Loreto Normanhurst School Redevelopment

Traffic and Parking Impact Assessment Peer Review

P1928

Prepared for
Residents' Action Groups from Mount Pleasant Avenue, Osborn Road and Surrounding Streets.

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1 Introduction

1.1 Background

Greys Consulting was engaged by “Residents’ Action Groups from Mount Pleasant Avenue, Osborn Road and Surrounding Streets” to undertake an Independent Peer Review of the Traffic and Parking Impact Assessment of the Staged Development of Loreto Normanhurst School prepared by TTW. The traffic report has been prepared in support of a State Significant Development for the Loreto Normanhurst Concept Proposal and Stage 1 Development Application.

The purpose of this independent review is to determine if the Environmental Impact Statement documents related to traffic and transport adequately assesses the local traffic impacts, whether the SIDRA modelling assessment is appropriate and to specify any additional information required from the applicant or make recommendations where issues have not been adequately addressed.

Subject site is depicted in Figure 1-1.

Figure 1-1 Subject Site Area

2 Proposed Development

2.1 Overview of the Proposal

The development application pathway for the Project will consist of a staged SSD Application pursuant to section 4.22 of the EPA Act, which will consist of:

- Concept proposal for establishment of ten (10) envelopes across the school for education and ancillary uses, including:
    - Site Layout.
    - Maximum building envelopes.
    - GFA distribution across the site.
    - On-site parking provision and distribution.
    - Approval for a school population of 2,000 students (noting Stage 1 seeks approval of a population of 1,650 students).
- Detailed consent for Stage 1 DA works including:
    - Staged approval for a school population of 1,650 students linked to the delivery of road and parking infrastructure.
    - Construction of a new 5 storey boarding house to accommodate up to 216 boarders.
    - Kerb upgrades along the Mount Pleasant Avenue and construction of two vehicular driveways.
    - Link road between Osborn Road to Mt Pleasant Avenue, including drop off and pick up arrangements.
    - Pedestrian shelter and associated landscaping and pedestrian access improvements.
    - Construction of an additional 133 car parking spaces, as follows:
        - Amendments to the Osborn Road car park including additional parking and pedestrian shelter.
        - Sports courts and underground carparking.
        - Tennis courts and underground carparking.
    - Demolition and Site preparation.
    - Landscape works.
    - Tree removal.
    - Augmentation of services and utilities infrastructure as required.

The original traffic report has been prepared by Asongroup and TTW has provided further amendments to address the shortcomings of the initial traffic report.

3 Technical Assessment of Traffic Report

3.1 Traffic Modelling

3.1.1 Modelling Platform

Given the number of forecast traffic generation in the future year scenario, SIDRA seems to be an inappropriate tool to determine future traffic movements, queuing and capacity testing. Due to dynamic nature of school trips particularly during the drop-off and pick-up time and also queueing nature of drop-off and pick-up activity, a microsimulation model would have been a more appropriate tool for this assessment.

SEAR conditions have not stipulated using SIDRA platform, hence, using AIMSUN or VISSIM would be recommended for this analysis.

There are several traffic related concerns which should be answered through a microsimulation to determine the knock-on effect of banning right turn movement at Mount Pleasant Avenue on the surrounding road network and almost doubling the volume of left turners on to Pennant Hills Road. These questions include:

- How banning right turn movement from Mount Pleasant Avenue to Pennant Hills Road would impact on traffic queuing back up Mount Pleasant Avenue
- How banning right turn movement from Mount Pleasant Avenue to Pennant Hills Road will impact on Normanhurst Road traffic, as Mount Pleasant Avenue residents seek to find alternative routes to Hornsby and Waitara
- Emergency vehicle access during peak times
- Examine Traffic Management Strategies to help Mount Pleasant Avenue drivers (e.g. “Keep Clear” Pavement Marking) - on the intersection of Mount Pleasant Avenue and Pennant Hills Road
- How additional trucks during construction phase would exacerbate the traffic conditions

In addition, new entrances will be built as a part of this development which should be modelled in Microsimulation to demonstrate a realistic interaction between the new driveways and adjacent road network.

3.1.2 Validation of SIDRA Model

In the absence of a Microsimulation traffic model, validation of a SIDRA network queueing and travel time in the SIDRA network would be crucial to compare observed travel times and queues to ensure validity of the base model. Otherwise, reliability of the future case queueing and travel time would be questionable. TTW have not undertaken back of queue surveys and in the same way have not validated the base case back of queue lengths and travel times in their SIDRA models.

While no SIDRA models were provided for the purpose of this peer review, Greys Consulting could not find any evidence of model validation in TTW report.

3.1.3 SIDRA Network Assessment

The intersection of Pennant Hills Road/Normanhurst Road/Osborn Road and Pennant Hills Road/Mount Pleasant Avenue have been modelled in isolation while the knock-on effects of these intersections should be modelled as a network to determine queues at Pennant Hills Road westbound approach at Normanhurst Road/Osborn Road and their impact on Mount Pleasant Avenue.

3.1.4 Pedestrian Modelling

Default 50 pedestrian per hour per approach figure has been adopted in SIDRA models. Given the nature of the development and bold presence of students during school hours, an actual pedestrian survey should have been undertaken, modelled and future growth should be reflected in SIDRA models

3.1.5 PM Peak Assessment

Regardless of network PM peak occurring outside of school PM peak, an independent assessment of peak hour in conjunction with the surrounding road traffic during the school termination hours is required to determine traffic movement interactions and detrimental impacts of additional pick-up manoeuvres during the PM peak. The PM peak results and discussion are missing from TTW traffic report.

3.1.6 Queueing

95th Percentile queueing should be reported in SIDRA tables to determine congested approaches at intersections. This is a major component in traffic modelling and analysis to identify capacity restraints and queue push back to surrounding intersections/access driveways.

Long queues along Mount Pleasant Avenue are not reflected in the SIDRA models due to push back from the intersection of Pennant Hills Road/Normanhurst Road/Osborn Road not modelled.

3.1.7 Drop-off and Pick-up Queueing Analysis

As mentioned in section 3.1.1, a microsimulation model would be the best tool to determine real-time impact of drop-off and pick-up manoeuvres through realistic arrival distribution in real-time. In the absence of microsimulation model, a numerical queueing analysis should have been undertaken to determine adequacy of the proposed drop-off and pick-up zone and its impacts on passing traffic.

3.1.8 Site Observation

There is no indication of site visits and assessment of traffic condition during the peak hour in terms of queueing and safety matters during peak hours. The nature of Mount Pleasant Avenue does not allow for a two-way busy traffic. This issue exacerbates with northbound school traffic during the AM and PM peak hours.

3.2 Mode Share

There are no clear proven outcomes recorded for Green Travel Plans (GTP). Several measures are proposed in a GTP; however, the acceptance of these measures by general public have not been proven yet. Travel mode share targets stipulated in Table 4.2 of TTW traffic report are aspirational and substantial. No practical measures have been identified to achieve targeted model shares. Covid Pandemic will dictate private car usage for a foreseeable future. Hence, Green Travel Plans are forecast to be even less effective.

3.3 Road Safety Audit

The traffic report has not assessed the existing crash patterns on the surrounding road network. Additional traffic due to the proposed development should be assessed from safety point of view by a team of road safety auditors to determine the risks and road safety impacts associated with that.

4 Response to Submissions

4.1 Response to Submissions

The applicant's traffic engineering consultant's response to submission pertaining traffic and transport matters has been reviewed to verify adequacy of the response and qualify practicality of their proposed solutions and mitigation measures.

Table 4-1 Response to Hornsby Shire Council

Issue Raised	TTW's Response	GREYS' Response
Existing pick-up operation is to be reviewed and improved.	Since the original Transport Assessment Report, the existing pick up and drop off arrangement at Osborn Road has been reviewed in its current operation and for its adequacy for the future operations at the School. To address the pick up and drop off issues and future demands Loreto has proposed a relocation of the existing facility and an additional through site link to further increase on site capacity.	Greys consulting did not find any queue length results corresponding to drop-off and pick-up operation and potential impacts on Osborn Road.
With 42.5% increase in students it can be argued that there will be a significant increase in queue length, this is not acceptable to the Branch as it would result in the pickup queue extending onto Osborn Road. Council has received many complaints from local residents regarding queuing onto Osborn Road issue during pickup time.	The relocated Osborn Road pick up and drop off and proposed additional through site link facility will increase the queuing capacity on site by five times what it is currently. Shifting the Osborn Road facility further south will also provide greater departure length from the Osborn Road/Pennant Hills Road intersection which will prevent queues from locking vehicles entering Osborn Road. These works have been proposed as part of Stage 1 to help ameliorate existing impacts that are experienced by the residents of Osborn Road.	There is no evidence of queueing analysis in the traffic report. A detailed microsimulation analysis or a numerical queueing assessment would be required to clarify this matter.
ELC Operational Traffic Management Plan will be impacted by the Master Plan of Loreto. Although the Master Plan excludes the DA of ELC, staff of ELC will rely on car parking areas in Loreto. The TAR needs to have a discussion regarding the future impact to ELC staff parking.	An Operational Traffic Management Plan has been prepared that includes the operation of the ELC, in particular car parking requirements. Car parking demand projections have accounted for demands generated by the ELC and future staff at Loreto.	No comments

Will there be dedicated bus services for Loreto Normanhurst students? If so how are the buses to be catered for?	Loreto currently operates 6 bus services and will include additional services as required as stages of the master plan are constructed. By relocating the Osborn Road pick up and drop off, additional capacity for these bus services will be provided at the Osborn Road slip road.	No comments
Date of traffic counts has not been provided and is required.	Updated SIDRA models have been prepared with traffic volumes from the Ason report. The volumes within this report have been reviewed against SCATS volumes from Thursday the 7th of November 2019 to ensure they reflect the school during normal operations.	According to the Residents' Action Groups, the school was not experiencing normal operations on that day as the year 12s term had finished and were not at school that day. Year 12s account for a lot of the Mount Pleasant A venue traffic as that is where they park, therefore traffic is deemed to be underestimated.

Table 4-2 Response to Transport for NSW

Issue Raised	TTW's Response	GREYS' Response
Trip distribution and assignment of additional traffic The Applicant should consider the existing travel preferences and availability of on-street parking, pick-up or drop-off in the surrounding local road network to estimate trip assignment. Intersection analysis of all impacted intersections should be revised or undertaken accordingly.	Traffic distribution has been revised to address the various vehicular access points around the site, with trips proportioned to available parking spaces. Increase provision of pick up and drop off will reduce the incidence of pick up and drop off occurring on local roads.	Potential drop-off and pick-up locations based on projected arrival direction has been specified in the report.
Managing school traffic volumes at Pennant Hills Road with Mount Pleasant Avenue DPIE should consider requesting an investigation into traffic management measures or development design to mitigate potential increases in the occurrence of crashes due to existing and additional pick-up/drop-off movements and on-street parking on Mount Pleasant Avenue associated with the school.	The Operational Traffic Management Plan submitted with this proposal indicates that those traveling via Mount Pleasant Avenue will be restricted to left out movements only. Future signalisation of this intersection would be of benefit for the community and Loreto, however with the current use of Pennant Hills Road and proximity of the Osborn Road signalised intersection, it is not desirable from Roads and Maritime Services.	There is no evidence of queueing analysis in the traffic report. A detailed microsimulation analysis or a numerical queueing assessment would be required to clarify this matter.
Pick up and drop off analysis required The TA should include analysis to determine the suitability of the existing pick-up/drop-off facility to accommodate the future school population. Should it be determined that the existing facility is deemed inadequate to manage the incoming demand, the Applicant should consider provisions to redesign the facility in future stages of the development.	Since the original Transport Impact Assessment, the existing pick up and drop off arrangement at Osborn Road has been reviewed in its current operation and for its adequacy for the future operations at the School. To address the pick up and drop off issues and future demands Loreto has proposed a relocation of the existing facility and proposed an additional through site link to further increase on site capacity. These works have been proposed as part of Stage 1 to help ameliorate existing impacts that are experienced by the residents of Osborn Road.	There is no evidence of queueing analysis in the traffic report. A detailed microsimulation analysis or a numerical queueing assessment would be required to clarify this matter.

Table 4-3 Response to Roads and Maritime Services

Issue Raised	TTW's Response	GREYS' Response
The existing access on Pennant Hills Road shall be removed and replaced with kerb and gutter to match existing.	Loreto notes the safety concerns regarding the existing access point from Pennant Hills Road. During the consultation process, it was discussed that this access point could be maintained for occasional ceremonial use and when a traffic management plan is in place. This was agreed with RMS in principle. To close the access driveway to general vehicular movements, removable bollards will be installed to prevent access when ceremonial events are not occurring.	This matter has been addressed in the amended design
School Zones must be installed along all roads with a direct access point (either pedestrian or vehicular) from the school. School Zones must not be provided along roads adjacent to the school without a direct access point.	School zones are currently in place on roads with a direct access point.	No comments
There should be suitable pedestrian paths/facilities within the vehicle accessible areas to corral pedestrians to appropriate crossing locations.	Where pedestrian movements are encouraged, pedestrian pathways and crossings have been provided. In the Operational Traffic Management Plan, it has been specified that the main pedestrian crossing areas are marshalled within the site.	This matter has been addressed in the amended design
All vehicles are to enter and exit the site in a forward direction. Provision for vehicles to turn around must be provided within the property boundary.	All vehicles are able to enter and exit the site in a forward direction. This has been shown in the attached swept path analysis.	This matter has been addressed in the amended design

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5 Summary and Conclusions

Greys Consulting was engaged by “Residents’ Action Groups from Mount Pleasant Avenue, Osborn Road and Surrounding Streets” to undertake an Independent Peer Review of the Traffic and Parking Impact Assessment of the Staged Development of Loreto Normanhurst School prepared by TTW. The following deficiencies were identified after peer review of the TTW traffic report and associated design layouts:

- Inappropriate modelling platform has been used for the purpose of this assessment. A microsimulation platform would be recommended for further traffic modelling and assessment.
- SIDRA traffic model has not been validated in terms of queue length at both intersections.
- SIDRA modelling should be undertaken in a network arrangement rather than isolated intersection modelling.
- A pedestrian survey at the intersection due to numerous students crossing the signalised intersection. Using default SIDRA pedestrian numbers would be unacceptable.
- An appropriate queueing analysis of the proposed drop-off and pick-up zone has not been undertaken.
- TTW traffic engineers have not undertaken a site observation to determine the local background traffic issues associated with Loreto.
- Green Travel Plan mode targets are aspirational and impractical and COVID has not been taken in to account either.
- A holistic Road Safety Audit of the surrounding road network during school time has not been undertaken.

It is concluded that numerical and safety impacts of the proposed development proposal should be undertaken using updated traffic counts and calibrated SIDRA traffic models through network analysis and observation during peak hours. The existing safety issues should be identified through a Road Safety Audit and detrimental impacts of additional traffic should be identified and associated risks should be evaluated and mitigated.

SEARS conditions specified by this SSD are very broad and insufficient for a development at this level. It is recommended to provide a more detailed SEARs for further assessment.

Greys Consulting is of the opinion that the traffic assessment undertaken by TTW is inaccurate and has underestimated the traffic impacts of the proposed development and further decision making based on this report is deemed to be inappropriate.