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29 July 2016

Macquarie Health Corporation
301 Catherine Street
Leichhardt NSW 2040

Attention: Mike Robinson
Sent via email: MRobinson@machealth.com.au

Dear Mike

RE : INDEPENDENT REVIEW – ROYAL PRINCE ALFRED HOSPITAL'S MULTI-STOREY CAR PARK TRANSPORT IMPACT ASSESSMENT

Bitzios Consulting was engaged to undertake an independent review and comment on the Transport Impact Assessment by GTA Consultants that was submitted as part the development application for a proposed multi-storey car park for Royal Price Alfred Hospital on Lucas Street, Camperdown.

Document title: Royal Prince Alfred Hospital Lucas Street Multi-Storey Staff Car Park Transport impact Assessment
Issue: C
Date: 3 June 2016

Table 1: Review Findings

Item	Description	Comments	Significance
A	Section 2.3 Morning and Evening peak hours have been chosen to be in conjunction with the staff shift timing and hence, the AM peak assessed does not coincide with the commuter morning peak.	1. Figure 2.15 is missing, so we are unable to validate the staff shift timing. 2. Although staff work during shift hours, there would be general administrative staff that would work the normal business hours and commute during the network peak; has this been considered?	The peak hour traffic impact would be more significant than as stated in the TIA.
B	Section 2.4 The intersections that were surveyed and assessed include: 1. Lucas Street/Church Street 2. Lucas Street /Missenden Road 3. Church Street /Fowler Street 4. Church Street/Grose	1. A greater extent of Carillon Avenue should be included in the assessment due to the proximity of the intersections to the site and the traffic distribution. In our opinion, the intersection of Carillon Avenue/ Church Street should be added to the assessment. The intersection of Parramatta Road/Missenden Road should also be added to the	The indicative road network's level of performance may be worse than as stated in the TIA.

	Street/Fowler Lane 5. Lucas Street/New Road 6. Brodie Street/New Road 7. Parramatta Road/ Mallett Street 8. Parramatta Road/ Layton Road/Church Street 9. Salisbury Road/Mallett Street 10. Carillon Avenue /Grose Street (New Hospital Road) 11. Carillon Avenue/Missenden Road	assessment. 2. Intersections have been assessed/modelled using SIDRA intersection analysis as isolated intersections. Intersections along Carillon Avenue should be modelled as a network due to their close proximity and the queue propagation during peak hours. 3. The report is not clear on the signal phasing used in the assessment.	
C	Section 2.6 The report states the main existing multi-storey car park located south of the site has a reduction in the availability of parking supply for use by staff due to recent modifications by an adjacent landowner.	It is unclear from the report, what the total reduction in parking is, what the source of the information is and what data was used to quantify the reduction.	This may lead to an oversupply of parking in the precinct. The parking demand and supply is required to justify the need for a new car park within the precinct.
D	Section 2.8 The report identifies the existing pedestrian facilities in the area surrounding the site.	1. Pedestrian footpaths and crossing facilities from Carillon Avenue to New Hospital Road and RPAH buildings were not mentioned. The pedestrian desire lines were not identified. 2. The pedestrian activity anticipated from the Queen Mary Building, the existing car parks and the approved development south of the proposed site were not included in the assessment. The safety considerations for these pedestrian should be addressed.	This may result in a higher safety risk with lack of safety provisions and connectivity for both pedestrians and cyclists.
E	Section 5.1 The report identifies that the design will ensure easy use of the existing pedestrian infrastructure and cyclist access has been considered.	In our opinion, the report does not provide an adequate description and assessment of the pedestrian and cyclist facilities.	This may result in a higher safety risk with lack of safety provisions and connectivity for both pedestrians and cyclists. The shift in transportation mode would not occur without safe and adequate pedestrian and cyclist facilities.
F	Section 6.1 This section outlines the assumptions applied in	1. The report indicates that staff arrival timing is outside of the commuter peak; however, staff departure timing from the night shift is	The reliability of the data and assumptions would determine the accuracy of the impact stated in

	estimating the traffic generated by the proposed car park during peak hours.	expected to be after handover to the morning shift and would coincide with the commuter peak. As such the analysis should be undertaken for the commuter peak. 2. The report does not provide the source of the assumptions used in estimating the traffic generation. The existing staff parking pattern should be surveyed and used as a basis for the traffic generation calculation. 3. Evening peak traffic generation was also an assumption with no source. Again, the estimation only takes into account the shift workers and does not include the general administration staff that leave during the evening peak. 4. The TIA did not include background traffic growth from approved developments in the vicinity of the site. The cumulative traffic generation from all approved developments is likely to have a bigger impact on the road network than the TIA shows.	the TIA.
G	Section 6.2 Distribution of traffic generated by the development	1. The report doesn't provide any details to back up the assumptions about traffic distribution. 2. Staff that use the car park should be familiar with traffic patterns in the area and are likely to avoid using the Carillon Avenue/Missenden Road intersection. There is no discussion of this issue in the report, so it isn't known whether this has been considered. 3. The analysis doesn't consider the potential traffic generated by the approved Prince Alfred Private Hospital development. 4. The decision to route all inbound traffic via New Hospital Road relies on New Hospital Road and its intersection with Carillon Avenue to have capacity for the additional traffic and doesn't allow for any alternative routes if there is an incident on the proposed route.	The reliability of the data and assumptions would determine the accuracy of the impact stated in the TIA.
H	Section 6.3 SIDRA analysis of the isolated intersections with the traffic generated by the proposed car	4. Again, the intersection of Carillon Avenue/ Church Street should be added to the assessment due to the proximity to the main car park assess via Grose Street (New	The indicative road network's level of performance may be worse than as stated in

	park	Hospital Road). The intersection of Parramatta Road/Missenden Road should also be added to the assessment. 5. The intersections were assessed in isolation. Due to the close proximity of some intersections, especially those on Carillon Avenue from Missenden Road to Mallet Street, it would be advisable to model these in a network to completely assess the downstream queue impact. 6. Further, with the proposed car park traffic, the intersection assessment for the Carillon Avenue/ Missenden Road intersection shows that the queues on Carillon Avenue would extend beyond the upstream intersection of Carillon Avenue/Grose Street.	the TIA.
I	Section 7 The report identifies the impact during construction; construction vehicles are expected to access the site via the Carillon Avenue/Grose Street intersection.	1. Further assessment of the load limit for Grose Street (New Hospital Road) is needed to demonstrate that the road has the structural strength required for construction vehicles. 2. The existing car park south of the proposed site is accessed via the same intersection. Heavy pedestrian activity is expected and the conflict with construction vehicles may increase the hazard risk to the more vulnerable road users.	The construction vehicles accessing the private road may lead to the deterioration of the road pavement which may be a hazard to other road users and higher safety risk to vulnerable road users with the increase in construction vehicles conflict. The road may also require maintenance or reconstruction.

The table above summarises the findings from the independent review of the abovementioned document.

It is also noted that the report doesn't mention a green travel plan for the RPAH. Green travel plans are used to reduce the reliance on the use of private vehicles by employees traveling to, from and for work.

In our opinion, the traffic impact of the development will be greater than stated in the assessment. Further analysis and assessment is required to better assess the impact of the proposed development on the road network.

Yours faithfully

Tom Wheatley
Manager – Sydney, Principal Traffic Engineer
BITZIOS CONSULTING