

David Lewis

To: Dimitri Gotsis
Subject: Response to RFI - SIDRA Modelling

Hi Dimitri

Please see below the response from the Transport consultant regarding SIDRA modelling as requested.

From: Dora Choi <dora.choi@asongroup.com.au>
Sent: Tuesday, 25 January 2022 4:43 PM
To: Tarini Pathak <Tarini.Pathak@turntown.com>
Cc: Stephanie Leaper <Stephanie.Leaper@turntown.com>; Wendy Zheng <wendy.zheng@asongroup.com.au>
Subject: RE: Upgrade to North Sydney Public School SSD-11869481 - Request for Additional Information

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Hi Tarini,

Thank you for your patience and understanding of my situation that resulted in the delay in our response to the Department of Planning and Environment (DPIE) Letter received 18 January 2022.

Upon receipt of the RFI, we have reviewed the comments and fundamentally, the question raised by DPIE relates to the application of optimised phase and cycle times in SIDRA modelling outlined in Page 55 of the Transport Assessment based on assumed improvements to phase and cycle times.

Reference is made to the Transport for NSW *Traffic Modelling Guidelines (Version 1.0, February 2013)*, which outlines Traffic Modelling procedures and reporting requirements applicable to Traffic Modelling work completed for Roads and Maritime Services (now TfNSW). The relevant section of the guideline applicable is Chapter 14 Single Intersection Modelling. Of particular relevance is Chapter 14.4 Calibration, where the following text has been extracted:

14.4 Calibration

The calibration process should be based on various traffic surveys and site observations. All changes required in order to calibrate the model should be fully documented with an explanation and justification of the change. SIDRA User Guidelines should be referred to for possible calibration methods.

In order to properly identify the effects of future network and/or demand changes on the existing operation of signalised intersections then the timings obtained from a calibrated model of existing conditions (based on observed signal times) should be compared with those obtained from the SIDRA optimised timings. In this way differences can be compared and an explanation provided as to why they may exist. This comparison is useful in identifying:

- Incorrect model assumptions in respect of traffic behaviour (saturation flows, delays due to pedestrians, queue storage space etc).
- Incorrect model assumptions in respect of signal operation assumptions (ie alternative phase calls, phase skipping, offset, cycle times, minimum greens, clearance times etc).
- Incorrect SCATS setup.

Table 13.5 in the previous section provides a summary of the steps necessary to properly distinguish between an optimised existing model and SCATS operations to avoid future scenario assumptions being erroneously attributed to "improving" SCATS operations. These steps also ensure that the real value of infrastructure works or signal operation changes are identified.

14.4	All changes required in order to calibrate the model should be documented. Table 13.5 provides a summary of the steps to be taken if any future scenarios require the optimisation of signal timings.
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Table 13.5 Suggested method for distinguishing optimiser effects

Step	Description	Outcome
1	Establish existing calibrated/validated model that reflects SCATS operations and observed saturation flows.	Calibrated existing model
2	Re-run model from step 1 with appropriate optimiser settings ⁽¹⁾	Optimised existing mode ⁽²⁾
3	Compare calibrated and optimised models and provide description and explanation of differences.	Summary of differences make decision to amend & re-run (or not)
4	If required under Step 3 then, make changes to previous models, re-run and compare to the revised calibrated existing model.	Provide discussion on differences.

Notes ⁽¹⁾The optimisation process should be based on intersection/network delay with common cycle time generally reflecting the master intersection in the sub system. Other optimiser settings may well be appropriate depending on SCATS setup in the vicinity. Traffic Network Operations staff can help identify local SCATS settings.

⁽²⁾ Depending on the scenarios to be examined it may be appropriate to use the optimised existing model as the base for comparison purposes.

In particular, paragraph 2 of Chapter 14.4 of the Traffic Modelling Guidelines stated that *"in order to properly identify the effects of future network and / or demand changes on the existing operation of signalised intersections then the timings obtained from a calibrated model of existing conditions (based on observed signal times) should be compared with those obtained from the SIDRA optimised timings. In this way differences can be compared and an explanation provided as to why they may exist"*.

The 2033 analysis presented originally was optimised in both the phase time and cycle time.

The reason why 2033 analysis was prepared based on optimised phase time and cycle time due to SIDRA crashing – as a result of the DoS and LoS using existing phase time causing a failure in the model in the PM 2033 using existing Phase Time. Refer to the attached error message. The reason for the error is because the DoS and LoS exceeding the maximum link capacity by a factor that is beyond the settings of SIDRA.

It is further noted that the phase time is adaptive to traffic conditions throughout a typical day whereby SCATS automatically adjust phase time to suit demand and therefore is not completely fixed and can adjust within the fixed Cycle Time set, in this instance, 120 seconds in both existing and future scenarios.

For clarity, we have prepared the following comparison table, whereby the summary with red border was previously reported.

In the revised table below, we have now included the following additional Scenarios for 2033:

- Scenario 4A – 2033 base case on existing Phase Time (PT), and Cycle Time (CT) of 120s

- Scenario 5A – 2033 base case + Development Traffic on existing Phase Time (PT), and Cycle Time (CT) of 120s
- Scenario 4B – 2033 base case on optimised Phase Time, and Cycle Time of 120s
- Scenario 5B – 2033 base case + Development Traffic on optimised Phase Time and Cycle Time of 120s
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**P1723_North
Sydney Public
School**

Sidra Result
Summary



Reported

AM Peak		2021			2023							
		Scenario 1 2021 base existing PT, CT 120s			Scenario 2 2023 base existing PT, CT 120s			Scenario 3 2023 base+dev existing PT, CT 120s			Scenario 2a 2023 base optimised, C	
		DoS	Delay (s)	LoS	DoS	Delay (s)	LoS	DoS	Delay (s)	LoS	DoS	Delay (s)
1	Pacific Hwy x McLaren St	0.82	19	B	0.85	21	B	0.86	22	B	0.98	48
2	Pacific Hwy x Bay Rd	0.86	25	B	0.88	26	B	0.95	28	B	0.69	26

PM Peak		2021			2023							
		Scenario 1 2021 base existing PT, CT 82s			Scenario 2 2023 base existing PT, CT 82s			Scenario 3 2023 base+dev existing PT, CT 82s			Scenario 2a 2023 base optimised, C	
		DoS	Delay (s)	LoS	DoS	Delay (s)	LoS	DoS	Delay (s)	LoS	DoS	Delay (s)
1	Pacific Hwy x McLaren St	0.33	8	A	0.33	9	A	0.34	9	A	0.35	9
2	Pacific Hwy x Bay Rd	1.23	32	C	1.25	33	C	1.30	37	C	0.63	21

We trust this information fully addresses the Request for Information.

Should you require any additional information or clarification, please do not hesitate to contact me.

Regards,

Dora Choi

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I acknowledge the traditional custodians of the land and pay my respects to Elders past and present. I also acknowledge all the Aboriginal and Torres Strait Islander staff working within the Department of Education at this time.

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