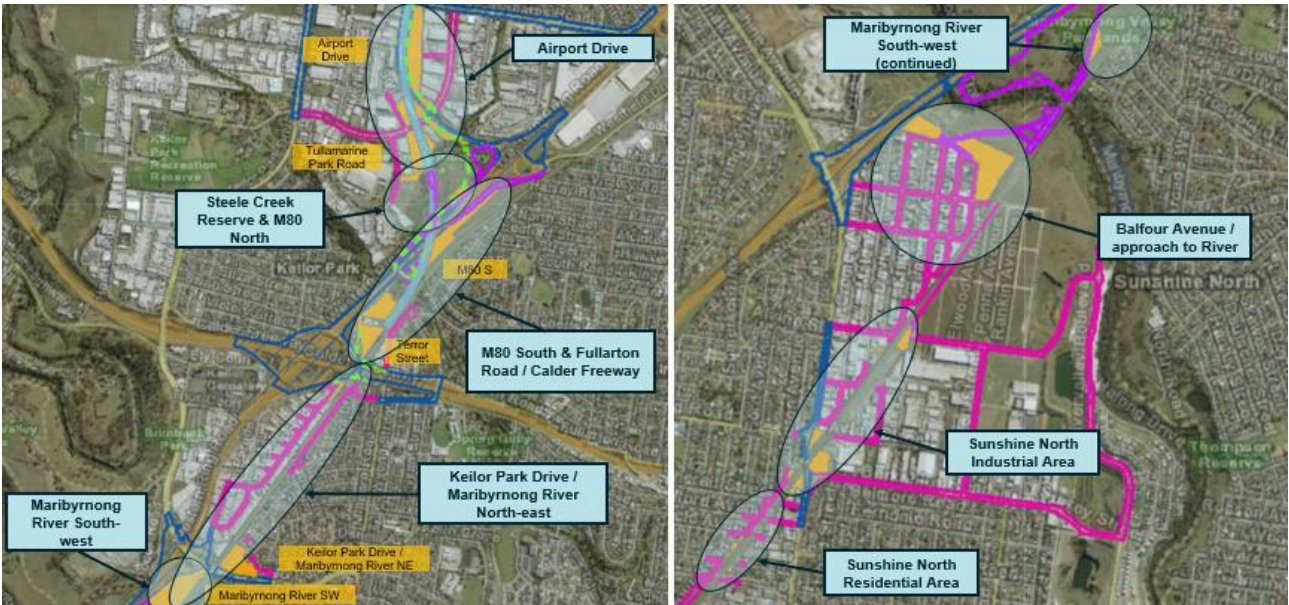





Figure 8-3 Corridor Construction Area

8.4.1 Airport Drive

Duration: August 2023- September 2025 (25 months)	 x 50	Peak Daily Vehicle Trips (Inbound & Outbound): x 32	 x 100	
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The Airport Drive construction area covers works required for the Project between Sharps Road and Steele Creek Tributary Reserve and will include the realignment of Airport Drive, construction of the viaduct from the edge of the Steele Creek Reserve and construction of the SUP and Tullamarine Park Road crossing.

Peak disruption periods for existing Airport Drive traffic will be associated with the realignment of the current road carriageways (stages 1 and 2), followed by the construction of the viaduct and other deliverables of the project. Peak disruption for Tullamarine Park Road would occur between Q4 of 2023 and Q1 of 2024, associated with the construction of the Viaduct across the road. It is assumed that SUP works would be able to be done in the shadow of larger construction disruption impacts.

The current construction activity including one-way daily truck trips split across Airport Drive and Tullamarine Park Road anticipated for this area are summarised in Table 8.2 and Table 8.3.

Table 8.2 Airport Drive Construction Tasks

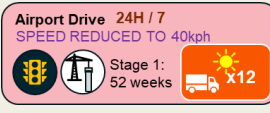
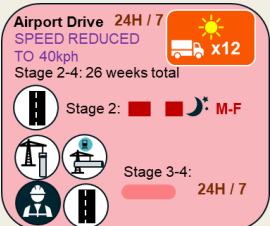
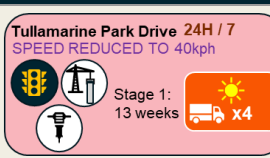
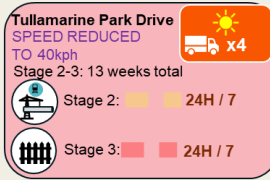
Airport Drive	Construction Tasks	Road Disruption	
 <p>Airport Drive 24H / 7 SPEED REDUCED TO 40kph Stage 1: 52 weeks</p>	<p>Stage 1</p> <ul style="list-style-type: none"> Setup Road barriers and close slow lane Modify existing Northbound truck bay Construct any piers & crossheads within workzone Construct new Northbound and Southbound within workzone 	Slow lane closure Northbound and Southbound	Speed reduced to 40kph
 <p>Airport Drive 24H / 7 SPEED REDUCED TO 40kph Stage 2-4: 26 weeks total</p>	<p>Stage 2</p> <ul style="list-style-type: none"> Complete road tie-in works and setup for traffic switch 	Full Southbound and Northbound night road closure	
	<p>Stage 3</p> <ul style="list-style-type: none"> Construct outstanding Piers, Crossheads and complete Viaduct Superstructure Complete Civil and Drainage Works Complete outstanding road slew works (fast lanes for Southbound and Northbound) 	Fast lane closure Northbound and Southbound	
	<p>Stage 4</p> <ul style="list-style-type: none"> Wearing Course and line marking 	Various Slow and Fast Lane closures on Southbound and Northbound road	

Table 8.3 Tullamarine Park Road Construction Tasks

Tullamarine Park Road	Construction Tasks	Road Disruption	
 <p>Tullamarine Park Drive 24H / 7 SPEED REDUCED TO 40kph Stage 1: 13 weeks</p>	<p>Stage 1: Foundation, Pier and Crosshead Construction</p> <ul style="list-style-type: none"> Set up fast lane closures on both Northbound and Southbound. Complete Piling & Pile Cap Excavation Works Complete FRP Works of Pile Cap Complete FRP Works of Pier and Crosshead 	Fast lane closure on Southbound and Northbound. Continuous	Speed reduced to 40kph
 <p>Tullamarine Park Drive 24H / 7 SPEED REDUCED TO 40kph Stage 2-3: 13 weeks total</p>	<p>Stage 2: Super-Tee install</p> <ul style="list-style-type: none"> Shift barriers back onto central median to create sufficient room for beam delivery Shut Southbound and fast lane of Northbound during beam lift for span 41 Shut Northbound and fast lane of Southbound during beam lift for span 42 	Temporary full closure of Northbound and fast lane of Southbound and vice versa.	
	<p>Stage 3: Architectural Screen & Ancillary Item install-</p> <ul style="list-style-type: none"> Shut Southbound for installation of architectural screen Shut Northbound for installation of architectural screens 	Full closure of Southbound and vice versa	

Impact of Additional Construction Traffic

Given the arterial nature of the surrounding road network providing access to the construction site, namely Sharps Road, Keilor Park Drive and Tullamarine Park Road, all of which are identified within the freight road hierarchy, an additional 32 trucks and 100 light vehicle movements per day is not anticipated to have any significant impact on the local network.

Disruption to Existing Transport Networks

A preliminary analysis of likely disruption to existing roads of closing or partially closing roads is provided below. Each potential road disruption includes an estimate of key traffic movements based on the best available information at the time of writing this could include data from models or isolated open data factored up based on web-based information.

Road Network – Airport Drive

Construction Assessment Year (2026) Traffic Volumes (Two-Way)							
Annual growth rate(s)	3.5% ²¹						
Daily	33,080vpd	Weekday Peak	2,800vph	Night Peak	390vph	Weekend Peak	n/a
		Peak direction	2080vph				

Airport Drive comprises two lanes in each direction so would typically be able to accommodate approximately 2,000 vehicles in each direction. Based on the growth assumptions adopted it is considered that at the time of construction the road will be approaching capacity in the peak direction at peak times, however outside these periods traffic would be well within capacity of the link.

Single Lane Closure: 18 months

Closing one lane in either a northbound or southbound or both directions would significantly reduce the capacity of that directional link from around 2,000vph to 1,000vph. Based on the predicted traffic volumes it is likely that in general traffic will be able to be accommodated. However at peak times volumes in the peak direction would exceed the capacity of a single lane, which may lead to increased delays and / or redistribution of traffic.

Modelling of the impact of this constraint on Airport Drive will need to be undertaken to understand the likely redistribution of traffic in the peak hour given capacity constraints across the network and determine any requirement for traffic management measures which will be developed as part of construction management.

Full Closures – Night Only: 1 weeknight only

One full night closure of the road will result in up to 390vph being diverted to alternative routes. It is understood that night closures are unlikely to be required for more than one or two nights during the construction period.

Suitable routes that are likely to be appropriate to accommodate displaced traffic due to construction closures are indicated in Figure 8-4. Potential diversion routes are typically industrial roads with significant that on a day to day basis cater for significant day time peak volumes and therefore likely to have reserve capacity during night-time periods to accommodate diverted traffic without a material impact to operation or amenity.

²¹ Applied the 3.5% per annum growth rate provided for the south-eastbound direction (Source: DoT Traffic Volume Open Data Hub, 2020)

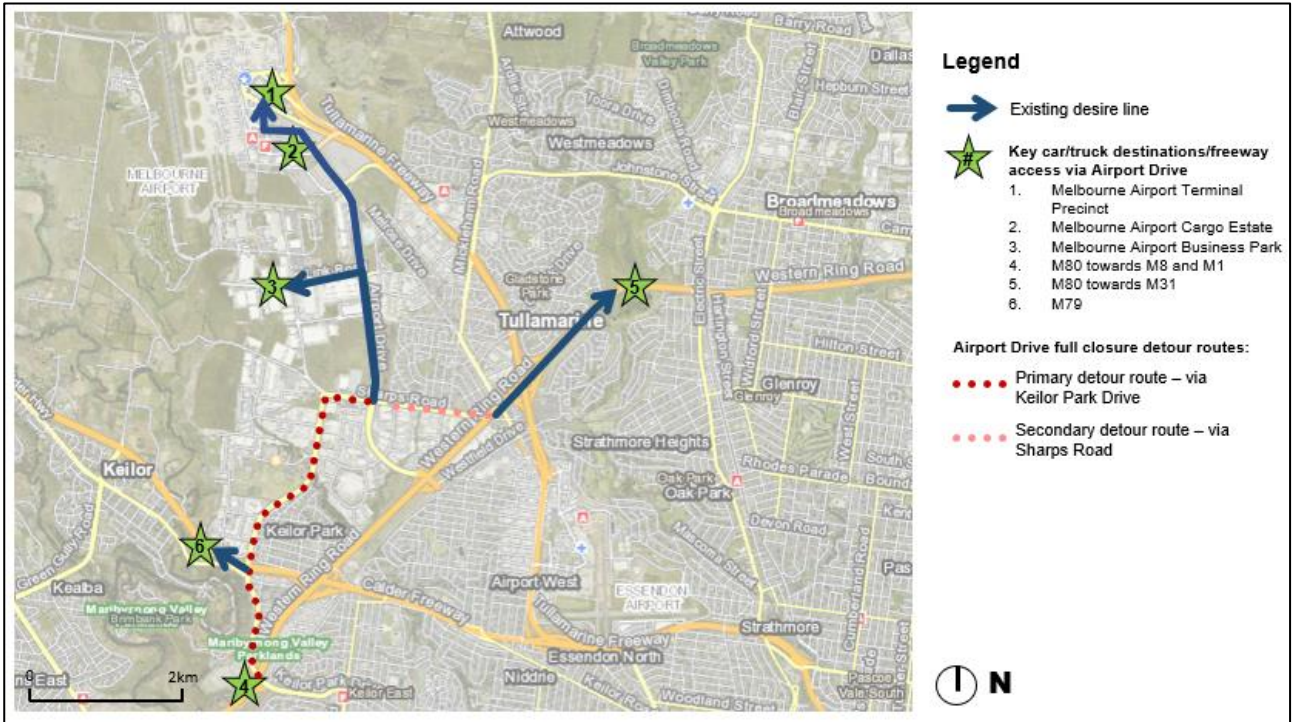


Figure 8-4: Potential Diversion Routes for Partial and Full Airport Drive Road Closures

Diversion of traffic during the night full closure is not anticipated to impact the operation of diversion routes due to relatively low diverted volumes and existing demands at these times compared to normal daytime operating conditions.

Truck parking at existing truck rest stops will be managed during construction.

Road Network – Tullamarine Park Road

Construction Assessment Year (2026) Traffic Volumes (Two-Way)

Annual growth rate(s)	3.5% ²²						
Daily	10,180vpd	Weekday Peak	1,020vph ²³	Night Peak	n/a	Weekend Peak	n/a
		Peak direction	600vph				

Single Lane Closures: 6 months

The closure of a single lane in one direction to accommodate construction would reduce the capacity in that direction to 1,000vph, this would comfortably be able to accommodate the anticipated traffic volumes on the road at this time.

It is assumed that on street parking would be restricted for the sections of Tullamarine Park Road where traffic lanes are temporarily removed. However, Google Earth imagery does not indicate a heavy demand for on street car parking in the vicinity of the proposed works.

²² Applied Airport Drive's annual growth rate to Tullamarine Park Road

²³ Given that the peak hour volume and directional splits for Tullamarine Park Road are unknown, for the purpose of this preliminary TIA, it has been assumed that 10% of traffic occurs during network peaks and 60% in the peak direction based on the nature of the road and connections

Full Carriageway Closures: 3 months

From the information to date it is understood that construction will require night-time carriageway closures during Stage 2 works which would be accompanied by reduced capacity in the opposite carriageway due to the far side lane also being required for works.

In Stage 3, 24-hour full carriageway closures will be required, although as with Stage 2 the carriageway closures can be consecutive rather than simultaneous, allowing access to the side roads and businesses at all times.

Depending on the section of road closed and locations of side streets and business accesses, temporary median breaks may be required to facilitate access.

Both stages could be managed through counterflow arrangement or full road diversions.

A counterflow arrangement merging both directions of traffic into a single lane and then slewing one lane across the median to use the opposing carriageway could be adopted to retain both directional movements.

Closure of the road will require diversions routing traffic via Sharps Road and Keilor Park Drive (and vice versa) to facilitate access to areas west and north of the works. These roads are also likely part of diversion routes to manage Airport Drive closures, to minimise impact on the diversion routes it is recommended that closures are scheduled to avoid periods when Airport Drive disruption may lead to additional traffic on either Sharps Road or Keilor Park Drive.

Public Transport Network Impacts

No public transport services use Airport Drive and therefore road closures or lane reductions to this road would have no impact on the public transport network.

One bus route (482) runs along Tullamarine Park Road, and therefore will be impacted during any full closures in one direction. Current stops are clear of construction areas and therefore are likely to remain open, subject to routes being maintained.

During full closures, depending on the preferred response either bus routes or bus stops may have to be relocated. The 482 bus route could easily be diverted along Sharps Road and Keilor Park Drive with no material increase to journey distance or timing, however the accessibility of the bus route to uses associated with businesses located off Tullamarine Park Road would be significant with walk distances to stops potentially increasing by potentially over a kilometre. This impact could be mitigated through diverting the bus through loops either side of the construction zone, however this would have an impact on journey times.

It is recommended that prior to construction, passenger demand information for stops on Tullamarine Park Drive should be sought to determine the most appropriate response in the CMP.




Active Transport Network Impacts

No active transport specific facilities are provided along Airport Drive and the nature of the road is unlikely to be attractive to cyclists, therefore there is unlikely to be significant cohort of active transport users impacted by the works.

However, it is noted that any cyclists that do use the road would be subject to the same closures and pavement width reduction and vehicular traffic.

It is recommended that prior to construction, cycle surveys should be undertaken to determine whether additional management practices are incorporated in the CMP to protect these more vulnerable users.

8.4.2 Steele Creek Reserve / M80 North

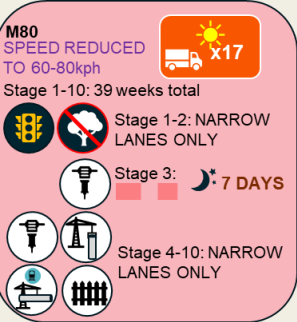
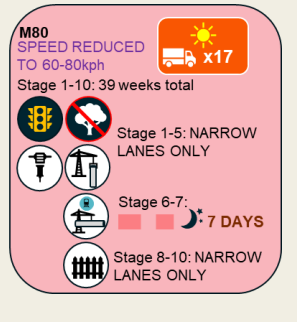
Duration: October 2023- December 2025: (26 months)	x 50 	Peak Daily Vehicle Trips (Inbound & Outbound):	x 34 	x 100 
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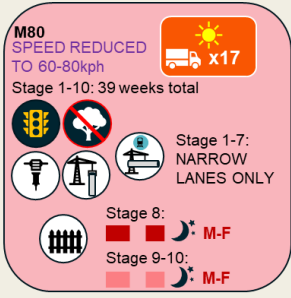
The Steele Creek Reserve / M80 North construction area includes works continuing construction of the MAR viaduct from Steele Creek Reserve, crossing the M80 and continuation of the SUP crossing Tullamarine Park Road through Steele Creek Tributary Reserve before connecting into the existing M80 Trail.

Peak disruption periods for existing M80 traffic will be associated with 55m span installation, Transfloor and architectural screen installation (stages 8 to 10) occurring in Q3 of 2024, associated with the construction of the Viaduct across the road. It is assumed that SUP works would be able to be done in the shadow of larger construction disruption impacts.

The current construction activity anticipated for this area is summarised in Table 8.4.

Table 8.4 M80 Construction Tasks

M80	Construction Tasks	Road Disruption	
2024 Q1 	Stage 1: Narrow up the lanes to 3.3m wide <ul style="list-style-type: none"> Intermittent closures (assumed to occur outside of peak hours) for line marking works 	Narrow lanes but no reduction to lane numbers	Speed reduced to 80kph Ramps reduced to 60kph
	Stage 2: Grubbing, clearing & Hardstand Construction <ul style="list-style-type: none"> Reduced speed only when works are occurring behind road barrier 		
	Stage 3: Piling Works	2024 Q1 only: North-eastbound and South-westbound emergency lane closures at all times of the day. Additionally, one to two weeks of intermittent night closures of the South-westbound slip lane 2024 Q2- Q3: Narrow lanes No reduction to lane numbers	
	Stage 4: Pile Cap Excavation <ul style="list-style-type: none"> Reduced speed only when works are occurring behind road barrier 	Narrow lanes No reduction to lane numbers	
	Stage 5: Pier & Crosshead <ul style="list-style-type: none"> Reduced speed only when works are occurring behind road barrier 		
	2024 Q2 	Stage 6: Pier 16 Backspan install	
Stage 7: Pier 17 Backspan install	2024 Q2 only: North-eastbound lanes only reduced to single lane capacity at night. 2024 Q1 and 2024 Q3: Narrow lanes, however no reduction to lane numbers		

M80	Construction Tasks	Road Disruption
2024 Q3 	Stage 8: Extended Full Road Closures for 55m span installation (1-2 nights)	2024 Q3 only: Full North-eastbound and South-westbound night road closure (one to two nights) 2024 Q1-Q2: Narrow lanes, however no reduction to lane numbers
	Stage 9: Transfloor Staged – 3-4 lane closures – (2-4 nights)	2024 Q3 only: Single lane capacity on North-eastbound and South-westbound roads at night 2024 Q1-Q2: Narrow lanes, however no reduction to lane numbers
	Stage 10: Architectural Screen Install	

Impact of Additional Construction Traffic

Given the arterial nature of the surrounding road network providing access to the construction site, namely the M80 and / or Tullamarine Park Road leading to Snyder Court an additional 34 trucks and 100 light vehicle movements per day is not anticipated to have any significant impact on the local network.

Disruption to Existing Transport Networks

Road Network – M80

Construction Assessment Year (2026) Traffic Volumes (Two-Way *unless stated*)

Annual growth rate(s) 2.9% (NEB), 3.5% (SWB)

Daily	169,550vpd	Weekday Peak	11,430vph	Night Peak	4,060vph	Weekend Peak	n/a
		Peak Direction	6,700vph				

The M80 in the vicinity of the works has a four-lane cross section in each direction and its performance has been upgraded with the introduction of freeway management practices.

In simple terms typical, unmanaged motorways can cater for 1,640vph, per lane increasing to 1,920 vph, per lane when managed²⁴. The M80 in the vicinity of the MAR construction works has a four lane cross section in each direction and has been upgraded to incorporate freeway management as part of the M80 upgrade, improving the capacity of the link to approximately 7,600vph, per direction. This suggests that at peak times the road will operate within typical capacity with a volume to capacity ratio (v/c) of 0.87.

Lane Width Reductions: 9 months

The performance of the M80 would be degraded with lane width reductions. Reducing lane widths to less than 3.35m would reduce free flow speed (FFS) by 10.6km/h with a 10.6% reduction in capacity²⁴.

A construction lane width of 3.3m with current predicted peak direction peak hour volumes would equate to a reduced performance with a demand / capacity ratio of 0.98. This is above desirable performance but is within absolute capacity, although the limited reserves would increase probability of flow breakdown.

Therefore, the construction disruption would have an impact on M80 peak period operation for potentially the six months that lane width reductions would be triggered. Modelling will be completed to further understand the degree of impact and refine lane widths. As part of construction planning it is recommended that travel behaviour strategies should be investigated to influence demands during peak times.

²⁴ Srouce: RTA NSW Motorway Design Guide: Capacity and Flow Analysis – April 2017, including Table 5

Lane Closures – Night Only: 6 months

The current construction intention is to include periods where the road is reduced to a single lane, which would reduce the capacity of the road to approximately 1,700vph, assuming the day time reduced lane widths are also maintained, increasing to approximately 1,900vph with standard lane widths.

DOT traffic profile data suggests that between 9pm and 5am traffic volumes on M80 are significantly less than during peak hours, generally representing approximately of 3% of daily volumes at 5am and 9pm. This would suggest that during the construction period potentially night-time traffic demands during the construction area would equate to a peak between 9pm and 5am of 3,000 vehicles per hour, which is well above the capacity of a single lane. It is noted that traffic volumes between midnight and 4am are much lower, representing 2% or less of daily volumes and may be able to be accommodated within a single lane configuration, if a standard lane width is adopted for that lane.

Stakeholder engagement will need to be undertaken to refine construction management plan to manage risks associated with the reduced capacity at night.

Full Closures – Night Only: 1-2 weeknights only

At present it is understood that intermittent night closures will be required for the M80. Assuming these occur between 9am and 5am it is likely that this will result in the need to detour of up to 3,260vph.

Given the limitations in movements between Calder Freeway and Tullamarine Freeway particularly for southbound traffic, detour routes will need to be identified from the non-freeway arterial network and given the number of movements that will need to be detoured should include different detours for different traffic streams through the construction zones to dissipate traffic and reduce impacts on individual roads.

Potential routes that are likely to be appropriate to accommodate displaced traffic due to construction closures are indicated in Figure 8-5.

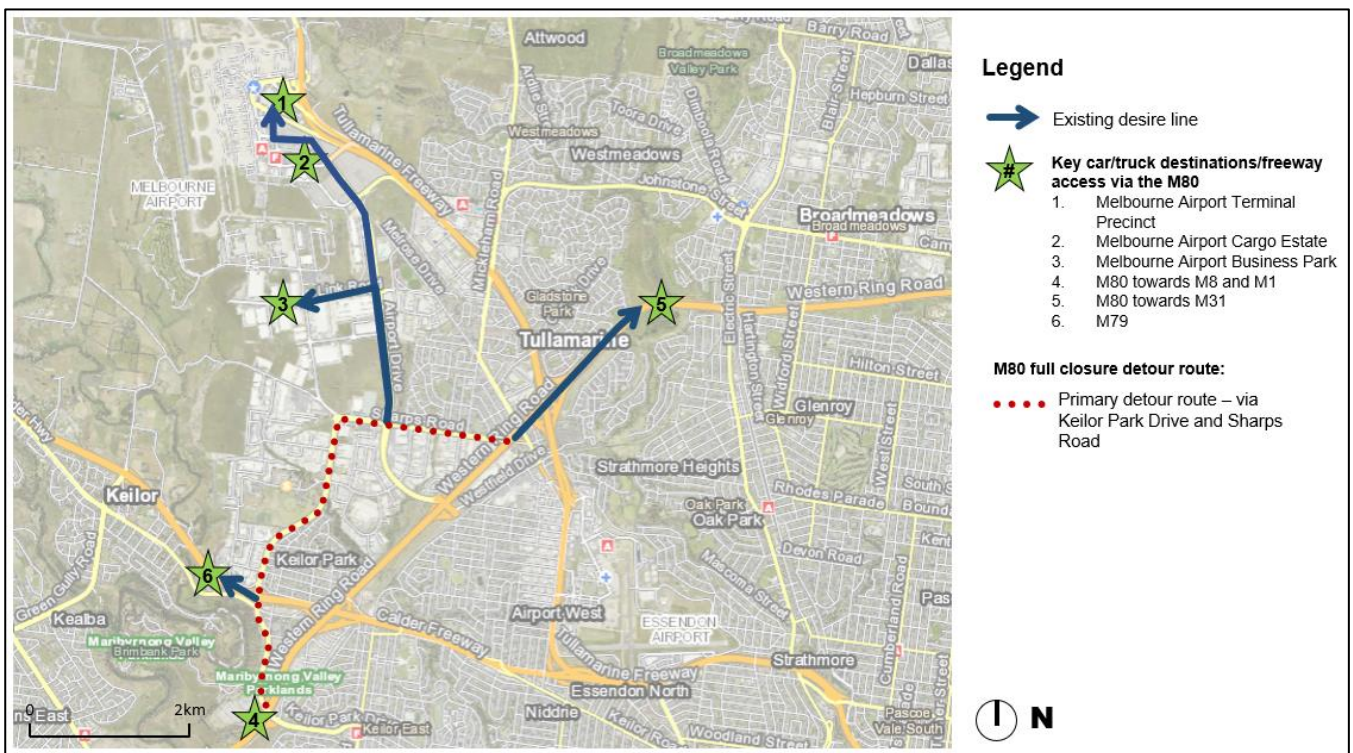


Figure 8-5: Potential Diversion Routes for Partial and Full M80 Road Closures

The development of a suite of detour routes for night closures will be developed as understanding of construction closure needs and an appropriate strategy identified within the CMP for this area.

Public Transport Network Impacts




No public transport services use the section of the M80 between Calder Freeway and Airport Drive interchanges and therefore road closures or lane reductions to this road would have no impact on the public transport network.

Active Transport Network Impacts

At this section of the M80, the M80 Trail runs along the east side of the carriageway (off road). The M80 trail also connects to an existing SUP following the alignment of Steele Creek up to Keilor Park Drive along the boundary of Keilor Park. These paths would be attractive to both walkers and cyclists based in Keilor East, Airport West and Keilor Park, and who will consequently be impacted by the works.

It is recommended that prior to construction, cycle surveys should be undertaken to determine whether additional management practices are incorporated in the CMP to protect these users and / or identify appropriate detours, which include use of existing maintenance trails.

8.4.3 M80 South & Fullarton Road / Calder Freeway


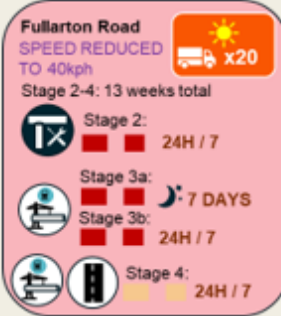
Duration: August 2023- July 2026 (35 months)	x 60 	Peak Daily Vehicle Trips (Inbound & Outbound):	x 40 	x 120 
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The M80 South and Fullarton Road / Calder Freeway construction area includes works continuing construction of the MAR viaduct from the M80 to the Albion-Jacana rail corridor (at-grade) north of Terror Street. The viaduct will transition down to broadly match the ARTC tracks with both MAR tracks to be aligned to the north west of ARTC.

The four-track cross section will require the widening of the active rail track corridor under Fullarton Road and Calder Freeway.

The current construction activity including the total one-way daily truck trips anticipated for this area is summarised in Table 8.5 to Table 8.7.

Table 8.5 Fullarton Road Construction Tasks (July 2025-March 2026)

Fullarton Road	Construction Tasks	Road Disruption	
2025 Q3 	Stage 1: Soil nail / abutment / deflection wall / Elec. Protection Canopy Works <ul style="list-style-type: none"> Can occur from rail corridor access 	No lane closure	No change to posted speed
2025 Q4 	Stage 2: Demolish existing bridge barrier & deck slabs <ul style="list-style-type: none"> Install temporary concrete barrier between fast and slow lane Demolish existing bridge barrier & deck slabs from top of bridge deck or rail corridor (would require ARTC occupation) 	Full Eastbound and Westbound road closure	Speed reduced to 40kph when not closed
	Stage 3a: Replace existing Super-T Beams (Westbound Lane only) <ul style="list-style-type: none"> Remove & replace existing Super-T beams from bridge deck or rail corridor (would require ARTC occupation) 	Full Eastbound and Westbound night road closure	
	Stage 3b: Install beams UC beams for SUP widening (Eastbound Lane only) <ul style="list-style-type: none"> Install UC beams with cross-bracing from bridge deck or rail corridor (the latter would require ARTC occupation) 	Full Eastbound and Westbound road closure	


Fullarton Road	Construction Tasks	Road Disruption	
	Stage 4: Install new decks <ul style="list-style-type: none"> Install temporary concrete barrier between fast and slow lane Install new deck slab from top of bridge deck or rail corridor (would require ARTC occupation) 	Continuous single lane closure	
2026 Q1 	Stage 5: Install new road barriers <ul style="list-style-type: none"> Install new barrier/concrete from bridge deck using concrete truck and crane 	Full Eastbound and Westbound night road closure	CLOSED

Table 8.6 Calder Freeway Main Carriageway Construction Tasks (July 2025-February 2026)


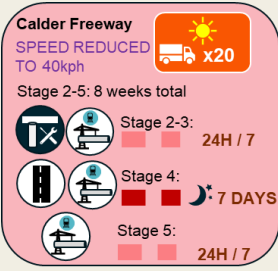

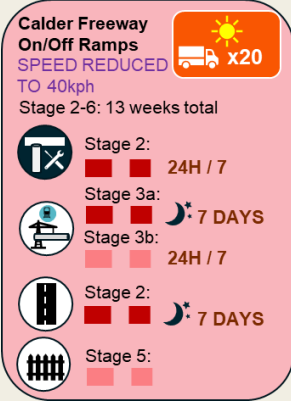
Calder Freeway	Construction Tasks	Road Disruption	
2026 Q1 	Stage 1: Soil nail / abutment / deflection wall / Elec. Protection Canopy Works <ul style="list-style-type: none"> Can occur from rail corridor access, no lane/road closures required on top of bridge 	No lane closure	No change to posted speed
	Stage 2: Demolish existing bridge barrier <ul style="list-style-type: none"> Install temporary concrete barrier between fast and slow lane Demolish existing bridge barrier from top of bridge deck or rail corridor (would require ARTC occupation) 	Continuous Eastbound and Westbound slow lane closure	Speed reduced to 40kph
	Stage 3: Replace existing decks <ul style="list-style-type: none"> Install temporary concrete barrier between fast and slow lane Remove & replace existing decks from bridge deck or rail corridor (would require ARTC occupation) 	Continuous Eastbound and Westbound slow lane closure	
	Stage 4: Install new road barriers <ul style="list-style-type: none"> Install new barrier/concrete from bridge deck using concrete truck and crane 	Full Eastbound and Westbound night road closure	
	Stage 5: Bridge I-Girder strengthening works <ul style="list-style-type: none"> Install temporary barrier between fast and slow lane Strengthen existing girders from underside of bridge 	Continuous Eastbound and Westbound slow lane closure	

Table 8.7 Calder Freeway / M80 On/Off Ramps Construction Tasks (July 2025-March 2026)

Calder Freeway / M80 On/Off Ramps	Construction Tasks	Road Disruption	
2025 Q3 	Stage 1: Soil nail / abutment / deflection wall / Elec. Protection Canopy Works <ul style="list-style-type: none"> Can occur from rail corridor access, no lane/road closures required on top of bridge 	No lane closure	No change to posted speed
2025 Q4 	Stage 2: Demolish existing bridge barrier & deck slabs <ul style="list-style-type: none"> Install temporary concrete barrier between fast and slow lane Demolish existing bridge barrier & deck slabs from top of bridge deck or rail corridor (would require ARTC occupation) 	Full Eastbound and Westbound lane closure	CLOSED
	Stage 3a: Replace existing Super-T Beams <ul style="list-style-type: none"> Full road closure (both lanes) Remove & replace existing Super-T beams from bridge deck or rail corridor (would require ARTC occupation) 	Full Eastbound and Westbound night road closure	CLOSED
	Stage 3b: Install new decks <ul style="list-style-type: none"> Install temporary concrete barrier between fast and slow lane Remove & replace existing decks from bridge deck or rail corridor (would require ARTC occupation) 	Continuous Eastbound and Westbound slow lane closure	Speed Reduced to 40kph
	Stage 4: Install new road barriers <ul style="list-style-type: none"> Install new barrier/concrete from bridge deck using concrete truck and crane 	Full Eastbound and Westbound night road closure	CLOSED
	Stage 5: Install SUP Anti-Throw Screen & Noise Wall <ul style="list-style-type: none"> Install temporary concrete barrier between fast and slow lane Install Anti-Throw Screen & Noise Wall from bridge deck 	Continuous Eastbound and Westbound slow lane closure	Speed reduced to 40kph
	Stage 6: Install new conduits <ul style="list-style-type: none"> Can occur from rail corridor access, no lane/road closures required on top of bridge 	No lane closure	Revert to posted speed

Impact of Additional Construction Traffic

Given the largely arterial nature of the surrounding road network providing access to the construction site, namely the M80 and Calder Freeway which are identified within the freight road hierarchy (with the exception of Fullarton Road), all of an additional 40 trucks and 120 light vehicle movements per day is not anticipated to have any significant impact on the local network.

Disruption to Existing Transport Networks

Road Network – Fullarton Road

Construction Assessment Year (2026) Traffic Volumes (Two-Way)

Annual growth rate(s)	1.5% ²⁵						
Daily	6,220vpd	Weekday Peak	620vph ²⁶	Night Peak	unknown	Weekend Peak	n/a

Single Lane Closure: Up to 3 months

Closure of a single traffic lane will either require MAR works to detour all traffic from the closed lane or adopt a shuttle system through the works. construction. However, this will be tested using Visum modelling developed for the project.

Preliminary Visum modelling (2018 AM calibrated and validated volumes) of the impact of operating a shuttle system suggests that this would result in a significant amount of traffic detouring via alternative routes with the primary routes being Keilor Park Drive to Sharps Road and Tullamarine Freeway to Melrose Drive.

However, the impact of the detouring traffic will have relatively minor impacts to the routes with speed changes typically less than 10kph expected. Through the shuttle system some delays are expected that these appear unlikely to extend much beyond immediate approaches to the shuttle section.

Further analysis will be required once the model has been calibrated and validated and a construction year network developed

Full Closure: Duration to be advised

At peak times a full closure of the road may be required this will require approximately 620vph to be diverted. It is recommended that the implications of these additional movements will need to be tested with network modelling.

Full Closure – Night Only Frequency to be advised

Given typical drops in traffic volumes overnight compared to peak hours it is anticipated that displaced traffic will be able to be accommodated on detour routes, however it is recommended that the primary detour route should be via the Calder Freeway which is unlikely to impact amenity for residential properties.

Potential Fullarton Road Detour Routes

An initial review of the network suggests two alternative options provide primary detour solutions for any closure of Fullarton Road. These are:

- Freeway Calder southbound, access at Keilor Park Drive and egress at McNamara Avenue
Calder northbound, access at Keilor Road and egress at Keilor Park Drive
- Non freeway Either direction, Moorna Drive, Woorite Place, Milleara Road, Keilor Park Drive

At this stage it is unclear whether the Calder Freeway operation would be impacted at the same time as Fullarton Road closures, however it is recommended that this should be avoided during more detailed construction planning.

Further analysis of the potential detour options will need to be undertaken when a final CMP becomes available.

²⁵ Source: DOT Open Data Traffic Count Location Portal information suggests that a count undertaken in 1993 indicated AADT of 3,800, which would suggest on average a 1.5% per annum increase.

²⁶ Assumed that 10% of the AADT occurs during the peak hour.

Road Network – Calder Freeway

Construction Assessment Year (2026) Traffic Volumes (Two-Way *unless stated*)

Annual growth rate(s)		1.9%					
Daily	53,620vpd	Weekday Peak	5,310vph ²⁷	Night Peak	1,150vph	Weekend Peak	n/a
		Peak Direction	3,430vph				

Based on typical freeway lane capacity expectations it is anticipated that the Calder Freeway has capacity to accommodate between 4,900 and 5,800vph, per carriageway with all three lanes operating in each direction. Although it is noted that in the outbound direction the section of carriageway over the rail corridor is transitioning from a three-lane to a two-lane cross section.

Slow Lane Closure: Up to 2 months

Slow lane closures would reduce the capacity of the carriageway to between 3,300 and 3,800vph, whilst this is likely to accommodate the majority of volumes, peak direction volumes in the peak hour are likely to be approaching capacity. This may reduce speeds on the link and increase the likelihood of flow breakdown at these times.

It is noted that for the outbound carriageway the removal of a slow lane would just relocate south the merging of the two kerb sides lanes as part of the three-lane to two-lane transition, which would suggest less impact.

Full Closure – Night Only: Up to 2 months

Full closure would result in potential diversion options for up to 1,150vph (although for much of the period they would be significantly lower) depending on scheduling of closures and disruptions on adjacent local roads, namely via Fullarton Road, including:

- Fullarton Road Keilor Park Drive, Fullarton Road, Moorna Drive and in return direction
- Keilor Park Drive Keilor Park Drive, Milleara Road, Woorite Place and in return direction

Further analysis of the potential detour options will need to be undertaken when a final CMP becomes available.

Road Network – Calder Freeway / M80 On / Off Ramps

Construction Assessment Year (2026) Traffic Volumes (One-Way)

Annual growth rate(s)		1.9%					
On ramp – Daily	26,200vpd	Weekday Peak	2,600vph ²⁸	Night Peak	unknown	Weekend Peak	n/a
Off ramp – Daily	22,800vpd	Weekday Peak	2,300vph ²⁹	Night Peak	unknown	Weekend Peak	n/a

Slow Lane Closure: Up to 3 months

Austrroads traffic management guidelines suggests that the typical capacity for a single lane freeway ramp is approximately 1,800vph. Given traffic volumes on the ramps will significantly exceed this, formal modelling will be undertaken to understand the impact of reducing the Calder Freeway / M80 ramp capacity followed by engagement with DOT prior to preparation of a construction management strategy for this location.

Full Closure – Night: Up to 3 months | Day: Duration to be advised

Potential diversion options depending on scheduling of closures and disruptions on adjacent local roads, namely via Fullarton Road, including:

²⁷ Assumed that 10% of the AADT occur during the peak hour

²⁸ Assumed that 10% of the AADT occur during the peak hour

²⁹ Assumed that 10% of the AADT occur during the peak hour

- Fullarton Road Keilor Park Drive, Fullarton Road, Moorna Drive and in return direction
- Keilor Park Drive Keilor Park Drive, Milleara Road, Woorite Place and in return direction

Further analysis of the potential detour options will need to be undertaken when a final CMP becomes available.

Public Transport Network Impacts

Currently two bus routes (465 and 478) utilise Fullarton Road and therefore road closures or lane reductions to this road would have an impact on the public transport network. Currently, the nearest bus stop is 150m east of the Albion-Jacana rail corridor and is potentially subject to temporary stop closures, subject to routes being maintained, noting that the both bus services do not operate into the late hours of the night or early hours of the morning.

Currently only one bus route (483) runs along the Calder Freeway and therefore road closures or lane reductions to this road would have an impact on the service performance of the route. This route is likely to remain open, subject to routes being maintained, noting that the 483 service also does not operate into the late hours of the night or early hours of the morning and would therefore not be impacted by full night closures.

No bus routes currently utilise the Calder Freeway / M80 On or Off Ramps.

It is recommended that prior to construction, passenger demand information for stops on Fullarton Road should be sought to determine the most appropriate response in the CMP.




Active Transport Network Impacts

At present, the Fullarton Road / Calder Freeway / M80 intersection has a 3m SUP forming part of the M80 Trail which is located immediately west of the ARTC tracks underneath the Calder Freeway road bridges, connecting back up towards the M80 alignment via an at-grade crossing of Terror Street. On the east side of the ARTC tracks is a footpath connecting Keilor East and Airport West suburbs to Fullarton Road and the M80 Trail via a SUP crossing immediately south of the Calder Freeway off ramp.

While the current usage of both the SUP and footpath at this location are relatively low, the paths would be attractive to both pedestrians and cyclists based in Keilor East, Airport West and Keilor Park, and who will consequently be impacted by the works.

It is recommended that construction programming be reviewed to ensure that some cross rail and road corridor connectivity is maintained.

8.4.4 Keilor Park Drive / Maribyrnong River North-east

Duration:	January 2024- May 2027 (41 months)	x 160		Peak Daily Vehicle Trips (Inbound & Outbound):	x 110		x 320	
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The Keilor Park Drive and Maribyrnong River north-east construction area including Keilor Park Drive and Border Drive Reserve will feature works delivering two new MAR tracks adjacent to the existing ARTC tracks will slewed underneath the Keilor Park Drive road-over-rail bridge.

To accommodate the new MAR tracks, Keilor Park Drive at the road bridge will require works to temporarily allow construction vehicle access from the road network down to the rail tracks.

The peak disruption period for existing Keilor Park Drive traffic is in Q1 and Q2 of 2025 and will be associated with demolition of the existing road barrier and installation of new road barriers and footpath (stages 2 to 4).

The current construction activity including the total one-way daily truck trips anticipated for this area is summarised in Table 8.8.

Table 8.8 Keilor Park Drive Construction Tasks (November 2024-July 2025)

Keilor Park Drive	Construction Tasks	Road Disruptions	
2024 Q4 	Stage 1: Blade/deflection wall/maintenance walkway works <ul style="list-style-type: none"> Can occur from rail corridor access 	No lane closure, only speed reduction due to live construction activity	Speed reduced to 40kph
2025 Q1-Q2 – 3 months each direction 	Stage 2: Demolish existing barrier <ul style="list-style-type: none"> Continuous slow lane closure Install temporary concrete barrier between fast and slow lane Demolish existing bridge barrier and footpath from top of bridge deck 	Slow Lane closure on Eastbound and Westbound lanes	Speed reduced to 40kph
	Stage 3: Install new road barriers <ul style="list-style-type: none"> Install new barrier/concrete from bridge deck using concrete truck and train 	Full Eastbound and Westbound night road closure	
	Stage 4: FRP new footpath	Slow Lane closure on Eastbound and Westbound lanes	

Impact of Additional Construction Traffic

Whilst this construction area is anticipated to generate at peak times approximately 430 movements per day these will be split between two works zones expected to generate 150 and 280 vehicle movements per day.

The smaller construction works site is proposed to be located within the Border Drive Reserve and would be accessed via a left in and left out arrangement to Keilor Park Drive then through a short section of local residential street (noting that there is currently a ‘local traffic only’ restriction), with the route running past less than 20 residential properties.

Whilst capacity is not anticipated to be impacted by the additional construction movements, amenity for a small number of residential properties may be affected which may need to be managed.

The larger construction works site is located away from residential areas and would be accessed from the arterial network and therefore traffic movements associated with the works area is not expected to have an impact on the road network. It is however noted that access would be via an existing maintenance track accessed from the Keilor Park Drive to M80 on ramp bus lane and therefore stakeholder engagement is recommended to ensure movements between the bus lane and the maintenance track are managed safely. This will need to be addressed within the CMP.

Disruption to Existing Transport Networks

Road Network – Keilor Park Drive

Construction Assessment Year (2026) Traffic Volumes (Two-Way *unless stated*)

Annual growth rate(s) 0.97%³⁰

Daily	21,400vpd	Weekday Peak Peak Direction	2,160vph 1,110vph	Night Peak	460vph	Weekend Peak	n/a
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Single Lane Operation: Up to 3 months per direction

Reducing Keilor Park Drive across the rail corridor to a single lane for each direction to facilitate works would reduce the capacity of the road to approximately 1,000vph in each direction. Whilst at most times this is likely to be sufficient to accommodate traffic movements at peak times in the peak direction volumes will be in the order of the capacity of the road, which may result in some localised delays and queuing at this time.

The proximity of the works to the signalised intersection with M80 on/off ramp and Slater Parade, which is within 60m of the rail corridor, is likely to complicate the appropriate traffic management response and will need to be formally modelled, to understand impacts to queuing and delays.

Full Closure – Night Only: Up to 3 months per direction

Night closures will require detours and a preliminary review of the network suggests this would need to be via Milleara Road and Fullarton Road.

Public Transport Network Impacts

Currently only one bus route (903) utilises Keilor Park Drive and therefore road closures or lane reductions to this road would have an impact on the public transport network. Current stops are clear of construction areas and therefore are likely to remain open, subject to routes being maintained, noting that the 903 service does not operate into the late hours of the night or early hours of the morning.

It is recommended that prior to construction, passenger demand information for stops on Keilor Park Drive should be sought to determine the most appropriate response in the CMP.

Active Transport Network Impacts




At present, the Keilor Park Drive road bridge has a 2m footpath located adjacent to the eastbound traffic lanes. This footpath currently provides local residents based in Keilor East with direct access to the M80 Trail at Slater Parade / Keilor Park Drive. The next closest active transport rail crossings providing access to the M80 Trail are 1km further southwest via the Maribyrnong River Trail or 1.5km further northeast via Fullarton Road / Wonganella Drive. Hence, it is likely that the Keilor Park Drive footpath crossing the bridge will be most attractive to both walkers and cyclists based in Keilor East, and who will consequently be impacted by the works.

It is noted that any walkers and cyclists that do use the road would be subject to the same closures and pavement width reduction as vehicular traffic.

It is recommended that prior to construction, cycle surveys should be undertaken to determine whether additional management practices are incorporated in the CMP to accommodate these users.

³⁰ Annual growth rate estimated from calculating the compound annual growth rate between 20,000vpd in 2019 and 21,400vpd in 2026 (Source: DOT Traffic Volume Portal)

8.4.5 Maribyrnong River South-west

Duration:	September 2023-May 2027 (44 months)	x 60 	Peak Daily Vehicle Trips (Inbound & Outbound):	x 40 	x 120 
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The Maribyrnong River south-west construction area includes works delivering a new MAR rail bridge crossing the Maribyrnong River located adjacent to the existing Quarter Mile Bridge carrying the ARTC tracks.

Although the M80 and local road network in the Sunshine North industrial area will be used to provide construction vehicles with access to/from the site laydown areas, no partial or full road closures are anticipated.

Impact of Additional Construction Traffic

Given the arterial nature of the surrounding road network providing access to the construction site, namely the M80, an additional 40 trucks and 120 light vehicle movements per day is not anticipated to have any significant impact on the local network between 2023 and 2027.

Disruption to Existing Transport Networks

Road Network

There are currently no planned road network disruptions for this construction area.

Public Transport Network Impacts

The construction activities and zones accessed around the Maribyrnong River are removed from the public transport network.

Active Transport Network Impacts




The key transport network impact will be intermittent closure of the Maribyrnong River Trail between the M80 and east of the Quarter Mile Bridge to enable construction works to be undertaken when this cannot safely occur with the trail open, however in general the trail will remain open for much of the construction period..

The trail is not classified as a SCC and is more of a recreational trail and therefore many users are anticipated to be undertaking discretionary trips, further understanding of users is currently being sought.

Preliminary analysis of the alternative routes that could be undertaken indicate that any detours using existing roads are likely to be long and include relatively busy sections, potentially not suitable for some trail users or attractive for discrepancy trips.

Further analysis of peak and non peak usage of the trail is recommended as part of ongoing construction planning to identify periods when the impact of any necessary closures can be minimised..

8.4.6 Balfour Avenue / approach to the Maribyrnong River

Duration:	September 2023-May 2027 (44 months)	x 30 	Peak Daily Vehicle Trips (Inbound & Outbound):	x 20 	x 60 
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The Balfour Avenue and approach to the Maribyrnong River construction area will be used to service two construction delivery sections.

Similar to the Maribyrnong River South-west construction area, the location of infrastructure to be delivered is well away from the road network and therefore road closures to facilitate works will not be required.

Impact of Additional Construction Traffic

Access to the construction area and its individual laydown and works sites will be via the arterial network, namely M80 and McIntyre Road. The link from the arterial network to the work and laydown sites would be through industrial roads such as Balfour Avenue, Baldwin Avenue and Whitehall Avenue. Given the nature of these streets, an additional 20 trucks and 60 light vehicle movements per day is not anticipated to have any significant impact on the local network.

Disruption to Existing Transport Networks

Road Network

There are currently no planned road network disruptions for this construction area.




Public Transport Network Impacts

The construction activities and zones accessed around the Maribyrnong River are removed from the public transport network.

Active Transport Network Impacts

There are no significant active transport links on the western side of the Maribyrnong River works therefore construction activity in this zone is not anticipated to have any further material impact on the active transport network.


8.4.7 Sunshine North Industrial Area

Duration: November 2024-October 2025 (11 months) x 50  Peak Daily Vehicle Trips (Inbound & Outbound): x 32  x 100 

The Sunshine North industrial area construction area includes works supporting the continuation of two new at-grade MAR tracks that will be constructed at-grade adjacent to the ARTC tracks up to and including works under McIntyre Bridge. Peak disruption for existing McIntyre Road traffic would occur in Q2 and Q3 of 2025 and will be associated with demolition of the existing road barrier, installation of the new barrier, footpath and bridge strengthening works (stages 2 to 5).

The current construction activity including the total one-way daily truck trips anticipated for works on McIntyre Road is summarised in Table 8.9.

Table 8.9 McIntyre Road Construction Tasks

McIntyre Road	Construction Tasks	Road Disruption	
2025 Q1 	Stage 1: Soil nail/abutment works <ul style="list-style-type: none"> Can occur from rail corridor access, no lane/road closures required on top of bridge 	No lane closure, only speed reduction to 40kph due to live construction activity	Speed reduced to 40kph
2025 Q2-Q3 – 3 months each direction	Stage 2: Demolish existing barrier <ul style="list-style-type: none"> Install temporary concrete barrier between fast and slow lane Demolish existing bridge barrier & footpath from top of bridge deck 	Full northbound and southbound closure	CLOSED



McIntyre Road	Construction Tasks	Road Disruption	
<p>McIntyre Road SPEED REDUCED TO 40kph</p> <p>Stage 2-5: 26 weeks total</p> <p>Stage 2: 24H / 7</p> <p>Stage 3: 7 DAYS</p> <p>Stage 4: 24H / 7</p> <p>Stage 5: 24H / 7</p> <p>x16</p>	<p>Stage 3: Install new barrier</p> <ul style="list-style-type: none"> Full road Northbound or Southbound road closure when installing barriers. Space required for Frannas. Install new barrier/concrete from bridge deck using concrete truck and crane 	Full Northbound and Southbound night road closure	Speed reduced to 40kph
	<p>Stage 4: FRP new footpath</p>	Slow Lane closure on Northbound and Southbound lanes	
	<p>Stage 5: Bridge I-Girder strengthening works</p> <ul style="list-style-type: none"> Take out one traffic lane Install temporary barrier between fast and slow lane Strengthen existing girders from underside of bridge 		

Impact of Additional Construction Traffic

As with the Balfour Avenue / approach to the Maribyrnong River construction area, works and laydown zones are accessed via the arterial and industrial roads and therefore an additional 32 trucks and 100 light vehicle movements per day is not anticipated to have any significant impact on the local network.

Disruption to Existing Transport Networks

Road Network – McIntyre Road

Construction Assessment Year (2026) Traffic Volumes (Two-Way <i>unless stated</i>)							
Annual growth rate(s)		0.9%					
Daily	27,680vpd	Weekday Peak	3,900vph	Night Peak	570vph	Weekend Peak	n/a
		Peak Direction	2,870vph				

McIntyre Road comprises two lanes in each direction and given its frontages and activity is likely to have a target capacity of less than 2,000vph in each direction. Given anticipated traffic volumes it is likely the road will already be operating at constrained levels by the time MAR construction is underway.

Single Lane Operation: Up to 3 months per direction

Based on traffic volume predictions it is considered that construction year traffic volumes would exceed the capacity of a single lane during the peak hour and in the peak direction whilst in the off peak direction volumes would be close to capacity.

Latest information suggests that construction works on either side of the bridge can be undertaken consecutively as opposed to simultaneously, allowing one direction to retain a dual lane operation.

The scheduling of works provides opportunities to explore means to mitigate the impacts of the lane reduction, for the peak direction. This could include developing a construction management plan that is based on maintaining only a single lane in both directions for the entire works with a “floating” central lane that can be reserved to provide additional capacity for the peak direction flow as necessary.

This and other opportunities to mitigate the impacts will need to be refined and explored in line with stakeholder engagement and included within the CMP.

Full Closure – Night: Up to 3 months | Day: Duration to be advised

The primary detour route for this closure, which would displace up to 3900vph during the day and 570vph during night closures, is anticipated to be via St Albans Road and Furlong Road, however it is noted that this

route includes a 4.5m height restriction for northbound diverted traffic. Larger vehicles will need to undertake a longer route via Ballarat Road and M80.

It is noted that the whilst Furlong Road abuts sensitive locations including Sunshine Hospital and two primary schools, the diversion period would be at night when volumes both to be diverted and already using these roads is low and the interaction between traffic and the users of the sensitive locations is more limited.

Preparation of the CMP will need to consider diversion routes.

Public Transport Network Impacts

Two routes, 903 Smart Bus Route and 941 Night Bus, run along McIntyre Road and road disruptions if capacity is not maintained will impact travel times and service reliability.

Route 903 is likely to experience most disruption as it runs between 5am and 9pm including peak hours, however access to individual stops is unlikely to be impacted due to lane closures as the nearest stops to the works are located 150 and 280m south and north of the bridge respectively. Modelling will be required to determine the likely extent of delays. Night closures may have a bigger impact if they overlap the service hours as they would result in the closure of four stops between Furlong Road and Ballarat Road, however given the operating hours for the service this is unlikely.

The route 941 night bus runs on a Saturday and Sunday with one and two services respectively, all passing over McIntyre Road bridge between 3am and 5am. One stop for the route is located on McIntyre Road approximately 150m south of the bridge at Gap Street. During scheduled night closures the route will need to be diverted along St Albans Road and Furlong Road which would have a minor extension to the route journey distance and time and result in the closure of the Gap Street stop.

Stakeholder engagement is required to determine whether the Gap Street stop needs to be maintained, in which case potential loop options to facilitate access to McIntyre Road and a return to access St Albans Road will need to be investigated.




Active Transport Network Impacts

McIntyre Road has only a single footpath located to the west of the carriageway. Pedestrian traffic volumes are not known. The road is not a part of the strategic cycle network.

Pedestrian detour of the route can be provided by means of Mansfield Avenue and the Drake Street level crossing, however this is dependent on the McIntyre Road bridge works being undertaken prior to the removal of this level crossing. This diversion may increase walking trips by up to 600m, if travelling between Furlong Road and Berkshire Road, but for many other pedestrian journeys that could use McIntyre Road the detour would be less.


It is recommended that overall construction planning should schedule works to McIntyre Road prior to the closure of the Drake Street level crossing, as currently foreseen. If this is not possible the CMP will need to consider means to facilitate safe pedestrian movements across the bridge between construction zones and traffic lanes.

8.4.8 Sunshine North Residential Area

Duration:	March 2024- October 2025 (17 months)	 x 50	Peak Daily Vehicle Trips (Inbound & Outbound):	x 32	 x 100	
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The Sunshine North residential area construction area includes works supporting the continuation of two new at-grade MAR tracks that will be constructed adjacent to the existing ARTC tracks up to the transition into the Albion viaduct component of the project. It includes the decommissioning of Barwon Avenue and Drake Street rail crossings and delivery of a new pedestrian overpass at Cranbourne Avenue.

Similar to the Maribyrnong River south-west and Balfour Avenue / approach to the Maribyrnong River construction areas, although the M80, Furlong Road and local road network in the Sunshine North Residential Area, namely Mansfield Avenue, Urana Avenue and Gilmour Road, will be used to provide



construction vehicles with access to/from the site laydown areas, no partial or full road closures are anticipated.

Impact of Additional Construction Traffic

While the additional construction traffic movements between 2024 and 2025 associated with this works zones are anticipated to be able to be accommodated within the capacity of the road it is noted that access to the area will be via residential streets such as Mansfield Avenue, Urana Avenue and Gilmour Road, therefore some amenity impacts may be felt by residents due to increased truck movements.

The CMP will need to ensure that a communication strategy is adopted to inform residents of periods of activity and manage expectations.

Disruption to Existing Transport Networks

Road Network

The works in this construction zone do not require closure or lane disruptions to any roads and therefore are anticipated to have no material impact on the local road network.

Public Transport Network Impacts

No bus routes currently traverse the local road network in the Sunshine North residential area east of McIntyre Road which includes Mansfield Avenue, Urana Avenue and Gilmour Road.

Active Transport Network Impacts

At present, the entire length of Urana Avenue and Gilmour Road between Clayton Street and Cary Street intersections are bicycle friendly roads marked with sharrows. Gilmour Road between Clayton Street and Cary Street also provides access to the existing pedestrian underpass crossing the rail corridor and connecting to Barwon Avenue. Mansfield Avenue currently provides access to an existing pedestrian level crossing to Drake Street.

Surveys undertaken suggest approximately 210 active transport movements across the rail corridor between the Barwon Avenue and Drake Street crossings. It is likely that some of these may be children linking to schools on the opposite side of the corridor.

It is recommended that works are scheduled to always maintain at least one crossing operating. Signage is also recommended to warn cyclists on street about increased truck activity and routes. These recommendations will need to be considered as part of the CMP for the works.

8.5 Sunshine Section Construction Area Breakdowns

For the purpose of understanding the construction traffic impacts as part of the Sunshine section, the area between Sunshine to where MAR returns to grade on the Albion-Jacana rail corridor has been broken down into seven broad construction areas, as illustrated in Figure 8-6.

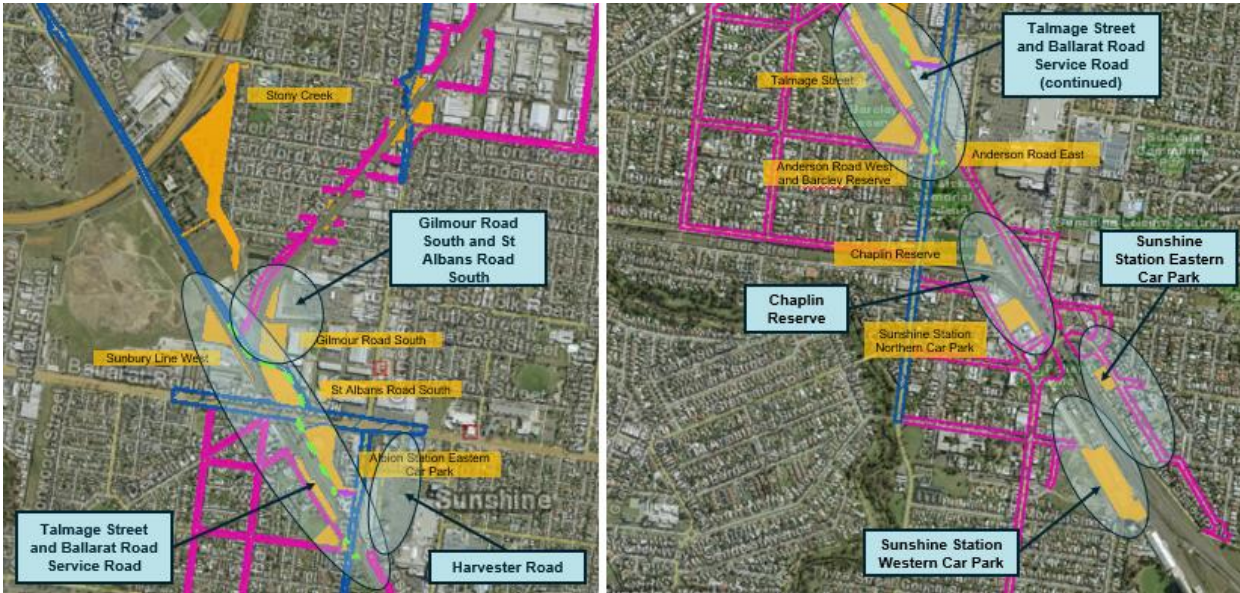








Figure 8-6 Sunshine Section Construction Areas

At the time of writing an AM based Visum model has been developed with a full calibration and validation process completed. The model has been developed to cover a construction year of around 2026 and a number of the major road closure scenarios have been tested to determine likely redistribution of traffic and hence impacts to speed.

It should be noted that the model redistributes traffic based on route attractiveness for traffic rather than influenced detour routes and also does not take into account traffic volume dampening that can be achieved with travel demand management measures undertaken prior and during major construction periods.

8.5.1 Gilmour Road South and St Albans Road South

Duration: October 2022- March 2026 (42 months)	Gilmour Road	 x 50	Peak Daily Vehicle Trips (Inbound & Outbound): x 32	 x 100	
	St Albans Road	 x 20	x 16	 x 40	

The Gilmour Road construction area covers works required for the Project corridor to the viaduct that will traverse across the Sunbury line tracks. It is assumed it includes the tying in of the St Albans Road SUP at the northern end of the scope of project. Gilmour Road will have a function in providing access, including crane access for viaduct works associated with MAR.

The St Albans Road construction area covers works to widen the existing St Albans road bridge to accommodate the MAR tracks. A dedicated SUP bridge over the rail line will also be delivered, to complete the connection between Albion Station and existing facilities north of Gilmour Road.

Peak disruption periods for both roads will be associated with service relocations, piling, pier and cross head lifting works adjacent to the St Albans Road bridge (stages 1, 3 and 5), followed by the construction of the viaduct (stages 7 and 8). It is assumed that SUP works would be able to be done in the shadow of larger construction disruption impacts.

The construction activity and one-way daily truck trips split across Gilmour Road and St Albans Road anticipated for this area is summarised in Table 8.10.

Table 8.10 St Albans Road & Gilmour Road Construction Tasks

St Albans Road & Gilmour Road	Construction Tasks	Road Disruption	
<p>2022 Q4-2023 Q3</p> <p>St Albans Road & Gilmour Road 24H / 7 4 weeks Gilmour Road x8 St Albans Road x16 2 weeks</p> <p>St Albans Road & Gilmour Road Gilmour Road x8 St Albans Road x16</p>	<p>Stage 1:</p> <ul style="list-style-type: none"> Service relocations New access driveway construction off St Albans Road 	<p>Gilmour Road & St Albans Road: Four weeks part closure – one lane shuttle operation</p> <p>St Albans Road only: Additional two weeks part closure – one lane shuttle operation</p>	Speed reduced to 40kph
	<p>Stage 2:</p> <ul style="list-style-type: none"> No road closures planned 	No road closures planned	
<p>2023 Q4-2024 Q2</p> <p>St Albans Road & Gilmour Road 24H / 7 4 weeks Gilmour Road x16 St Albans Road x16</p> <p>St Albans Road & Gilmour Road Gilmour Road x16 St Albans Road x4</p>	<p>Stage 3:</p> <ul style="list-style-type: none"> Piling adjacent to the St Albans Road bridge 	Gilmour Road & St Albans Road: Four weeks part closure – one lane shuttle operation	
	<p>Stage 4:</p> <ul style="list-style-type: none"> No road closures planned 	No road closures planned	
<p>2024 Q3-Q4</p> <p>St Albans Road & Gilmour Road 24H / 7 2 weeks Gilmour Road (Includes large beam deliveries) x32 St Albans Road x4</p> <p>St Albans Road & Gilmour Road Gilmour Road (Includes large beam deliveries) x32 St Albans Road x4</p>	<p>Stage 5:</p> <ul style="list-style-type: none"> Pier and cross head lifting works adjacent to the St Albans Road bridge 	Gilmour Road & St Albans Road: Two weeks part closure – one lane shuttle operation	
	<p>Stage 6:</p> <ul style="list-style-type: none"> No road closures planned 	No road closures planned	
<p>2025 Q1-2026 Q1</p> <p>St Albans Road & Gilmour Road Gilmour Road (13-26 weeks) 24H / 7 (Includes large beam deliveries) x32 St Albans Road (3 weekends) 24H WE x4</p>	<p>Stages 7-8:</p> <ul style="list-style-type: none"> SUP and MAR span lifting works and construction of deck 	<p>Gilmour Road: Between three to six months full road closure</p> <p>St Albans Road: Three weekends full road closure</p>	CLOSED

Impact of Additional Construction Traffic

St Albans Road runs broadly alongside the Sunbury rail corridor between St Albans and Ballarat Road / Anderson Road / McIntyre Road in Sunshine North. Gilmour Road is a local collector connecting to St

Albans Road approximately 500m north Ballarat Road, and providing access through the Sunshine North residential area to Furlong Road, however the southern end of the road abuts industrial uses and a proposed future retarding basin for Melbourne Water.

The construction of the viaduct will result in the need for over dimensional access between St Albans Road and Gilmour Road intersection. At this stage the largest vehicle anticipated will need to be able to accommodate a 33m long Super Tee.

Preliminary swept paths have been undertaken and temporary intersection layouts will need to be designed and constructed accordingly, as part of Stage 1 works. Full travel path checking for over dimensional vehicle access will be required prior to construction.

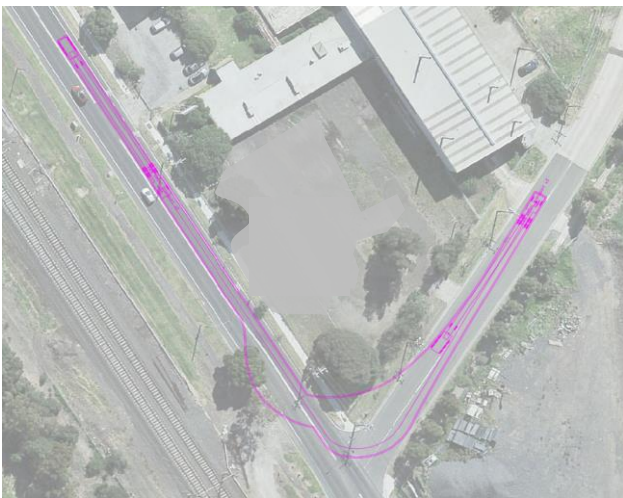


Figure 8-7 Preliminary Over Dimensional Vehicle Swept Path



Figure 8-8 Gilmour Road Works Site Entry and Exit Proposals

The main laydown / works site for this area of works will be within land between Gilmour Road and the rail corridor the site will operate based on a one-way truck circulation with access proximate to the Gilmour Road / St Albans Road intersection. It is recommended that if possible, access gate should be located at least 6m from the tangent point of the intersection radii, in accordance with AS2890.1.

Given the nature of these surrounding road network, and assuming that all truck and the majority of light vehicle movements will access the site from the St Albans Road so away from residential areas construction traffic is not anticipated to have a significant impact on the operation of the local network on a day to day basis. However, the delivery of large elements may require additional traffic management measures which will be identified within the CMP.

Disruption to Existing Transport Networks

Road Network – Gilmour Road

Construction Assessment Year (2026) Traffic Volumes (Two-Way)							
		Visum Model					
Daily	Less than 4,000vpd ³¹	Weekday Peak	150vph	Night Peak	n/a	Weekend Peak	n/a
		Peak Direction	120vph				

³¹ Estimated by AJM-JV, based on the Austroads assumption that a municipal road (low to medium daily traffic volumes) experiences less than 2,000 vehicles per lane, per day (Source: <https://austrroads.com.au/publications/pavement/aqpt04k/design-method/design-traffic>)

Full Road Closures – 3 to 6 months

It is understood that a period of full road closure will be required to accommodate cranes and facilitate the delivery and installation of large construction elements associated with the viaduct. Road closures would likely be limited to the southern end of the street.

Visum modelling of a full road closure suggest that Gilmour Road traffic would distribute primarily to Furlong Road to the north with McIntyre Road, Westmoreland Road, Northumberland Road and Duke Street funnelling traffic down to Ballarat Road.

The modelling indicates little changes to traffic travel speeds on the wider network due to the diversion, although minor localised delays may be experienced accessing Furlong Road, particularly in the vicinity of the intersection with McIntyre Road. Overall, the impact of this closure would be minimal.

There are some commercial accesses located at the corner of St Albans Road and Gilmour Road, which include access from Gilmour Road. Stakeholder engagement will be required to determine whether Gilmour Road access to these properties needs to be retained in refining road closure extents.

Road Network – St Albans Road

Construction Assessment Year (2026) Traffic Volumes (Two-Way)							
DoT Traffic Volume Open Data Hub		Visum Model					
Daily	8,700vpd ³²	Weekday Peak	1,150vph	Night Peak	n/a	Weekend Peak	n/a
		Peak Direction	710vph				

Single Lane Closure – 12 weeks split into 3 periods

The removal of a single lane to facilitate a works site would require either a diversion or shuttle operation, along St Albans Road. Preliminary analysis of a shuttle option has been undertaken using the VISUM model. This indicates that the shuttle would trigger approximately 100 vehicles in the AM peak hour to divert to alternate routes broadly split to between McIntyre Road, Furlong Road and Ballarat Road, although increases to traffic movements on these roads would be relatively minor compared to existing volumes, with no material impact on operation.

Traffic remaining on St Albans Road using the shuttle operation would be subject to significant delays with average speeds on the approach and through the shuttle system being well below posted speed limit, although the impact seems to be contained to St Albans Road.

Full Road Closures – 3 weekends

At times it is anticipated that full road closures will be required to accommodate cranes and facilitate the delivery and installation of large construction elements associated with the viaduct.

Visum modelling suggests that weekend traffic would primarily divert via Furlong Road and Gilmour Road to the north east of the rail corridor with north south connections to the south east of the corridor spread across McIntyre Road, Duke Street and to a lesser extent Westmoreland Road.

However average speed changes indicate that most diversion routes would experience relatively little change. The exception would be Furlong Road where the average speed changes suggest that some congestion and delays may be likely around the signalised intersections between St Albans Road and McIntyre Road. Changes to phase timings may help to mitigate this impact.

Public Transport Network Impacts

No bus routes currently operate on Gilmour Road or along St Albans Road and therefore road closures or lane reductions within this construction area would have no impact on the public transport network.

³² AJM-JV assumed that daily traffic volumes along St Albans Road will remain relatively constant.

Active Transport Network Impacts

Gilmour Road, although not a significant part of the walking and cycling network has facilitates for both types of trips, linking active transport users from the residential area to the SCC along St Albans Road. Current provision includes a continuous off set path from the Barwon Avenue underpass to St Albans Road along the southern side of the road only, traffic calming slow points and cycle sharrows depicting the shared nature of the carriageway.

It is likely that the works will result in the closure of the existing footpath connection to St Albans Road.




St Albans Road is an important active transport route containing separate footpath and on road cycle lanes that are identified as part of the SCC network, although it is noted that current active transport facilities over the rail corridor are poor and anecdotally it is understood may result in some cyclists diverting to use the Barwon Avenue crossing.

Given the importance of the SCC on St Albans Road and the lack of alternative safe rail crossing facilities it is recommended that the following is considered to mitigate impacts to the active transport network:

- Scheduling of works to consider maintaining at least one safe rail corridor crossing accessible for users of the SCC
- Facilitating temporary active transport user road space within road closure plans

for cyclists especially it is recommended that lane closure solutions reserve carriageway space for active transport users to maintain the connection between the residential areas and St Albans Road.

8.5.2 Talmage Street and Ballarat Road Service Road

Duration:	October 2022- March 2026 (42 months)	 x 100 to 120	Peak Daily Vehicle Trips (Inbound & Outbound):	 x 80 to 100	 x 200 to 240
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The Talmage Street and Ballarat Service Road construction area covers works required for the Project between Ballarat Road and Anderson Road, including the construction of the viaduct and track tie-ins to Albion Station, and western works associated with Anderson Road flyover and SUP bridge.

Peak disruption periods for existing Ballarat Road and Anderson Road traffic will be associated with road closures required to undertake piling, pier and cross head lifting works adjacent to the Ballarat Road bridge and construction of the Anderson Road flyover (stages 3 to 5). These closures although currently spanning long periods in the program are anticipated to be shorter targeted closure periods when more detailed construction planning is undertaken.

Ballarat Road Service Road at this stage has been assumed to be able to be closed through stages 2 to 6 to facilitate for access, for construction vehicles accessing the site laydown and works areas running along the rail corridor between Albion Station (inclusive) and Anderson Road.

It is assumed that SUP works would be able to be done in the shadow of larger construction disruption impacts, although works under St Albans Road bridge may require lane closures and shuttle operation to provide clearance to the construction area.

The construction activity and one-way daily truck trips split across Ballarat Road, Ballarat Road Service Roads and Anderson Road (based on an average of 40 and maximum of 50 vehicle trips per hour) anticipated for this area is summarised in Table 8.11 to Table 8.13.

Table 8.11: Ballarat Road Construction Tasks


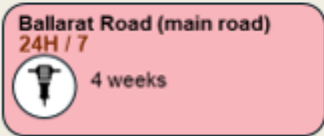


Ballarat Road (main carriageway)	Construction Tasks	Road Disruption	
2022 Q4-2023 Q3 	Stage 1: <ul style="list-style-type: none"> Service relocations Traffic island modification adjacent to Ballarat Road to allow for large construction vehicles 	8 weeks part closure (service relocations) and 2 weeks part closure (traffic island modification)	Speed reduced to 40kph
	Stage 2: <ul style="list-style-type: none"> No road closures planned 	No road closures planned	
2023 Q4-2024 Q2 	Stage 3: <ul style="list-style-type: none"> Piling adjacent to the Road bridge 	Four weeks part closure	
	Stage 4: <ul style="list-style-type: none"> No road closures planned 	No road closures planned	
Ballarat Road (main carriageway)	Construction Tasks	Road Disruption	
2024 Q3-Q4 	Stage 5: <ul style="list-style-type: none"> Pier and cross head lifting works adjacent to the St Albans Road bridge Span lifting and construction of deck 	Two weeks part closure (pier and cross head lifting works) Three weekends full closure and two weekend closures on the westbound lanes (span lifting and deck construction)	
2025 Q1-2026 Q1	3. Stages 6-8 <ul style="list-style-type: none"> No road closures planned 	No road closures planned	

Table 8.12: Ballarat Road Service Roads Construction Tasks

Ballarat Rd 2x Service Roads (West of Albion)	Construction Tasks	Road Disruption	
2022 Q4-2023 Q2	Stage 1: <ul style="list-style-type: none"> No road closures planned 	No road closures planned	No speed reduction
2023 Q3 	Stage 2: <ul style="list-style-type: none"> Closed and used solely for construction vehicle access 	12 months full road closure plus intermittent day closures as required	CLOSED
2023 Q4-2025 Q1	Stage 3-6: <ul style="list-style-type: none"> Closed and used solely for construction vehicle access 		


















Ballarat Rd 2x Service Roads (West of Albion)	Construction Tasks	Road Disruption	
Ballarat Road Service Road Eastbound & Westbound Lanes 24H / 7 Solely for construction Access (Includes large beam deliveries)  x20			
2025 Q2-2026 Q1 Ballarat Road Service Road Eastbound & Westbound Lanes  x24	Stages 7-8 <ul style="list-style-type: none"> No road closures planned 	No road closures planned	No speed reduction

Table 8.13: Anderson Road Construction Tasks

Anderson Road	Construction Tasks	Road Disruption	
2022 Q4-2023 Q3 Anderson Road  M-F 5 nights    x8	Stage 1: <ul style="list-style-type: none"> Survey pick up Set up temporary traffic lights 	Closure 1a: Five nights of either full westbound lane closures or full eastbound lane closures	Speed reduced to 40kph
2023 Q3 Anderson Road 24H / 7 10 days   x16	Stage 2: <ul style="list-style-type: none"> Anderson Road SUP demolition 	10 days full road closure (24 / 7)	
2024 Q1-2024 Q2 Anderson Road 20 days   x20	Stage 3: <ul style="list-style-type: none"> Abutment and central pier preparation works 	20 days single fast lane closures in each direction (daytime only)	
2024 Q2-Q3 Anderson Road 24H / 7    x30	Stage 4: <ul style="list-style-type: none"> Central pier and 3 no. bridges construction over Anderson Road (BGO/SBY flyover, MAR flyover, SUP) 	Shuttle flow of the westbound slow lane only (other two lanes closed)	
2024 Q3-Q4 Anderson Road 24H WE 3 weekends   x20	Stage 5: <ul style="list-style-type: none"> Bridge construction over Anderson Road 	Three weekends full road closure	
Anderson Road  x24	Stage 6: <ul style="list-style-type: none"> No road closures planned 	No road closures planned	No speed reduction

Anderson Road	Construction Tasks	Road Disruption	
<div style="border: 1px solid black; padding: 5px;"> <p>Anderson Road</p>  </div>	<p>Stages 7-8:</p> <ul style="list-style-type: none"> No road closures planned 	No road closures planned	

Impact of Additional Construction Traffic

Access to this area of construction by trucks is currently foreseen to be via Ballarat Road and Ballarat Road service roads through Albion Station western car park and into the specific work / laydown sites located off Talmage Street. The number of these movements on each service road would be up to 340 per day if all vehicles use the same ingress and egress route. In practice it is considered that whilst all truck movements, typically 20 inbound and 20 outbound per day would use the service roads, workforce movements would be split between Ballarat Service Road and Talmage Street with the latter using either Ferguson Road and King Edward Avenue.

Workforce movements would most likely occur outside periods when trucks are accessing the site and would be split between Ballarat Road Service Roads, Ferguson Road and King Edward Avenue to access Talmage Street. Given the role of these streets in the local network this additional traffic is unlikely to have any material impact on the capacity of the network, particularly as construction workforce traffic movements tend to occur outside road network peaks.

The construction requirements of this area of the project will require delivery of large elements with the largest anticipated at this stage to be 33m long super tees, which will be delivered via Ballarat Road. Initial swept path analysis of the largest vehicles indicates that whilst the vehicles can exit Ballarat Road to the eastbound Service Road with minor kerb adjustments and temporary removal of car parking it may require localised traffic management to safely close down lanes to facilitate the exit from Ballarat Road.





Figure 8-9: Over Dimensional Swept Path Assessment – Ballarat Road to Ballarat Road Service Road



Figure 8-10: Over Dimensional Swept Path Assessment – Ballarat Road Service Road into Albion Station Car Park

From Figure 8-10, it is considered that manoeuvring the largest oversized vehicle under Ballarat Road bridge and into the northern end of the construction zone would require considerable land take from the Australian Reinforcing Company (ARC) site. It is noted that the bridge span headroom is reduced around the structural piers that fall on the edge of the road carriageway and therefore the effective headroom over the swept path will need to be considered against clearance requirements for loads, as part of the CMP for the area.

Information provided by RPV to date suggests that between October 2023 and January 2025 approximately 250 oversized deliveries will need to be made, this would equate to one over dimensional vehicle delivery a day³³. Road closures will clearly be required to facilitate the movement of longer trucks.

Egress by trucks at present is identified as via the westbound Ballarat Road service road. It is assumed that trucks departing the site would be empty and therefore have returned to standard road vehicle dimensions.

³³ Victorian business day calculator indicates that between 1st October 2023 and 31 January 2025 there are 334 Monday to Friday business days excluding public holidays.

Disruption to Existing Transport Networks

Road Network – Ballarat Road

Construction Assessment Year (2026) Traffic Volumes (Two-Way)							
DoT Traffic Volume Open Data Hub		Visum Model		DOT Traffic Profile Viewer			
Daily	49,080vpd	Weekday Peak	4,350vph	Night Peak (9pm)	1,700vph	Weekend Peak	2,990vph
		Peak Direction	2,630vph	Night Peak (5am)	690vph		

Ballarat Road has a dual lane capacity in both directions, which would typically cater for in the order of 2,000 to 2,400vph, depending on conditions.

Estimates of construction year traffic volumes suggest the road would be heavily used during the peak hour with volumes in the peak direction at or exceeding typical capacity for this road configuration, therefore any disruption to the existing configuration will have a wider impact.

Single Lane Closure: 14 weeks split into 3 periods

Given predicted construction assessment year traffic volumes reducing the capacity of Ballarat Road to a single lane will have a significant impact on traffic volumes and operation.

The Visum AM model³⁴ has been used to provide an indication of the likely impacts of reducing the capacity of both impacts to a single lane in each direction.

The Visum indicates that closing one lane in each direction during the AM peak hour would result in the redistribution of approximately 800 vehicles from the eastbound carriageway and 600 vehicles from the westbound carriageway. Based on available capacity across both local and arterial links many of these movements could redistribute to the local road network, including Perth Avenue and Adelaide Street (noting that both roads currently have truck bans in place) leading to Forrest Street and McIntyre Road, with a lesser redistribution using roads such as Western Freeway and Tilburn Road to streets south of Forrest Street.

Traffic volumes remaining on Ballarat Road would experience significant delays with speeds through the one lane section of the road experiencing a 30kph plus speed drop, which assuming traffic would otherwise travel at the posted speed represents a 40% speed reduction.

On roads facilitating the distributed traffic, lesser delays are expected however the modelling indicates that local links and McIntyre Road could experience delays associated with more than a 20% reduction in the average speed. Key locales where journey delays could be significant due to the works would include:

- Forrest Street / Anderson Road
- McIntyre Road / Berkshire Road

It is noted that the modelling assumes both carriageways are reduced to a single lane at the same time, potentially impacts would be less by scheduling the closures occur coincidentally rather than simultaneously.

A traffic management plan (TMP) will be required to further investigate measures to manage the redistribution of traffic and hence the impact of the lane reductions.

Weekend Full Closures: 3 weekends

Current construction planning suggests that a series of 24-hour closures will be required, scheduled to occur at weekends. This is likely to result in the need to manage up to 2,900vph on the wider network if both the eastbound and westbound carriageways need to be closed at the same time.

Analysis of the DOT Traffic Profile Viewer data suggests that the traffic task would be similar both outside and during school terms, with no material difference between Saturday traffic volumes, therefore suggesting no benefit in restricting these closures to school holiday periods.

³⁴ AM Peak Hour model for this area has been calibrated and validated.

Visum model indicates that traffic will distribute over multiple routes with, based on capacity reserves alone, the primary routes being via McIntyre Road, St Albans Road, local streets such as Perth Avenue and Adelaide Street into Forrest Street and Glengala Road and Wright Avenue.

The most significant impacts based on the current modelling scenarios, would be experienced on Furlong Road, Perth Avenue, Adelaide Street, Forrest Street Anderson Road, Foundry Road and Harvester Road which would experience delays resulting from average speeds reducing by the equivalent of between a 20% and 30% reduction on the posted speed limit.

Key locales where journey delays could be significant based on current modelling would include

- M80 on and off ramps at Furlong Road
- Furlong Road intersection with McIntyre Road
- Station Street intersection with Tilburn Road
- Forrest Street intersection with Anderson Road
- Anderson Road intersections with Foundry Road and Harvester Road
- Hampshire Road

A suite of mitigation requirements may be required to manage traffic appropriately, including minimising impacts on local streets, however based on the short-term duration of closures these are likely to be limited to travel behaviour-based measures.

Road Network – Ballarat Road Service Roads

Construction Assessment Year (2026) Ballarat Road Eastbound Service Road Traffic Volumes							
		Visum Model					
Daily	Less than 4,000vpd ³⁵	Weekday Peak	50vph	Night Peak	n/a	Weekend Peak	n/a
Construction Assessment Year (2026) Ballarat Road Westbound Service Road Traffic Volumes							
		Visum Model					
Daily	Less than 4,000vpd ³⁶	Weekday Peak	150vph	Night Peak	n/a	Weekend Peak	n/a

Current construction planning suggests that the eastbound service roads located west of the rail corridor would be closed for most of the period of works in the Talmage Street and Ballarat Road Service Road construction area.

It is understood that this is primarily to facilitate construction movements to and from the laydown sites, although, there may be a shorter period where the eastbound road is closed to allow construction of piers for the viaduct either side of Ballarat Road.

The westbound service road is proposed to remain open, other than when short closures may be required to allow access to the Albion Station construction site by over size over mass (OSOM) vehicles.

It is noted that in terms of the volume of construction traffic, the advised volumes at this stage would not suggest a need to close the road. However, it is recognised that there will be periods when over dimensional vehicles will require the eastbound service road to be closed to safely undertake the manoeuvre into the site. It is noted that the westbound service road would be used by vehicles exiting the site and that in general

³⁵ Estimated by AJM-JV, based on the Austroads assumption that a municipal road (low to medium daily traffic volumes) experiences less than 2,000 vehicles per lane, per day (Source: <https://austroads.com.au/publications/pavement/agpt04k/design-method/design-traffic>).

³⁶ Estimated by AJM-JV, based on the Austroads assumption that a municipal road (low to medium daily traffic volumes) experiences less than 2,000 vehicles per lane, per day (Source: <https://austroads.com.au/publications/pavement/agpt04k/design-method/design-traffic>).

over-dimensional vehicles are able to retract trailers when unloaded, the use of this road by over dimensioned vehicles is unlikely.

Ballarat Road Service Roads provide local connectivity between the arterial network and the community of Albion as well as direct access to both commercial and residential properties that abut the two service roads.

Ballarat Road Eastbound Service Road – Full Closure: 12 months plus intermittent day closures

The ARC site abuts and takes access directly from the eastbound service road, with Gates 4 and 5, which appear to be a staff car park and a truck storage park, located within the preferred extent of the closure. The operation would need to be approached in relation to the access to these gates and the operation of the parking areas they serve. Options to be explored would include ARC providing internal access via Gates 1 to 3 located opposite or to the west Ballarat Road / Adelaide Road connection to the service road or conversion of a short section of the service road as two way, although this latter option would still require closure to facilitate some over dimensional vehicles.

In terms of local connectivity, the eastbound service road provides a safer alternative to a right turn into Adelaide Street to access the eastern area of Albion, including Albion Station, from Ballarat Road west. Traffic, including two bus routes, currently turns left from Ballarat Road, passes under the main carriageway and enters Sydney Street from where the wider local network can be accessed. Removal of this would require vehicles to right via Perth Avenue or Adelaide Street, noting the former includes right turn storage of approximately 70m, while Adelaide Street has no right turn lane. It is likely that long term removal of the Ballarat Road service road will require upgrades to these intersections to safely facilitate the additional demands for right turns.

Closure of this road would also impact parking with currently between 25 and 30 vehicles able to park unrestricted along the length of the service road. Given the location and surrounds it is likely that demand for these spaces would be from a mixture of Albion Station commuters and ARC visitors and employees.

Ballarat Road Westbound Service Road – Intermittent Closures for OSOM movements

The westbound service road provides direct access to approximately 20 residential dwellings between Sydney Street and Adelaide Street, which have no alternative access options. Access to these would need to be maintained. The road also includes a bus stop, located 50m west of Sydney Street.

However, given that closures will only be required for OSOM vehicles, these can be planned and scheduled to avoid bus access times and provide local residents and businesses with sufficient notice to be able to manage movements to and from individual properties over the short periods that road will be closed.

In terms of local connectivity for general traffic, it is anticipated that over the short closure periods traffic would be routed down Gunnedah Street or Derrimut Street to Adelaide Street. The volumes of traffic using the detour route would not be significant.

Road Network – Anderson Road


Construction Assessment Year (2026) Traffic Volumes (Two-Way)							
DoT Traffic Volume Open Data Hub		Visum Model		DoT Traffic Profile Viewer			
Daily	18,000vpd ³⁷	Weekday Peak	2,270vph	Night Peak	560vph	Weekend Peak	1,130vph
		Peak Direction	1,330vph				

Single Lane Closures: Up to 7 months split into 3 periods

Visum modelling of lane closures on Anderson Road suggests that in the AM Peak hour this would result in the diversion of approximately 330vph for a northbound closure and 490vph for southbound closures.

Some queuing and delays are expected at the merge from two lanes to one lane, generally representing a likely 50% reduction in average speeds through the underpass.

³⁷ AJM-JV assumed that daily traffic volumes along Anderson Road will remain relatively constant.



Preliminary diversion routes with no outside influence to change travel patterns would be Perth Avenue, Adelaide Street with some increase to volumes through the Hampshire Road, Durham Road and Sun Crescent network.

Delays expected on the wider network due to the redistribution of traffic would generally be minimal although southbound movements on Perth Avenue and Adelaide Street could experience delays reducing the average travel speed by approximately 10kph in places.

Full Closures: 10 days plus 3 weekends split into 2 periods

Current construction planning suggests that Anderson Road may need to be closed for a period of days, suggesting full daily volumes will need to be diverted. Previous closures during the level crossing removal involved construction of a temporary road rather than diversion of traffic, although it is noted that these works involved a far longer closure period of the current road alignment.

Visum modelling based on capacity reserves across the network suggests that full closure of Anderson Road at the rail underpass could result in most traffic diverting via either Adelaide Street or Perth Avenue to the west of Anderson Road or Harvester Road and Durham Road to the east.

Less significant traffic volumes would divert to broader alternative routes linking to the M80 or Ballarat Road west via The Avenue / Link Road and to Ballarat Road east via Sunshine Road and Ashley Street.

Based on average speed changes on key diversion links significant congestion and delay is likely on Hampshire Road around the rail overpass, Ballarat Road in a westbound direction and Perth Avenue and Adelaide Street.

Public Transport Network Impacts

Public transport networks impacted within the Talmage Street and Ballarat Road Service Road construction area include both bus and access to rail services.

Albion Station

Albion Station will be impacted by works, car parking will be lost including permanently as works are undertaken and there may be periods when rail occupations result in the closure of the line with train replacement buses required.

Train replacement bus stops will not be impacted as they are located to the east of the current station clear of construction areas.

Bus Routes – Ballarat Road and Service Road Closures


Three bus services currently operate via Ballarat Road (main carriageway) and utilise bus stops between 500 and 750m west of the Ballarat Road (road over rail) bridge. These include:

- 215 – Caroline Springs-Highpoint SC, 20-minute peak service frequency
- 426 – Caroline Springs-Sunshine Station, 40-minute peak service frequency
- 456 – Sunshine Station-Melton via Caroline Springs, 40-minute peak service frequency

Appropriate access arrangements to the bus stops and/or route diversions will be required as part of the full and partial closures of Ballarat Road.

Bus routes 426 and 456 exit Ballarat Road opposite Adelaide Street and continue via the Ballarat Road Service Road into Sydney Street with stops 50m from the Ballarat Road bridge and Albion Station Car Park (western) entrance off Sydney Street. These routes will need to be diverted for a significant period due to the service road closure.

Current investigation has been concentrated around diverting routes via a right turn off Ballarat Road at either Perth Avenue or Adelaide Street to access the Albion residential area, the number of extra vehicles undertaking these movements would be low, however, there are safety and operational concerns in relation



to the difficulty of crossing three lanes of traffic with current road geometry and controls. Further investigation and discussion with DOT and bus operators will be required to resolve the management of this impact. .

Diverting buses from the north end of Sydney Street would impact one bus stop in each direction which are currently located proximate to the entrance to Albion Station, however increased journey lengths are not anticipated to be significant.

Passenger demand information (including consideration of potential demand in line with Albion Station forecourt reconfiguration works) should be sought to determine the most appropriate response in the CMP to in relation to the need to relocate stops.

Weekend closures of Ballarat Road would impact route 215 which would need to divert via a similar route to routes 426 and 456 before returning to Ballarat Road via Harvester Road, whilst this would be a greater diversion than for routes 426 and 456 this diversion would only be triggered on the 3 weekends the works are expected to fully close the road.

It is noted that Westran Bus Depot is located on Hulett Street off Ballarat Road, approximately 1.2km from Ballarat Road bridge. Therefore, any closures to Ballarat Road bridge may impact a much wider range of bus routes and services, including replacement buses, than just those that use Ballarat Road. Stakeholder engagement with Westran is recommended to fully understand the impact.

Bus Routes – Anderson Road

At present, the Anderson Road section around the Project area does not accommodate any public transport services operated by PTV.

Active Transport Networks

Footpaths are present along both Ballarat Road Service Roads, abutting the largely residential properties that are accessed from the road. Appropriate access arrangements will need to be provided for residents during construction works.

Similarly, appropriate access should be obtained between Albion Station and the ARC north of the service road.

No footpaths or specific cycle facilities are provided within the Ballarat Road bridge cross sections, therefore road closures of this road would have no impact on the active transport network, other than increased traffic movements on the wider network, which should be investigated further.

The Anderson Road / Rail bridge structure is a key node in the walking and cycling network for Albion and Sunshine. To the north of the rail corridor and suspended off the rail bridge crossing Anderson Road is a SUP, which forms part of the Sunbury to Sunshine SCC, to the south of the rail corridor is a second SUP which links into a north south SUP that runs along the eastern side of the Anderson Road corridor and provides both pedestrian and cycle access from the south to the SCC. On the western side of the Anderson Road corridor is a footpath that also provides access to the SCC but does not meet the width requirements for use by cyclists.

The MAR works at Anderson Road will not impact the SCC SUP north of the bridge but will require the decommission of the existing southern SUP and works to both the eastern and western footpath to allow these to connect to a replacement southern SUP bridge to be provided as part of the works. It is anticipated that works to the footpaths and as part of the rail works will trigger the need to close both the eastern and western active transport connections for short periods.

It is recommended that closure of the western footpath should be minimised as that would facilitate access from Albion to the SCC, although cyclists would need to be signed to dismount, as indicated in Figure 8-11.

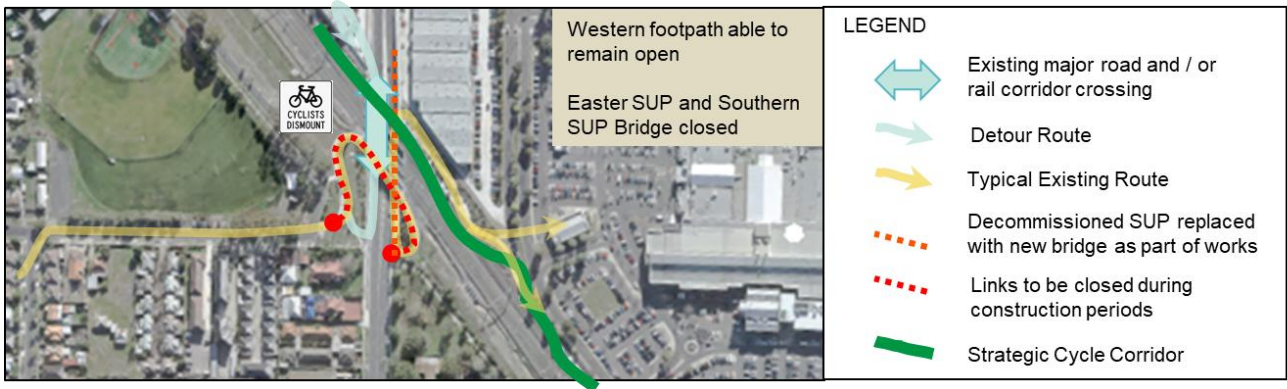


Figure 8-11: Active Transport Strategy when Western Footpath is clear of construction activity

When the western footpath also needs to be closed, the active transport link will be detoured via HV McKay Gardens making use of the existing HV McKay pedestrian bridge and the pedestrian operated signals on Anderson Road, as indicated in Figure 8-12.

The detour route is not considered to have a material impact on the active transport network as it is unlikely to result in significant delays or journey increases for most users, given key desire lines, however it is noted that cyclists would be required to dismount for the pedestrian signals of Anderson Road and to use the HV McKay bridge.

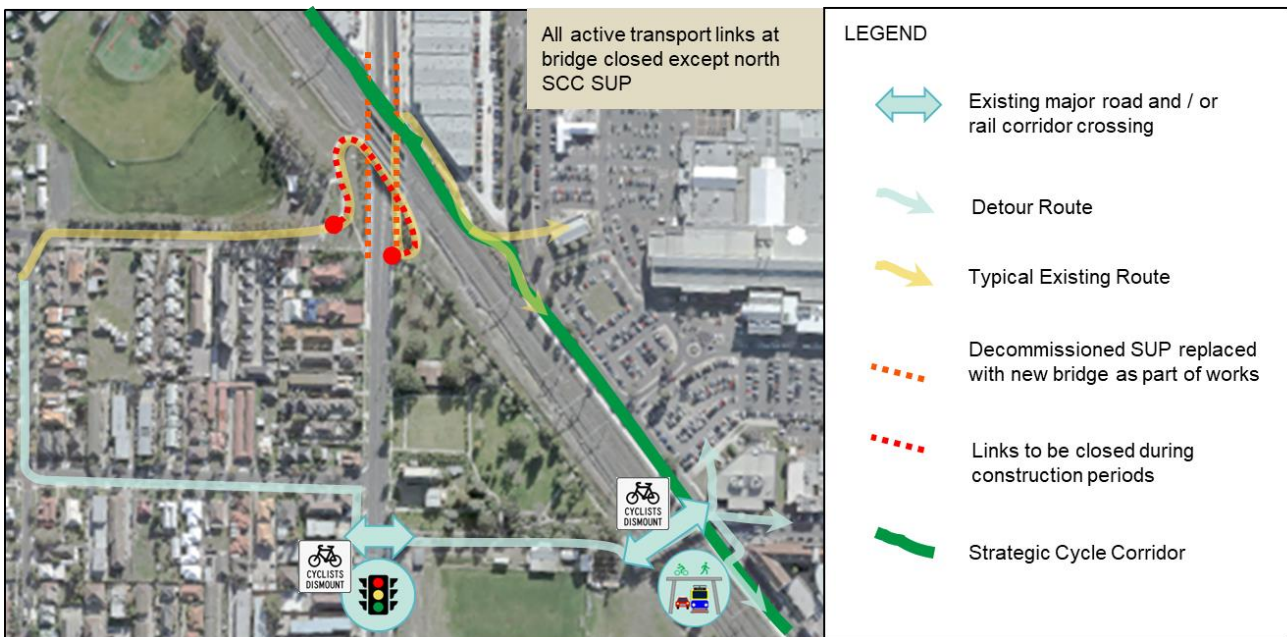


Figure 8-12: Detour Strategy for Active Transport Diversions during Anderson Road area works

8.5.3 Harvester Road

Duration:	April 2023- September 2023 (6 months)	x 50		Peak Daily Vehicle Trips (Inbound & Outbound):	x 40	x 100
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The Harvester Road construction site will be required to facilitate works to the Exxon Mobil jet fuel pipeline and eastern tracks between Sunshine and Albion. The site may impinge into Harvester Road where it runs adjacent and parallel to the rail corridor. Full details of the construction works have not been provided although RPV have provided preliminary truck requirements.

Impact of Additional Construction Traffic

Harvester Road is a municipal sub arterial road catering for 18,000vpd, which adjacent to the construction area comprises a single northbound lane plus turning lane two southbound lanes, although these merge to a single lane at the roundabout with Hampshire Road.

The addition of 40 truck movements per day and 100 construction workforce trips per day will have no material impact on the road's performance or operation.

Disruption to Existing Transport Network

Road Network – Harvester Road

Construction Assessment Year (2026) Traffic Volumes (Two-Way)

DoT Traffic Volume Open Data Hub	Visum Model	DoT Traffic Profile Viewer
Daily 18,000vpd ³⁸	Weekday Peak Peak Direction	Night Peak Weekend Peak

Single Lane Closures – Northbound and one lane Southbound – 4 months, plus intermittent closures possible outside this period

Visum modelling of the closures suggests traffic would naturally divert to split across Anderson Road, Hampshire Road and Cornwall Road, with some wider diversion via Ashley Street and Glengala Road to the M80. Volume changes are generally expected to be less than 50 additional movements per hour per direction on the key diversion routes

Wider network congestion due to diverting traffic is typically not significant with most diversion routes operating with minimal changes to average speeds. Minor increases in delays at nodes such as traffic signals such as Anderson Road / Foundry Road and Hampshire Road / Hertford Road may occur at peak times.

Delays to southbound traffic that remains on Harvester Road would be greater, typically representing a 30% reduction in speed compared to posted speed.

Public Transport Network Impacts

PTV network maps indicate that Route 408 and 410 currently travel southbound down Harvester Road between Devonshire Road and Dickson Street, however investigation of the stops and routes through the PTV website indicates that both routes currently use Hampshire Road rather than Harvester Road, with no stops in the vicinity of the closures.

Therefore, the closure is unlikely to have any material impact on the public transport network.

Active Transport Networks

The works would result in the closure of the existing section of the Sunbury to Sunshine SCC that runs along Harvester Road. AJM understand that single and split closure construction strategies are being considered to accommodate works to the path.

It is recognised that as part of the SCC and a C1 category route under Movement and Place the facility is a key commuter and cyclist route which will need to be maintained through appropriate diversions during construction. Active transport usage along the impacted section of path is not known, however Strava data (2018) suggest that there is limited walking movements whilst cycle usage appears to be similar in scale to sections of the M80 Trail including the Calder Freeway crossing, which has been surveyed at approximately 50 movements per day.

³⁸ AJM-JV assumed that daily traffic volumes along Anderson Road will remain relatively constant

Given the strategic importance of the link, work has been undertaken to investigate different detour routes to maintain the link in some form, this analysis measures the different detour options against criteria framework, developed for the exercise and summarised in Figure 8-13. This will be used to inform future discussions with relevant stakeholders and the ultimate construction management strategy in relation to active transport detours for this area of works.



Figure 8-13: Summary of criteria considered in the approach to finalising SCC detour route

8.5.4 Chaplin Reserve

Duration: November 2022- February 2026 (28 months)	x50 to 120	Peak Daily Vehicle Trips (Inbound & Outbound):	x 40 to 100	x 100 to 240
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The Chaplin Reserve construction area covers works required for the Project south-east of Anderson Road towards Sunshine Station, including the construction of the MAR flyover to the Sunshine tracks and rail corridor SUP. It is noted that the actual construction area is not within Chaplin Reserve but on VicTrack land between the reserve and the rail. It will be accessed through the reserve.

Although Anderson Street south of the rail bridge and local road network in the Sunshine area will be used to provide construction vehicles with access to/from the site laydown areas, no partial or full road closures are anticipated in association works managed out of this construction site.

Impact of Additional Construction Traffic

As outlined above, Anderson Road is an arterial north-south route running between Ballarat Road (Albion/Sunshine area) and Wright Street (Sunshine West area).

The construction area will be accessed through the Chaplin Reserve in the general vicinity of the current crossover to the reserve. The Reserve is currently unused, however, there are a number of buildings which may constrain larger truck access, these include a brick building directly to the north of the entrance which could restrict visibility for construction vehicles exiting the site and shed opposite the crossover that could impact the orientation of vehicles trying to exit the site.

It is understood that the site has been earmarked for development, which may result in these buildings having been removed prior to MAR works. If the buildings are still in place at the time of construction, the site may need additional access protocols to manage vehicle circulation and visibility constraints.

The timing of development is unknown, but it is feasible that the site may be in the process of being developed or have been developed and be ready for occupation through at least part of the MAR construction program.

A layout of the ultimate development has been obtained and tested to determine if the proposed road system would support MAR construction truck access and is provided for information as Figure 8-14.

The swept path analysis indicates that the future road network through the development will include sections where larger trucks would require the whole carriageway. If the residential development is constructed and occupied before MAR works construction management plans will need to address the management of road sections, particularly at corners where only one vehicle at a time will be able to be accommodated. Furthermore, routing construction vehicles through residential areas may require residential amenity to be considered which may impact the ability of the site to facilitate 24-hour operation or deliveries.

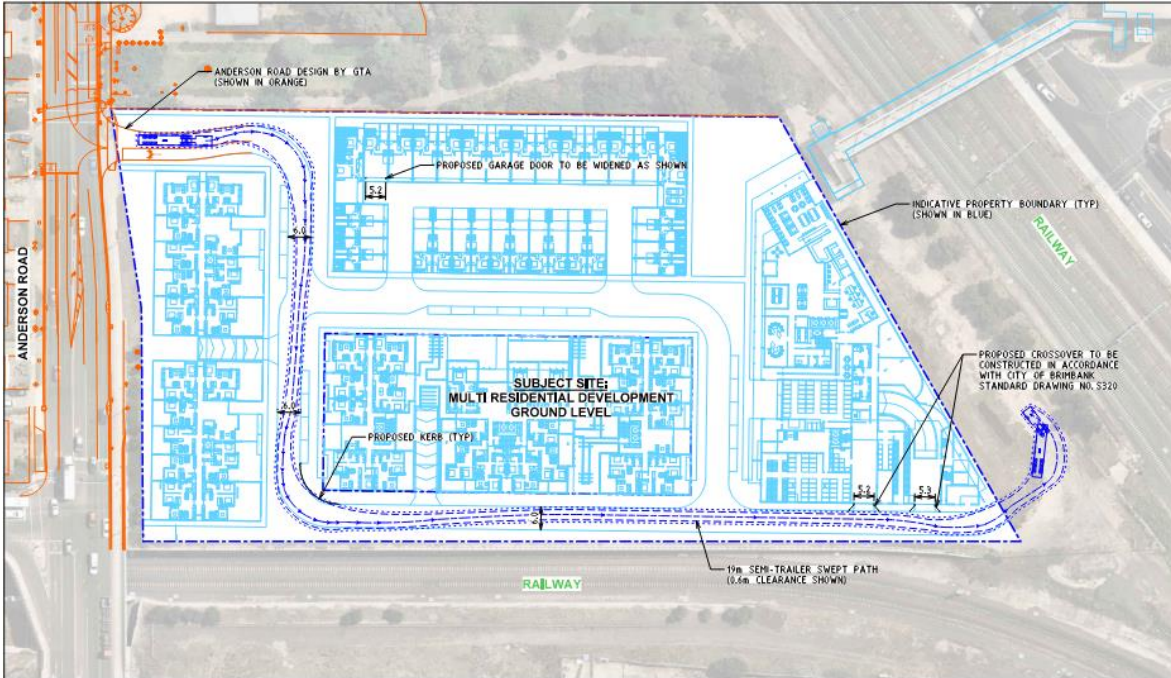


Figure 8-14: Access through Chaplin Reserve future development site

Currently, access to Chaplin Reserve is via an unsignalled private driveway located immediately to the south of the Anderson Road POS. With residential development of the site it is understood that the POS will be upgraded to incorporate the signalisation of the access.




Construction truck traffic is unlikely to generate more than three to four movements per hour turning in and three to four movements per hour turning out during the day. Peak traffic movements would be associated with the arrival and departure of the workforce, currently estimated as up to 50 movements in and 50 movements out in any one hour. It is noted that right turns into the site would use the existing right turn lane so could impede northbound movements.

In line with most construction sites workforce movements would mostly likely occur outside network peak periods. Initial analysis suggests that the level of construction traffic associated with MAR and turning into and out of the site would have no material impact on Anderson Road through traffic and would be within the capacity of an unsignalled intersection. It is noted that the proximate POS immediate to the north and signalised intersection at Forrest Street 90m to the south would also assist vehicles exiting the site by creating gaps in the north south traffic flow on Anderson Road as signal phases change.

Impact on Existing Transport Networks

Construction works managed from the Chaplin Reserve construction site do not require any road closures or disruption to facilitate works, safe access or clearance. Therefore, this area of construction is not anticipated to have any material impact on the wider transport networks.

8.5.5 Sunshine Station Western Car Parks (north and south of the station)

Duration:	November 2022 January 2025	 x 50	Peak Daily Vehicle Trips (Inbound & Outbound):	 x 40 to 100	 x 100
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(15 months)

to 120

to 240

No road closures or major disruptions are required for the works that will be run out of either the northern or western car parks for Sunshine Station as works will be primarily associated with extending the western platform at Sunshine and the extension to the western Sunshine Car Park, which is proposed to accommodate the offset parking from Albion.

Impact of Additional Construction Traffic

The southern construction area will be accessed from Derby Road which to the east of Hampshire Road is a short cul-de-sac providing access to residential lots and a residential access street to the south and a commercial / industrial site to the north. The intersection with Hampshire Road is signalised.

Based on the crossover and aerial imagery of the site to the north it is considered that the road has a current or historic role in accommodating standard dimensional truck movements. However, it is noted that on-street car parking is provided within 20 metres of the intersection with Hampshire Road, swept path analysis of the larger vehicles anticipated to need access to the construction site is recommended to determine the need for temporary removal of on street parking.

The northern car park will be accessed from Sun Crescent and may trigger a need to widen the existing crossover to facilitate vehicle turning movements.





Both construction sites will result in a reduction in car parking available for Sunshine Station however the full extent of car parking loss is not currently known. Construction Management Plans (CMP) for the sites will need to be developed to understand and appropriately mitigate car parking losses if necessary.

The workforce at these sites will generate between 50 and 120 movements at the start and end of the construction working days. These movements will generally occur outside network peaks, furthermore both sites would generate less traffic due to removing commuter car parking.

Disruption to Existing Transport Networks

Construction works managed from the Sunshine west and north construction sites will not require any road closures or disruption to facilitate works, safe access or clearance. Therefore, this area of construction is not anticipated to have any material impact on the operation of the wider transport networks.

8.5.6 Sunshine Station Eastern Car Park

Duration:	November 2022 January 2025 (15 months)	 x 50  to 120	Peak Daily Vehicle Trips (Inbound & Outbound):	 x 40 to 100	 x 100 to 240
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Access to the site where works associated with the eastern track will be managed is currently indicated at the corner of Station Place and Monash Street, approximately 20 to 25m from the existing intersection to Station Place south. It is noted that the construction site is located within 50m of Our Lady of the Immaculate Primary School. It is recommended that the crossover of the site should be provided at the northern end of the site to maximise spacing between the access and the adjacent street intersection.

Impact of Additional Construction Traffic

Given the relatively low numbers of construction vehicle movements anticipated; and noting that some additional daily movements would be off set with the reduction in parking at the station, the Sunshine Eastern Car Park construction area is not anticipated to have a significant impact on the local network.

However, given the proximity of a primary school to the site it is recommended that consideration is given to managing student safety and truck movements to and from the site to avoid not only peak road network periods but also school start and finishing times.

Disruption to Existing Transport Networks

Road Network

There are currently no planned road network disruptions for the Sunshine Eastern Car Park construction area.

Public Transport Network Impacts

Bus Routes

One bus route, 216 runs along Monash Street, however its stops are located over 100m from the site entrance, so is unlikely to be impacted by construction.

Station Car Parking

The construction site is likely to result in the temporary closure of the southern half of Sunshine Station eastern car park, the exact number of car parks that will be temporarily lost is not known at this stage.

A construction parking management plan will be required to identify how the reduction in car parking will be managed. It is noted that Sunshine west car park will be expanded to provide approximately 70 additional parking spaces which will ultimately be used to replace spaces lost at Albion. If this work can be scheduled to occur in advance of works to the eastern car park as well as before the works to Albion Station then these spaces could be used to maintain parking supplies at Sunshine Station during construction. Other options for management would include travel demand strategies and investigating options to provide temporary parking either in the area around Sunshine or other proximate stations, such as Tottenham or Ginifer.

Active Transport Network Impacts

The construction site will traverse across the Sunshine to Footscray SCC SUP that runs alongside the rail corridor. In addition, the access to the site crosses the existing footpath that links the primary school and church and southern residential areas to Sunshine Station.

Information provided by RPV indicates that both SUP and the footpath will be maintained during the construction. The construction management plan will therefore need to articulate the management and safety protocols that will ensure that users of the SUP and footpath are separated from active construction traffic movements.

It is recommended that as part of construction planning the project should consider whether providing a temporary link between Monash Street and the SCC along the southern boundary of the construction zone could provide a benefit and allow the existing footpath between Station Place south and Sunshine Station Car Park to be closed. This would limit management of pedestrians / cyclists and construction vehicle movements to a single crossing location.


8.6 Overall Road Network Impacts

It is noted that different road closures would naturally distribute traffic onto the same alternative routes, where modelling has been undertaken the impact of each road closure on links in the road network has been compared to provide an indication of where and when the most significant impacts may be experienced.

This has only been undertaken at the time of writing for key road closures within the Sunshine and Corridor sections and are provided in Figure 8-15 and Figure 8-16 respectively.

Based on the Figure 8-15 the following impacts in relation to Sunshine section construction activities are noted:

- The full closure of Ballarat Road at a weekend would have the widest impact on the operation of the surrounding road network, impacting traffic flow to some extent on multiple roads
- Ballarat Road one lane closures and Anderson Road full lane closures would also impact multiple roads

- 
- Perth Avenue, Adelaide Street and Forrest Street would be impacted by multiple closures
 - There are individual nodes on the network where increases in traffic due to individual closures may have an impact on operation and these may need to be considered in more detail as construction closures and timing is confirmed. These include:
 - > Intersections of Harvester Road / Foundry Road and Foundry Road / Anderson Road
 - > M80 anticlockwise off ramp to Ballarat Road
 - > Intersections of Ballarat Road with Perth Avenue and Adelaide Street
 - The longer-term road closures of Gilmour Road and Ballarat Road service road would have little impact to traffic performance

Based on the Figure 8-16 the following impacts in relation to Corridor section construction activities are noted:

- Single lane closures on McIntyre Road will have the widest impact on the operation of the surrounding road network, impacting traffic flow to some extent on multiple roads
- Single lane closures on the Calder Freeway on and/or off ramps connecting to the M80 south-westbound lanes and a shuttle type operation on Fullarton Road will also impact multiple roads
- The single lane closure of Airport Drive in each direction, narrowing of lanes on the M80 and slow lane closure on the M80 in the south-westbound direction would have little impact to traffic performance across the wider network



Roads Potentially Impacted by Sunshine and Albion Package Road Disruptions (NB Identified through calibrated & validated model 2026 scenario testing)	Street Classification	Ballarat Road Weekend Full Closure	St Albans Road Weekend Full Closure	Ballarat Road One Lane Closure	Anderson Road Full Closure	Anderson Road One Lane Closure	Harvester Road One Lane Closure	McIntyre Road One Lane Closure	Gilmour Road Full Closure	Gilmour Road Single Lane Shuttle Operation	Ballarat Road Service Road (North) Closure	St Albans Road Single Lane Shuttle Operation
Ballarat Road Bridge	DOT Arterial											
- West of Bridge	DOT Arterial											
- East of Bridge	DOT Arterial											
Perth Avenue	BCC Collector											
Adelaide Street	BCC Collector											
Forrest Street	BCC Collector											
Anderson Road (at rail overpass)	DOT Arterial											
- North of rail overpass	DOT Arterial											
- South of rail overpass	DOT Arterial											
Harvester Road north of Foundry Road	BCC Sub Arterial											
Harvester Road South of Foundry Road	BCC Sub Arterial											
Hampshire Road	BCC Sub Arterial											
McIntyre Road	DOT Arterial											
Furlong Road - M80 to McIntyre Road	BCC Sub Arterial											
Furlong Road - M80 to St Albans Road	BCC Sub Arterial											
St Albans Road	DOT Arterial											
Glengala Road	BCC Collector											
The Avenue / Link Road / Wright Street	BCC Collector											
Wright Street / Sunshine Road	DOT Arterial											
Tilburn Road	BCC Sub Arterial											
Station Road	DOT Arterial											
Fitzgerald Road	BCC Sub Arterial											
Berkshire Road	BCC Sub Arterial											
Duke Street	BCC Sub Arterial / MCC Distributor											
Westmoreland Road	BCC Collector											
M80 - Furlong Road to Ballarat Road	Freeway											
M80 / Furlong Road - NEB off ramp	Freeway											
M80 / Furlong Road - NEB on ramp	Freeway											
M80 / Furlong Road - SWB off ramp	Freeway											
M80 / Furlong Road - SWB on ramp	Freeway											
M80 / Ballarat Road - NEB off ramp	Freeway											
M80 / Ballarat Road - NEB on ramp	Freeway											
M80 / Ballarat Road - SWB off ramp	Freeway											
M80 / Ballarat Road - SWB on ramp	Freeway											
Ashley Street	DOT Arterial											
Approach												
- Where a link generally experiences a consistent reduction to speed or not clearly identifiable based on the pdf model output, the link average (worst performing direction) is used (spreadsheet output)												
- Where a link has varied reduction to speed, the worst section (worst performing direction) is used												
X												

Roads Potentially Impacted by Sunshine and Albion Package Road Disruptions
(NB Identified through calibrated & validated model 2026 scenario testing)

	Ballarat Road Weekend Full Closure	St Albans Road Weekend Full Closure	
Ballarat Road Bridge	-	0	
- <i>West of Bridge</i>	0	0	
- <i>East of Bridge</i>	0	0	
Perth Avenue	-13	0	
Adelaide Street	-18	0	
Forrest Street	-23	0	
Anderson Road (at rail overpass)	-12	0	
- <i>North of rail overpass</i>	-32	0	
- <i>South of rail overpass</i>	-12	0	
Harvester Road north of Foundry Road	-16	0	
Harvester Road South of Foundry Road	-7	0	
Hampshire Road	-14	0	
McIntyre Road	-11	-5	
Furlong Road - M80 to McIntyre Road	-33	-30	
Furlong Road - M80 to St Albans Road	-5	-29	
St Albans Road	-7		
Glengala Road	-11	0	



The Avenue / Link Road / Wright Street	-6	0	
Wright Street / Sunshine Road	-7	0	
Tilburn Road	-10	0	
Station Road	-24	0	
Fitzgerald Road	-11	0	
Berkshire Road	-6	-7	
Duke Street	-5	-5	
Westmoreland Road		-8	
M80 - Furlong Road to Ballarat Road	0	0	
M80 / Furlong Road - NEB off ramp	-18	0	
M80 / Furlong Road - NEB on ramp	-9	0	
M80 / Furlong Road - SWB off ramp	0	-7	
M80 / Furlong Road - SWB on ramp	-18	0	
M80 / Ballarat Road - NEB off ramp	0	0	
M80 / Ballarat Road - NEB on ramp	-16	-10	
M80 / Ballarat Road - SWB off ramp	0	0	
M80 / Ballarat Road - SWB on ramp	0	0	
Ashley Street	-12	0	
Monash Street	-10	0	

Legend

- Changes in average journey speed that may have a noticeable impact on delay and queuing. Increasing impact with depth of colour
- Minor changes in speed which are unlikely to be noticeable
- No loss in speed, including links where average speeds may increase
- Road subject to direct disruption modelled in scenario

Figure 8-15: Comparison of Sunshine Section Road Disruption Scenarios Across the Wider Network



Roads Potentially Impacted by Corridor Package Road Disruptions (NB Only 2018 pre calibrated & validated model available)	Street Classification	Airport Drive One lane in each direction	M80 Lane Narrowings	M80 SWB Slow Lane Closure - 80kph	Calder Fwy interchange Anticlockwise to SWB Ramp Kerbside Lane Closure	Calder Fwy I/C Anticlockwise to SWB and Clockwise to EB - Ramp Kerbside Lane Closure	Fullarton Road Shuttle Operation
Airport Drive	DOT Arterial	Dark Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Tullamarine Park Road	BCC Collector	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Sharps Road west of Airport Drive	DOT Arterial	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Sharps Road east of Airport Drive	DOT Arterial	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Keilor Park Drive north of Tullamarine Park Rd	DOT Arterial	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Keilor Park Drive - Tullamarine Park Rd to Calder Freeway	DOT Arterial	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
-Freeway EB on ramp	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
-Freeway EB off ramp	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
-Freeway WB on ramp	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
-Freeway WB off ramp	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Keilor Park Drive west of M80	DOT Arterial	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
-Freeway NEB on ramp	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
-Freeway NEB off ramp	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Keilor Park Drive east of M80	DOT Arterial	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
-Freeway SWB on ramp	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
-Freeway SWB off ramp	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
M80 - Keilor Park Drive to Calder Freeway	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
M80 - Calder Freeway to Airport Drive - NEB	Freeway	Light Orange	Dark Orange	Light Orange	Light Orange	Light Orange	Light Orange
M80 - Calder Freeway to Airport Drive - SWB	Freeway	Light Orange	Dark Orange	Dark Orange	Light Orange	Light Orange	Light Orange
-Airport Drive freeway SWB off ramp	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
-Airport Drive freeway NEB on ramp	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
-Airport Drive freeway NEB off ramp	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Calder Freeway west of M80	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Calder Freeway east of M80	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
- Freeway interchange Clockwise to NEB	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
- Freeway interchange Anticlockwise to WR	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
- Freeway interchange Clockwise to EB	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
- Freeway interchange Anticlockwise to SWB	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Fullarton Road east of rail corridor	MVCC Collector	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Fullarton Road east of Moorna Drive	MVCC Collector	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Keilor Road	DOT Arterial	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Matthews Avenue	MVCC Collector	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Tullamarine Freeway	Freeway	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Milleara Road	DOT Arterial	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Dinah Parade	MVCC Major Road	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange

Roads Potentially Impacted by Corridor Package Road Disruptions (NB Identified through calibrated & validated model 2026 scenario testing)	Street Classification	McIntyre Road One Lane Closure
Ballarat Road Bridge	DOT Arterial	Dark Orange
- West of Bridge	DOT Arterial	Dark Orange
- East of Bridge	DOT Arterial	Dark Orange
Perth Avenue	BCC Collector	Light Orange
Adelaide Street	BCC Collector	Light Orange
Forrest Street	BCC Collector	Light Orange
Anderson Road (at rail overpass)	DOT Arterial	Light Orange
- North of rail overpass	DOT Arterial	Dark Orange
- South of rail overpass	DOT Arterial	Light Orange
Harvester Road north of Foundry Road	BCC Sub Arterial	Light Orange
Harvester Road South of Foundry Road	BCC Sub Arterial	Light Orange
Hampshire Road	BCC Sub Arterial	Light Orange
McIntyre Road	DOT Arterial	Dark Orange
Furlong Road - M80 to McIntyre Road	BCC Sub Arterial	Light Orange
Furlong Road - M80 to St Albans Road	BCC Sub Arterial	Light Orange
St Albans Road	DOT Arterial	Light Orange
Glengala Road	BCC Collector	Light Orange
The Avenue / Link Road / Wright Street	BCC Collector	Light Orange
Wright Street / Sunshine Road	DOT Arterial	Light Orange
Tilburn Road	BCC Sub Arterial	Light Orange
Station Road	DOT Arterial	Light Orange
Fitzgerald Road	BCC Sub Arterial	Light Orange
Berkshire Road	BCC Sub Arterial	Light Orange
Duke Street	BCC Sub Arterial / MCC Distributor	Light Orange
Westmoreland Road	BCC Collector	Light Orange
M80 - Furlong Road to Ballarat Road	Freeway	Dark Orange
M80 / Furlong Road - NEB off ramp	Freeway	Light Orange
M80 / Furlong Road - NEB on ramp	Freeway	Light Orange
M80 / Furlong Road - SWB off ramp	Freeway	Light Orange
M80 / Furlong Road - SWB on ramp	Freeway	Light Orange
M80 / Ballarat Road - NEB off ramp	Freeway	Light Orange
M80 / Ballarat Road - NEB on ramp	Freeway	Light Orange
M80 / Ballarat Road - SWB off ramp	Freeway	Dark Orange
M80 / Ballarat Road - SWB on ramp	Freeway	Light Orange
Ashley Street	DOT Arterial	Light Orange

Legend	
	Changes in average journey speed that may have a noticeable impact on delay and queuing. Increasing impact with depth of colour
	Minor changes in speed which are unlikely to be noticeable
	No loss in speed, including links where average speeds may increase
	Road subject to direct disruption modelled in scenario

Figure 8-16: Comparison of Corridor Section Road Disruption Scenarios Across the Wider Network

In the absence of being able to undertake, and report on a complete transport environment and risk and impact assessment, a preliminary analysis has been undertaken to identify construction related risks to date. This initial analysis is provided in Appendix F for information.

8.7 Rail Occupations and Station Closures

In addition, to road closures the project will require rail and station closures to facilitate works. Current information provided by RPV suggests the following rail occupations:

- Sunbury Line – five day closure in Late 2023
- ARTC – 60-hour occupation undertaken annually in March between 2023 and 2026
- Albion and Sunshine Stations – Periodic closures in line with Sunbury Line closures

To manage line closures and station closures, a Rail Occupation Plan will need to be developed in consultation with stakeholders. The plan will need to include:

- Number of rail replacement buses required
- Stop locations, noting that whilst Albion Station Rail Replacement bus stops are likely to be unaffected by the works, Sunshine Station rail replacement bus stops may need to be temporarily relocated due to the proposed use of the car park as a construction site.
- Changes of car parking and whether additional temporary car parking can be provided to replace temporary shortfalls during works.
- Travel demand management requirements to help minimise peak demands.

9. Summary and Conclusion

9.1 Summary

The Project involves the delivery of new rail infrastructure between Sunshine and Melbourne Airport that will provide a rail-based option to access Melbourne Airport by 2029.

As part of the project some non rail based transport infrastructure will also be delivered, these will include:

- A shared use path (SUP) on the Sunbury to Sunshine Strategic Cycling Corridor (SCC) linking the current SUP that terminates at Albion Station to the start of on road cycle and footpath infrastructure on St Albans Road north of Gilmour Road
- A SUP on the Keilor East to Melbourne Airport SCC linking the M80 Trail up to the existing Airport Drive SUP north of Sharps Road

These new sections of infrastructure, as well as the improvements for sustainable access and end of trip facilities at Albion, will contribute to driving more healthy means for local residents to move around and between suburbs along the future MAR rail corridor

As part of the Project additional infrastructure will also be delivered, with the primary additional benefits provided as:

- SUP on the Sunbury to Sunshine SCC linking the current SUP that terminates at Albion Station to the start of on road cycle and footpath infrastructure on St Albans Road north of Gilmour Road
- SUP on the Keilor East to Melbourne Airport SCC linking the M80 Trail up to the existing Airport Drive SUP north of Sharps Road

This impact assessment considers the impact of the project on the wider transport network within State land, namely between Sunshine and Sharps Road, Tullamarine. The TIA does not cover the impact of the project on the wider rail network, but concentrates on legacy and construction impacts to active transport, bus and road networks.

The key elements of the project that are being reported on and assessed include:

- Changes to station car parking at Sunshine and Albion, triggered because of works at Albion Station
- Permanent or legacy changes to the active transport and road networks triggered or delivered by the project, noting that the project is not anticipated to have any legacy impact to the bus network
- High level assessment of construction impacts including additional traffic and likely road disruptions based on the current information available and noting that construction planning for the project is generally still in its infancy and will be developed further

9.2 Conclusions

9.2.1 Legacy Impacts

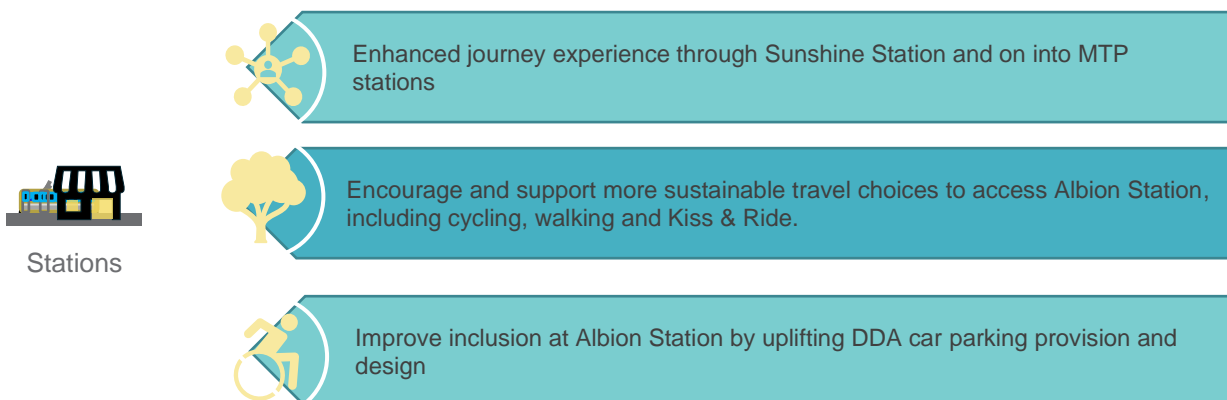
The project will result in the following changes to patronage at Albion and Sunshine Stations at the design year of 2036:

- Attraction of 900 additional patrons per day to Sunshine Station, equating to 6% more than would access the station if MAR was not constructed with 300 anticipated between 7am and 9am, primarily comprising walk and bus mode transfers (excludes transferring passengers).
- A minor shift in passengers from Albion to Sunshine Station for rail network entry by some car mode travellers due to the relocation of approximately 70 car parking spaces from Albion to Sunshine.

In addition, the legacy will enhance the rail journey experience with:

- Enhanced station interchange facilities at Sunshine including a second paid concourse with additional vertical transport options including escalators, DDA compliant platforms and improved weather protection in the form of additional canopies.
- A direct link without transfer for passengers to new stations provided by the MTP including Arden, Parkville, State Library, Town Hall and Anzac on through to Caulfield and the Pakenham and Cranbourne lines
- Increased bike parking at Albion Station with one parkiteer and separate hoop facilities on both sides of the corridor and improved forecourt for pedestrian movements to and from the wider Albion area
- Increased DDA parking supplies at both Albion and Sunshine Stations to negate current insufficiencies in supply compared to current standards. All existing and future DDA spaces will be provided or upgraded to meet AS2890.6 design requirements
- Inclusion of Kiss & Ride parking at Albion Station, which currently does not provide these parking facilities.
- Completion of the existing Albion gap in the Sunbury to Sunshine SCC to provide a continuous link from Sunshine to St Albans Road including:
 - > Provision of SUP on St Albans Road from Gilmour Road, over the rail corridor to Albion Station
 - > Provision of SUP along the eastern boundary of Albion Station to link into the existing SUP south of the station
- Upgrading the southern and eastern links of the Calder Freeway over rail and under road active transport corridor connections to be fully compliant for shared use (bicycle and pedestrian)
- Providing a new SUP compliant rail corridor crossing at Fullarton Road
- Completing the Keilor East gap in the Keilor East to Melbourne Airport SCC between Fullarton Road and Sharps Road including:
 - > Construction of a new path through the Steele Creek Tributary reserve area between M80 Trail and Tullamarine Park Road
 - > A connection under Airport Drive to the south of Tullamarine Park Road with a pedestrian operated signal to cross Tullamarine Park Road
 - > A SUP connection along the east side of Airport Drive to Sharps Road aligned to connect to the existing Airport Drive SUP facility

Overall, it is considered that the combination of the new infrastructure will:





Networks



Enhance the Strategic Cycling Corridor Network in the northern suburbs by closing key gaps at St Albans Road, Steele Creek Tributary Reserve and Airport Drive



Improve safety for cyclists on Sunbury to Sunshine SCC where infrastructure is not currently provided such as St Albans Road bridge and Albion Station Car Park



Provide a more viable healthy and sustainable transport option for employees and visitors to Melbourne Airport and Melbourne Airport Business Park, with new off road connections to existing infrastructure



Increase activity transport connectivity between Keilor East, Airport West and Keilor Park

The Project will trigger a need to replace three active transport connections across the rail corridor and the proposed mitigation is considered reasonable and appropriate as follows:


- > Barwon Avenue underpass and Drake Street level crossing
MAR will upgrade and rationalise the current Albion – Jacana line crossing points to deliver a safe, elevated active transport link over the rail corridor which will meet primary desire lines for walking and cycling.
- > M80 Trail under Calder Freeway and Fullarton Road
The SUP will be relocated to the south east side of the rail corridor to allow for MAR rail tracks, this will include upgrades to the existing rail active transport overpasses either side of the road corridors and the pedestrian underpass of the road to compliant SUP designs. The works will result in a minor increase to the connectivity of the M80 SCC at Calder Freeway but will benefit cycle connectivity between Keilor East and Airport West and Airport West and Keilor Park.
- > Anderson Road Southern SUP
Will be replaced with a new SUP located just to the south of the current alignment, effectively replacing like with like.

The Project design will be developed and refined through the finalisation of the reference design and then tender process. Minor risks have been provisionally identified and provided for information in Appendix E prior to formal Environmental Risk Assessment. It is noted that all risks are anticipated to be managed as part of the design process and to not trigger major changes to the Project Scope or construction expectations.

9.2.2 Construction Impacts

Construction planning for the project is currently underway, however preliminary information has been provided and has been considered within this TIA. It is noted that comprehensive modelling of construction has not been completed across the full section and full construction scenarios but will continue to be developed and documented in formal modelling reports.

Summary of modelling done to date has been considered within the TIA. It should be noted that this modelling is conservative and reflects natural redistribution choices which would be made prior to outside influences such as detour signage, communication and messaging, which typically would be expected as part of any major construction project.



Based on the information to date, the project has been divided into a series of construction zones and the following is concluded:

- Construction activity will peak across the Sunshine and Corridor sections from the end of 2023 through to the start of 2025
- Compared to other major transport infrastructure works in Melbourne, such as the MTP construction traffic generation is relatively modest with only five out of the 15 construction areas anticipated to generate 40 or more truck movements a day (includes arrivals and departures) outside short intense peak activity demand periods. Three of these sites would typically generate less than this but may include intense periods when truck movements are closer to 100 vehicle movements per day
- Workforce requirements have not been advised but based on similar truck requirements to workforce as identified for the MTP would equate to be between 20 and 160 workers per construction zone, which conservatively could equate to approximately 20 to 160 arrivals in the morning and 20 to 160 departures in the afternoon
- Construction trips typically do not coincide with road network peak hours, with workforces generally arriving and departing before the wider road network peaks and truck movements generally scheduled to occur between peaks
- Some construction zones will need to manage over dimensional vehicle deliveries, particularly associated with viaduct and bridge works and this will need to be subject to further investigation
- Overall construction traffic is not anticipated to have a material impact on the operation of the road network, however access to individual sites will need further consideration when more information is available including:
 - > Gilmour Road construction zone, with relation to road space land take requirements
 - > Albion car park and corridor construction zone, with relation to the breakdown of different construction vehicle access requirements and daily quantum of larger vehicles
 - > Chaplin Reserve construction zone, with relation to the timing of this site's residential development and need to access MAR construction sites through the area
- The major construction impact of the project will occur due to road disruptions and closures required to facilitate access to works areas, including the need to locate large plant and to provide suitable clearance to works area, particularly bridges

Network Disruptions During Construction

Active Transport

The project construction area will extend across areas of the active transport network. The key areas of potential impacts and the current proposed strategy to manage are:

- Sunbury to Sunshine SCC between Albion and Sunshine – signed detour routes either through Albion or via Sunshine.
- Anderson Road southern crossing – detours via existing pedestrian operated signals and HV McKay Gardens and Bridge
- Albion – Jacana Corridor crossings – works to be staged to retain at least one existing crossing until the new overpass is construction
- Maribyrnong River Trail – construction areas will aim to be contained clear of the existing path as there are no suitable easily accessible local diversion to re-route the path. Further data will be required to understand the path usage
- M80 SCC Trail at Calder Freeway / Fullarton Road – works to be staged to retain ability to continue trail either to the north or south of the rail corridor



Public Transport

Construction works will impact bus routes with some services needing to be diverted. Discussions with DOT and bus operators will be undertaken to identify appropriate routes. Bus routes that may need to be diverted include:

- Bus Route 482 if full closure of Tullamarine Park Road is necessary
- Bus Routes 465 and 478 if full closures of Fullarton Road are required
- Smart Bus Route 903 which may be impacted by multiple closures including:
 - > Keilor Park Drive
 - > McIntyre Road
- Night bus Route 941
- Bus Routes 426 and 456 which will need to be diverted for a significant period of time due to the closure of the Ballarat Service Road, impacting a small number of stops but generally still able to serve the same community and primary destinations as at present
- Bus Route 215 which would need to divert with the closure of Ballarat Road over three weekends

A bus plan will need to be developed in consultation with PTV and bus operators to finalise diversion routes and bus stop relocations.

Road Disruption Impacts

Full modelling has not been completed for all periods and all sections however preliminary understanding of roads likely to be impacted by road disruptions has been undertaken on current stage modelling. Based on this modelling the key road disruption impacts have been identified at this stage as follows:

- The full closure of Ballarat Road over a weekend is likely to result in the most widespread impacts to the road network. However, at this stage this anticipated to occur for only three weekends during the entire construction programme
- Ballarat Road single lane closures, Anderson Road full closures and McIntyre Road closures will also have a significant impact across the network
- Perth Avenue, Adelaide Street, Forrest Street are the key local streets that may experience noticeable changes in performance during multiple construction road disruption scenarios. However, this may be able to be minimised with the adoption of appropriate travel demand management techniques developed in consultation with the community and local stakeholders
- Furlong Road is an arterial road that provides access to Sunshine Hospital and would also experience noticeable impacts from multiple construction disruption requirements

Modelling of the PM peak and completion of the AM peak model where it is still to be calibrated and validated will need to be undertaken. Further refinement reflecting impacts of Travel Demand Management (TDM) may also be required.

TDM plans and Construction Management Plans (CMP) will be prepared to identify management strategies and any upgrade requirements that are necessary to manage increased traffic from key major road disruptions. These have been identified alongside potential risks information in Appendix F prior to a formal Environmental Risk Assessment.

It is anticipated TDM will reduce the initial impacts that are identified within modelling to date as they would seek to remodel, retime, reroute and reduce trips through key construction areas.

9.3 Environment Effects Act 1978 Self-Assessment Criteria

The EE Act is relevant to the Project as it provides for the assessment of proposed projects that may have a significant effect on the environment. The Ministerial Guidelines under the EE Act provide the criteria used to determine whether a project warrants referral to the Minister for Planning. A project proponent is responsible for assessing whether its project will have potential adverse environmental effects that could be significant in a regional or State context.

As part of this Impact Assessment, consideration has been given to the criteria specifically relevant to transport planning only to determine the potential extent of transport network effects. The referral criteria relevant to this Impact Assessment and the associated response is provided in Table 9.1 below. Criteria relevant to other environmental matters are addressed in the relevant impact assessment.

It is considered that the transport impacts of the project would not trigger an EES and that impacts, primarily associated with the construction of the project will be able to be appropriately managed through travel demand, construction management and transport management plans.

Table 9.1: Traffic Impact Assessment of EE Act Referral Criteria

EE Act Self-Assessment Criteria	Traffic Impact Assessment Response	Criterion for referral met?
Potential for extensive displacement of residences or severance of residential access to community resources due to infrastructure development.	<p>The Project does not require any temporary or permanent acquisition of residential properties, nor would the Project result in the displacement of residences. It is however expected that there will be some disruption, but not severance, to residential access to community resources, as a result of road closures, reduction in road capacity and during rail occupation periods. Road disruptions will be minimised as much as possible. Additionally, appropriate diversion route and traffic management strategies will be developed to mitigate potential impacts, alongside a CEMP addressing construction zones and roads, public transport and active transport network impacts. It is also noted that the majority of potential impacts would be a result of construction activities and will therefore be temporary in nature.</p> <p>In addition to the above, there are two adjacent pedestrian rail corridor crossings in Sunshine North that will be removed as a result of the Project, one of which is a level crossing. The Project will however replace these crossings with a shared use path overbridge which will maintain the connectivity provided by the two existing crossings.</p> <p>While access to community resources may be disrupted during construction, the completed Project will improve the reliability and efficiency of access to community resources. This includes through closing key gaps in the Strategic Cycling Corridor Network, increasing the number and frequency of trains on this section of the rail network and providing additional bicycle parking at Albion Station. As such, potential impacts are not expected to result in extensive severance of residential access to community resources.</p>	Criterion not met.
Potential significant effects on the amenity of a substantial number of residents, due to extensive or major, long-term changes in visual, noise and traffic conditions.	MAR will deliver significant traffic benefits by improving cycling connectivity and will offer an alternate, no vehicular transport option to the Melbourne Airport. It is however acknowledged that the Project will result in temporary traffic disruption to residents as a result of road and lane closures, and increased traffic from construction vehicles. Traffic impacts during construction will be temporary in nature and will be managed via a Traffic Management Plan. For this reason, it is not expected that residents will experience extensive or major long-term traffic impacts.	Criterion not met.

Appendix A

TRANSPORT ASSETS IMPACTED AND ROAD NETWORK DATA



A.1 DOT Road Assets

DOT manages the construction, maintenance and repair of the following declared roads which may be subject to temporary or permanent impacts from the project

- Anderson Road, Sunshine
- Ballarat Road, Sunshine North
- St Albans Road, Sunshine North
- McIntyre Road, Sunshine North
- Keilor Park Drive, Keilor East
- Calder Freeway & On and Off Ramps, Keilor East
- M80, Tullamarine
- Airport Drive, Tullamarine

A.2 Municipal Road Assets

A.2.1 Brimbank City Council

- Ferguson Street, Albion
- Talmage Street, Albion
- Sydney Street, Albion
- Ballarat Road Westbound Service Road
- Ballarat Road Eastbound Service Road
- Gilmour Road, Sunshine North
- Barwon Avenue, Sunshine North
- Urana Avenue, Sunshine North
- Cranbourne Avenue, Sunshine North
- Fullarton Road, Keilor East
- Terror Street, Tullamarine
- Tullamarine Park Road, Tullamarine

A.2.2 Moonee Valley City Council

- Fullarton Road, Airport West

A.3 Non-Road Assets

The planning, delivery and management of cycling infrastructure includes both DOT and local councils. The main assets impacted by the project are:

- Sunbury to Sunshine SCC between Albion Station and St Albans Road / Gilmour Road, Brimbank
- Sunbury to Sunshine SCC, SUP bridge at Anderson Road, Brimbank
- Barwon Avenue, pedestrian rail underpass
- Drake Street pedestrian at grade rail level crossing
- Maribyrnong River Trail, Brimbank / Moonee Valley
- M80 Trail at Keilor East, Brimbank / Moonee Valley



- Keilor East to Melbourne Airport SCC, Tullamarine

A.4 Project Area Road Network Data

Table A.1 Project Area Road Network Overview

Road name	Managing authority	AADT ³⁹	HV%	Alignment	Divided / undivided	Number of lanes	Posted Speed Limit	Active transport facilities	MAR interface type	Potential permanent / project legacy impacts?
Hampshire Road	DoT / VicRoads	25,000	7%	North-South	Divided	Four-lanes, two-way	60km/h	-	x2 road-over-rail bridges	No, temporary impacts only during construction
Anderson Road	DoT / VicRoads	18,000	9%	North-South	Divided	Four-lanes, two-way	60km/h	West: Raised footpath East: Raised SUP	Road-under-rail	
Ballarat Road (main carriageway)	DoT / VicRoads	42,000	5%	East-West	Divided	Four-lanes, two-way	70km/h	-	x2 road-over-rail bridges	
Ballarat Road Service Road Westbound	BCC	Less than 4,000*	Less than 10%**	East-West	n/a	Two-lanes, one-way	50km/h	South: Footpath	Albion Station access	Yes
Ballarat Road Service Road Eastbound	BCC	Less than 4,000*	Less than 10%**	East-West	n/a	Two-lanes, one-way	50km/h	North: Footpath		Yes
Sydney Street	BCC	Less than 4,000*	Less than 10%**	North-South	Undivided	Two-lanes, two-way	50km/h	West & East: Footpaths		Yes
St Albans Road	DoT / VicRoads	8,700	7%	East-West	Undivided	Two-lanes, two-way	60km/h	South: Footpath	Road-over-rail bridge	Yes
McIntyre Road	DoT / VicRoads	26,000	7%	North-South	Undivided	Four-lanes, two-way	60km/h	West: Footpath	Road-over-rail bridge	No, temporary impacts only during construction
Keilor Park Drive	DoT / VicRoads	20,000	6%	East-West	Undivided	Two-lanes eastbound, four-lanes including two short westbound turning lanes	80km/h	North: Footpath	Road-over-rail bridge	
Calder Freeway including on/off-ramps	DoT / VicRoads	47,000	4%	East-West	Divided	On-ramp: two-lanes, one-way Main carriageway: six-lanes, two-way Off-ramp: two-lanes, one-way	Main carriageway: 100km/h On/off-ramps: 80km/h	-	x4 road-over-rail bridges	
Fullarton Road	BCC	5,600	Less than 10%**	East-West	Undivided	Two-lanes, two-way	60km/h	North: Footpath	Road-over-rail bridge	Yes
M80	DoT / VicRoads	136,000	13%	North-east-South-west	Divided	Ten-lanes, two-way	100km/h	-	New rail-over-road bridge (viaduct)	No, temporary impacts only during construction
Airport Drive	DoT / VicRoads	26,000	14%	North-South	Divided	Four-lanes, two-way	80km/h	East (north of Sharps Road): SUP up to Mercer Drive	New rail-over-road bridge (viaduct)	Yes
Tullamarine Park Road	BCC	8,000	Less than 10%**	East-West	Divided	Four-lanes, two-way	60km/h	North & South: Footpaths	New rail-over-road bridge (viaduct)	No, temporary impacts only during construction
Sharps Road	DoT / VicRoads	17,000	16%	East-West	Divided	Four-lanes, two-way	70km/h	North: Footpath	New rail-over-road bridge (viaduct)	
Mercer Drive	APAM	15,000 ⁴⁰	5% ⁴⁰	East-West	n/a	Two-lanes, one-way	60km/h	-	New rail-over-road bridge (viaduct)	Yes
Terminal Drive	APAM	30,000 ⁴⁰	5% ⁴⁰	East-West	n/a	Five-lanes, one-way, including one bus-only lane	50km/h	-	New rail-under-road	Yes
Centre Road	APAM	25,000	6%	North-South	Divided	North of Terminal Drive: Six-lanes, two-way, including two short southbound turning lanes South of Terminal Drive: Five-lanes, two-way, including one short northbound turning lane	40-60km/h	East: Footpath	New rail-under-road	Yes
Taxi Lane / Bonney Court	APAM	No data	Taxi Lane: 0% (taxi-only) Bonney Court: 100% (bus-only)	North-South	n/a	Taxi Lane: Two-lanes, one-way Bonney Court: Three-lanes, one-way	No data	Taxi Lane East: Footpath Bonney Court West: Footpath	New rail-under-road	Yes

* No recent AADT data is publicly available. To provide an estimate of the AADT for a particular road, AJM-JV adopted the following assumptions:

Municipal road (low to medium daily traffic volumes): Less than 2,000 vehicles per lane, per day⁴¹

Arterial road (high traffic daily volumes): 2,000 vehicles per lane, per day or higher⁴¹

** No recent HV% data is publicly available. To provide an estimate of the HV% for a particular road, AJM-JV adopted the following assumption:

Less than 10% of the AADT, given that most roads interfacing with the Project generally have a HV% of 10% or lower

³⁹ Best estimate of pre covid 19 AADT data taken from public sources and / or traffic volumes data. Volumes will be updated to predicted volumes from modelling when calibration and validation is completed

⁴⁰ Based on traffic surveys taken by Austraffic at Tullamarine Freeway / Mercer Drive and Tullamarine Freeway / Terminal Drive from 15 to 21 June 2019 for a 24-hour period.

⁴¹ Guide of Pavement Technology Part 4K: Selection and Design of Sprayed Seals, Austroads, 2019. Source: <https://austrroads.com.au/publications/pavement/agpt04k/design-method/design-traffic>

Table A.2 Project Area Road Network Traffic Volume Data

Road name	2019 (Existing) Peak Hour Traffic Volumes				2026 (MAR Construction) Two-way AADT	2036 (MAR Legacy) Two-way AADT	Peak / Non Peak Direction	2026 (MAR Construction) Peak Hour Traffic Volumes		2036 (MAR Legacy) Peak Hour Traffic Volumes		Traffic Volume Count Location
	Peak / Non Peak Direction	Peak Hour Traffic Volume (One-way) [1]	Peak Hour Traffic Volume (Two-way)	Annual Growth Rate [1]				One-way traffic volume	Two-way traffic volume	One-way traffic volume	Two-way traffic volume	Location
Hampshire Road					25,000	25,000	Northbound	330	840	360	870	Between Foundry Road and Hampshire Crescent
							Southbound	510		510		
	Northbound	812	1,624	No growth			Northbound	1160	2140	1530	2560	At Hampshire Road bridge
	Southbound	812					Southbound	980		1030		
							Northbound	760	1370	890	1490	Between Corio Street and Derby Road
							Southbound	610		600		
Anderson Road	Northbound	880	1,430	No growth	18,000	18,000	Northbound	940	2270	1030	2390	At rail bridge
	Southbound	550					Southbound	1330		1360		
Ballarat Road (main carriageway)	Westbound	2,510	3,650	2.00%	49,080	61,310	Westbound	1720	4350	1640	4610	At road bridge
	Eastbound	1,140		2.50%			Eastbound	2630		2970		
Ballarat Road Service Road Westbound	No data		Less than 400	No data	Less than 4,000*	Less than 4,000*	Westbound	150	980	340	1190	Between Adelaide Street and Sydney Street
							Westbound	650		840		East of the Albion Station Eastern Car Park access
							Eastbound	330		350		
Ballarat Road Service Road Eastbound	No data		Less than 400	No data	Less than 4,000*	Less than 4,000*	Eastbound	50	440	130	480	Between Adelaide Street and Sydney Street
							Eastbound	440		480		East of St Albans Road
Sydney Street	No data		Less than 400	No data	Less than 4,000*	Less than 4,000*	Northbound	0	30	0	100	Between Ballarat Road and Gunnedah Street
							Southbound	30		100		
Adelaide Street	No data		Less than 400	No data	Less than 4,000*	Less than 4,000*	Northbound	360	640	420	760	Between Ballarat Road and Lawson Street
							Southbound	280		340		
St Albans Road	Westbound	210	620	No growth	8,700	8,700	Westbound	440	1150	590	1350	Between Gilmour Road and the road bridge
	Eastbound	410					Eastbound	710		760		
Gilmour Road	No data		Less than 400	No data	Less than 4,000*	Less than 4,000*	Northbound	120	150	50	290	Between St Albans Road and Cary Street
							Southbound	30		240		
McIntyre Road	Northbound	920	2,260	0.90%	27,680	30,280	Northbound	1030	3900	1280	4440	At road bridge
	Southbound	1,340					Southbound	2870		3160		
Keilor Park Drive	Westbound	1,040	2,020	0.97%	21,400	23,570	Westbound	1110	2160	1230	2390	Between Slater Parade and Milleara Road
	Eastbound	980					Eastbound	1050		1160		
Calder Freeway including on/off-ramps	Westbound	3,010	4,890	1.90%	53,620	64,720	Westbound	3430	5310	4150	6030	Between the M80 and Mooma Drive
	Eastbound	1,880					Eastbound	1880		1880		
Fullarton Road	No data		560	1.50%	6,220	7,210			620	720	Between Mooma Drive and Keilor Park Drive	
M80, Western Ring Road	North-eastbound	3,880	9,140	2.90%	169,550	232,320	North-eastbound	4740	11430	6310	15750	Between the Calder Freeway and Airport Drive
	South-westbound	5,260		3.50%			South-westbound	6690		9440		
Airport Drive	Northbound	620	1,640	3.50%	33,080	46,660	Northbound	790	2090	1110	2940	Between Sharps Road and the M80
	Southbound	1,020		3.50%			Southbound	1300		1830		
Tullamarine Park Road	No data		800	3.50%	10,180	14,360			1,020	1,440	Between Sharps Road and Keilor Park Drive	
Sharps Road	Westbound	1,060	1,690	1.50%	19,730	24,410	Westbound	1180	1940	1370	2380	Between Tullamarine Park Road and Melrose Drive
	Eastbound	630		2.80%			Eastbound	760		1010		
Mercer Drive			1500	4.85%	20,900	33,550			2090	3360	Between Airport Drive and the Tullamarine Freeway	
Terminal Drive			3000	4.85%	41,790	67,110			4180	6710	Between Centre Road and the Tullamarine Freeway	
Centre Road	Northbound	618	1,518	2.50%	34,830	55,920	Northbound	730	2190	940	3870	Between Melbourne Drive and Airport Drive
	Southbound	900		7.20%			Southbound	1460		2930		
Taxi Lane / Bonney Court	No data			No data	No data	No data	No data				Between Centre Road and Arrival Drive	

Table Key

	No data / no active transport facilities / no MAR interface
	Not applicable
	* No recent AADT data is publicly available. To provide an estimate of the AADT for a particular road, AJM-JV adopted the following assumptions: Municipal road (low to medium daily traffic volumes): Less than 2,000 vehicles per lane, per day[3] Arterial road (high traffic daily volumes): 2,000 vehicles per lane, per day or higher
	** No recent HV% data is publicly available. To provide an estimate of the HV% for a particular road, AJM-JV adopted the following assumption: Less than 10% of the AADT, given that most roads interfacing with the MAR project generally have a HV% of 10% or lower
	Where no peak hour data is publicly available, AJM-JV adopted the following assumption: Peak hour traffic volume is equivalent to 10% of the AADT
	AJM-JV estimated growth rates. Note that 'no growth' was assumed where negative growth is forecast
	Road will have potential project legacy impacts
	Future traffic volume data is sourced from a calibrated and validated AJM-JV DOMINO model
	Future traffic volume data is sourced from an un-calibrated and un-validated AJM-JV DOMINO model
	Future traffic volume data is sourced from using annual growth rates supplied in this table

Footnotes

- [1] Best estimate of pre covid 19 AADT data taken from public sources and / or traffic volumes data. Volumes will be updated to predicted volumes from modelling when calibration and validation is completed
- [2] Based on traffic surveys taken by Austraffic at Tullamarine Freeway / Mercer Drive and Tullamarine Freeway / Terminal Drive from 15 to 21 June 2019 for a 24-hour period.
- [3] Guide of Pavement Technology Part 4K: Selection and Design of Sprayed Seals, Austroads, 2019. Source: <https://austrroads.com.au/publications/pavement/agpt04k/design-method/design-traffic>

Appendix B STRATEGIC DOCUMENTS REVIEW



B.1 Strategic documents review

Table B.2 Summary of key reference material produced by key stakeholders which has been used to inform MAR

Department of Transport	Elements of the Project Aligned or Informed by the Strategy or Policy
 <p>Plan Melbourne 2017-2050 State Government of Victoria, 2017</p> <p>Plan Melbourne sets the metropolitan strategic planning strategy for Melbourne. Key aspirations outlined in this document include:</p> <ul style="list-style-type: none"> Melbourne has an integrated transport system that connects people to jobs and services and goods to market Melbourne is a productive city that attracts investment, supports innovation and creates jobs <p>Strategic centres and economic precincts across Melbourne's north-west regions were identified including Melbourne Airport as a place of state significance. It serves as a key location for moving passengers and freight into and out of Victoria and playing a significant economic and employment-generating role. Places of state significance will be the focus for harnessing investment and growth.</p>	<p>MAR alignment</p> <p>Completion of an active transport link to Melbourne Airport and the terminal area.</p>
 <p>DOT's Strategic Plan 2019-23: Simple Connected Journeys DOT, 2019</p> <p>DOT's Strategic Plan will help to deliver the Victorian Government's significant transport agenda. Its focus and key priorities reflect the significant growth forecast across the state and align with the objectives of the Transport Integration Act, and therefore should also be considered when developing the Project's design response. Key focus areas of the Strategic Plan are:</p> <ul style="list-style-type: none"> Designing and planning a people-focused system Operate a safe and inclusive system Optimise the system for sustainable and reliable travel Deliver investments that unlock system-wide benefits Innovate and engage with partners, industry and the community 	<p>Improved sustainable access to stations on MAR corridor.</p> <p>Encompasses consideration of improved communication and user experience aspirations at key MAR feed in stations</p>
 <p>DOT's Integrated Transport Journey Requirements (ITJRs) DOT, 2019</p> <p>These provide a set of high-level strategic requirements (e.g. travel time, reliability, feeling secure, interchangeability, journey planning, economic and environmental sustainability) that articulate the transport user needs and how this translates to the transport network objectives and Transport Integration Act's outcomes. The consideration of the ITJRs to MAR users is central in supporting the delivery of better economic and social outcomes for Victoria and the community.</p>	<p>Informed project requirements that has influenced individual elements of the project including journey and interface requirements</p>
 <p>Movement and Place in Victoria DOT, 2019</p> <p>The Movement and Place Framework recognises that streets perform multiple functions, i.e. enable the movement of people and goods, but can also serve as key destinations. The Framework supports how DOT plan the road and transport network, based on understanding the needs of transport users and potential local network solutions and transforming them into aspirations.</p>	<p>Limited scope as project is primarily a rail-based project.</p> <p>However, Movement and Place for active transport and public transport has been considered in relation to enabling and complementary project scope and future proofed opportunities</p>



Traffic Engineering Manual Volume 3 – Additional Network Standards & Guidelines | Design Guidance for strategically important cycling corridors | VicRoads, 2016

This document aims to provide standards and guidelines for implementing and designing SCCs. SCCs are a subset of the Principal Bicycle Network (PBN) and aim to provide:

- A long-term vision for a network of direct, safe and high-quality cycling corridors that provide access to activity centres and public transport hubs
- A 'step-change' in cycling facilities to encourage the uptake of cycling across all ages and abilities. This will be delivered through using a combination of off road paths, on road separated bike lanes and local streets with traffic calming measures in place
- Focused planning and investment along these key corridors

Three sections of SCC will be delivered as part of the project:

- Sunbury Rail Corridor SCC from Albion Station to Gilmour Road
- East Keilor to Melbourne Airport at Steele Creek
- Melbourne Airport SCC from Apac Drive to Terminals



DOT's Draft Cycle Parking Guidance at Stations | DOT 2018

These Guidelines intend to support an increase in cycle access mode share to railway stations, in line with the Transport Integration Act, Plan Melbourne, Victorian Cycling Strategy and other strategic documents.

The Guidelines outline the quantity and type of bicycle parking infrastructure that should be provided at stations by setting targeted bicycle access mode shares. These aspirations and guidelines should be considered when addressing MAR surface transport interfaces involving station access by active transport modes.

Project includes scope to increase cycle parking at Albion and Sunshine station generally in line with the intention of this strategy to increase cycle access mode to stations.



DRAFT Sunshine Integrated Transport Plan | DOT, 2019

This draft plan was developed to realise the vision for the Sunshine National Employment and Innovation Cluster (NEIC)/'Sunshine Cluster' as set out in Plan Melbourne. The plan identifies a series of infrastructure investments to be delivered across three horizon years, which will help to inform the proposed transport objectives and outcomes for MAR. Key transport response goals that have been identified for the Sunshine Cluster are:

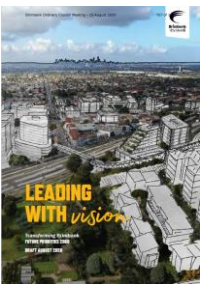
- Strengthen mass transit links (MAR and other major rail and road projects) to other regional centres to transform Sunshine into Melbourne's west CBD
- Increase connectedness of Sunshine's neighbourhoods and hubs by enhancing sub-regional and precinct access and permeability – road, tram and bus upgrades
- Increase Sunshine's liveability by addressing local movement barriers, enhancing pedestrian connectivity and re-prioritising streets

Limited scope as MAR project does not deliver major changes to station infrastructure that would enable significant changes.

However, MAR future proofs for subsequent projects that may be able to realise more aspects of the documentation

Brimbank City Council

Elements of the Project Aligned or Informed by the Strategy or Policy



DRAFT Leading with Vision | Transforming Brimbank Future Priorities 2050 | BCC 2020

The current draft priorities paper was presented at the Ordinary Council Meeting held on August 18, 2020 for Council to consider endorsing. The purpose of this document is to contribute to setting out a clear plan that aligns with Council policy and to attract investment to deliver community benefits, in response to the Western Rail Plan including MAR. This document outlines that by 2050, Brimbank aims to become "the powerhouse of Melbourne's west", supported by "inclusive and integrated transport" which is one of six community aspirations. The following objectives under 'inclusive and integrated transport' have been identified:

- Accessible transport for all across all modes
- Well-planned road and parking networks

Limited scope as MAR project does not deliver major changes to station infrastructure that would enable significant changes. However, MAR future proofs for subsequent projects that could realise more aspects of the documentation

- Increased active transport opportunities through extending the SUP network
- Frequent and reliable public transport services
- Train stations that are well connected to other modes



Final Sunshine Station Super Hub Urban Design Principles | BCC 2020

Ten Urban Design Principles were prepared by Council to guide the development of rail projects such as MAR being delivered by RPV around Sunshine Station and its surrounds. The principles relevant to transport planning are:

- Deliver a holistic integrated redevelopment of the station precinct
- Design a legible precinct that is environmentally sustainable
- Retain and enhance pedestrian connections to the station and cross the rail corridor
- Integrate local and regional cycle links
- Prioritise safety in design

Not applicable as current MAR proposals do not consider the Sunshine Super Hub scenario.

More significant opportunities and alignment with document aspirations may be created as part of subsequent projects



Final Sunshine to Melbourne Airport Rail Corridor Urban Design Principles | BCC 2020

Three Urban Design Principles were prepared by Council to guide the development the MAR corridor delivered by RPV. The principles relevant to transport planning are:

- Provide parallel and cross-corridor pedestrian and cycle opportunities to minimise barrier related effects
- Future proof station locations and maximise urban redevelopment along the corridor

Limited scope as MAR project does not deliver major changes to station infrastructure that would enable significant changes. However, MAR future proofs for subsequent projects that could realise more aspects of the documentation



Final Albion Station Precinct Urban Design Principles | BCC 2020

Ten Urban Design Principles were prepared by Council to guide the development of rail projects such as MAR being delivered by RPV around Albion Station and its surrounds. The principles relevant to transport planning are:

- Deliver a holistic integrated redevelopment of the station precinct
- Design a legible precinct that is environmentally sustainable
- Retain and enhance pedestrian connections to the station, cross the rail corridor and underneath Ballarat Road
- Integrate local and regional cycle links
- Prioritise safety in design

Not fully applicable as MAR does not deliver a full development of Albion Station precinct.

However, intentions of the strategy are incorporated or future proofed for where reasonable including:

- Relocating western frontage for improved alignment to walk in catchment
- Provision of SUP connection over the rail at St Albans Rd
- Upgrade to existing at-grade pedestrian crossing on corridor



Brimbank Cycling and Walking Strategy | BCC, 2016

Council updated their 2008 strategy in 2016 with the aim of making active transport more attractive throughout the municipality. This Strategy sets out a framework for a well-integrated strategic infrastructure network focusing on local connector routes linking to wider, more strategic walking and cycle routes, as well as directional and wayfinding signage.

The proposed guidelines and treatments should help to inform the current and future active transport interfaces along the MAR corridor between Sunshine and Sharps Road in Tullamarine.

Future proofs for specific actions identified within the scheme.

Positive contribution to the intention of the strategy with the provision of SUP bridge at St Albans Road over the rail.



Brimbank Active Transport Advocacy Brochure

Advocates for:

- Victorian Government investment to build safe, off road cycle paths
- Connecting the missing links between key cycle routes within Brimbank
- More bicycle parking at railway stations and town centres

Active transport features of the project will contribute to the aspirations of this advocacy document including:

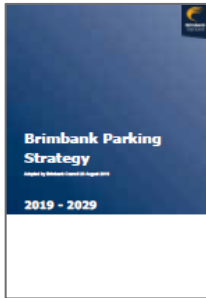
- Provision of SUP connection over the rail at St Albans Road
- Steele Creek tributary to Airport Drive and Sharps Road SCC



Transport Priority Paper 2018 | BCC, 2018

The Paper proposes solutions and projects to improve connectivity, based on Council's transport priorities and Plan Melbourne's vision for creating 20-minute neighbourhoods. The Paper acknowledges "that transport infrastructure for the west passes through Brimbank, which is ideally placed to provide services and facilities for the region, however improvements across all modes of transport are needed in the short and long term".

Contributes to aspirations in relation to sustainable and active transport including identified proposed cycle links along Airport Drive and St Albans Road.



Brimbank Parking Strategy | BCC, 2019

The Parking Strategy establishes a high level coordinated, consistent and transparent approach and policy basis for providing and managing car parking across Brimbank and should be considered when proposing transport outcomes for Sunshine and Albion stations. It includes actions to guide Council over 2019–2029, based on six principles:

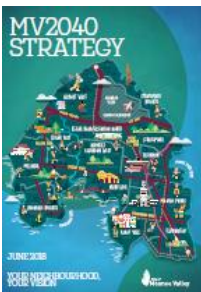
- Fair allocation of parking and enforcement of parking restrictions
- Access to all, including special access requirements
- Affordable car parking
- Improvements to efficiency before increasing provision
- Parking policies will support a shift to sustainable transport modes
- Car parking locations and design will contribute to attractive, safe and vibrant streets

Supports strategy to manage demand for car parking at railway stations by encouraging active transport alternatives to parking and ride. Specifically, increased bicycle parking options.

Future proofs for changes in parking strategy on Albion – Sunshine Corridor that may be able to be realised in subsequent projects.

Moonee Valley City Council

Elements of the Project Aligned or Informed by the Strategy or Policy



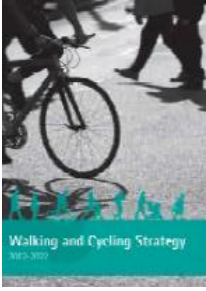
MV2040 Strategy | MVCC, 2018

The strategy provides a long-term vision for Moonee Valley, in alignment with Plan Melbourne, and reduces the need for multiple standalone strategies. It is envisioned that Moonee Valley is a healthy city that is also fair, thriving, connected with accessible sustainable transport choices, green, and a beautiful. The MAR design response should aim to consider the following transport planning aspirations and/or implementation initiatives in the MV2040 Neighbourhood Factsheets for Airport West and Keilor East:

- Provide active transport links throughout Airport West and Keilor East including along Steele Creek and crossing the Calder Freeway
- Integrate walking and cycling routes to future green spines (e.g. Roberts Road) and/or community-focused open space
- Advocate for a new railway station within the municipality as part of MAR

Upgrade to SUP facilities on Fullarton Road and south of rail corridor will align with specific policies to provide active transport links across the Calder Freeway.

The provision of a new SUP from Steele Creek through to Airport Drive and Sharps Road



Walking and Cycling Strategy 2012-2022 | MVCC

The Walking and Cycling Strategy is a 10-year plan to increase the number of active transport trips. Council aims to further develop existing pedestrian and cycling network by proposing new links. The strategy identifies specific actions to address these missing links through an implementation plan that is municipal wide and location specific. For instance, Fullarton Road and Roberts Road which interface with or provide access to MAR.

Upgrade to SUP facilities on Fullarton Road will align with specific policies to provide active transport links across the Calder Freeway.


Appendix C

CRASH STATISTICS





C.1 Corridor Crash Statistics

Table C.1 Corridor Area Crash Data, 2014 to 2019 (latest available)

Location	No. of incidents in the last 5 years	Incident type (including quantity)	Pedestrian/ Cyclist Injury	Fatality	Serious Injury	Other Injury
Airport Dr / Sharps Road intersection	3	<ul style="list-style-type: none"> x2: Collision with vehicle (right/thru) x1: Collision with vehicle (right/left) 	0	0	0	3
Tullamarine Park Road (between Beverage Drive and Allied Drive intersections)	3	<ul style="list-style-type: none"> x1: Collision with a fixed object (off right bend) x1: Collision with a fixed object (right off carriageway) x1: Collision with vehicle (right near) 	0	0	1	2
M80 clockwise Steele Creek bridge to diverge for Airport Drive	1	<ul style="list-style-type: none"> x1: Collision with vehicle (rear end) 	0	0	1	0
M80 anticlockwise Steele Creek bridge to merge with on ramp from Airport Drive	16	<ul style="list-style-type: none"> x13: Collision with vehicle (rear end) x1: Collision with vehicle (lane change left) x1: Collision with vehicle (lane side swipe) x1: Other 	0	0	10	6
Fullarton Road (20m east of Roberts Road intersection)	1	<ul style="list-style-type: none"> x1: Collision with vehicle (rear end) 	0	0	1	0
Calder Freeway off ramp (within 100m of rail corridor)	1	<ul style="list-style-type: none"> x1: Collision with vehicle (lane change right) 	0	0	1	0
Keilor Park Drive (south of Border Drive Reserve)	1	<ul style="list-style-type: none"> x1: Collision with vehicle (lane side swipe) 		0	0	1
Keilor Park Drive / Slater Parade intersection	3	<ul style="list-style-type: none"> x2: Collision with vehicle (rear end) x1: Collision with vehicle (right turn sideswipe) 	0	0	1	2
McIntyre Road (between Furlong Road and Berkshire Road intersections)	6	<ul style="list-style-type: none"> x3: Collision with vehicle (rear end) x1: Collision with vehicle (right near) x 1: Into object / parked (left bend) x 1 u-turn 	0	0	4	2

C.2 Sunshine Crash Statistics

Table C.2 Sunshine and Albion Area Crash Data, 2014 to 2019 (latest available)

Location	No. of incidents in the last 5 years	Incident type (including quantity)	Pedestrian/ Cyclist Involved	Fatality	Serious Injury	Other Injury
St Albans Road (between M80 and Ballarat Road)	5	<ul style="list-style-type: none"> x2: Collision with vehicle (head on) x1: Collision with a fixed object (left off carriageway) x1: Bike overturned (no collision) x1: Collision with vehicle (manoeuvre not specified) 		0	1	4
St Albans Rd / Ballarat Service Rd	1	<ul style="list-style-type: none"> x 1: Struck pedestrian (ped) (far side ped, hit by vehicle from the left) 				1
Ballarat Road (main carriageway westbound lanes) (between Perth Avenue and Harvester Road) (includes incidents at intersections with Perth Ave and Adelaide St)	13	<ul style="list-style-type: none"> x6: Collision with vehicle (rear end) x1: Collision with vehicle (right through) x2: Collision with vehicle (lane change left) x2: Collision with vehicle (lane change right) x1: Collision with a fixed object (right off carriageway) x1: Collision with vehicle (right near) 	0	0	9	4
Ballarat Road (main carriageway eastbound lanes) (between Perth Avenue and Harvester Road)	5	<ul style="list-style-type: none"> x4: Collision with vehicle (rear end) x1: Collision with vehicle (right through) 	0	0	2	3
Anderson Road (Within 100m of likely construction area)	5	<ul style="list-style-type: none"> x2: Collision with vehicle (rear end) x2: Collision with vehicle (while emerging from driveway) x1: Collision with vehicle (right near intersection) 		0	2	3
Harvester Road (Hampshire Rd to diverge from rail corridor)	3	<ul style="list-style-type: none"> x1: Collision with some other object (temporary roadworks) x1: Collision with vehicle (while emerging from driveway) x1: Collision with vehicle (right through) x1: Collision with a fixed object (left off carriageway) 		0	1	2
Derby Rd vicinity of Sunshine West Construction Area	1	<ul style="list-style-type: none"> x1 Collision with vehicle (while emerging from driveway) 			1	

Appendix D ALBION AND SUNSHINE PATRONAGE



D.1 Overall Station Demand

Sunshine station is projected to become a major interchange station in the future, primarily due to the opening of the Metro Tunnel and the Western Rail Plan. Station entries, exits and transfers for the AM and PM peaks are shown in Table D.1 and predicted access mode share are shown in Table D.2.

Table D.1 Sunshine Station Demand

Time period Movement type		Day 1	Base Case (no MAR)	Design Year	Future State 1 Before SRL	Future State 2 Post SRL
		2028	2036		2051	2051 + 30%
AM Peak (7:00 to 9:00)	Entry	3,000	3,800	4,200	4,800	6,200
	Exit	2,400	2,800	2,900	3,800	5,100
	Transfer	4,100	2,800	4,400	10,700	14,800
	Total	9,500	9,400	11,500	19,300	26,100
PM Peak (16:30 to 18:30)	Entry	2,500	3,000	3,100	4,000	5,200
	Exit	3,300	4,500	4,800	4,900	6,500
	Transfer	3,000	2,700	4,300	10,200	13,900
	Total	8,800	10,200	12,200	19,100	25,600

Source: ClicSim (AM 2036 Base: 4.01, PM 2036 Base:4.02)

AM Project Scenarios: 2028: Interpolating 2026: 2.13 and 2031:2.11, 2036:3.19, 2051 before SRL :2.17, 2051 with SRL: 2.19

PM Project Scenarios: 2028: Interpolating 2026: 2.14 and 2031:2.12, 2036:3.24, 2051 before SRL:2.18, 2051 with SRL :2.20

D.1.1 Access Mode Shares

Table D.2 shows access mode shares at Sunshine station, these access mode shares are derived from VITM.

Table D.2 Access Mode Shares – Sunshine Station (Daily and AM peak station entries only)

Time Period Access Mode		Day 1	Base Case (no MAR)	Design Year	Future State 1 Before SRL	Future State 2 Post SRL
		2028	2036		2051	2051 + 30%
AM Peak (7-9am)	Walk/Cycle	800	1,100	1,200	1,500	2,000
	Bus	900	1,400	1,600	1,600	2,100
	Drive (Park and Ride)	600	700	700	800	1,000
	Drive (Kiss and Ride)	500	600	600	600	800
	AM Peak Total	2,800	3,800	4,100	4,500	5,900
Daily	Walk/Cycle	3,700	4,900	5,000	6,800	9,000
	Bus	4,600	6,400	7,000	8,300	11,100
	Drive (Park and Ride)	1,300	1,500	1,600	1,600	2,100
	Drive (Kiss and Ride)	1,000	1,200	1,300	1,300	1,700
	Daily Total	10,700	14,000	14,900	18,000	23,900

Source: VITM (2036 Base Scenario: MARCS_360003F0, 2036 Project Scenario: MARCS_360002F0)

Other Project Scenarios: MAR_Gold_MAR_{Year}_v2, 2051 with SRL : MAR_Gold_MAR_withSRL_2051_v2)

Appendix E LEGACY PRELIMINARY MINOR IMPACT MATRIX



E.1 Legacy Risks Preliminary Pathway to Level of Impact

Key legacy elements have been considered in relation to potential high-level transport risks that can occur with different transport infrastructure. How the design responds to these general risks has been plotted in relation to likelihood of an event occur and the most likely consequences which in suggests a level of impact that may or may not need further design or management input through ongoing project development stages. It is noted that this assessment is preliminary and is provided for information and to guide formal Environmental Risk Assessment procedures when undertaken.

For the purpose of this assessment similar consequence and likelihood frameworks have been adopted as within the MTP traffic impact assessment in Table E.1.

Table E.1 Preliminary Risk Likelihood and Consequence Rating Criteria – subject to discussion and agreement within wider Environmental Risk Assessment Process for the Project

Likelihood		Consequence	
Level	Description	Level	Description
Rare	The event is very unlikely to occur triggered under exceptional circumstance	Negligible	No detectable change in the local transport network setting No risk to individual or groups of transport users
Unlikely	The event is unlikely to occur, triggered under unusual circumstances	Minor	Short term, reversible changes in the local transport network settings Small impact on an individual or group transport users' journey
Possible	The event may occur under normal circumstances once within 5 years	Moderate	Long term but limited changes to the transport network settings that can be reasonable managed
Likely	The event may occur more than once in any five-year period	Major	Long term, significant changes to the transport network Major trauma that may lead to long term life changes.
Almost Certain	The event is almost certain to occur at least once a year	Severe	Irreversible, significant changes resulting in widespread risks to the functioning of the transport network May result in multiple major trauma or fatality

Based on the rating table above, the risks identified throughout the assessment of the Project elements impacting the wider transport network have been reviewed and an initial level of impacts have been identified.

Potential mitigation options have been identified for discussion and adoption as necessary through relevant stakeholder engagement processes minimise the level of any impact. No risks are considered to be unmanageable and it is not considered likely that suitable design responses would trigger any major changes to the project or construction expectations.

The preliminary risk matrices are provided below:

- Table E.2 - Preliminary Risk and Impact Assessment – New Shared User Path Infrastructure

Table E.2 Preliminary Risk and Impact Assessment – New Shared User Path Infrastructure

Project Element	Description	Location of potential areas of risk	Context	Initial Impact Risk Assessment and Mitigation Recommendations						
				Type of Risk	Consequence	Likelihood	Initial Risk	Next Steps		
Completion of Section of SCC between East Keilor and Sharps Road	<p>An identified future off road SUP that will be delivered as part of the project. The new path will connect to the existing M80 Trail and the existing Steele Creek Trail in the vicinity of the M80 bridge. The trail will run through the Steele Creek Tributary Reserve. It will cross over Tullamarine Park Drive and pass under Airport Drive to run along the east side of Airport Drive up to Sharps Road.</p> <p>Potential risk points likely to be:</p> <ul style="list-style-type: none"> ► SUP crossing of industrial collector street ► Gradients that are not DDA compliant. 	Tullamarine Park Road signalised path crossing	The SCC gap closure improves access to nearby destinations where cycling or walking are key modes, particular for more vulnerable users. Recreational users are likely to be limited to more confident users on longer routes	Delay to SUP users	Moderate traffic volumes for the cross section. Road can be crossed safely in two parts	Minor	Traffic volumes on Tullamarine Park Road are well within capacity suggesting gaps in traffic likely. Median will enable active transport crossing can be undertaken in two parts.	Possible	Low	Engage with Brimbank City Council regarding appropriate strategy.
				SUP / vehicle conflicts	Significant heavy vehicle use. Four lanes of traffic to be crossed but with a median.	Moderate	Moderate traffic volumes (7,000vpd across two lanes in each direction). Visibility of approaching traffic to be provided for design speed of the road.	Rare	Low	Undertake a Safe Systems Assessment (SSA) and Road Safety Audit (RSA)
		Steele Creek Tributary Section	Existing topography may result in grades in excess of DDA 1m in 14m or 1m in 20m but withing cycle limits.	Path gradients not suitable for all users	Not suitable for DDA access. Or DDA users using trail get into difficulties	Moderate	Land uses at the northern end of the path section and connections to other tracks are likely to limit the attractiveness of the track to users prepared for longer distance journeys such as too the airport and connecting to next SCC at the terminal.	Rare	Low	Provision of signage at entry and exit nodes of path section where gradients may not be suitable for all users
Sunbury to Sunshine SCC - SUP connection - Albion Station Car Park to St Albans Road	<p>SUP provided round the boundary of the car park, across the station car park entrance, under Ballarat Road bridge to St Albans Road terminating in the vicinity of Gilmour Road.</p> <p>Potential risk points likely to be:</p> <ul style="list-style-type: none"> ► SUP crossings of higher volume side roads or accesses ► Locations where SUP users need to cross high volume arterial roads to join or leave the SUP. 	SCC crossing treatment at Albion Station	The SCC will cross the current Albion Station eastern forecourt access, proximate St Albans Road / Ballarat Service Road	SUP / Vehicle conflicts	Incidents associated with through SCC users (typically cyclists) colliding with or having to make emergency stops to avoid vehicles exiting or entering Albion Station car park.	Moderate	Potential limitations to visibility of SCC users travelling south due to structure of Ballarat Road bridge could increase likelihood of occurrence.	Possible	Medium	Ensure visibility lines along SCC and from the driveway to the SCC, particularly under Ballarat Road bridge are maximised.
				Rear end collisions for vehicles	Incidents associated with slow moving stop start actions which could occur due to multiple considerations for drivers exiting the station car park.	Minor	Potential limitations to visibility of SCC users travelling south due to structure of Ballarat Road bridge could increase likelihood of occurrence.	Possible	Low	Signage to warn both SUP and station access of potential opposing vehicles.
				Albion Station will be an access node to the SCC. This means there will be people both on foot and bike joining or leaving the SCC as well as through movements	SCC through and entry / exit conflicts	Incidents involving higher speed through SCC cyclists and users crossing path to and from the station.	Moderate	The crossing is one of the main access nodes from the north and east so is likely to be well used by rail passengers that walk and cycle to the station either via the SUP or through the local footpaths.	Possible	Medium
		Access to and from SCC via Gilmour Road	The improved SCC will provide a generally safer and more usable access to Albion Station from residential areas in the Stations north east catchment. This cohort would access the SCC via Gilmour Road. Will contribute to suite of measures necessary to achieve target cycle access modal share to Albion	SUP / Vehicle Conflicts	Cyclist or pedestrian turning between Gilmour Road and SCC involved in an incident with a vehicle travelling through on St Albans Road. St Albans Road 60kph but a F3 freight route with AADT 8,700	Major	One existing crash at intersection involve bicycle (Crash Data Reference 2017 - T20170020506)-. Limited visibility to the south due the road overpass to rail	Possible	High	Monitor SUP user movements between SCC and Gilmour Road.
				Suppression of modal shift that could be achieved by construction of infrastructure	Perceived hazards or difficulty in crossing between Gilmour Road may discourage less confident riders from making a modal shift to bike	Minor	Crossing likely to be difficult due to poor visibility and relatively high volumes for single lane road	Possible	Low	Consider incorporation crossing opportunities to facilitate movements to and from Gilmour Rd and from southbound existing St Albans Road facilities to the SCC.
			North of Gilmour Road active transport facilities are provided in the form of on road cycle lanes and footpaths in the verge	SUP / Vehicle conflicts, transition to existing facilities on St Albans Road / Vehicle conflicts	Southbound footpath and cycle users will need to cross both directions of traffic on St Albans Road to access SCC	Major	Road is relatively high volumes with limited visibility of vehicles crossing over rail corridor	Possible	High	Advocate for the continuation of the SUP further north along St Albans Road.
				Infrastructure not convenient for users	Southbound cyclists may not transition to SCC and remain in traffic lane impeding traffic flows	Minor	As per existing	Possible	Low	Initial measures to slow vehicles where there are potential vehicle-cyclist conflicts

Project Element	Description	Location of potential areas of risk	Context	Initial Impact Risk Assessment and Mitigation Recommendations						
				Type of Risk	Consequence	Likelihood	Initial Risk	Potential Risk Management Principles		
Albion Station Reconfigured Western Car Park	Car parking provision in the western car park will be significantly reduced. Approximately 100 commuter spaces will be relocated to Sunshine.	Local Streets	No commuter car parking will be provided on the western side of the rail corridor. Kiss & Ride, accessible and staff parking will be provided	On street parking will be fully utilised by commuters to the extent that it is unavailable for short and long-term use associated with local uses	Existing parking restrictions already reserve most nearby streets to include some on street spaces for non-rail users	Minor	Proximate on street car parking is controlled with short term restrictions. Reorientation of the station may result in local streets with no current restrictions becoming attractive parking locations MAR will not increase demands over base.	Possible	Low	Wayfinding and information dissemination to educate Albion Park & Ride users of relocated spaces Develop of a suite of measures to encourage locals to shift from car to bike to use new bike facilities Extension to existing on street parking restriction coverage to recognise new streets
		Ferguson & Talmage Street	Primary pedestrian entrance to Station Precinct orientated to Ferguson Street / Talmage Street	Increased traffic movements on Ferguson Street & Talmage Street with a material impact on the existing amenity and performance of the streets	Streets are local streets and not through streets so any impact to capacity is unlikely to have wider network consequence. Potential increased through use particularly on Talmage Street, which incorporating a long straight stretch, may increase risk of higher speeds, than currently.	Moderate	VITM modelling suggests that during the AM peak two-hour period 600 rail passengers would arrive by Kiss & Ride mode. These would be split between the east and west side of the corridor. Surveys of Kiss & Ride trips at Sunshine indicated group sizes of between 1.5 and 2.7 application of the most conservative rate and assuming a broad split between east and west corridor facilities would suggest approximately 100 additional vehicles in a two-hour peak. Given the nature of Ferguson Street and Talmage Street and lack of traffic generating development along one side these additional trips are unlikely to have a material impact on the road. There is potential for excessive speeds along Talmage Street - due to its long straight alignment	Possible	Medium	Traffic volumes are unlikely to require any mitigation. Monitoring of speeds may be required to understand if local traffic management could be required in the future.
Albion Station Reduced capacity eastern car park	Between 30 and 150 commuter spaces will be removed from the eastern car park and relocated to Sunshine, to meet canopy targets. Kiss & Ride parking will be incorporated.	Local Streets	Significant reduction in capacity of station car park for commuters. Limited local streets, key arterial streets include clearway or No Standing restrictions	Increase demands for off-site car parks.	On street car parking could impede traffic flow. Local streets general industrial in nature. Abuse of other long term parking options not aimed at commuters but located closer and more convenient to Albion once car park is full	Minor	Higher order streets are typically subject to existing clearway or parking restrictions making them not suitable for on street car parking	Unlikely	Low	Wayfinding and information dissemination to educate Albion Park & Ride users of relocated spaces Develop of a suite of measures to encourage locals to shift from car to bike to use new bike facilities Review higher order kerb side parking restrictions to ensure station users cannot use.
Albion Station forecourt areas	Parkiteers and unprotected 'hoop' end of trip facilities will be provided and should encourage an increase in this modal share	Station forecourts	Station car parks and forecourts cater for a mix of movements including some that are being undertaken under time constraints	Rail patron foot traffic incidents	Collisions between pedestrians and street furniture, cyclists, cars accessing car parks. Vehicles likely to be slow moving due to car park.	Moderate	Rail forecourts are common areas for foot traffic to be rushing and focussed on the entrance to platforms	Possible	Medium	Ensure that street furniture and end of trip facilities are not in primary desire lines to station entrance Locate and position Parkiteers so that doors do not open out into pedestrian paths and visibility is provided round corner.
Sunshine Station Car Park	MAR will generate a minor increase in patronage, but no additional car parks are being provided.	Car Parks	Rail car parking is currently not subject to fees. There are also limited enforceable restrictions.	MAR patrons take up commuter car parks from Metro passengers	Poor journey experience for Metro passengers	Moderate	Premium ticketing for MAR services will reduce the attractiveness of Sunshine car parking and rail compared to parking fees at Melbourne Airport. However this may still provide an option for business day trips if Airport Station is more proximate to terminals than short term car parking at the Station	Possible	Medium	May need to monitor usage of Sunshine Car Park and consider introduction of controls to ensure parking is retained for commuters.
Sunshine Station Additional Parks	The southern car park will increase capacity by between 130 and 250 spaces	Station Car Park Access / Hampshire Road roundabout	Additional movements will need to be accommodated between Albion and Sunshine and in particular through the intersection of Hampshire Road / Sun Crescent and the station car park	Operation of the wider network	Queuing and additional delays would impact the operation of the wider road network, including delaying buses SIDRA analysis indicates little delay.	Moderate	Majority of relocated spaces are from the western Albion Station car park. Surveys indicated that this car park and the southern car park are generally at capacity prior to 7am and therefore redistributed traffic from Albion to Sunshine is unlikely coincide with peak road network periods	Unlikely	Low	None recommended at this time

Appendix F

CONSTRUCTION PRELIMINARY IMPACT MATRIX



F.1 Preliminary Construction Traffic Risk and ERP Requirements

Table F.1 Preliminary Risk and Impact Assessment (refer to Table E.1 in Appendix E for which summarises the preliminary risk likelihood and consequence criteria)

Type of Risk	Risk Cause	Context	Consequence and Likelihood Comment	Preliminary Risk Assessment (socio-economic / environmental)			Possible Management Measures	Environmental Performance Management
				Conseq.	Likelihood	Initial Risk		
Construction Activities on traffic flow, congestion and vehicle based road use	Construction traffic into and out of construction sites impeding traffic volumes	All Packages. Level of risk may change per package and area. Current risk is likely worse - thinking Anderson Rd turn into Chaplin Reserve site.	Construction generation rates provided suggest relatively low peak construction traffic volumes, which will typically occur outside traditional peak road traffic periods. SIDRA at most likely sites where delays could occur (Anderson Road) indicate no material delays	Minor	Possible	Low	Prepare Transport Management Plans for each Construction zone Consult with relevant authorities as required.	TT2
	General increase in link traffic volumes on the broader road network.	All packages	Construction traffic impacting the wider network. Generation rates provided or estimated to date are relatively low and spread across different construction sites which may be active at different times. Construction workers movement tend to occur outside peak hours	Minor	Unlikely	Low	Consult with relevant authorities	Unlikely to be required but covered as part of TT2.
	Large / Over dimensional vehicle movements	Sunshine Package, Viaduct Package and Construction zones including bridges	Full road closures impacting community accessibility and movement, on street car parking banned. May require physical infrastructure changes and road widening which may have an impact on other users. Will be required based on construction advice to date.	Moderate	Almost Certain	High	Prepare over dimensional transport management plan. Identify sensitive receptors. Consult with relevant authorities	TT2
	Roads closed in entirety to facilitate works or access to works	Sunshine Package, Possibly Viaduct - will need to be confirmed. Risk will depend on type of closure full day, night or weekend.	Significant delays. Diversion of traffic to routes where amenity and safety of local users may be impacted. Will occur based on construction advice to date.	Minor	Almost Certain	Medium	Construction scheduling or works that require short term road closures to avoid peak time periods if possible and to avoid proximate road closures. Prepare Transport Management Plans tailored each road closure, including traffic modelling. Consult with relevant authorities	TT1, TT3
	Road capacity reduced due to road narrowing and / or lane closures	May be a different level of impact in different areas. Depending the road that would be closed	Significant delays. Diversion of traffic to routes where amenity and safety of local users may be impacted.	Minor	Almost Certain	Medium	Consult with emergency services. Consult with key bus operators	TT1, TT3
	Actively used on street car parking loses.	Risk level would vary in different areas	Loss of car parking for the community. However few community uses in the vicinity of the works in project area.	Minor	Almost Certain	Medium	Understand demands and activities associated with impacted on-street car parking Consult with relevant authorities and stakeholders.	TT1, TT4
	Increased demands on local public parking to facilitate site workers	Risk level would vary in different areas	Loss of car parking for the community. However few community uses in the vicinity of the works in project area.	Minor	Almost Certain	Medium	Provide parking for workers within construction sites	TT2, TT4
Construction Activities on the operation of the public transport network	Rail occupations I	PTV lines / V Line Sunshine Package only	Significant impact to individual's journeys to work and other use of public transport	Moderate	Almost Certain	High	Prepare Rail Occupation Plan Consult with relevant authorities	TT1, TT5
	Station car parking reductions	Sunshine Package Only	Users of station cannot access sufficient car parking. Demands overflow onto local streets impacting amenity. Whilst some periods when car parking is reduced the station will be closed however rail replacement buses would still visit the station, although demands may reduce over rail occupation periods.	Minor	Almost Certain	Medium	Prepare Rail Occupation Plan, including consideration or temporary parking locations and potentially additional bike parking capability.	TT5, TT4
	Bus route detours	Sunshine Package Only	Buses using routes not previously traversed by bus services impacting amenity of local residents. Diversion routes requiring buses to make less safe manoeuvres than existing (ie replacing a left turn with an unsignalised right turn on a busy highway)	Moderate	Almost Certain	High	Consult with relevant authorities Consult with bus operators	TT1, TT3
	Bus stop closures	Sunshine Package Only	Diverting routes missing key stops that impacts communities access to bus routes and / or use of buses to reasonably access destinations.	Moderate	Unlikely	Low		
Construction Activities on the operation of the active transport network	Cycle path closures	Maribyrnong River Package and Sunshine and Albion Packages	Active transport routes cannot be maintained during construction, forcing users to less attractive or less safe routes or changing mode.	Minor	Possible	Low	Monitor usage before closure Consult with relevant authorities Prepare a Transport Management Plan, to outline appropriate alternatives where necessary	TT3
	Pedestrian links blocked	Generic all packages	Pedestrians miss connections or unable to complete journeys without significant increases in travel time and walking distances	Minor	Possible	Low		
Construction Activities on Other	Rail occupations II	ARTC Freight Requirements. Corridor Package and Sunshine Package	Significant closures impacting the logistics of freight and good movements around the state	Moderate	Almost Certain	High	Consult with ARTC Schedule closures to avoid high use periods as much as possible	TT6

Table F.2 Description of transport Environmental Management Requirement (EMR) by risk type

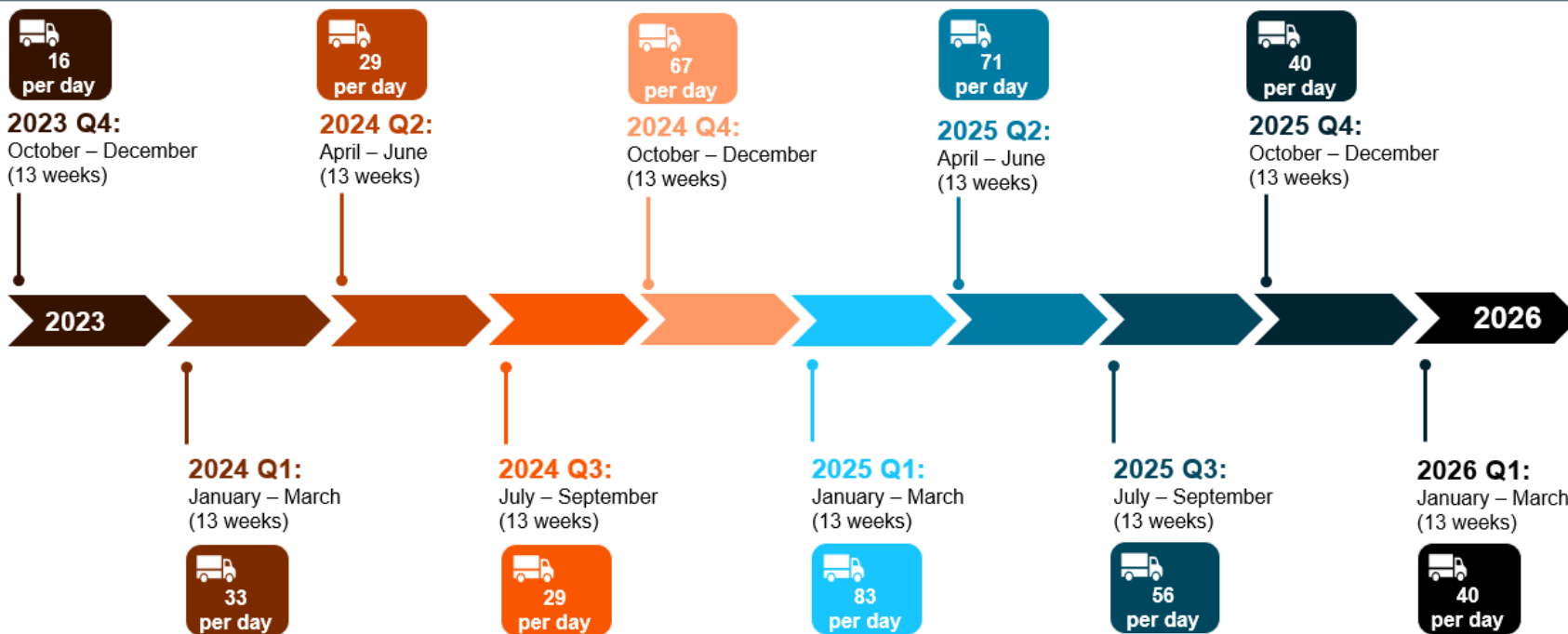
Type of Risk	Purpose of Traffic and Transport EPR	Traffic and Transport Environmental Performance Requirement	
		Type of EPR	Description of Plan
TT1	Influence communities approach to travel during construction to minimise traffic volumes	Travel Demand Management Plan (TDMP)	Preparation of a Travel Demand Management Plan (s) to influence travel behaviour during construction periods that will be implemented preceding and during construction periods. TDMPs to include: Strategies to roll out communication on upcoming construction disruptions Any tools and options that could be implemented by the community to manage changes to journeys The TDMP must be consistent with MAR Community and Stakeholder Engagement Plan.
TT2	Manage construction sites	Construction Transport Management Plans (CTMP)	Preparation of CTMPs for each construction site to manage movements into and out and around construction sites to include but not be limited to: Access controls to minimise excessive disruption on the adjacent transport network Movements in and around the site by all modes to minimise conflicts Car parking for workers to minimise impacts to public car parking Over dimensional vehicle access requirements Haulage routes
TT3	Manage disruptions to non rail transport networks	Transport Management Plans (TMP)	Prepare Transport Management Plans for Package of Works. Plans to include where appropriate but not be limited to: Site / disruption specific TMPs to mitigate against disruptions as required. Overdimensional Vehicle route identification and management processes Active transport diversions and wayfinding Public bus diversions, stop locations and mitigations to minimise disruption to network.
TT4	Manage changes to public car parking	Car Parking Management Plans (CMP)	Prepare Car Parking Management Plans outlining: Any loss of public car parking and time periods loss is applicable Potential temporary changes in parking controls Alternative public parking strategies where necessary.
TT5	Manage passenger rail closures	Rail Occupation Plans (ROP)	Preparation of a Rail Occupation Plan for each rail / line closure period and extent, including but not limited to: Rail replacement bus details for each closure Alternate station parking options where station parking is impacted.
TT6	Manage freight rail closures	ARTC Rail Occupation Plan (AROP)	Preparation of a Freight Occupation Plan in consultation with ARTC for each ARTC line closure period and extent, including but not limited to: Period and extent of each closure Likely freight tasks impacted by closures (??)

Appendix G

CORRIDOR AND VIADUCT CONSTRUCTION ACTIVITIES







MAR Construction Timeline – Corridor and Viaduct Package









LEGEND















Early works / early works warranting road closures

- | | |
|---|---|
|  Temporary road works (e.g. barrier set-up/line marking) |  Abutment, soil nail, existing bridge demolition, etc. works |
|  Civil and drainage works |  Grubbing, clearing and hardstand construction |

Main construction works / main construction works warranting road closures

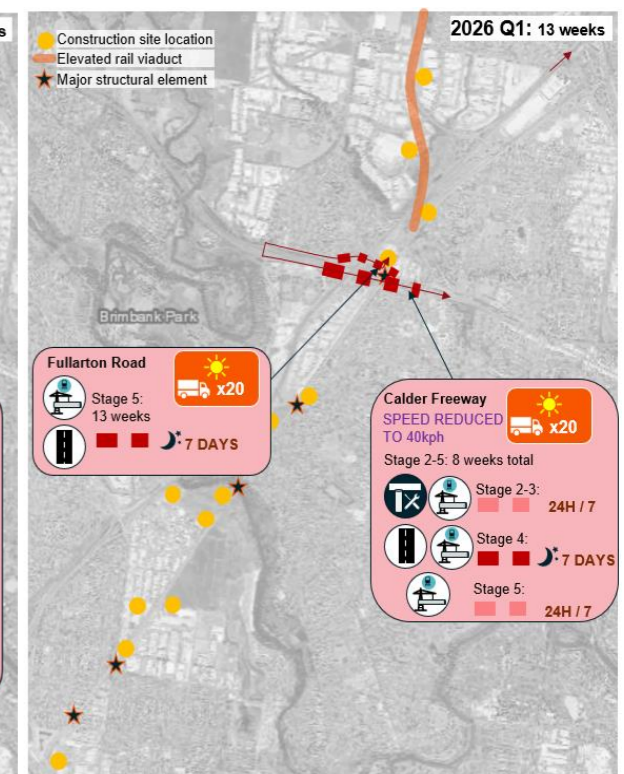
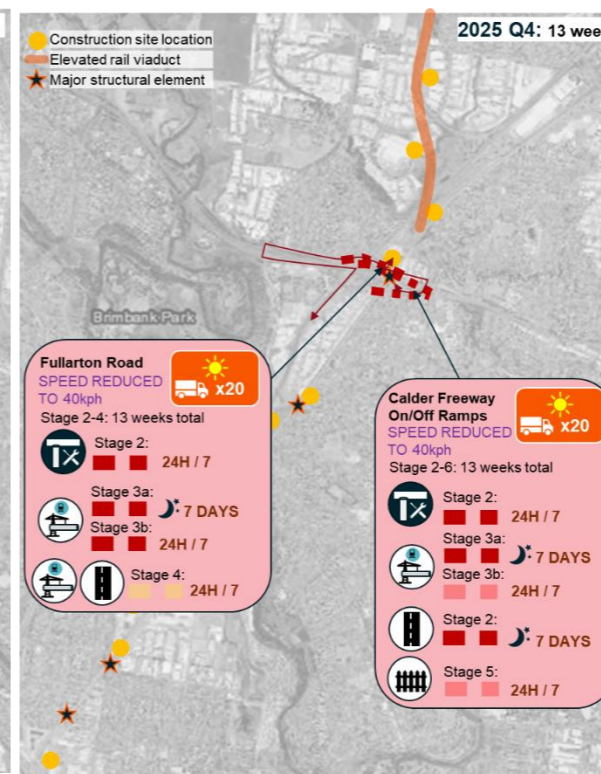
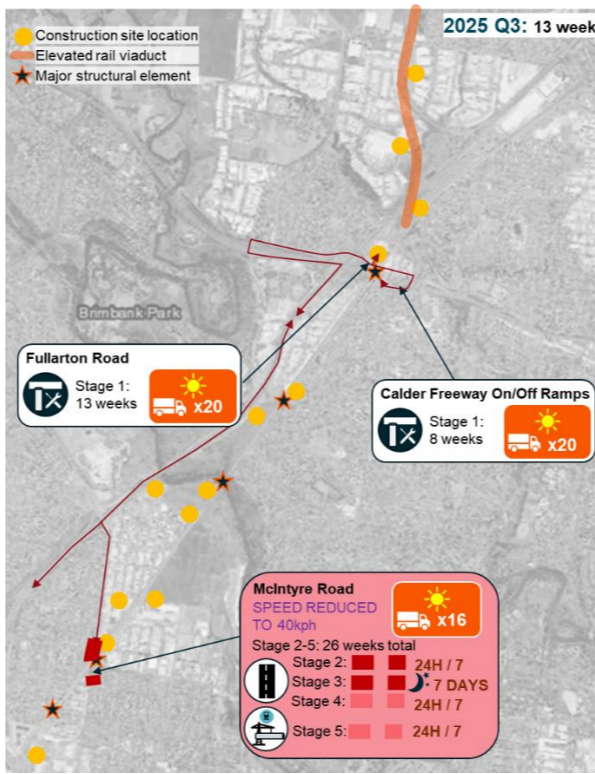
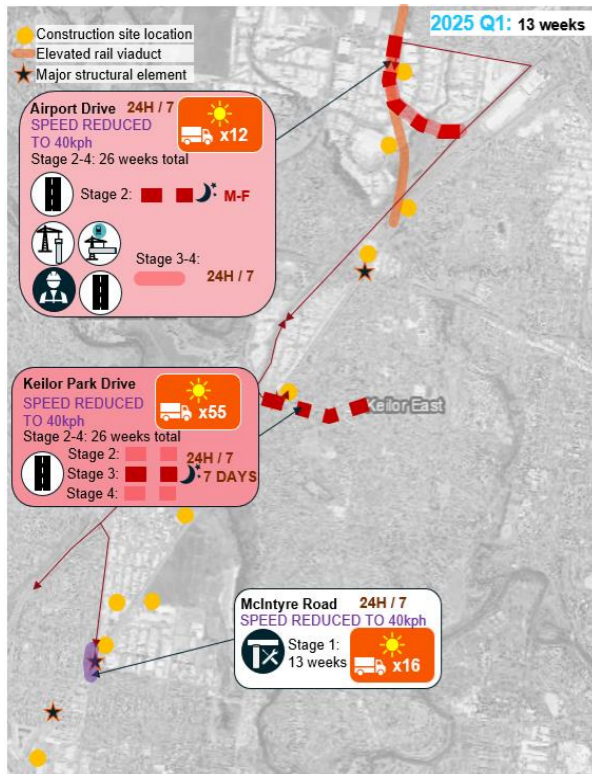
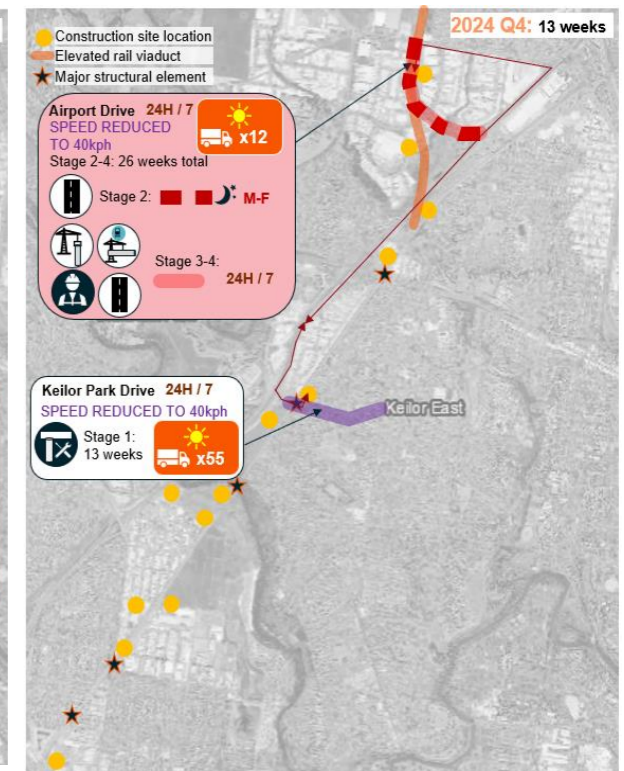
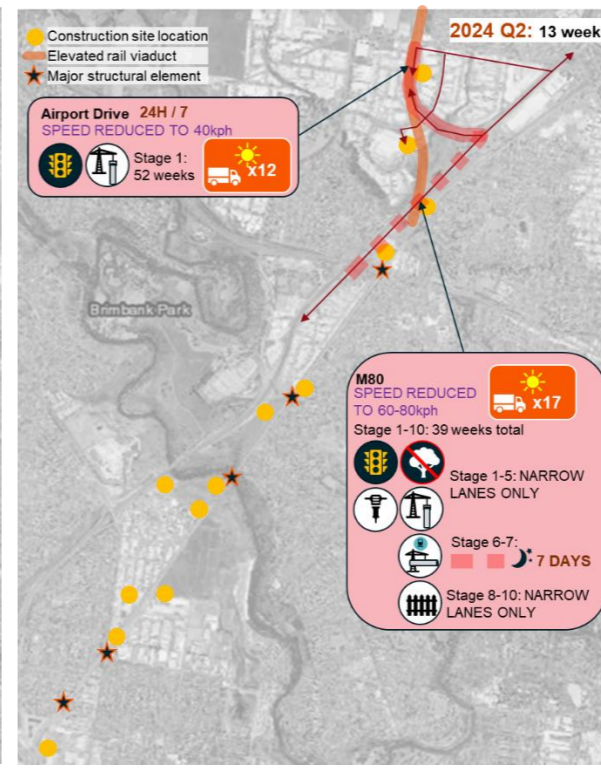
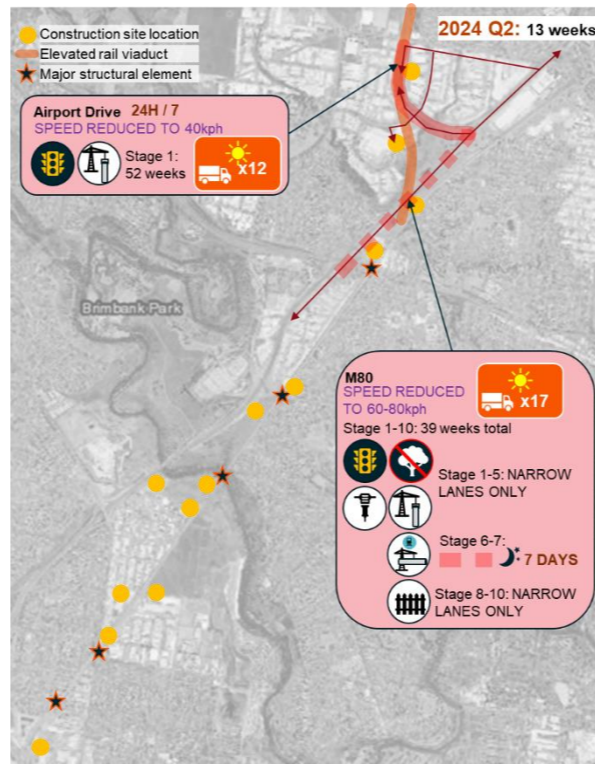
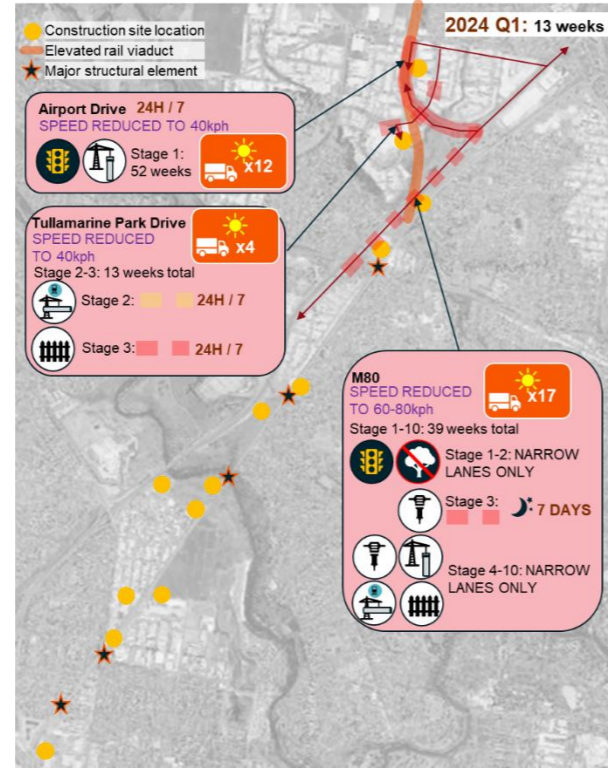
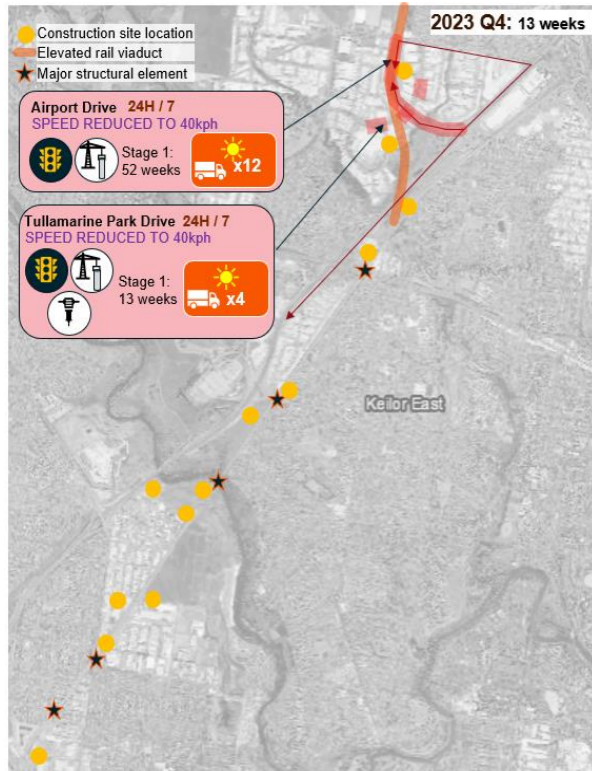
- | | |
|--|---|
|  Piling/pile cap works |  Span/deck construction and/or lifting (rail bridges/road bridge accommodating rail only) |
|  Pier / cross head construction And/or lifting |  Span/deck construction and/or lifting (rail bridges/road bridge accommodating rail and SUP) |
|  Various permanent road works (e.g. barrier set-up, slew, new footpath works) |  Architectural screen/noise wall/anti-throw screen and/or ancillary item installation |

Transport network impacts

- | | |
|---|--|
|  Key construction vehicle access route(s) | 24H / 7 Road/lane(s) closed all day/night all 7 days |
|  Intermittent speed reduction only | 24H M-F Road/lane(s) closed all day/night on weekdays |
|  Longer term speed reduction only | 24H WE Road/lane(s) closed all day/night on weekends |
| Intermittent/part closure for < 3 months |  7 DAYS Road/lane(s) closed all night only all 7 days |
|  Shuttle flow extent |  M-F Road/lane(s) closed all night only on weekdays |
|  Lane (i.e. partial road) closure extent |  WE Road/lane(s) closed all night only on weekends |
|  Full road closure extent |  x4 Average Daily truck movements per month Day Only (50% arrivals & 50% departures) |
| Closure for 3+ months |  x4 Average Daily trucks per month Day / night (50% arrivals & 50% departures) |
|  Shuttle flow extent | |
|  Lane (i.e. partial road) closure extent | |
|  Full road closure extent | |

2023

2026



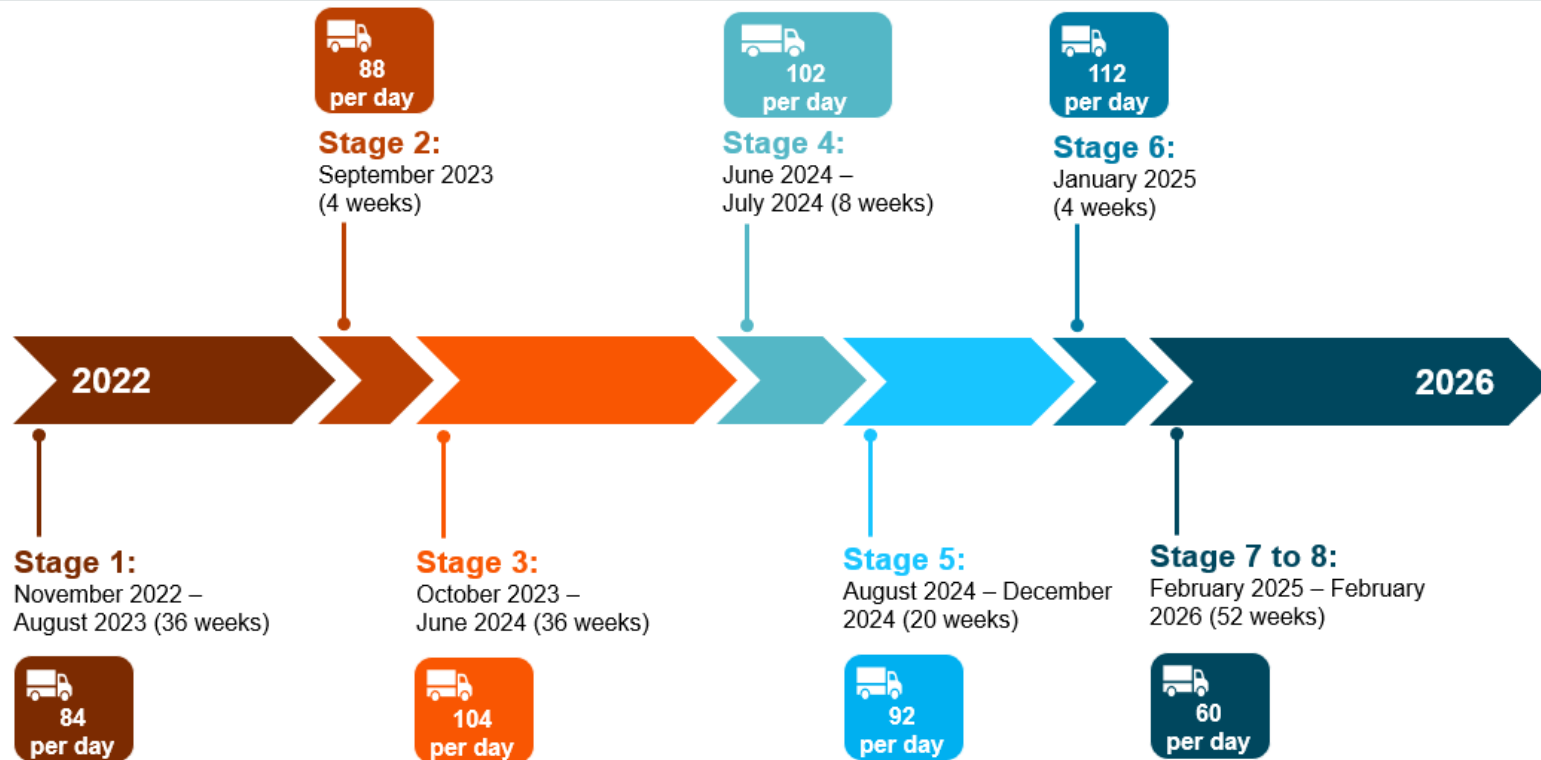
NOTE: ONLY TRUCK VOLUMES WARRANTING ROAD NETWORK DISRUPTIONS AND/OR CLOSURES HAVE BEEN MAPPED

Appendix H

SUNSHINE TO ALBION CONSTRUCTION ACTIVITIES










MAR Construction Timeline – Sunshine to Albion Package











LEGEND


Early works / early works warranting road closures

 Temporary traffic lights setup	 New access road/path	 Removal of car parking spaces
 Service relocations	 Traffic island modification/removal	
 SUP demolition	 Survey pick up	






Main construction works / main construction works warranting road closures

 Piling works	 Span construction and/or lifting (rail bridges/road bridge accommodating rail only)
 Pier / cross head construction And/or lifting	 Span construction and/or lifting (rail bridges/road bridge accommodating rail and SUP)
 Combined Services Route (CSR) work	 Abutment and pier works






Transport network impacts

 Key construction vehicle access route(s)




Intermittent/part closure during stage

 Shuttle flow extent	 M-F Road/lane(s) closed all night only on weekdays
 Lane (i.e. partial road) closure extent	 WE Road/lane(s) closed all night only on weekends
 Full road closure extent	




Closure across during most/all of stage

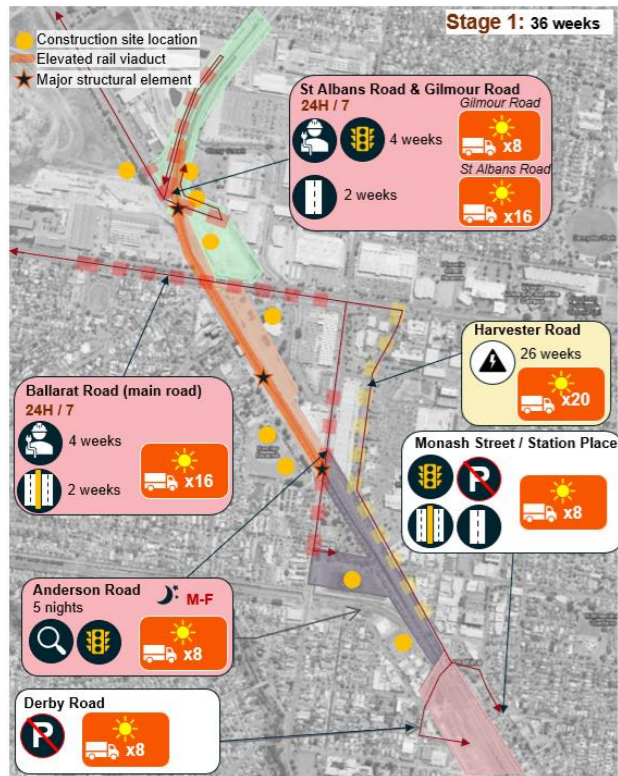
 Shuttle flow extent	 Average Daily truck movements per month Day Only (50% arrivals & 50% departures)
 Lane (i.e. partial road) closure extent	 Average Daily trucks per month Day / night (50% arrivals & 50% departures)
 Full road closure extent	

Existing rail track network between Sunshine and Albion

	Metropolitan rail tracks
	Regional rail tracks
	ARTC tracks

Rail network impacts

	No changes to rail track operation
 - - -	Buses replace passenger trains day to night or ESBF (early start, before first) (rail tracks temporarily closed)
	ARTC rail tracks temporarily closed / no train period

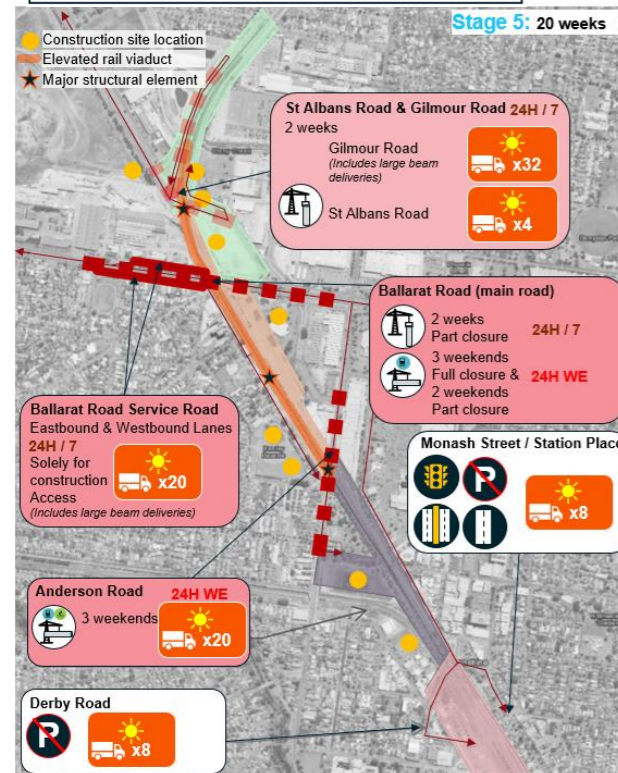


Rail network impacts

x4 days (April), x2 weekends (June & August)

x4 ESBF (April), x4 ESBF (June & August)

60 hours (April), x2 no train periods (June & August)

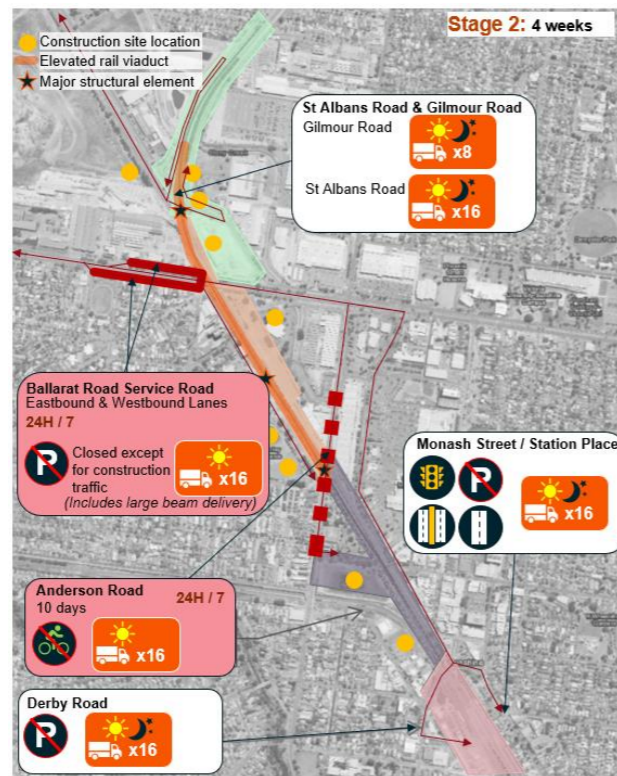


Rail network impacts

x3 weekends (August, September & December)

x6 ESBF (August, September & December)

60 hours, x2 no train periods

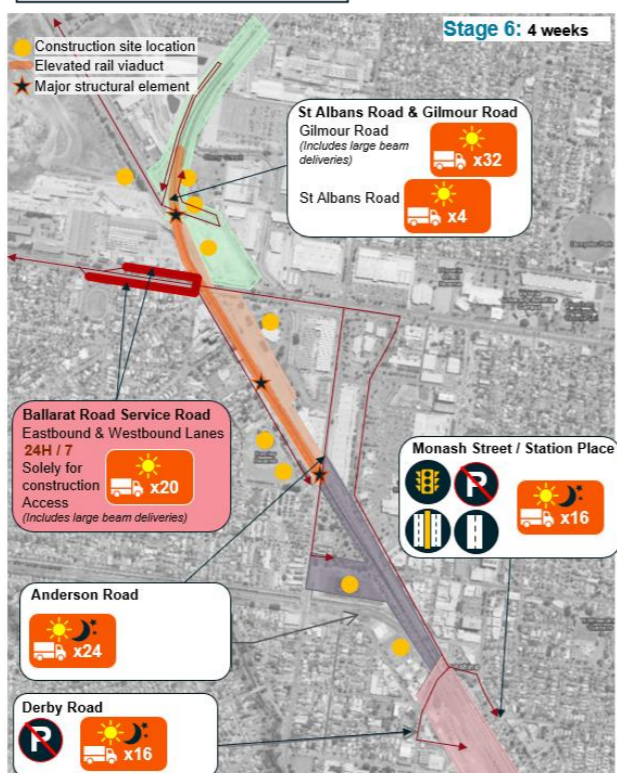


Rail network impacts

x9 days

x4 ESBF

x1 60 hours, x2 no train periods

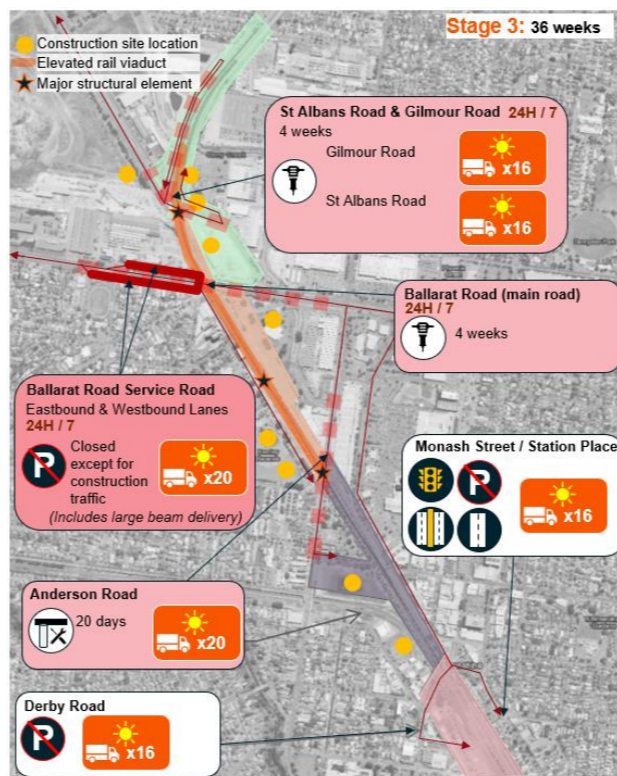


Rail network impacts

x31 days

x6 ESBF, x9 days

x5 no train periods

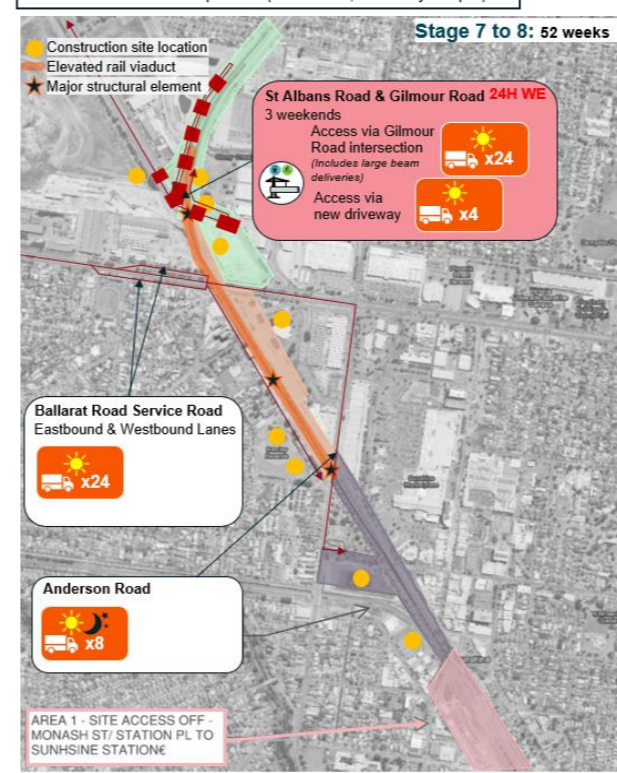


Rail network impacts

x3 weekends (December, February & April)

x6 ESBF (December, February & April)

x3 no train periods (December, February & April)

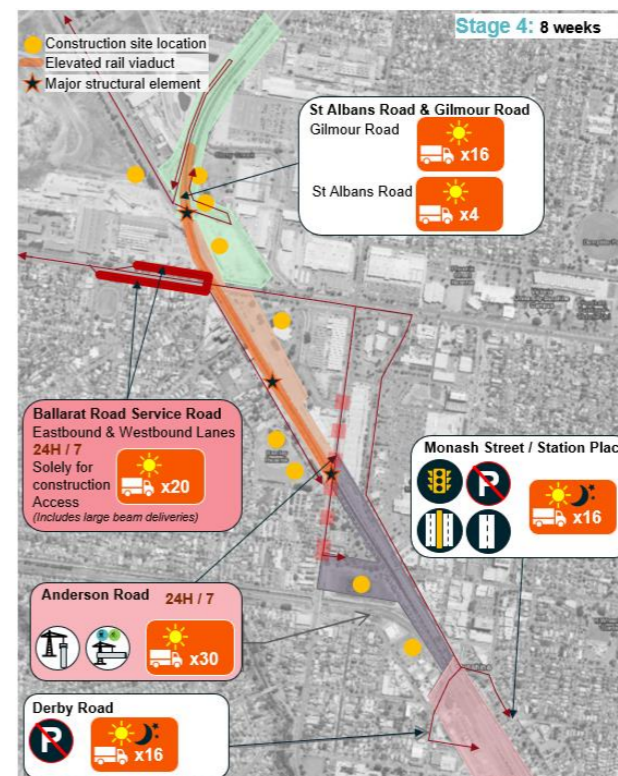


Rail network impacts

x3 weekends (April, July & August)

x6 ESBF (April, July & August)

x2 no train periods (April, July & August)



Rail network impacts

x16 days

x9 days

x3 no train periods



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