

**MELBOURNE METRO RAIL PROJECT ENVIRONMENT EFFECTS STATEMENT INQUIRY
AND ADVISORY COMMITTEE**

MMRA TECHNICAL NOTE

TECHNICAL NOTE NUMBER: 027

DATE: 19 August 2016

PRECINCT: Parkville, CBD North, CBD South and Domain Station Precincts

EES/MAP BOOK REFERENCE: EES Chapter 8; Technical Appendix D – Transport Impact Assessment

SUBJECT: Transport

Response to Section 2 of the ‘Preliminary Matters and Further Information’ Request dated 25 July 2016.

NOTE:

1. This Technical Note has been prepared with the assistance of AJM and responds to Section 2 of the ‘Preliminary and Further Information’ request made by the IAC on 25 July 2016 (**Request**).
2. For ease of reference, this Technical Note adopts the topic headings set out in the Request and reproduces the relevant ‘references’ and ‘requests’ prior to setting out MMRA’s response.

2.1 Modelling animations

(i) Reference

The Transport Impact Assessment (TIA) at p16 states that various modelling tools have been used, some of which can provide animated outputs.

(ii) Request

The IAC requests:

1. *short animation clips, where available, to demonstrate typical peak hour traffic conditions during construction phase and operations, with and without MMR, around the Parkville and Domain Precincts*

2. *short animation clips, where available, of pedestrian movements on public footpaths and crossings in the immediate vicinity of the station entries at Parkville, CBD North, CBD South and Domain.*

MMRA Response:

Request 1 – Animations from traffic simulation models

3. A series of animation videos from the traffic simulation models for the Parkville station precinct (from the Aimsun models) and the Domain station precinct (from the VISSIM models) have been prepared. The videos are consistent with the analysis presented in Technical Appendix D Transport Impact Assessment of the EES. The simulations demonstrate typical peak hour traffic conditions during construction phase and operations, with and without Melbourne Metro, around the Parkville and Domain station precincts.
4. The traffic volumes and trip distribution patterns in the animations are sourced from the VITM analysis.
5. These videos will be available via download from the following website:
<http://metrotunnel.vic.gov.au/ees/inquiry-advisory-committee>
6. The following videos are included:
 - a. Parkville Station – Grattan Street and Royal Parade Precinct - Year 2021.
 - i. 2021 Base Case (no project) AM and PM peaks
 - ii. 2021 Construction Case AM and PM peaks
 - b. Parkville Station – Grattan Street and Royal Parade Precinct - Year 2031.
 - i. 2031 Base Case (no project) AM and PM peaks
 - ii. 2031 Project Case AM and PM peaks
 - c. Domain Station – Domain tram interchange - Year 2021.
 - i. 2021 Base Case (no project) AM and PM peaks
 - ii. 2021 Construction Case AM and PM peaks
 - d. Domain Station – Domain tram interchange - Year 2031.
 - i. 2031 Base Case (no project) AM and PM peaks
 - ii. 2031 Project Case AM and PM peaks

Request 2 – Animations from pedestrian simulation models

7. A series of animation videos from the STEPS pedestrian simulation models for the legacy Parkville station precinct, CBD North station precinct, CBD South station precinct and Domain station precinct have been prepared. These videos are consistent with Technical Appendix D Transport Impact Assessment and will be

available via download from the following website:

<http://metrotunnel.vic.gov.au/ees/inquiry-advisory-committee>

8. STEPS micro-simulation software has been used to assess pedestrians moving through stations and the surrounding street level precincts, interacting with other pedestrians and their environment. This package includes a sample of video animations extracted from the STEPS precinct models for the Base case (no project) and Project Case (with Melbourne Metro) AM and PM peak hour scenarios for 2031.
9. The inputs, approach, and outputs of each of the STEPS precinct models is consistent with the analysis presented in Technical Appendix D Transport Impact Assessment of the EES. The following key comments and/or assumptions should be noted when viewing these animations:
 - a. Tram movement animations are provided for visualisation purposes only. In the STEPS models, tram movement is based on a timetable or headway and is unaffected by traffic signal timings.
 - b. High pedestrian densities can be observed in locations with bidirectional flow due to minimal lane forming behaviour. This is particularly apparent in the central area of pedestrian crossings.
 - c. Street furniture is included in the models to define pedestrian walking areas.
 - d. Some pedestrians in the models are choosing the perceived shortest walk path, which at times results in dense movements around corners or adjacent to obstacles.
10. The following videos are included:
 - a. CBD North Station – La Trobe Street and Swanston Street Precinct - Year 2031.
 - i. Base Case (no project) AM and PM peaks
 - ii. Project Case AM and PM peaks
 - b. CBD South Station – Collins Street and Swanston Street Precinct - Year 2031.
 - i. Base Case (no project) AM and PM peaks
 - ii. Project Case AM and PM peaks
 - iii. Project Case scramble crossing AM peak; an option testing the impact of introducing a ‘scramble’ or Barnes crossing at the Collins Street and Swanston Street intersection.
 - c. CBD South Station – Flinders Street and Swanston Street Precinct - Year 2031.
 - i. Base Case (no project) AM and PM peaks

- ii. Project Case AM and PM peaks
 - d. Parkville Station – Grattan Street and Royal Parade Precinct - Year 2031.
 - i. Base Case (no project) AM and PM peaks
 - ii. Project Case AM and PM peaks
- 11. All videos are 5 minute extracts during the AM or PM peak hours. The videos run at approximately three times actual pace.

2.2 Domain station

(i) Reference

The TIA at p139-140 - Figures 8-20 and 8-21 Domain station precinct travel times – 2021 construction case do not indicate the closure of Domain Road.

(ii) Request

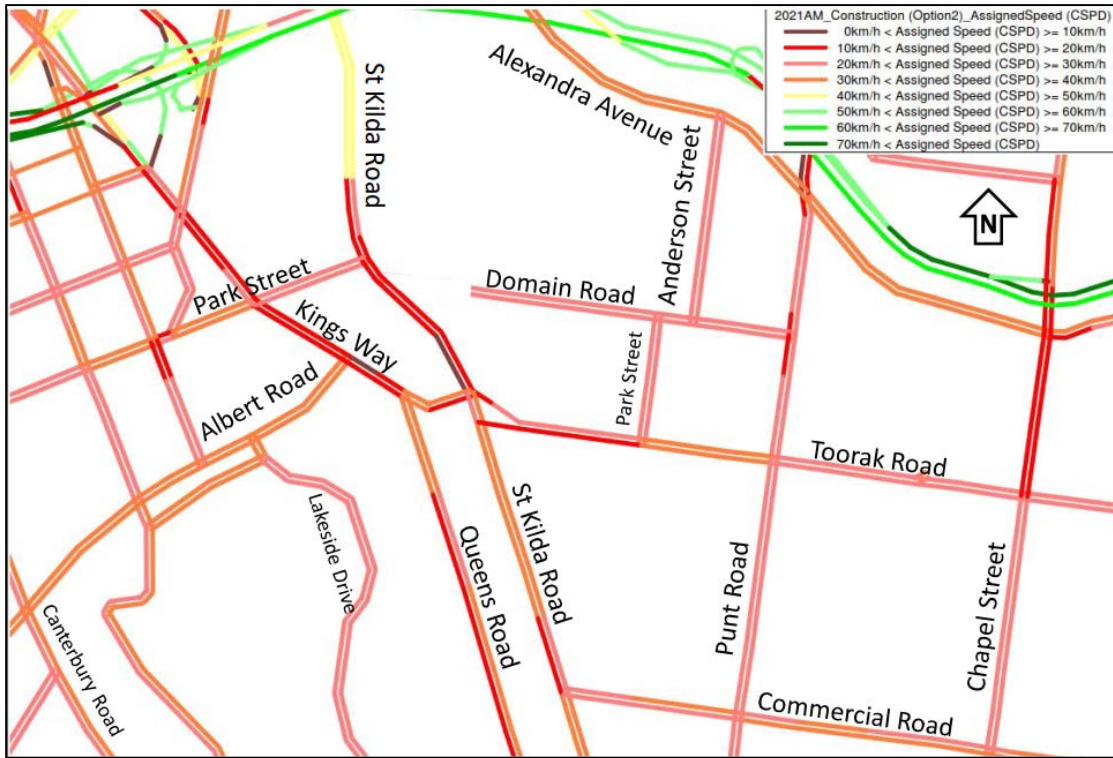
The IAC requests:

- 3. *confirmation that the outputs reflect conditions with the closure of Domain Road to general traffic.*

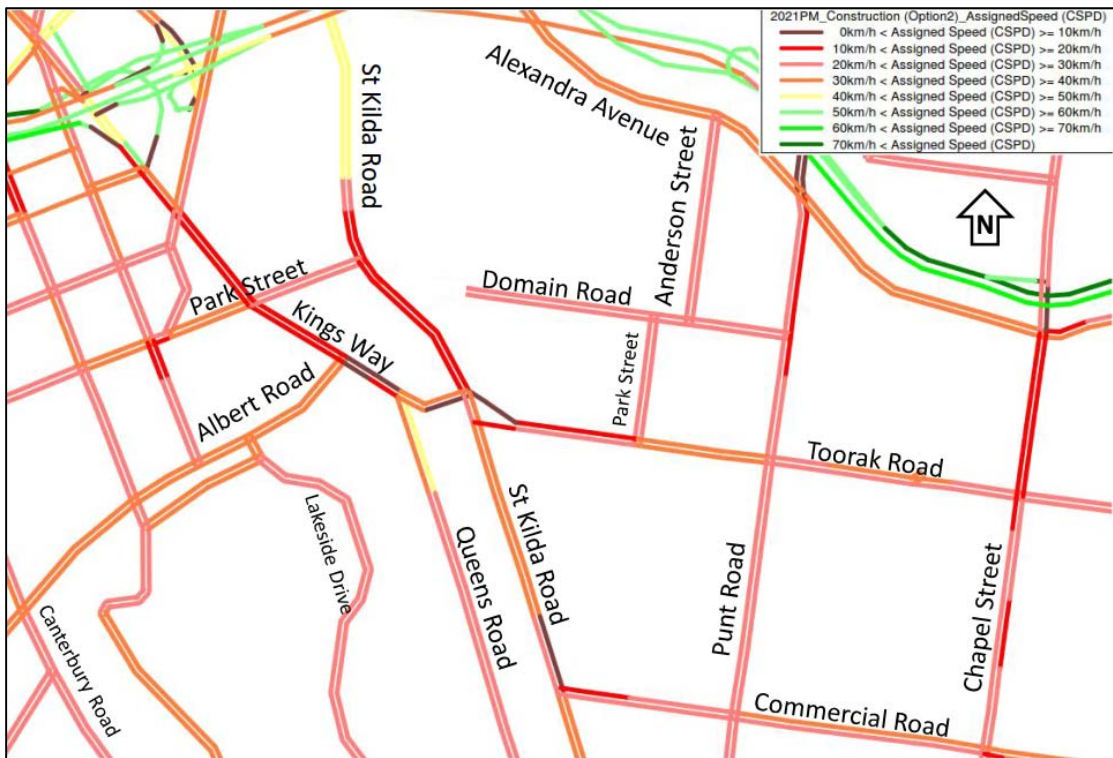
MMRA Response:

Request 3 – Domain Road closure – confirmation

- 12. It is confirmed that the models include the closure of Domain Road. In this case, the closure has been implemented in the model by banning turns, having the effect that traffic does not travel along Domain Road during the closure period. The video animations for the Domain Station – Domain tram interchange provided in response to Request 2 above show the closure.
- 13. Revised versions of Figure 8-20 and Figure 8-21 showing the closure of Domain Road are presented below:



Updated Figure 8-20 Domain station precinct travel times - 2021 Construction Case - One-lane - AM Peak



Updated Figure 8-21 Domain station precinct travel times - 2021 Construction Case - One-lane - PM Peak

(i) Reference

Appendix B – Existing Transport Conditions at p88-89, Figure 7-3 and Table 7-5 headings indicate the inclusion of existing traffic volumes for Domain Road, but they are not shown.

(ii) Request

The IAC requests:

- 4. the existing Domain Road traffic volumes.

MMRA Response:

Request 4 – Domain Road traffic volumes

14. Domain Road traffic volumes are shown in the graph below.

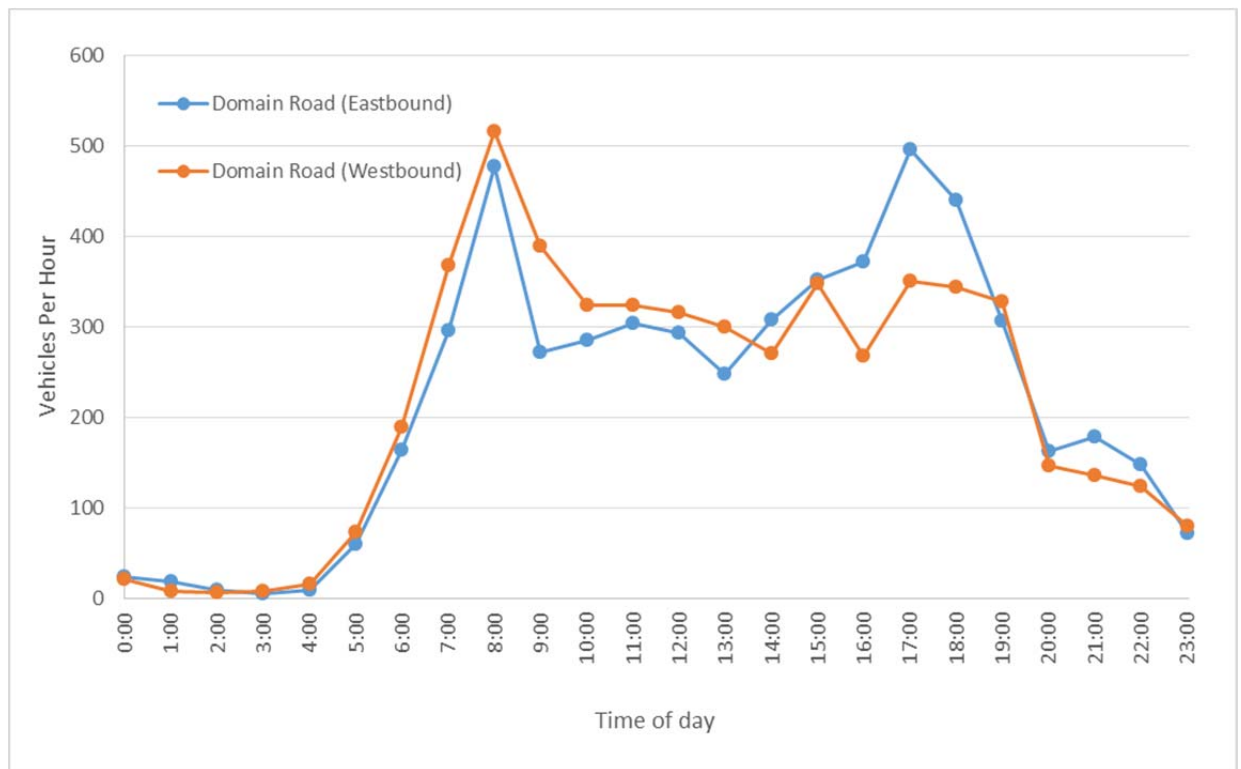


Figure 1: Daily traffic profile on Domain Road approaches to Birdwood Avenue (Source: SCATS 28 July 2016)

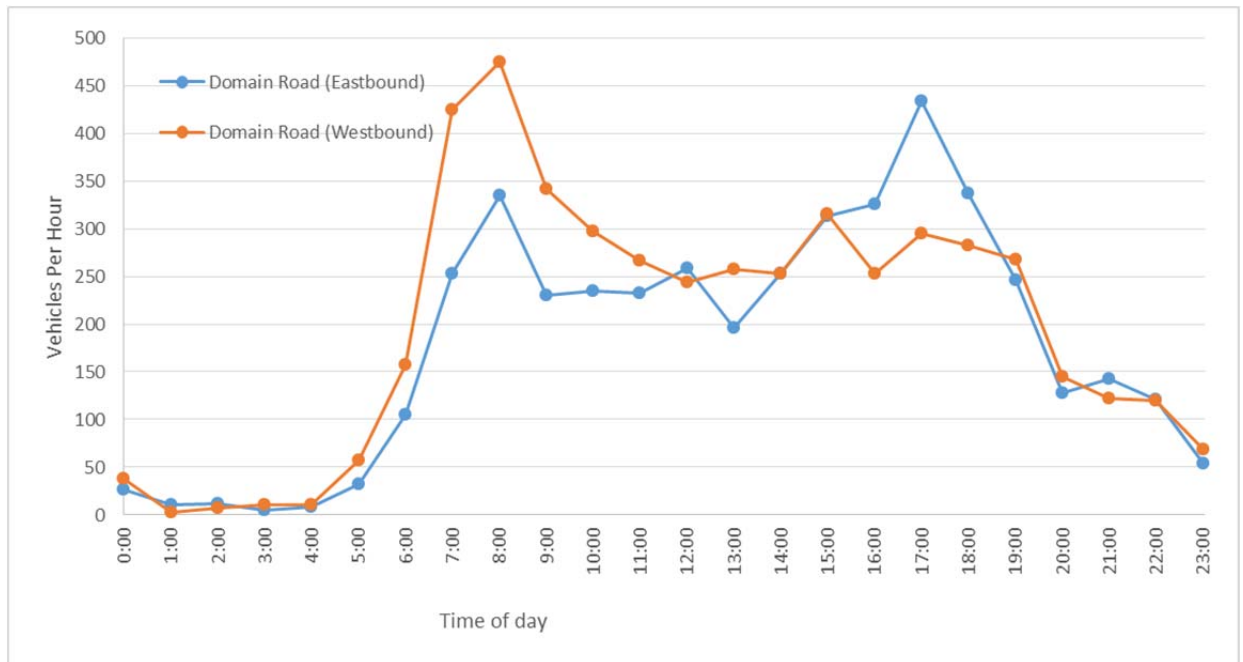


Figure 2: Daily traffic profile on Domain Road approaches to pedestrian crossing at Dallas Brooks Drive (Source: SCATS 28 July 2016)

Table 1: Weekday traffic flows on Domain Road at Birdwood Avenue and Dallas Brooks Drive

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
Domain Road at Birdwood Avenue (Eastbound)	295	477	496	440	5,292
Domain Road at Birdwood Avenue (Westbound)	368	515	350	344	5,244
Domain Road at Dallas Brooks Drive (Eastbound)	253	335	434	337	4,292
Domain Road at Dallas Brooks Drive (Westbound)	425	475	295	282	4,713

Source: VicRoads SCATS, 28 July 2016

(i) Reference

Appendix D – Transport Modelling Report Section 4.8 p83 states almost 4000 pedestrians will walk between the Domain Station and the tram superstop at St Kilda Road in peak periods.

(ii) Request

The IAC requests:

5. *analysis on how the design of the transit interchange at ground level will accommodate the movements between the Domain Station and the tram superstop, as well as movements between the tram superstop and St Kilda Road.*

MMRA Response:

Request 5 – Operation of the Domain Road transit interchange

15. STEPS has been undertaken at the Domain station tram interchange to simulate the surges in pedestrian flows caused by arriving and departing trams, and the consequent impacts on the tram stop and station entrance.
16. STEPS is an agent-based pedestrian modelling package that is used to build detailed 3D geometry and simulate complex pedestrian demand and flows. Using STEPS, the complex time-dependent interactions between the pedestrians and model geometry were captured and used to provide a more detailed insight into the operation of the tram stop platform, and the performance of the tram stop to train station interface.
17. Video simulation files of the operation of the proposed Domain tram interchange have been prepared. These video files are included in the pedestrian simulation modelling package (in response to Item 2 above) and will be available via download from the following website: <http://metrotunnel.vic.gov.au/ees/inquiry-advisory-committee>
18. The following videos are included:
 - a. Domain Station – Domain tram interchange - Year 2031.
 - i. Project Case AM and PM peaks

(i) Reference

Appendix E - 2031 Road Functional Layouts: Map MMR-AJM-PWPM-SK-RR-69837 p2 shows a potential tram superstop on Domain Road.

(ii) Request

The IAC requests:

6. *any current plans for this proposed tram superstop, and advice as to whether the superstop will be accessible from the proposed underpass below St Kilda Road.*

MMRA Response:

Request 6 – Proposed tram superstop

19. The new tram superstop will be located in the middle of St Kilda Road to the south of Domain Road. This stop will have a direct connection via escalators and a lift in the centre of St Kilda Road to the underpass below St Kilda Road, providing a convenient and efficient interchange to Domain Station.

(i) Reference

Appendix F - Construction footpath closures and diversions and Map 4 of 5, Pedestrian routes impacted by construction phase shows significant construction hoarding closing St Kilda Road.

(ii) Request

The IAC requests clarification on:

7. *the extent of hoarding proposed.*

MMRA Response:

Request 7 – Extent of hoarding

20. Hoarding would be installed around the Domain Station construction site on St Kilda Rd and the Albert Road Reserve, including car spaces to the west of the reserve. Hoarding will also be installed around Edmund Herring Oval and both sides of Domain Rd between the oval and St Kilda Rd.
21. Pedestrian access would be maintained along both sides of St Kilda Road and Domain Road and along Albert Road. Access along the existing footpaths will generally be available, except in locations where the paths need to be modified to maintain connectivity in accordance with the construction sequencing for Domain Station.

2.3 Western portal - replacement parking

(i) Reference

The TIA at p78 states that:

Options are being investigated to provide replacement parking in the vicinity of the station to minimise impacts on rail patrons driving to the station and users of JJ Holland Park, but details are not available at the time of writing ...

(ii) Request

The IAC requests:

8. *an update on this investigation and the results of that investigation.*

MMRA Response:

Request 8 – Western Portal replacement parking

22. An assessment determined that there is only one practical site for the replacement parking at the Western Portal for South Kensington station patrons.
23. The proposal is to construct car parking on the vacant site on Hobsons Street to the east of Kensington Road as shown below. The new car parking area will require passengers to cross Kensington Road and walk along the existing path along the northern side of Childers Street through the JJ Holland Park to access the station entrance near Ormond Street. No other options have been identified that provide a more practical solution to the loss of car parking.

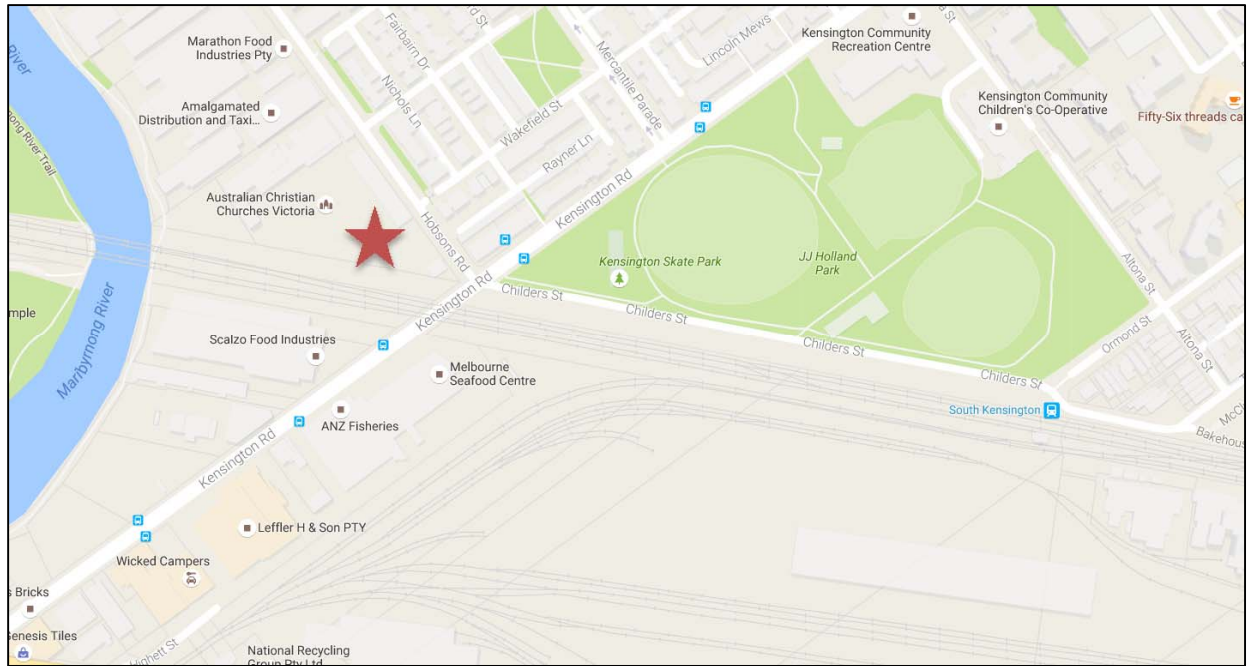


Figure 3: Proposed site for replacement car parking at Western Portal during construction

2.4 Bicycle parking

(i) Reference

The TIA, at p178, p193, p203, p213 and p228, states that 20 bicycle parking spaces will be provided at CBD stations and 50 spaces at other stations.

(ii) Request

The IAC requests advice on:

9. *how the quantum of bicycle parking was determined.*

MMRA Response:

Request 9 – Determination of bicycle parking quantum

24. The decision about the proposed number of parks at Melbourne Metro stations was informed by:
 - a. Reviewing existing regulatory or best practice requirements;
 - b. Reviewing the number of bicycle parking spaces at existing stations;
 - c. Reviewing current cycle demand at stations based on PTV data; and
 - d. Site visits and observations at existing CBD stations.
25. There is no Victorian or Australian guidance on how many bicycle parking spaces should be provided at railway stations. Guidance only exists in relation to a general requirement to provide bicycle parking at railway stations.
26. The following number of spaces are currently provided at CBD stations:

- | | |
|----------------------|----------|
| a. Flinders Street | 0 spaces |
| b. Melbourne Central | 0 spaces |
| c. Parliament | 0 spaces |
| d. Flagstaff | 0 spaces |
| e. Southern Cross | 6 racks |
27. CBD stations are already highly accessible by foot or tram (particularly within the free tram zone) from people's origin point, and therefore the potential demand for cycle parking is likely to be low in relation to the number of passengers.
 28. For a range of CBD and inner city stations, publicly available PTV data (<http://ptv.vic.gov.au/about-ptv/ptv-data-and-reports/research-and-statistics/>) indicates a range of 0% up to a 6% of total station patronage is by bicycle. Typically, the attendances at these stations are less than 1%.
 29. The data does not make clear if these bicycle trips are cyclists taking bicycles on trains for onward journeys or they are parking their bicycles at the station. However, it does confirm that the vast majority of trips to / from the CBD or inner city stations are made by passengers connecting on foot or by tram, rather than using bicycles.
 30. Passengers connecting using bicycles account for a higher percentage of trips at some inner city stations, such as South Yarra and Jolimont. However, there is no consistent pattern across the network. For example, bicycle users account for 0% of journeys to or from Kensington / West Richmond stations.
 31. Site visits were undertaken to Flinders Street Station and Melbourne Central to establish the level of bicycle parking around the stations. Site observations suggested there is some potential demand for bicycle parking at railway stations in the CBD.
 32. The City of Melbourne Bicycle Plan envisages enhancing the on- and off-road bicycle networks, and increasing bicycle parking. The Council has set targets in the 2012 Bicycle Plan to increase bicycle trips by 50%. The current draft plan for 2016-2020 states an intent to increase provision of bicycle parking at railway stations. It states that the Council will *"work with the Victorian Government to provide end of trip facilities at major transport hubs especially planned Melbourne Metro stations."*
 33. Consideration of bicycle parking demand must acknowledge that demand associated with the stations and the underlying general demand around those stations is different. Both Parkville and CBD North are examples where there is a high level of bicycle parking demand associated with adjacent universities and other key facilities, as well their location within the central city. Further, their location on the Principal Bicycle Network supports higher demand due to better access compared to other locations.
 34. In the absence of regulatory or other guidance, and without understanding how different demands could potentially overlap, MMRA initially suggested a minimum provision of:

- a. Arden 50 spaces
 - b. Parkville 50 spaces
 - c. CBD North 20 spaces
 - d. CBD South 20 spaces
 - e. Domain 50 spaces
35. The lower levels of provision for the CBD stations recognises that many cyclists travelling to the CBD from inner and middle suburbs are unlikely to transfer to train services once at their CBD destination.
36. The above proposal was presented to the Traffic and Transport Working Group on 9 December 2015 and 17 February 2016. From these meetings there was a general agreement to the levels suggested for the CBD stations. For Domain, the City of Port Phillip argued that greater provision was required based on the surrounding land use and reduced level of public transport compared to the CBD. At Parkville, it was recognised there is already a high demand for cycle parking associated with the university and other facilities, and accordingly it is unclear how many cyclists would use the station.
37. MMRA will undertake further consultation with stakeholders regarding bicycle parking, including the identification of suitable locations for bicycle parking.

CORRESPONDENCE:

No correspondence.

ATTACHMENTS:

- A. Short animation clips (file names are underlined)

Request	Location	Animation
Request 1	Parkville Station – Grattan Street and Royal Parade Precinct - Year 2021	2021 Base Case (no project) AM and PM peaks – <u>'2021 Base AM'</u> and <u>'2021 Base PM'</u>
		2021 Construction Case AM and PM peaks – <u>'2021 Construction AM'</u> and <u>'2021 Base PM'</u>
	Parkville Station – Grattan Street and Royal Parade Precinct - Year 2031	2031 Base Case (no project) AM and PM peaks – <u>'2031 Base AM'</u> and <u>'2031 Base PM'</u>
		2031 Project Case AM and PM peaks – <u>'2031 Project AM'</u> and <u>'2031 Project PM'</u>
	Domain Station – Domain tram interchange - Year 2021	2021 Base Case (no project) AM and PM peaks – <u>'160801 2021 Base – 830AM'</u> and <u>'160801 2021 Base – 530PM'</u>

Request	Location	Animation
		2021 Construction Case AM and PM peaks – <u>'160801 2021 Construction – 830AM'</u> and <u>'160801 2021 Construction – 530PM'</u>
	Domain Station – Domain tram interchange - Year 2031	2031 Base Case (no project) AM and PM peaks – <u>'160801 2031 Base – 830AM'</u> and <u>'160801 2031 Base – 530PM'</u>
		2031 Project Case AM and PM peaks – <u>'160801 2031 EES Road Functional Layout – 830AM'</u> and <u>'160801 2031 EES Road Functional Layout – 530PM'</u>
Request 2	CBD North Station – La Trobe Street and Swanston Street Precinct - Year 2031. – <u>'CBDN La Trobe St 2031 AM'</u> and <u>'CBDN La Trobe St 2031 PM'</u>	Base Case (no project) AM and PM peaks
	CBD South Station – Collins Street and Swanston Street Precinct - Year 2031. – <u>'CBDS Collins St 2031 AM'</u> and <u>'CBDS Collins St 2031 PM'</u>	Project Case AM and PM peaks
		Base Case (no project) AM and PM peaks
		Project Case AM and PM peaks Project Case scramble crossing AM peak; an option testing the impact of introducing a 'scramble' or Barnes crossing at the Collins Street and Swanston Street intersection. – <u>'CBDS Collins St 2031 AM Scramble'</u>
	CBD South Station – Flinders Street and Swanston Street Precinct - Year 2031. – <u>'CBDS Flinders St 2031 AM'</u> and <u>'CBDS Flinders St 2031 PM'</u>	Base Case (no project) AM and PM peaks
Parkville Station – Grattan Street and Royal Parade Precinct - Year 2031. – <u>'Parkville Royal Pde 2031 AM'</u> and <u>'Parkville Royal Pde 2031 PM'</u>	Base Case (no project) AM and PM peaks	
	Project Case AM and PM peaks	
Request 5	Domain Station – Domain tram interchange - Year 2031. – <u>'DM Tram Platform 2031 AM'</u> and <u>'DM Tram Platform 2031 PM'</u>	Project Case AM and PM peaks