# Appendices

# Appendix A

# Summary of relevant State and Local Government Policy documents

# State / regional planning policy documents

## Network Rail Development Plan

Public Transport Victoria (Public Transport Victoria) developed the Network Development Plan – Metropolitan Rail in response to one of its key objectives upon formation as a government body in 2012. The plan is a detailed examination of how Melbourne's railway system is expected to evolve and grow over the short, medium and long-term. The plan outlines three key goals and actions for the rail network:

- To expand the capacity of the existing network to meet the needs of a growing city
- To redesign rail services to maximise opportunities for coordination with other public transport modes
- To extend the network into areas currently not served by metropolitan rail

There are four stages to the Network Development Plan:

- Stage 1 – Overcoming constraints
- Stage 2 - Commencing the introduction of a metro-style system: within 10 years
- Stage 3 - Extending the network: within 15 years
- Stage 4 - Preparing for future growth: within 20 years

Melbourne Metro is an integral part of the whole network plan and is referred to in Stage 2 of the Network Development Plan – Metropolitan Rail. Stage 2 involves the construction of Melbourne Metro. The plan outlines the resultant changes to the network. These changes allow increased train frequencies on six existing corridors and longer trains to operate on the Sunbury and Dandenong corridors. It would also provide new capacity in the inner core of the network to enable high frequency metropolitan services to Melton, Melbourne Airport and Rowville.

The Network Development Plan is the key reference document for Public Transport Victoria future rail network planning and the strategic framework around Melbourne Metro.

## Plan Melbourne (May 2014)

Plan Melbourne is the Victorian Government's metropolitan planning strategy that would guide the city's growth to 2050. The Plan sets out a vision for the future and provides a blueprint that would shape how people in greater Melbourne would live and work over the next 40 years. Plan Melbourne has policies and strategies that address transport, housing, economic development, and the environment across Melbourne.

Amendment VC106, which amended the Victoria Planning Provisions and all planning schemes to recognise 'Plan Melbourne' was approved by the Minister for Planning and came into effect on 30 May 2014.

The Plan Melbourne Advisory Committee has reformed in order to refresh and update the plan to reflect the public submissions received on the Draft Plan, and build upon committees original recommendations. This refresh would include reference to the Melbourne Metro Rail Project.

## Inner Melbourne Action Plan

The Inner Melbourne Action Plan is a collaborative partnership between the Cities of Melbourne, Yarra, Port Phillip and Stonnington and Maribyrnong. The group was established to provide an integrated response to guide to future development in the Inner Melbourne Region.

It forms a framework for the councils to translate Melbourne's planning policy directions into local planning strategies, and to develop a collaborative vision and joint initiatives. It also enables the policies and strategies developed by the individual municipalities to complement each other and work towards agreed

regional frameworks. There are a number of key strategies that align with and support Melbourne Metro to improve public transport:

- Effectively link transport routes so that the Inner Melbourne Region is accessible throughout by walking, cycling and public transport
- Increase public transport use

# City of Melbourne

## Melbourne Transport Strategy 2012

The main aims of the Melbourne Transport Strategy 2012 relate to the coordination of transport initiatives, strategic land use development policy and integration of local plans with the strategic plans of the State. The Strategy was adopted by Council on 8 May 2012 updating the 2006 strategy *Moving People and Freight 2006 - 2030*.

The Strategy identifies the need for *"a metro style rail service"* and to achieve these key directions, the strategy identifies 126 actions, including to *"work with the Department of Transport to achieve the conversion of the suburban rail network into a metro style system"*. In addition, the Strategy aims to ensure Melbourne Metro *"is well integrated with the existing city"* and linked to the municipality's urban renewal areas including Southbank, Docklands, E-Gate, Arden Macaulay, and City North. The Strategy would be reviewed again in 2016.

## Bicycle Plan (2012-2016)

The City of Melbourne *Bicycle Plan 2012-16* is the Council's short to medium term plan to make the City safer and more attractive for current and future cyclists. The Plan focuses on creating a viable bicycle network by improving links between existing routes, and by encouraging people of all ages and abilities to take up cycling or bicycle more frequently for local trips. The Plan outlines current cycling trends outlines potential strategies and actions for infrastructure, facilities, services and programs for investment by the City of Melbourne and partners.

The Plan identifies 50 large and small-scale projects to develop the City of Melbourne's bicycle network.

Some of the major projects outlined in the Plan and completed over the period were:

- La Trobe Street physically-separated bike lanes
- Swanston Street / Princes bridge conversion of one lane of traffic to bicycle only lane
- Elizabeth Street physically-separated bike lanes from Haymarket Roundabout to Victoria Street (partly completed to Queensberry Street only)
- Part time bike lane (peak hours) on Exhibition Street
- St Kilda Road (southbound) physically-separated bicycle lane between Princes Bridge and Linlithgow Avenue
- Clarendon Street chevron-separated bicycle route between Victoria Parade and Wellington Parade

Some projects in the planning and 'further investigation needed' stage that relate to the location of Melbourne Metro sites are:

- St Kilda Road – plan to construct a physically-separated bicycle route in conjunction with the City of Port Phillip from Southbank Boulevard to Carlisle Street in St Kilda
  - This route would pass directly through Domain station site and may also affect construction vehicle access to Swanston Street
- Wreckyn Street – plan to upgrade the connection from Wreckyn Street to Arden Street

- Grattan Street – work with stakeholders to develop the best way to improve cycling conditions on Grattan Street
  - Parkville station site is likely to be located under Grattan Street
- Arden Street – plan to upgrade route and bridge over Upfield railway line
  - Considerations may need to be given to staging of construction as Arden is proposed to be a key construction zone for Melbourne Metro.

The City of Melbourne has developed a draft bicycle plan to for 2016 – 2020 to further improve the bicycle network and boost the number of people riding bikes. Consultation on the draft Bicycle Plan 2016-2020 has now concluded and the strategy is due to be presented to Council for approval in March 2016.

## Walking Plan

Walking is the most important mode of transport for the City of Melbourne. It accounts for 66 percent of all trips within the municipality and is part of trips by all other modes. The City of Melbourne's Walking Plan (2014) is part of an integrated approach to transport, outlined in the City of Melbourne Transport Strategy 2012. The purpose of the Walking Plan is to highlight the contribution that walking makes to the city municipality, while laying out a practical plan to improve the city's walking network and encourage more walking. The walking plan aims to increase the number of walking trips in 2030 by 63 percent from 2009 levels.

It establishes principles for planning walking in the city including priority access, safety, access for all abilities, planning for future growth, creating attractive walking environments, permeability and reducing delay to pedestrians. In particular it supports improving pedestrian crossing times and reducing speed limits to improve pedestrian safety. The actions in the plan are grouped in three streams.

- Planning
  - amending the Melbourne Planning Scheme to improve the walking environment
- Street management
  - changing traffic signal operation to reduce delays to pedestrians
  - increasing the number of pedestrian streets and shared zones
  - improving legibility and way finding
- Capital works
  - extensive master planning
  - access around tram and bus stops
  - increasing the number of road crossings

The Walking Plan includes strategies and principals that focus on the role that walking plays in the city. These would form inform planning and design considerations around the station precincts.

# City of Port Phillip

## Sustainable Transport Strategy (2014)

The City of Port Phillip's *Sustainable Transport Strategy* is the City's transport policy document which was adopted by the council in December 2014. It aims to provide a framework for Council transport planning decisions to achieve a connected and liveable city for residents, visitors and workers that has less dependence on car-based travel. It does this by aiming to improve the convenience, safety, accessibility and range of sustainable travel choices across the municipality.

Melbourne Metro would align with the stated goal of the *Sustainable Transport Strategy* to improve public transport in the City of Port Phillip.

## Sustainable Transport Precinct Plans

In 2012 the City of Port Phillip divided the municipality into 10 Sustainable Transport Precincts in order to better identify areas of action to improve transport efficiency. St Kilda Road was identified as one stand-alone area. The area around the intersection of Albert Road / St Kilda Road, which is near the location of Domain station, was identified as an area in need of pedestrian crossing improvements and an area which would benefit from potential speed limit reductions.

## Bicycle Plan (2011)

The City of Port Phillip's *Bike Plan 2011-2020* is a plan that outlines the Council's policy vision and strategies to improve conditions for bicycle riding in the municipality. It describes the Council's strategy to increase bicycle trips by improving infrastructure, integration with public transport and walking networks, and behaviour and cultural change.

The two main strategies in the document that relate to Domain station site are: the strategic goal of achieving integration with public transport and also the improvement of on-road bicycle routes, specifically St Kilda Road.

## Walking Plan (2014)

The *Walk Plan 2011-2020* is the City of Port Phillip's strategic document that outlines the goals and actions to increase pedestrian trips in the municipality. The key goals of the policy are to create a walking network, provide higher quality walking environments, integrate walking with public transport, and build a culture that embraces walking in the municipality as a transport mode. Each key goal is supported by various strategies to achieve the goal's outcome.

The most relevant statements to Melbourne Metro are in the stated need for greater focus on pedestrian needs on major roads like St Kilda Road, which is relevant as it is the site of Domain station. St Kilda Road is described as a road that forms a barrier to pedestrian access due to high car traffic numbers. The document calls for more priority to be given to pedestrians at this location. Integration with public transport modes is also called for in the document. Domain station pedestrian amenity would be relevant in this regard.

## Parking Plan

The *Parking Neighbourhood Scheme* is the City of Port Phillip's strategic parking policy. It is an approach to parking regulation that seeks community feedback regarding parking issues. The policy tries to balance the community's needs within a precinct and the liveability impacts parking has on the City. There are six parking precincts covering the municipality and the St Kilda East, Windsor and Melbourne precinct will be reviewed in June / July 2016.

## Public Transport Advocacy Statement (2009)

The City of Port Phillip's *Public Transport Advocacy Statement* is a 2009 strategic advocacy document that outlines the Council's priority public transport improvements and describes the challenges likely to be faced by the municipality in the future. One key area of concern outlined in the document is the need for more tram capacity on St Kilda Road. The document acknowledges that Melbourne Metro involves construction of an underground rail tunnel that would achieve this in the longer term but suggests tram improvements may be necessary in the short-medium term. The document also outlines the case for connecting the tram tracks between Kings Way at Park Street and Heather Street at Park Street. This tram connection would have implications for the operation of tram routes at Domain interchange.

## St Kilda Road North Precinct Plan (2013)

The *St Kilda Road North Precinct Plan 2013* provides the City of Port Phillip's strategy for the future development of St Kilda Road, north of St Kilda junction to Dorcas Street near the Shrine of Remembrance. It establishes the principles for land use, transport and access, as well as community infrastructure. It also provides a framework for the review of built form controls in the precinct.

The Plan outlines how an underground railway station at Domain is expected to create new opportunities for high-value businesses and residential development in the area as well as relieving pressure on the Swanston Street / St Kilda Road tram corridor. The Plan advocates that entrances and exits to the new underground station should provide access to the City of Port Phillip neighbourhoods, the pedestrian crossing of St Kilda Road be maintained, a modal interchange is created between trams and the new station and, strong provision of bicycle parking is ensured.

## Fisherman's Bend Strategic Framework Plan

Fisherman's Bend is the largest urban renewal site in Australia and is located in the City of Port Phillip in Port Melbourne. This major new residential and employment precinct is still in the strategic planning stages and is currently being reviewed and updated by the Victorian Government. While Fisherman's Bend will not directly affect Melbourne Metro as the alignment of the rail tunnel does not interface with Port Melbourne, its role in the growth of residential and employment in the inner city is significant and will have major impacts on Melbourne's transport network.

# City of Stonnington

## Sustainable Transport Policy (2008)

The City of Stonnington developed an overarching Sustainable Transport Policy in 2008 in order to ensure that Stonnington responds well to contemporary transport challenges. This creates a framework within which an effective and coordinated transport planning and development can occur, and is, tailored to deal with the area's specific transport opportunities and challenges.

The City of Stonnington aim is to be serviced by an integrated, sustainable, safe, convenient, and accessible transport network that responds to the municipality's unique style and character, minimises impact on the environment and overall amenity, enhances liveability, promotes well-being, vitality and prosperity and benefits all users.

In recognising that travel relates to the movement of people and goods where appropriate, and not to the movement of vehicles, transport priority has been identified in the following order:

- Walking
- Cycling
- Public Transport
- Commercial vehicles serving local businesses and institutions
- Multiple-occupancy vehicles
- Single-occupancy vehicles

Melbourne Metro would align with the stated goal of the *Sustainable Transport Strategy* to improve public transport in the City of Stonnington.

## Bicycle Strategy (2013-2018)

The City of Stonnington's *Cycling Strategy 2013-2018* outlines the Council's strategies to enhance the physical environment as well as social aspects of bicycle use in order to support more uptake of cycling by

residents as well as more trips by current cyclists. The Strategy focuses on improving access to key local destinations by bicycle.

The five strategic directions outlined by the Strategy are:

- To encourage participation in cycling through promotion, marketing, and advocacy
- Facilitate the development of safe, accessible, legible, functional and appropriate cycling options and initiatives
- Continue to develop and improve the cycling network and associated facilities – prioritising the Principal Bicycle Network
- Support people at their destinations though end-of-trip improvements
- Champion local cycling culture in Stonnington.

## Walking Policy (2011)

The City of Stonnington Sustainable Transport Policy 2008 identifies walking as the priority transport mode. Walking is defined as the movement of people on foot and using mobility aids, including wheelchairs and scooters. The vision of City of Stonnington's Walking Policy (April 2011) is to progressively make its suburbs and precincts world-class walking areas, where it is safe and convenient to walk to destinations, where people are actively encouraged and enabled to walk, and where key community stakeholder groups and the community at large support Council's efforts to increase the amount of walking.

Key policy objectives include:

- Encourage more people to walk
- Collaborate to promote and improve provision for walking
- Create pedestrian friendly built environments, streets and public spaces
- Increase the safety of walking around schools and retail precincts
- Integrate walking with public transport

The Walking Policy aligns with Melbourne Metro by integrating walking with public transport which is one of the key modes of transport used to access stations.

# Relevant Planning Scheme Amendments and Strategic Planning Studies

Melbourne Metro Land Use Baseline Report summarises the relevant planning scheme amendments and associated strategic planning studies and policies have been grouped into the relevant precincts to which they apply.

# Appendix B

# Existing Conditions Summary

# Contents

# List of Figures

# 1 Precinct 1: Tunnels

## 1.1 Existing Conditions

As this TIA relates to the surface transport impact aspects of the Melbourne Metro and the tunnel works are underground, there is limited relevance of the tunnels to this transport impact assessment. The only other aspect of the tunnels that is relevant is the construction of the access shafts.

The locations for emergency access shafts are proposed to be at:

- Fawkner Park: to be located in the north east section of the park; or
- Adjacent to Linlithgow Avenue: to be located in Queen Victoria Gardens (north of Linlithgow Avenue)

A permanent above ground structure would be constructed to provide access and house essential equipment. Parking and access for emergency services personnel is required adjacent to the emergency access shaft, as they need direct access from the public road network.

# 2 Precinct 2: Western Portal (Kensington)

## 2.1 Existing Conditions

### 2.1.1 Road Transport

#### 2.1.1.1 Road Network

Table 2-1 lists the Smartroads categorisation of the road network near the proposed portal precinct. CityLink is the only preferred traffic route within the western portal precinct. Dynon Road and Macaulay Road are designated traffic routes. Dynon Road, Lloyd Street and Epsom Road (north of Smithfield Road) are approved B-double and higher mass truck routes.

**Table 2-1 Western portal precinct - SmartRoads road user priority classifications**

| SmartRoads classification | Road transport | | | Public transport | Active transport | |
|---|---|---|---|---|---|---|
| | Preferred traffic route | Traffic route | Local primary access route | Bus priority route | Bicycle priority route | Pedestrian priority area |
| **Declared Roads** | | | | | | |
| **City Link** | ✓ | - | - | - | - | - |
| **Dynon Road** | - | ✓ | - | ✓ | ✓* | - |
| **Local Roads** | | | | | | |
| **Macaulay Road** | - | ✓(east of Boundary Road) | ✓ | ✓ | ✓* | ✓(east of Kensington Rd) |
| **Epsom Road** | - | - | ✓ | - | ✓** | - |
| **Kensington Road** | - | - | ✓ | ✓ | ✓* | - |
| **Lloyd Street** | - | - | ✓ | - | - ** | - |
| **Arden Street** | - | - | ✓(east of Lloyd Street) | - | ✓** | - |
| **Childers Street** | - | - | - | - | ✓** | - |
| **Hobsons Road** | - | - | - | - | ✓** | - |
| **Tennyson Street** | - | - | - | - | ✓** | - |
| **Ormond Street** | - | - | - | - | - | - |

* Principal Bicycle Network, ** Local Bicycle Network

**Source: Transmaps, 2015 (http://www.maps.vic.gov.au/TransMaps/ui/DotmapUI.jsp)**

There are a number of network constraints in the western portal precinct:

- Lloyd Street has three closely spaced railway bridges with the lowest clearance height of 3.1 m
- Kensington Road has a railway bridge with a height restriction of 4.7 m located to the south of Childers Street and Hobsons Road
- Macaulay Road from Epsom Road to Stubbs Street has a truck curfew from 7:00am – 7:00pm Monday to Friday and 7:00am – 1:00pm, Saturday.

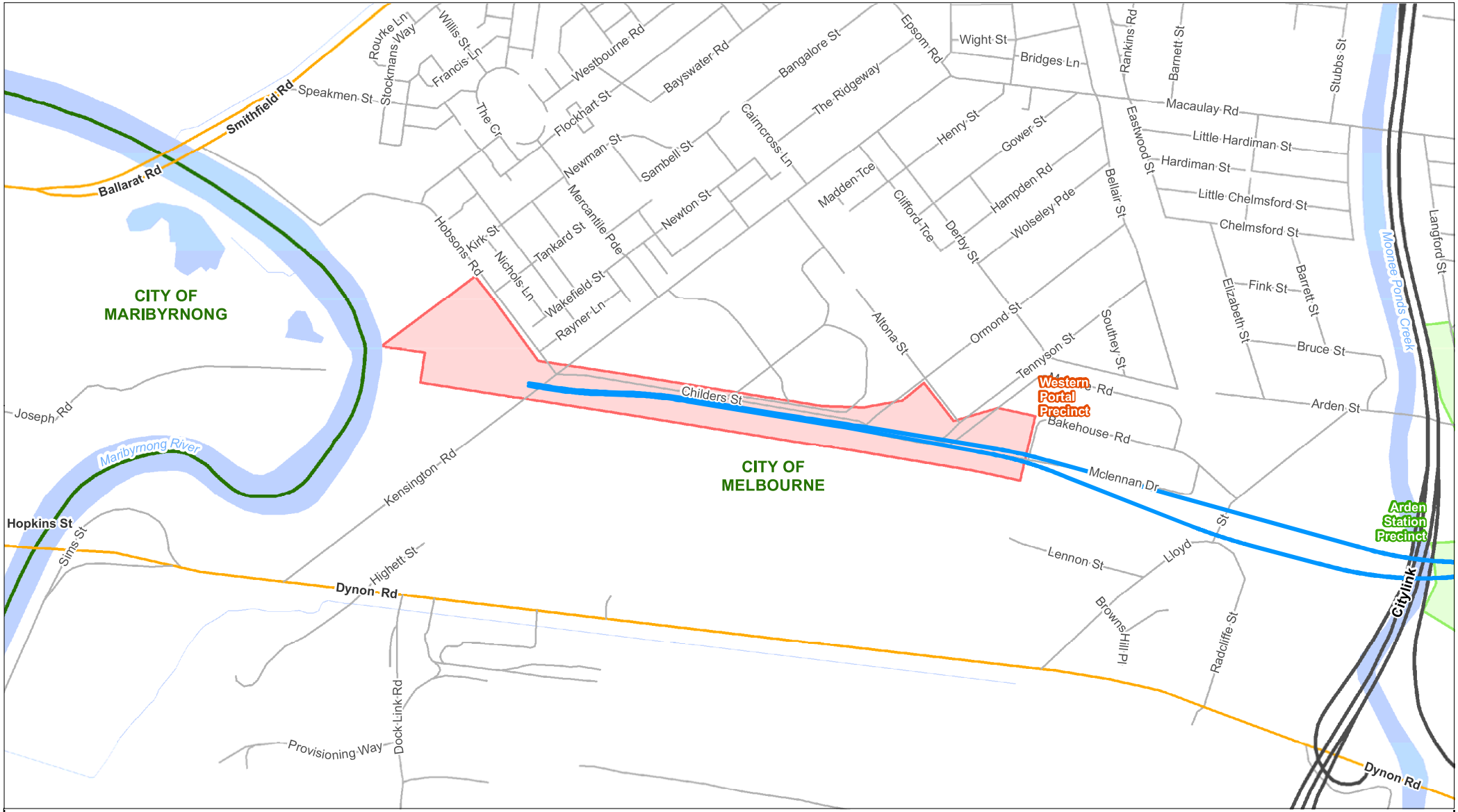



**Figure 2-1 Western portal precinct - Road network**

#### 2.1.1.1.1 Declared Roads

CityLink is a major tollway that functions as a bypass from the CBD and the West Gate Freeway to the Tullamarine Freeway and the M80 Ring Road near Essendon. It connects through to the Monash Freeway which is tolled up to Toorak Road in Malvern. It passes over the western portal precinct and has off/on-ramps at Dynon Road and Racecourse Road and a full interchange at Footscray Road.

Dynon Road is an arterial highway which provides a link into the CBD from Melbourne's western suburbs, providing an alternative to Footscray Road. It is a dual carriageway corridor where significant truck volumes are common as it is an important connection to the Port of Melbourne.

#### 2.1.1.1.2 Local Roads

There are a number of key local roads in the western portal precinct. An overview is provided in Table 2-2.

**Table 2-2 Western portal precinct – Key local roads**

| Local Road | Description |
|---|---|
| Macaulay Road | Macaulay Road is a single carriageway road with footpaths provided on both sides of the street. The street has dedicated bicycle lanes in both directions. The road has both 40km/h and 50km/h speed zones. |
| Epsom Road | Epsom Road is a single carriageway road with footpaths provided on both sides of the street. The speed limit alternates between 40km/h and 50km/h in residential and built up areas. |
| Kensington Road | Kensington Road is a single carriageway road with footpaths provided on both sides of the street. The street has dedicated bicycle lanes in both directions. There is a speed limit of 50km/h in residential areas. |
| Lloyd Street | Lloyd Street is a single carriageway road with footpaths provided on both sides of the street. The street has dedicated bicycle lanes in both directions. |
| Childers Street | Provides one traffic lane in each direction. There is indented parking on the southern side of Childers Street by JJ Holland Park. An off shared path also runs the length of the park and then there is an on road cycle path from Ormond Street to Tennyson Road. There are traffic management measures in place (speed humps) along the whole street. There is no vehicle access to Ormond Street or Tennyson Street From Childers Street. Only bicycle and pedestrian access is permitted. |
| Ormond Street | Residential street which provides one traffic lane in each direction. On street parking. No vehicle access to Childers Street but bicycle and pedestrian access are permitted. |

### 2.1.1.2 Network Performance

#### 2.1.1.2.1 Daily Traffic Profiles

To understand daily traffic profiles along key roads near the proposed western portal, SCATS data was obtained from VicRoads for a number of key intersections in the vicinity of the proposed western portal location.

*Kensington Road, Hobsons Road and Childers Street*

The profile of traffic flows on Kensington Road, Hobsons Road and Childers Street is shown in Figure 2-2.

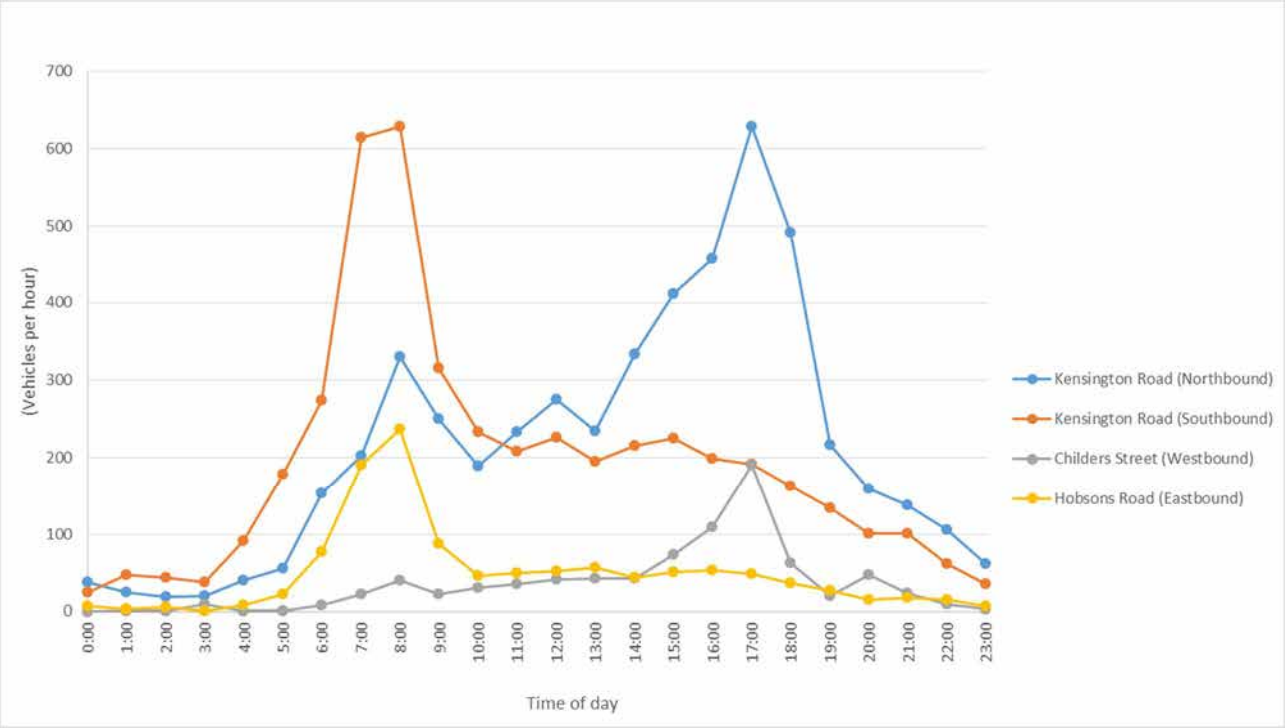



**Figure 2-2: Daily traffic profile on Kensington Road, Hobsons Road and Childers Street**

**(Source: VicRoads SCATS 27 May 2015)**

The peak flows on Kensington Road (southbound) and Hobsons Road (eastbound) are higher during the AM peak with the highest flows between 8:00am – 9:00am (refer to Table 2-3). Childers Street (westbound) has peak flows between 5:00pm – 6:00pm.

**Table 2-3: Weekday traffic flows at Kensington Road/ Hobsons Road / Childers Street signalised intersection**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Kensington Road (Northbound)** | 330 | 250 | 457 | 629 | 5,073 |
| **Kensington Road (Southbound)** | 615 | 629 | 199 | 190 | 4,550 |
| **Hobsons Road (Eastbound)** | 190 | 237 | 53 | 48 | 1,158 |
| **Childers Street (Westbound)** | 22 | 40 | 109 | 190 | 836 |

**Source: VicRoads SCATS, 27 May 2015**

*Dynon Road and Kensington Road*

The profile of traffic flows on Dynon Road and Kensington Road is shown in Figure 2-3 and Table 2-4.

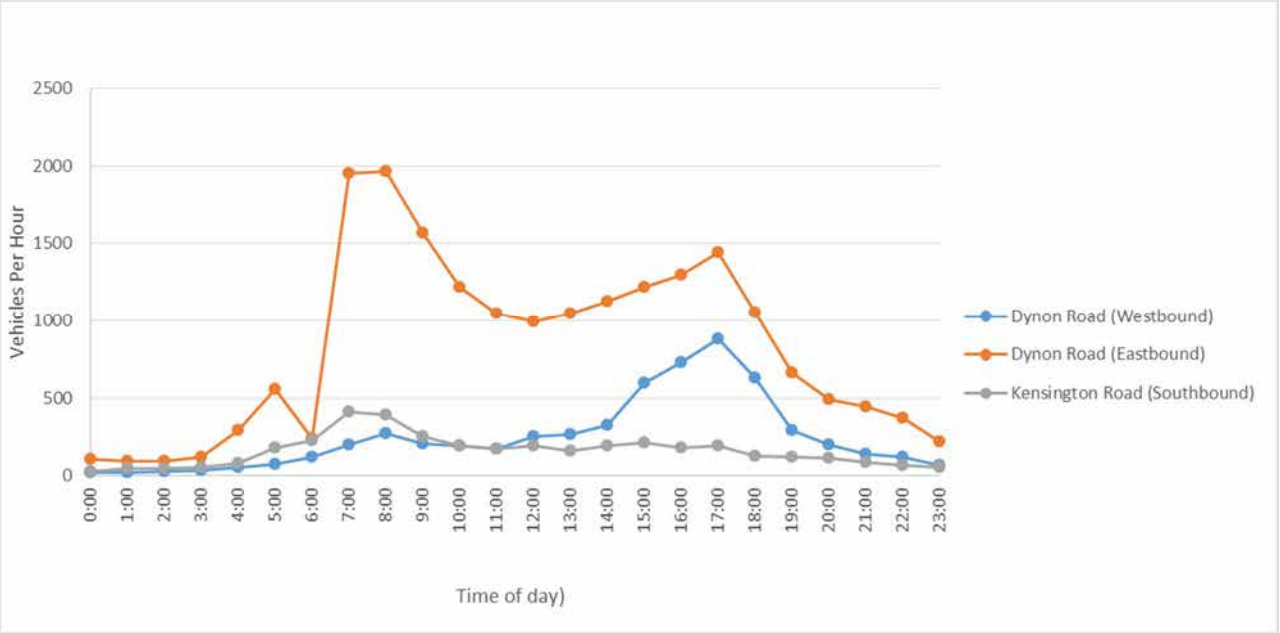



**Figure 2-3: Daily traffic profile on Kensington Road and Dynon Road**
**(Source: VicRoads SCATS 27 May 2015)**

The peak flows on Dynon Road (eastbound) and Kensington Road (southbound) are higher during the AM peak. The highest flows on Dynon Road are between 8:00am – 9:00am. VicRoads Average Annual Daily Traffic (AADT) volumes[1] shows the number of trucks on Dynon Road is estimated to be 1,800 travelling eastbound and 1,600 westbound between Kensington Road and Dock Link Road.

**Table 2-4: Weekday traffic flows at Kensington Road and Dynon signalised intersection**

| Intersection Leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Dynon Road (Westbound)** | 199 | 273 | 730 | 883 | 5,907 |
| **Dynon Road (Eastbound)** | 1,950 | 1,963 | 1,298 | 1,446 | 19,629 |
| **Kensington Road (Southbound)** | 410 | 395 | 178 | 194 | 3,799 |

**Source: VicRoads SCATS, 27 May 2015**

AADT volumes show the number of trucks on Dynon Road is estimated to be 1,300 travelling eastbound and 1,200 westbound between Lloyd Road and Western Link Tollway.

[1] https://www.vicroads.vic.gov.au/traffic-and-road-use/road-network-and-performance/road-use-and-performance

**Table 2-5: Weekday traffic flows at Dynon Road and Lloyd Street signalised intersection**

| Intersection Leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Dynon Road (East)** | 497 | 653 | 1,113 | 1,394 | 14,002 |
| **Dynon Road (West)** | 2,140 | 1,837 | 1,115 | 1,167 | 19,652 |
| **Lloyd Street (South)** | 180 | 234 | 558 | 633 | 4,965 |

**Source: VicRoads SCATS, 27 May 2015**

#### 2.1.1.2.2 Intersection Analysis

Table 2-6 provides a description of the intersection controls in place at key intersections within Kensington.

**Table 2-6 Intersection controls**

| Intersection | Control | Public transport priority | Cyclist advanced stop boxes | Banned movements |
|---|---|---|---|---|
| **Lloyd Street and Dynon Road** | Signalised | None | None | None |
| **Kensington Road and Dynon Road** | Signalised | None | None | None |
| **Epsom Road, Kensington Road and Macaulay Road** | Signalised | None | Yes | None |
| **Kensington Road and Childers Street** | Signalised | None | Yes | None |

### 2.1.2 Road Safety

Between January 2010 and January 2015, there were 70 road casualties[2] within the defined study area bound by Dynon Road, Kensington Road, Lloyd Street, Macaulay Road and CityLink. Of these accidents:

- None were fatal, 34 per cent (24) were serious injury casualties, and 66 per cent (46) were other injury casualties
- Rear end crashes accounted for 18 per cent of motor vehicle incidents
- There were 23 bicycle casualties over the period (32 per cent of all casualties). The most common type of bicycle incident was motor vehicles turning right through an intersection colliding with a cyclist heading straight. Macaulay Road had the highest frequency of bicyclist casualties.
- There were 10 incidents (14 per cent) involving motor vehicles striking pedestrians

The key area where incidents occurred was in the commercial/retail strip of Macaulay Road. The intersection with the highest frequency of incidents was the intersection of Kensington Road and Dynon Road.

[2] https://www.data.vic.gov.au/data/dataset/road-crash-information-system-data-extract-may

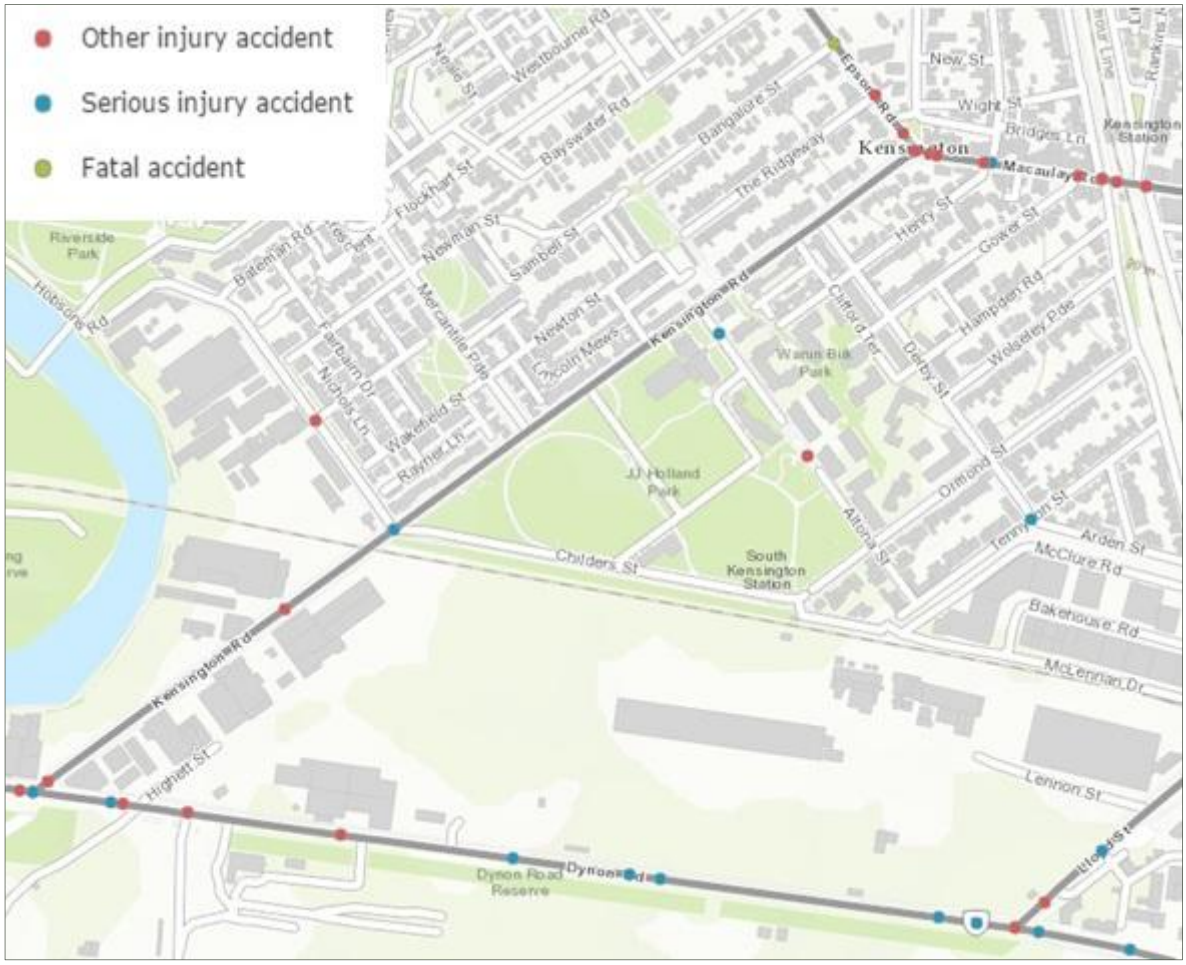



**Figure 2-4 Western portal precinct – Road accident locations**

## 2.1.3 Car Parking and Access

### 2.1.3.1.1 On Street Parking

Most roads within the proposed western portal study area have a good supply of on-street parking with unrestricted parking controls. There is a small amount of restricted parking on Childers Street (refer to Table 2-7).

**Table 2-7: On-street parking in the immediate vicinity of the proposed western portal**

| Street | Parking spaces | Parking restriction |
|---|---|---|
| **Childers Street (south of JJ Holland Park)** | 125 | Unrestricted |
| **Childers Street (between Ormond Street and Tennyson Street)** | 28 | Unrestricted with exception of 8 2hr resident priority parking spaces |
| **Kensington Road (Childers Street to Altona Street)** | 68 | Unrestricted |

### 2.1.3.1.2 Disabled Parking

There are four disabled parking spaces on Kensington Road and two disabled spaces on Childers Street.

#### 2.1.3.1.3 Taxi Zones

There are no identified taxi stands near the proposed western portal location.

#### 2.1.3.1.4 Loading Zones

There are loading zones on Kensington Road between Hobsons Road and Childers Street. These are subject to a 30 minute time limit from 7.30 am to 6.30 pm (Monday to Friday) and 7.30 am to 12.30 pm on Saturday.

#### 2.1.3.1.5 Clearways

There are no clearways near the proposed western portal location.

#### 2.1.3.1.6 Car Sharing

There are two car share operators within the vicinity of the proposed western portal location:

- Go Get – 1 car on Gower Street just south of Macaulay Road
- Flexicar – 1 car on Derby Street (nr Kensington Road) and 1 car on Bellair Street (near Macaulay Road)

#### 2.1.3.1.7 Off Street Parking

There is very limited off-street parking in the vicinity of the proposed western portal location.

#### 2.1.3.1.8 CBD Congestion Levy

The Victorian government imposes the levy on "off-street" parking spaces used for parking cars or larger motor vehicles within the levy area annually. The levy is charged on each space that existed as leviable parking space at any time in the previous calendar year.

From 2015, there were would be two levy areas, which would be subject to different levy rates. Spaces within the category 1 levy area would be subject to the full levy rate, while spaces in the category 2 levy area would be charged a lesser amount which would now include Kensington. For the spaces within the category 1 levy area, the congestion levy for 2014 is $1300 for each leviable parking space. From 2015, a lesser rate of $950 would apply on each space within the category 2 levy area[3].

### 2.1.4 Public Transport

#### 2.1.4.1 Rail Network

The nearest station to the proposed western portal location is Kensington which is an unstaffed located on Childers Street. The public transport services in the area near the proposed western portal are shown in Figure 2-5.

The station is served by the Werribee and Williamstown lines. Other railway lines that pass through South Kensington, but do not stop, are the Sunbury line and the regional V/Line services for Melton/Ballarat, Bendigo, and Geelong.

[3] http://www.sro.vic.gov.au/sro/sronav.nsf/childdocs/-3A87315B22BC23FFCA2575A100441F59-EFC160ABBE873990CA2575B70020FC3B?open

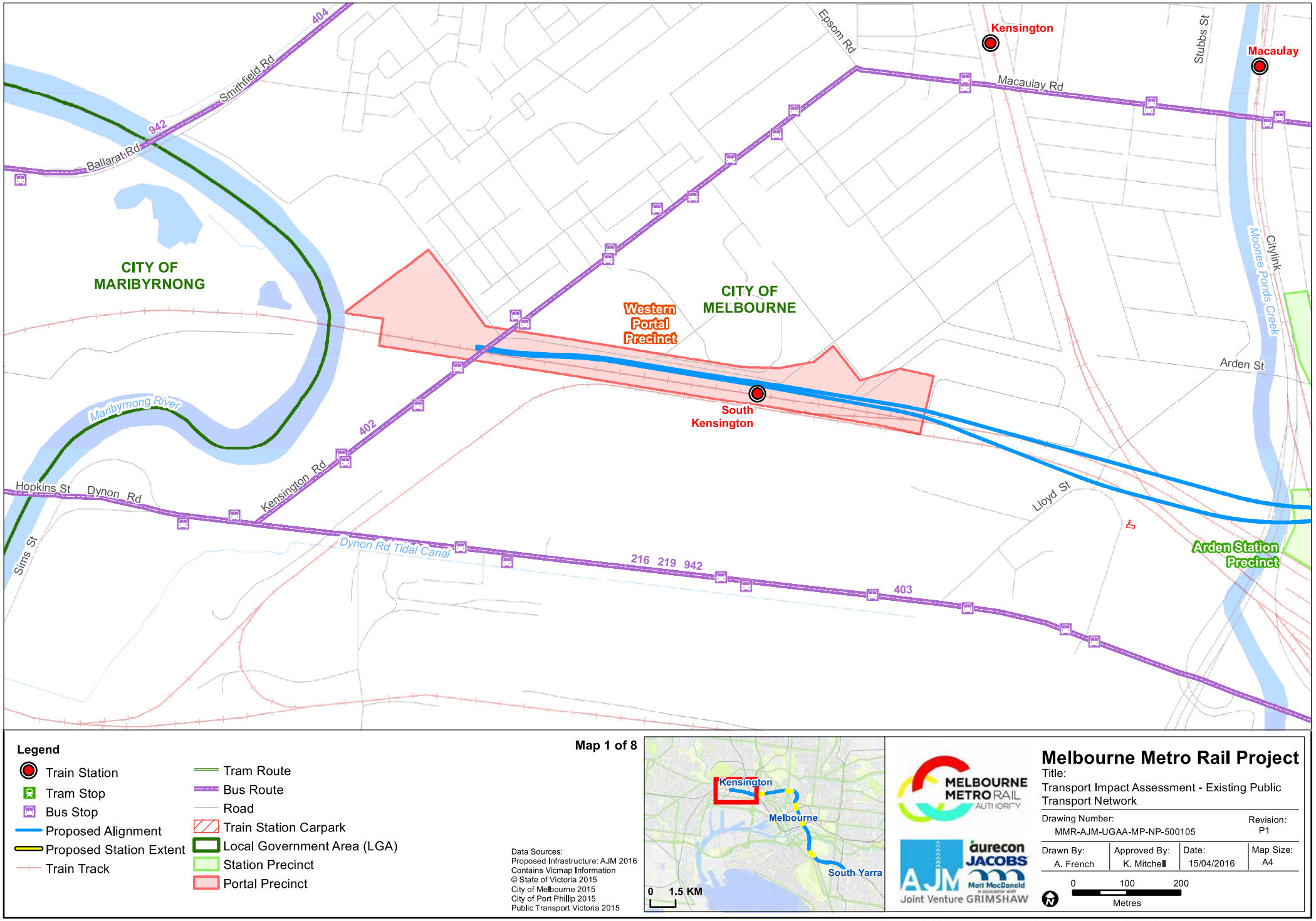



**Figure 2-5 Western portal precinct - Public transport network**

There are currently 17 inbound services stopping at South Kensington Station during the peak 2-hour period (refer to Table 2-8). There are 6 inter-peak services that stop at South Kensington Station. This is approximately a third of all Werribee / Williamstown services, all other services do not stop at South Kensington Station.

**Table 2-8 Rail services from South Kensington Station**

| Line | Trains per hour (peak direction) | | | |
|---|---|---|---|---|
| | Peak hour | Peak 2-hour | Inter-peak | Other off-peak |
| Werribee | 5 | 12 | 3 | 3 |
| Williamstown | 0 | 0 | 3 | 0 |

**Source: PTV (Timetable effective 14 August 2015).**

The Night Network comprises all night public transport on weekends, with all night trains and trams, late night buses, and a 2am coach service to key regional centres. PTV is leading the delivery of the one-year trial in partnership with Victoria Police. The trial network has been designed to provide over 70 per cent of Melburnians with an all night train, tram or bus within one kilometre of their home and includes: [4]

- Night Train: Hourly services in and out of the city on almost all metro train lines
- Night Tram: 30 minute service on six key tram routes throughout Melbourne
- Night Bus: 21 routes linking with trains from the city (replacing NightRider services)
- Night Coach: 2am services to Ballarat, Bendigo, Geelong and Traralgon

### 2.1.4.2 Tram Network

There is no tram service within the western portal precinct.

### 2.1.4.3 Bus Network

There are five bus services operating near the proposed western portal (refer to Table 2-9):

- Routes 216 and 219 travel along Dynon Road to the south of the proposed portal location
- Route 402 travels along Kensington Road to the west of JJ Holland Park and the proposed portal location
- Route 404 travels along Epsom Road / Smithfield Road to the north of the proposed portal location

Dynon Road, Macaulay Road, and Kensington Road are all identified as are designated SmartRoads bus priority routes.There are currently 18 bus services (peak direction) during the peak hour operating in the vicinity of the proposed western portal (refer to Table 2-9). There is one Night Bus.

**Table 2-9 Bus routes operating near the western portal location**

| Bus Route | Buses per hour (peak direction) | | | |
|---|---|---|---|---|
| | Peak hour | Peak 2-hour | Inter-peak | Other off-peak |
| 216 (Caroline Springs – Brighton Beach) | 6 | 10 | 2 | 2 |
| 219 (Sunshine South – Gardenvale) | 2 | 4 | 2 | 2 |

[4] http://ptv.vic.gov.au/getting-around/night-network/night-network-overview/

| Bus Route | Buses per hour (peak direction) | | | |
|---|---|---|---|---|
| | Peak hour | Peak 2-hour | Inter-peak | Other off-peak |
| 402 Footscray – East Melbourne via North Melbourne | 7 | 12 | 6 | 3 |
| 403 | | | | |
| 404 Footscray – Moonee Ponds via Newmarket | 3 | 6 | 2 | 2 |

**Source: PTV, 21 June until further notice. (Friday frequencies occasionally differ from Mon-Thurs frequencies).**

## 2.1.5 Active Transport

### 2.1.5.1 Pedestrian Environment

There is a good provision of pedestrian infrastructure in the vicinity of the western portal precinct. With the exception of Dynon Road, all roads connecting the site to the wider road network have footpaths on both sides of the carriageway providing a continuous network near and throughout the western portal precinct.

Macaulay Road (east of Kensington Road is the only SmartRoads pedestrian priority in the area. Most of the study area is walkable with footpaths provided along most roads, though the major road corridors through the area adversely affect the pedestrian environment by creating severance. However facilities to cross streets are generally provided and help to reduce the severance effect of major road corridors.

Next to the major roads, such as Dynon Road and Footscray Road, amenity levels at times are poor, principally due to the high volume of traffic movements along these traffic routes. There are not many active street frontages along the major corridors that can give a perception of feeling unsafe especially when walking in the winter months and later in the evening.

There are poor levels of legibility and relatively little wayfinding or signage, across the precinct to encourage local trips. The area is dissected by major road corridors and in particular the east-west arterial roads. Facilities to cross these roads are provided in the form of controlled pedestrian crossings. Pedestrian crossings are provided on many of the local roads.

Drop curbs are provided at both signalised and unsignalised intersections. Most signalised pedestrian crossings have aural signals as well as visual signalling for pedestrians. The provision of tactile ground surface indicators is generally widespread although there are some locations where this is not provided.

During the AM peak period there are typically 530 passenger entries / exits at South Kensington Station (refer to Appendix D).The key access modes to the station in the morning peak for boarding passengers are walk (80 per cent), car (16 per cent) and 2.5 per cent by bicycle. Sixty one per cent of passengers at South Kensington station have the stated trip purpose of commuting to employment and 21 per cent for education[5].

### 2.1.5.2 Bicycle Environment

#### 2.1.5.2.1 Bicycle Network

There are a number of on-road and off-road bicycle lanes in the vicinity of the proposed western portal location (refer to Table 2-10 and Table 2-1) including an off-road shared path between Kensington Road and Ormond Street and an on-road bicycle path east of Ormond Street (refer to Figure 2-6).

**Table 2-10 Western portal precinct - Bicycle network**

[5] Passenger Activity by Metropolitan Station (2008-09 to 2013-14), PTV, May 2015

| Road | Type of treatment |
|---|---|
| **Dynon Road** | Off road shared path |
| **Macaulay Road** | On-road bicycle lane |
| **Epsom Road** | Informal on road bicycle route |
| **Kensington Road** | On-road bicycle lane |
| **Childers Street** | Off road shared path between Kensington Road and Ormond Street. On-road bicycle path east of Ormond Street. |
| **Arden Street** | Informal on road bicycle route |
| **Hobsons Road** | On-road bicycle lane |
| **Tennyson Street** | Informal on road bicycle route |
| **Lloyd Street** | On-road bicycle lane |

Bicycle counts were undertaken at the intersection of Childers Street / Kensington Road / Hobsons Road on Wednesday 9 December 2015. During the AM peak (7am-9am) there were 97 cyclists travelling eastbound on Childers Street and 22 westbound. Fifteen cyclists were counted travelling southbound on Kensington Road and 11 northbound.

#### 2.1.5.2.2 Bicycle Parking

There is a small amount cycle parking areas at JJ Holland Park, South Kensington station and in the retail area of Macaulay Road.

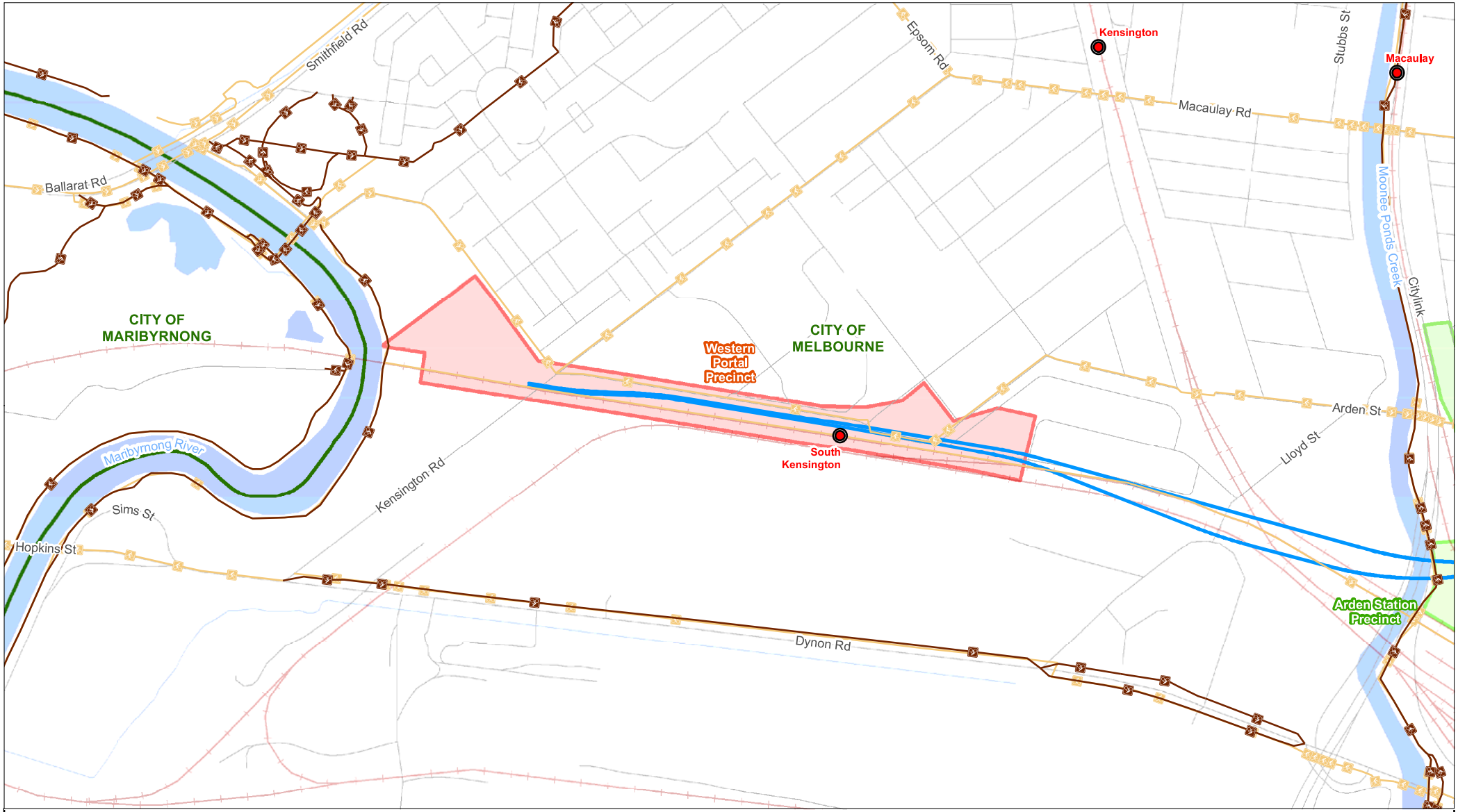



**Figure 2-6 Western portal precinct - Bicycle network**

# 3 Precinct 3: Arden Station

## 3.1 Existing Conditions

### 3.1.1 Road Transport

#### 3.1.1.1 Road Network

Table 3-1 lists the Smartroads categorisation of the road network in the Arden station precinct. Victoria Street and Queensberry Street are both designated tram routes in the Arden area with Dynon Road, Dryburgh Road and Arden Street bus priority routes. There are five bicycle priority routes in Arden and Victoria Street is a pedestrian priority area.

Figure 3-1 shows the road network in the Arden station precinct. CityLink is a tolled freeway connecting the Tullamarine and Calder Freeways with the West Gate Freeway and is the only preferred traffic route in the area. Access to CityLink within the precinct is provided northbound from Dynon Road. Macaulay Road, Dynon Road, Dryburgh Street and Curzon Street/Harker Street are designated traffic routes. Curzon Street, Harker Street, Victoria Street and Dynon Road are approved B-double and higher mass truck routes in the vicinity of the precinct.

**Table 3-1 Arden station precinct - SmartRoads road user priority classifications**

| SmartRoads classification | Traffic | | | Public transport | | Active transport | |
|---|---|---|---|---|---|---|---|
| | Preferred traffic route | Traffic route | Local primary access route | Bus priority route | Tram priority route | Bicycle priority route | Pedestrian priority area |
| **Declared Roads** | | | | | | | |
| **City Link** | ✓ | - | - | - | - | - | - |
| **Dynon Road** | - | ✓ | - | ✓ | - | ✓* | - |
| **Dryburgh Street** | - | ✓ | - | ✓ | ✓ | ✓** | - |
| **Macaulay Road** | - | ✓ | - | - | ✓ | ✓** | - |
| **Victoria Street** | - | ✓ | - | - | - | ✓** | - |
| **Curzon Street** | - | ✓ | - | - | - | -** | - |
| **Local Roads** | | | | | | | |
| **Arden Street** | - | - | ✓ | ✓ (East of Dryburgh) | ✓ | ✓* | - |
| **Lauren Street** | - | - | - | - | - | - ** | - |
| **Abbotsford Street** | - | - | - | - | ✓ | ✓* | - |
| **Queensberry Street** | - | - | - | - | ✓ | ✓* | ✓(East of Curzon St) |

* Principal Bicycle Network, ** Local Bicycle Network

**Source: Transmaps, 2015 (http://www.maps.vic.gov.au/TransMaps/ui/DotmapUI.jsp)**

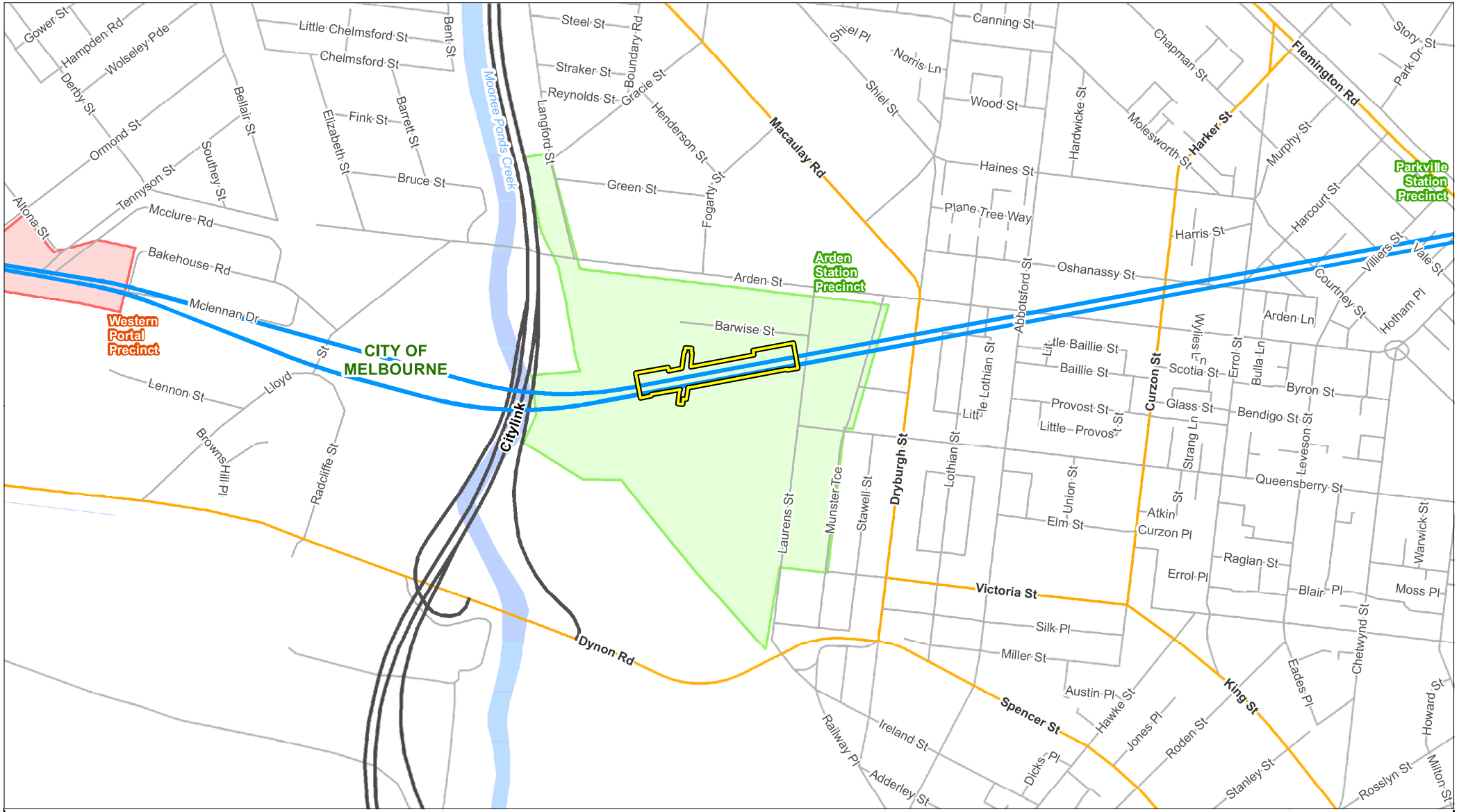



**Figure 3-1 Arden station precinct - Road network**

There are a number of network constraints in the vicinity of the Arden study area including:

- Low level overhead tram wires on Queensberry Street and Abbotsford Street
- Low level rail bridge on Railway Place (southern end of Laurens Street) which has a height restriction of 4.6 m in height.
- Gatehouse Street which is an extension of Curzon Street and Harker Street has a 24 hour truck curfew to all trucks greater than 4.5 tonnes.

#### 3.1.1.1.1 Declared Roads

Table 3-2 provides a description of the arterial roads in the Arden study area and provides a brief description of the physical layout of the roads as well as their function in the road network.

**Table 3-2 Arden Station Precinct - Declared Roads**

| Declared Road | Road name | Description |
|---|---|---|
| Tollway | City Link | City Link is a major toll road which functions as a bypass from the CBD and the Westgate Freeway to the Tullamarine Freeway and the M80 Ring Road near Essendon. It connects through to the Monash Freeway which is tolled up to Toorak Road in Malvern. It borders the western edge of the Arden Station precinct, and has off/on-ramps at Dynon Road and Racecourse Road and an interchange at Footscray Road. |
| Arterial–Other | Macaulay Road | Macaulay Road, between Dryburgh Street and Boundary Road, is a separated single carriageway with a tree-lined central median. Crossing of opposing traffic streams is restricted through median breaks and intersection control. Kerbside on-street parking is provided on both sides of Macaulay Road. Bicycle lanes are positioned between the parking and through lanes with a chevron median providing delineation between bicycle and motorised traffic. |
| Arterial–Other | Dryburgh Street | Dryburgh Street, between Spencer Street and Macaulay Road, is the continuation of the arterial link from Boundary and Macaulay roads. Parallel car parking and cycle lanes are provided. A single unpainted line separates bicycle and vehicular traffic. This section of Dryburgh Street has a bi-direction dual carriageway with minimal pedestrian interface. Trees line the central median. The speed limit is 60 km/h for its length with the exception of a 50km/h zone south of Spencer Street. |
| Arterial–Other | Dynon Road | Dynon Road is a dual carriageway corridor which provides a link into the southern part of Arden from Melbourne's western suburbs and provides an alternative to Footscray Road. It allows direct entry to Dryburgh Street for vehicles travelling north to the Arden Precinct. Significant truck volumes are common on this road as it is an important port connection. |
| Arterial–Other | Curzon Street / Harker Street | Curzon Street and Harker Street form a north-south arterial link connecting Victoria Street to Flemington Road. The road corridor connects south to King Street. Curzon Street is a dual carriageway separated by a central tree lined median. Bicycle lanes and on-street parking is provided for the full length. |
| Arterial–Other | Victoria Street | Victoria Street, between Dryburgh Street and Curzon Street, is a declared arterial road. East of Curzon Street. Victoria Street up to Peel Street is a local road. Despite not being a declared arterial road, Victoria Street is a busy main road through this section as multiple land uses and major destinations like Queen Victoria Market are nearby. Victoria Street is a separated dual carriageway with parallel on-street parking. |

#### 3.1.1.1.2 Local Roads

Table 3-3 provides a description of the local roads in the vicinity of the Arden study area.

**Table 3-3 Arden Station Precinct - Local Roads**

| Local road | Description |
|---|---|
| Arden Street | Arden Street east of Railway Canal provides two lanes in each direction with parallel parking and intermittent cycle lanes provided on both sides of the carriageway. Arden Street runs through some light to medium industrial areas on its western half but east of Dryburgh Street more residential and civic land uses predominate. Arden Street is a single carriageway west of Railway Canal. |
| Laurens Street | Laurens Street is a single carriageway road with footpaths provided on both sides of the street. The street connects with Arden Street and Dynon Road and provides parallel on-street parking along the length of the route. It connects North Melbourne Station directly via Ireland Street to the Arden Precinct. Laurens Street provides access to local land uses which is mostly light/medium industrial. During the 2015-16 financial year, City of Melbourne would be constructing the expansion of West Melbourne park. 6 This would result only a pedestrian and cycle connection from Laurens Street to North Melbourne station via Ireland Street and Railway Place. |
| Abbotsford Street | Abbotsford Street provides one traffic lane and one tram lane in each direction with parallel parking prohibited on both sides of the street. Abbotsford Street provides direct access to small businesses and residential areas and is a key road, tram and bicycle link in the North Melbourne area. |
| Queensberry Street | Queensberry Street provides one traffic lane and one tram lane in each direction between Errol Street and Abbotsford Street. The section of Queensberry Street between Abbotsford Street and Laurens Street has centre of road parking. Queensberry Street provides direct access to small businesses and residential areas and is a key road, tram and bicycle link in the North Melbourne area. |

### 3.1.1.2 Network Performance

#### 3.1.1.2.1 Daily Traffic Profiles

To understand daily traffic profiles along key roads near the proposed Arden station, SCATS data was obtained from VicRoads for a number of key intersections in the vicinity of the proposed Arden station location.

*Arden Street/ Dryburgh Street/ Macaulay Road*

The profile of traffic flows on Arden Street, Dryburgh Street and Macaulay Road is shown in Figure 3-2.

[6] http://www.melbourne.vic.gov.au/sitecollectiondocuments/west-melbourne-park-expansion-project-update.doc

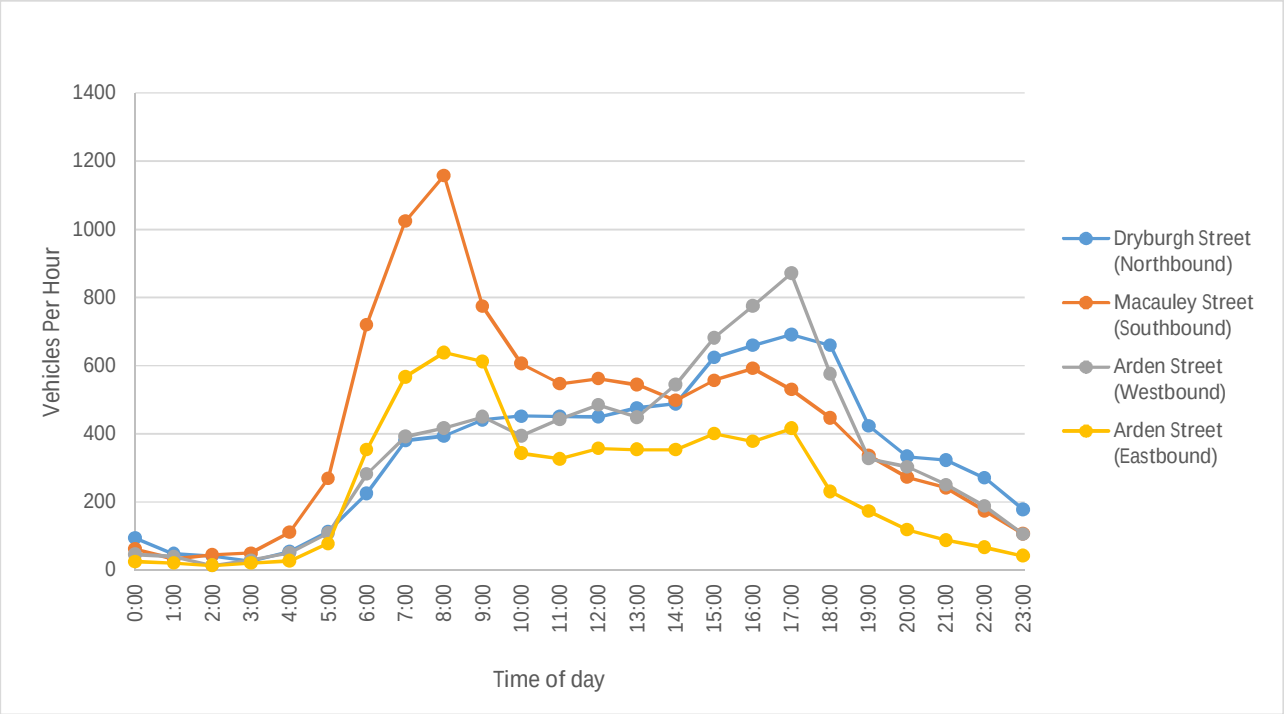



**Figure 3-2: Average daily traffic profile on Arden Street and Macaulay Road**

**(Source: VicRoads SCATS 27 May 2015)**

The peak flows on Macaulay Road (north approach) and Arden Street (west approach) are higher during the AM peak with the highest flows between 8:00am – 9:00am (refer to Table 3-4). Arden Street (east approach) and Dryburgh Street (south approach) have peak flows between 5:00pm – 6:00pm.

**Table 3-4: Weekday traffic flows at Arden Street/ Dryburgh Street/ Macaulay Road signalised intersection**

| Intersection leg | Vehicles by Time Period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Macaulay Road (North)** | **986** | **1130** | **578** | **600** | **10,291** |
| **Arden Street (East)** | **425** | **478** | **835** | **1,000** | **8,564** |
| **Dryburgh Street (South)** | **409** | **400** | **672** | **757** | **8,662** |
| **Arden Street (West)** | **611** | **682** | **413** | **415** | **6,248** |

Source: VicRoads SCATS, 27 May 2015

*Arden Street and Curzon Street*

The profile of traffic flows on Arden Street and Curzon Street is shown in Figure 3-2.

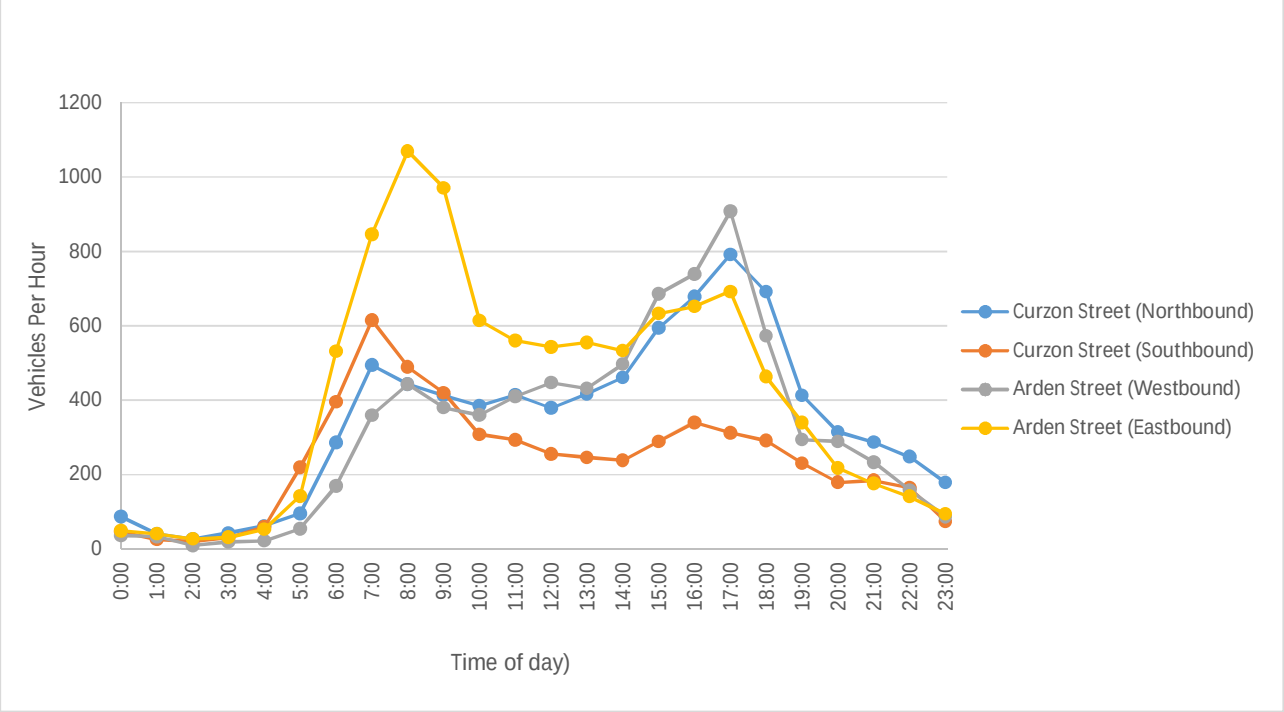



**Figure 3-3: Average daily traffic profile on Arden Street and Curzon Street**

**(Source: VicRoads SCATS 27 May 2015)**

The peak flows on Curzon Street (northbound) and Arden Street (westbound) are higher during the PM peak with the highest flows between 4:00pm – 5:00pm (refer to Table 3-4). Arden Street (eastbound) has the highest peak flows between 8:00am – 9:00am.

**Table 3-5: Weekday traffic flows at Arden Street and Curzon Street signalised intersection**

| Intersection leg | Vehicles by Time Period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Curzon Street (Northbound)** | **494** | **443** | **791** | **691** | **8,241** |
| **Curzon Street (Southbound)** | **615** | **489** | **312** | **291** | **5,724** |
| **Arden Street (Westbound)** | **359** | **443** | **908** | **573** | **7,637** |
| **Arden Street (Eastbound)** | **846** | **1069** | **692** | **463** | **9,974** |

Source: VicRoads SCATS, 27 May 2015

*Dryburgh Street, Spencer Street and Dynon Road*

The profile of traffic flows on Spencer Street, Dynon Road and Dryburgh Street is shown in Figure 3-2.

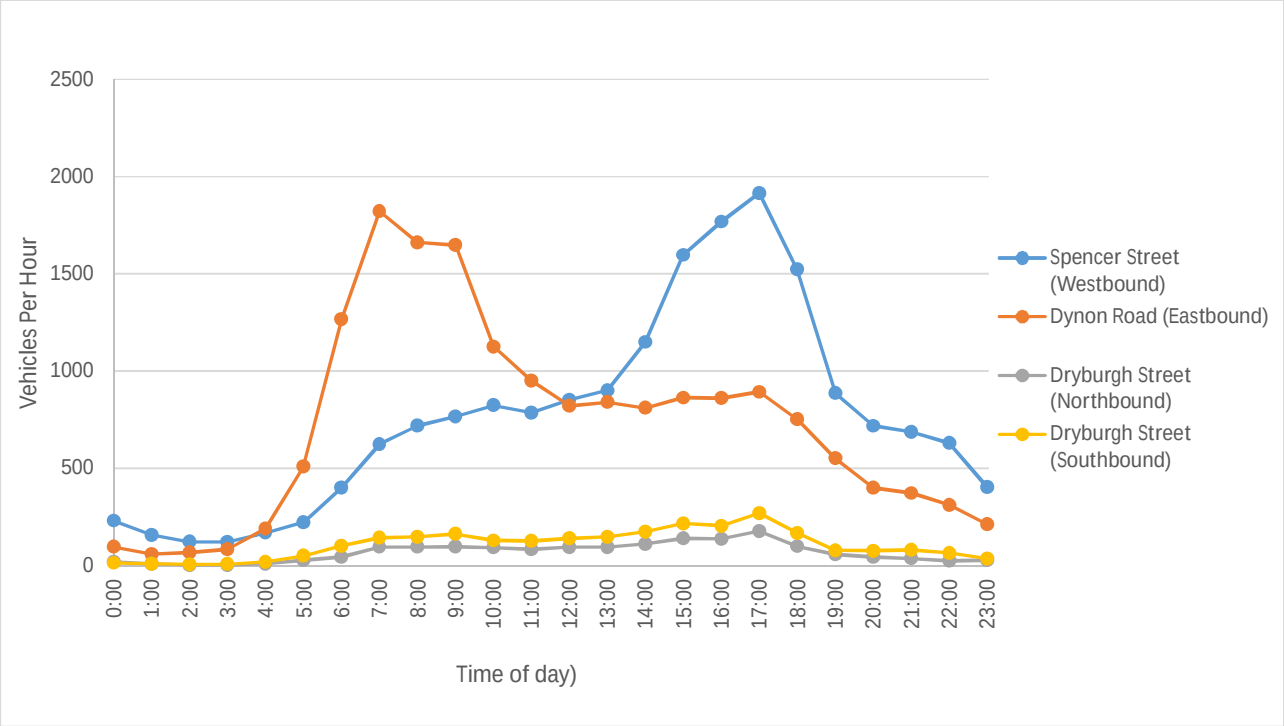



**Figure 3-4: Average daily traffic profile on Dryburgh Street, Spencer Street and Dynon Road**

**(Source: VicRoads SCATS 27 May 2015)**

The highest peak flows are on Dynon Road (eastbound) are during the AM from 7:00am – 8:00am (refer to Table 3-4). Spencer Street (westbound) has the highest PM peak flows between 5:00pm – 6:00pm.

**Table 3-6: Weekday traffic flows at Dryburgh Street / Spencer Street / Dynon Road signalised intersection**

| Intersection leg | Vehicles by Time Period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Spencer Street (Westbound)** | **624** | **179** | **1,768** | **1,915** | **18,170** |
| **Dynon Road (Eastbound)** | **1,821** | **1,661** | **861** | **893** | **17,167** |
| **Dryburgh Street (Northbound)** | **96** | **96** | **137** | **178** | **1,619** |
| **Dryburgh Street (Southbound)** | **143** | **148** | **204** | **269** | **2,562** |

**Source: VicRoads SCATS, 27 May 2015**

*King Street, Curzon Street and Victoria Street*

The profile of traffic flows on King Street, Curzon Street and Victoria Street is shown in Figure 3-2.

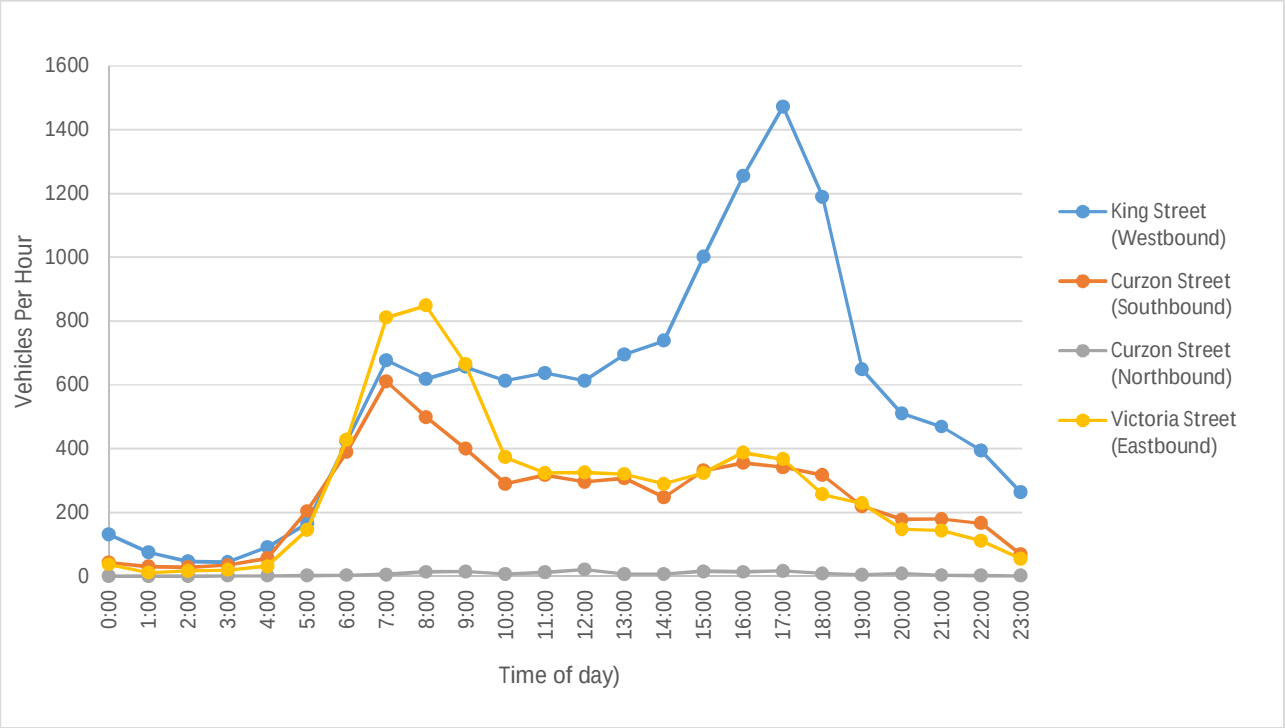



**Figure 3-5: Average daily traffic profile on Curzon Street, Victoria Street and King Street**

**(Source: VicRoads SCATS 27 May 2015)**

The peak flows on Curzon Street (southbound) and Victoria Street (eastbound) are highest during the AM peak with the highest flows between 8:00am – 9:00am (refer to Table 3-4). King Street (westbound) has peak flows of 1,255 vehicles between 5:00pm – 6:00pm.

**Table 3-7: Weekday traffic flows at Curzon Street / Victoria Street / King Street signalised intersection**

| Intersection leg | Vehicles by Time Period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **King Street (Westbound)** | **677** | **618** | **1,255** | **1,473** | **13,426** |
| **Curzon Street (Southbound)** | **611** | **499** | **355** | **341** | **5,906** |
| **Curzon Street (Northbound)** | **5** | **13** | **13** | **16** | **162** |
| **Victoria Street (Eastbound)** | **811** | **849** | **387** | **367** | **6,658** |

**Source: VicRoads SCATS, 27 May 2015**

#### 3.1.1.2.2 Intersection Analysis

Table 3-8 provides a description of the intersection controls in place at key intersections within Kensington.

**Table 3-8: Intersection controls - Arden**

| Intersection | Control | Public Transport Priority | Cyclist Advanced Stop Boxes | Banned Movements |
|---|---|---|---|---|
| **Macaulay Road and Boundary Road and Canning Street** | Signalised | None | Macaulay Road southbound only | Canning Street is exit only and is restricted to bus and bicycles |
| **Arden Street and Laurens Street** | Signalised | None | None | None |
| **Arden Street and Curzon Street** | Signalised | None | Yes – at all approaches | None |
| **Queensberry Street and Dryburgh Street** | Signalised | None | Yes – at all approaches | None |
| **Macaulay Road and Dryburgh Street and Arden Street** | Signalised – but turn bays at Macaulay Road to Arden Street part time signals and give way | None | Yes – at Arden Street westbound approach | None |
| **Victoria Street and Dryburgh Street** | Signalised | None | Yes – at Dryburgh Street approaches | None |
| **Curzon Street and Victoria Street** | Signalised – with exception of left turn in from Victoria Street to Curzon Street as give way | None | None | Truck ban signs at entry to Curzon Street south of intersection. |
| **Dryburgh Street and Dynon Road** | Signalised with exception of left turn from Dryburgh Street into Dynon Road as give way | None | Yes Dryburgh Street northbound | None |
| **Laurens Street and Queensberry Street** | Give way to Laurens Street traffic | None | None | None |
| **Victoria Street and Abbotsford Street** | Signalised | None | Yes – at Abbotsford Street approaches | None |

### 3.1.2 Road Safety

According to VicRoads crash data for the area bounded by Dynon Road, City Link, Macaulay Road and Curzon Street, there were 99 road casualty incidents near the Arden Precinct between January 2010 and January 2015. Of these incidents:

- 33 per cent were serious injury incidents and 66 per cent were classified as ‘other injury’ incidents. There were no fatal crashes
- 23 of the incidents (23 per cent) involved crashes between cyclists and motor vehicles. Of these 34 per cent were serious injury accidents
- 10 of the 99 incidents involved pedestrians and of these 50 per cent were serious injury incidents. All pedestrian incidents involved accidents between motor vehicles and pedestrians
- 81 per cent of all the incidents recorded occurred at intersections. The intersection of Macaulay Road and Dryburgh Street and Arden Street was the intersection with the highest frequency of incidents. Car parking and access

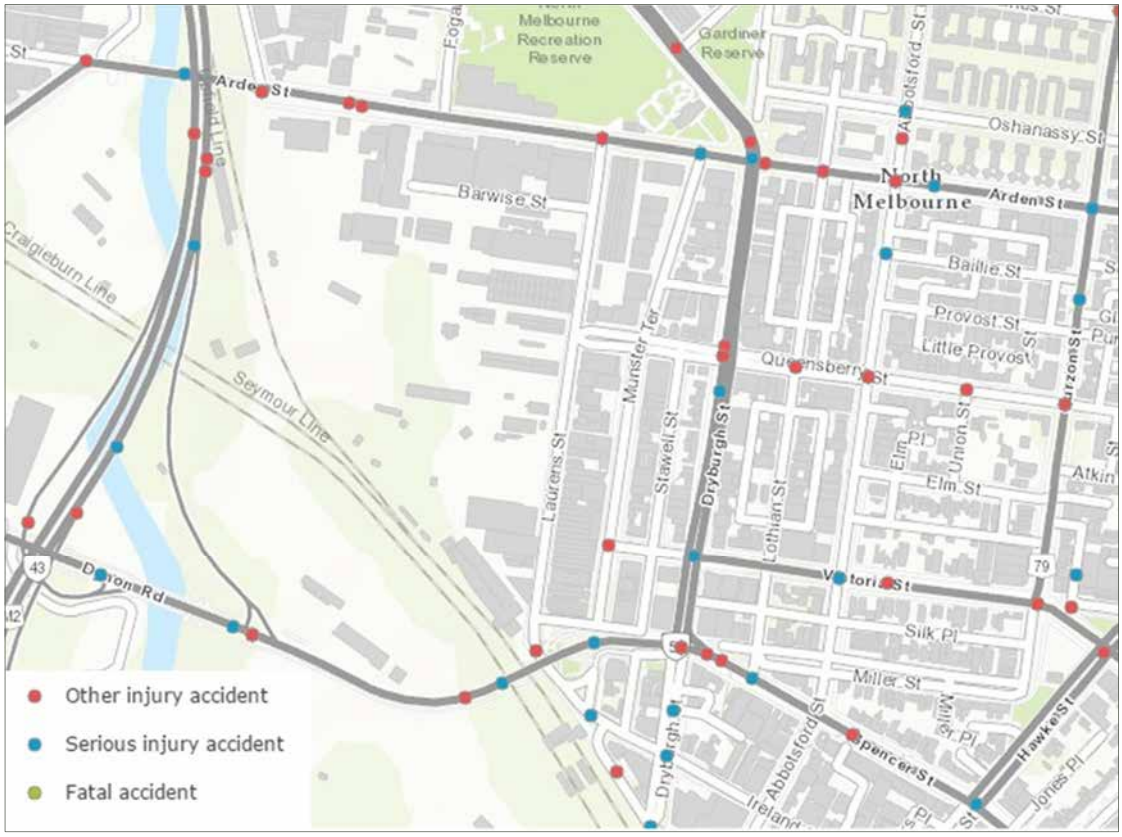



**Figure 3-6 Arden Station Precinct – Road accident locations**

## 3.1.3 Car Parking and Access

### 3.1.3.1.1 On Street Parking

There is a reasonable supply of on-street parking within the vicinity of Arden study area which is a mix of unrestricted, 2-hour and 4-hour parking (refer to Table 2-7).

**Table 3-9: On-street parking in the immediate vicinity of the proposed Arden station**

| Street | Parking spaces | Parking restriction |
|---|---|---|
| **Laurens Street (Arden Street to Queensberry Street)** | 48 | 2hr free parking |
| **Laurens Street (Queensberry Street to Spencer Street)** | 36 | Unrestricted although loading zones outside front of Weston Milling factory. |
| **Arden Street (Fogarty Street to Laurens Street)** | 30 | Unrestricted |
| **Dryburgh Street (Victoria Street to Arden Street)** | 40 | Predominantly 2hr free parking |
| **Dryburgh Street (Queensberry Street to Arden Street)** | 35 | Majority 2hr parking. A couple of spaces are 4hr or 15min. |
| **Macaulay Road (Arden Street to Fogarty Street)** | 48 | 15min parking spaces on east. West is unrestricted. |
| **Queensberry Street (Laurens Street to Dryburgh Street)** | 30 | Permit zones along north side east of Munster Terrace. Remainder predominantly unrestricted. Five 2hr parking spaces near Dryburgh Street. |

#### 3.1.3.1.2 Taxi Zones

There are no taxi zones within the study area.

#### 3.1.3.1.3 Loading Zones

There are a number of loading zones servicing existing businesses on Laurens Street, Arden Street and Dryburgh Street.

#### 3.1.3.1.4 Clearways

There are no clearways in the vicinity of the study area.

#### 3.1.3.1.5 Car Sharing

There are a number of car share operators within the Kensington area:

- Go Get – 1 car on Victoria Street (nr Dryburgh Street) and 1 car on the corner of Queensberry and Curzon Street
- Flexicar – 1 car on Ireland Street (nr North Melbourne Station)

#### 3.1.3.1.6 CBD Congestion Levy

The Victorian government imposes the levy on "off-street" parking spaces used for parking cars or larger motor vehicles within the levy area annually. The levy is charged on each space that existed as leviable parking space at any time in the previous calendar year.

From 2015, there were would be two levy areas, which would be subject to different levy rates. Spaces within the category 1 levy area would be subject to the full levy rate, while spaces in the category 2 levy area would be charged a lesser amount which would now include Arden. For the spaces within the category 1 levy area, the congestion levy for 2014 is $1300 for each leviable parking space. From 2015, a lesser rate of $950 would apply on each space within the category 2 levy area[7].

### 3.1.4 Public Transport

#### 3.1.4.1 Rail Network

The public transport services in the vicinity of the proposed Arden Station location are shown in Figure 3-7. The proposed Arden Station is located near the North Melbourne rail junction which is the convergence of multiple metropolitan and regional railway lines. These lines include the Upfield, Craigieburn, Sunbury, Werribee and Williamstown Metropolitan railway lines as well as the regional V/Line for Melton/Ballarat, Bendigo, and Geelong and Seymour (on the Craigieburn line).

The nearest stations to the proposed Arden station are North Melbourne (to the south) and Macaulay (to the north west). North Melbourne station is a premium station, staffed from the first to last train. It has 6 platforms which serve the Craigieburn, Sunbury, Upfield, Werribee and Williamstown Lines. The main entrance to North Melbourne is at the south end of the platforms at the intersection of Adderley Street and Railway Place.

The frequency of rail services through North Melbourne is shown in Table 3-10. There are currently 26 Metropolitan inbound services stopping at North Melbourne Station during the morning peak. All Upfield, Werribee, Williamstown, Craigieburn and Sunbury services stop at North Melbourne Station. In the inter-peak there are 14 services (peak direction) stopping at North Melbourne Station.

[7] http://www.sro.vic.gov.au/sro/sronav.nsf/childdocs/-3A87315B22BC23FFCA2575A100441F59-EFC160ABBE873990CA2575B70020FC3B?open

North Melbourne is an important transfer station and recorded the fifth most transfers out of all the transfer stations in the network. During the AM peak there are approximately 2600 passengers entering/ exiting North Melbourne Station. Fifty five percent of passengers using North Melbourne station are travelling for commuting purposes. A further 24 per cent travel for education purposes.

**Table 3-10 Train frequencies by line from North Melbourne Station**

| Line | Trains per hour (peak direction) | | | |
|---|---|---|---|---|
| | Peak hour | Peak 2-hour | Inter-peak | Other off-peak |
| **Craigieburn** | 8 | 14 | 3 | 2 |
| **Upfield** | 4 | 7 | 3 | 2 |
| **Sunbury** | 5 | 9 | 2 | 2 |
| **Werribee** | 6 | 12 | 3 | 3 |
| **Williamstown** | 3 | 6 | 3 | 3 |

Source: PTV, 21 June until further notice. (Friday frequencies occasionally differ from Mon-Thurs frequencies).

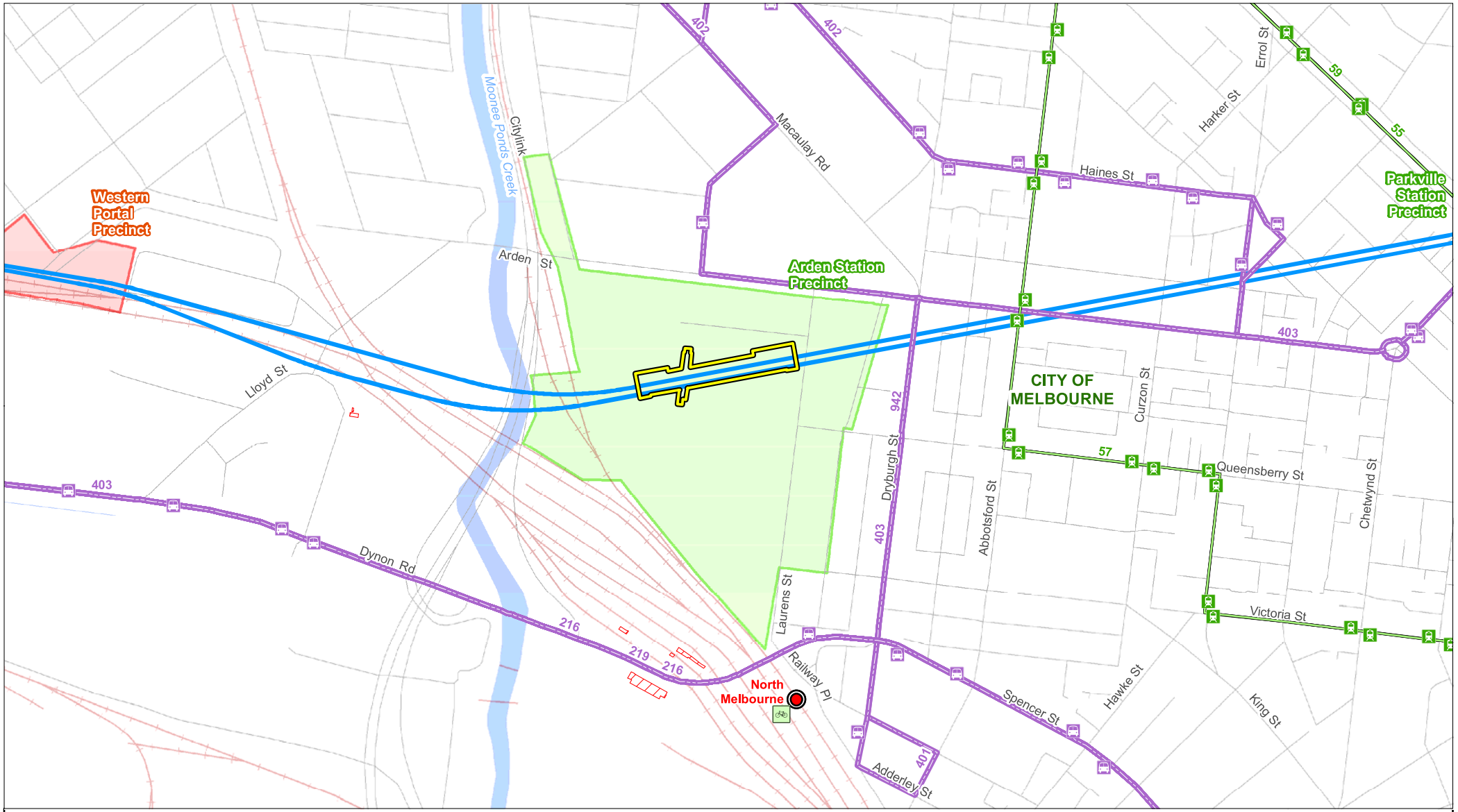
Macaulay station (on the Upfield line) is an unstaffed station located on Macaulay Road with two side platforms. There are seven services that stop during the 2-hour peak periods.

For details of the Night Network public transport services, refer to section 2.1.4 (western portal - rail network).

#### 3.1.4.2 Tram Network

The tram network near the proposed Arden station is shown in Figure 3-7. Route 57 provides services near the proposed station along Abbotsford Street and Victoria Street including stops at:

- Stop 13 – Curzon Street/Queensberry Street
- Stop 14 – Abbotsford Street / Queensberry Street
- Stop 15 – Abbotsford Street / Arden Street




**Legend**

- Train Station
- Tram Stop
- Bus Stop
- Train Station Bike Storage
- Proposed Alignment
- Proposed Station Extent
- Train Track
- Tram Route
- Bus Route
- Road
- Train Station Carpark
- Local Government Area (LGA)
- Station Precinct
- Portal Precinct

Map 2 of 8


Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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City of Melbourne 2015
City of Port Phillip 2015
Public Transport Victoria 2015

MELBOURNE METRO RAIL AUTHORITY

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# Melbourne Metro Rail Project

Title:
Transport Impact Assessment - Existing Public Transport Network

| Drawing Number: | | Revision: |
|---|---|---|
| MMR-AJM-UGAA-MP-NP-500105 | | P1 |
| Drawn By: | Approved By: | Date: | Map Size: |
| A. French | K. Mitchell | 15/04/2016 | A4 |

0 100 200
Metres

**Figure 3-7 Arden station precinct - Public transport network**

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Route 55 and 59 provide services further to the north east along Racecourse Road. Of the three stops, stop 15 is the busiest with approximately 380 daily boardings and alightings[8]. Stop 13 sees greater use towards West Maribyrnong with 238 daily boardings and alightings compared to 143 towards to the city.

During the peak hour there are 10 services operating (peak direction) and 18 services during the peak-2 hour period (refer to Table 3-1).

**Table 3-11: Route 57 City (Elizabeth Street) – West Maribyrnong tram services**

| Route | Trams per hour (peak direction) | | | |
|---|---|---|---|---|
| | Peak hour | Peak 2-hour | Inter-peak | Other off-peak |
| **Route 57 City (Elizabeth Street) – West Maribyrnong** | 10 | 18 | 8 | 3 |

Source: PTV, 21 June until further notice. (Friday frequencies occasionally differ from Mon-Thurs frequencies).

#### 3.1.4.3 Bus Network

The bus network near the Arden Precinct is shown in Figure 3-7. There are three bus services operating near the proposed Arden Station.

- Route 401 is an express bus service between the Hospital precinct, Melbourne University and North Melbourne Railway station. It travels along Dryburgh Street and Arden Street
- Route 402 runs along Macaulay Road/ Canning Street to the north of the proposed station location
- 403 (Footscray Station - University of Melbourne via Royal Melbourne Hospital)

Bus route 401 has seen a 147 per cent growth in average weekday trips since 2010-11 to almost 2.5 million passengers per annum making it Melbourne's 4th busiest bus service. During the peak hour, the 401 operates 15 services (peak direction) and 30 services during the peak 2 hours. Inter-peak there are 15 services (peak direction). During the peak period route 402 operates 12 services during the peak 2-hour period (peak direction) and 6 services during the inter-peak period (refer to Table 3-2). Route 403 is a new route that runs off peak from Footscray to the University of Melbourne.

**Table 3-12 Bus routes operating near the proposed Arden Station**

| Route | Buses per hour (peak direction) | | | |
|---|---|---|---|---|
| | Peak hour | Peak 2-hour | Inter-peak | Other off-peak |
| **401 (North Melbourne – Melbourne University)** | 15 | 30 | 15 | 6 |
| **402 (Footscray – East Melbourne)** | 6 | 12 | 6 | 3 |

Source: PTV, May 2015. (Friday frequencies occasionally differ from Mon-Thurs frequencies).

### 3.1.5 Active Transport

#### 3.1.5.1 Pedestrian Environment

The immediate area around the Arden Precinct is mostly industrial. Most building frontages have little interface with the footpath and the industrial land use in the area does not generate much pedestrian traffic.

[8] Tram Origin Destination Report, PTV, 2011.

East of the Arden precinct the urban environment is more walkable and wide attractive tree-lined streets contain mostly residential dwellings. Queensberry Street has a slightly more mixed land use profile and has higher pedestrian volumes and a good walkable environment.

There is well provided pedestrian infrastructure in all streets in the vicinity of the Arden Precinct (refer to Table 3-13). Smaller roads as well as larger carriageways all have walkable footpaths. This is consistent with the age of the area in that it is a well-established suburb of Melbourne originally built as a walking, tram and horse-and-cart neighbourhood.

There did not appear to be any cars parked illegally on the footpath during a site visit to the area or any other significant impediments to pedestrian access.

**Table 3-13 Footpath provision - Arden study area**

| Street/Road | Comment |
|---|---|
| **Laurens Street (Arden Street to Queensberry Street)** | Wide Footpaths provided on both sides of road. Frequent movements of large vehicles to industrial sites on west side of road. |
| **Laurens Street (Queensberry Street to Spencer Street)** | Footpaths at around 1.5 m width. Uneven footpath surfaces and large vehicles accessing sites mostly on the western side of road. |
| **Arden Street (Fogarty Street to Laurens Street)** | Footpaths in generally good condition and at least 1.8 m in width. |
| **Dryburgh Street (Spencer Street to Victoria Street)** | Wide footpath of over 1.8 m. |
| **Dryburgh Street (Victoria Street to Queensberry Street)** | Wide footpath of over 1.8 m. |
| **Macaulay Road (Arden Street to Fogarty Street)** | Wide footpaths on both sides of carriageway. |
| **Fogarty Street (Macaulay Road to Arden St)** | Good condition – around 1.5 m wide |
| **Queensberry Street (Laurens Street to Dryburgh Street)** | Good condition – around 1.5 m wide |
| **Millers Street (Laurens Street to Dryburgh Street)** | Footpath provided on north side of street only |

Most pedestrian crossing points in the vicinity of the Arden Precinct are unsignalised – due to the generally low pedestrian volumes as a consequence of the types of land use in the neighbourhood.

Signalised crossings are located at:

- Laurens Street and Arden Street
- Dryburgh Street and Arden Street
- Dryburgh Street and Queensberry Street
- Dryburgh Street and Victoria Street
- Dryburgh Street and Spencer Street and Dynon Road

The provision of drop curbs at both signalised and unsignalised intersections is almost ubiquitous. Most signalised pedestrian crossings have aural signals as well as visual signals. The provision of tactile tiles is not universal. Only major intersections generally have such provision.

#### 3.1.5.1.1 Pedestrian Volumes

There are approximately 2,600 passengers entering / exiting North Melbourne station during the AM peak period, and nearly 2,000 in the PM peak. Transfers between platforms in the AM peak are around 5,000 passengers (refer to Appendix D).

At Macaulay station there are approximately 200 passenger entries/exits during the AM and PM peak.

### 3.1.5.2 Bicycle Environment

#### 3.1.5.2.1 Bicycle Network

The Arden Station precinct has an established network of on-road bicycle lanes. The most developed bicycle infrastructure is on Abbotsford Street, which has separated and chevron style bicycle lanes (refer to Table 3-14). Queensberry Street and the northern section of Macaulay Road have chevron style lanes but not separated lanes. The bicycle network is shown in the area is shown in Figure 3-8. There are also on-road bicycle paths on Curzon Street and Arden Street.

The Capital City Trail roughly follows the alignment of CityLink through the area and is an important north-south CBD bound bicycle commuter connection. The nearest access from the Arden Station precinct to the trail is at Arden Street.

These counts provide a reflection of the typical range of bicycle movements along these corridors. The Super Tuesday counts reflect a single day of travel, but are observed each year at the same time of year, with March providing a good representation of an 'average' travel' day.

**Table 3-14 Arden Station Precinct - Bicycle network**

| Road | Type of treatment |
|---|---|
| **Macaulay Road** | Chevron separated on road bicycle lane |
| **Dryburgh Street** | On-road bicycle lane |
| **Victoria Street** | Chevron separated on road bicycle lane (east of Errol Street) |
| **Curzon Street** | On-road bicycle lane |
| **Arden Street** | On-road bicycle lane |
| **Abbotsford Street** | Chevron separated on road bicycle lane |
| **Queensberry Street** | Chevron separated on road bicycle lane |
| **Dynon Road** | Off road shared path |

Super Tuesday Bike Count is the world's biggest and longest running visual bike count. It measures bicycle commuter flows in the morning peak from 7am to 9am. The ninth annual Super Tuesday was conducted on Tuesday 3 March 2015.

#### 3.1.5.2.2 Bicycle Parking

There is a number of bicycle parking locations across the Arden station precinct. There is a Melbourne Bike Share station located at North Melbourne station just to the south of the Arden station site with 12 bike docks available.

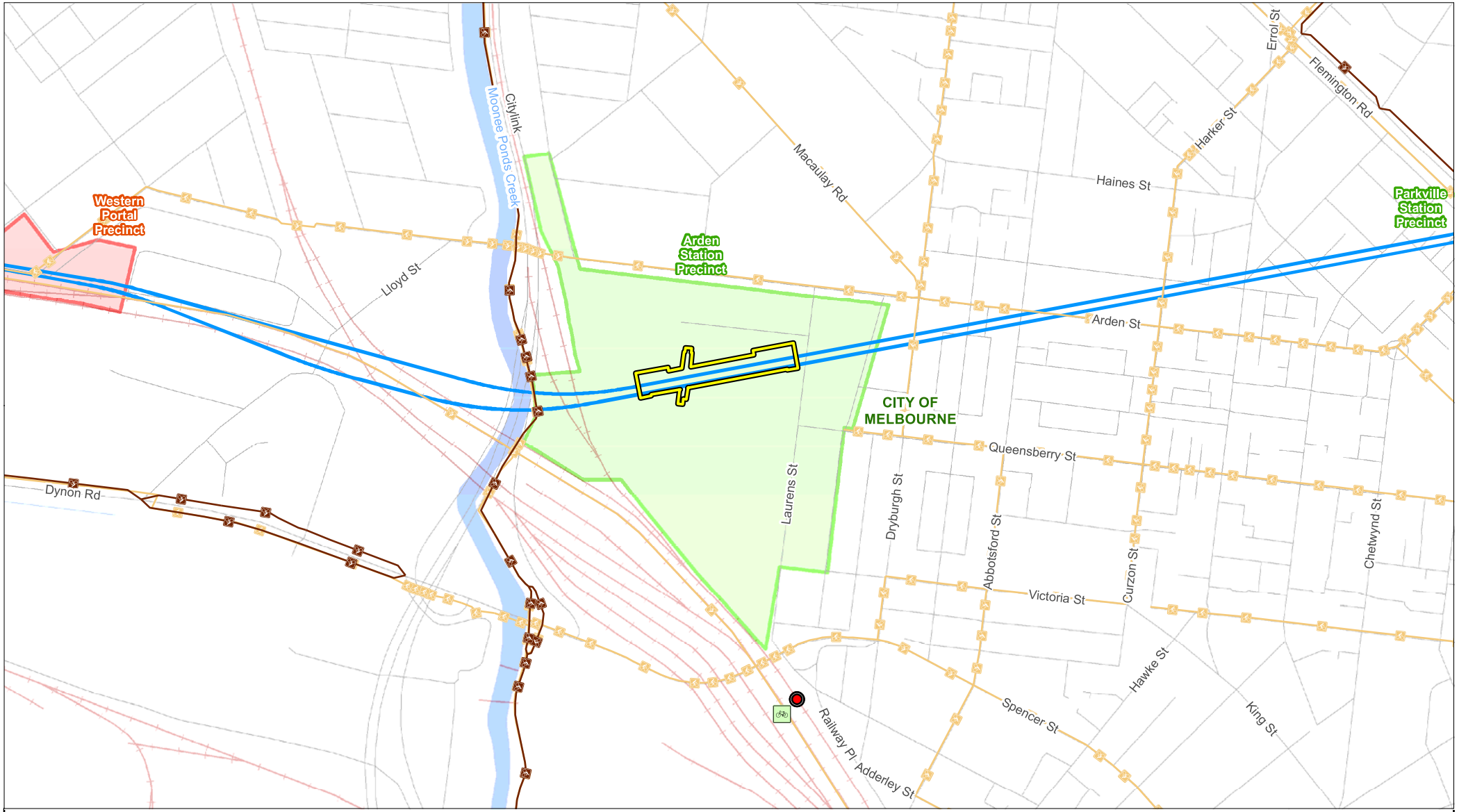



**Figure 3-8 Arden station precinct - Bicycle network**

# 4 Precinct 4: Parkville Station

## 4.1 Existing Conditions

### 4.1.1 Road Transport

#### 4.1.1.1 Road Network

This report was compiled while the VCCC was still under construction. Changes to transport conditions during later stages of construction and also once the VCCC is operational may be different to those outlined in this report.

It should be noted that although Grattan Street is designated as a local road it plays an important east-west connection to the immediate north of the CBD. There are a number of local roads in the Parkville area that have been subject to through traffic in the past (such as Gatehouse Street).

There are no network constraints in the Parkville station precinct. The roads around the major trip attracting centres like the hospital precinct and Melbourne University are prioritised for public transport, pedestrians and cycling.

Table 4-1 shows the road network in vicinity of the proposed Parkville station. The immediate area is a mixture of pedestrian, bicycle, tram, traffic, and bus priority areas. The preferred traffic routes are Harker Street, College Crescent, Macarthur Road and Elliot Avenue. Royal Parade, Flemington Road and Peel Street are classified as traffic routes and approved B-double and higher mass truck routes.

There are three designated traffic routes on the wider Parkville network. Royal Parade and Flemington Road are also designated traffic routes but not along their full length. It should be noted that although Grattan Street is designated as a local road it plays an important east-west connection to the immediate north of the CBD. There are a number of local roads in the Parkville area that have been subject to through traffic in the past (such as Gatehouse Street).

There are no network constraints in the Parkville station precinct. The roads around the major trip attracting centres like the hospital precinct and Melbourne University are prioritised for public transport, pedestrians and cycling.

**Table 4-1 Parkville station precinct - SmartRoads road user priority classifications**

| SmartRoads classification | Traffic | | | | Public transport | | Active transport | |
|---|---|---|---|---|---|---|---|---|
| | Preferred traffic route | Traffic route | Local primary access route | Local secondary access route | Bus priority route | Tram priority route | Bicycle priority route | Pedestrian priority area |
| **Declared Roads** | | | | | | | | |
| **Royal Parade** | - | ✓ | - | - | - | ✓ | ✓* | ✓ |
| **Flemington Road** | - | ✓ | - | - | - | ✓ | ✓* | ✓ |
| **Peel Street** | - | ✓ | - | - | - | ✓ | ✓* | - |
| **Elizabeth Street** | - | ✓ | - | - | - | ✓ | ✓* | ✓ |

| SmartRoads classification | Traffic | | | | Public transport | | Active transport | |
|---|---|---|---|---|---|---|---|---|
| | Preferred traffic route | Traffic route | Local primary access route | Local secondary access route | Bus priority route | Tram priority route | Bicycle priority route | Pedestrian priority area |
| **College Crescent** | ✓ | - | ✓ | - | - | - | ✓* | ✓ |
| **Macarthur Road / Elliott Avenue** | ✓ | - | - | - | - | - | - | - |
| **Local Roads** | | | | | | | | |
| **Grattan Street** | - | ✓ | - | - | ✓ | - | ✓* | ✓ |
| **Queensberry Street** | - | - | - | ✓ | - | - | ✓* | ✓ |
| **Swanston Street** | - | - | ✓ | - | - | ✓ | ✓* | ✓ |
| **Wreckyn Street** | - | - | ✓ | - | ✓ | - | ✓** | - |
| **Leicester Street** | - | - | - | - | ✓ | - | - | ✓ |
| **Bouverie Street** | - | - | - | - | ✓ | - | - ** | - |
| **Pelham Street** | - | - | - | - | ✓ | - | - ** | - |
| **Barry Street** | - | - | - | - | ✓ | - | - | - |
| **Berkeley Street** | - | - | - | - | - | - | - | - |
| * Principal Bicycle Network, ** Local Bicycle Network | | | | | | | | |
| Source: Transmaps, 2015 (http://www.maps.vic.gov.au/TransMaps/ui/DotmapUI.jsp) | | | | | | | | |

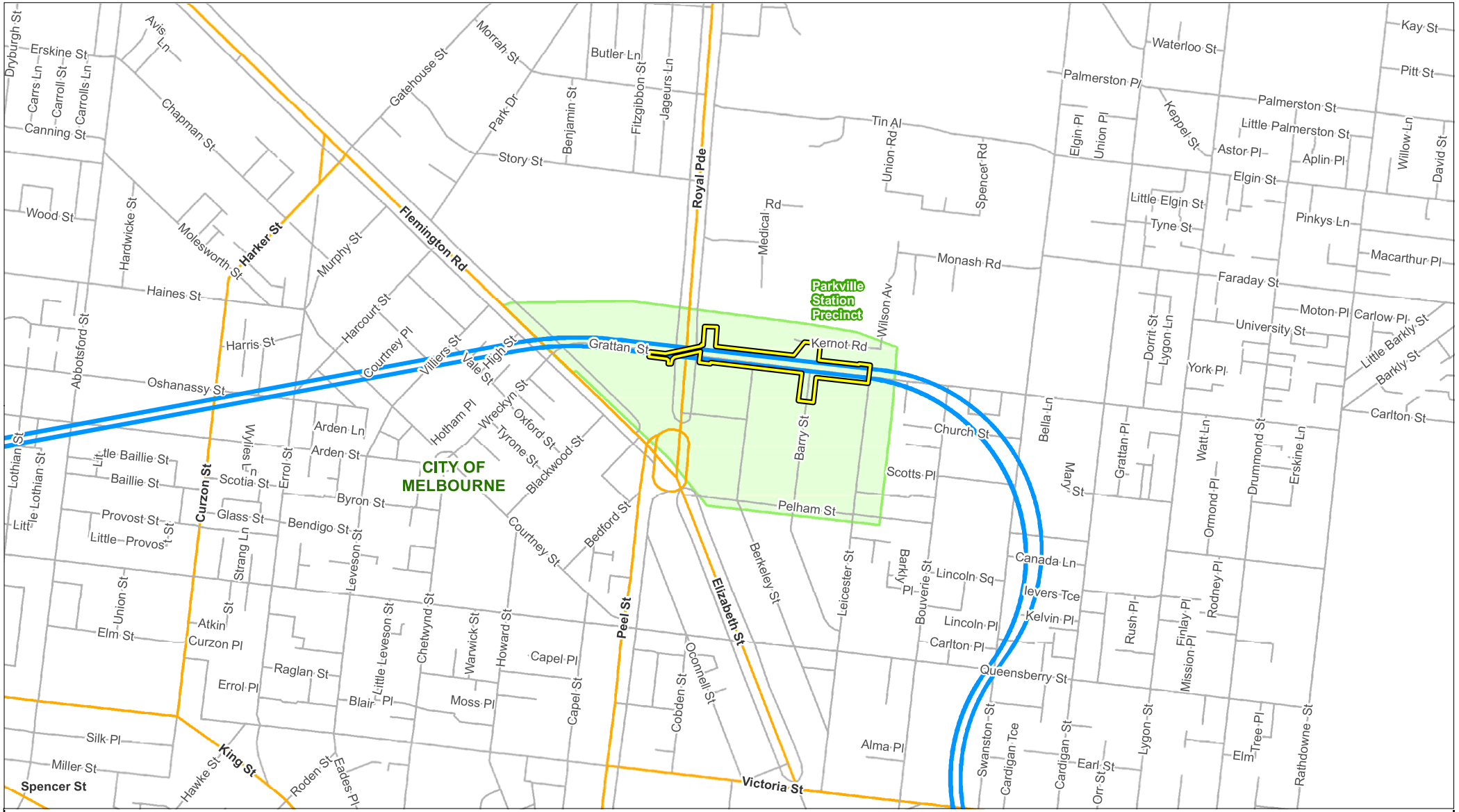
#### 4.1.1.1.1 Declared Roads

Table 4-2 provides a brief description of these roads.

**Table 4-2 Declared roads near the proposed Parkville station**

| Declared road | Road name | Description |
|---|---|---|
| Arterial–Other | Royal Parade | Royal Parade is configured as a main central carriageway with a central tram reserve and outer carriageways separated by medians. The north and south-bound carriageways include a single traffic lane, unseparated bicycle lane and kerbside parking. The central carriageway includes a traffic lane and a tram only lane in either direction. Right turn lanes are provided in the tram lanes at signalised intersections. Left turns are not permitted from the central carriageway and a number of breaks in the median are provided to allow for access between the carriageways. |
| Arterial–Other | Flemington Road | Flemington Road is a key arterial road with a posted speed limit of 60 km/h. Within the vicinity of the study area, Flemington Road is configured as a main central carriageway with a segregated tram reserve and outer carriageways separated by medians. The north and south-bound carriageways include two traffic lanes, a bicycle lane and on street parking. The central carriageway includes two traffic lanes except at platform tram stops where it narrows to one traffic lane, and a tram only lane in either direction. Left turns are not permitted |

| Declared road | Road name | Description |
|---|---|---|
| | | from the central carriageway and a number of breaks in the median are provided to allow for access between the carriageways. |
| Arterial–Other | Macarthur Road / Elliott Avenue | Macarthur Road and Elliott Avenue have a posted speed limit of 60 km/h with two traffic lanes in each direction between Flemington Road and Macarthur Road near the access to Melbourne Zoo. The road narrows to one lane in each direction east of Melbourne Zoo, with flaring to two through lanes, and left and right turning lanes at the intersection with Royal Parade. |
| Arterial–Other | Cemetery Road / College Crescent | Cemetery Road /and College Crescent form the eastern continuation of Macarthur Road and Elliot Avenue after these roads cross Royal Parade. Cemetery Road and College Crescent connect with Alexandra Parade which is a key east west arterial road feeding into the Eastern Freeway. |
| Arterial–Other | Elizabeth Street | Elizabeth Street is a north-south arterial road linking the Haymarket signalised roundabout to the northern section of the Melbourne CBD. Between the Haymarket roundabout and Queensberry Street, Elizabeth Street has three lanes of traffic in both directions and parallel parking. In 2014, Copenhagen style separated bicycle lanes were installed in this section of Elizabeth Street. Elizabeth Street has no bicycle lane provision south of Queensberry Street, |
| Arterial–Other | Peel Street | Peel Street is a north-south arterial route consisting of two traffic lanes in each direction with a segregated median tramway. Parking is provided on both sides of the street. This is a key traffic route linking the western side of the CBD and Docklands area to the northern suburbs. |




**Legend**

- Proposed Alignment
- Proposed Station Extent
- Arterial Road
- Local Road
- Local Government Area (LGA)
- Station Precinct
- Portal Precinct

Map 3 of 8


Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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City of Melbourne 2015
City of Port Phillip 2015
Public Transport Victoria 2015

MELBOURNE METRO RAIL AUTHORITY

aurecon JACOBS Mott MacDonald AJM Joint Venture GRIMSHAW

# Melbourne Metro Rail Project

Title:
Transport Impact Assessment - Existing Road Network

| Drawing Number: | | | Revision: |
|---|---|---|---|
| MMR-AJM-UGAA-MP-NP-500105 | | | P1 |
| Drawn By: | Approved By: | Date: | Map Size: |
| A. Davy | K. Mitchell | 15/04/2016 | A4 |

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**Figure 4-1 Parkville station precinct - Road network**

#### 4.1.1.1.2 Local Roads

Table 4-3 lists the key local roads in the Parkville study area and provides a brief description of the physical layout of the roads as well as their function in the local road network.

**Table 4-3 Parkville Station Precinct - Local Roads**

| Local road | Description |
|---|---|
| Grattan Street | Grattan Street is an east-west road providing two traffic lanes in each direction. Additional lanes for turning movements are provided at intersections. Parallel parking is provided on both sides of the carriageway and is generally subject to fee based short term parking restrictions. Several bus stops (bus only standing) are located in the area as Grattan Street is an important bus corridor for connections from North Melbourne Railway station to the University and Health precinct. Grattan Street is a major pedestrian access point to the Melbourne University and provides emergency vehicle access to the Royal Melbourne Hospital and would be an important access road to the VCCC when it opens (estimated 2015). Grattan Street currently forms part of an alternative east-west traffic route to Victoria Street and Alexandra Parade. The speed limit on Grattan Street is 50km/h.<br><br>At the time of writing substantial construction works for the VCCC are underway on Grattan Street and temporary traffic management measures are in place. No parking is available on the southern side of Grattan Street between Flemington Road and Royal Parade and the footpath is closed to pedestrians in this location. |
| Swanston Street | Swanston Street is a north-south road that is generally one traffic lane in each direction with parallel parking and “Copenhagen” style bicycle lanes. Swanston Street has a central tram reservation extending to the tram terminus adjacent to Melbourne University. Right turning lanes are provided at key intersections such as Grattan Street. |
| Queensberry Street | Queensberry Street is an east-west road that provides one to two traffic lanes in each direction with turning lanes providing additional storage at key intersections. Queensberry Street has parallel parking and some sections of centre of road parking. Unseparated bicycle lanes are provided on both sides of the carriageway with provision of chevrons to delineate the cycle lane from traffic lanes. |
| Gatehouse Street | Gatehouse Street provides one undivided traffic lane in each direction. On-street parking is provided on both sides of the carriageway. Truck curfews for rigid motor vehicles with laden vehicle ratings of more than 4.5 tonnes, are in place 24 hours a day 7 days a week. Gatehouse Street provides access to and from residential dwellings. Gatehouse Street has a unique role providing accommodation for parents of Royal Children’s Hospital patients, access to Royal Park, local schools and is subject to regular use by through traffic avoiding congested arterial network. |
| Wreckyn Street | Wreckyn Street is an east-west road between Flemington Road and Courtney Street. It becomes Grattan Street east of Flemington Road and Arden Street west of Courtney Street. Wreckyn Street has one traffic lane in each direction with parallel and centre parking. On road cycle lanes are provided which have chevron markings to encourage separation from motor vehicles. Wreckyn Street has a speed limit of 50km/h. Buses (routes 401 & 402) to and from the health precinct and the University route via this street. |
| Berkeley Street | Berkeley Street connects Grattan Street and Pelham Street and is a local road with one traffic lane in each direction. It has paid parallel parking on both sides. Berkeley Street has two traffic calming speed humps in its carriageway. Pedestrian paths on both sides are 1.5 to 2 m in width. The street provides access to Melbourne University buildings and local businesses. |
| Leicester Street | Leicester Street runs down one side of University Square. It provides paid parallel parking and centre of carriageway paid parking in its southern section. Bicycle lanes are provided in sections. It provides a local road connection to Pelham Street and University related land uses in this area. |
| Barry Street | Barry Street runs down the opposite side of University Square to Leicester Street. It provides paid parallel parking and centre of carriageway paid parking in its southern section. Bicycle lanes are provided in sections. It provides a local road connection to Pelham Street and University related land uses in this area. |

### 4.1.1.2 Network Performance

#### 4.1.1.2.1 Daily Traffic Profiles

To understand daily traffic profiles along key roads near the proposed Parkville station, SCATS data was obtained from VicRoads for a number of key intersections in the vicinity of the proposed Arden station location.

*Elizabeth Street / Grattan Street*

The profile of traffic flows on Grattan Street and Royal Parade is shown in Figure 3-2.

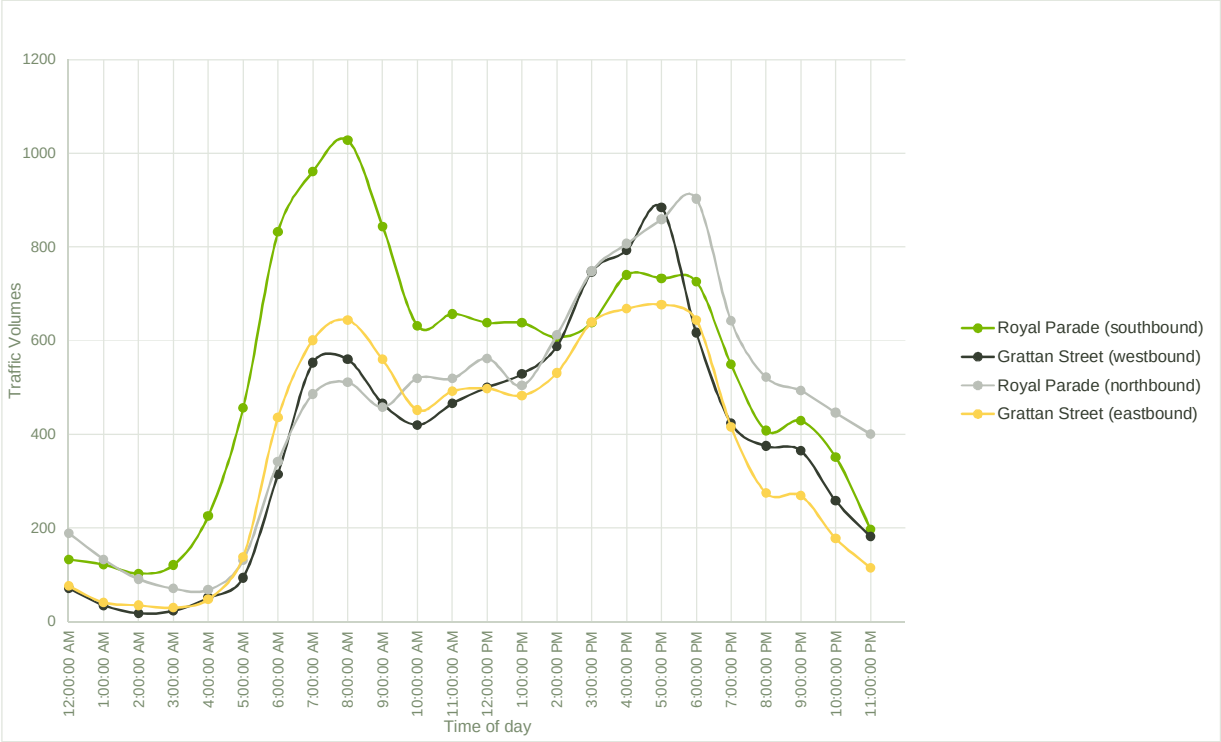



**Figure 4-2: Average daily traffic profile on Royal Parade and Grattan Street**

**Source: VicRoads SCATS 27 May 2016**

The peak flows on Royal Parade (southbound) are higher during the AM peak with the highest flows between 8:00am – 9:00am (refer to Table 4-4). Royal Parade (northbound) and Grattan Street (westbound) have peak flows between 5:00pm – 6:00pm. Traffic flows on Grattan Street (eastbound) are consistent during both peaks with between 600 – 700 vehicles each hour.

**Table 4-4: Weekday traffic flows at Royal Parade and Grattan Street signalised intersection**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Royal Parade (southbound)** | 961 | 1,028 | 740 | 733 | 12,769 |
| **Grattan Street (westbound)** | 553 | 560 | 793 | 884 | 9,335 |

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Royal Parade (northbound)** | 486 | 511 | 807 | 859 | 11,017 |
| **Grattan Street (eastbound)** | 601 | 644 | 668 | 677 | 8,946 |

**Source: VicRoads SCATS, 27 May 2015**

*Flemington Road / Grattan Street / Wreckyn Street*

The profile of traffic flows on Flemington Road and Grattan Street is shown in Figure 4-3.

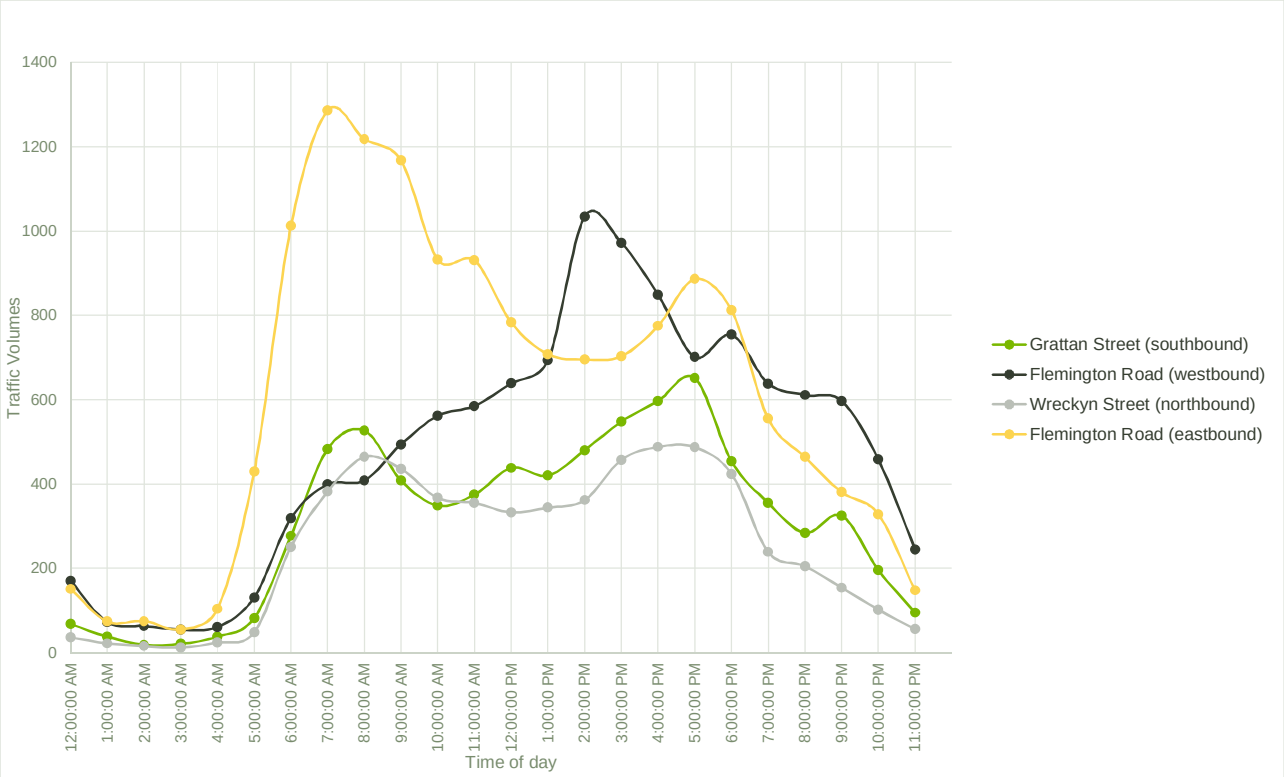



**Figure 4-3: Average daily traffic profile on Flemington Road and Grattan Street**

**Source: VicRoads SCATS 27 May 2015**

The peak flows on Flemington Road (eastbound) are higher during the AM peak with the highest flows between 8:00am – 9:00am (refer to Table 4-5). Grattan Street (southbound) and Flemington Road (westbound) have peak flows between 5:00pm – 6:00pm. Traffic flows on Wreckyn Street (northbound) are fairly consistent during both peaks.

**Table 4-5: Weekday traffic flows at Flemington Road and Grattan Street signalised intersection**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Grattan Street (southbound)** | 483 | 527 | 597 | 651 | 7,528 |
| **Flemington Road (westbound)** | 399 | 408 | 849 | 701 | 11,510 |
| **Wreckyn Street (northbound)** | 382 | 464 | 488 | 487 | 6,064 |
| **Flemington Road (eastbound)** | 1286 | 1218 | 775 | 886 | 14,673 |

**Source: VicRoads SCATS, 27 May 2015**

#### 4.1.1.2.2 Intersection Analysis

Table 4-6 lists the key road intersections in the Parkville study area and provides information on their control, public transport priority offered, cycling advanced stop boxes and associated infrastructure and also lists any banned movements.

**Table 4-6 Parkville Key Intersections**

| Intersection | Control | Public transport priority | Cyclist advanced stop boxes | Banned movements |
|---|---|---|---|---|
| **Grattan Street and Royal Parade** | Fully Signalised | No | Yes – on Grattan Street westbound, Royal Parade Southbound | None |
| **Grattan Street and Flemington Road/Wreckyn Street** | Fully Signalised | No | Yes – Flemington Road north /southbound | None |
| **Haymarket Signalised Roundabout** | Fully Signalised | Tram only signal phases | Yes – At most approaches | None |
| **Flemington Road and Harker Street / Gatehouse Street** | Fully Signalised | Tram only signal phases | None | Truck bans on vehicles over 4.5 tonnes into Gatehouse Street |
| **Elizabeth Street and Queensberry Street** | Fully Signalised | None | Yes | Right turn from Elizabeth Street into Queensberry Street |
| **Peel Street and Queensberry Street** | Fully Signalised | Tram only signal phases | Yes | None |
| **Royal Parade and Gatehouse Street** | Fully Signalised | None | On Royal Parade | Truck bans on vehicles over 4.5 tonnes into Gatehouse Street |

### 4.1.2 Road Safety

Between January 2010 and January 2015 there were 278 road casualty incidents around Parkville in the area bounded by Queensberry Street, Swanston Street, College Crescent, Gatehouse Street, Flemington Road, and Peel Street. Of these incidents:

- 34 per cent were serious injury casualties and 66 per cent were 'other injury accidents'. There were no fatalities.
- 38 per cent of (106) incidents involved bicycles. 91 per cent of these incidents involved collisions with motor vehicles. 38 per cent were serious injury incidents. Incident hotspots included Grattan Street (20 incidents), Royal Parade (12 incidents), Haymarket Roundabout (10 incidents), Flemington Road and Wreckyn Street intersection (8 incidents), and Flemington Road and Gatehouse Street intersection (7 incidents).
- 21 per cent involved pedestrians being struck by motor vehicles. 50 per cent of these incidents led to serious injuries
- There were 16 casualty incidents involving buses and trams (6 per cent of all incidents). Half of these involved pedestrians.
- 66 per cent (183) incidents occurred at intersections

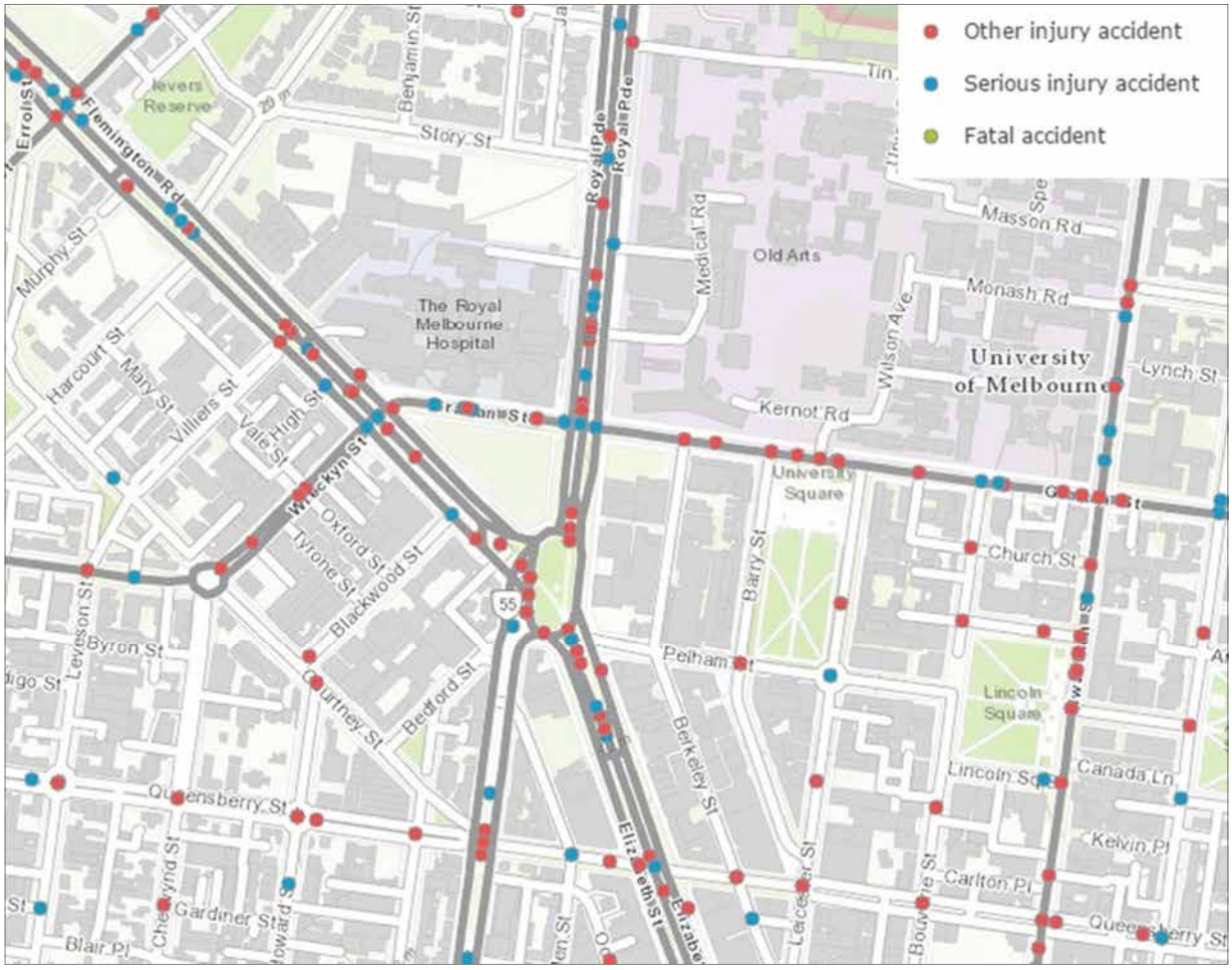



**Figure 4-4Parkville Station Precinct – Road accident locations**

## 4.1.3 Car Parking and Access

#### 4.1.3.1.1 On street parking

On-street parking spaces outside the hospital precinct and Melbourne University are generally subject to parking restrictions, with a mix of parking types provided including;

- Drop-off (10 min)
- Short term (1-2 hours)
- Medium term (3-4hours)
- Provision for those with a disability permit.

These cater for different types of visitor demand generated by the hospitals and University, although future demand and requirements are unknown. Previous studies undertaken by the City of Melbourne have shown that on-street parking to the south of Royal Park is heavily utilised with many streets in close proximity to the Hospitals and University.

Disabled parking is also available in several side streets as well as in the paid parking facilities in the Royal Melbourne Hospital. At present some parking along Royal Parade and Grattan Street is not available due to construction work around the VCCC.

#### 4.1.3.1.2 Off Street parking

There are a number of public off-street car parking facilities that service land uses within the study area (Figure 5-15 shows the location of the major public car parks). These parking facilities range in size from small off-street facilities containing less than 50 spaces to significantly larger multi-deck parking facilities containing over 1000 spaces. In total, there are approximately 5,600 public off-street parking spaces within the study area with the greatest number located on the Melbourne University central campus

The majority of public off-street car parks and particularly those directly servicing the hospitals, Melbourne University and the Queen Victoria Market are subject to parking fees.

#### 4.1.3.1.3 Taxi Zones

There is a major taxi zone outside the Royal Melbourne Hospital in which busy periods demand for the waiting bays exceeds supply. Taxis often stop illegally at the bus stop located directly to the south of the taxi zone.

#### 4.1.3.1.4 Loading zones

There are a number of loading zones located in the Parkville study area. Sites include:

- Loading zones on Grattan Street between Royal Parade and Swanston Street
- Loading zones on Berkeley Street and Pelham Street
- Loading zones on southern side of Flemington Road servicing retail and hospitality land uses

#### 4.1.3.1.5 Access Points

There are several key land use access locations in the Parkville station precinct. These are important vehicle and pedestrian entry/exit points.

For the University of Melbourne there are multiple access points including:

- Royal Parade (4 gates including Tin Alley and Genetics Lane)
- Grattan Street (4 gates including the main access point at Gate 10)
- Swanston Street (5 gates including Tin Alley)

The hospital area to the west of Royal Parade has several important access points off Royal Parade and Grattan Street.

- Royal Parade – Royal Melbourne Hospital (RMH) car park access, pedestrian access to Melbourne private hospital, ambulance entry and exit point
- Grattan Street – main pedestrian access to RMH, patient transfer vehicle entry and exit point

#### 4.1.3.1.6 Clearways

There are no clearways in operation in the Parkville study area.

#### 4.1.3.1.7 Car sharing

Parkville is well serviced by car sharing services. There are over 20 vehicles available in the Parkville area through providers such as Flexicar, GoGet and GreenShareCar. There is some use of these services by businesses in the area for commercial purposes, or residents for general transport.

#### 4.1.3.1.8 CBD Congestion Levy

The Victorian government imposes the levy on "off-street" parking spaces used for parking cars or larger motor vehicles within the levy area annually. The levy is charged on each space that existed as leviable parking space at any time in the previous calendar year (Appendix B).

From 2015, there were would be two levy areas, which would be subject to different levy rates. Spaces within the category 1 levy area would be subject to the full levy rate, while spaces in the category 2 levy area would be charged a lesser amount which would now include Parkville. For the spaces within the category 1 levy area, the congestion levy for 2014 is $1300 for each leviable parking space. From 2015, a lesser rate of $950 would apply on each space within the category 2 levy area[9].

### 4.1.4 Public Transport

#### 4.1.4.1 Rail Network

Railway stations are on the periphery of the Parkville station precinct and rely on tram and bus connections to access the major employment and education centres.

#### 4.1.4.2 Tram Network

There are three tram routes that operate through Parkville with a further two operating on the edge of Parkville. These routes and the wider tram network near Parkville are shown in Figure 4-5. The tram routes directly relevant to the Parkville Precinct are Route 19, 55, and 59, however there are a number of other routes on Swanston Street.

Route 19 travels along Royal Parade past the University and Royal Melbourne Hospital. Route 55 travels along tracks on Flemington Road and into Royal Park then travels north through Brunswick up to West Coburg. Route 59 transverses the Flemington Road corridor as well, passing through Moonee Ponds before heading west to Airport West.

Routes 19, 55, and 59 in and around Parkville operate in exclusive tram lanes but travelling times can be compromised by cross traffic at intersections where right turning traffic is permitted in tramways. The tram lanes from Elizabeth Street to Flemington Road on the Haymarket roundabout are occasionally blocked in the PM peak by cars queuing back from Grattan Street to Peel Street.

[9] http://www.sro.vic.gov.au/sro/sronav.nsf/childdocs/-3A87315B22BC23FFCA2575A100441F59-EFC160ABBE873990CA2575B70020FC3B?open

Nine tram routes operate on Swanston Street on the eastern edge of the study area. The tram services operate in an exclusive tram lane. A major tram terminus is located outside the Melbourne University at Faraday Street. Routes 1 and 8 operate cross-city services and routes 3/3a, 5, 6, 16, 64, 67 and 72 all terminate here. The University tram stop is DDA compliant but other stops have older safety zone style stops.

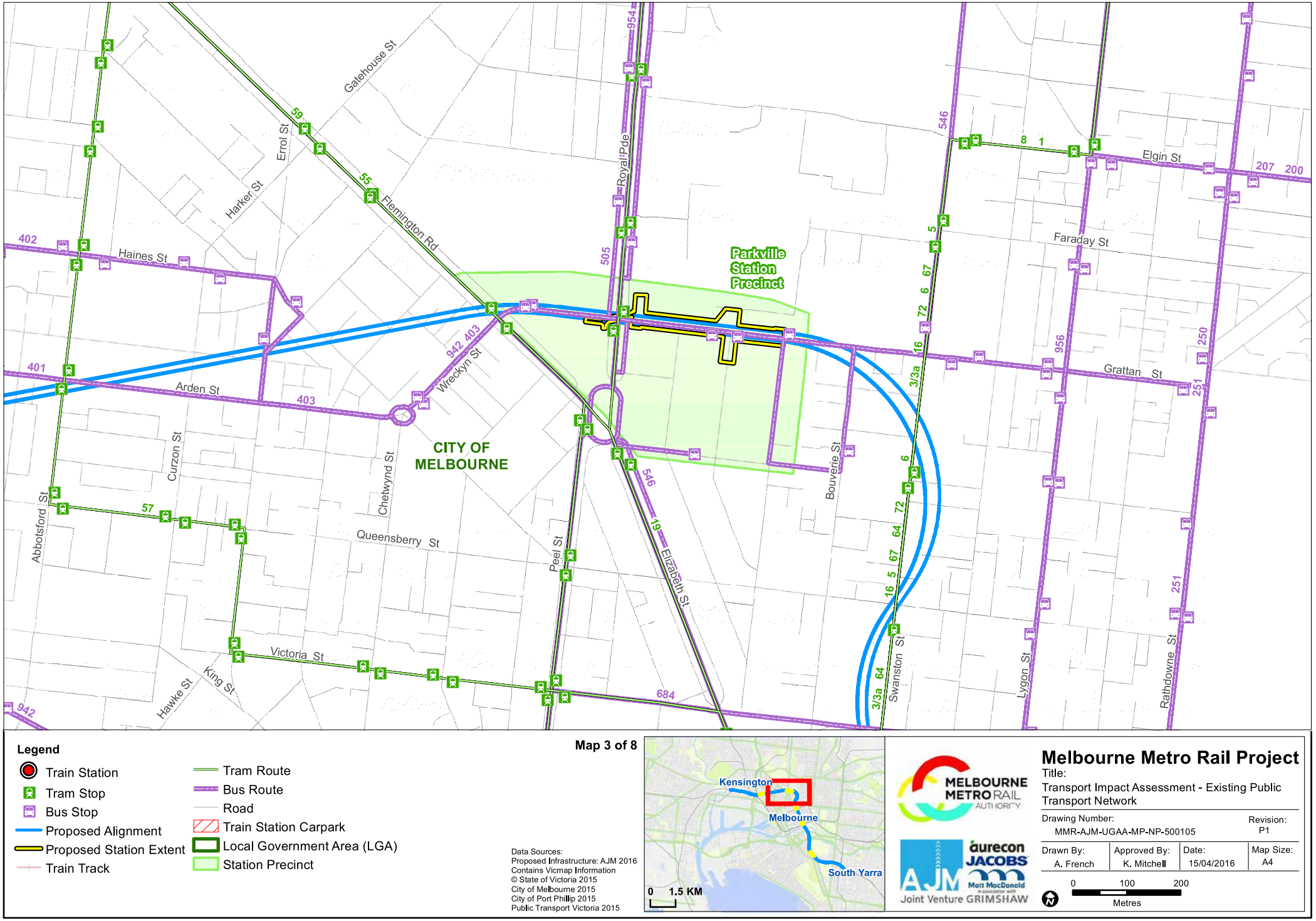



**Figure 4-5 Parkville station precinct – Public transport network**

Accessible platform stops are available on some Elizabeth Street and Flemington Road stops – most notably the Flemington Road and Grattan Street stop servicing The Royal Melbourne Hospital and the Elizabeth Street stop at the Haymarket roundabout. The Swanston Street Melbourne University tram stop is fully accessible.

During the peak hour Route 19 operates 14 services (peak direction) down Royal Parade. Route 19 has the 5th highest patronage out of all the tram routes in Melbourne.10 On Royal Parade outside the University and Royal Melbourne Hospital at stops 10 and 11 there are over 8,000 boardings and alightings.

Route 55 and Route 59 operate 15 and 14 services respectively during the peak hour along Flemington Road (refer to Table 4-7). Route 55 has an average of 80 passengers per service in the peak periods and is the 12th busiest tram route in the Melbourne. A further 6,500 boardings and alightings occur on Flemington Road outside the Royal Melbourne Hospital.

**Table 4-7: Number of tram services in Parkville**

| Route | Trams per hour (peak direction) | | | |
|---|---|---|---|---|
| | Peak hour | Peak 2-hour | Inter-peak | Other off-peak |
| **Royal Parade (Royal Melbourne Hospital)** | | | | |
| 19 City (Elizabeth Street) – North Coburg | 14 | 26 | 10 | 3 |
| **Flemington Road (Royal Melbourne Hospital)** | | | | |
| 55 Domain Interchange – West Coburg | 15 | 26 | 5 | 3 |
| 59 City (Elizabeth Street) – Airport West | 14 | 21 | 8 | 3 |
| **Swanston Street (Melbourne University)** | | | | |
| Routes 1, 3/3a, 5, 6, 8, 16, 64, 67 and 72 | 55 | 98 | 43 | 18 |

Source: PTV, May 2015. (Friday frequencies occasionally differ from Mon-Thurs frequencies).

During the peak period there are a total of 55 tram services operating on Swanston Street (peak direction). Stop 1 on Swanston Street at the Melbourne University has over 21,000 boardings and alightings during the day making it the 11th busiest station/ tram stop in the network.

For details of the Night Network public transport services, refer to section 2.1.4 (western portal - rail network).

#### 4.1.4.3 Bus Network

There are four metropolitan bus routes that serve the Parkville study area as well as a Night Network service at the weekend. The Route 401 bus operates as a weekday limited stop shuttle service between North Melbourne Railway Station, the hospital precinct (Royal Melbourne Hospital Grattan Street) and Melbourne University (Grattan Street) only. It is a very high frequency service, up to 15 buses per hour in the peak hour, (refer to Table 4-8).

The Route 402 bus is also a high frequency service (up to 6 buses per hour in the peak hour) that operates daily between Footscray and East Melbourne via North Melbourne with four stops along Grattan Street. It connects with Footscray, Macaulay and Kensington stations allowing an option to transfer for access to Parkville. Route 402 has seen a 9.2 per cent growth in patronage annually between 2010-11 and 2011-12 to

[10] 2012-13 figures, Source: http://www.yarratrams.com.au/about-us/who-we-are/facts-figures/

900,000 passengers. Key boarding stops include Footscray Station and Kensington Station with passengers alighting predominantly at Royal Melbourne Hospital, Melbourne University or St Vincent's Hospital.

**Table 4-8 Bus route frequencies near the proposed Parkville station**

| Bus Route | | Buses per hour | | | |
|---|---|---|---|---|---|
| | | Peak hour | Peak 2-hour | Inter-peak | Other off-peak |
| **401** | **North Melbourne – Melbourne University via Royal Melbourne Hospital** | 15 | 30 | 15 | 6 |
| **402** | **Footscray – East Melbourne via North Melbourne** | 6 | 12 | 6 | 3 |
| **505** | **Moonee Ponds – Melbourne University via Parkville Gardens** | 1 | 2 | 1 | 1 |
| **546** | **Heidelberg – Melbourne University – Queen Victoria Market via Clifton Hill and Carlton** | 2 | 4 | 2 | N/A |

Source: PTV, May 2015

The Route 505 bus operates daily between Moonee Ponds Interchange and Melbourne University via Parkville Gardens with stops throughout Parkville including Royal Park Station, Royal Parade, Melbourne Zoo, Melbourne University and Royal Melbourne Hospital. It is a low frequency service (only one bus per hour in the peak hour) operating with only one service an hour across the day. The 505 service has grown by 11.6 per cent in daily patronage between 2010-11 and 2011-12.

The Route 546 bus between Heidelberg and Queen Victoria Market via Clifton Hill and Carlton with stops on Grattan Street (peak) and Royal Parade (off peak) only operates on weekdays. It connects with stations along the Hurstbridge line including Heidelberg and Clifton Hill. On the 546 service there was a steady decline in patronage between 2010-11 and 2011-12 by around 3,000 passengers annually.

PTV is currently considering a proposal for an express shuttle bus service between Victoria Park Station and the Parkville precinct. Such a shuttle bus route provide faster access to the Parkville precinct from the South Morang and Hurstbridge lines and relieve capacity pressure on both trains and trams through the CBD. Such a service would operate every 5 minutes in peak periods and every 10 minutes during the inter-peak.

### 4.1.5 Active Transport

#### 4.1.5.1 Pedestrian Environment

Most of the precinct is highly walkable with wide pavements, although dissected by major road corridors, particularly the north-south arterials. There are a number of SmartRoads pedestrian priority routes in Parkville, especially around the Melbourne University site including:

- Royal Parade
- Grattan Street
- Flemington Road
- Pelham Street
- Leicester Street
- Queensberry Street

- Haymarket Roundabout.

There are few active street frontages along the major corridors however pedestrian amenity levels can be poor due to high vehicular traffic volumes. Facilities to cross streets are provided regularly which help to reduce the severance effect of major boulevards like Royal Parade and Flemington Road. Around the University and hospital precinct there is a very high volume of pedestrian movement during both the peak and off peak periods.

Next to the major roads, pedestrian amenity levels can be poor due to high vehicular traffic volumes. There are few active street frontages along the major corridors. There are poor levels of legibility and relatively little wayfinding (signage) across the precinct to encourage local trips although it is known 90 per cent of off peak trips are by pedestrians. Within the vicinity of Haymarket the pedestrian environment is confusing and difficult to navigate. Connecting between modes can also be[11] difficult.

There is a good provision of pedestrian infrastructure within the vicinity of the Parkville Precinct. All roads connecting the site to the wider road network have footpaths on both sides of the carriageway, providing a continuous network near and throughout the Parkville Precinct. Due to the construction of the VCCC there are restricted pedestrian pathways along Grattan Street and Royal Parade near Royal Melbourne Hospital.

The area is dissected by major road corridors and in particular the north-south arterial roads. Facilities to cross these roads are provided in the form of controlled pedestrian crossings. Crossing Royal Parade and Flemington Road using the controlled pedestrian crossings typically requires multiple stops and use of pedestrian refuge areas due to the width of these roads and the relatively short pedestrian crossing signal phase times.

Pedestrian crossings on some of the more local roads are well provided for. The pedestrian crossing location on Grattan Street at University Square in front of the Grattan Street entrance to Melbourne University has two signalised crossing points and is a busy crossing location.

The provision of drop curbs at both signalised and unsignalised intersections is quite common. Most signalised pedestrian crossings have aural signals as well as visual signalling for pedestrians. The provision of tactile tiles is generally widespread although there are some locations where this is not provided for.

#### 4.1.5.2 Bicycle Environment

##### 4.1.5.2.1 Bicycle Network

Cycling is a significant and growing transport mode in and around Parkville. VicRoads permanent counts in 2013 recorded an average of 520 bicycle riders travelling southbound on Royal Parade in the AM peak hour, with around 1,800 making this movement each day.[12]

The existing bicycle network near the proposed Parkville station is shown in Figure 4-6 and Table 4-9.

[11] VISTA (2009-10)

[12] https://www.vicroads.vic.gov.au/~/media/files/documents/traffic%20and%20road%20use/bicyclenetworkreportaug2013.ashx

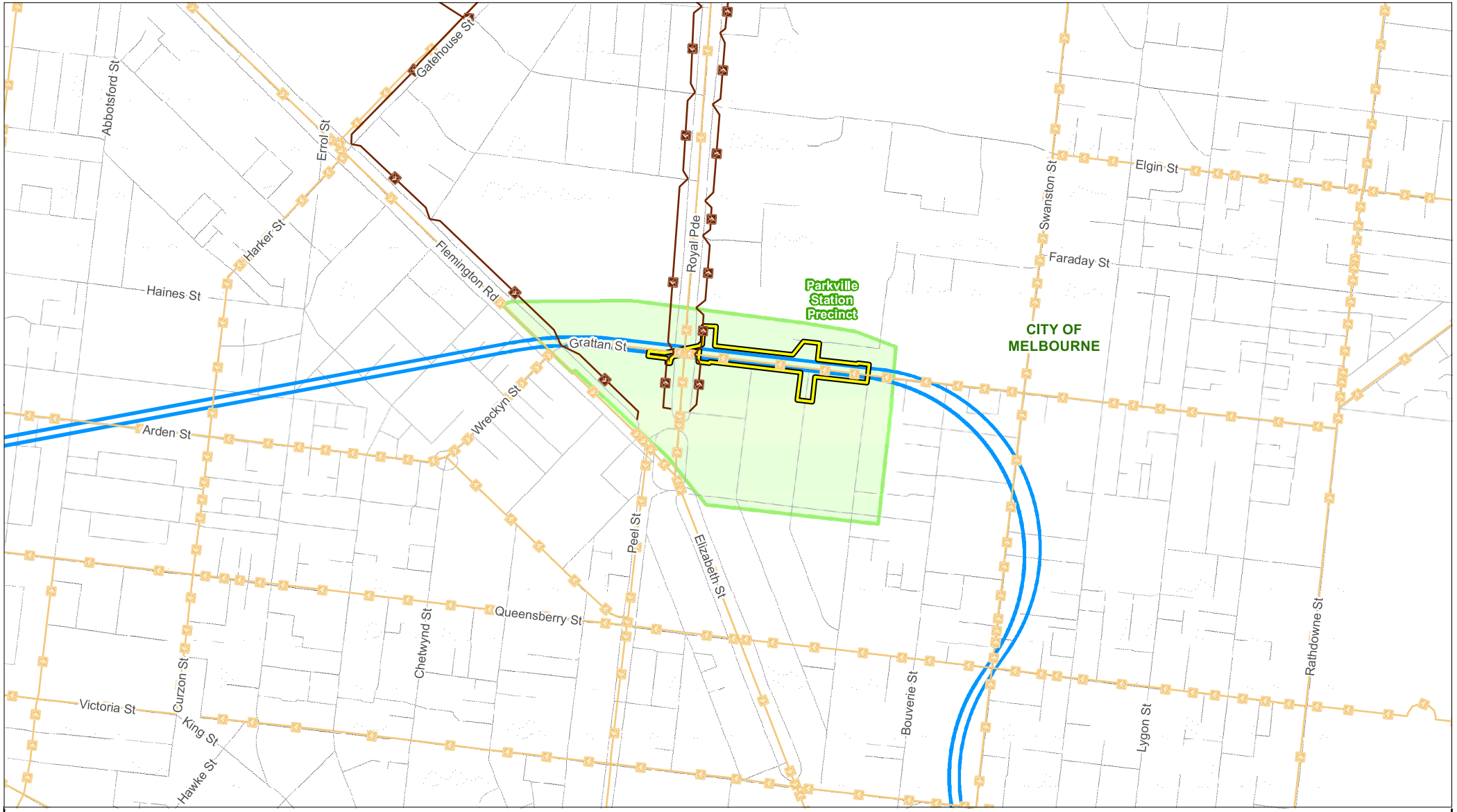



**Figure 4-6 Parkville station precinct – Bicycle network**

To the north of Parkville are the local authorities of Moreland and the City of Yarra which both have the highest mode shares for bicycle use in Melbourne. Significant numbers of bicycle commuters in these jurisdictions journey to work in Parkville or through the area to the CBD beyond.

**Table 4-9 Parkville Station precinct - Bicycle network**

| Road | Type of treatment |
|---|---|
| **Royal Parade** | On-road bicycle lanes along service road. Shared path between Park Street and Grattan Street on eastern side of Royal Parade |
| **Grattan Street** | East of Grattan Street - Off road shared path |
| **Flemington Road** | On-road bicycle lanes along service road |
| **Haymarket Roundabout** | On-road bicycle lanes are available through this intersection |
| **Peel Street** | Intermittent on road bicycle lanes |
| **Elizabeth Street** | North of Queensberry Street - separated on road bicycle lanes (Copenhagen lanes)<br>South of Queensberry Street - Informal on road bicycle route |
| **Queensberry Street** | On-road bicycle lane |
| **Swanston Street** | Separated on road bicycle lanes (Copenhagen lanes) |
| **Bouverie Street** | On-road bicycle lane |
| **Pelham Street** | On-road bicycle lane |
| **Wreckyn Street** | On-road bicycle lane |

Bicycle parking hoop locations can be found in and around Parkville. The major sites in Parkville like the hospitals and Melbourne University have private bicycle parking facilities and other end of trip facilities such as showers and lockers.

The Melbourne Bike Share scheme also has several stations in Parkville, including two at Melbourne University (University Square and Tin Alley). These presently have very low usage, for example the bike share station at Tin Alley, within the Melbourne University Campus had around five uses per weekday in 2012.

# 5 Precinct 5: CBD North Station

## 5.1 Existing Conditions

### 5.1.1 Road Transport

#### 5.1.1.1 Road Network

Table 5-1 lists the Smartroads categorisation of the road network in the vicinity of the proposed CBD North station. Victoria Street, Peel Street and Elizabeth Street to the north of the proposed CBD North station are classified as SmartRoads traffic routes. La Trobe Street and Swanston Street are classified as local primary access routes.

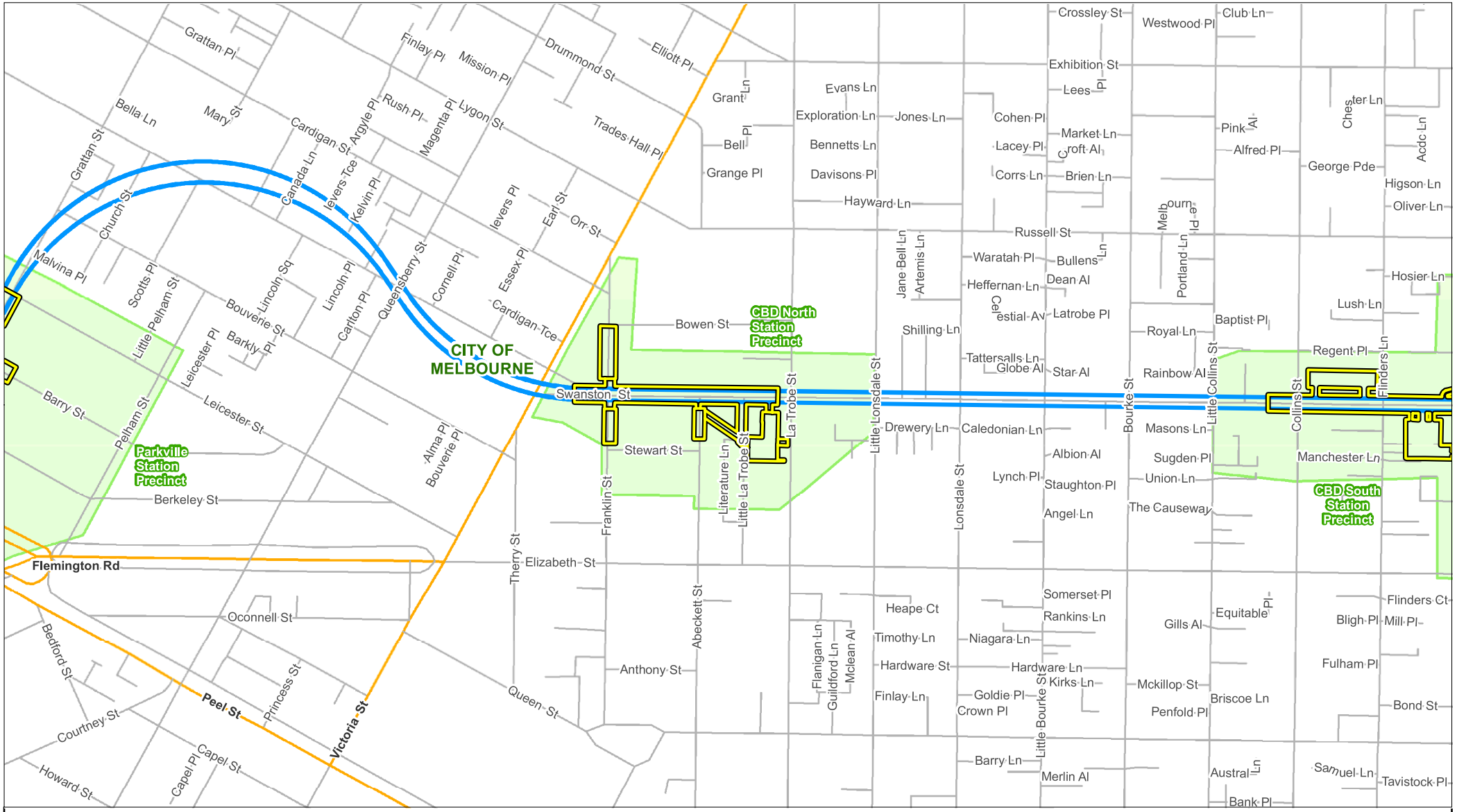
**Table 5-1 CBD North Station Precinct - SmartRoads traffic priority routes**

| SmartRoads classification | Traffic | | Public transport | Active transport | |
|---|---|---|---|---|---|
| | Traffic route | Local primary access route | Tram priority route | Bicycle priority route | Pedestrian priority area |
| **Declared Roads** | | | | | |
| **Victoria Street** | ✓ | - | - | - | ✓ |
| **Elizabeth Street (north of Victoria Street)** | ✓ | | ✓ | ✓* | ✓ |
| **Local Roads** | | | | | |
| **Swanston Street** | - | - | ✓ | ✓* | ✓ |
| **La Trobe Street** | - | ✓ | ✓ | ✓* | ✓ |
| **Elizabeth Street (south of Victoria Street)** | - | ✓ | ✓ | ✓** | ✓ |
| **A'Beckett Street** | - | - | - | - | - |
| **Little La Trobe Street** | - | - | - | - | - |
| **Franklin Street** | - | - | - | - | - |
| **Stewart Street** | - | - | - | - | - |

* Principal Bicycle Network, ** Local Bicycle Network

**Source: Transmaps, 2015 (http://www.maps.vic.gov.au/TransMaps/ui/DotmapUI.jsp)**

There is a low bridge (4.3 m) on Dudley Street and a VicRoads warning that Victoria Street and Elizabeth Street intersection has low tram wires. Other network constraints in the area include the various road closures, one way streets, and turn bans that are common in the Hoddle grid but not unique to this specific study area




**Legend**

- Proposed Alignment
- Proposed Station Extent
- Arterial Road
- Local Road
- Local Government Area (LGA)
- Station Precinct
- Portal Precinct

**Map 4 of 8**


Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
City of Melbourne 2015
City of Port Phillip 2015
Public Transport Victoria 2015

MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture GRIMSHAW — aurecon JACOBS Mott MacDonald

# Melbourne Metro Rail Project

Title:
Transport Impact Assessment - Existing Road Network

| Drawing Number: | Revision: |
|---|---|
| MMR-AJM-UGAA-MP-NP-500105 | P1 |

| Drawn By: | Approved By: | Date: | Map Size: |
|---|---|---|---|
| A. Davy | K. Mitchell | 15/04/2016 | A4 |

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**Figure 5-1 CBD North station precinct – Road network**

The proposed CBD North station is located within the CBD 'Hoddle Grid' that is characterised by nine east-west streets and nine north-south streets intersecting at right angles. This street layout results in a road network with closely spaced intersections carrying high volumes of pedestrian, bicycle, public transport and private vehicle movements. Many of the streets also provide access to laneways, further increasing the potential conflicts of transport movements in the CBD. This CBD Hoddle Grid street network layout requires careful management and often requires various regulatory measures such as one-way streets, turning bans at intersections and temporary road closures.

#### 5.1.1.1.1 Declared Roads

Table 5-2 below lists the declared roads in the vicinity of the proposed CBD North station and provides a brief overview of their features, physical layout as well as their road network function.

**Table 5-2 CBD North Station Precinct - Declared Roads**

| Declared road | Road name | Description |
|---|---|---|
| Arterial–Other | Victoria Street | Victoria Street is a key arterial road under the management of VicRoads. It is a major east-west route connecting a number of inner suburbs between North Melbourne and Hawthorn while also forming a key route between the CBD and the eastern suburbs. Victoria Street/Victoria Parade provides direct access to a number of intersecting arterial roads including Hoddle Street, Nicholson Street and Peel Street.<br><br>Victoria Street provides two to three traffic lanes in each direction with parallel parking provided on each side of the carriageway (outside of clearway times). This section of Victoria Street can experience heavy congestion between La Trobe Street and Elizabeth Street due to the conflicting priorities between north-south and east-west movements, including tram movements. |
| Arterial–Other | Peel Street | Peel Street forms part of both a key north-south traffic route and a key east-west traffic route linking the western side of the CBD and Docklands area to the northern suburbs (via Royal Parade and Flemington Road) and eastern suburbs (via Victoria Street/Victoria Parade). Peel Street also plays an important role in the public transport and cycle network. |
| Arterial–Other | Elizabeth (north of Victoria Street) | To the north of Victoria Street, Elizabeth Street is an arterial road linking the Haymarket roundabout to the northern section of the Melbourne CBD. Between the Haymarket roundabout and Victoria Street it has four lanes of traffic split between a service road and a central carriageway similar to other Melbourne boulevards, with tram services operating along the centre of the road in a segregated tram fairway. |

#### 5.1.1.1.2 Local Roads

The proposed CBD North station is located within the CBD Hoddle Grid which is characterised by nine east-west streets and nine north-south streets intersecting separately at right angles. This street layout results in a road network with closely spaced intersections carrying high volumes of pedestrian, cycle, public transport and private vehicles movements. Many of the streets also provide access to laneways further increasing the potential conflicts of transport movements in the CBD. This CBD Hoddle Grid street network layout requires careful management and often requires various regulatory measures such as one-way streets, turning bans at intersections and temporary road closures.

Table 5-3 lists the key local roads near the proposed CBD North station Area and provides a brief overview of their features, physical layout as well as their road network function.

**Table 5-3 Local Roads near the CBD North study site**

| Local Roads | Description |
|---|---|
| Swanston Street | Swanston Street (north-south) is currently one of the most important tram and bicycle routes in Melbourne connecting the wider metropolitan tram and bicycle network to the north and south through the CBD. Swanston Street also plays an important role in providing delivery and maintenance vehicle access to the various land uses on Swanston Street, a few of which are commercially landlocked by only having access directly from Swanston Street.<br><br>Swanston Street between Franklin Street and A'Beckett Street is permanently closed to all vehicles except trams and bicycles. However, the section of Swanston Street directly to the south of this road closure is open at all times to provide access to Little La Trobe Street which is a one-way street accessed only from Swanston Street. Swanston Street is a 40km/h zone where it is open to traffic. |
| La Trobe Street | La Trobe Street (east-west) connects the north-eastern side of the CBD to Docklands for both tram and other road based traffic. La Trobe Street also provides direct access to a number of large car parks servicing Melbourne Central and has parallel parking on both sides of the street. In the vicinity of the CBD North Precinct, the street provides one lane of traffic in each direction with additional tram and parking lanes as well as Copenhagen style protected bicycle lanes (both sides of road) installed in 2013-14. Installation of the protected bicycle lanes required the removal of one traffic lane each direction. La Trobe Street is a 40km/h zone. |
| A'Beckett Street | A'Beckett Street (east-west) generally provides one wide lane in each direction with turning lanes providing additional storage at key intersections. The street connects William Street, Queen Street and Elizabeth Street to Swanston Street and provides parallel parking along the majority of this route. The intersections of A'Beckett Street with William Street, Queen Street and Elizabeth Street are all signalised. The intersection of A'Beckett Street and Swanston Street is controlled by a stop restriction. At this intersection there is a pedestrian right of way zebra crossing and bicycle lane.<br><br>Towards Elizabeth street end of A'Beckett Street there is a pedestrian zebra crossing spanning the width of the road. The recently developed A'Beckett Square is accessed off A'Beckett Street and Stewart Street and provides a community sports and gathering area<br><br>The primary function of A'Beckett Street is to provide access to local land uses accessed from the street. Access to Stewart Street is not permitted from A'Beckett Street. |
| Little La Trobe Street | Little La Trobe Street (east-west) is a one-way, one-lane street accessed from the wider road network only via Swanston Street. The street provides parallel parking on one side of the road and runs on a moderate gradient between Swanston Street and Elizabeth Street. Footpath widths on the north side of Little La Trobe Street were extended to improve pedestrian amenity. |
| Franklin Street | Franklin Street (east-west) provides 1-2 traffic lanes with parallel and centre of road parking in most locations. Franklin Street connects Victoria Street to the Docklands and Footscray Road via Dudley Street. Franklin Street provides access to an off-street car park and loading facility servicing RMIT (between Swanston Street and Victoria Street) and to an off-street car park servicing ALDI and rental car companies to the south of Swanston Street. |
| Stewart Street | Stewart Street (north-south) is a one way road accessed from Franklin Street and provides on-street parking on the north side and access to the RMIT Swanston Academic Building loading facility. Stewart Street is a no through road for local traffic only from 7:00am – 10:00pm Monday to Saturday. It is closed mid-block by bollards. The recently developed A'Beckett Square is accessed off Stewart Street and A'Beckett Street and provides a community sports and gathering area. |
| Elizabeth Street | Between Flinders Street and Victoria Street, Elizabeth Street (north-south) generally provides one traffic lane and one tram lane in either direction with signalised crossing provided at all the key intersections. |

### 5.1.1.2 Network Performance

#### 5.1.1.2.1 Daily Traffic Profiles

SCATS data was obtained from VicRoads for 27 May 2015.

*Swanston Street and Victoria Street*

The profile of traffic flows on Swanston Street and Victoria Street is shown in Figure 5-2.

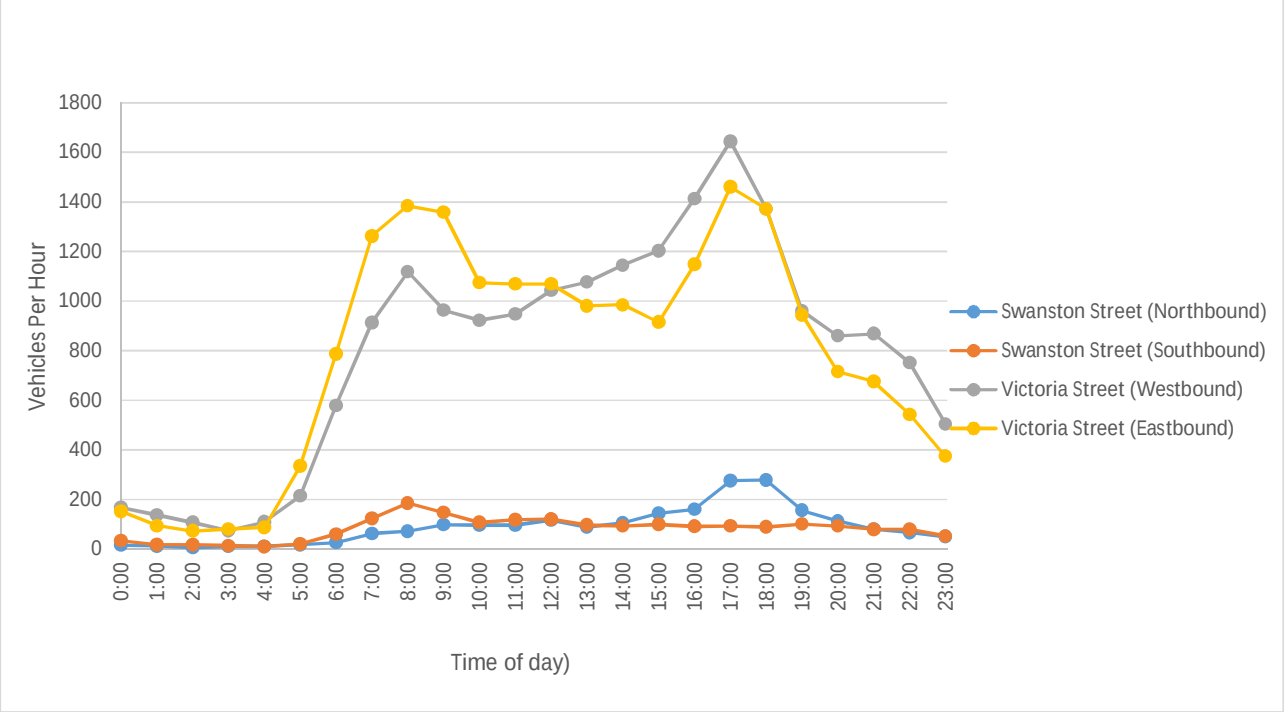


**Figure 5-2: Daily traffic profile on Swanston Street and Victoria Street (Source: SCATS 27 May 2015)**

The peak flows on Swanston Street (southbound) are higher during the AM peak with the highest flows between 8:00am – 9:00am (refer to Table 5-4). Victoria Street (westbound), and Swanston Street (northbound) have peak flows between 5:00pm – 6:00pm. Victoria Street (eastbound) has a noticeable peak in the AM (7:00am-9:00am) and the PM (5:00pm – 6:00pm).

**Table 5-4: Weekday traffic flows at Victoria Street and Swanston Street signalised intersection**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| Swanston Street (southbound) | 123 | 185 | 91 | 92 | 1,935 |
| Victoria Street (westbound) | 913 | 1,118 | 1,413 | 1,644 | 19,090 |
| Swanston Street (northbound) | 62 | 71 | 160 | 275 | 2,155 |
| Victoria Street (eastbound) | 1,262 | 1,384 | 1,148 | 1,460 | 18,933 |

**Source: VicRoads SCATS, 27 May 2015**

*Swanston Street and La Trobe Street*

The profile of traffic flows on La Trobe Street and Swanston Street is shown in Figure 5-3.

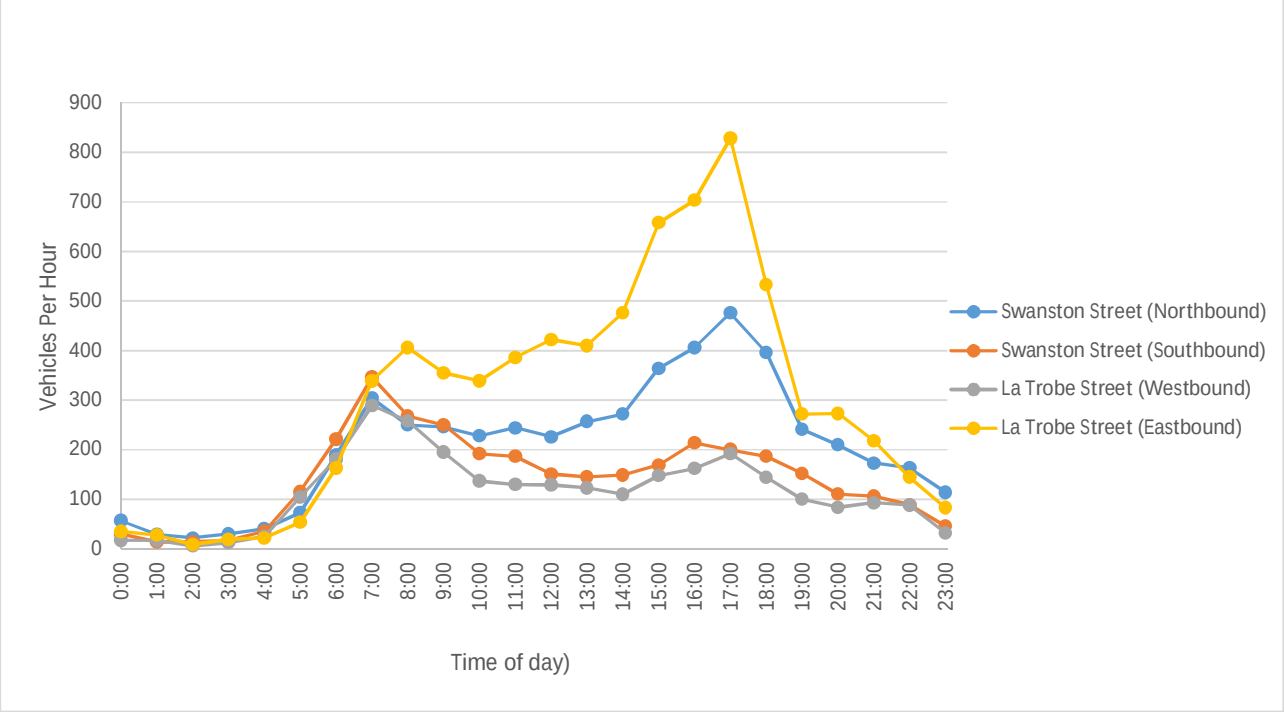


**Figure 5-3: Daily traffic profile on Swanston Street and La Trobe Street (Source: SCATS 27 May 2015)**

The peak flows on Swanston Street (southbound) and La Trobe Street (westbound) are higher during the AM peak with the highest flows between 7:00am – 8:00am (refer to Table 5-5). La Trobe Street (eastbound), and Swanston Street (northbound) have peak flows between 4:00pm – 6:00pm.

**Table 5-5: Weekday traffic flows at La Trobe Street and Swanston Street signalised intersection**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| Swanston Street (southbound) | 346 | 268 | 214 | 200 | 3,408 |
| La Trobe Street (westbound) | 289 | 258 | 162 | 192 | 2,777 |
| Swanston Street (northbound) | 304 | 250 | 406 | 476 | 5,011 |
| La Trobe Street (eastbound) | 339 | 406 | 703 | 828 | 7,176 |

**Source: VicRoads SCATS, 27 May 2015**

*Elizabeth Street / Victoria Street*

The profile of traffic flows on Elizabeth Street and Victoria Street is shown in Figure 5-4.

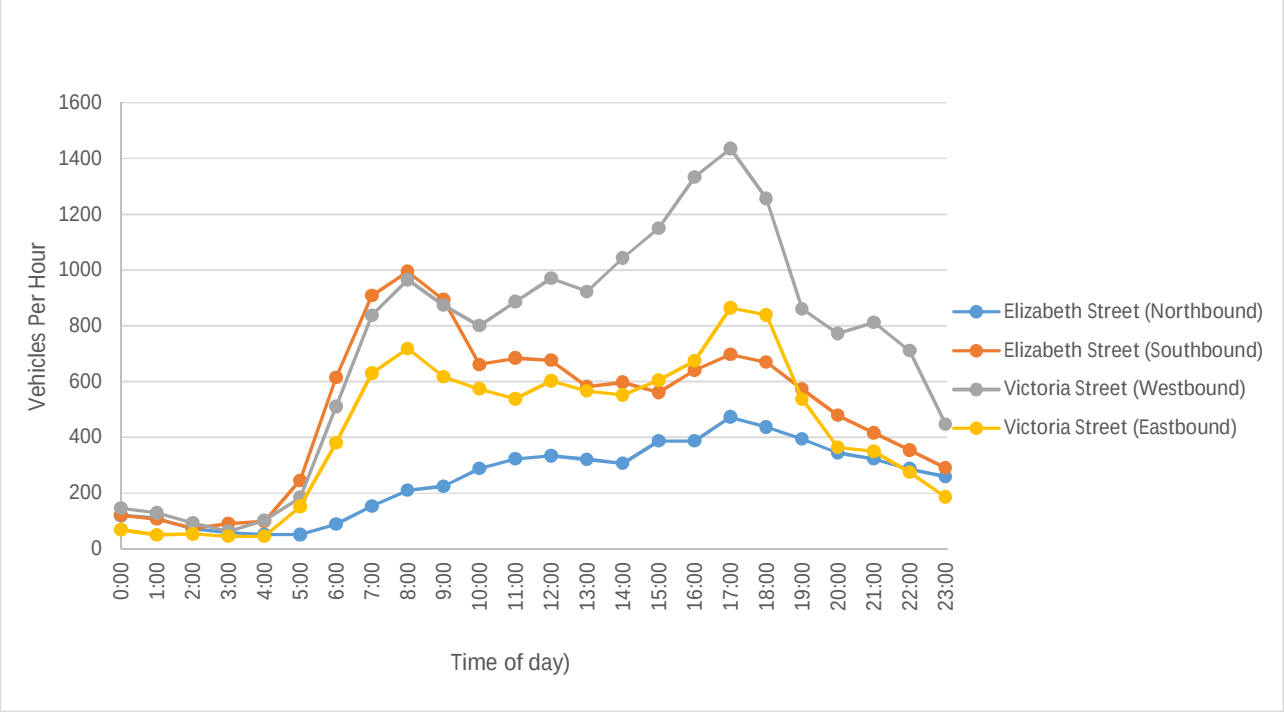


**Figure 5-4: Daily traffic profile on Elizabeth Street and Victoria Street (Source: SCATS 27 May 2015)**

The peak flow on Elizabeth Street (southbound) is higher during the AM peak with the highest flows between 7:00am – 9:00am (refer to Table 5-6). Victoria Street (eastbound and westbound), and Elizabeth Street (northbound) have peak flows between 4:00pm – 6:00pm.

**Table 5-6: Weekday traffic flows at Elizabeth Street and Victoria Street signalised intersection**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| Elizabeth Street (southbound) | 908 | 994 | 697 | 670 | 12,027 |
| Victoria Street (westbound) | 837 | 965 | 1,435 | 1,256 | 17,299 |
| Elizabeth Street (northbound) | 153 | 210 | 473 | 437 | 6,004 |
| Victoria Street (eastbound) | 630 | 718 | 864 | 839 | 10,284 |

**Source: VicRoads SCATS, 27 May 2015**

The profile of traffic flows on Elizabeth Street and La Trobe Street is shown in Figure 5-5.

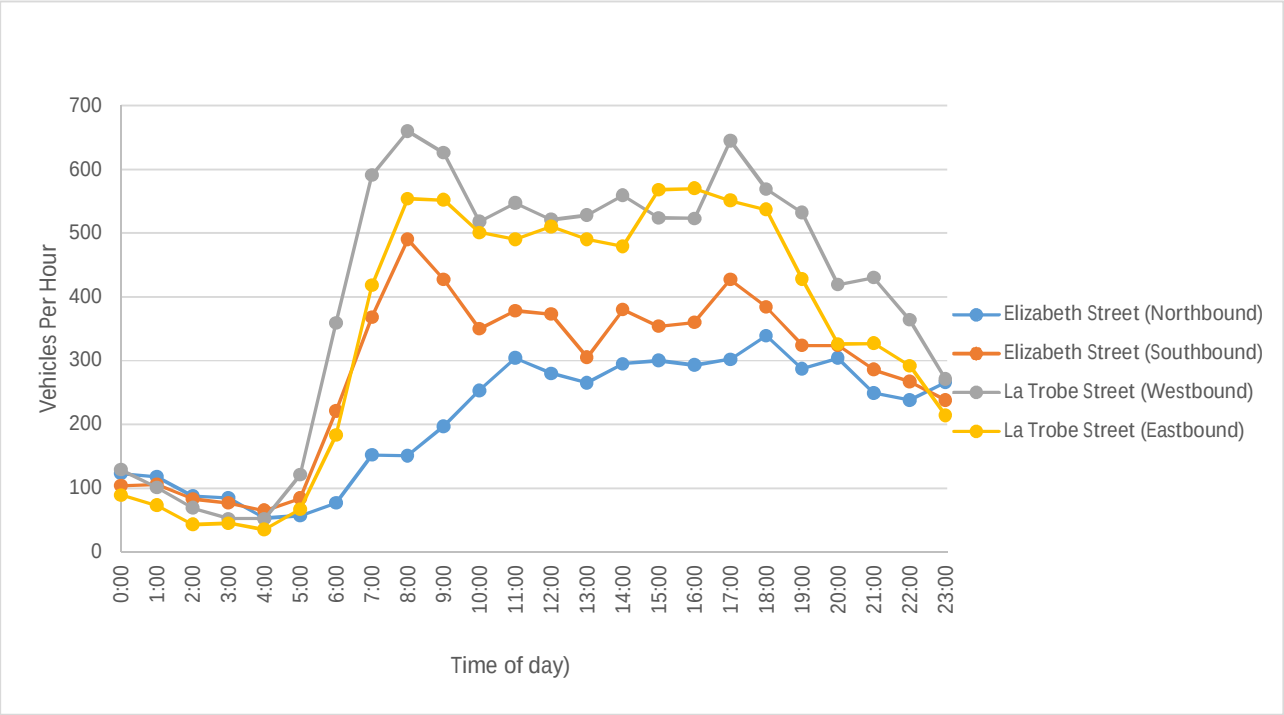


**Figure 5-5: Daily traffic profile on Elizabeth Street and La Trobe Street (Source: SCATS 27 May 2015)**

The peak flow on Elizabeth Street (southbound) is higher during the AM peak with the highest flows between 8:00am – 9:00am (refer to Table 5-7). Elizabeth Street (northbound) has its peak flow between 5:00pm – 6:00pm. La Trobe Street (eastbound and westbound) has both an AM peak and a PM peak with a plateau of 480-550 vehicles per hour in the interpeak.

**Table 5-7: Weekday traffic flows at Elizabeth Street and La Trobe Street signalised intersection**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| Elizabeth Street (southbound) | 368 | 490 | 360 | 427 | 6,775 |
| La Trobe Street (westbound) | 591 | 660 | 523 | 645 | 9,710 |
| Elizabeth Street (northbound) | 152 | 151 | 293 | 302 | 5,076 |
| La Trobe Street (eastbound) | 418 | 554 | 570 | 551 | 8,342 |

**Source: VicRoads SCATS, 27 May 2015**

#### 5.1.1.2.2 Intersection Analysis

Table 5-8 below lists the key road intersections in the CBD North Study Area. It also lists information on their control, public transport priority offered, cycling advanced stop boxes and associated infrastructure, and also lists any banned movements.

**Table 5-8 CBD North Key Intersections**

| Intersection | Control | Public transport priority | Cyclist advanced stop boxes | Banned movements |
|---|---|---|---|---|
| **Swanston Street and Victoria Street** | Fully signalised | Tram signal phases | Yes – on Swanston Street | Right turns from Swanston Street southbound approach |
| **Swanston Street and Franklin Street** | Fully signalised | Tram signal phases | Yes – on Swanston Street Bicycle signals. | Through traffic on Swanston Street |
| **Swanston Street and A'Beckett Street** | Unsignalised (Give way) | N/A | Yes – on A'Beckett Street | Left turns from A'Beckett Street |
| **Swanston Street and Little La Trobe Street** | Unsignalised (Give way) | N/A | None | Little La Trobe Street is a one way street westbound only. |
| **Swanston Street and La Trobe Street** | Fully signalised | Tram signal phases | Yes – all approaches | Left and right turns into Swanston Street southbound |
| **Swanston Street and Little Lonsdale Street** | Fully signalised | Tram signal phases | Yes – on Swanston Street | Left turns into Swanston Street. |
| **Swanston Street and Lonsdale Street** | Fully signalised | Tram signal phases. Bus lanes on Lonsdale Street | Yes – on Swanston Street | Right turns into Swanston Street and Lonsdale Street. Left turns into Swanston Street during certain times of day. |
| **Elizabeth Street and Victoria Street** | Fully signalised | Tram signal phases | None | Right turns from Elizabeth Street |
| Elizabeth Street and Therry Street | Fully signalised | N/A | None | None |
| Victoria Street and Franklin Street | Fully signalised | N/A | None | None |

### 5.1.2 Road Safety

Between January 2010 and January 2015 were 194 road casualties within the area bounded by Victoria Street, Russell Street, Little Lonsdale Street, and Elizabeth Street. Of these accidents:

- 0 per cent were fatal, 32 per cent (62) were serious injury casualties, and 66 per cent (132) were other injury casualties
- 79 casualties (40 per cent) involved bicycles. Of these, 30 per cent were serious (24). In total, 69 (87 per cent) involved collisions with motor vehicles. 'Car dooring' incidents were the most frequent incident type of incident. La Trobe Street was the site of a large proportion of these casualties.

- Pedestrians accounted for 24 per cent (47) of casualties, 28 per cent of which were serious injuries. 96 per cent (45) of these casualties occurred after being struck by moving vehicles (99 per cent motor vehicles and 1 per cent bicycles)
- 68 per cent of all incidents occurred at intersections. The most incidents occurred at the intersection of La Trobe Street and Elizabeth Street.

### 5.1.3 Car Parking and Access

#### 5.1.3.1.1 On street Parking

In total, there are approximately 300 on-street parking spaces within the study area, with on-street parking provided on nearly all streets. This on street parking is provided on the kerb side.

Parking occupancy rates for these sites are typical of CBD parking demand and depend on time of day and day of the week.

#### 5.1.3.1.2 Disabled Parking

There are 11 on street disabled car parking spaces located in the study area. The majority of these car parking spaces have time restrictions.

#### 5.1.3.1.3 Taxi Zones

There are four designated City Safe Taxi Ranks[13] in the CBD, located at the following locations:

- Queen Street between Little Collins Street and Bourke Street
- Flinders Street Station, at Swanston Street
- Bourke Street, near Russell Street
- King Street near Flinders Street

The nearest to the CBD North Study Area are the stops on Queen Street and Bourke Street. There are other taxi ranks in the area including:

- Franklin Street (near Swanston Street)
- Corner of Elizabeth Street and Little Lonsdale Street
- Corner of Swanston Street and Little Lonsdale Street

#### 5.1.3.1.4 Loading Zones

The City of Melbourne manages the provision of loading zones within the City and aims for a target occupancy rate of 60 per cent (maximum). This approach is used to ensure that a sufficient supply of loading zones is provided and to minimise issues associated with vehicles circulating or double parking in search of an available loading zone.

#### 5.1.3.1.5 Access Points

Off-street car parking access points are prevalent a long many of the roads in the CBD North Study Area. Key loading areas for retail and commercial premises are also located along the key roads in the study area. Off street car parking around the Melbourne Central shopping centre accessed from La Trobe attracts large numbers of car park users.

[13] Managed by the City of Melbourne, the ranks provide a safer environment for passengers waiting for a taxi and for taxi drivers waiting for passengers. Each rank is staffed by a security officer in a distinct uniform, is monitored by security cameras, and has additional lighting and clear signage.

#### 5.1.3.1.6 Clearways

Clearways are currently in operation on Victoria Street and Lonsdale Street. Clearway restrictions on Victoria Street operate between 6:30am and 10:00am and 3:00pm to 7:00pm on the south side of the road and between 3:00pm and 7:00pm on the north side of the road. Lonsdale Street clearways operate between 7:00am and 9:30am on both sides of the road and between 4:30pm and 6:30pm on the north side of the road. Short parking time restrictions apply for other times outside these hours.

#### 5.1.3.1.7 Car Sharing

There are a number of on-street car parks designated for car sharing vehicles in the CBD North Study Area and in the wider CBD.

#### 5.1.3.1.8 Off street Parking

The CBD has many off-street car parking locations. These car parking facilities are typically multi-story buildings and underground multi-level car parks and vary in capacity. Due to their central location within the CBD many of these facilities charge standard CBD car parking rates and reduced early-bird prices.

#### 5.1.3.1.9 CBD Congestion Levy

The Victorian government imposes the levy on "off-street" parking spaces used for parking cars or larger motor vehicles within the levy area annually. The levy is charged on each space that existed as leviable parking space at any time in the previous calendar year (Appendix D).

From 2015, there were would be two levy areas, which would be subject to different levy rates. Spaces within the category 1 levy area would be subject to the full levy rate, while spaces in the category 2 levy area would be charged a lesser amount which includes CBD North. For the spaces within the category 1 levy area, the congestion levy for 2014 is $1300 for each leviable parking space. From 2015, a lesser rate of $950 would apply on each space within the category 2 levy area[14].

### 5.1.4 Public Transport

#### 5.1.4.1 Rail Network

The nearest station to the proposed CBD North station is Melbourne Central. This is an underground railway station is part of the City Loop. Melbourne Central is a key railway station in the metropolitan network and in FY 2011-12 was the third busiest station by annual patronage (14 million) and is the 10th busiest transfer station[15].

Melbourne Central is a key employment and education access station. PTV data[16] derived from station surveys show the journey purposes for Melbourne Central rail trips are predominantly work/ business (45 per cent) and education (32 per cent). Survey data on transport modes used to access Melbourne Central are also available from the PTV data. Eighty three percent of passengers walk to Melbourne Central Station and a further 13 per cent use the tram.

The only railway lines in the Melbourne network that do not stop at Melbourne Central are the Sandringham, Werribee/ Williamstown and the Flemington Racecourse & Showgrounds (part-time) lines. Limited Glen Waverly line services stop at Melbourne Central during the peak periods.

The Service frequencies for the railway lines stopping at Melbourne Central are shown in Table 5-9.

[14] http://www.sro.vic.gov.au/sro/sronav.nsf/childdocs/-3A87315B22BC23FFCA2575A100441F59-EFC160ABBE873990CA2575B70020FC3B?open

[15] PTV, 'Train Station Patronage Fact Sheet', http://ptv.vic.gov.au/about-ptv/ptv-data-and-reports/research-and-statistics/, Accessed 1 May 2015

[16] PTV, 'Train Station Patronage Fact Sheet', http://ptv.vic.gov.au/about-ptv/ptv-data-and-reports/research-and-statistics/, Accessed 1 May 2015

#### 5.1.4.1.1 Number of Services

**Table 5-9 Melbourne Central Railway Station service frequencies by line**

| Railway line | Mon-Fri AM peak frequency | Mon-Fri Off peak frequency | Mon-Fri PM peak frequency | Saturday | Sunday |
|---|---|---|---|---|---|
| **Alamein** | 20 mins | 16 mins | 16 mins | - | - |
| **Belgrave/Lilydale** | 3 mins | 15 mins | 4 mins | 10 mins | 10 mins |
| **Craigieburn** | 6 mins | 20 mins | 5 mins | 20 mins | 20 mins |
| **Cranbourne/Pakenham** | 4 mins | 7 mins | 4 mins | 10 mins | 10 mins |
| **Frankston** | 6 mins | 10 mins | 4.5 mins | 10 mins | 10 mins |
| **Glen Waverley** | - | 15 mins | 10 mins | 20 mins | 20 mins |
| **Hurstbridge** | 8 mins | 40 mins | 8.5 mins | 20 mins | 20 mins |
| **South Morang** | 8 mins | 20 mins | 11 mins | 20 mins | 20 mins |
| **Sunbury** | 6 mins | 20 mins | 6.5 mins | 20 mins | 20 mins |
| **Upfield** | 18 mins | 20 mins | 20 mins | 20 mins | 20 mins |
| **Williamstown** | 22 mins | 20 mins | 22 mins | 20 mins | 20 mins |

**Source: PTV (Timetable effective 21 June 2015)**

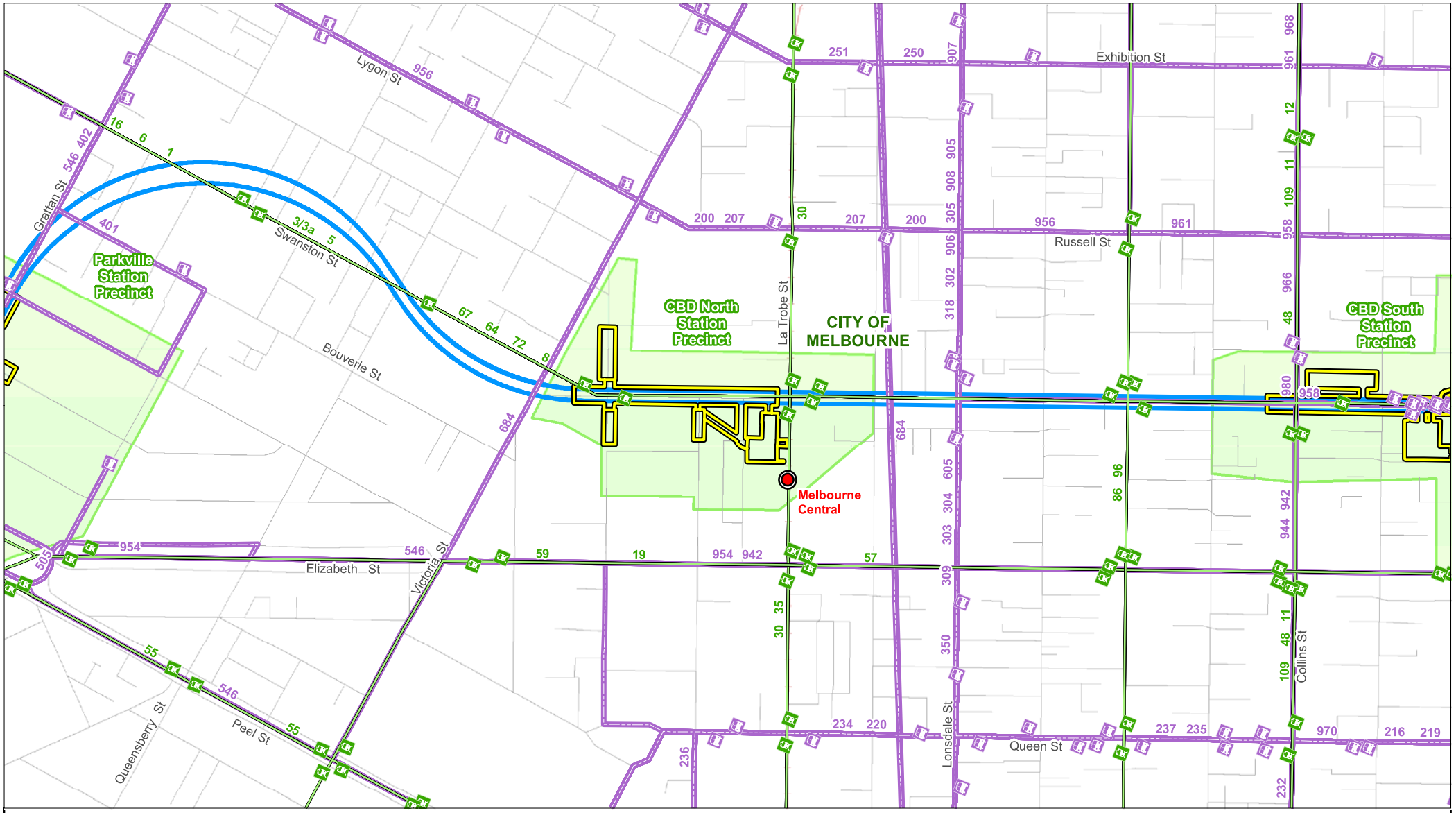


**Figure 5-6 CBD North station precinct - Public transport network**

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#### 5.1.4.2 Tram Network

The proposed CBD North station is located on La Trobe Street is on the edge of the Free Tram Zone (FTZ) near Swanston Street. Two tram routes operate on La Trobe Street. One of these tram routes is the City Circle free tourist tram, and the other is Route 30. Swanston Street which is the busiest tram corridor in the Melbourne tram network.Both Swanston Street and La Trobe Street are designated SmartRoads tram priority routes. The routes operating near proposed CBD North station are shown in Figure 5-6.

Tram stops on Swanston Street near the CBD North Precinct are fully accessible stops however only some tram routes use accessible low-floor trams. La Trobe Street trams are not currently accessible and no accessible tram stops are available on this street.

For details of the Night Network public transport services, refer to section 2.1.4 (western portal - rail network).

##### 5.1.4.2.1 Number of Services

During the peak hour there are a total of 55 tram services operating on Swanston Street (peak direction). On Route 30, there are 6 services operating during the peak hour and 12 services during the peak 2-hour period (peak direction). On route 30 there are 722 daily boardings and alightings at the Swanston Street / La Trobe Street[17].

**Table 5-10 CBD North tram service frequencies by time of day (Source: PTV, May 2015)**

| Tram route | | Trams per hour | | | |
|---|---|---|---|---|---|
| | | Peak hour | Peak 2-hour | Inter-peak | Other off-peak |
| **Swanston Street** | | | | | |
| **Routes 1, 3/3a, 5, 6, 8, 16, 64, 67 and 72** | | 55 | 98 | 43 | 18 |
| **Elizabeth Street** | | | | | |
| **19** | **City (Elizabeth Street) – North Coburg** | 14 | 26 | 10 | 3 |
| **57** | **City (Elizabeth Street) – West Maribyrnong** | 15 | 26 | 5 | 3 |
| **59** | **City (Elizabeth Street) – Airport West** | 14 | 21 | 8 | 3 |
| **La Trobe Street** | | | | | |
| **30** | **Etihad Stadium Docklands - St Vincent's Plaza** | 6 | 12 | 5 | 2 |

Source: PTV, May 2015. (Friday frequencies occasionally differ from Mon-Thurs frequencies).

[17] Tram Origin Destination Report, PTV, 2011.

#### 5.1.4.3 Bus Network

There are seven bus services that travel along Lonsdale Street to the north of the proposed station location which is shown in Figure 5-6. The 684 City to Eildon via Lilydale Station travels along Lonsdale Street but does not stop all others stop near the intersection of Swanston Street and Lonsdale Street. Bus routes 200, 605, and 684 are fully accessible services. Bus routes 207, 250, and 251 run accessible services on weekend buses only. There are no accessible services on route 350.

**Table 5-11 Bus routes near the proposed CBD North Station (Source: PTV, May 2015)**

| Tram route | | Trams per hour | | | |
|---|---|---|---|---|---|
| | | Peak hour | Peak 2-hour | Inter-peak | Other off-peak |
| **200** | **City (Queen Street) – Bulleen** | **4** | **8** | **3** | **2** |
| **207** | **City – Doncaster Shopping Centre via Kew Junction** | **4** | **8** | **3** | **2** |
| **250** | **City (Queen Street) - La Trobe University** | **3** | **6** | **3** | **2** |
| **251** | **City (Queen Street) – Northland SC** | **3** | **6** | **3** | **2** |
| **350** | **City (Queen Street) – La Trobe University via Eastern Freeway** | **4** | **8** | **3** | **2** |
| **605** | **City via Kooyong Road – Gardenvale** | **4** | **8** | **3** | **2** |
| **684** | **City – Eildon via Lilydale Station** | **One peak service only** | | | |

Source: PTV, May 2015

### 5.1.5 Active Transport

#### 5.1.5.1 Pedestrian Environment

CBD North is a busy pedestrian precinct with large numbers of pedestrian movements generated by the Melbourne Central Station and shopping centre, the RMIT campus, and the State Library. There are a number of SmartRoads pedestrian priority areas in CBD North including:

- La Trobe Street
- Swanston Street
- Lonsdale Street
- Elizabeth Street
- Victoria Street

There is good pedestrian footpath provision in the CBD North station precinct, however some locations suffer from congestion at times. Footpaths are sufficiently wide on the major thoroughfares like Swanston Street and La Trobe Street, however street trading as well as street infrastructure (rubbish bins, traffic signal boxes, etc.) reduces the effective widths of footpaths in many areas.

Smaller streets typically have narrower footpath widths but usually less street infrastructure. Some streets like Little La Trobe Street have had upgrades in recent years to improve pedestrian amenity and footpath provision. But some streets like Little Lonsdale Street have constrained space for future footpath extensions due to the adjacent built environment.

Pedestrian crossings at the major intersections are all signalised. Crossings at Swanston Street and Little La Trobe Street and Swanston Street and A'Beckett Street are pedestrian priority zebra crossing locations. Swanston Street and Little Lonsdale Street is a signalised crossing.

Controlled pedestrian crossings south of La Trobe Street are programmed to automatically activate pedestrian phases without the need for a pedestrian to press buttons from 5:30am to 12:30am on weekdays. North of La Trobe Street this is not the case. The City of Melbourne plans to roll out further automatic pedestrian phases to a wider network that includes all of the CBD North station precinct and beyond[18].

The existing Melbourne Central Station passenger entry, exit and transfer flows for the busiest two-hour periods in the AM and PM periods are shown in Table 5-12. In 2012 there were just under 16,000 passenger entries / exits observed in the AM peak period compared to over 21,500 passengers entry / exits during the PM peak at Melbourne Central Station (refer to Appendix D). Around 83 per cent of passengers walk to from Melbourne Central Station and a further 13 per cent use the tram.

**Table 5-12 Melbourne Central Station - 2012 weekday passenger entries, exits and transfers**

| Station | AM peak (7:00am-9:00am) | | PM peak (4:30pm - 6:30pm) | |
|---|---|---|---|---|
| | Total entries and exits | Transfer between platforms | Total entries and exits | Transfers between platforms |
| **Melbourne Central** | 15,990 | 0* | 21,530 | 0* |

**Source: ClicSIm 2012 Base model**

***Negligible number of transfers occurring.**

Pedestrian counts are available from City of Melbourne for various CBD locations. Figure 5-7 shows average pedestrian volumes at Melbourne Central for the month of March 2015 (which reflects the typical profile of the preceding 12 months). It is important to note that the highest volume levels occur during the middle of the day on weekdays (except for Friday – which is busiest at 6pm) and that there are similar total volumes between weekdays and weekends. For weekdays there is a noticeable inflow of commuters to the area from 7am to 9am and outflow spike in the PM peak at 5pm. Weekend profiles are smoother than weekdays with no distinct peaks.

[18] City of Melbourne, *Draft Walking Plan 2014-17*, p.31

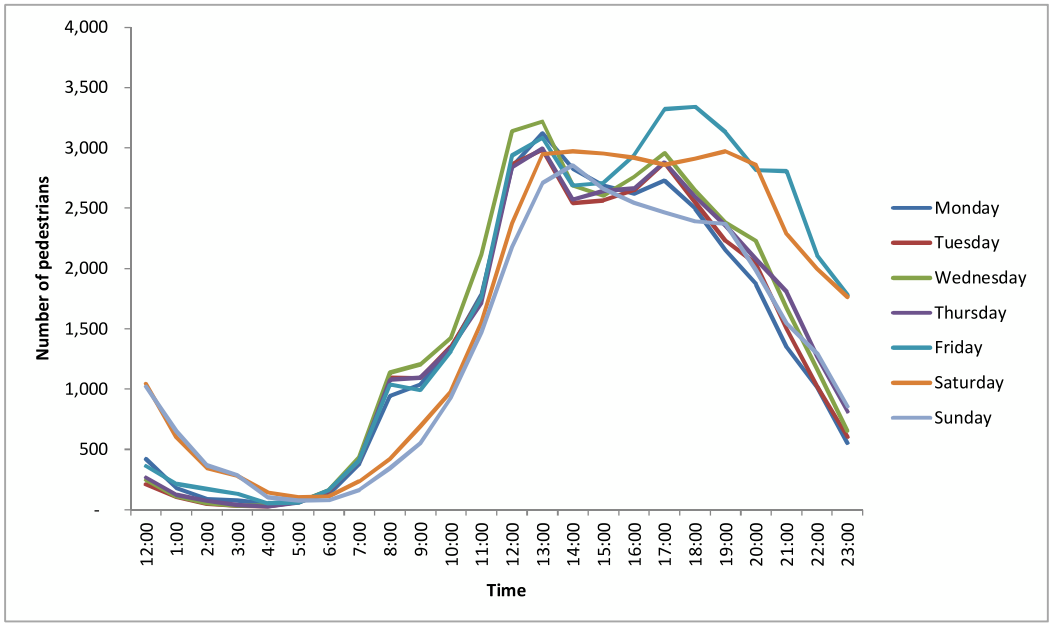



**Figure 5-7 Pedestrian counts at Melbourne Central by day for March 2015**

### 5.1.5.2 Bicycle Environment

#### 5.1.5.2.1 Bicycle Network

The proposed CBD North station is located in the heart of the CBD and is close to some of the city's most developed bicycle infrastructure. The major east-west and north-south roads provide segregated bicycle lanes (La Trobe Street and Swanston Street). Bicycle connections to the north of the proposed CBD North station toward Parkville are excellent (refer to Table 5-13).

The Bike Network routes around CBD North are shown in Figure 5-8. Separated bicycle lane infrastructure on Swanston Street and La Trobe Street are important recent enhancements to the local bicycle network. Priority traffic signals for bicycles are also active at the Swanston Street and Franklin Street intersection (north/southbound) and at the Swanston Street and La Trobe Street intersection (north/southbound). These bicycle priority phases share available signal cycle time with tram only phases.

**Table 5-13 CBD North station precinct - Bicycle network**

| Road | Type of treatment |
|---|---|
| **La Trobe Street** | Separated on road bicycle lanes (Copenhagen lanes) |
| **Swanston Street** | Off road separated bicycle path |
| **Elizabeth Street** | Intermittent on road bicycle lanes |

The CBD North area is one of the State's busiest in bicycle traffic during peak commuting hours of the weekday. The Super Tuesday surveys in the area showed that around 800-1000 bicycles travel along Swanston Street north-south between 7am-9am, and around 600-800 bicycles travelled east-west along La Trobe Street[19]. Although there are many bicycle hoops in the CBD, during university terms the capacity of bicycle parking stations does not completely handle the total demand.

[19] Bicycle Network, *Super Tuesday Bicycle Commuter Count – Victoria April 2015*, Census day: 3 March 2015


**Figure 5-8 CBD North station precinct – Bicycle network**

# 6 Precinct 6: CBD South Station

## 6.1 Existing Conditions

### 6.1.1 Road Transport

#### 6.1.1.1 Road Network

VicRoads' SmartRoads transport mode priority classifications of the roads near the proposed station are summarised in Table 6-1. Like other parts of the CBD Hoddle Grid and also the CBD North Study area the roads in the CBD South Study area are principally pedestrian, bicycle, and public transport priority routes. The nearest traffic route is Alexandra Avenue to the south of the study area.

**Table 6-1 CBD South station precinct - SmartRoads road user priority classifications**

| SmartRoads classification | Traffic | | Public transport | Active transport | |
|---|---|---|---|---|---|
| | Local primary access route | Local secondary access route | Tram priority route | Bicycle priority route | Pedestrian priority area |
| **Local Roads** | | | | | |
| **Swanston Street** | - | - | ✓ | ✓* | ✓ |
| **Flinders Street** | ✓ | - | ✓ | ✓* | ✓ |
| **Collins Street** | - | ✓ | ✓ | ✓* | ✓ |
| **Elizabeth Street** | - | ✓ | ✓ | ✓* | ✓ |
| **Flinders Lane** | - | - | - | - | - |
| **Little Collins Street** | - | - | - | - | - |

* Principal Bicycle Network, ** Local Bicycle Network

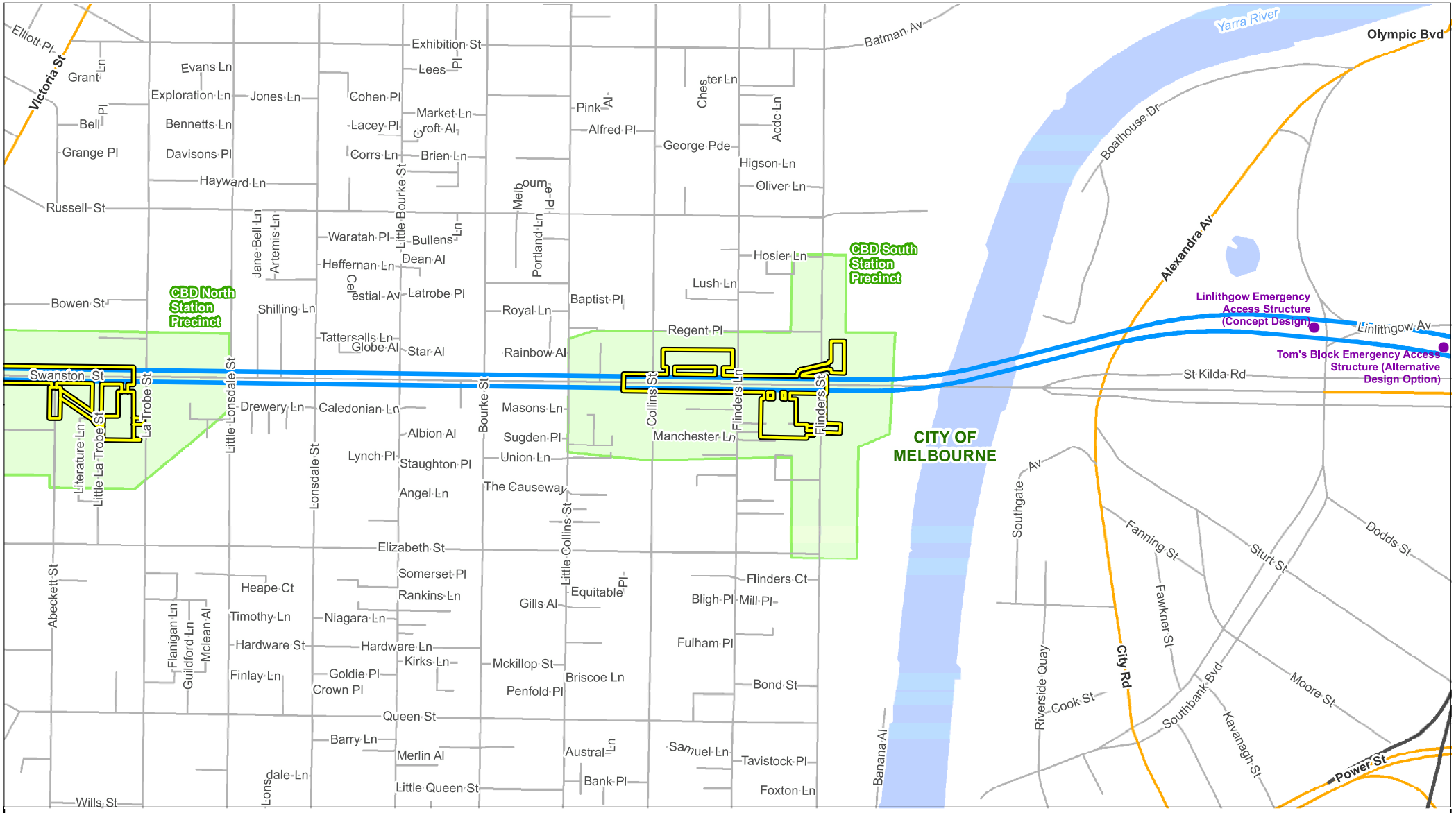
Source: Transmaps, 2015 (http://www.maps.vic.gov.au/TransMaps/ui/DotmapUI.jsp)

There are no preferred traffic routes or traffic routes within the CBD South study area. There are a number of network constraints in the vicinity of the CBD South study area including various road closures, one way streets, and turn bans:

- Low-level tram wires - VicRoads[20] notes that tram routes within the CBD have low level tram wires
- Low-level bridges - there are low-level bridge on Flinders Street to the west of Spencer Street with a height clearance of 4.0 m as well as low level bridges south of Flinders Street at Spencer Street (4.0 m), King Way (4.7 m), William Street (3.9 m) and Queensbridge Street (4.0 m).

The nearest arterial road is Alexandra Avenue located to the south of the Yarra River. One of the key functions of this arterial road is to provide for traffic movements between South Melbourne, Port Melbourne and sections of the West Gate Freeway and also to and from the CBD and inner eastern Melbourne suburbs. Another key function of this route is to provide an alternative route to the CityLink tunnels for placarded goods vehicles as these vehicles are prohibited from using these tunnels.

[20] VicRoads, 2009, *Information Bulletin: Height Clearance on Roads*




**Legend**

- Emergency Access Structure (Indicative)
- Proposed Alignment
- Proposed Station Extent
- Toll Road
- Arterial Road
- Local Road
- Local Government Area (LGA)
- Station Precinct
- Portal Precinct

Map 5 of 8


Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
City of Melbourne 2015
City of Port Phillip 2015
Public Transport Victoria 2015

MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture GRIMSHAW
aurecon JACOBS Mott MacDonald in association with

# Melbourne Metro Rail Project

Title:
Transport Impact Assessment - Existing Road Network

| Drawing Number: | Revision: |
|---|---|
| MMR-AJM-UGAA-MP-NP-500105 | P1 |

| Drawn By: | Approved By: | Date: | Map Size: |
|---|---|---|---|
| A. Davy | K. Mitchell | 15/04/2016 | A4 |

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**Figure 6-1 CBD South station Precinct - Road network**

Other arterial roads in the wider area include:

- King Street/Kingsway located at the western end of the CBD, which provides direct access to the West Gate Freeway
- Batman Avenue is a toll road that comprises Part of the CityLink network and connects to the south east of the CBD at the intersection with Flinders Street and Exhibition Street. This road link provides access to Alexandra Avenue as well as the wider freeway network.

#### 6.1.1.1.1 Declared Roads

There are no Arterial Roads within the CBD South study area. The nearest Arterial Road is Alexandra Avenue located to the south of the Yarra River. One of the key functions of this arterial road is to provide for traffic movements between South Melbourne, Port Melbourne and sections of the West Gate Freeway and also to and from the CBD and inner eastern Melbourne suburbs. Another key function of this route is to provide an alternative route to the Burnley and Domain Tunnels for placarded goods vehicles as these vehicles are prohibited from using these tunnels.

Other Arterial Roads in the wider area include:

- King Street/Kingsway located at the western end of the CBD, which provides direct access to the West Gate Freeway
- Batman Avenue (Toll Road) located to the south east of the CBD via Flinders Street and Exhibition Street. This road link provides access to Alexandra Avenue as well as the wider freeway network.

#### 6.1.1.1.2 Local Roads

The key local roads within the vicinity of the CBD South station are listed in Table 6-2. This table also provides a brief description of the physical layout of the roads and also their main road network functions.

**Table 6-2 CBD South Local Roads**

| Local Roads | Description |
|---|---|
| Swanston Street | Swanston Street (north-south) is currently one of the most important tram and bicycle routes in Melbourne connecting the wider metropolitan tram and bicycle network to the north and south through the CBD. Swanston Street also plays an important role in providing delivery and maintenance vehicle access to the various land uses on Swanston Street, a few of which are commercially landlocked by only having access directly from Swanston Street.<br><br>Swanston Street between Flinders Lane and Collins Street is permanently closed to all vehicles except trams and bicycles. |
| Flinders Street | Flinders Street (east-west) provides one to three traffic lanes and one tram lane in each direction. The street plays a key role in distributing traffic between the CBD streets and the wider road network. Flinders Street also provides direct access to a number of large car parks and has parallel parking on sections of the street. |
| Flinders Lane | Flinders Lane (westbound only) is a one lane, one-way street with parking provided on the south side. Kerb build outs are provided at the intersections of Swanston Street and Degreaves Street to facilitate the safe movement of pedestrians at these locations. Flinders Lane provides access to a number of lane ways which in turn provide access to servicing and loading for a number of buildings fronting Flinders Street, Flinders Lane, Swanston Street and Elizabeth Street |
| Collins Street | Collins Street (east-west) provides one traffic lane, one tram lane and advisory cycle lanes in both directions and connects the eastern and western sides of the CBD for both tram and other road based traffic. Immediately west of Swanston Street, there are two DDA compliant tram platform stops. Collins Street can experience heavy congestion during peak periods, particularly between Swanston Street and Elizabeth Street. |

| Local Roads | Description |
|---|---|
| Little Collins Street | Little Collins Street (westbound only) is a one lane, one-way street with localised widening at key intersections. The exception to this is at the Little Collins Street and Swanston Street intersection which has been narrowed by kerb build-outs to facilitate the safe movement of pedestrians through the intersection. The section of Little Collins Street between Royal Lane and Elizabeth Street has a lunch time closure between 12:00pm and 2:00pm. This closure helps reduce the potential conflict between pedestrians and motor vehicles given the narrow footpath widths and high number of pedestrian crossing movements. The primary function of Little Collins Street is to provide access to local land uses including multi-storey car parks. |

### 6.1.1.2 Network Performance

#### 6.1.1.2.1 Daily Traffic Profiles

SCATS data was obtained from VicRoads for 27 May 2015.

*Flinders Street / Swanston Street*

The profile of traffic flows on Flinders Street and Swanston Street is shown in Figure 6-2.

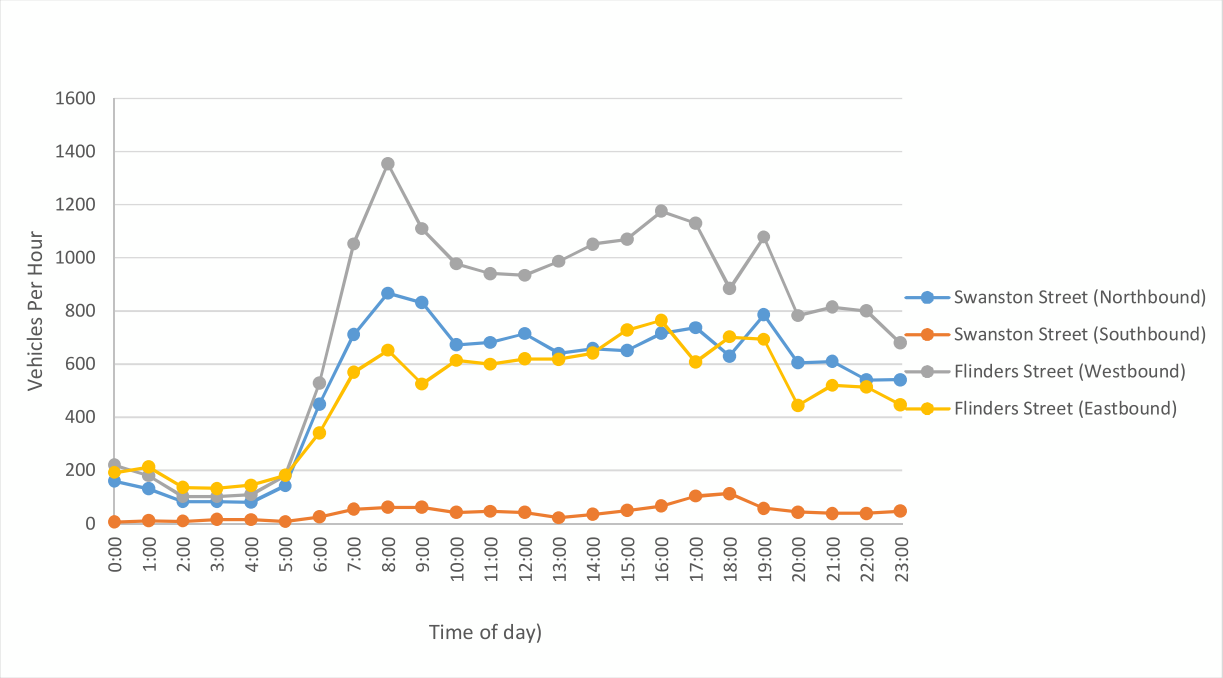



**Figure 6-2: Daily traffic profile on Swanston Street and Flinders Street (Source: SCATS 27 May 2015)**

The peak flows on Flinders Street (westbound) are higher during the AM peak with the highest flows between 8:00am – 9:00am (refer to Table 4-4). Flinders Street (eastbound) has peak flows between 5:00pm – 6:00pm.

**Table 6-3: Weekday traffic flows at Flinders Street and Swanston Street signalised intersection**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Swanston Street (southbound)** | 54 | 62 | 66 | 103 | 1,007 |
| **Flinders Street (westbound)** | 1,052 | 1,354 | 1,175 | 1,130 | 18,235 |
| **Swanston Street (northbound)** | 711 | 866 | 715 | 737 | 12,717 |
| **Flinders Street (eastbound)** | 569 | 652 | 764 | 607 | 11,595 |

**Source: VicRoads SCATS, 27 May 2015**

*Flinders Street / Elizabeth Street*

The profile of traffic flows on Flinders Street and Swanston Street is shown in Figure 6-3.

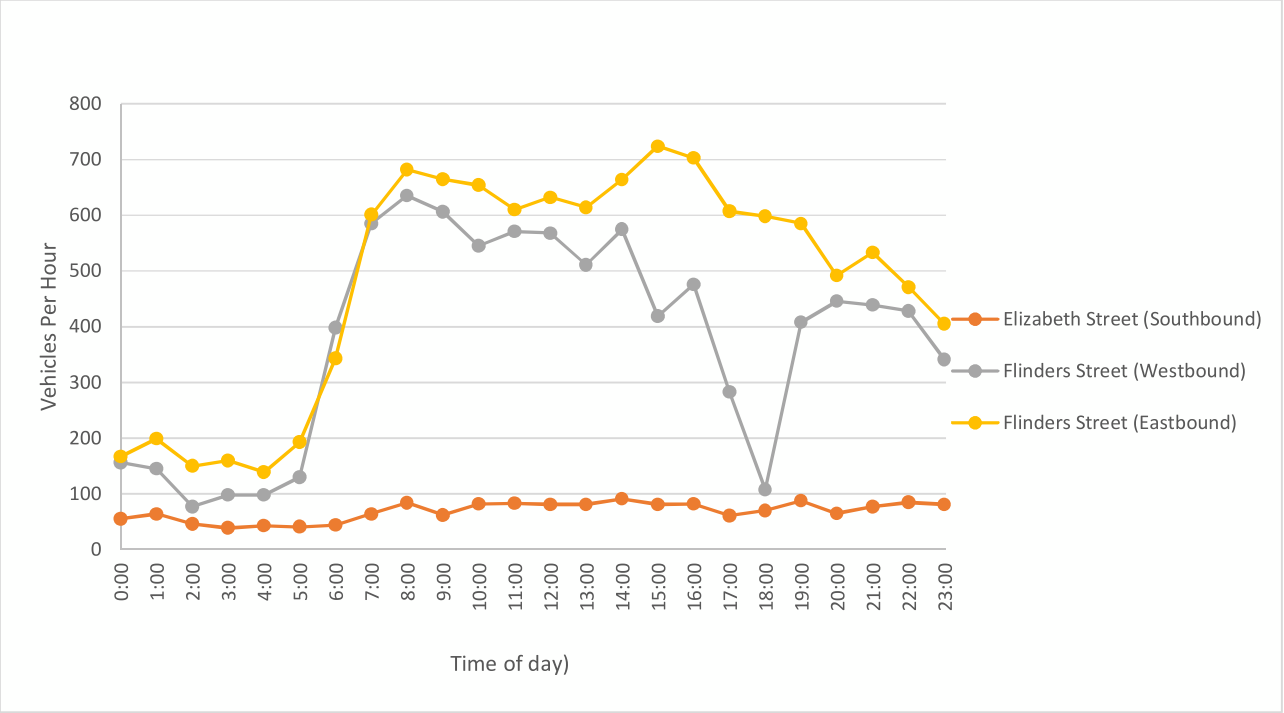



**Figure 6-3: Daily traffic profile on Elizabeth Street and Flinders Street (Source: SCATS 27 May 2015)**

The peak flows on Elizabeth Street (north approach) are very low during both AM and PM peak periods. The Flinders Street (east approach) has higher traffic flow during the AM peak with the highest flows between 8:00am – 9:00am (refer to Table 6-4). Flinders Street (west approach), has peak flows between 4:00pm – 5:00pm.

**Table 6-4: Weekday traffic flows at Elizabeth Street and Swanston Street signalised intersection**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Elizabeth Street (southbound)** | 64 | 84 | 82 | 61 | 1,650 |
| **Flinders Street (westbound)** | 585 | 635 | 476 | 283 | 9,046 |
| **Flinders Street (eastbound)** | 601 | 682 | 703 | 607 | 11,591 |

**Source: VicRoads SCATS, 27 May 2015**

*Collins Street / Swanston Street*

The profile of traffic flows on Collins Street and Swanston Street is shown in Figure 6-4.

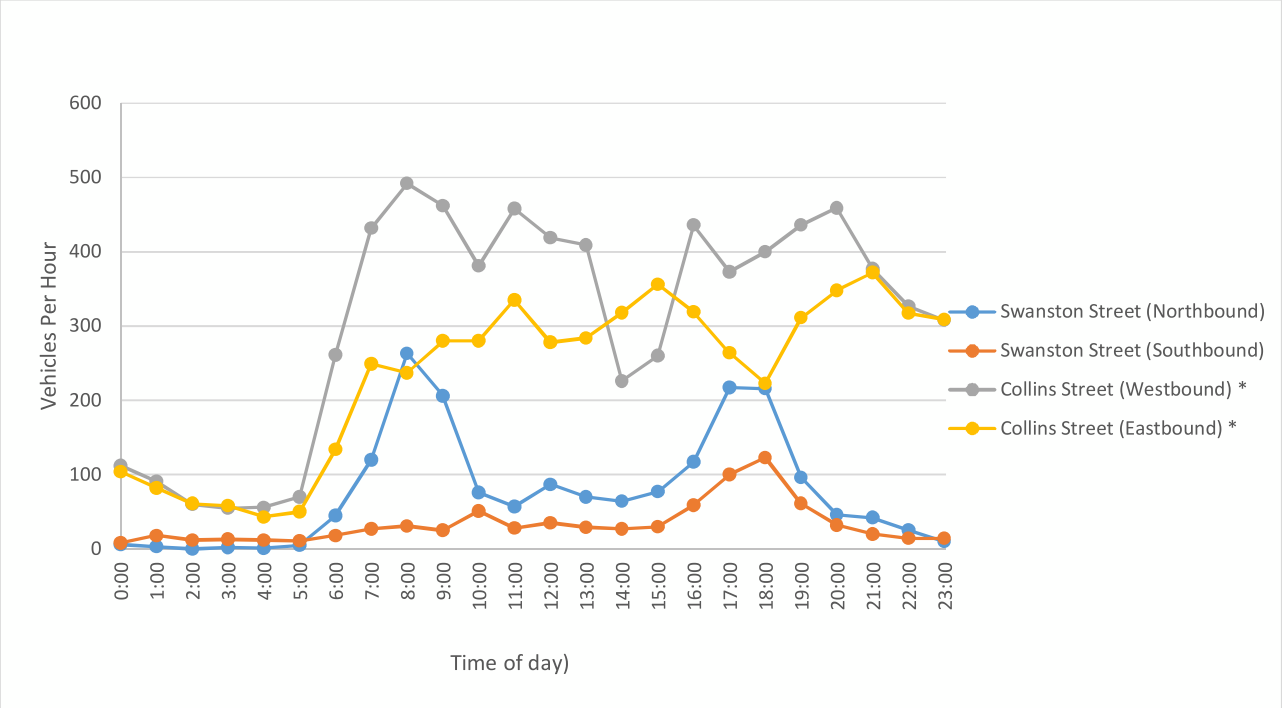



**Figure 6-4: Daily traffic profile on Collins Street and Swanston Street (Source: SCATS 27 May 2015)**

Detectors were not located on the Collins Street approaches (eastbound and westbound) to the Collins Street / Swanston Street intersection. The volume for the eastbound approach was calculated from the eastbound approach to Collins Street / Russell Street intersection minus the left turning vehicles from the southbound approach to the Swanston Street / Collins Street intersection. The volume for the westbound approach was calculated from the westbound approach to Elizabeth Street / Collins Street (due to no turning movements allowed at the Swanston Street / Collins Street intersection.

The flow on Collins Street (eastbound) has a peak at 11:00am, 2:00pm-4:00pm and 8:00pm-9:00pm. The flow on Collins Street (westbound) has an AM peak between 7:00am-9:00am and a PM peak between 7:00pm-8:00pm. The Swanston Street (northbound) flow is from a detector in a bike lane where the highest flows occur between 8:00am -9:00am and 5:00pm-6:00pm (refer to Table 6-5). Swanston Street (southbound) has peak flows between 5:00pm-6:00pm.

Table 6-5: Weekday traffic flows at Collins Street and Swanston Street signalised intersection

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Swanston Street (southbound)** | 27 | 31 | 59 | 100 | 798 |
| **Collins Street (westbound)*** | 432 | 492 | 436 | 373 | 7,360 |
| **Swanston Street (northbound)** | 120 | 263 | 117 | 217 | 1,851 |
| **Collins Street (eastbound)*** | 249 | 237 | 319 | 264 | 5,612 |

**Source: VicRoads SCATS, 27 May 2015**

#### 6.1.1.2.2 Intersection Analysis

Table 6-6 lists the key intersections in the study area and also provides a description of the controls in place, information on whether public transport priority is given at signals, cycling infrastructure and also banned turning movements.

Table 6-6 Intersections near the CBD South study site

| Intersection | Control | Public transport priority | Cyclist advanced stop boxes | Banned movements |
|---|---|---|---|---|
| **Swanston Street and Collins Street** | Fully Signalised | Yes (tram phases) | Yes – as well as priority phases with trams | All movements to and from Swanston Street (south leg) except for trams and bicycles |
| **Swanston Street and Flinders Lane** | Fully Signalised | Yes (tram phases) | Yes – as well as priority phases with trams | All movements to and from Swanston Street (north leg) except for trams and bicycles |
| **Swanston Street and Flinders Street** | Fully Signalised | Yes (tram phases) | Yes (northbound on Swanston Street only) – as well as priority phases with trams | Right and left turns into Swanston Street by unauthorised vehicles |
| **Swanston Street and Little Collins Street** | Fully Signalised | Yes (tram phases) | N/A | Little Collins street is a pedestrian only area during weekdays between 12:00 and 14:00. |

*Swanston Street and Collins Street*

There are a number of turn bans in place at this intersection for motorised traffic. Through movements are only possible on Swanston Street for authorised vehicles and turns into Swanston Street are not permitted from Collins Street (authorised vehicles excepted). Through traffic along Collins Street is the main motorised traffic flow. Flows are fairly balanced in the AM periods but eastbound prevails as the larger flow in the PM. Heavy vehicles account for around 3.9 per cent of motorised traffic volumes.

The key bicycle flows are principally on Swanston Street although Collins Street is also a bicycle corridor, particularly in the PM period. The highest volumes were on Swanston Street as a through movement. These flows were fairly balanced between northbound and southbound. In the PM period southbound flows are slightly higher than northbound flows. Collins Street carries less than one-third of the bicycle volumes observed on Swanston Street. Its highest traffic movements are also through movements but there is also a high number of right turners from Collins Street to Swanston Street southbound in the PM period.

*Elizabeth Street and Flinders Street*

This intersection is a T-intersection. Right turns are not permitted from Elizabeth Street and Flinders Street westbound. For motorised traffic the highest traffic volumes were on Flinders Street and were for through movements. These were fairly balanced between east and westbound in the AM period but were higher for eastbound movements in the PM period. Left turns into Elizabeth Street and left turns out of Elizabeth Street were fairly balanced across the AM and PM periods suggesting that this area functions at capacity most of the day. Heavy vehicles account for around 3.5 per cent of motorised traffic volumes.

There are fairly low bicycle volumes at this intersection. Flinders street westbound through moving bicycles recorded the highest flows in the observed AM period and Flinders Street eastbound through movements were the highest in the PM period. Elizabeth Street left turns into Flinders Street were the highest volume movements on this road.

*Swanston Street (St Kilda Road) and Flinders Street*

Through movements for authorised motorised traffic only are permitted on St Kilda Road and Swanston Street. There are significant traffic volumes on St Kilda Road northbound approach turning right in both the AM and PM periods. A smaller number of vehicles turn left (around one quarter as many in the AM period and less in the PM period). There are similarly high volumes on Flinders Street, with the major movements being high numbers of vehicles turning left at St Kilda Road and through westbound along Flinders Street. The opposite direction – eastbound – along Flinders Street has similarly sized volumes as westbound through traffic. Heavy vehicles account for around 2.0 per cent of motorised traffic volumes.

The key bicycle flows are principally on St Kilda Road and Swanston Street. There are low numbers of bicycles on Flinders Street (it carries around one tenth as many bicycles as St Kilda Road and Swanston Street). The highest volumes were St Kilda Road and Swanston Street through movements. In the AM period northbound flows are higher than southbound flows. This intersection is a key bicycle intersection. For St Kilda Road and Swanston Street movements bicycles were the largest proportion of vehicles entering and exiting the intersection.

### 6.1.2 Road Safety

Between January 2010 and January 2015 there were 185 road casualties[21] within the defined study area bound by Flinders Street/Yarra River, Elizabeth Street, Little Collins Street, and Russell Street. Of these incidents:

- 0 per cent, 30 per cent (56) were serious injury casualties, and 70 per cent (129) were other injury casualties
- Incidents involving bicycles accounted for 52 per cent (98) of incidents. Of these 27 per cent were serious injury casualties. Car dooring incidents accounted for 35 per cent (35) of casualties.
- Pedestrians struck by vehicles accounted for 29% per cent (55) of all casualties. 39 per cent of these incidents resulted in serious injuries.
- The worst location for accidents was on Swanston Street between Flinders Street and Flinders Lane which recorded 27 incidents (23 of which were bicyclists)

[21] VicRoads, *CrashStats*, https://www.vicroads.vic.gov.au/safety-and-road-rules/safety-statistics/crash-statistics, Accessed: 15 May 2015

## 6.1.3 Car Parking and Access

#### 6.1.3.1.1 On Street Parking

In total, there are approximately 145 on-street parking spaces within the study area, with on-street parking provided on nearly all streets. This on street parking is provided on the kerb side.

Parking occupancy rates for these sites are typical of CBD parking demand and depend on time of day and day of the week.

#### 6.1.3.1.2 Disabled Parking

There are 9 on street disabled car parking spaces located in the study area. All of these car parking spaces have time restrictions.

#### 6.1.3.1.3 Taxi Zones

There are four designated City Safe Taxi Ranks in the CBD, situated at the following locations:

- Queen Street between Little Collins Street and Bourke Street
- Flinders Street Station, at Swanston Street
- Bourke Street, near Russell Street
- King Street near Flinders Street

The nearest to the CBD South Study Area is the stop on Swanston Street near Flinders Street Station.

There are nine other taxi ranks in the area bordered by Bourke Street, Elizabeth Street, Yarra River and Russell Street.

#### 6.1.3.1.4 Loading Zones

The City of Melbourne manages the provision of loading zones within the City and aims for a target occupancy rate of 60 per cent (maximum). This approach is used to ensure that a sufficient supply of loading zones is provided and to minimise issues associated with vehicles circulating or double parking in search of an available loading zone.

#### 6.1.3.1.5 Access Points

All streets within the area of the CBD South station are fully accessible to all emergency vehicles. Throughout the CBD it is commonplace for emergency vehicles to travel along tram tracks if necessary to bypass stationary traffic or travel through the universally accessible tram stops.

Key vehicular accesses off the streets in the study area include off street car parking locations and the Cathedral grounds. Flinders Lane provides a high number of accesses to buildings in the site area.

#### 6.1.3.1.6 Off Street Parking

There are six major off-street public car parks within the area bordered by Bourke Street, Elizabeth Street, Yarra River and Russell Street. The City of Melbourne operates two car parks in the area at City Square (Flinders Lane) and Council House (Little Collins Street) which provide cheaper hourly rates.

The nearest off-street car parks to the CBD South station are the City Square and Australia on Collins car parks.

#### 6.1.3.1.7 Clearways

Clearways currently operate between 7:00am and 9:30am on the north side of Flinders Street.

#### 6.1.3.1.8 Car Sharing

There are a number of on-street car parks designated for car sharing vehicles near the proposed station and across the CBD. The majority of these are located within off street car parks.

#### 6.1.3.1.9 CBD Congestion Levy

The Victorian government imposes the levy on "off-street" parking spaces used for parking cars or larger motor vehicles within the levy area annually. The levy is charged on each space that existed as leviable parking space at any time in the previous calendar year (Appendix D).

From 2015, there were would be two levy areas, which would be subject to different levy rates. Spaces within the category 1 levy area would be subject to the full levy rate, while spaces in the category 2 levy area would be charged a lesser amount which includes CBD South. For the spaces within the category 1 levy area, the congestion levy for 2014 is $1300 for each leviable parking space. From 2015, a lesser rate of $950 would apply on each space within the category 2 levy area[22].

### 6.1.4 Public Transport

#### 6.1.4.1 Rail Network

The proposed CBD South station is located near the existing Flinders Street Station, a key railway station in the metropolitan network that in FY 2011-12 was the busiest station by annual patronage (26 million).[23] Flinders Street Station is a key destination for many of the metropolitan rail network's railway lines. It is also located in a key part of the CBD and provides significant tram and walk connections to the wider area.

PTV data[24] derived from station surveys show the main journey purposes for Flinders Street Station rail trips are work/ business (54 per cent), personal business appointments (10 per cent) and education (18 per cent). Flinders Street Station has a high proportion of transfer passengers, meaning people arrive by train and then transfer to another train to leave the station. This means that there are less people that need to access the station from outside the station site. Surveys indicate that around 32 per cent of Flinders Street Station patrons are transfer passengers. Around 53 per cent arrive or depart by walking and around 14 per cent by tram.

The existing Flinders Street Station passenger entry, exit and transfer flows are shown for the busiest two-hour periods in the AM and PM in Appendix D. In 2012 there were approximately 32,000 passenger entries/ exits during the AM peak period and over 43,000 passenger entries and exits during the PM peak.

In the City, Flinders Street Station is the central hub for Night Trains. City Loop stations would continue to close shortly after midnight as they do now and Southern Cross Station would close shortly after 1am. After 1am, all trains would run direct to and from Flinders Street Station. Access to Flinders Street Station after 1am would only be through the main entrance on Swanston Street. Night Trains stop at all stations on the rest of the metropolitan rail network, except on the Stony Point and Flemington Racecourse lines where trains would not operate.

#### 6.1.4.2 Tram Network

There are four tram corridors near the proposed CBD South Station; Swanston Street, Flinders Street, Elizabeth Street and Collins Street are designated SmartRoads tram priority routes. The proposed CBD South station is located within the Free Tram Zone (FTZ).

[22] http://www.sro.vic.gov.au/sro/sronav.nsf/childdocs/-3A87315B22BC23FFCA2575A100441F59-EFC160ABBE873990CA2575B70020FC3B?open

[23] Public Transport Victoria, 'Train Station Patronage Fact Sheet', http://ptv.vic.gov.au/about-ptv/ptv-data-and-reports/research-and-statistics/, Accessed 1 May 2015

[24] ibid

There are nine tram routes that operate on Swanston Street and these are in an exclusive tram lane for the majority of the route. Tram stops on Swanston Street near the CBD South station are fully accessible stops however only some tram routes use accessible low-floor trams.

There are four tram routes that operate on Collins Street, Routes 11, 12, 48 and 109. Trams operate in a tram segregated lane with generally limited encroachment by traffic along the length of the street.

Tram routes 70 and 75 run in an east-west direction on Flinders Street. The City Circle tram service (Route 35) also operates on Flinders Street). Tram routes 19, 57 and 59 run in a north-south direction on Elizabeth Street. Trams operate in a segregated tram lane along Elizabeth Street. Accessible platform stops are available on Elizabeth Street.

The CBD South station precinct has the highest volume of tram routes serving the area across the whole of Melbourne including[25]:

- Swanston Street - 110 tram services during the peak hour (5:00pm – 6:00pm). This is the total number of tram services in both directions
- Collins Street - 72 tram services during the peak hour (8am – 9pm). This is the total number of tram services in both directions
- Flinders Street – 29 tram services during the peak hour (5pm – 6pm). This is the total number of tram services in both directions.
- Elizabeth Street - 69 tram services during the peak hour (8am – 9am). This is the total number of tram services in both directions

[25] PTV tram timetables (27 January 2016 – 31 December 2016), http://www.ptv.vic.gov.au/

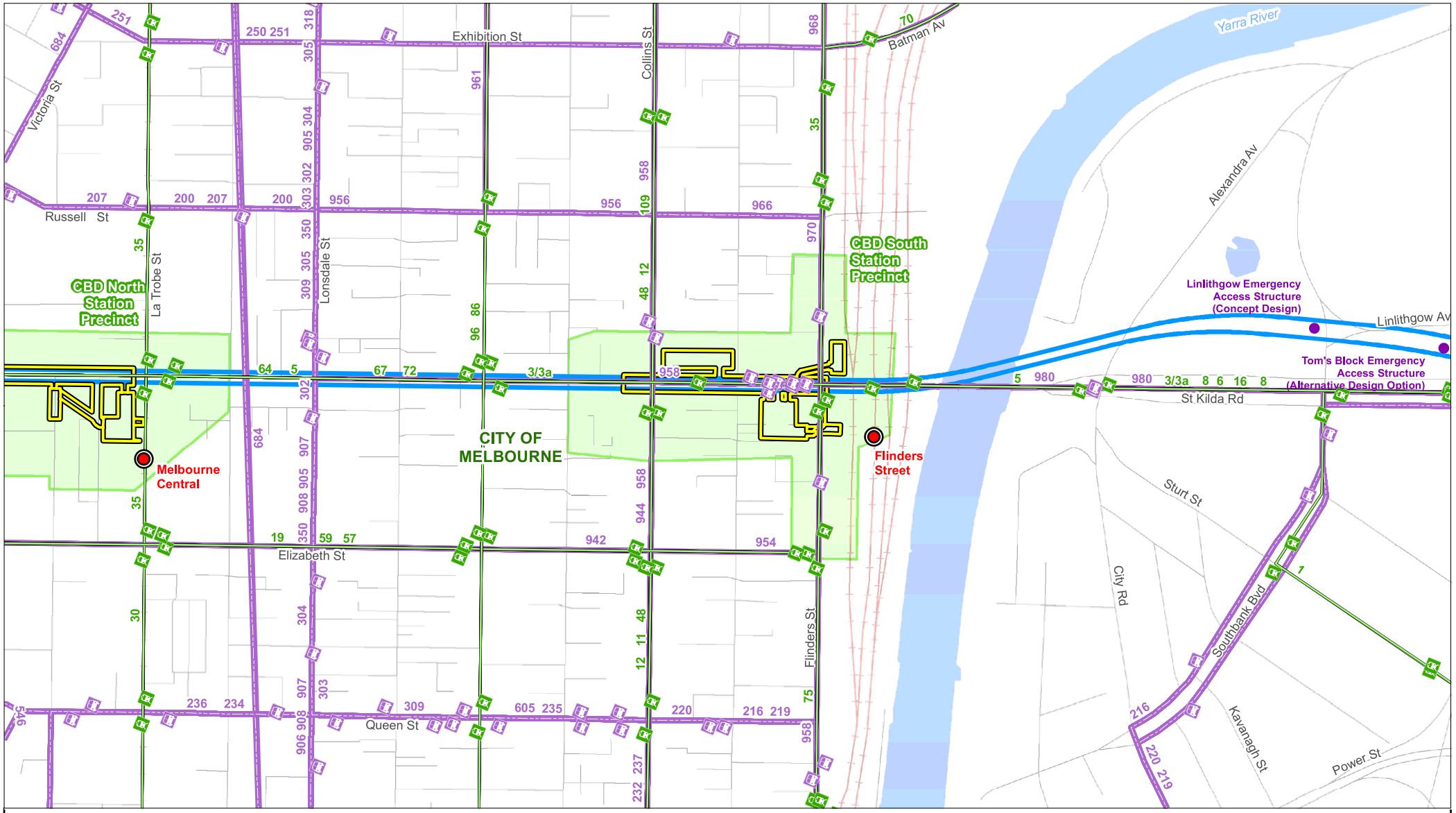



**Figure 6-5 CBD South station precinct – Public transport network**

#### 6.1.4.3 Bus Network

There is one metropolitan bus route (Route 605) that runs near the proposed CBD South station along Flinders Street on its journey from Gardenvale to the City via Kooyong Road. For details of the Night Network services, refer to section 2.1.4.

### 6.1.5 Active Transport

#### 6.1.5.1 Pedestrian Environment

There is a good provision of pedestrian infrastructure in the vicinity of the proposed CBD South station. Major pedestrian movements are observed around Flinders Street Station, Federation Square, City Square, and Swanston Street. There are a number of SmartRoads pedestrian priority areas within this precinct including:

- Flinders Street
- Swanston Street
- Collins Street
- Elizabeth Street

The CBD South station precinct has a high number of closely spaced signalised intersections providing pedestrians multiple crossing opportunities. Throughout the CBD, the majority of traffic signals run at 90 second cycles meaning that pedestrians have relatively short waiting times at signals.

Most streets near the proposed CBD South station experience relatively low levels of traffic (that is Swanston Street, Flinders Lane, Little Collins Street) both during peak periods and throughout the day. In these streets it is common that a significant number of informal mid-block crossings by pedestrians would be undertaken safely throughout the day.

In addition to footpaths that run along the main east-west and north-south streets, there are a number of laneways (some of which are traffic free) and malls making the CBD a highly accessible walking environment.

The existing Flinders Street Station passenger entry, exit and transfer flows are shown for the busiest two-hour periods in the AM and PM in Table 6-7. In 2012 there were approximately 32,360 passenger entries/ exits in the AM peak period and over 43,500 passenger entries/exits in the PM peak at Flinders Street Station (refer to Appendix D). Flinders Street Station has a high proportion of transfer passengers, meaning people arrive by train, transfer to another train to leave the station with approximately 25,000 transfers between platforms during the AM peak period.

**Table 6-7 Flinders Street Station - 2015 weekday passenger entries, exits and transfers**

| Year | AM peak (7:00am-9:00am) | | PM peak (4:30pm - 6:30pm) | |
|---|---|---|---|---|
| | Total entries and exits | Transfers between platforms | Total entries and exits | Transfers between platforms |
| **2012** | 32,360 | 24,820 | 43,570 | 19,490 |

**Source: 2012 Base Run ClicSim passenger modelling**

PTV data[26] derived from station surveys show the main journey purposes for Flinders Street Station rail trips are work/ business (54 per cent), personal business appointments (10 per cent) and education (18 per cent). Flinders Street Station has a high proportion of transfer passengers, meaning people arrive by train and then transfer to another train to leave the station. This means that there are less people that need to access the station from outside the station site. Surveys indicate that around 32 per cent of Flinders Street Station

[26] ibid

patrons are transfer passengers. Around 53 per cent arrive or depart by walking and around 14 per cent by tram.

### 6.1.5.2 Bicycle Environment

#### 6.1.5.2.1 Bicycle Network

The bicycle network around the proposed CBD South station site is shown in Figure 6-6. Swanston Street is the key bicycle route through the CBD. Between Flinders Street and La Trobe Street access for delivery and maintenance vehicles is prohibited during the AM and PM commuter peaks and the lunch time peak periods. The removal of parked vehicles during these critical time periods allow cyclists better clearance from passing trams and provides more overtaking opportunities. There are also dedicated cycle lanes provided in the tram stop areas which require cyclists to stop and wait while stationary trams have their doors open.

Other key cycle routes into the City near the CBD South station include St Kilda Road, Batman Avenue, and the north and south sides of the Yarra River between Swan Street and Clarendon Street.

**Table 6-8 CBD South station precinct - Bicycle network**

| Road | Type of treatment |
|---|---|
| **Swanston Street** | Off road separated bicycle path |
| **Flinders Street** | Informal on road bicycle route |
| **Collins Street** | On-road bicycle lane |
| **Elizabeth Street** | Intermittent on road bicycle lanes |
| **Northbank/Flinders Walk** | Off road shared path |

Apart from two Melbourne Bike Share Stations[27], there are limited areas available for cycle parking along Swanston Street within the vicinity of the CBD South station. One on the Cathedral side of Swanston Street near Flinders Street, which has space for 11 bicycles and the other is on Flinders Street near Federation Square, which has space for up to 27 bicycles. Melbourne Bike Share is designed for short rides between stations, with 51 bike stations and 600 bikes situated around the Melbourne CBD.

Apart from two Melbourne Bike Share Stations, there are limited areas available for cycle parking along Swanston Street within the vicinity of the CBD South station. One on the Cathedral side of Swanston Street near Flinders Street, which has space for 11 bicycles and the other is on Flinders Street near Federation Square, which has space for up to 27 bicycles. Melbourne Bike Share is designed for short rides between stations, with 51 bike stations and 600 bikes situated around the Melbourne CBD.

[27] http://www.melbournebikeshare.com.au/

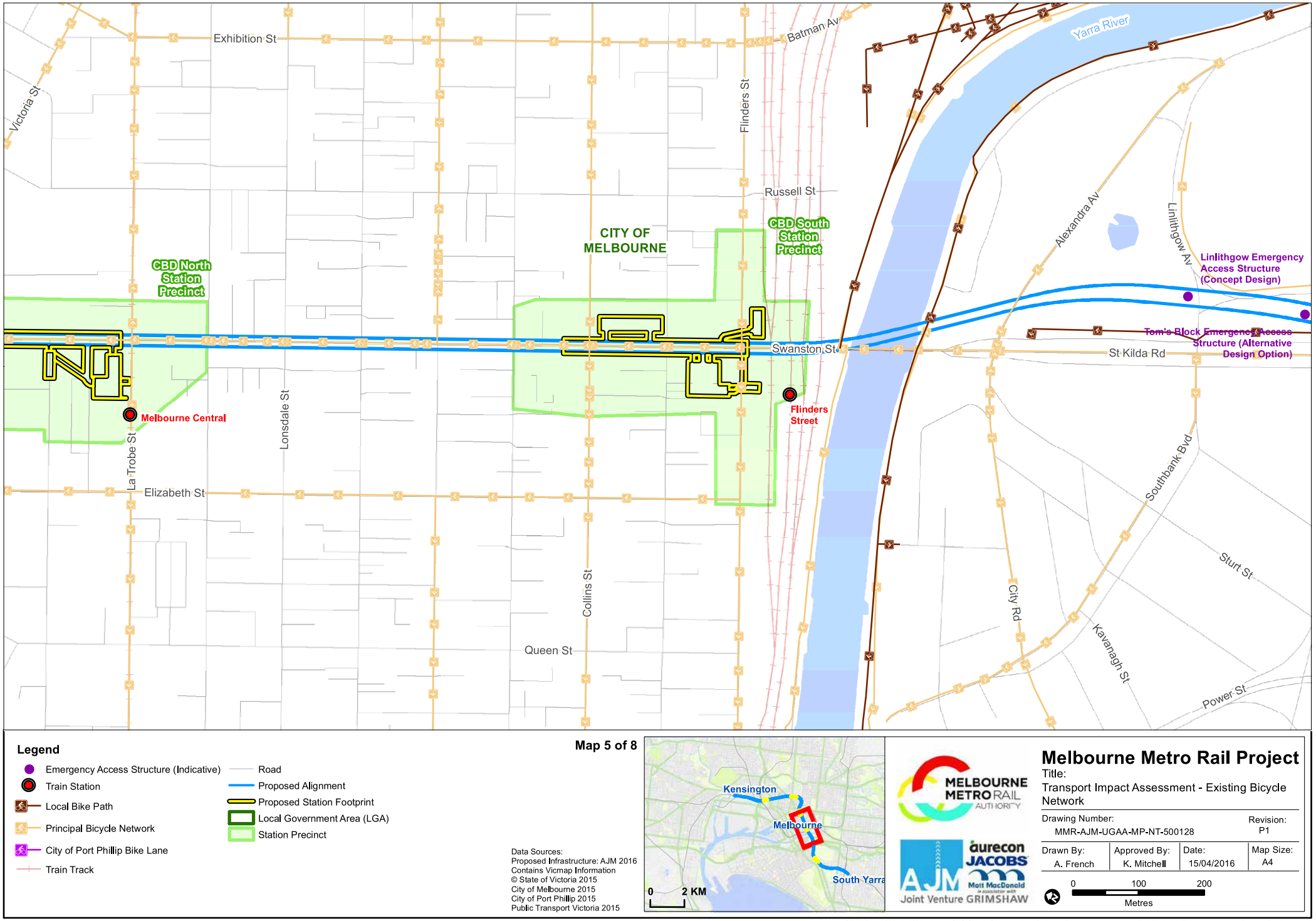



**Figure 6-6 CBD South Station Precinct – Bicycle network**

# 7 Precinct 7: Domain Station

## 7.1 Existing Conditions

### 7.1.1 Road Transport

#### 7.1.1.1 Road Network

VicRoads SmartRoads road use priority classifications are shown in Table 7-1 in the study area. The main roads in the study area are mixed priority routes with the exception of the preferred traffic corridors of Kings Way and Queens Road. St Kilda Road is a public transport and bicycle priority route as well as a traffic route.

**Table 7-1 Domain Station Precinct - SmartRoads road user priority classifications**

| SmartRoads classification | Traffic | | | | Public transport | | Active transport |
|---|---|---|---|---|---|---|---|
| | Preferred traffic route | Traffic route | Local primary access route | Local secondary access route | Bus priority route | Tram priority route | Bicycle priority route |
| **Declared Roads** | | | | | | | |
| **St Kilda Road** | - | ✓ | - | - | ✓ | ✓ | ✓* |
| **Kings Way** | ✓ | - | - | - | - | - | - |
| **Queens Road** | ✓ | - | - | - | - | - | - |
| **Toorak Road** | - | ✓ | - | - | - | ✓ (east of Park St) | ✓* |
| **Local Roads** | | | | | | | |
| **Domain Road** | - | - | ✓ | - | - | ✓ | - |
| **Domain Street** | - | - | - | ✓ | - | - | - |
| **Dorcas Street** | - | - | - | - | - | - | ✓* |
| **Park Street** | - | - | - | ✓ | - | ✓ | - |
| **Albert Road** | - | ✓(west of Kingsway) | - | - | - | - | ✓* |
| **Bowen Crescent and Bowen Lane** | - | - | - | - | - | - | - |
| **Linlithgow Avenue** | - | - | ✓ | ✓ | - | - | ✓* |
| **Birdwood Avenue** | - | - | - | ✓ | - | - | - ** |
| **Fawkner Park** | - | - | - | - | - | - | - * |

* Principal Bicycle Network, ** Local Bicycle Network

Source: Transmaps, 2015 (http://www.maps.vic.gov.au/TransMaps/ui/DotmapUI.jsp)

Toorak Road has multiple competing priorities covering all modes and including pedestrian priority east of Punt Road. Around Domain interchange bus priority declines for St Kilda Road but tram and bicycle priorities remain.

#### 7.1.1.1.1 Declared Roads

Table 7-2 lists the key arterial roads in the Domain Study Area and provides a brief description of their physical layout and road network function.

**Table 7-2 Key arterial roads in the Domain Study Area**

| Declared Road | Road Name | Description |
|---|---|---|
| Arterial-Highway | Kings Way | Kings Way is an arterial highway, under the control of VicRoads. Sections of this route provide a service road, catering for local traffic access and parking. However, in general the road has four to five lanes in each direction.<br><br>A tram service operates in a separate central carriageway to the north of Park Street.<br><br>This route (in connection with Queens Road) provides a key road link between the CBD, the West Gate Freeway, Nepean Highway and Princes Highway. |
| Arterial-Highway | Queens Road | Queens Road is part of the Kings Way arterial Highway link between the CBD and Nepean and Princes Highways. It has a five lane carriageway, with a central reversible lane, and operates with 3 lanes in the peak direction and 2 lanes in the counter-peak direction. This section of road provides access to the high density residential area along its east side. |
| Arterial–Other | St Kilda Road | St Kilda Road is a major north-south route linking the southern suburbs of Melbourne with the CBD. The road provides four traffic lanes in each direction (with two lanes in an inner and two in an outer carriageway), and a central tram reservation. In addition, on-street parking (in both carriageways with peak direction clearways), on-road cycle lanes, nature strips and wide footpaths are provided in both directions. Sections of the footpath adjacent to the Royal Botanic Gardens are shared footways providing off-road cycle facilities.<br><br>The road is a key public transport route between the CBD and southern suburbs, catering for trams and buses. It is a major bicycle route between the CBD and southern suburbs, and also caters for many pedestrian movements and crossings. |
| Arterial–Other | Toorak Road | Toorak Road is an east-west road under the control of VicRoads (and in part City of Melbourne with respect to medians and associated infrastructure). There are tram tracks within the road reservation east of Park Street South Yarra and parallel parking along the length of the road outside of clearway times. It is an informal bicycle route and provides access to Fawkner Park and adjacent residential and commercial areas. |

#### 7.1.1.1.2 Local Roads

Table 7-2 below outlines the key local roads in the Domain Study Area and provides a brief description of their physical layout and road network function.

**Table 7-3 Key Local Roads in the Domain Study Area**

| Local Road | Description |
|---|---|
| Domain Road | Domain Road is an east-west local road which runs along the southern boundary of the Shrine of Remembrance Reserve, Kings Domain South and The Royal Botanic Gardens. Tram tracks run from its intersection with St Kilda Road to Park Street. Domain Road provides access to Melbourne Grammar School, the parklands, and various commercial and residential land-uses. Parallel car parking is provided on both sides of the road. Domain Road provides one traffic lane in each direction. |
| Dorcas Street | Dorcas Street is a local road that runs along the municipal boundary of the City of Melbourne and the City of Port Phillip. It provides one traffic lane in each direction. It provides access to residential and commercial land-uses. Parking is provided on both sides of the road. |
| Park Street | Park Street is located in the City of Port Phillip. It is one lane each way with a parking lane (that is a Clearway during peak periods) with central dual tram track reservations. Park Street provides a link between St Kilda Road and Kings Way as well as South Melbourne. Route 55 trams currently operate along Park Street between Kings Way and Domain Interchange. It provides accesses to primarily commercial and residential buildings. Further west on Park Street Route 1 trams operate through to Beaconsfield Parade. |
| Albert Road | Albert Road between St Kilda Road and Kings Way is a local road under the control of the City of Port Phillip. It provides access to commercial buildings and high density residential land uses. It has angle on-street parking on both sides of the road and centre of the road parking near its junction with Kings Way. Albert Road splits at its eastern end and connects to St Kilda Road in two locations, with both carriageways providing two way accesses. This section is a green wedge, tree lined park and is the site of the South African Soldiers' Memorial. |
| Bowen Crescent and Bowen Lane | Bowen Crescent and Bowen Lane are local roads within the City of Port Phillip. Each provides two-way traffic with a single traffic lane. Both roads cater for direct access to local businesses and parking areas. Bowen Crescent provides parallel parking on both sides along its length. Due to its narrow width and parking on both sides of the road, Bowen Crescent has constrained footpath widths on both sides. |

#### 7.1.1.2 Network Performance

*Daily traffic profiles*

SCATS data was obtained from VicRoads for 27 May 2015.

*St Kilda Road, Domain Road, Park Street and Albert Road*

The profile of traffic flows on Kings Way and Queens Road is shown in Figure 7-1. The peak flows on Queens Road (northbound) are higher during the AM peak with the highest flows between 6:00am – 8:00am (refer to Table 7-4). Kings Way (southbound) has peak flows between 7:00am-9:00am and 4:00pm – 6:00pm.

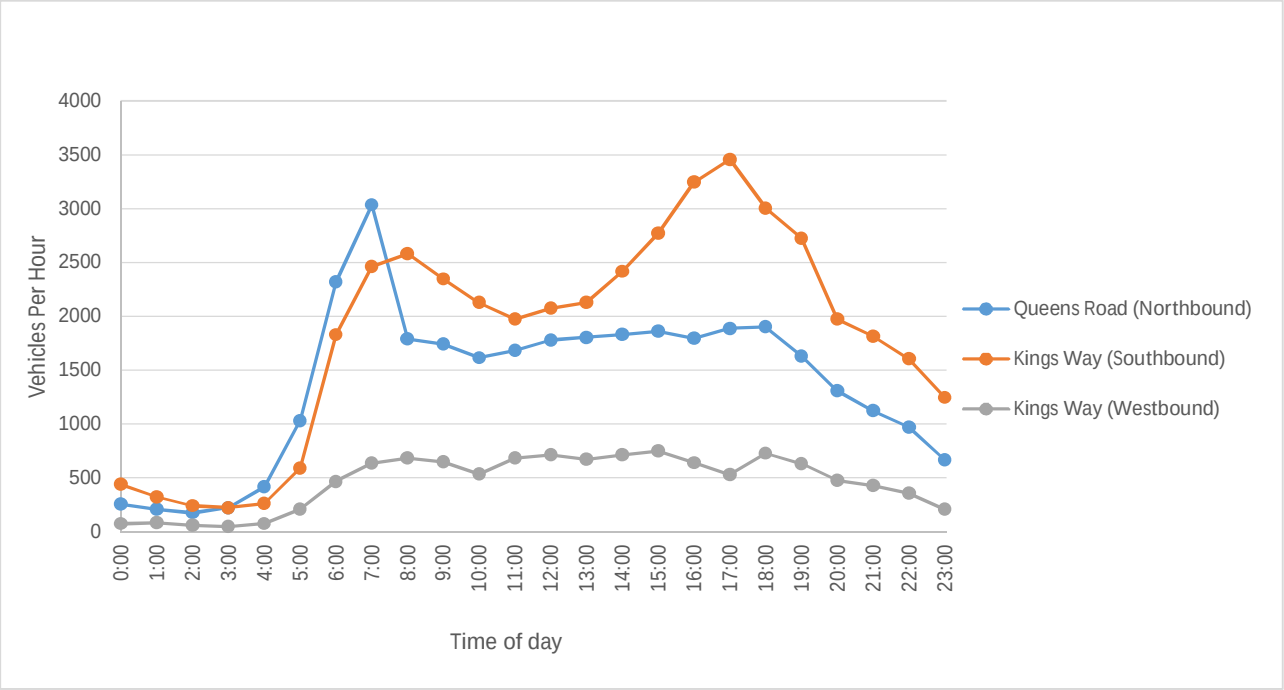
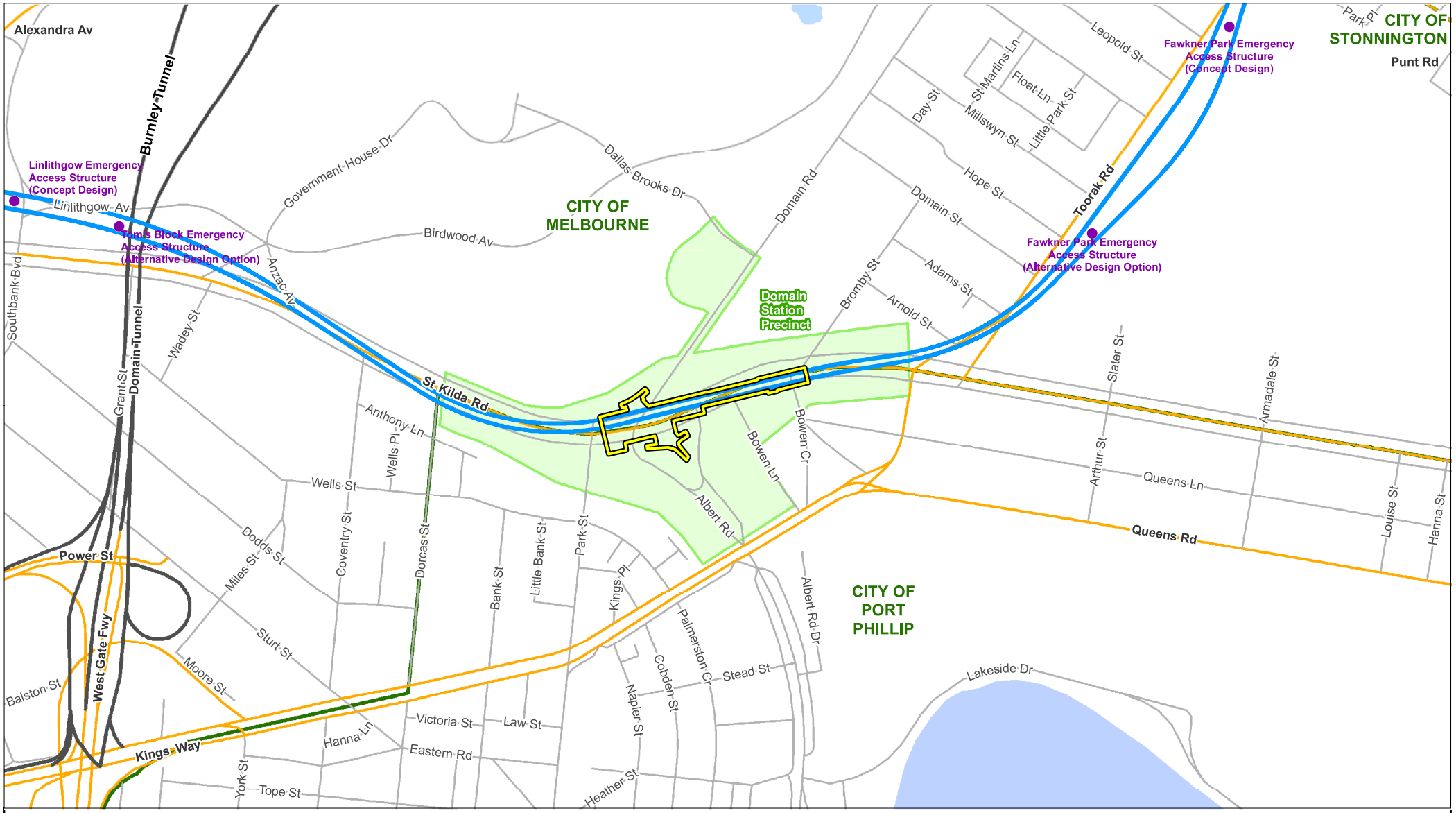



**Figure 7-1: Daily traffic profile on Kings Way and Queens Road)**

**Source: SCATS 27 May 2015**




**Legend**

- Emergency Access Structure (Indicative)
- Proposed Alignment
- Proposed Station Extent
- Toll Road
- Arterial Road
- Local Road
- Local Government Area (LGA)
- Station Precinct
- Portal Precinct

**Map 6 of 8**


Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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City of Melbourne 2015
City of Port Phillip 2015
Public Transport Victoria 2015

MELBOURNE METRO RAIL AUTHORITY

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# Melbourne Metro Rail Project

Title:
Transport Impact Assessment - Existing Road Network

| Drawing Number: | | Revision: |
|---|---|---|
| MMR-AJM-UGAA-MP-NP-500105 | | P1 |
| Drawn By: | Approved By: | Date: | Map Size: |
| A. Davy | K. Mitchell | 15/04/2016 | A4 |

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**Figure 7-2 Domain station precinct - Road network**

**Table 7-4: Weekday traffic flows at Kings Way and Queens Road signalised intersection**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Kings Way (southbound)** | 2,461 | 2,580 | 3,245 | 3,459 | 43,851 |
| **Kings Way (westbound)** | 634 | 682 | 639 | 529 | 18,235 |
| **Queens Road (northbound)** | 3,035 | 1,791 | 1,794 | 1,888 | 33,041 |

**Source: VicRoads SCATS, 27 May 2015**

The profile of traffic flows on St Kilda Road and Park Street is shown in Figure 7-3.

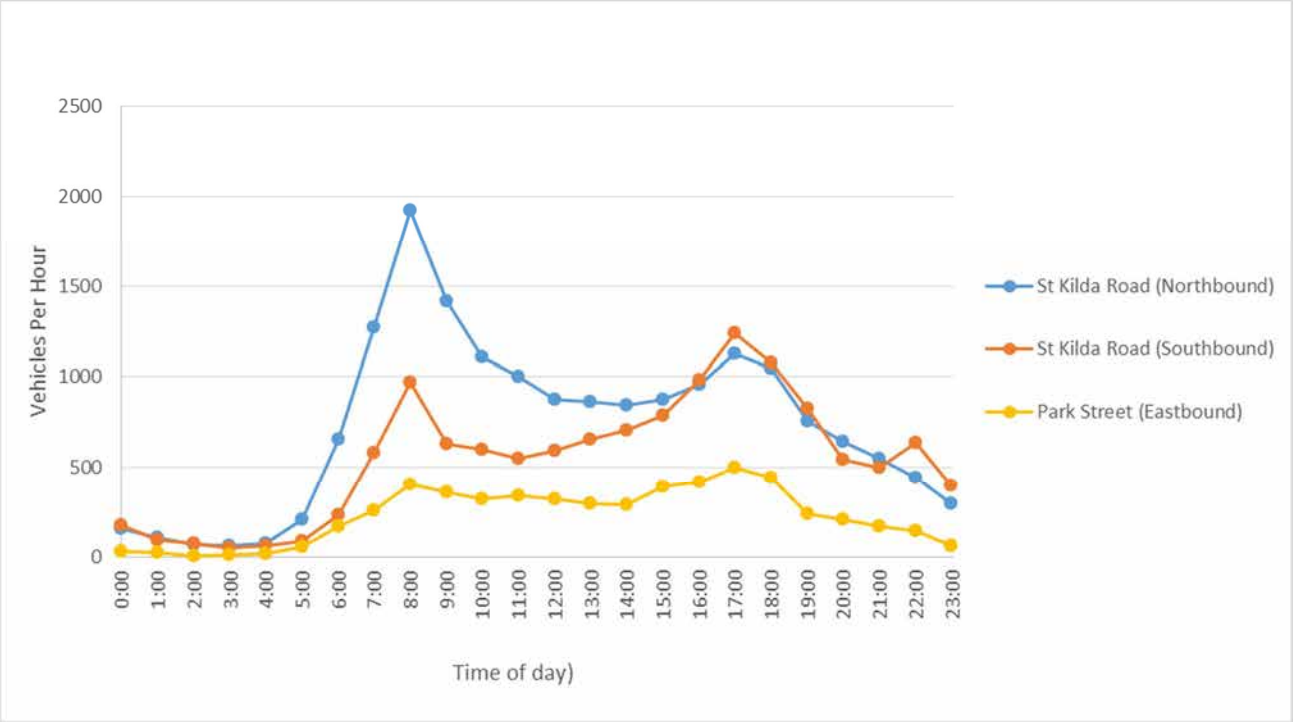


**Figure 7-3: Daily traffic profile on St Kilda Road, Domain Road, Park Street and Albert Road**

**Source: SCATS 27 May 2015**

The peak flow on St Kilda Road (northbound) has a peak flow between 8:00am-9:00am. St Kilda Road (southbound) has a peak flow between 5:00pm-6:00pm.

**Table 7-5: Weekday traffic flows at St Kilda Road, Domain Road, Park Street and Albert Road signalised intersection**

| Intersection Leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **St Kilda Road (southbound)** | 576 | 973 | 985 | 959 | 13,030 |
| **St Kilda Road (northbound)** | 1,274 | 1,921 | 1,239 | 1,126 | 17,326 |
| **Park Street (eastbound)** | 226 | 405 | 416 | 497 | 5,442 |

**Source: VicRoads SCATS, 27 May 2015**

The profile of traffic flows on Albert Road and Kings Way is shown in Figure 7-4.

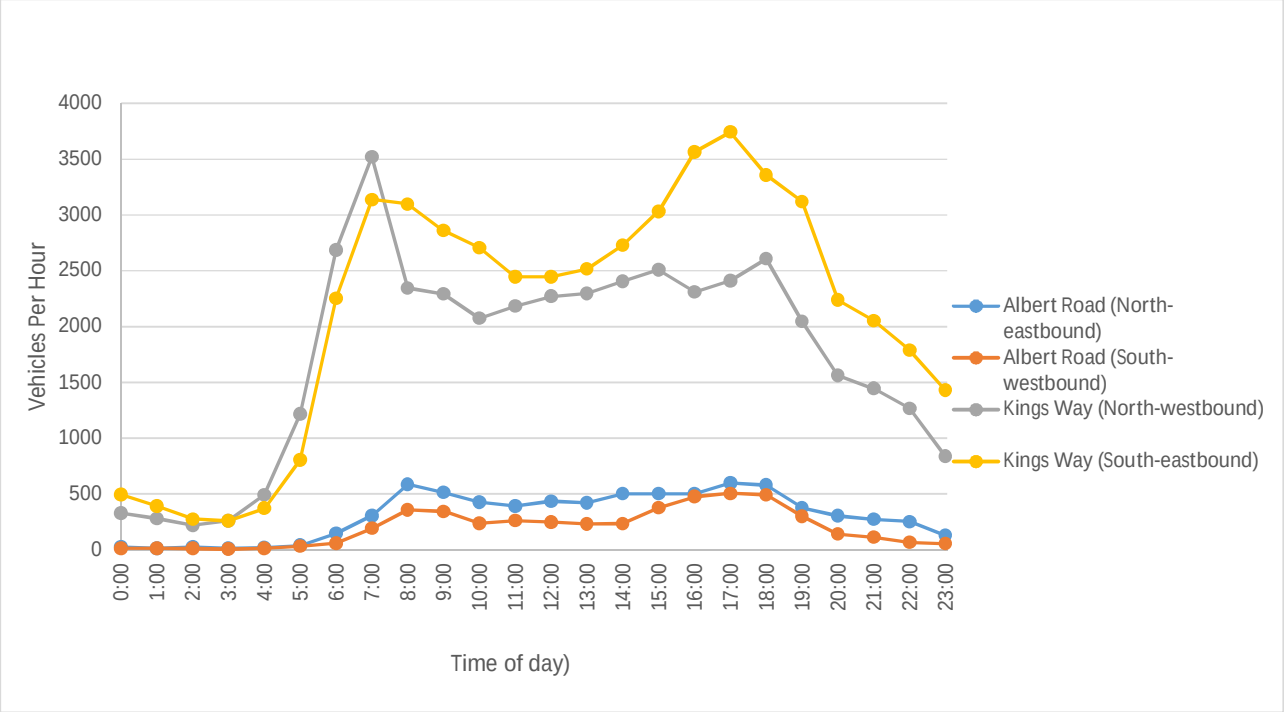


**Figure 7-4: Daily traffic profile on Albert Road and Kings Way (Source: SCATS 27 May 2015)**

The peak flow on Kings Way (north-westbound) occurs between 6:00am-8:00am. The peak flows on Kings Way (south-eastbound) occurs between 7:00am-8:00am and 4:00pm-6:00pm (refer to Table 7-6).

**Table 7-6: Weekday traffic flows at Albert Road and Kings Way signalised intersection**

| Intersection Leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Albert Road (south-westbound)** | 192 | 357 | 475 | 504 | 4,758 |
| **Kings Way (north-** | 3,522 | 2,345 | 2,310 | 2,411 | 41,848 |

| Intersection Leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **westbound)** | | | | | |
| **Albert Road (north-eastbound)** | 304 | 585 | 501 | 598 | 7,355 |
| **Kings Way (south-eastbound)** | 3,138 | 3,097 | 3,565 | 3,744 | 51,105 |

**Source: VicRoads SCATS, 27 May 2015**

The profile of traffic flows on St Kilda Road, Toorak Road and Kings Way is shown in Figure 7-5.

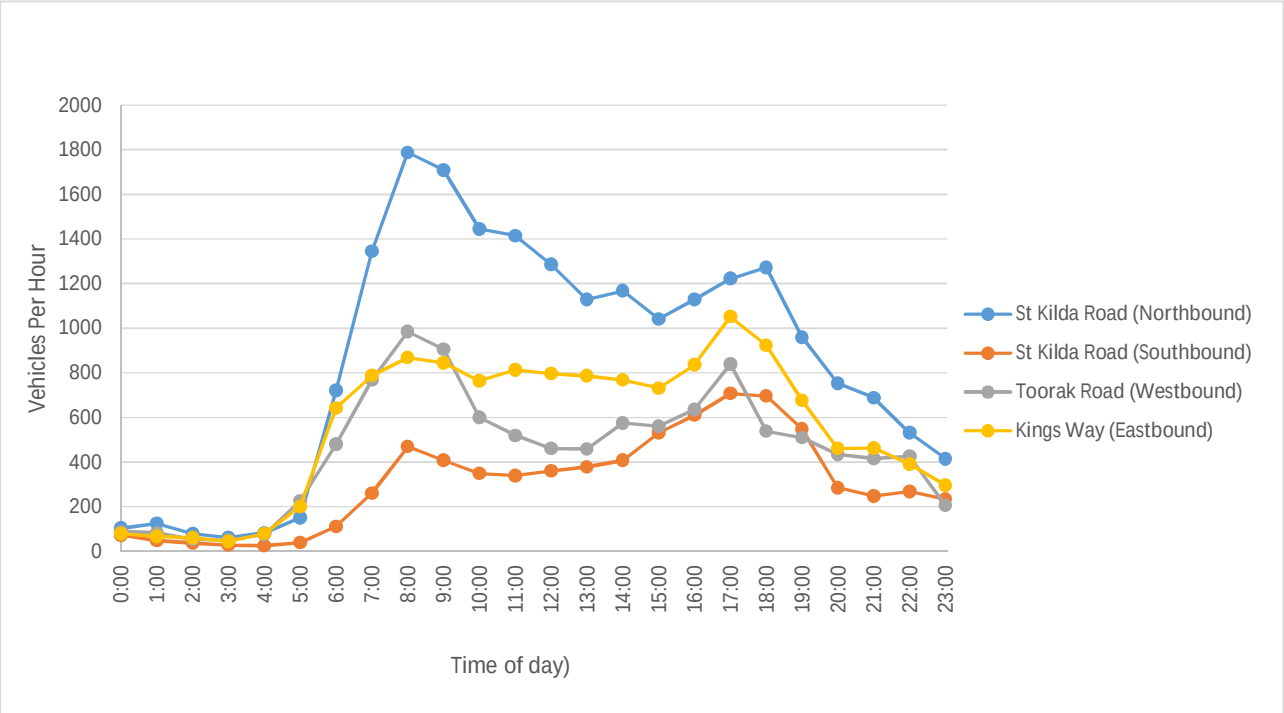


**Figure 7-5: Daily traffic profile on St Kilda Road, Toorak Road and Kings Way (Source: SCATS 27 May 2015)**

The peak flow on St Kilda (northbound) occurs between 7:00am-9:00am (refer to Table 7-7). The peak flows on St Kilda Road (southbound) and Kings Way (eastbound) occurs between 4:00pm-6:00pm. The peak flows on Toorak Road (westbound) occurs between 7:00am-9:00am and 4:00pm-6:00pm.

**Table 7-7: Weekday traffic flows at St Kilda Road, Toorak Road and Kings Way signalised intersection**

| Intersection Leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **St Kilda Road (southbound)** | 261 | 470 | 610 | 707 | 7,469 |
| **Toorak Road (westbound)** | 768 | 985 | 635 | 839 | 10,898 |

| Intersection Leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **St Kilda Road (northbound)** | 1,345 | 1,787 | 1,129 | 1,222 | 20,622 |
| **Kings Way (eastbound)** | 788 | 869 | 836 | 1,052 | 13,439 |

**Source: VicRoads SCATS, 27 May 2015**

*Intersection controls*

Table 7-8 below lists the key intersections in the Domain Study Area. It also lists information on their control, public transport priority offered, cycling advanced stop boxes and associated infrastructure and also lists any banned movements.

**Table 7-8 Key Intersections in the Domain Study Area**

| Intersection | Control | Public transport priority | Cyclist advanced stop boxes | Banned movements |
|---|---|---|---|---|
| **St Kilda Road and Park Street** | Fully signalised | Tram signal phases | Yes - on St Kilda Road | Right turns from St Kilda Road into Park Street not possible due to road layout. |
| **St Kilda Road and Domain Road** | Fully signalised | None | Yes | U-turns from Domain Road |
| **St Kilda Road and Albert Road** | Partially signalised – Albert Road southern entry/exit off/on to St Kilda Road is give way. Northern entry signalised exit. | N/A | None | Right turns from Albert Road into St Kilda Road |

*St Kilda Road and Park Street and Domain Road and Albert Road North*

For motorised traffic the highest traffic volumes were observed for St Kilda Road northbound through movements in the AM period, and southbound in the PM period. In the AM period there are also high volumes of vehicles turning left from St Kilda Road to Park Street. This movement has similarly high volumes in reverse in the PM period. Albert Road and Domain Road appear to function as access roads to St Kilda Road traffic. Heavy vehicles accounted for around 1.8 per cent of all motorised traffic.

For bicycles, St Kilda Road through movements were the key traffic volumes observed in the survey. All other movements and other roads showed volumes that were only small fractions of St Kilda road observed volumes. Northbound through flows on St Kilda Road are the predominant flow in the AM peak and southbound though flows are the key flow in the PM peak.

### 7.1.2 Road Safety

Victorian Government road casualty statistics[28] for dates January 2010 and January 2015 were consulted for the road area bounded by the Shrine of Remembrance Reserve, Domain Street, Toorak Road, Kings Way, and Dorcas Street. During this period there were 169 road casualties. Of these incidents:

- 59 (35 per cent) were serious casualty incidents and 110 (65 per cent) were other injury incidents, there were no fatal crashes
- 29 per cent (49) of incidents involved bicycles. Of these 30 per cent (15) were serious injury casualties. Car dooring incidents accounted for 42 per cent (21).
- Pedestrian incidents accounted for 29 (17 per cent) of casualties. For pedestrian incidents, 45 per cent were serious casualties. 1 incident involved a bicycle striking a pedestrian.
- There were 6 incidents of trams or buses being hit by motor vehicles, and 3 incidents of trams or buses striking pedestrians
- The most common crash type for motor vehicles was rear ended crashes with vehicles in the same lane

### 7.1.3 Car Parking and Access

#### 7.1.3.1.1 On street parking

In total, there are approximately 390 on-street parking spaces within the study area, with on-street parking provided on nearly all streets. This on street parking is provided on the kerb side.

Parking occupancy rates for these sites are generally high. Parking demands can be significant during weekdays for on street parking to access the varied commercial and official land uses along St Kilda Road.

#### 7.1.3.1.2 Disabled Parking

There are 8 on street disabled car parking spaces located in the Domain Study Area. These car parking spaces have time restrictions.

#### 7.1.3.1.3 Taxi Zones

There are two taxi zones located in the Domain Study Area. St Kilda Road between Albert Road and Domain Road has a taxi zone operational between 8:00am and 6:00pm. A taxi zone is also provided on the north side of Albert Road (between St Kilda Road and Kings Way) which is operational between 6:00pm and 6:00am.

#### 7.1.3.1.4 Loading Zones

There are a number of on-street loading zones inside the Domain Study Area.

#### 7.1.3.1.5 Access Points

Access points are extensively provided for most land uses along St Kilda Road and in the key local roads in the study area. These accesses are generally for car parking for commercial and residential land uses while others provide loading docks.

#### 7.1.3.1.6 Clearways

Clearways are present on St Kilda Road along its central carriageway between High Street and Grant Street between 7:00am and 10:00am Monday to Friday in the CBD bound direction.

[28] https://www.data.vic.gov.au/data/dataset/road-crash-information-system-data-extract-may

#### 7.1.3.1.7 Car Sharing

There are a number of on-street parked car sharing vehicles in the Domain Study Area. The City of Melbourne and the City of Port Phillip have active support for these car share sites and provision is generally in locations of key accessibility and visibility.

#### 7.1.3.1.8 Off Street Parking

The nearest major off-street car parking site to the Domain Study Area is located between Bowen Crescent and Bowen Lane. Additional off-street car parks are located along St Kilda Road to the north of Park Street and to the south of Toorak Road. There are also numerous private car parking sites associated with residential and office land uses.

#### 7.1.3.1.9 CBD Congestion Levy

The Victorian government imposes the levy on "off-street" parking spaces used for parking cars or larger motor vehicles within the levy area annually. The levy is charged on each space that existed as leviable parking space at any time in the previous calendar year (Appendix D).

From 2015, there were would be two levy areas, which would be subject to different levy rates. Spaces within the category 1 levy area would be subject to the full levy rate, while spaces in the category 2 levy area would be charged a lesser amount. For the spaces within the category 1 levy area, such as Domain, the congestion levy for 2014 is $1300 for each leviable parking space. From 2015, a lesser rate of $950 would apply on each space within the category 2 levy area[29].

### 7.1.4 Public Transport

#### 7.1.4.1 Rail Network

The public transport services in the area near the CBD South Precinct are shown in Figure 7-6. The Domain study area does not have immediate access to the Metropolitan rail network. The nearest railway stations to the precinct are Flinders Street Station (1.8 km) and South Yarra Station (1.8 km). The Domain study area is principally serviced by buses and is a major tram junction in the Melbourne tram network.

#### 7.1.4.2 Tram Network

Domain Tram Interchange is a major level access stop interchange located at the intersection of Park Street and St Kilda Road. The interchange was upgraded to full DDA compliance in 2013 however not all tram routes utilise low-floor trams along the St Kilda Road corridor. It features a series of island platforms for designated routes, weather shelters, and electronic displays to allow easy transfer between tram services. Domain functions as a key interchange point for many tram routes in the Melbourne tram network. The tram network in and around the study area is shown in Figure 7-6. Nine tram routes operate directly through Domain Interchange on St Kilda Road. These routes are listed in Table 7-9.

For details of the Night Network public transport services, refer to section 2.1.4 (western portal - rail network).

[29] http://www.sro.vic.gov.au/sro/sronav.nsf/childdocs/-3A87315B22BC23FFCA2575A100441F59-EFC160ABBE873990CA2575B70020FC3B?open


**Legend**

- Emergency Access Structure (Indicative)
- Train Station
- Tram Stop
- Bus Stop
- Proposed Alignment
- Proposed Station Extent
- Train Track
- Tram Route
- Bus Route
- Road
- Train Station Carpark
- Local Government Area (LGA)
- Station Precinct

Map 6 of 8


Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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City of Melbourne 2015
City of Port Phillip 2015
Public Transport Victoria 2015

MELBOURNE METRO RAIL AUTHORITY

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# Melbourne Metro Rail Project

Title:
Transport Impact Assessment - Existing Public Transport Network

| Drawing Number: | Revision: |
|---|---|
| MMR-AJM-UGAA-MP-NP-500105 | P1 |

| Drawn By: | Approved By: | Date: | Map Size: |
|---|---|---|---|
| A. French | K. Mitchell | 15/04/2016 | A4 |

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Metres

**Figure 7-6 Domain station precinct – Public transport network**

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The total number of services operating along St Kilda Road is summarised in Table 7-9. Most tram services along St Kilda Road offer less than 10 minute headways between trams during peak times. Domain Interchange has an average of 13,725 daily boardings and alightings during a typical weekday.

**Table 7-9 Tram routes operating near the proposed Domain station**

| Tram route | Trams per hour | | | |
|---|---|---|---|---|
| | Peak hour | Peak 2-hour | Inter-peak | Other off-peak |
| **Routes 3/3a, 5, 6, 8, 16, 64, 67 and 72** | 55 | 98 | 43 | 18 |

**Source: PTV, May 2015**

#### 7.1.4.3 Bus Network

The bus network in and around the Domain Study Area is shown in and the key bus routes in the area are listed in Table 7-10. There are limited bus services operating along the St Kilda Road corridor, reflecting the importance of trams as the principle public transport mode and the secondary role of buses. Bus route 216 runs accessible buses on weekends only, while routes 219 and 220 have fully accessible services every day of the week.

**Table 7-10 Bus routes operating near the proposed Domain station**

| Tram Route | | Buses per hour | | | |
|---|---|---|---|---|---|
| | | Peak hour | Peak 2-hour | Inter-peak | Other off-peak |
| 216 | Caroline Springs – Brighton Beach | 4 | 7 | 2 | 1 |
| 219 | Sunshine South – Gardenvale | 2 | 4 | 2 | 1 |
| 220 | Sunshine – City - Gardenvale | 7 | 15 | 4 | 4 |

**Source: PTV, May 2015**

Bus route frequencies are listed by day and time and service operating hours outlined in Table 7-10. Bus frequencies for route 220 are high reflecting the high patronage on this route (see patronage details in next section). Bus frequencies for the other routes are less frequent. For details of the Night Network public transport services, refer to section 2.1.4 (western portal - rail network).

### 7.1.5 Active Transport

#### 7.1.5.1 Pedestrian Environment

The Domain Study Area presents a lower density land-use environment than the CBD study areas due to its larger geographical area and the presence of large areas of parkland nearby. The pedestrian environment is characterised by this lower density land use and decreased emphasis on pedestrian interface in its built form.

Footpath provision is generally excellent in the Domain Study Area. Footpath widths along St Kilda Road are generous and are typically even surfaced. A walking/bicycle shared zone exists on the northern side of St Kilda Road between Anzac Avenue and Domain Road. Other local roads in the study area have wide footpaths with the exception of Bowen Crescent and Bowen Lane.

The St Kilda Road corridor is a significant route for through traffic modes including trams, bicycles and motor vehicles and priority is generally given to these modes at crossing locations along St Kilda Road. The tram interchange provides a significant walking/tram interchange and is the site of several controlled pedestrian crossing points. Crossing points along Kings Way are generally low amenity, and due to the high motor vehicle traffic demand along this route, pedestrian crossing signal phase times are low.

The streetscape in the Domain Study Area provides a reasonably high level of accessibility compliance. Most crossing locations have aural signals as well as visual signalling. The provision of tactile paving is widespread, particularly around the redeveloped tram interchange.

#### 7.1.5.2 Bicycle Environment

##### 7.1.5.2.1 Bicycle Network

St Kilda Road is an important north-south bicycle route which experiences high volumes of bicycle traffic during weekdays. Albert Road and Park Street provide lesser used bicycle routes, but represent some of the only east west roads in the immediate area for bicycle traffic. Domain Road is an informal bicycle route between South Yarra and St Kilda Road and provides an alternative to Toorak Road. The area around the proposed station is one of Victoria's busiest in bicycle traffic during peak commuting hours, with around 1100 cyclists travelling north-south along St Kilda Road between 7am-9am.

The cycle network around the Domain Study Area is shown in Figure 7-7. It shows that St Kilda Road, Albert Road, Dorcas Street, Anzac Avenue, and Toorak Road are all PBN classified roads.

The bicycle facilities and routes near the proposed Domain station are:

- On road bicycle lanes on St Kilda Road (generally 1.5 m wide) and Albert Road to the east of Kingsway
- Off road shared paths on Albert Road to the west of Kings Way, on the footpath along St Kilda Road on the northern side between Anzac Avenue and Domain Road, and through Fawkner Park.
- Toorak Road and Birdwood Avenue informal routes

The density of bicycle parking sites is lower in Domain compared to the CBD which reflects the lower density land uses in the area.

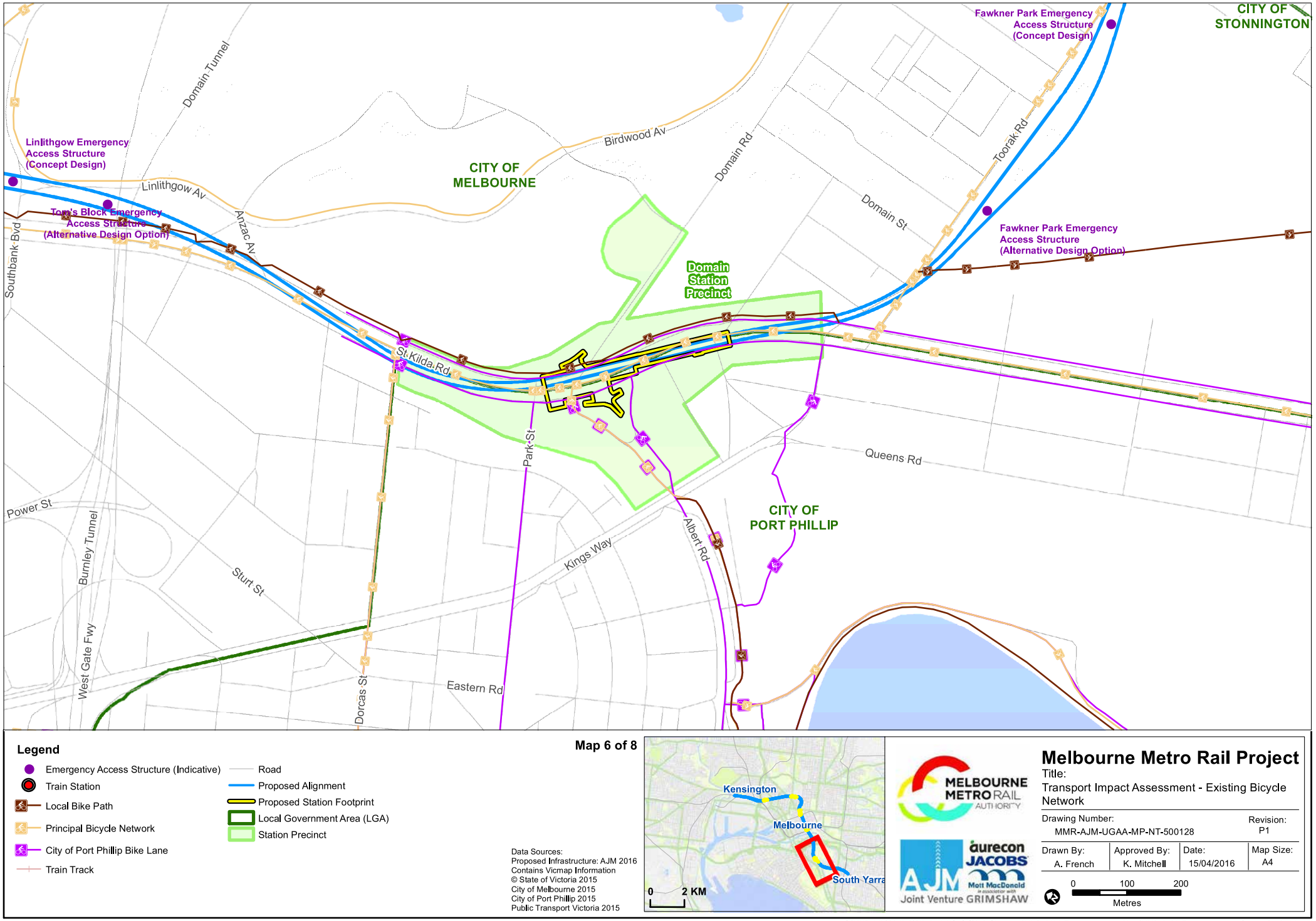


**Figure 7-7 Domain station precinct - Bicycle network**

# 8 Precinct 8: Eastern Portal (South Yarra)

## 8.1 Existing Conditions

### 8.1.1 Road Transport

#### 8.1.1.1 Road Network

Table 8-1 lists the Smartroads categorisation of the road network in the vicinity of the proposed eastern portal. It shows that the immediate area is principally a tram and pedestrian priority area. Punt Road to the west and Williams Road to the east are preferred traffic routes. Toorak Road, Punt Road and Commercial Road are all approved as B-double and higher mass truck routes

**Table 8-1 Eastern portal precinct - SmartRoads road user priority classifications**

| SmartRoads classification | Traffic | | Public transport | | Active transport | |
|---|---|---|---|---|---|---|
| | Preferred traffic route | Traffic route | Bus priority route | Tram priority route | Bicycle priority route | Pedestrian priority area |
| **Declared Roads** | | | | | | |
| **Punt Road** | ✓ | - | ✓ | - | - | - |
| **Toorak Road** | - | ✓ | - | ✓ | ✓* | ✓ |
| **Commercial Road** | - | ✓ | ✓ | | ✓* | ✓ |
| **Local Roads** | | | | | | |
| **Chapel Street** | - | - | | ✓ | ✓* | ✓ |
| **Osborne Street** | - | - | - | - | - | - |
| **William Street** | - | - | - | - | - | - |

* Principal Bicycle Network, ** Local Bicycle Network

Source: Transmaps, 2015 (http://www.maps.vic.gov.au/TransMaps/ui/DotmapUI.jsp)

There are two network constraints are present within the direct vicinity of the eastern portal precinct. These relate to bridges running over rail lines:

- William Street Bridge - William Street crosses the Cranbourne / Pakenham / Frankston rail lines as a bridge over the tracks. The proposed location of the eastern portal is in close proximity to this bridge (no weight restriction) and may affect construction options.
- Argo Street Bridge - Argo Street crosses the Sandringham rail line as a bridge over the tracks (10 tonnes weight limit)

##### 8.1.1.1.1 Declared Roads

There are three arterial roads in the vicinity of the South Yarra precinct: Toorak Road, Punt Road and Commercial Road. Punt Road is defined as Arterial Highway, Toorak Road and Commercial Road are defined as Arterial (Other) Roads.


**Legend**

- Emergency Access Structure (Indicative)
- Proposed Alignment
- Proposed Station Extent
- Arterial Road
- Local Road
- Local Government Area (LGA)
- Station Precinct
- Portal Precinct

**Map 7 of 8**


Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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City of Melbourne 2015
City of Port Phillip 2015
Public Transport Victoria 2015

MELBOURNE METRO RAIL AUTHORITY

aurecon JACOBS Mott MacDonald AJM Joint Venture GRIMSHAW

# Melbourne Metro Rail Project

Title:
Transport Impact Assessment - Existing Road Network

| Drawing Number: | | Revision: |
|---|---|---|
| MMR-AJM-UGAA-MP-NP-500105 | | P1 |
| Drawn By: | Approved By: | Date: | Map Size: |
| A. Davy | K. Mitchell | 15/04/2016 | A4 |

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Metres

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**Figure 8-1 Eastern portal precinct - Road network**

**Table 8-2 : Arterial Roads in Eastern portal study area Descriptions**

| Declared road | Road name | Description |
|---|---|---|
| Arterial-Highway | Punt Road | Punt Road (Hoddle Street to the north) is a key north-south arterial road that connects an array of suburbs from St Kilda through to Clifton Hill/Northcote. It provides access to the major freeways in the area through interchanges at the Eastern Freeway in Clifton Hill and the Monash Freeway / CityLink Tollway in Cremorne. Punt Road also has an intersection with Princes Highway / St Kilda Road, which is a major primary arterial road in the region. The section of Punt Road within the vicinity of the eastern portal provides two lanes of traffic in each direction with parallel parking. Clearways are however operational on both sides in both the AM and PM peak periods. |
| Arterial–Other | Toorak Road | Toorak Road (Burwood Highway to the east) is a key east-west arterial road that connects the eastern suburbs through to St Kilda Road in South Melbourne. It also provides for access to the Monash Freeway at the final interchange before the Monash becomes tolled. Toorak Road has two lanes in each direction between Chapel Street and Punt Road with parallel parking on both sides. It operates at 40 km/h and is a shared road with trams operating along the entire section. Clearways are also present in the AM peak for traffic heading westbound and during the PM peak for traffic heading eastbound. |
| Arterial–Other | Commercial Road | Commercial Road (Malvern Road to the east) is another key east-west arterial road that runs parallel to Toorak Road from the Monash Freeway to St Kilda Road. Commercial Road also has two lanes in each direction between Chapel Street and Punt Road with parallel parking on both sides. It operates at 40 km/h and is shared road space with trams. Directional clearways are present, with clearways present in the AM peak for traffic heading westbound and during the PM peak for traffic heading eastbound. |

#### 8.1.1.1.2 Local Roads

Two local roads run parallel and provide for north-south links through the area - Chapel Street and Osborne Street. William Street, is only a local access road, is another important road in the study area for this project, given its close proximity to the proposed eastern portal. Descriptions of these three roads are provided in Table 8-3. Note that all three of these roads are defined as local roads according to VicRoads guidelines, although the northern end of Chapel Street, north of Toorak Road, is considered to be an Arterial (Other).

**Table 8-3 : Local Road Descriptions**

| Local Road | Description |
|---|---|
| **Chapel Street** | Chapel Street is a north-south road linking South Yarra to Windsor through Prahran. It also connects South Yarra to Richmond to the north where it turns into Church Street. Chapel Street provides access to Princes Highway to the south, although it is not defined as a preferred traffic route given the high volume of pedestrian activity in the area from the abutting stores. Chapel Street has one lane of traffic in each direction operating at 40 km/h with parallel parking bays along both sides. These lanes are shared road space with trams and no clearways are present along its entire length. |
| **Osborne Street** | Osborne Street runs north-south between Toorak Road and Commercial Road and is parallel to Chapel Street. It is designated as a local residential road and has detached residential properties along both sides. The road itself is one lane in each direction and has provision for parallel unmarked parking on both sides. |
| **William Street** | William Street is a local residential road that has one lane in each direction and unmarked parallel parking allowance. It has a bridge just south of Toorak Road that crosses over the rail. There are footpaths present on both sides of the road that link into a walking trail between South Yarra Station and Chapel Street. |

### 8.1.1.2 Network performance

#### 8.1.1.2.1 Daily Traffic Profiles

SCATS data was obtained from VicRoads for 27 May 2015.

The profile of traffic flows on Kings Way and Queens Road is shown in Figure 8-2.

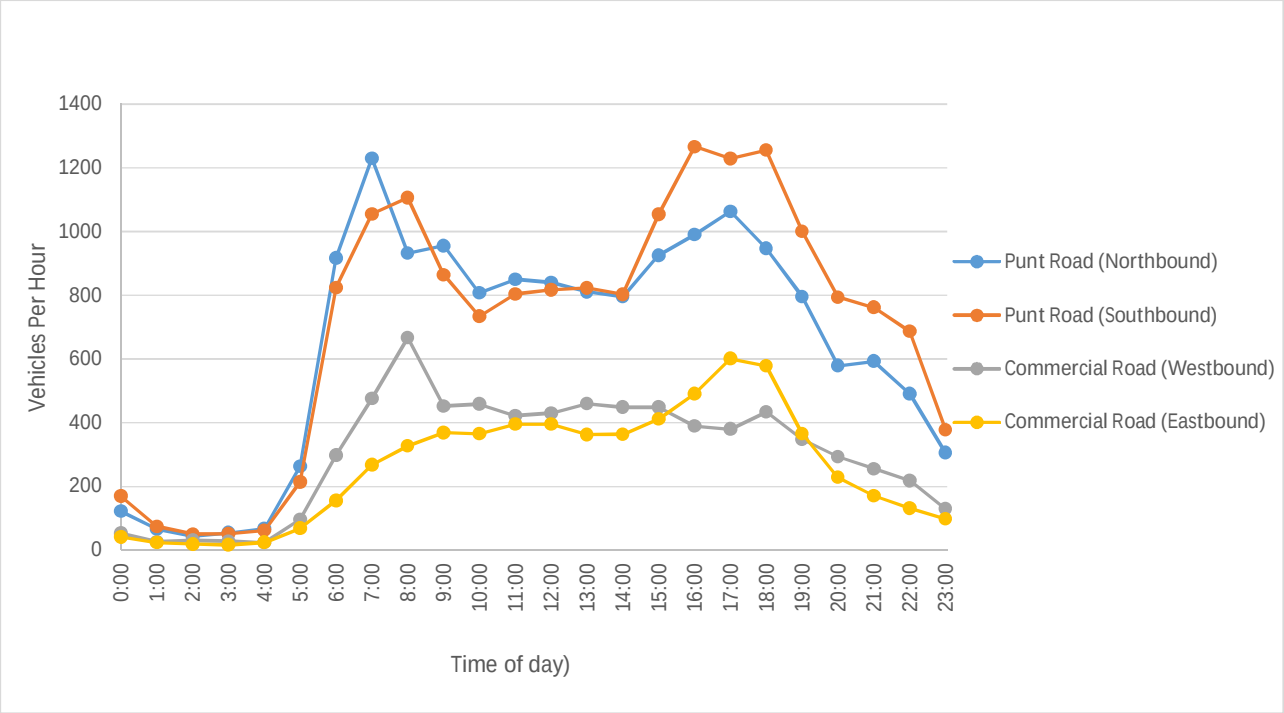


**Figure 8-2: Daily traffic profile on Commercial Road and Punt Road (Source: SCATS 27 May 2015)**

The peak flow on Commercial Road (westbound) occurs between 7:00am-9:00am (refer to Table 8-4). The peak flow on Commercial Road (eastbound) occurs between 5:00pm and 6:00pm. The peak flows on Punt Road (northbound) occurs between 6:00am-8:00am and 4:00pm-6:00pm. The peak flows on Punt Road (southbound) occurs between 7:00am-8:00am and 4:00pm-6:00pm

**Table 8-4: Weekday traffic flows at Commercial Road and Punt Road signalised intersection**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Punt Road (southbound)** | 1,055 | 1,106 | 1,266 | 1,255 | 16,880 |
| **Commercial Road (westbound)** | 476 | 667 | 390 | 380 | 7,274 |
| **Punt Road (northbound)** | 1,230 | 932 | 990 | 1,063 | 15,450 |
| **Commercial Road (eastbound)** | 268 | 327 | 491 | 601 | 6,278 |

**Source: VicRoads SCATS, 27 May 2015**

The profile of traffic flows on Toorak Road and Punt Road is shown in Figure 8-3.

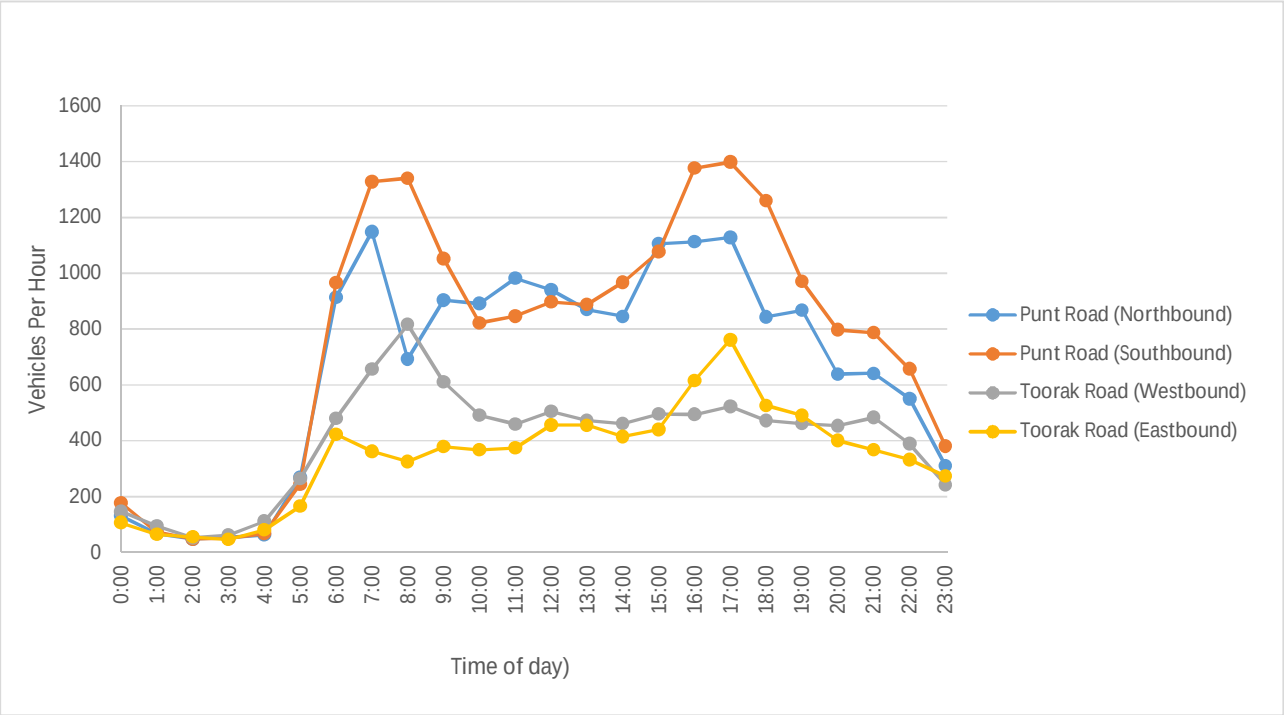


**Figure 8-3: Daily traffic profile on Toorak Road and Punt Road (Source: SCATS 27 May 2015)**

The peak flow on Toorak Road (westbound) occurs between 7:00am-9:00am (refer to Table 8-5). The peak flow on Toorak Road (eastbound) occurs between 4:00pm-6:00pm. The peak flows on Punt Road (southbound) occur between 7:00am-8:00am in the AM peak and between 4:00pm-5:00pm in the PM peak.

**Table 8-5: Weekday traffic flows at Toorak Road and Punt Road signalised intersection**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Punt Road (southbound)** | 1,328 | 1,340 | 1,377 | 1,398 | 18,468 |
| **Toorak Road (westbound)** | 656 | 816 | 494 | 523 | 9,688 |
| **Punt Road (northbound)** | 1,148 | 692 | 1,112 | 1,128 | 16,005 |
| **Toorak Road (eastbound)** | 361 | 325 | 615 | 761 | 8,275 |

**Source: VicRoads SCATS, 27 May 2015**

The profile of traffic flow on Chambers Street, South Yarra is shown in Figure 8-4. This traffic flow was observed midblock on Chambers Street, between Bond Street and Oxford Street.

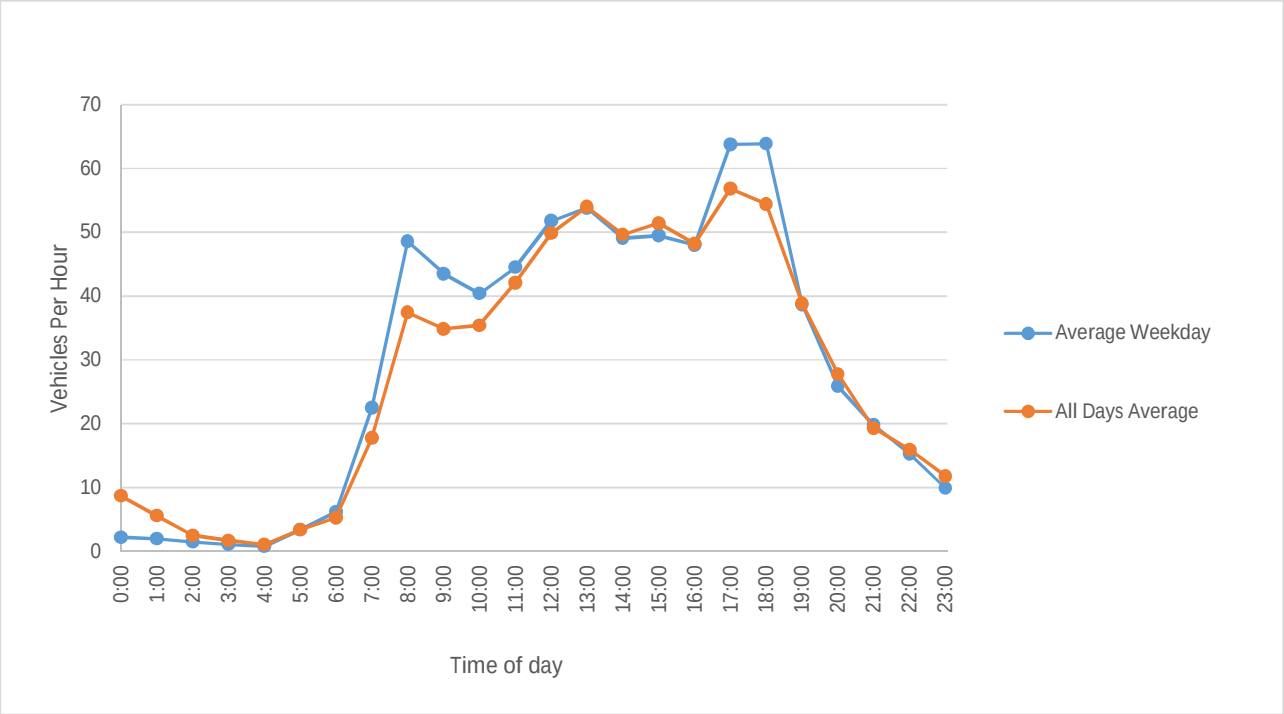


**Figure 8-4: Daily traffic profile observed on Chambers Street, South Yarra**

**Source: Traffic count 27 July 2015 to 9 August 2015)**

The peak flows on Chambers Road occur between 8:00am-9:00am (AM peak) and 5:00pm-6:00pm (PM peak) (refer to Table 8-6).

**Table 8-6: Weekday traffic flows at Chambers Road**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Chambers Road (northbound)** | 23 | 49 | 48 | 64 | 706 |

**Source: Traffic count, 27 July 2015 to 9 August 2015**

The profile of traffic flow on Osborne Street, South Yarra is shown in Figure 8-5. This traffic flow was observed at 125 Osborne Street, South Yarra.

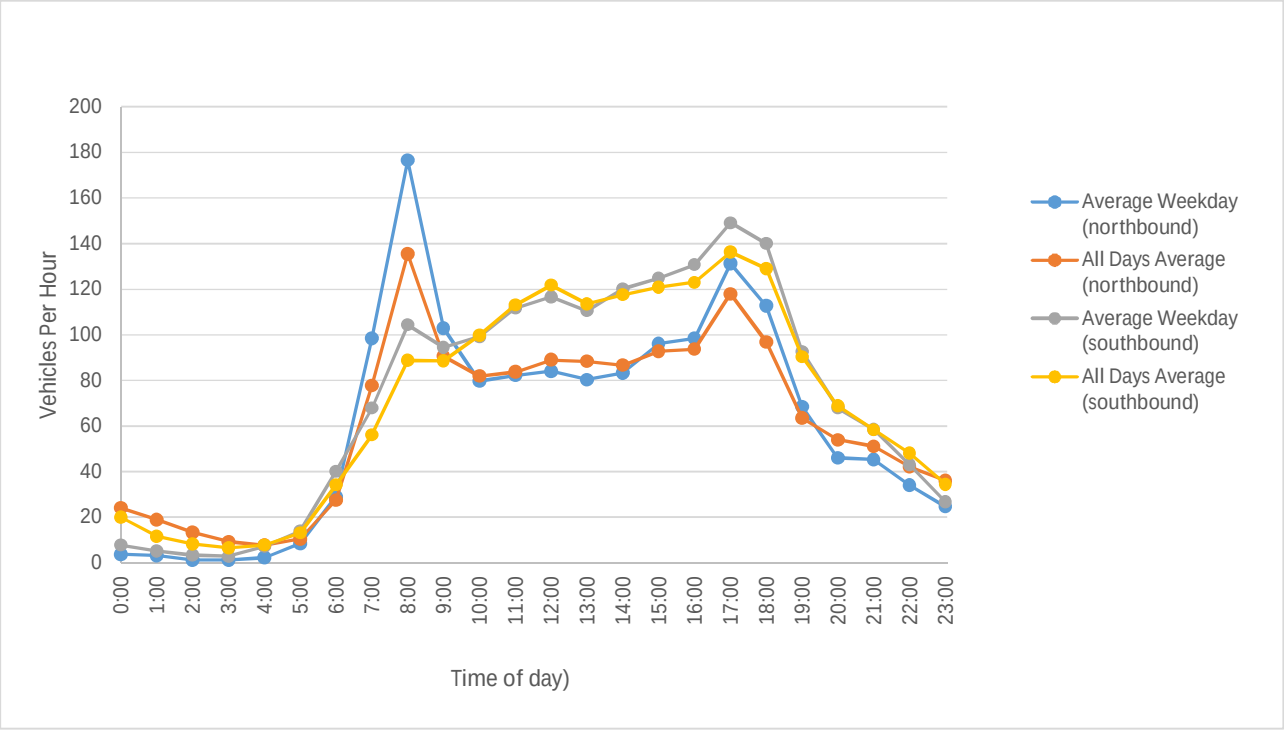


**Figure 8-5: Daily traffic profile observed at 125 Osborne Street**

**(Source: Traffic count 27 July 2015 to 9 August 2015**

The peak flows on Osborne Street (northbound) occur between 7:00am-9:00am (AM peak) and 5:00pm-6:00pm (PM peak) (refer to Table 8-7). The peak flows on Osborne Street (southbound) occur between 11:00am-1:00pm (lunchtime) and 5:00pm-6:00pm (PM peak).

**Table 8-7: Weekday traffic flows at Osborne Street**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Osborne Street (northbound)** | 98 | 177 | 98 | 131 | 1493 |
| **Osborne Street (southbound)** | 68 | 104 | 131 | 149 | 1739 |

**Source: Traffic count, 27 July 2015 to 9 August 2015**

The profile of traffic flow on Fawkner Street, South Yarra is shown in Figure 8-5. This traffic flow was observed at property boundary of 49 and 51 Fawkner Street, South Yarra.

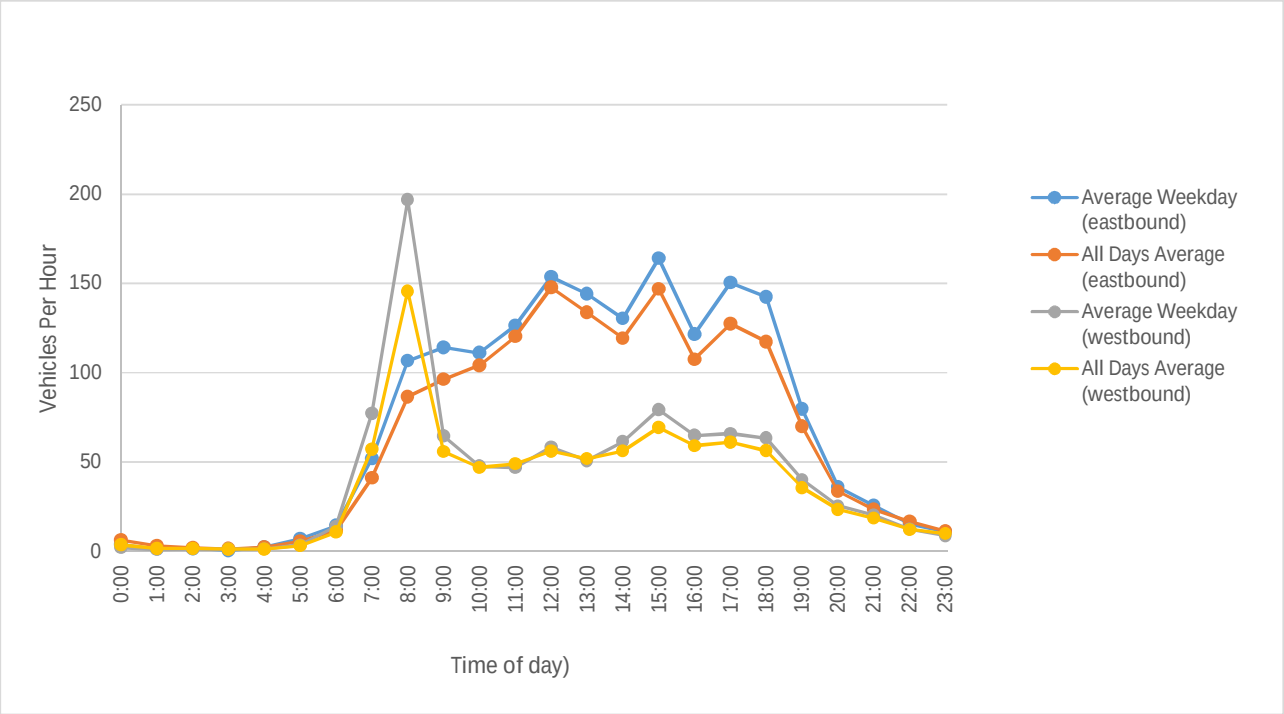


**Figure 8-6: Daily traffic profile observed on Fawkner Street**

**Source: Traffic count 9 February 2013 to 22 February 2013)**

The peak flow on Fawkner Street (westbound) occurs between 7:00am and 9:00am (refer to Table 8-8). The peak flows on Fawkner Street (eastbound) occur between 11:00am-1:00pm, 2:00pm-4:00pm and 5:00pm-6:00pm.

**Table 8-8: Weekday traffic flows at Fawkner Street**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **Fawkner Street (eastbound)** | 52 | 107 | 122 | 150 | 1716 |
| **Fawkner Street (westbound)** | 77 | 197 | 65 | 66 | 1009 |

**Source: Traffic count, 27 July 2015 to 9 August 2015**

The profile of traffic flow on William Street is shown in Figure 8-7. This traffic flow was observed midblock between Arthur Street and Toorak Road.

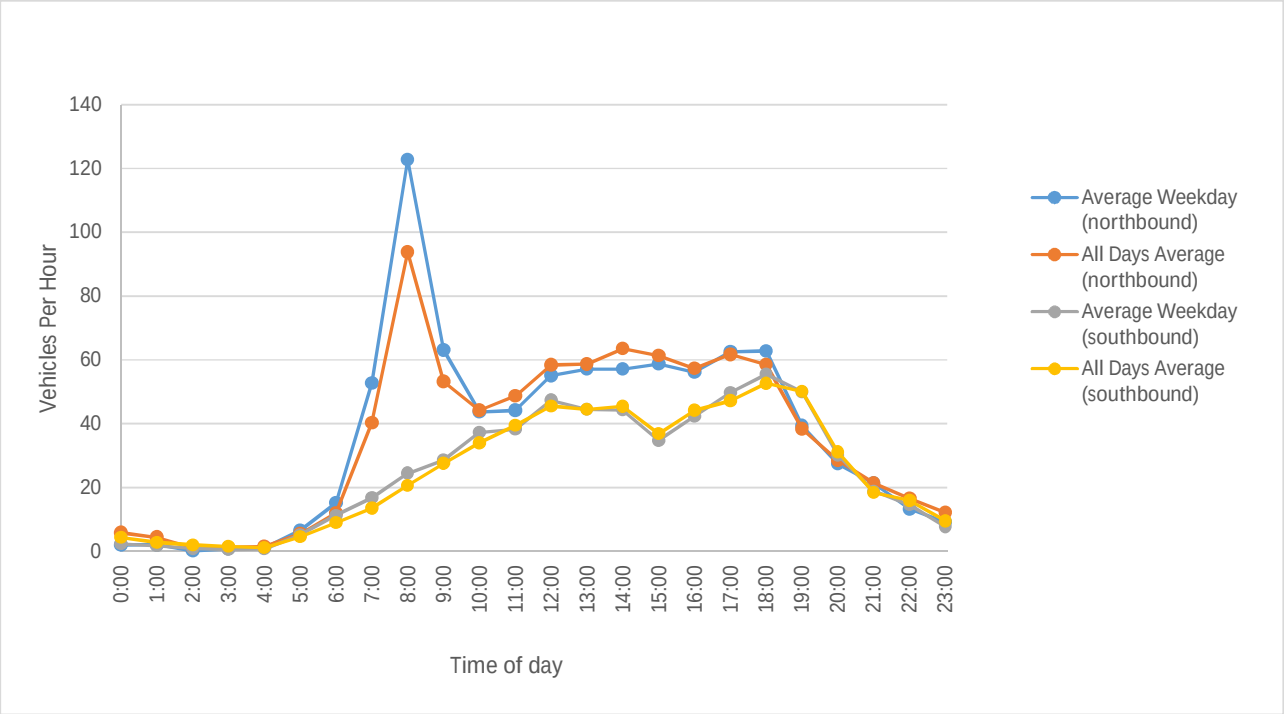


**Figure 8-7: Daily traffic profile observed on William Street (Source: Traffic count 4 May 2013 to 19 May 2013)**

The peak flow on William Street (northbound) occurs between 7:00am-9:00am (refer to Table 8-9). The peak flow on William Street (southbound) occurs between 5:00pm-7:00pm.

**Table 8-9: Weekday traffic flows at William Street**

| Intersection leg | Vehicles by time period | | | | |
|---|---|---|---|---|---|
| | 7:00am to 8:00am | 8:00am to 9:00am | 4:00pm to 5:00pm | 5:00pm to 6:00pm | 24 hrs |
| **William Street (northbound)** | 53 | 123 | 56 | 63 | 875 |
| **William Street (southbound)** | 17 | 25 | 42 | 50 | 609 |

**Source: Traffic count, 27 July 2015 to 9 August 2015**

#### 8.1.1.2.2 Intersection Analysis

There are a number of signalised and unsignalised intersections situated within close proximity to the proposed eastern portal precinct. Table 8-10 summarises these intersections and their specifications.

**Table 8-10 : Key intersection – Eastern portal**

| Intersection | Control | Public transport priority | Cyclist advanced stop boxes | Banned movements |
|---|---|---|---|---|
| **Toorak Road and Chapel Street** | Signalised | No | Yes | Right turn from Toorak Road to Chapel Street (peak times only) |
| **Toorak Road and Punt Road** | Signalised | Yes | No | Right turn from Toorak Road to Punt Road (peak times only) |
| **Toorak Road and Osborne Street** | Priority | No | No | - |
| **Toorak Road and William Street** | Priority | No | No | - |
| **Chapel Street and Arthur Street** | Priority | No | No | - |
| **Chapel Street and Arthur Street** | Pedestrian | No | No | - |

### 8.1.2 Road Safety

Between January 2010 and January 2015, there were 130 road casualties within the study area bound by Punt Road, Chapel Street, mid-block between Toorak Road and Commercial Road, and Mid-block between Toorak Road and Alexandra Avenue. Of these incidents:

- <1 per cent (1) was fatal, 25 per cent (32) were serious injury casualties and 74 per cent (97) were other injury casualties
- The single fatality was a motor vehicle driver
- Motor vehicle on motor vehicle collisions accounted for 47 per cent (61) of incidents
- 37 per cent (49) involved motor vehicles colliding with bicyclists and 16 per cent (21) with pedestrians. The most common type of bicycle injury accident was car dooring (38 per cent of all cyclist incidents)
- Only one incident involved trams and it was also noted that 6 per cent involved taxis

Busy activity centres and Chapel Street and Toorak Road display high numbers of incidents along their extents in the study area noticeably contrasting with fewer casualty numbers on Punt Road and Commercial Road. Intersections at all locations and major pedestrian crossing locations are areas of high incident frequency.

### 8.1.3 Car Parking and Access

#### 8.1.3.1.1 On Street parking

On-street car parking is extensively provided in the area near the eastern portal. Chapel Street has free one hour parallel parking between Toorak Road and Dandenong Road. North of Toorak Road clearways operate during peak times. Toorak Road has free two hour car parking outside clearway times east of Walsh Street on its eastbound side. On the westbound carriageway there is an AM peak clearway up to Punt Road. The clearway section of Toorak Road extends its entire length from Walsh Street and Punt Road to Burwood where Toorak Road becomes the Burwood Highway. There are limited disabled spaces near the proposed eastern portal location.

#### 8.1.3.1.2 Taxi zones

Taxi zones have been installed along Chapel Street and some side streets. These zones provide dedicated pick-up and drop off zones every Friday and Saturday night until 5am the following morning. There are 8 located between South Yarra Station and Commercial Road.

#### 8.1.3.1.3 Loading Zones

There are two loading zones located on the northern side of Toorak Road between Darling Street and Claremont Street.

#### 8.1.3.1.4 Off Street Parking

There are a number of off street parking locations near the eastern portal.

#### 8.1.3.1.5 Clearways

During the AM and PM peak period Toorak Road has clearways in operation. The morning clearway operates from 7:00 – 9:00am Monday to Friday in the citybound direction. The evening clearway operates in the opposite direction from 4:30 – 6:30pm Monday to Friday.

#### 8.1.3.1.6 Car Sharing

In the eastern portal area there is one car share space in the Darling Street off-street car park. It is Flexicar operated. All other car share in the area are located in private facilities. Public Transport

### 8.1.4 Public Transport

#### 8.1.4.1 Rail Network

The public transport network within the wider area of the eastern portal and the immediate portal area is shown in Figure 8-8. The area is serviced by metropolitan railway, bus and tram services.

South Yarra railway station is the location of the convergence of the Sandringham Railway Line with the Frankston Line and the Cranbourne/Pakenham Lines. This group of lines is often known as the 'Caulfield Group' as the lines all run through Caulfield with the exception of the Sandringham Line.

The Sandringham Line runs from Sandringham in the local government area of Bayside to Flinders Street, a distance of approximately 18km and generally runs direct to Flinders Street.

In the AM peak inbound direction many services on the Dandenong corridor short-start and begin at Dandenong or Caulfield station. Some Frankston services in the PM peak terminate short at Carrum, Mordialloc, or Caulfield station. Cranbourne and Pakenham trains have short terminations at Caulfield. These services are used to handle high demand and manage passenger seat allocation for shorter trips and longer trips.

Railway service frequencies for the railway lines above are shown in Table 8-11. Peak direction frequencies are shown for AM and PM peaks (i.e. in the AM travel direction is to the CBD, and the opposite direction in the PM).

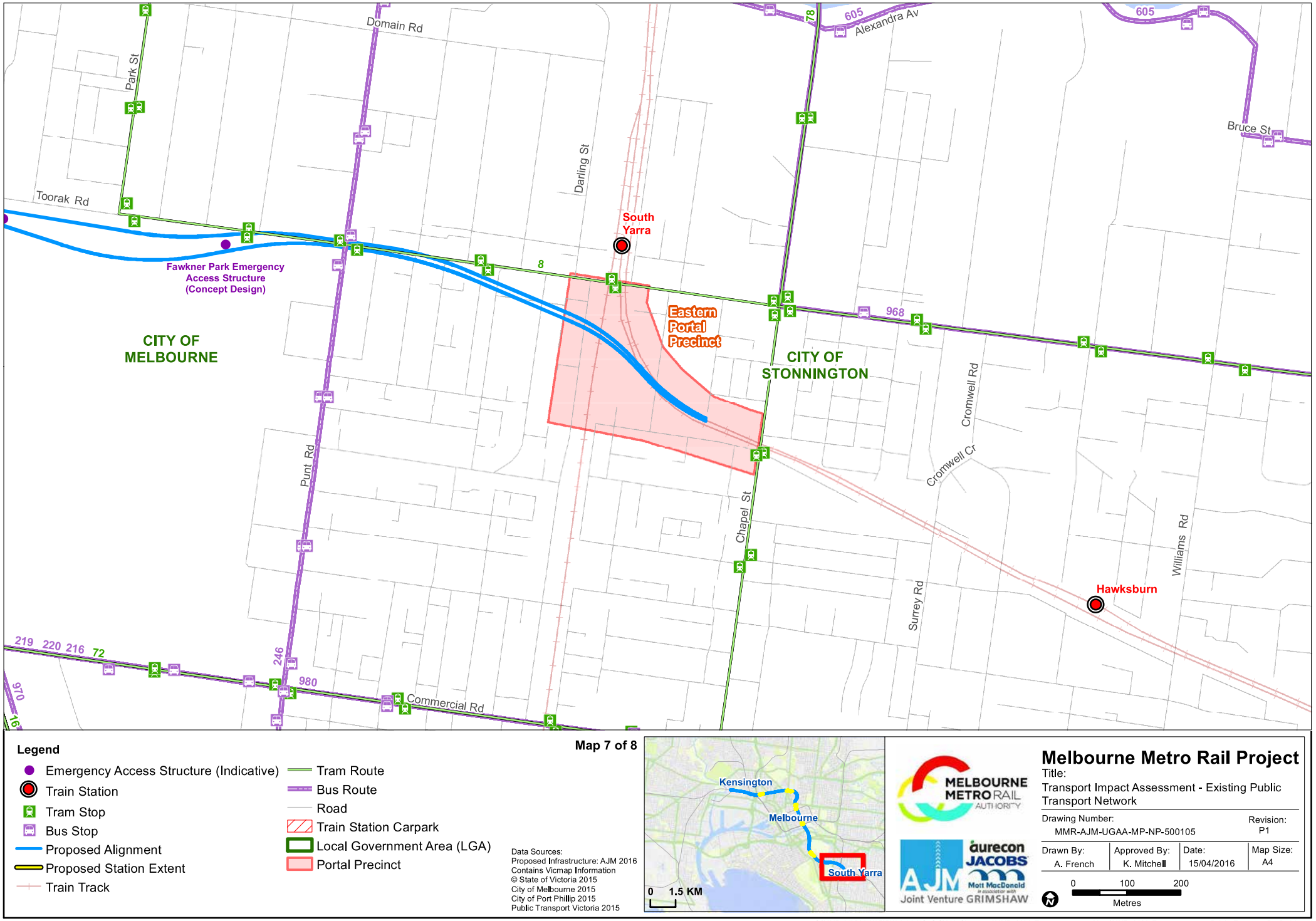


**Figure 8-8 Eastern portal precinct – Public transport network**

**Table 8-11 Caulfield Group rail service frequencies**

| Line | Mon-Fri AM peak frequency | Mon-Fri Off peak frequency | Mon-Fri PM peak frequency | Saturday | Sunday |
|---|---|---|---|---|---|
| **Sandringham** | 7.5 mins | 15 mins | 7.5 mins | 20 mins | 20 mins |
| **Cranbourne/ Pakenham** | 4 mins | 7 mins | 4 mins | 10 mins | 10 mins |
| **Frankston** | 6 mins | 10 mins | 4.5 mins | 10 mins | 10 mins |

Source: PTV, Timetable effective 21 June 2015

South Yarra station is the 11th busiest station in the metropolitan network by number of annual boardings and the 6th busiest transfer station in the Metropolitan network[30]. The principal journey purposes for South Yarra station users are work related followed by education[31].

### 8.1.4.2 Tram Network

The tram network in the immediate area near the eastern portal is shown in Figure 8-8. The displayed tram routes and their termini are outlined in Table 8-12.

The area is well serviced by trams. All tram routes except Route 78 run through the CBD at some point during their route. Route 78 is one of only a handful of tram routes in the Melbourne tram network that does not route via the CBD.

**Table 8-12 Tram service frequencies by time of day**

| Tram Route | | Tram services per hour | | | |
|---|---|---|---|---|---|
| | | Peak hour | Peak 2-hour | Daytime off-peak (tph) | Other off-peak (tph) |
| **Toorak Road** | | | | | |
| **8** | Toorak – Moreland | 9 | 18 | 5 | 5 |
| **Commercial Road** | | | | | |
| **72** | Camberwell – Melbourne University | 9 | 18 | 5 | 5 |
| **Chapel Street** | | | | | |
| **78** | Prahran (Balaclava) – North Richmond | 6 | 12 | 5 | 5 |

Source: PTV, Timetable effective 21 June 2015

Accessible platform stops are not widely available on the immediate network. Route 78 does not currently have any accessible stops or compatible trams. The closest accessible stop for all other routes in the area is Domain Interchange on St Kilda Road.

Stops near the proposed eastern portal location include:

- Route 8: Stop 30 – South Yarra Train Station

[30] PTV, 'Train Station Patronage Fact Sheet', http://ptv.vic.gov.au/about-ptv/ptv-data-and-reports/research-and-statistics/, Accessed 1 May 2015
[31] ibid

- Route 72: Stop 31 – Chapel Street / Commercial Road
- Route 78: Stop 50 – Toorak Road / Chapel Street
- Route 8 (stop 30) has almost 2,000 daily boardings and alightings at South Yarra Station. Route 72 (stop 31) and route 8 (stop 50) have 915 and 764 daily boardings and alightings respectively.

#### 8.1.4.3 Bus Network

The bus network in the immediate area of the eastern portal is shown in Figure 8-8. The majority of routes run along Malvern Road to the south or Punt Road to the west of the portal location. A Night Rider bus service travels along Toorak Road but operate exclusively on weekend nights.

### 8.1.5 Active Transport

#### 8.1.5.1 Pedestrian Environment

*Footpath provision*

There is good provision of pedestrian infrastructure in the vicinity of the eastern portal precinct. The majority of the local roads connecting the site with the wider road network have footpaths on both sides of the carriageway which are in good condition.

Toorak Road and Chapel Street are notable pedestrian environments connecting to the extensive commercial/retail/dining outlets on these streets. Street trading and dining areas have reduced footpath widths and cause congestion at peak times.

An off-street path (Lovers Walk) runs adjacent to the Frankston/Cranbourne/Pakenham rail lines from South Yarra station to Toorak station.

*Pedestrian crossings*

There are pedestrian crossing points at the following locations near the eastern portal precinct:

- Signalised pedestrian crossing outside South Yarra station on Toorak Road
- Toorak Road/Chapel Street signalised intersection
- Toorak Road/Punt Road signalised intersection

Whilst the majority of intersections along Toorak Road are priority controlled intersections, the side streets generally include kerb build outs that reduce pedestrian crossing widths.

*Accessibility*

The provision of drop curbs at both signalised and unsignalised intersections is almost ubiquitous. Most signalised pedestrian crossings have aural signals as well as visual signalling for pedestrians. The provision of tactile tiles is generally widespread although there are some notable exceptions like the pedestrian crossings at the intersection of Toorak Road and Chapel Street.

#### 8.1.5.2 Bicycle Environment

The City of Stonnington is the local authority that plans and manages the local cycle network, but it only has control over a few sections of the network.

The on-road bicycle route on Toorak Road operates as a clearway only bicycle route. Outside clearway times this route is inactive and used as car parking. Chapel Street has had cycle lane improvements since 2013 as part of ongoing work to reduce the number of car/bicycle incidents. Particular focus has gone on trying to reduce ‘car-dooring’ incidents. The narrow width of Chapel Street has meant that little road space reallocation has been made, focus has instead been on than new surfacing treatments and temporary signage campaigns to increase car drivers awareness of the risks posed to cyclists.

#### 8.1.5.3 Bicycle Parking

Bicycle parking is provided at various intervals in the immediate area of the eastern portal. Informal bicycle parking against pedestrian fencing and signage indicates that provision of formal sites is not adequate for demand. Pedestrian fencing at South Yarra station provides an important informal bicycle parking facility which is generally well utilised during weekdays.

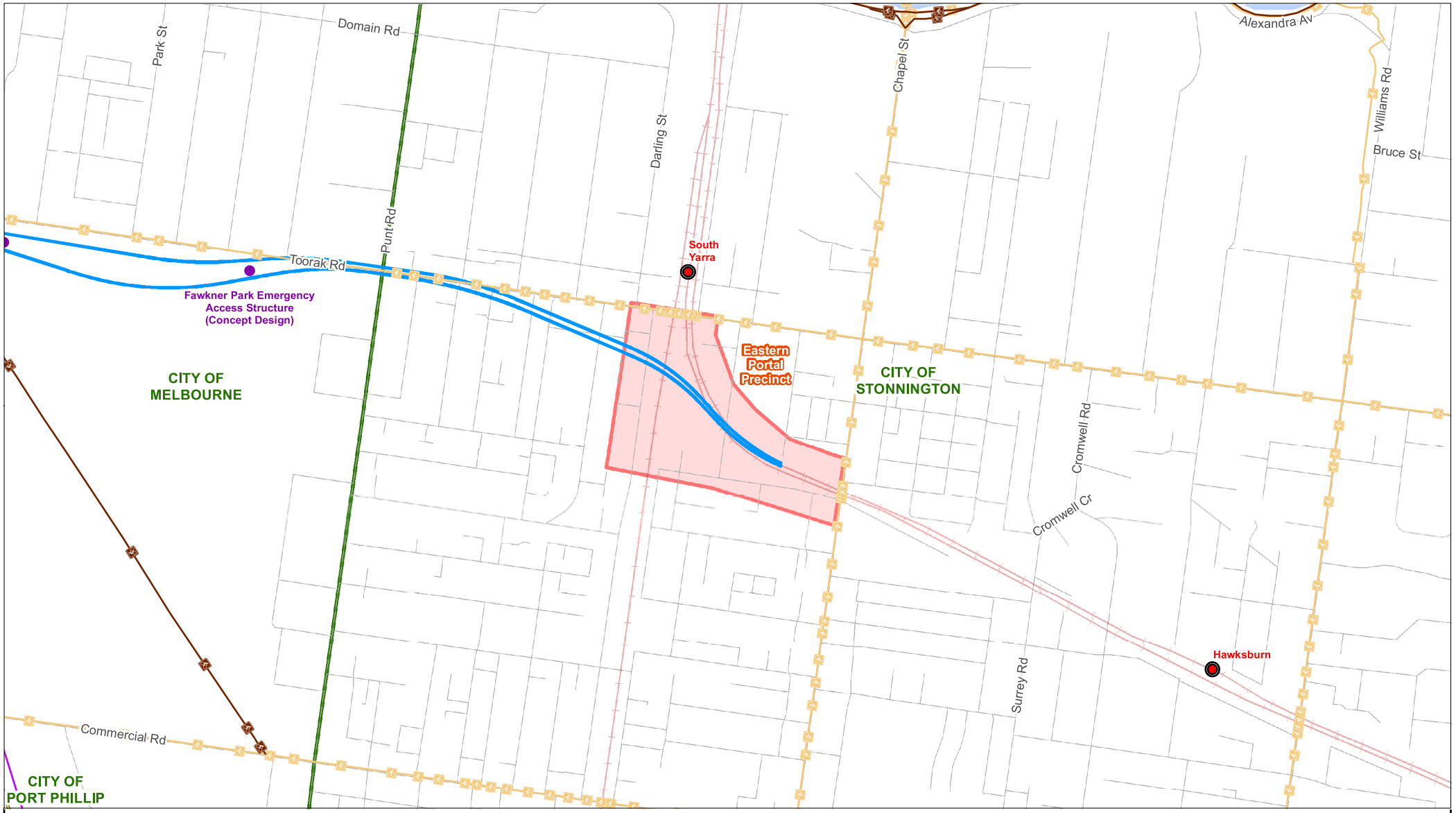


**Figure 8-9 Eastern portal precinct - Bicycle network**

# 9 Precinct 9: Western Turnback

The initial operations of the Melbourne Metro would have an imbalance in train numbers that needs to be addressed by early turning back of some trains on the Sunbury line to run back towards the CBD to service the busy Cranbourne and Pakenham lines. The Concept Design includes a western turnback at West Footscray, with a third platform and track at West Footscray Station, and modifications to the existing concourse.

## 9.1 Existing Conditions

### 9.1.1 Road Transport

#### 9.1.1.1 Road Network

Table 9-2 lists the SmartRoads categorisation of the road network in the vicinity of the proposed western turnback.

**Table 9-1 Western turnback precinct – Smartroads road user priority classifications**

| SmartRoads classification | Road transport | Public transport | Active transport |
|---|---|---|---|
| | Traffic route | Bus priority route | Bicycle priority route |
| **Declared Roads** | | | |
| **Geelong Road** | ✓ | | |
| **Sunshine Road** | ✓ | - | - |
| **Gordon Street** | ✓ | - | - |
| **Local Roads** | | | |
| **Cross Street** | - | - | ✓** |
| **Errol Street** | - | - | - |
| ** Local Bicycle Network | | | |
| Source: Transmaps, 2015 (http://www.maps.vic.gov.au/TransMaps/ui/DotmapUI.jsp) | | | |

Table 9-2 lists the declared roads in the vicinity of the West Footscray station and provides a brief overview of their features, physical layout as well as their road network function.

**Table 9-2 Western turnback precinct - Declared Roads**

| Declared road | Road name | Description |
|---|---|---|
| Arterial–Highway | Geelong Road | Geelong Road is a dual carriageway with three lanes in each direction. It joins the West Gate Freeway to the inner western suburbs of Melbourne. |
| Arterial–Other | Sunshine Road | Sunshine Road is a single carriageway road running east-west immediately south of the West Footscray station. There is only a footpath on the south side of the road, apart from a short footpath from the southern ramp to the station to the signalised intersection of Sunshine Road and Geelong Road. There are on-street bicycle lanes on Sunshine Road from the West Footscray station to and from the east. |


**Figure 9-1 Western turnback precinct – Road network**

Table 9-3 provides a description of the local roads in the vicinity of the western turnback precinct.

**Table 9-3 Western turnback precinct - Local roads**

| Local Roads | Description |
|---|---|
| Cross Street | Cross Street is a local residential road that has one lane in each direction, running east-west immediately north of West Footscray station. There are footpaths present on both sides of the road as are on-street bicycle lanes. |

## 9.1.2 Car Parking and Access

#### 9.1.2.1.1 Disabled Parking

There are 11 disabled car park spaces available at West Footscray station.

#### 9.1.2.1.2 Taxi Zones

There is a taxi rank on the southern side of West Footscray station, and two dedicated car park spaces for taxis in the car park on the northern side of West Footscray station.

#### 9.1.2.1.3 Loading Zones

There are no loading zones near West Footscray.

#### 9.1.2.1.4 Off-street Parking

There are two off-street public car parks at the West Footscray station. There are 400 off-street car parks at West Footscray station.

#### 9.1.2.1.5 Clearways

There is no on-street parking available on the roads immediately adjacent to the West Footscray station (Cross Street and Sunshine Road)

#### 9.1.2.1.6 Car Sharing

There is no car sharing facility near the West Footscray station.

There are cycle lanes on Cross Street and Sunshine Road at the West Footscray station. These cycle lanes are provided in both the eastbound and westbound directions on both roads.

There is formal bicycle parking available on both the north and south sides of the West Footscray station. There are two parkiteer cages located at West Footscray station.

## 9.1.3 Public Transport

### 9.1.3.1 Rail Network

The public transport services in the area near the western turnback precinct are shown in Figure 9-2. The proposed western turnback is located near the West Footscray station.

West Footscray is a key employment and education access station. PTV data[32] derived from station surveys show the journey purposes for West Footscray rail trips are predominantly work/ business (67 per cent), education (13 per cent) and personal business appointments (12 per cent). Survey data on transport modes used to access West Footscray are also available from the Public Transport Victoria data. Sixty eight percent of passengers walk to West Footscray station and a further thirty percent drive.

The Ballarat V/line service also passes through the West Footscray station, however it doesn't stop at West Footscray.

[32] PTV, 'Train Station Patronage Fact Sheet', http://ptv.vic.gov.au/about-ptv/ptv-data-and-reports/research-and-statistics/, Accessed 28 September 2015


**Figure 9-2 Western turnback precinct - Public transport network**

#### 9.1.3.2 Tram Network

There are no tram services in the vicinity of the proposed turnback location at West Footscray.

#### 9.1.3.3 Bus Network

There are three bus services that travel along Geelong Road to the east and one that travels along Sunshine Road to the south of the proposed turnback location at the West Footscray station (refer to Figure 9-2). Bus route 414 runs a fully accessible service. Bus routes 411 and 412 run accessible services on weekend buses only. There are no accessible services on route 472.

### 9.1.4 Active Transport

#### 9.1.4.1 Pedestrian Environment

There are pedestrian crossing points at the following locations near the western turnback precinct:

- Signalised pedestrian crossing outside West Footscray station on Sunshine Road
- Zebra crossing outside West Footscray station on Cross Street
- Sunshine Road/Geelong Road signalised intersection

The provision of drop curbs at both signalised and unsignalised intersections is almost ubiquitous. Most signalised pedestrian crossings have aural signals as well as visual signalling for pedestrians. The provision of tactile tiles is generally widespread around West Footscray station.

There is provision of pedestrian infrastructure in the vicinity of the western turnback precinct. The majority of the local roads connecting the site with the wider road network have footpaths on both sides of the carriageway which are in good condition. Sunshine Road only has a footpath on the southern side of the road. Cross Street has a footpath on the northern side of the carriageway and shared path on the southern side of the carriageway.

#### 9.1.4.2 Bicycle Environment

There are a number of bicycle routes on the main roads in the western turnback precinct, most notably Geelong Road and Cross Street around the West Footscray station. Many of these routes are designated PBN routes only and do not have supporting cycling infrastructure.

There are cycle lanes on Cross Street and Sunshine Road at the West Footscray station. These cycle lanes are provided in both the eastbound and westbound directions on both roads. There is also a shared path on the southern side of Cross Street.

There is formal bicycle parking available on both the north and south sides of the West Footscray station. There are two parkiteer cages located at West Footscray station.


**Figure 9-3 Western turnback precinct – Bicycle network**


121 Exhibition Street

Melbourne VIC 3000

PO Box 23061 Docklands VIC 8012 Australia