

Appendix D Passenger Journey Time Analyses for Options 2A, 2B, 2C, and 6

As part of the comparative assessment of alternative layout options for Victoria underground station (Stage D, Options 2A, 2B, 2C and 6), analysis of passenger journey times has been undertaken consistently using the following methodology:-

- For each layout option/ variant, obtain an indicative sketch as drawn by Weston Williamson (Project Design Architect);
- Import sketch into ArcGIS mapping software to scale distance in metres for each station element. Use platform mid-point to scale to;
- Create a database of all elements containing distance and differentiate by element type (default, escalators, stairs and travelators). For escalators calculate inclined distance and adjust distance accordingly;
- Apply a free-flow walk speed of 1.34 metres per second as default (as an average for all users) otherwise 0.92 metres per second for escalators, 0.63 metres per second on stairs and 1.92 metres per second on travelators;
- Apply operational/ circulation strategy to reflect intended orientation of vertical circulation/ way-finding/ sign-posting for both AM and PM peak periods;
- Taking each station entrance/ exit and platform in turn as either a point at which a passenger may start or finish walking within Victoria underground station, create an origin-destination journey time matrix;
- Taking the agreed passenger demand matrix for the station (AM and PM Peak 3 hour periods for 2016 +20% demand uplift), multiply the journey time matrix by the passenger demand matrix to yield total passenger hours. At this stage no account taken of % PRM or intended routing/ journey times for PRM passengers;
- Summarise total passenger hours for street to platform and reverse, interchange (platform to platform) and all movements combined.

The predicted total passenger hours are presented in the following tables with values shown for each option and in comparison (absolute difference, calculated as Option minus Stage D) to the Stage D layout.

In respect of operational performance there is no difference between Option 2B and 2C (differing only in respect of the proposed construction techniques). Option 2A provides connection between the Interchange Concourse and Paid Area Link (PAL) which results in the lowest passenger hours of the Option 2 schemes for both AM and PM peak periods.

Option 6, with the PAL taking a more direct route to the Victoria line overpass and hence escalators 10-12 to provide access to the northern end of the Victoria line platforms, has been predicted to be better than the Stage D scheme for street to platform movements – in both directions – during the AM Peak period. Though the interchange movements take longer than Stage D, overall Option 6 provides a 1% reduction in passenger travel time during the AM Peak.

In the PM Peak Option 6 provides the best comparative performance to Stage D, albeit with a 3% increase in overall journey times.

Table 1: Passenger Hours in AM Peak 3-hours 2016 +20%					
Movements	Stage D	Option 2A	Option 2B	Option 2C	Option 6
Street - Platform	1,855	1,878	1,902	1,902	1,758
Platform - Street	1,341	1,373	1,384	1,384	1,271
Platform - Platform	669	699	702	702	810
All Movements	3,864	3,951	3,989	3,989	3,838
Table 2: Passenger Hours in AM Peak 3-hours Comparative Performance (Options – Stage D)					
Movements	Stage D	Option 2A	Option 2B	Option 2C	Option 6
Street – Platform	1,855	24	47	47	-97
Platform – Street	1,341	32	44	44	-70
Platform - Platform	669	30	33	33	141
All Movements	3,864	86	124	124	-26
Table 3: Passenger Hours in PM Peak 3-hours 2016 +20%					
Movements	Stage D	Option 2A	Option 2B	Option 2C	Option 6
Street - Platform	1,413	1,425	1,436	1,436	1,423
Platform - Street	2,299	2,387	2,417	2,417	2,110
Platform - Platform	686	812	826	826	1,006
All Movements	4,398	4,624	4,679	4,679	4,537
Table 4: Passenger Hours in PM Peak 3-hours Comparative Performance (Options - Stage D)					
Movements	Stage D	Option 2A	Option 2B	Option 2C	Option 6
Street - Platform	1,413	12	23	23	10
Platform - Street	2,299	88	118	118	-189
Platform - Platform	686	126	140	140	320
All Movements	4,398	226	281	281	140

*Note: For the above analyses the MDC1 Stage D routing was modified as follows:- Flow from Vic Line platforms to D&C Line westbound along modelled along existing interchange corridor. Flow from D&C Line westbound platform to Victoria Line platforms routed along new interchange corridor. This is to ensure consistency for direct comparison with Options 2A, 2B and 2C.

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