# Melbourne Metro Rail Project

## Joint Enquiry/Advisory Committee- Traffic

V161448T

Prepared for
Harwood Andrews on behalf of Stonnington City Council

12 August 2016

Cardno
Shaping the Future

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# Contact Information

**Cardno Victoria Pty Ltd**
**Trading as Cardno**
ABN 47 106 610 913

Level 4
501 Swanston Street
Melbourne
Victoria 3000 Australia

Telephone: (03) 8415 7777
Facsimile: (03) 8415 7788
International: +61 3 8415 7777

victoria@cardno.com.au
www.cardno.com

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# 1 Qualifications and Expertise

In accordance with the guide to expert evidence prepared by Planning Panels Victoria, my qualifications and expertise to undertake this work are summarised below:-

## Name:

Stephen John Hunt

## Address:

Cardno Victoria Pty Ltd

Level 4 - 501 Swanston Street

Melbourne Vic 3000

## Professional Qualifications:

Bachelor of Engineering (Civil), 1975, Swinburne University of Technology

Graduate Diploma of Highway and Traffic Engineering, 1981, Chisholm Institute of Technology

## Professional Experience:

Consultant, Cardno Victoria: 2007 - present

Director, Grogan Richards Pty Ltd: 1988 – 2006

Traffic Engineer with Cities of Doncaster and Templestowe, Caulfield and Prahran: 1975 – 1988

## Areas of Expertise:

Car parking and traffic analysis

Traffic advice and assessment of land uses and development proposals to planning authorities, government agencies, corporations and developers (including major residential, retail, commercial, industrial, institutional and mixed use projects).

Preparation and presentation of evidence before VCAT and Planning Panels.

## Expertise to Prepare This Report:

My training and experience including involvement with all forms of development over many years qualifies me to comment on the traffic and car parking implications of the proposal.

## Instructions which Defined the Scope of this Report:

I have been requested by Harwood Andrews on behalf of Stonnington City Council to consider the traffic, parking and access implications of the Melbourne Rail Link Project during the construction period, particularly in relation to the works proposed at the Eastern Portal to the south of South Yarra Station and to present my expert opinions to the Joint Inquiry / Advisory Committee convened to consider the

environmental effects of the MMRP, having regard to the EES as exhibited, and public submissions received.

## Facts, Matters And Assumptions Relied Upon:

Documents as exhibited including:

- Melbourne Metro Rail Project – Project Outline – July 2015.
- Melbourne Metro Rail Project - Environmental Effects Statement Report – April 2016
- Melbourne Metro Rail Project – EES – Map Book – April 2016
- Melbourne Metro Rail Project – Transport Impact Assessment – April 2016
- Submission to the EES prepared by Stonnington Council, endorsed by Council on 4th July 2016.
- Public submissions to the EES in relation to issues within my defined scope of review.

## Identity of Persons Undertaking the Work:

Stephen Hunt, of Cardno.

I have made all the inquiries that I believe are desirable and appropriate, and no matters of significance, which I regard as relevant, have to my knowledge been withheld from the Panel.

*Stephen Hunt*

*Consultant*

*for* **Cardno**

# 2 Instructions

My name is Stephen Hunt and I am a consultant traffic engineer practicing with Cardno Victoria.

I have been commissioned by Harwood Andrews on behalf of the City of Stonnington to view the Environmental Effects Statement prepared for the Melbourne Metro Rail Project and to provide my expert opinion with respect to the following issues:

1. The implications of proposed construction works within Precinct 8: Eastern Portal of the project in South Yarra and traffic increases along access routes to the construction site.
2. Matters which should be addressed within the proposed Transport Management Plan to be undertaken to minimise disruption and loss of amenity during the construction period.
3. The traffic and movement implications of the Public Realm Improvement Concept for South Yarra Precinct prepared by the City of Stonnington dated July 2016.

In the course of preparing this report I have reviewed the documents exhibited with the EES in relation to the above issues and inspected the public transport, arterial and local street network in the vicinity of Precinct 8. I have also reviewed submissions by the City of Stonnington and members of the public with respect to these matters.

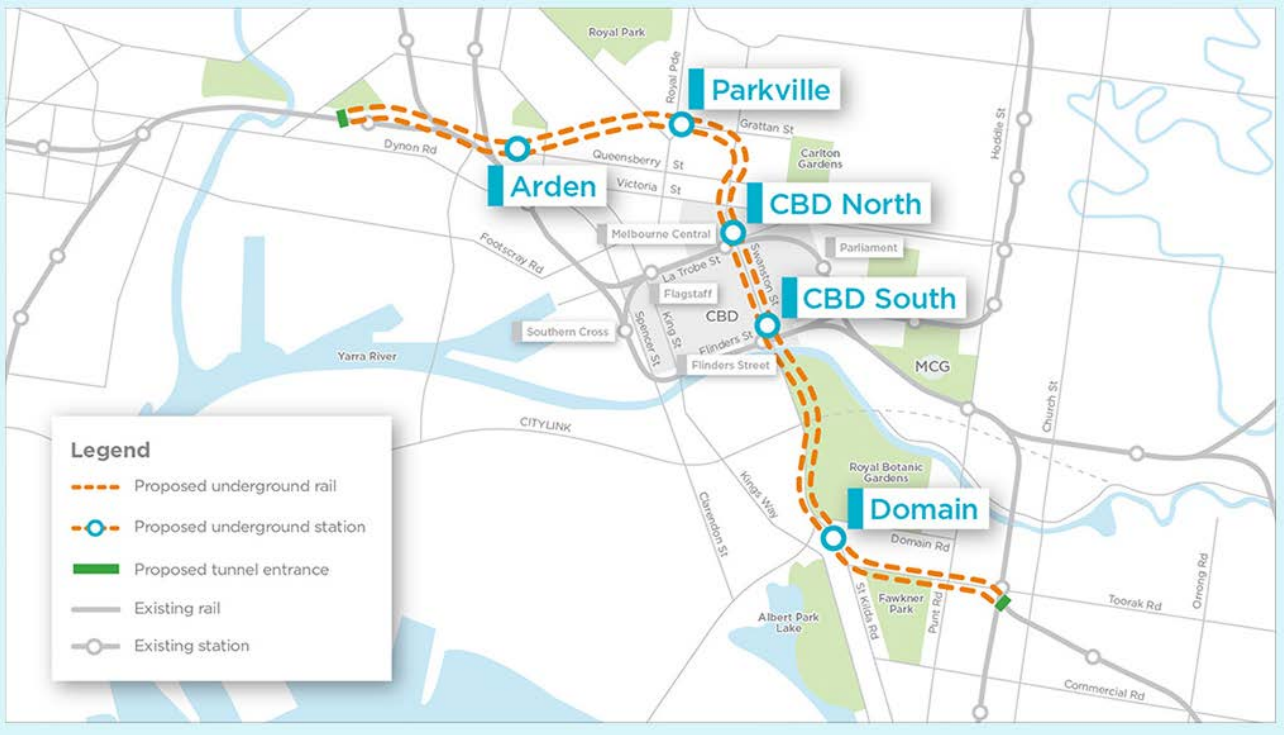
# 3 Metro Rail Link Overview - Precinct 8

## 3.1 Overview

The Metro Rail Link Project proposes construction of the following as shown in Figure 1.

- Two tunnels running from South Kensington to South Yarra travelling underneath Swanston Street, St Kilda Road and Toorak Road connecting the Sunbury line in the north and the Cranbourne Pakenham Line in the south east.
- New underground stations at Arden Parkville, CBD North, CBD South and Domain, with direct interchange at Flinders St and Melbourne Central Stations,
- Train / tram interchanges at Parkville and Domain Stations,
- Rail tunnel entrances at South Kensington and South Yarra.

**Figure 3-1 Melbourne Metro Rail Project Map**



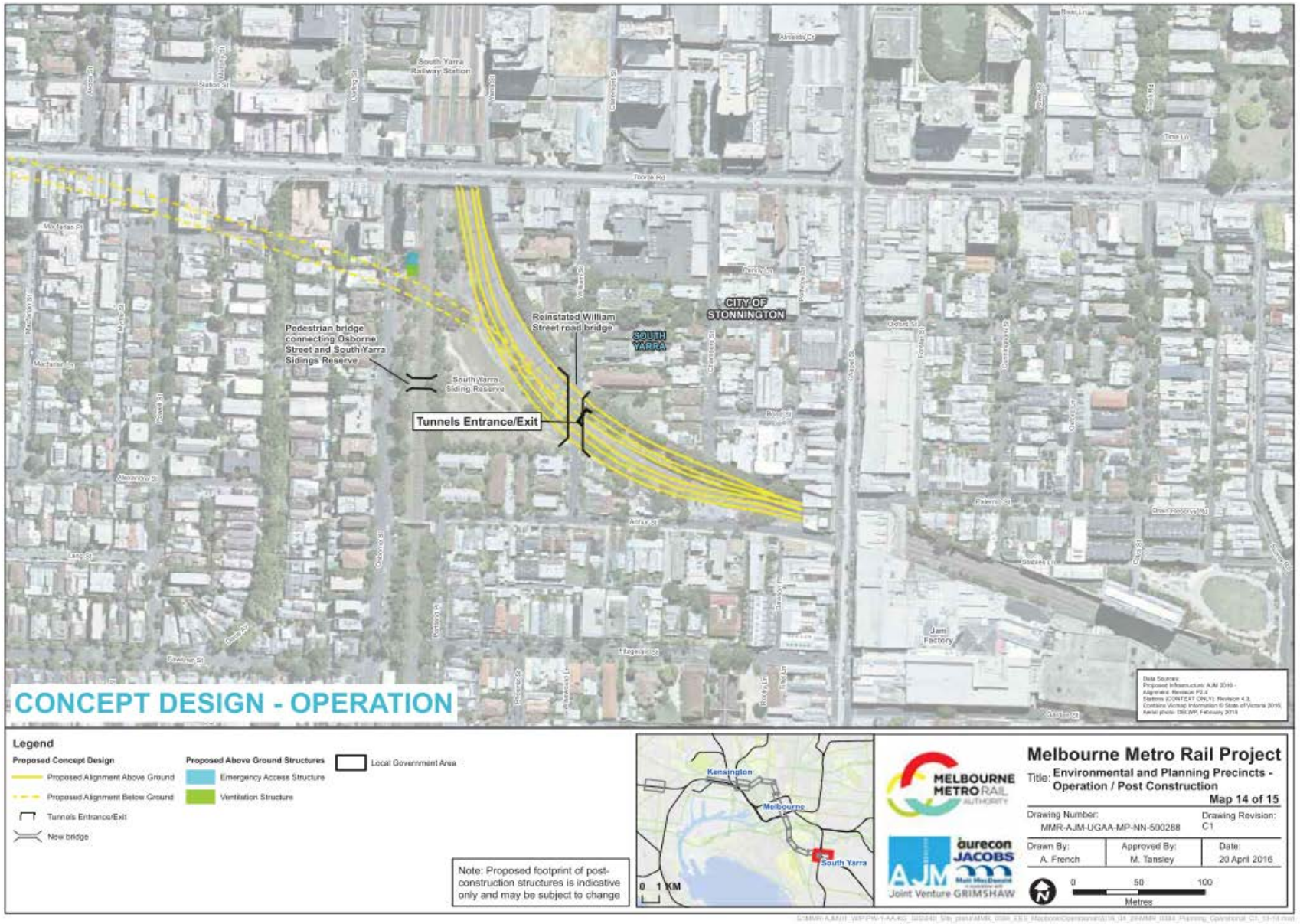

## 3.2 Precinct 8 – Eastern Portal

Between Domain Station and the Eastern Portal at South Yarra, the alignment passes under Fawkner Park and the under the Toorak Rd road reserve until the approach to the Eastern Portal where it ties to the existing Cranbourne Pakenham line tracks west of Chapel Street.

Freight and regional services using the Cranbourne Pakenham Line, as well as passenger services on the Frankston and Sandringham lines, will continue to utilise existing tracks through South Yarra Station towards the CBD via Richmond, while Cranbourne Pakenham Line services will access directly to the proposed underground service to Domain Station and beyond.

The Eastern Portal Concept Design is shown in Figure 3-2.

**Figure 3-2 Eastern Portal - Concept Design**



# 4 Construction Phase

## 4.1 Overview

An overview of the proposed construction methodology of the overall Project is provided in Section 8 of Transport Impact Assessment Report -Technical Appendix D (TIAR).

The following is noted with respect to the issues I have been asked to review:

### 4.1.1 Workforce Traffic and Parking

- A large onsite workforce would be engaged during the construction period and would require access to and from major work areas.
- Table 8-1 suggests an indicative construction workforce of 1,442 workers, including 93 workers at the Eastern Portal.
- As most of the major work sites are easily accessible by public transport, parking provision would not need to be significant, with where necessary, the contractor expected to lease car spaces for employees.
- For sites outside the CBD it is expected that some car parking provision would be arranged on-site for the workforce.
- It is expected that much of the workforce would travel outside of peak periods reducing the impact on peak traffic periods.
- Traffic generated by the workforce would be well below daily fluctuations of traffic activity and as such modelling undertaken has not included workforce travel activity.
- As it is proposed to operate many of the sites on a 24-hour, 7 day operation, peak activity would occur at shift changeover times.

### 4.1.2 Construction Truck Activity

- Trucks are expected to comprise the majority of traffic on the project with truck volumes estimated for each site based on the expected volumes of spoil to be removed (33%), concrete delivery (20%) and other material deliveries (47%).
- Table 8.2 and 8.3 of the TIAR provide estimates of daily truck volumes over time for each work location across the project, broken up into scenarios where the southern Tunnel Boring Machine (TBM) is located at either from Domain only or from Domain and Fawkner Park respectively. The estimates suggest totals of an average of 1,040 truck movements per day across the entire project, including an average of 50 truck movements per day at the Eastern Portal for either scenario.
- The extent of truck activity at the Eastern Portal is unaffected by the choice of location of the TBM.
- Truck activity at the Eastern Portal is expected to continue for a period of 30 months commencing at the start of the overall project, with longer durations of up to 48 months at other locations.

### 4.1.3 Site Management and Construction Methodology

- Vehicle access to construction sites is to be maintained at all times for emergency access.
- Pedestrian and cycle connectivity is to be maintained during construction where possible.
- Access to businesses and residences at station locations is to be maintained where possible but "some access to some would be severely restricted".
- "Early works" tram diversions will be undertaken to avoid disruption to tram services during construction, specifically the diversion of Tram Route 8 which runs along Toorak Road through South Yarra, from Domain Road to Toorak Road west of Park Street to facilitate construction of Domain Station.
- Detailed Construction Management Plans will be implemented in each precinct to
    - minimise the disruption to traffic caused by construction, including management of truck movements,
    - minimise truck movements during peak periods to reduce adverse impacts on peak hour traffic ,
    - divert traffic to alternate routes and / or encourage motorists to use alternate routes, and
    - minimise truck movements at night time to reduce adverse impacts on residents.
- The plans will also identify construction traffic routes to direct traffic away from local streets and to the arterial freeway network as quickly as possible.

## 4.2 Construction Plan and Access – Eastern Portal

### 4.2.1 Construction Requirements at Eastern Portal

Table 8.5 of the TIAR sets out a summary of key issued identified in the management of construction traffic for each precinct.

For Precinct 8, the Eastern Portal, the following is noted:

*"The eastern portal works involve connection to the existing rail networks.*

***Traffic** management arrangements would need to be developed to minimise truck activity during construction works and minimise associated impacts on local residents and the operation of Toorak Road during peak periods.*

*Traffic management plans need to identify and address site specific potential conflicts between trucks movements to and from the construction work site and the other transport users, particularly vulnerable users like pedestrians and cyclists including the high level of pedestrian activity along Toorak Road associated with South Yarra Station.*

***Public transport** operations (service frequency and connectivity) would need to be maintained or measures introduced to provide replacement services as a result of numerous temporary occupations on the Frankston, Dandenong and Sandringham lines through South Yarra Station.*

*Truck movements to and from Toorak Road may need to be actively managed to avoid disruption to tram services along Toorak Road.*

***Pedestrian and cycling** facilities need to provide safe and efficient movement of pedestrians and cyclists around the construction work site during the construction phase."*

A more detailed assessment of construction traffic impacts is subsequently provided on Section 8.11 including a broad assessment of existing conditions, including the surrounding arterial and local road network, public transport facilities and pedestrian and cycling infrastructure.

The proposed layout of the construction site for Precinct 8 is shown on Map 14 of the exhibited map book and reproduced in Figure 4.1.

### 4.2.2 Proposed Construction Traffic Routes

Proposed Construction Traffic Routes to the Eastern Portal is shown in Figure 8.23 of the TIAR and detailed in Appendix C – Construction Traffic Routes.

The proposed routes and access points to the Eastern Portal are shown in Figure 4.2 of this report.

Section 8.11.2 of the TIAR details the issues and consequent proposals related to construction at the Eastern Portal and access to the site, with the following key issues noted.

a) Vehicle (truck) access options to the construction site are nominated as

   i) Route 1 – Kings Way, St Kilda Road, Toorak Road West to Punt Road.

   ii) Route 2 – MacRobertson Bridge, Alexandra Avenue, Chapel Street to Toorak Road.

b) Immediate access (shown dashed green in Figure 4.2 of this report) is then proposed via Toorak Road between Punt Road and Chapel Street and Chapel Street between Toorak Road and Arthur Street, and a series of local roads including Osborne Street, William Street, Arthur Street and Chambers Street.

c) Section 8.11.2 also suggests that access is expected to be required from Punt Road, Chapel Street, Toorak Road, Commercial Road and some local streets around South Yarra including William Street, Arthur Street Osborne Street and Fawkner Street.

d) The widening of the rail tracks to facilitate connection of the Dandenong line to the MMR tunnel will require the removal of the existing William Street bridge over the rail line during the construction period, with a new bridge proposed at completion of the work, reinstating the existing local road network.

e) Lovers Walk, a pedestrian path running along the northern side of the railway line between Toorak Road and Chapel Street will be demolished during the construction phase, with a new pedestrian link provided following completion of the works.

f) A temporary bridge to the South Yarra Siding is proposed from Osborne Street to provide vehicular access to the site during the construction period.

**Figure 4-1 Eastern Portal Construction Site – Concept Layout**

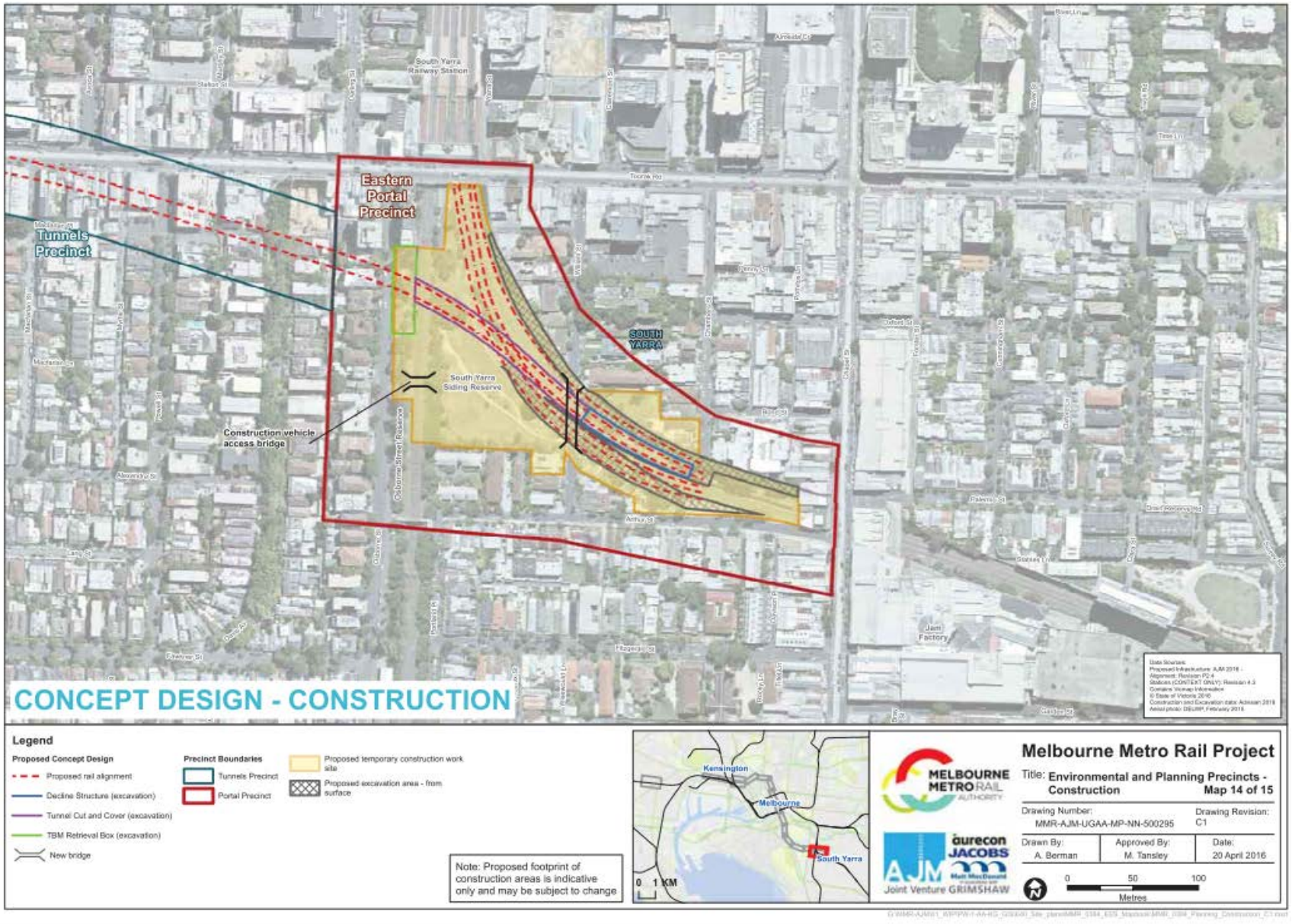
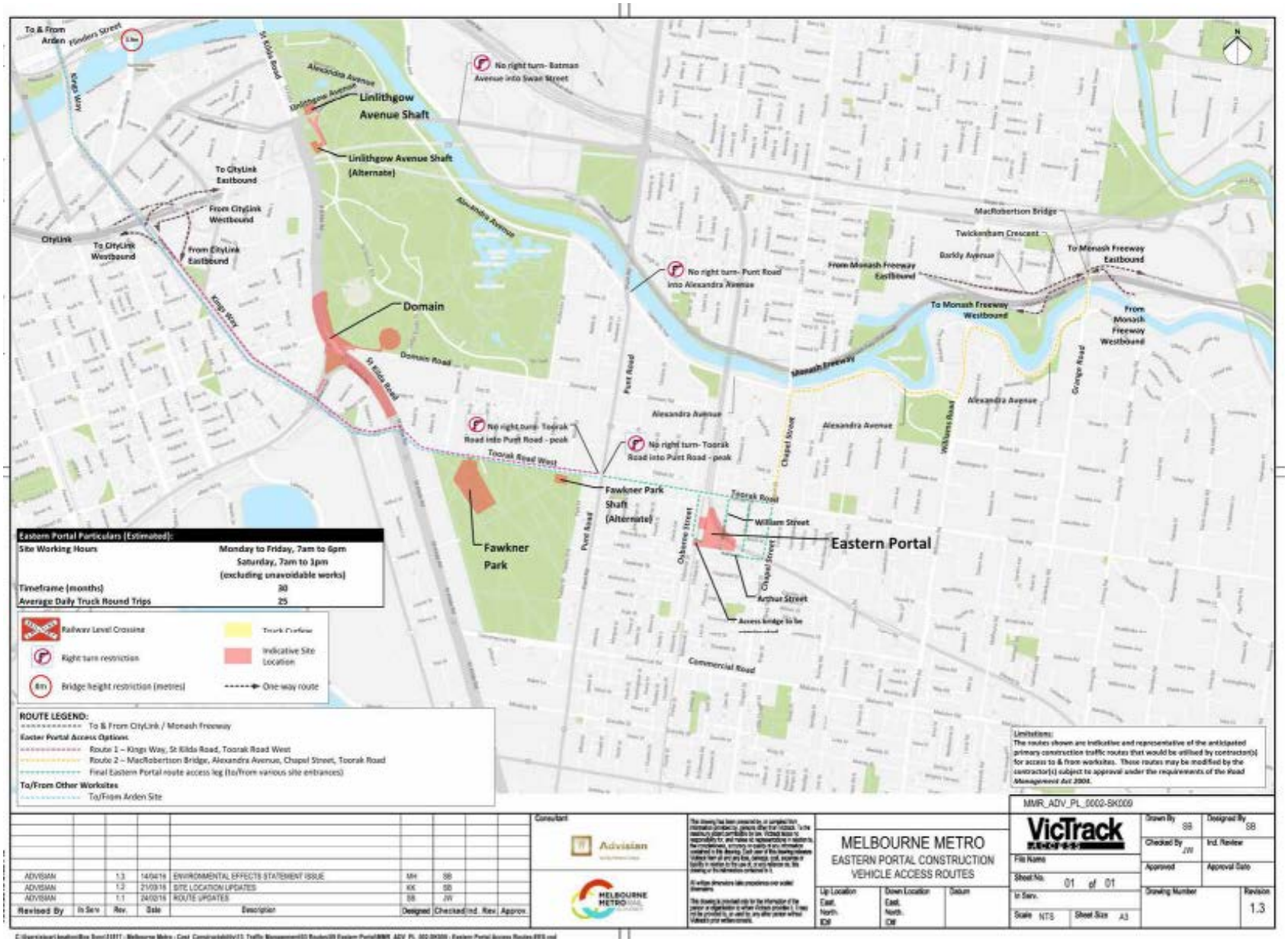


**Figure 4-2 Eastern Portal Construction Site – Nominated Access Routes**



### 4.2.3 Construction Traffic Impact Analysis

The Road Transport Impact Assessment contained in Section 8.11.3 states that it is expected that construction activity at the Eastern Portal will continue for 30 months, with construction required 24 hours, 7 days per week over that period. Truck access and movements would operate over standard working hours.

An average of 50 truck movements per day will be required to access the construction site, 25 movements in and 25 out. Peaks of 62 truck movements per day are estimated.

The assessment of truck movements and operational analysis states that;

"*The proposed construction traffic routes developed for the precinct focus on moving truck and other construction traffic to Toorak Road as quickly as possible to avoid disruptions to local residents. The expected level of construction activity could be accommodated readily by Toorak Road outside of peak periods, with active traffic management required during peak periods to minimise delays to trams movements and traffic flow along Toorak Road.*

*Daily volumes along Toorak Road, the key access route to the site, are quite high with around 18,000 vehicles per day currently travelling along Toorak Road. With the expectation that all trucks would use Toorak Road, for access to the eastern portal construction works site the 60 trucks represents less than 1 percent increase in daily volumes. As much of the truck traffic would travel outside peak periods, this volume of construction traffic would be unlikely to significantly affect overall operations in the area".*

*"No modelling has been undertaken of the eastern portal construction activities, as the data or site observations indicate that base volumes are low and modelling is not required to support the assessment.*

*The construction work is located in a residential area, which means the impact of truck movements and construction activity through the area should be minimised by restricting operations to daylight hours to minimise night time impacts on residents. Operations should also be kept to outside of peak periods to minimise impacts on Toorak Road that has a strong traffic carrying function in peak periods and is also a major tram route.*

*Given the relatively low number of trucks shown above, which would represent a small fraction of total volumes on the construction routes, it is expected that this level of traffic can be managed effectively with minimal impact. There would be localised traffic and parking disruptions to local streets including, Arthur Street, William Street, Osborne Street and Chambers Street with construction vehicles using these roads to access the construction work sites"*

*"There may be occasional disruption to tram movements along Toorak Road due to truck movements but these are expected to be limited in frequency and duration. Otherwise impacts of construction vehicles on travel times and reliability of bus and tram services would be negligible given the very small proportion this represents of the total traffic volumes on the key roads within the vicinity of the precinct."*

### 4.2.4 Environmental Performance Requirements

The recommended Environmental Performance requirements for the construction period of the Eastern Portal is discussed in Section 8.11.6 of the TIAR, setting out requirements for road transport, public transport, active transport and travel demand management.

The measures effectively require the development of Transport Management Plans for the construction period which are recommended to include:

- Management of any closures to traffic lanes required, including but not limited to, Osborne Street and William Street.
- Monitoring of travel behaviour changes caused by construction work, including pre construction baseline data and periodic reporting of behaviour change. (I take this as being collection of traffic volume data prior to construction commencing and periodic monitoring to determine changes to traffic patterns and identification of issues which may arise from traffic transfers or disruption).
- Recognition of other projects operating concurrently where relevant.
- Potential routes for construction traffic.
- Alternate routes to maintain connectivity for road users during the construction period.
- Provision of car parking for construction workers where possible.
- Development of emergency services access plans during the construction period.

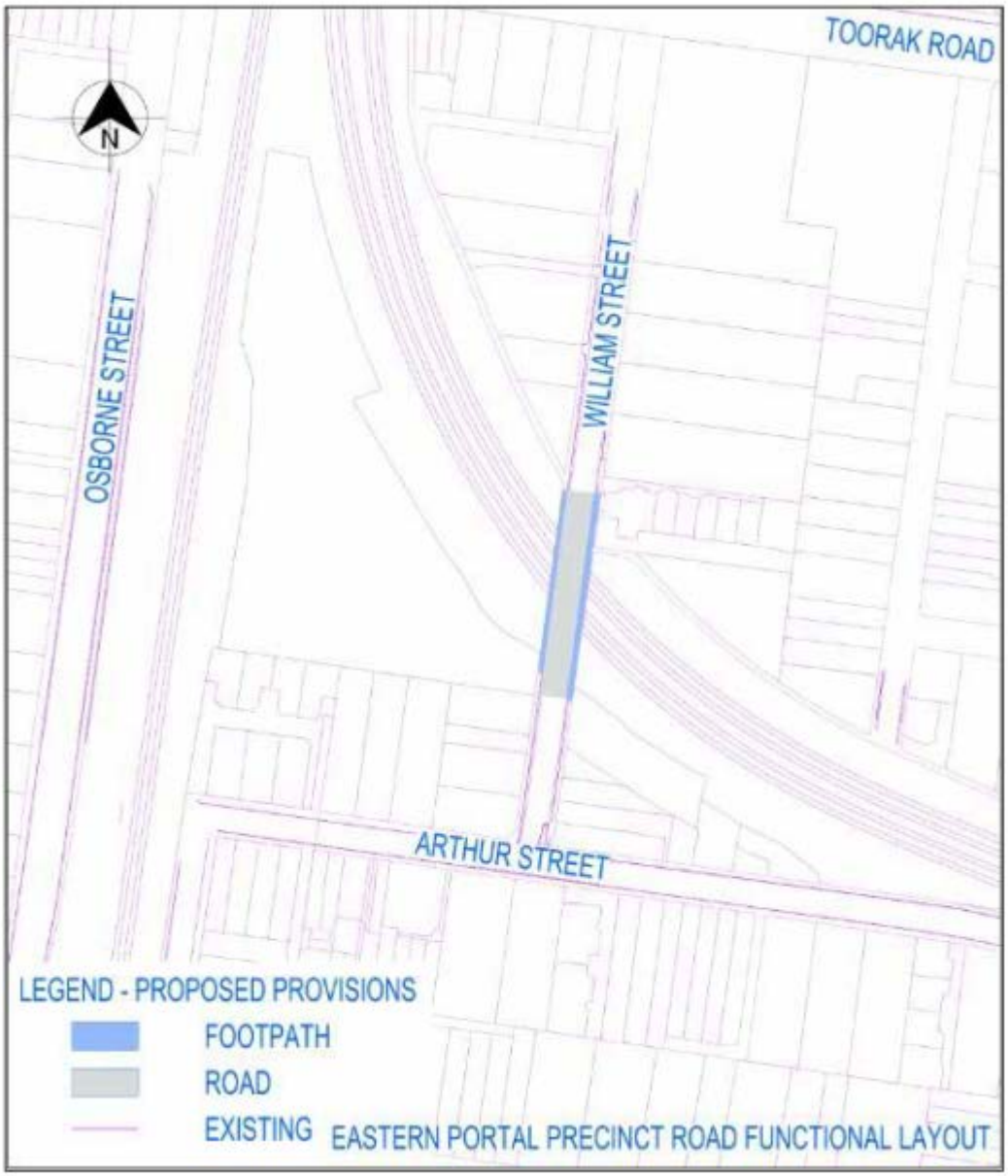
- Development of a plan to minimise disruption to rail services during construction.
- Implement measures to minimise disruption to the tram and bus networks during construction including replacement services for disrupted rail customers.
- Implement transport measures to maintain pedestrian and cyclist connectivity during construction and safety of site access points to avoid conflict between pedestrians and construction traffic.
- Implement a travel demand management strategy.

# 5 Operational Phase – Precinct 8

## 5.1 Road Network Changes

Following completion of the construction phase of the project it is proposed that the road network will be returned to existing conditions with the proposed reinstatement of the William Street railway bridge at completion of the works with the functional design shown in Figure 5-1.

**Figure 5-1 Proposed Road Functional Layout – William Street Bridge**




No other changes or improvements to the road network are currently contemplated.

The Transport Report states that, as the road network is unchanged, there will be no net impact on road based transport as a consequence of the project.

## 5.2 Public Transport Connections

An assessment is undertaken in Section 9.11.2 of the TIAR as to the implications of the project on public transport linkages and connections within Precinct 8 centred on South Yarra Station.

The report notes that, besides the MMRP, there are no other improvements proposed to public transport services (ie buses or trams) in the vicinity of the precinct.

In assessing the impact of the project on public transport connections in the area, the report indicates that the MMRP, while rerouting the Cranbourne / Pakenham services away from South Yarra Station and hence decreasing services to the station, is expected to result in a freeing up of capacity on the Sandringham and Frankston lines to City Loop via Richmond, such that more frequent services will be able to be provided on those lines.

The report states that due to the removal of the Cranbourne / Pakenham services from South Yarra Station, that there will be a significant decrease (44% in the AM and 63% in the PM) in passengers transferring between rail services at South Yarra Station and adjoining tram / bus services along Toorak Road.

It is however unclear as to whether this relates to

- less people using trams along Toorak Road to transfer to trains at South Yarra Station as a consequence of the reduced services,
- less people alighting at South Yarra Station to transfer to tram services along Toorak Road to St Kilda Road, or
- a combination of both.

The report does not provide any estimates of increased train patronage levels at South Yarra Station as a consequence of continuing population growth in the area, the adequacy of the upgraded services along the Frankston and Sandringham lines to cater for increased patronage demands.

There is also no analysis apparent as to expected patronage increases or resultant levels of service of the Toorak Road as a consequence of population growth or the removal of the Cranbourne Pakenham interchange option at South Yarra Station.

There is also no analysis apparent as to the patronage implications of the proposed rerouting of Tram Route 8 from Swanston Street to William Street

There appears also to be uncertainty as to whether Tram Route 8 will be rerouted back to Domain Road following completion of the project.

In respect to the Eastern Portal precinct, the Transport Report concludes however that "*there will be negligible impact to tram network or bus services within the eastern portal precinct".*

## 5.3 Active Transport Connections

It is indicated in the Concept Design – Operations shown in Figure 3-2 of this report, that a pedestrian bridge connecting Osborne Street and the South Yarra Siding Reserve will be constructed to provide ongoing connectivity to the reserve from the west, possibly by retention or modification to the access bridge proposed during the construction phase.

It is noted however that connection is not discussed or analysed in the TIAR.

In addition, it is intended that a pedestrian path will be reinstated along the north side of the rail line between Toorak Road and Chapel Street, replacing Lovers Walk which is required to be demolished during the construction phase.

The principle active transport assessment undertaken in the TIAR is a review of pedestrian connections to South Yarra Station following completion of the MMRP.

It is estimated in Section 9.11.3.2 of the TIAR that there will be a comparative reduction in total passenger entries / exits at South Yarra Station as a consequence of the MMRP during peak periods, as well as a reduction in the number of transfers occurring between rail lines, with the comparative peak hour volumes summarised in Table 9.60 and reproduced in Figure 5-2.

**Figure 5-2 South Yarra Station – 2031 Melbourne Metro Passenger Entries, Exits and Transfers**

| Station Entrance | AM Peak (7:00am – 9:00am) | | PM Peak (4:30pm – 6:30pm) | |
|---|---|---|---|---|
| | Total Entries and Exits | Transfer | Total Entries and Exits | Transfer |
| **2031 No Project** | 9,350 | 1,610 | 8,540 | 1,460 |
| **2031 Melbourne Metro** | 7,480 | 990 | 7,450 | 410 |
| **Difference 2031 Melbourne Metro - 2031 No project** | -1,870 (-20%) | -620 (-39%) | -1,090 (-13%) | -1,050 (-72%) |

**Source: 2031 Project Case ClicSim passenger modelling - B23 (PM) and B26 (AM)**

The TIAR notes that, while the MMRP results in a reduction in passenger numbers using South Yarra Station compared to the “no build” case, modelling shows that there will still be an increase in passenger numbers in peak periods compared with existing (2012) conditions, equivalent to 20% in the AM peak and 43% in the PM peak.

As a consequence, the TIAR concludes that the project will have a beneficial impact on the pedestrian network around South Yarra station.

Overall the TIAR concludes that the implementation of the recommended Environmental Performance Requirements will result in a very low residual risks to the transport network and the operations of Melbourne Metro following completion of the project.

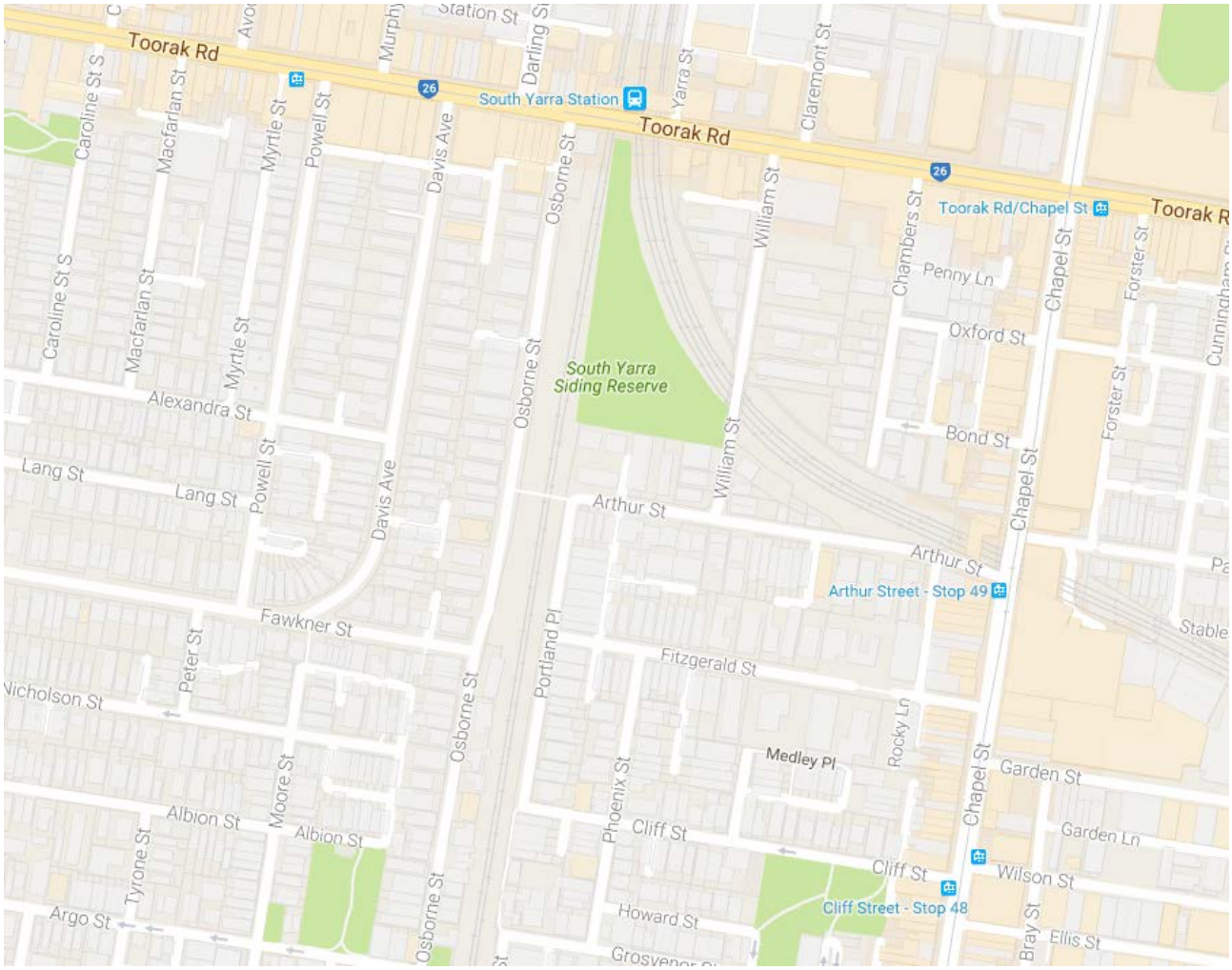
# 6 Review of Issues

## 6.1 Implications of Construction Works

### 6.1.1 Site Access and Review of Options

A plan of the road network surrounding the South Yarra Siding area and Precinct 8 is shown in Figure 6.1.

**Figure 6-1 South Yarra Siding (Eastern Portal) – Surrounding Road Network**




During the construction of the MMRP significant construction works are proposed at the Eastern Portal which will require a workforce of up to 93 people on a daily basis and an average of 50 truck movements per day over a 30 month period removing spoil and delivering concrete and other construction materials.

The EES indicates that the overall project will require 24 hour / 7 day per week construction, particularly for the tunnelling components, however it is unclear if this will apply within Precinct 8. Reference to the TIAR indicates that truck movements, if not work hours, may be limited to daylight hours only, and possibly outside of peak periods on the arterial network.

Access to the work site is clearly a significant issue having regard to the limitations of access from the arterial road network and the constraints which are evident with respect to:

- The need to demolish the William Street Bridge to facilitate track deviation works,
- The physical restriction preventing direct access from Toorak Road, as well as the disruption which would result if it was possible,
- The extremely constrained and sensitive local road network to the south of the site,
- Limitations on access to the site resulting from the existing rail infrastructure and private property constraints.

The vehicle access routes to the site as shown in Figure 4-2 of this report, proposes that truck movements to the site will be directed to utilise two alternate arterial routes,

- from the west via Toorak Road, and
- from the north east via Chapel Street and Alexandra Avenue.

Direct access to the site is then proposed via a number of local routes including Osborne Street, Williams Street, Chambers Street, Chapel Street (south of Toorak Road) and Arthur Street.

Alternate routes via Commercial Road and Fawkner Street are also foreshadowed in the TIAR.

I have assessed the various access proposals to the site discussed in the TIAR and my views are outlined as follows.

#### *6.1.1.2 Osborne Street*

Osborne Street is a local street running south from Toorak Road parallel to the Sandringham rail line connecting to Commercial Road. Between Toorak Road and Argo Street, Osborne Street operates two way, reverting to one way south bound between Argo Street and Commercial Road.

South of Toorak Road, Osborne Street has a pavement width of approximately 11 metres which provides comfortably for 2 way traffic and parallel parking along each kerb as shown in Figure 6-1.

**Figure 6-2 Osborne Street South of Toorak Road**

The east side of Osborne Street in this section fronts the Osborne Street reserve adjacent to the rail line, while the western side is predominantly residential.

South of Fawkner Street, Osborne Street narrows to approximately 7.0 metres which allows parking on one side only to Argo Street and on both sides in the one way section. South of Fawkner Street, Osborne Street is fronted by residential properties on both sides.

The Vehicle Access Plan for the Eastern Portal contemplates the construction of a bridge between Osborne Street and the South Yarra Siding to allow construction access from Osborne Street. It is considered that in access terms, this proposal is feasible as a means of providing appropriate access to the site, however truck

access should be limited to movements between the site access and Toorak Road, with truck movements to the south prohibited.

To facilitate the access, parking on the east side of Osborne Street between the bridge access and Toorak Road may need to be restricted, and traffic islands south of Toorak Road and kerb extensions at the Toorak Road intersection removed or modified.

Due to the residential nature of Osborne Street, truck access should be limited appropriately to ensure reasonable residential amenity is maintained.

In my opinion, truck access to the south is inappropriate given the reduced carriageway width and one way operation. Potentially however, some limited access could be considered via Osborne Street and Fawkner Street to Punt Road, subject to a special needs requirement for use of that route and consultation with Council and effected residents.

#### *6.1.1.3 William Street / Arthur Street*

William Street is a local street that runs south from Toorak Road to Arthur Street and currently provides the only vehicular access to the South Yarra Siding on the south side of the rail bridge.

William Street truncates at Arthur Street, which is an east west street running from Chapel Street to the Sandringham rail line, where it truncates at Portland Place.

Traffic control works have been installed at the intersection of William Street and Arthur Street to prevent traffic from turning left from William Street. It is understood that this treatment was originally installed as part of access limitation on the Jam Factory site and has subsequently been retained to preclude rat-running through the residential precinct between Toorak Road and Chapel Street.

**Figure 6-3 William Street looking south and Arthur Street Intersection**


William Street has a pavement width of approximately 8.5 metres which provides for parking along each kerb and single lane two way traffic. Intermittent kerb extensions have been installed as traffic calming measures.

South of Toorak Road, William Street is predominantly residential in nature, with private property on the western side, and the Frankston Dandenong rail lines, physically preventing access to the south Yarra Siding north of the rail bridge.

As detailed in the EES, it is necessary to remove the bridge in order to undertake track relocation works and, as such, access to the Eastern Portal will only be available from the southern end of William Street via Arthur Street.

**Figure 6-4 William Street Rail Bridge and South Yarra Siding Access**

Arthur Street west of Chapel Street is a local street with a pavement width of approximately 7.5 metres which provides for parking along each kerb and single lane two way operation.

**Figure 6-5 Arthur Street west of Chapel Street**

It is considered that truck access to the site via Arthur Street and William Street south is not appropriate or feasible due to the physical constraints of the streets and the immediate residential interface.

In my view access to the Eastern Portal from the south via William Street should be precluded from the adopted construction access plan, unless it is absolutely required for specific deliveries which can only be brought to the site from this direction.

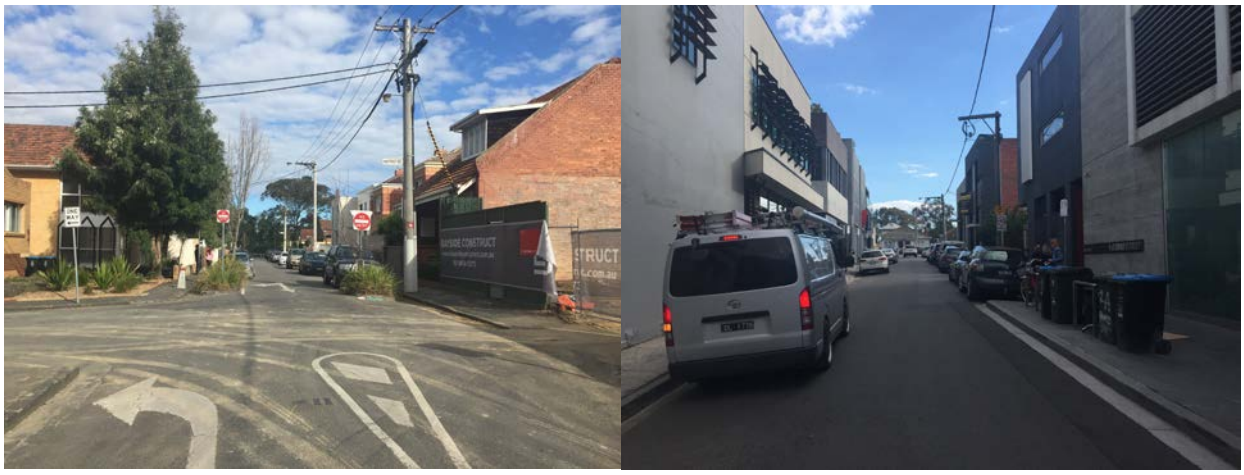
A specific management plan would need to be needed for this purpose which would require temporary parking bans and removal of traffic management treatments.

#### *6.1.1.4 Chambers Street / Bond Street*

Chambers Street is a local street that runs south from Toorak Road, truncating at the Dandenong Frankston rail line.

The street connects to Chapel Street via Bond Street and Oxford Street which operate as a one way pair, with the section of Chambers Street between Bond and Oxford operating one way in a north bound direction.

**Figure 6-6 Chambers Street and Bond Street**



Chambers Street has been included as a potential construction access route however in my opinion it is inappropriate as an access option to the construction area due to the narrowness of the street and one way configuration south of Oxford Street

It is also noted that Chambers Street does not connect to Arthur Street or the South Yarra Siding via William Street and hence direct access to the construction site from the southern end of Chambers Street appears problematical.

#### *6.1.1.5 Recommended Site Access*

Having regard to the location of the Eastern Portal works site and the access constraints identified above, it is my opinion that the only feasible option for provision of ongoing truck access to the site during the 30 month construction period is via Osborne Street and Toorak Road.

It is recognised that the limitation of access to a single point will result in a concentration of truck movements to the northern end of Osborne Street and this will result in amenity and access issues for nearby residents and businesses.

This will need to be carefully managed, including a strict works program which limits amenity impacts resulting from truck movements to acceptable periods.

A Transport Management Plan to the site should be developed prior to works being scheduled in close consultation with Stonnington Council and affected residents and businesses. The plan should include details as management of access to the site including, but not limited to, the following:

1. Acceptable hours of operation and use of the local street for access to the site by truck traffic.
2. Modifications to existing traffic management treatments and parking controls required to facilitate the required site access.
3. Traffic management controls required to minimise disruption to existing traffic and prevent truck movements into local areas to the south.
4. Provision of replacement parking as required.
5. Traffic control required at the intersection of Toorak Road / Osborne Street (potentially temporary traffic signals) to control traffic movements into and out of Toorak Road.

### 6.1.2 Impact on the Arterial Road Network

The Construction Access Plan for the Eastern Portal nominates Toorak Road west and Chapel Street north / Alexandra Avenue as the proposed construction access routes to the Eastern Portal.

I agree with the identification and nomination of these routes, noting appropriate connections are available to the recommended local access route via Osborne Street.

The impact of the construction activity on Toorak Road and to a lesser extent Chapel Street north will largely relate to the following issues, which are discussed in turn.

- The volume of truck traffic generated and the implications on the operation of the route during peak and inter-peak periods.
- The impact on road based public transport (ie trams) including potential delays and interruptions to services.
- The implications on parking along the arterial road.

#### *6.1.2.1 Truck Traffic Volumes and Network Performance*

It is estimated that construction activity at the Eastern Portal will generate an average of 50 truck movements per day over the 30 month construction period, with peak volumes of 60 truck movements per day.

The Transport Report states that the volume of trucks generated is low in relative terms (compared with other construction precincts along the project and as such modelling of traffic impacts was not warranted or necessary.

While I consider that this response is predominantly a consequence of the size and complexity of the overall project and the need to set priorities for detailed modelling and analysis undertaken in the relatively short time frames available to produce the Transport Assessment and EES, it is considered that, at a minimum, microsimulation modelling of Toorak Road and intersection analysis of key intersections is warranted and desirable, to ensure that through measures such as traffic signal timing and phasing and optimum operation of the road network can be achieved throughout the necessarily protracted construction period.

Ideally this should be extended to mesoscopic modelling of the immediate area to identify potential traffic displacement effects and possible ameliorative measures required.

During commuter periods, peak direction clearways operate along Toorak Road, which assist considerably in accommodating peak flow characteristics of traffic movements through the area. Outside of peak times, parking is accommodated along Toorak Road which is an integral part of the accessibility and amenity of the South Yarra Activity Centre.

A consequence of inter- peak parking is however that traffic capacity is reduced at these times, with operating conditions often congested to similar levels of service which are apparent during the commuter peak periods.

It is noted that proposals to extend Clearway times in this area over recent years to improve road network performance was strongly resisted and ultimately abandoned.

A notional response in relation to potential operational issues along Toorak Road was that truck movements could be confined to the inter-peak periods to reduce traffic congestion at peak times. In my opinion, the concentration of truck movements to these times may exacerbate traffic congestion, at the expense of access to businesses in the area, and a more rigorous assessment as to available capacity and scheduling of truck movements is required in the preparation of a satisfactory Traffic Management Plan.

In the end, it is likely to be a fine balance between scheduling of truck movements to minimise disruption to the road network and local amenity impacts with truck movements concentrated to Osborne Street.

It is noted that the nominated access route to the west along Toorak Road passes adjacent to Fawkner Park and close to the Domain Station construction precinct such that combined effects are likely to occur given the higher levels of construction activity forecast for these sites and proposed reductions in road capacity during the construction period.

These combined impacts have not, as I understand it been fully modelled, and the potential transfer effects of traffic need to be modelled prior to construction commencing or, at a minimum, monitored during the construction phase.

#### *6.1.2.2 Road Based Public Transport*

The concentration of truck traffic accessing the Eastern Portal will potentially impact on the operation of tram services along Toorak Road in the vicinity of the Eastern Portal.

This could be significant at intersections such as Toorak Road / Osborne Street and Toorak Road / Chapel Street where increases in truck turning movements potentially will delay tam services, exacerbating additional delays forecast for the route in the Domain Precinct.

Microsimulation and Sidra analysis is required to identify potential increases in delays identifying management measures required to ensure tram delays are minimised.

## 6.2 Transport Management Plan

Having regard to the review of potential issues in facilitating, it is considered that a Transport Management Plan is required to be developed to manage construction activity at the Eastern Portal Site, informed by transport modelling assessing specific issues related to Precinct 8 and the surrounding road network.

The Traffic Management Plan should be undertaken in consultation with the City of Stonnington, directly affected residents and traders, VicRoads and PTV.

Matters which I consider should be addressed in the Plan are as follows.

1. Details of construction activity proposed, including truck movements and the required scheduling of truck movements required to remove spoil and transport concrete and other materials to the site.
2. Proposed site management, including active construction areas and identification of potential restrictions on movement within the site which may impact on external access requirements.
3. Development of truck access plans to the site, centred on predominant (if not sole) access being undertaken via a new bridge to Osborne Street and Toorak Road.
4. Traffic modelling of the intersections of Toorak Road / Osborne Street to determine works required to facilitate site access, including required traffic control and potential removal of existing traffic management treatments.
5. Identification of on street parking required to be removed to facilitate access and location of replacement parking.
6. Identification of alternate routes which may be required for specific movements to the site which may be required to for internal access reasons, including frequency, types of truck movements and duration of alternate access required.
7. Traffic management works required to preclude truck movements to the south of the site access in Osborne Street.
8. Estimates of car parking demands which will be generated by the proposed onsite workforce, including consideration of demands of shift overlap periods, and location of staff parking to be provided.
9. Proposed measures to restrict workforce parking in existing on street areas.
10. Traffic modelling of Toorak Road to determine the impact of construction activity, including potential impacts for construction sites at Fawkner Park and Domain, and determination of required traffic management works to ensure retention of satisfactory levels of service and minimal additional delays to trams.

## 6.3 Public Realm Improvement Concept

The City of Stonnington, as part of their submission to the Melbourne Metro Rail Project EES, have prepared a concept for public realm improvements in the South Yarra Siding / South Yarra Station area which it is seeking to be implemented in association with the project.

The schematic diagram, showing the identified improvements being sought, is attached as Figure 6-7.

In my opinion, the proposal would considerable improve the transport and movement network in the precinct in the following ways:

- Improved pedestrian access to South Yarra Station from Toorak Road and from Yarra Street to the Forest Hill Precinct,
- Provision of upgraded tram stops in Toorak Road adjacent to the station, improving intermodal connectivity and safety,
- Provision of improved connectivity to South Yarra Siding via a connection to Toorak Road and a new civic plaza,
- Provision of the new pedestrian / cycle bridge between Osborne Street and South Yarra Siding, linking to the proposed regional bicycle path along the Sandringham Rail line,
- Improved east west pedestrian connectivity between South Yarra Station and Chapel Street via a new extended civic plaza and shared path along the southern side of the rail reserve and plaza area at William Street.

**Figure 6-7 South Yarra Siding Improvement Proposal – City of Stonnington July 2016**