MELBOURNE METRO RAIL PROJECT ENVIRONMENT EFFECTS STATEMENT INQUIRY AND ADVISORY COMMITTEE

MMRA TECHNICAL NOTE

TECHNICAL NOTE NUMBER:	021
DATE:	10 August 2016
PRECINCT:	CBD South Precinct
EES/MAP BOOK REFERENCE:	Map 8 (Horizontal Alignment Plans – Construction Phase)
SUBJECT:	Supplement to Technical Note 013 in relation to traffic impacts associated with construction of the Federation Square entrance to CBD South.

NOTE:

Background

1. Technical Note 013 describes the proposed construction arrangements for the Federation Square entrance to the CBD South station and contemplates closure of the westbound traffic lanes on Flinders Street, between Russell Street and Swanston Street, for four to five months.

2. This Technical Note has been prepared by AJM and summarises the traffic impacts of the works and potential traffic management.

Traffic management options

3. With the proposed closure of three west bound traffic lanes on Flinders Street east for construction activity there are three options for the traffic arrangements:

    a. Option 1: Full closure westbound and diversion (eastbound to remain open);

    b. Option 2: Provide one lane each way (east and west bound) for traffic north of the tram track; or

    c. Option 3: Provide one lane shared with trams westbound.

4. This Technical Note concludes that Option 1 is the preferred solution. This is because it provides:

    a. clarity of movement to drivers, with clear alternative routes;

    b. minimises impacts to the broader network; and

    c. an opportunity to undertake the works coincidentally with the closure of Flinders Street between Swanston Street and Elizabeth Street (to facilitate the open cut construction of the underpass between CBD North and Flinders Street stations – see Technical Note 20).

5. However, Option 1 will need to be supported by a package of mitigation measures.

Assumptions

6. Traffic surveys undertaken indicate that approximately 1250 vehicles per hour travel west through this section of Flinders Street during peak periods. Anecdotal evidence suggests that in the afternoon, vehicles are exiting the CBD via St Kilda Road and Flinders Street, and in the morning there is more cross movement westbound along Flinders Street. Vehicles are 'lost' due to the car parks located between the intersections.

7. Some traffic modelling of potential Flinders Street closures was undertaken earlier in the project using the VITM strategic model. This assumed Flinders Street was closed to all traffic between Elizabeth Street and Russell Street in both directions. Outputs from the model are shown in Figure 1 below for the afternoon peak. As these include Flinders Street closure in both directions, it is important in this instance to focus on the westbound impacts, which are assumed to be similar to a westbound only closure.

8. The blue indicates the reduction in traffic volumes and the red an increase. The key points to note are:

    a. Reduction in flows along Flinders Street between Spring Street and William Street to the west;

    b. Increased flows on Batman Avenue and Swan Street Bridge;

    c. Use of Brunton Avenue; and

    d. Increased east west flows on Southbank Boulevard and Alexandra Avenue.

9. At this stage, a targeted model for Option 1 has not been run, but the existing model is a working case.

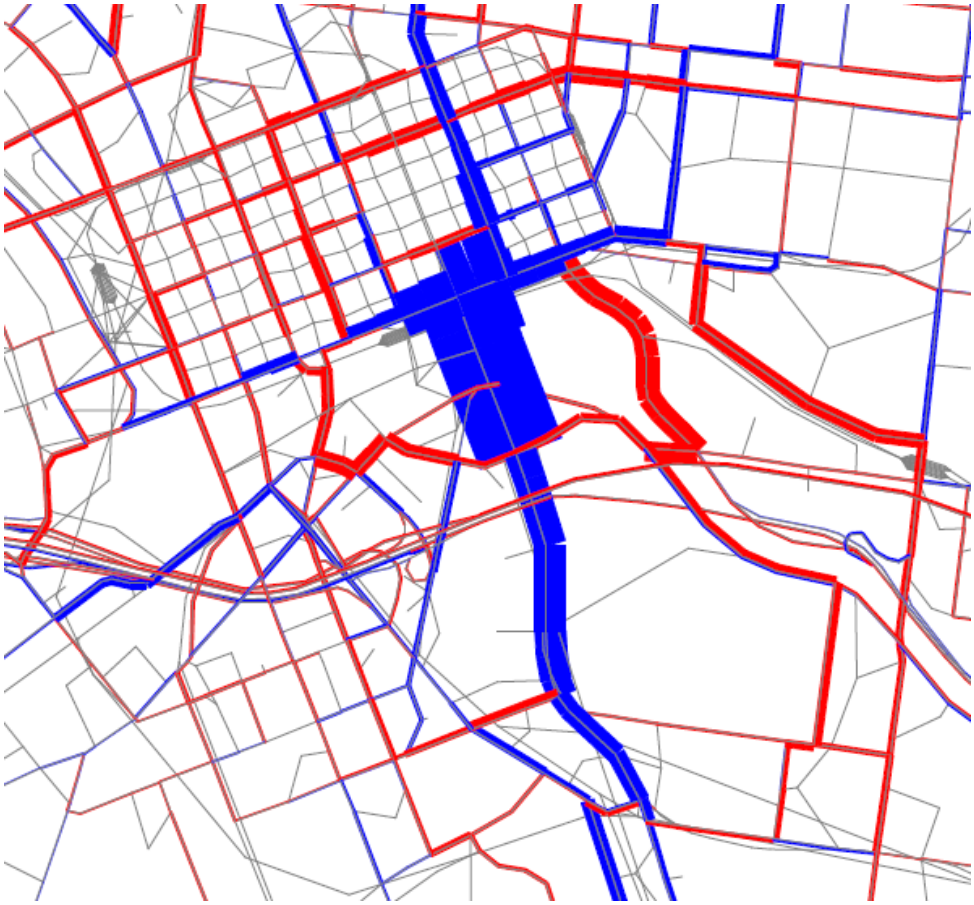

Figure 1: VITM difference plot PM peak Flinders Street (Elizabeth to Russell) closure and other restrictions

Discussion of options impacts

Option 1: *Full closure westbound and diversion*

10. The full closure westbound option provides a few options for diversion.

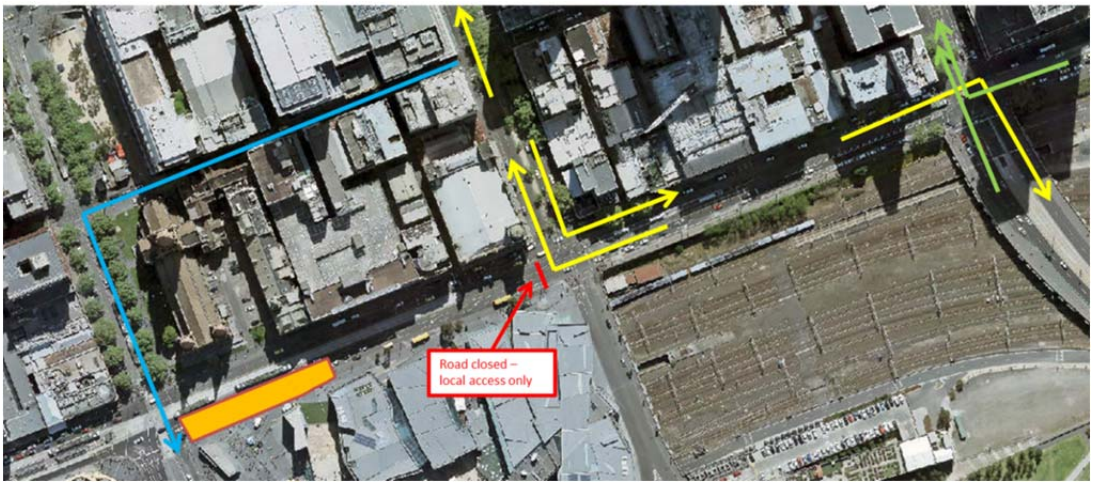

Figure 2: Overview of diversion/alternative routes

11. Flinders Street is a key east-west route in the network. Alternatives in the CBD are:

    a. Collins Street, which is further north and has limited capacity with effectively a single lane each way. It has limited potential to take additional traffic volumes, particularly given trams and pedestrians are the priority modes on the road; and

    b. Flinders Lane, which is a westbound route that effectively serves as a local access to various laneways and car parks. Its capacity is limited.

12. Neither Collins Street nor Flinders Lane have access to Swanston Street and then onto St Kilda Road, due to restrictions on Swanston Street. The left turns are currently not permitted. Removing the turn ban during the works (as indicated by the blue route above) is not practical because of the trams and pedestrian movements and would go against the modal priorities for Swanston Street. It would also potentially conflict with construction activity at City Square.

13. The other alternative to reach a southern westbound route (or St Kilda Road) would be via Batman Avenue. The intersection with Flinders St would require redesigning to facilitate increased right turn movements. In addition, the existing Toll would be a disincentive to use. Figure 3 below indicates the wider network alternative routes. These align with the routes identified in the VITM modelling with increased traffic resulting from the closure.

14. To reduce overall construction impacts, the closure could be coordinated with the planned closure of Flinders Street, west of Swanston Street, for the construction of the underpass between CBD South station and the existing Flinders Street Station.

Figure 3: Wider network diversion routes

Option 2: *Provide one lane each way for traffic north of the tram track*

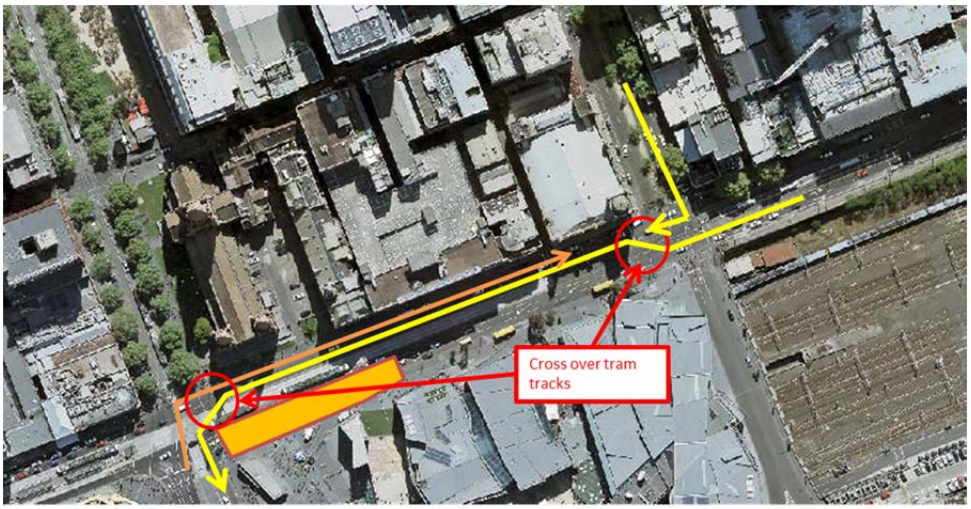

Figure 4: Alternative north side diversion

15. The option above reduces the eastbound movement to one lane and provides for the westbound movement in a single lane north of the tram tracks. This has a number of issues:

    a. Two crossover points over the tram tracks (indicated with red circles). This may require additional traffic signals and changes to phasing that would delay trams and the passengers on the 20 trams per hour using this section;

    b. Reduced capacity to inbound and outbound movements as well as both eastbound and westbound. This creates increased congestion across the network impacting <u>all</u> east and westbound movements, and those feeding into the network from St Kilda Road, with cumulative impacts across the network; and

    c. Potentially confusing to drivers.

16. An alternative variation on this would limit access to Flinders Street (west of Swanston Street) to right turning southbound flows from Russell Street. This removes one crossover and reduces impact on trams.

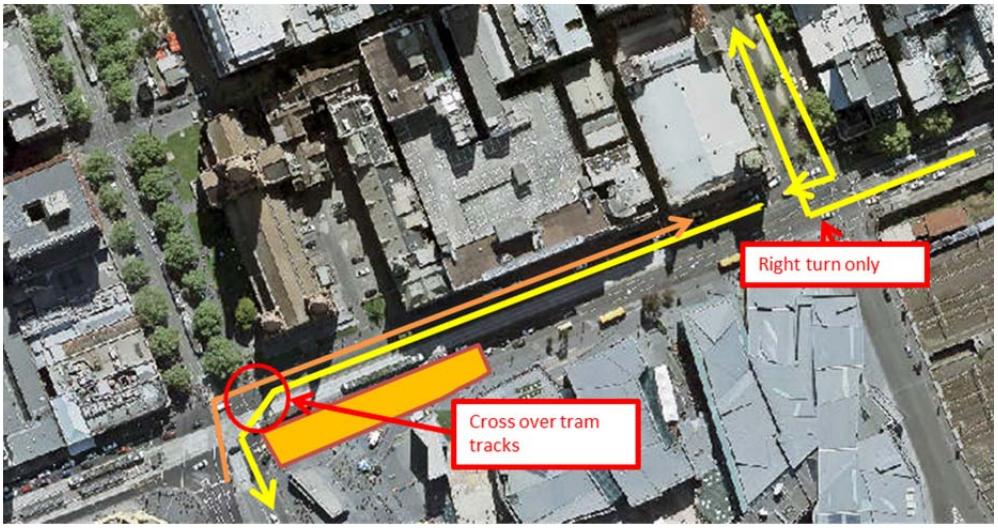

Figure 5: Variation on Alternative north side diversion

17. The crossover point (if at a single point) could operate with a separate signal and phase for trams and then southbound traffic. The capacity of this may be limited and would require assessment.

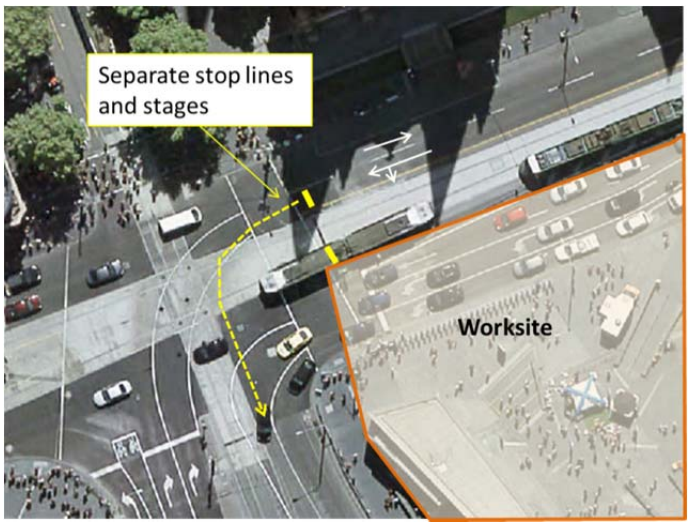

Figure 6: Sketch of potential Swanston St/Flinders Street layout

Option 3: *Provide one lane shared with trams westbound*

18. The proposed worksite keeps the tram tracks operational, although some overheads would require relocating. There is a potential option of shared running with cars and trams in the westbound tram lane.

19. This however has a number of issues:

    a. **Tram frequencies**, as there are approximately 20 trams an hour. Mixing with traffic will cause delays to tram passengers at a time when overall we are seeking to encourage modal switch to reduce car trips. Under existing operations, vehicle travelling west across Swanston Street into Flinders Street regularly queue back into the intersection due to limited capacity further west. This would continue, if not be exacerbated, creating high levels of delay to trams that are currently segregated; and

    b. **Tram infrastructure**, as there may be a need to provide for central poles for overheads due to the worksite coverage and removal of existing poles.

20. Given these issue it is not felt this option is either practical or advisable.

Stakeholder feedback

21. The options discussed above were presented to the Traffic and Transport Working Group in June 2016, attended by key stakeholders including VicRoads, City of Melbourne, and Yarra Trams.

22. The pros and cons of each option were discussed. The consensus from stakeholders, and those at the meeting, was that:

    a. Option 1, the full closure option, was the preferred option to focus on as the other options would have too wide an impact on the overall network and all movements into the area as opposed to a single movement.

    b. For any option, the use of Flinders Lane and Swanston Street as a diversion route was not supported.

    c. Shared running of trams and cars not supported by either PTV or Yarra Trams.

23. It was acknowledged that mitigations would be required at the Flinders Street / Exhibition Street intersection, use of the toll road would need consideration, and additional Origin-Destination information is required to validate this analysis and design appropriate mitigations.

Conclusion and mitigation

24. In summary, a number of options to mitigate construction impacts have been considered. The preferred option is a full closure for all westbound traffic (excluding trams) and diversion to the east.

25. To mitigate impacts of the closure, capacity and network improvements will be required at key intersections including:

    a. Exhibition Street / Flinders Street; requirement for two right turn lanes into Batman Avenue;

    b. Flinders Street / Russell Street; alternative layout to support adjusted flows; and

    c. Batman Avenue / Swan Street Bridge; increased time for left turn southbound onto Swan St Bridge.

26. A general review of traffic signals in the southern CBD will be required including those on potential alternative routes such as City Road, Southbank Boulevard and Linlithgow Avenue.

27. As in other precincts for this project, a clear communications and information strategy is proposed, including the use of variable message signs and other signing in advance and during the works.

28. In accordance with Environmental Performance Requirement T4, a Transport Demand Management (TDM) Strategy will also be required to encourage drivers to change their current behaviour to either re-time trips earlier/later, mode shift to other forms of transport, re-route or reduce need to travel.

29. In combination, this package of measures will reduce the impact of the works.

CORRESPONDENCE: No correspondence.

ATTACHMENTS: No attachments.