TfNSW Operational Traffic Modelling Team Review and Comments

High Street Penrith (East DA) SIDRA Model and Traffic Impact Assessment Report Review

The following sections comprise a summary of TfNSW operational traffic modelling team's review of High Street, Penrith (East DA) SIDRA Models and Traffic Impact Assessment Report and supporting document(s), prepared by ptc.

The specific documents and traffic model(s) provided for the review are outlined in Table 1.

Table 1: Reviewed material

Material	File name	File description	Received date
SIDRA models	20200429 - 200227 - Existing Situation - 2020 PM Peak.sip8	Existing Conditions model – future road network	05 May 2020
	20200429 - 200227 - Existing Situation - 2020 AM Peak.sip8	Existing Conditions model – future road network	05 May 2020
	20200429 - 200227 - East DA Scheme - 2026 Roundabout, Development, Link - PM Peak One-Way Link (FSR 6-1 Volumes).sip8	Post Development Model	05 May 2020
	20200429 - 200227 - East DA Scheme - 2026 Roundabout, Development, Link - AM Peak One-Way Link (FSR 6-1 Volumes).sip8	Post Development Model	05 May 2020
Reports	20200424 - Appendix K - Transport Impact Assessment for DA200148 for Mixed use Development at 87-93 Union Road PENRITH_CNR-6306.pdf	Traffic Impact Assessment Report	05 May 2020

Table 2 provides a summary of review comments.

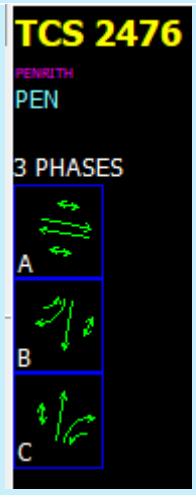
Table 2: Summary of review comments

Item	Section / Issue	Comment	Priority (major, medium, or minor)
Report Review			
1	Section 3.2	Generally, this section needs more detail as the following information is not clear: • Which intersections use data from TfNSW (including RMS) or Council? • Whether existing SCATS data from the signalised intersections was obtained from TfNSW to form the basis of the 2020 design year models? • Broadly explain how and why Council had to project data to 2020? • What are the adopted peak periods? • Which movements have been increased by 10% to represent the 2026 design year? Some of these may have been provided in another document, and they need to be included in this report. As these have not been provided, they could not be reviewed.	Major
2	Section 3.2	It is recommended that more detail about existing conditions such as survey counts and survey dates, queue lengths or any other data such as signal timings etc. used for model development and calibration be included in Section 3 or as an appendix of the report.	Major
3	Section 3.2	Generally, pre and post development impacts are compared for the same future year, i.e. how does the network operate in 2026 with and without the development. The approach taken (page 13) is different, and it is recommended that the report and modelling consider the following scenarios: • 2020 – Existing Conditions: Existing Road Network, no development • 2026 – Future Base: Future Road Network, growth, no development • 2026 – Future Base plus development and Link Road	Major
4	Section 3.2 – Figure 11 and Figure 12	Figure 11 and 12 are labelled “Existing Road Network, Post Development”. The description on page 13 suggests that it should be “Pre-Development”.	Noted

5	Section 3.2 – Figure 11 and Figure 12	The volume of eastbound and westbound traffic along Union Road in the AM and PM peaks changes by at least 100vph between Worth Street and Mulgoa Road. It is not clear if this is a result of traffic generating developments, or a function of the 2020 volume development process. It is recommended that the volumes are reviewed, update if required and an explanation provided.	Major
6	Section 3.2.2	The report identifies that model "calibration" has been applied to the intersection of Mulgoa Road / Union Road and gap acceptance parameters changed for the south approach right turn to ensure that the 95th percentile back of queue length is contained within the existing right turn lane. Given that Mulgoa Road is under construction to be upgraded to three lanes in each direction, and the right turn volumes at Mulgoa Road/ Union Road are projected volumes, the calibration will not result in replicating the typical traffic condition. Any default parameters should only be changed to replicate existing behaviour and adequate justification should be included in the report.	Major
7	Section 3.3	Section 3.3 discusses future road network amendments, including intersection upgrades to Mulgoa Road and the Mulgoa Road / High Street intersection. These changes have already been included in the model results presented in Section 3.2.3 and therefore should already be described earlier in the report or the models updated to show the existing conditions road network.	Medium
8	Section 5.1	It is recommended that development traffic distribution assumptions be included in the report. To provide a clear understanding of the development impacts, it is prudent to understand how the development traffic was distributed on the network.	Medium
9	Section 5.2	The report mentions that the traffic generated by the Urban Apartments development has been included within the Post-Development modelling scenario. This should be described clearly in the modelling scenarios discussed in Item 3, and could be included at the future base scenario, or as a further post development scenario, depending on which development is likely to be constructed first.	Medium
10	Section 5.3	The report comments that some delays experienced in the network at the intersections will increase from the existing conditions but "the proposal will result in a marginal increases to those delays".	Major

		A significant change in operation is expected at the intersections of Mulgoa Road / Union Road, Worth Street / Union Road and High Street / Worth Street, and therefore the comment is currently considered inaccurate. It may be clarified or justified if the build up of design year scenarios is improved.	
11	Section 5.3	The report describes the future operation of the Mulgoa Road / Union Road intersection, summarising that the unsignalised right turn exceeds the capacity of the movement in the peak periods. The report comments that this *"is likely due to the random arrival of vehicles from the north within the two southbound lanes"*, yet both the existing and future year models include the three lane southbound layout. This section also mentions that *"The operation of the High street intersection likely creates gaps between the signal phases that are not being replicated in SIDRA"*. This statement is also considered inaccurate as this is one of the main purposes of developing SIDRA Network models. It is noted that providing correct phasing in a logical sequence may improve the anticipated operation of this movement It is recommended that this section of the report is reviewed as it is not accurate and revised.	Medium
12	Section 8	The report concludes that : *"In summary, the model indicates that the proposal will be accommodated within the road network and will result in some manageable increase to the delays at some intersections"* As per the results presented in Table 17 and 18 of the report, delays at some intersections increase in the order of 500 seconds and LOS drops from C/D to F with the proposed development. Furthermore, three intersections are anticipated to operate with a DOS over 1. This indicates that the intersections are operating above capacity. As highlighted in Item 3, it is recommended that new 2026 future base models are developed with background growth but without the development to understand which aspect of traffic is likely to causes the poor operation. If development traffic causes the poor operation of the intersections, then mitigation options will need to be developed and assessed for the intersections which are operating over capacity.	Major
Existing Conditions Model Review Files:			

20200429 - 200227 - Existing Situation - 2020 AM Peak.sip8 20200429 - 200227 - Existing Situation - 2020 PM Peak.sip8			
13	Existing Conditions Data	It does not appear that pedestrian surveys have been undertaken. It is recommended that pedestrian information is collected for the signalised intersections on Worth Street as the intersection operation will be affected by vehicles giving way to pedestrians.	Medium
14	Speed limits	Approach cruise speeds and exit cruise speeds should match the posted speed limits at Union Road, Worth Street and Union Lane.	Minor
15	Gap Acceptance	Gap acceptance parameters have been adjusted from their default values at the intersection of Mulgoa Road / Union Road. As discussed in Item 6, this is not considered appropriate given that both the layout and volumes represent future conditions.	Major
16	Lane widths	All lane widths for all intersections are the default 3.3m. Throughout the intersection network, there are lane widths ranging from 2.5m to 3.3m. It is recommended that these are updated.	Minor
17	Geometry	Intersection geometry is incorrect at the Worth Street / Union Lane intersection as follows: East approach – right turn lane should be a short lane with parking South approach- should have two exit lanes and two approach lanes.	Medium
18	Geometry	Intersection geometry is incorrect at the Worth Street / Union Road intersection as follows: North approach – kerb side lane should be a left turn only lane, without parking. East approach – kerb side lane should be a short lane with parking.	Medium
19	Geometry	On the north approach at High Street / Worth Street the left turn slip lane has been modelled as a separate lane. SIDRA recommends that slip lanes with a length less than 30m are modelled as a slip lane off the through lane and Free Queue distances added in the Lane Disciplines to inform how queue lengths for through and left turn vehicles interact. It is recommenced that this is updated.	Minor

20	Intersection Control	The intersection control needs to be updated at the Worth Street / Union Lane intersection to be a Give-Way rather than a Stop.	Minor
21	Pedestrians	It is noted that pedestrian protection is not included for any of the pedestrian movements. It is likely pedestrian protection will be included from left turn vehicles and some right turn movements at the signalised intersections on Worth Street. The model should include pedestrian protection for all conflicting movements in line with TfNSW's Traffic Signal Design Manual and specific advice from the TfNSW Network Operations teams. If pedestrian protection is provided at the sites, pedestrian movements must be included within the priorities, and where required the length of late start for vehicles added under Gap Acceptance, Opposing Peds (signals).	Medium
22	Phasing	At High Street and Mulgoa Road, the adopted traffic signal phase sequence of A, C, F2 would be unconventional and must be reviewed. Phasing for all signalised intersections requires review and should be set up as per SCATS data. Further detail is required in the report on how the phasing sequence and the phases were identified.	Major
23	Phasing	At High Street / Worth Street, the adopted phasing should be obtained from SCATS.	Major
24	Phasing	Phasing and timing at Worth Street / Union Road needs to be the same as SCATS. Any changes to this phasing also should be consulted with network operations in TfNSW. 	Major
25	Phasing	It is recommended that using 'Undetected' movements be considered and phase transitions for related signalised left turn movements be considered and reviewed for the signalised intersections along Worth Street.	Medium

Future Conditions Model Review
Files:
20200429 - 200227 - East DA Scheme - 2026 Roundabout, Development, Link - AM Peak One-Way Link (FSR 6-1 Volumes).sip8
20200429 - 200227 - East DA Scheme - 2026 Roundabout, Development, Link - AM Peak One-Way Link (FSR 6-1 Volumes).sip8

26	Various	All changes recommended above should be undertaken on the 2026 post development models.	Major
27	Speed limits	Approach and exit cruise speeds have been kept as the default 60km/h for new roads. It is recommended that this is reviewed to ensure that this is correct.	Minor
28	Phasing	The intersection phasing adopted at High Street / Mulgoa Road needs to be completely reviewed as described in the above sections. Furthermore, it is noted that the addition of a user class for the Urban Apartments has affected the phasing for the left turn slip lane from the east approach and there are now major vehicle conflicts. Refer to Figure 1 for an example.	Medium

Figure 1: High Street and Mulgoa Road post development phasing