

3002666.114

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EPSDD
Level 2, 480 Northbourne Avenue
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Dear Ali,

RE: Peer Review of Molonglo 3 East – Transport Modelling Review

Thank you for the opportunity to provide peer review and feedback on the work undertaken by WSP in their Molonglo 3 East Planning and Infrastructure Study.

The models used by WSP to support the Molonglo 3 East Planning and Infrastructure Study have been supplied to SMEC for peer review. Two different model types have been supplied:

- Canberra Strategic Transport Model (CSTM)
- SIDRA models

SMEC has conducted a review of the models against our own modelling practices and ACT guidelines. We have compared the model inputs to the project report to ensure that the proposed changes have been accurately modelled. We have also compared the model outcomes to the East West Arterial Feasibility Study and William Hovell Drive – Bindubi Street Interchange Feasibility Study to understand if the findings from the three projects can be considered comparable.

The CSTM peer review considered the following items:

- Model code (i.e. the automated process used by TransCAD to generate the model outputs)
- Model coding (Base Model, Option 1 and Option 2)
- Output comparison

Our findings in these three areas are presented in the following sections.

Model Code:

A minor change has been made to the model code which changed the simulation time from an input parameter to a hard-coded value of one hour. While it is unclear why this parameter was changed, it should not have any effect on model outputs.



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A number of changes have been made to the model control file that mean the model cannot be opened. Some changes appear to have been made automatically (possibly by opening the model in a different version of TransCAD or another compiler) but fundamental changes to the way the model operates have also been made. These changes appear to have been made after the models were run and were not evident in the model results supplied to SMEC.

Base CSTM Model Review:

Not all CSTM network changes agreed to between SMEC, EPSDD and TCCS at the outset of the East-West Arterial Feasibility Study project have been applied (the uninterrupted flag on John Gorton Drive has not been updated in WSP model). However, the difference is expected to be insignificant and this error is present in all models.

The transport network, public transport routes and zone input data (land use, demographic factors etc.) appear to be identical to the EWA Feasibility Study models.

A number of model outputs have been compared to the CSTM model that was used in the EWA Feasibility Study, including:

- PT Person trips
- Car Trips
- Volumes on key arterial links
- Bulk summary statistics

The Base model has been run for 50 iterations in the AM peak and 15 (convergence) in the PM peak.

Most of the model outputs vary from the EWA Feasibility Study by less than 0.1%. Overall, the Molonglo 3 East Base Case model appears to match the EWA Feasibility Study preferred option model for the 2041 AM and PM peak periods.

Option 1 CSTM Model Review:

We have reviewed the Option 1 model, and found that changes from the Base Model appear to be limited to the road and public transport networks. There have been no changes to the zone data or other model parameters.

New and modified public transport routes appear to have been coded correctly. However, public transport travel time functions (AB_ttf / BA_ttf) do not appear to have been applied correctly. Three TTF values are available:

- TTF = 1 to be used where PT vehicles are mixed with traffic in a single lane. PT vehicles will travel at the same speed as the congested traffic speed
- TTF = 2 to be used where PT vehicles are mixed with traffic on a multi-lane road. PT vehicles will travel 10% slower than the congested traffic speed.
- TTF = 3 to be used where PT vehicles have their own facility (bus lane, busway, light rail etc). PT vehicles will travel at the signposted speed limit.

The Option 1 model uses TTF 3 through the shared zone, allowing public transport to travel at 40 km/hr, which might be too high.

The link between the Southern Collector and Northern Collector is described in the report as a shared zone, active travel and public transport spine. However, it has been modelled as a collector at 40 km/hr with a capacity of 500 veh/h per direction. The AB_tcrds / BA_tcrds (Town Centre Roads) flag halves the signposted speed limit and should be considered for roads like this. In addition, the model does not allow education bicycle trips to use the shared zone.

The proposed road network has not been modelled accurately in this option. It appears that the connectivity in the proposed network is matched in the model, but the road alignments, lengths and intersection locations do not match the proposed option.

The Option 1 model has been run for 20 iterations in the AM peak and 12 (convergence) in the PM peak.

Option 2 CSTM Model Review:

We have reviewed the Option 1 model, and found that changes from the Base Model appear to be limited to road and public transport changes. There have been no changes to the zone data or other model parameters.

While the public transport routes appear to have been coded correctly, the IPT route through Molonglo 3 East uses TTF = 3 (correctly) but the bus lane on Bindubi Street extension through the shared zone has not been removed.

The link between the Southern Collector and Northern Collector is described in the report as a shared zone, active travel and public transport spine. However, it has been modelled as a collector at 40 km/hr with a capacity of 500 veh/h per direction. The AB_tcrds / BA_tcrds (Town Centre Roads) flag halves the signposted speed limit and should be considered for roads like this

The proposed road network has not been modelled accurately in this option. It appears that the connectivity in the proposed network is matched in the model, but the road alignments, lengths and intersection locations do not match the proposed option.

The Option 2 model has been run for 25 iterations in the AM peak and 12 (convergence) in the PM peak.

General CSTM Comments:

The IPT route along John Gorton Drive, through Molonglo 3 East and on to Civic operates with its own right-of-way through Molonglo 3, but nowhere else along the corridor. This is also the case in the EWA Feasibility Study modelling, but should be revisited in future projects.

SIDRA Model Review

SMEC conducted a review of the SIDRA models provided. Outcomes of the review are presented in Table 1.

Table 1: SIDRA Model Comments

Issue/Note	Intersection	Discussion	Severity	Solution
Basic Saturation Flow	All signals	Use of 1850 tcu/hr per previous TCCS guidelines	N/A	N/A
Assumptions	All	All assumptions are appropriate	N/A	N/A
Lane movements & blockage calibration	1	Some approach lanes are associated with incorrect exit lanes, either from or to LRT. <u>Not observed to affect results.</u>	Minor	Can be easily corrected but does not affect conclusions.
Network signal configuration	3	Network routes could be used to optimise signal coordination and improve overall network performance. Network delay was observed to decrease in both AM and PM. Performance in PM improved from LoS D to C while AM remained at LoS F.	Medium	Add routes and use them for program network timing

In addition to the comments above, SMEC makes the following general observations on the SIDRA modelling:

- The SIDRA models appear to be set up appropriately for the task
- The conclusions drawn from the model outputs are appropriate

- Use of raw CSTM volumes is appropriate for intersections or roads that do not currently exist, but does require some care in setting up the CSTM so that the centroid connectors load traffic on to the network in appropriate locations relative to the intersections.
- Volumes used by WSP to assess the intersection performance at the William Hovell Drive – Bindubi Street interchange differ from those used in the WHD-BSE Feasibility Study. Differences such as this are not unusual, but they should be noted and discussed as it potentially leads to different conclusions.
- The WHD-BSE Feasibility Study used Aimsun to test the interchange as Option 4, while this report uses SIDRA (with the westbound WHD carriageway excluded), so direct comparison of the two sets of outcomes is difficult. The 2041 AM model performance is better in the Aimsun model, while the 2041 PM model performance is better in the SIDRA model.

Conclusions

SMEC has conducted a review of the strategic transport modelling and intersection analysis undertaken by WSP for the Molonglo 3 East Planning and Infrastructure Study. No serious issues were found in the modelling and SMEC believes that the modelling outcomes can be accepted by EPSDD and TCCS to support the findings of the study. While the modelling outcomes are considered acceptable, SMEC has identified a number of improvements that could be made to the models. These changes are not likely to make a material difference to the model outcomes and conclusions that have been drawn, but should be considered for any further work.

Yours sincerely,



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