

Our ref 220034-02/JPH
Date 24 September 2010

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ARUP

Dear Sir

The Australian Hearing Hub Response to Agencies - Transport Issues

Arup prepared a Transport and Accessibility Impacts Report (16 June 2010) for the proposed Australian Hearing Hub (MP 10_0032). The following is a response to letters received from the following agencies:

- NSW RTA, 23 August 2010
- NSW Transport, 1 September 2010
- City of Ryde, 13 September 2010

1. Response to NSW RTA Letter, 23 August 2010

The RTA recommends that the Hearing Hub application be considered / determined independently of the Precinct E traffic modelling for the Concept Plan.

The measures noted in Item 4 are noted and will form part of the Workplace Travel Plan prepared for the development.

The RTA letter, by way of omission, suggests that the traffic impacts of the proposed development are acceptable and can be accommodated by the external road network.

2. Response to NSW Transport Letter, 1 September 2010

The proposed parking provision is in accordance with the conditions of the MUCP. The conditions provide for an overall limit on total parking supply for Precinct E, rather than a specific rate for each individual development. This condition provides for flexibility in the parking rate adopted for each individual development within the precinct and MU is exercising this flexibility in the proposed parking provision for the Hearing Hub.

The recommendations regarding bicycle parking are noted. Bicycle parking within the development will be prioritised in convenient locations that are well lit, sheltered and secure. Provision will be made for visitor parking at grade located close to major entrances.

The MUCP 40% mode share target to non-car travel is a long term target that will be achieved over time with gradual increases in the proportion of non-car travel. The sustainable transport measures proposed as part of the development will contribute to the meeting of these targets in the future.

The recommended sustainable transport measures are noted and will form part of the final Statement of Commitments.

3. Response to City of Ryde Letter, 13 September 2010

Australian Hearing Hub

TRAFFIC COMMENTS

Overview

The proposed 6-storey Australian Hearing Hub Building has a 23,138 m² GFA, two levels of car parking containing 339 spaces and a loading dock. It is located within the Macquarie University Campus near the Balaclava / Epping Road intersection. The building is accessible from many points including Gymnasium / Culloden Roads, Technology Place / Talavera Road, Waterloo / Herring Roads and Balaclava / Epping Roads. The potential traffic impacts of this development will be at junction points for the university road system and connection points to the public road system.

*Essentially ARUP's Traffic report should account for the "with development" traffic and the planned upgrades at Waterloo / Herring Roads and Balaclava / Epping Roads as a result of proposed development. ARUP has attempted to do this but there appears to be inconsistencies with their assessment. An proper assessment requires use of the **Macquarie Park Paramics Modelling (MPPM)** to assess the "with development" traffic impacts and accounting for the accumulative operational and functional impacts of development in the Macquarie Park Road network, so that a decision can be made as to whether or not functional changes will be required at the key external intersections. Details are outlined below under '**Comments**'*

No application or fee has been received to use the Macquarie Park Paramics Modelling (MPPM) as the University is a Reference Group Member. The application was referred to Council's MP Paramics modelling consultant; Bitzios Consulting who added the following comments:

"It appears that ARUP have "short cut" the process by using the locally validated model prepared by Cardno. They could argue that their work was for the same client (i.e. the University) which did not require them to "purchase" the model. They should still, however, have to pay the application fee and provide all of the model inputs, outputs etc. to be reviewed so that Council can satisfy itself of the impacts and recommended mitigative measures. Over 300 peak hour trips certainly exceeds the 5% threshold for requiring assessment using the MPPM process. The rest of the memo you have prepared appears reasonable."

Arup Response:

Macquarie University is a Reference Group Member of the MPPM and has previously been supplied with a copy of the model by Council.

The Council website (accessed 23/9/10) states in relation to the MPPM that "*The Paramics model will be actively maintained and continuously updated as developments are approved.*" It is our understanding that this has not actually occurred in practice and the original 2007 version of the model is still Council's current version of the model. In particular, the model has not been updated to reflect any changes in traffic patterns that may have occurred as a result of the opening of the Epping to Chatswood Rail Line.

It is therefore logical to assess the traffic impacts of the proposed development using the most up to date version of the model. This is the Cardno version used for the assessment of the Macquarie University Temporary Car Park on Culloden Road. This version not only includes the temporary car park but also includes improvements to the Epping Road / Herring Road intersection which has occurred since the 2007 base model was developed.

The reference to "over 300 peak hour trips" is misleading. The proposed development includes 339 parking spaces and to accommodate the development 955 existing parking spaces will be demolished (W1, W2, C1) and replaced by 795 spaces at a location some distance away (temporary car park on Culloden Road). The proposed development will actually result in a net decrease in traffic on the University Ave and Macquarie Drive road network.

In addition to the changes described above, the 2012 Project Case model also includes:

- proposed Waterloo Road / Herring Road intersection improvements which are a Cochlear development condition of consent

- modification of Balaclava Road, Macquarie Drive and University Ave to reflect current traffic flow arrangements, and also the proposed realignment of Macquarie Drive between Western Road and Balaclava Road
- removal of car parks W1, W2, C1 and Culloden Road temporary car park (sections A, B, C = 795 spaces in total)
- forecast traffic generated by the Cochlear, Library and Private Hospital developments
- changes to Technology Place traffic management as part of the recently opened Private Hospital

The RTA is currently investigating a number of options for improvements to the Epping Road / Balaclava Road intersection. At the time of our assessment, however, a preferred option had not been selected nor had a clear timing commitment been agreed. After consultation with the RTA it was agreed that any proposed improvement at this location should not therefore be included in the 2012 Project Case model. The RTA's letter dated 23 August 2010 does not raise this intersection as an issue.

Comments

1) Background.

Prior to this application Council's modelling consultant Bitzios Consulting received Macquarie University's re-located car park Paramics and Sidra models. Bitzios has completed their review of the Paramics and Sidra modelling. The temporary relocation of the car park will cause a re-distribution of traffic with additional university traffic accessing the intersection of Epping Road and Culloden Road and Epping Road and Balaclava Road.

*Upgrade works are not considered necessary at Epping Road and Culloden Road. However the additional traffic will put pressure on the capacity of the Epping Road east right-turn movement into Balaclava Road in the AM. That is, **a second right-turn lane in Epping Road on the eastern approach is required.** At this time the RTA are planning to upgrade and add bus lanes to Epping Road & Balaclava Road intersection. Consequently **the timing of construction of the additional Epping Road (east) right-turn lane and/ or the proposed upgrade of the Balaclava Road/Epping Road intersection should be considered with this development application and in consultation with the RTA.***

See Arup comment in Overview section.

*Furthermore, the intersection of **Herring Road and Waterloo Road** is to be upgraded due to impacts of the Macquarie Uni – Cochlear development and the Macquarie Shopping Centre. **The timing of construction of these proposed upgrades should also be considered with this development application and in consultation with the RTA.***

See Arup comment in Overview section.

2) Paramics Modelling:

*The Australian Hearing Hub application (pg 18 Section 4.2.1) indicates that it is relying on the previous external Paramics and Sidra Modelling model used for the relocation of the car park (as described above) as the basis for traffic modelling of impacts of the Australian Hearing Hub at key intersections. **The report indicates that the Paramics model has been updated locally for 2010 conditions but this has not been verified.** The relocation of the car park and associated modelling is a consolidation of the loss of parking on-site and therefore **this is not the basis for accessing the traffic impacts of the Hearing Hub.***

*The MPPM-2007 updated was also used to assess the performance of intersections internally. ARUP's report indicates that the internal campus intersections with all university developments to date plus the Hearing Hub would perform at an acceptable level of service in 2012 Project Case (with development). There is a series of maps but **from the information supplied, it is not possible to verify ARUP's conclusion of acceptable level of service for internal intersections. Consideration has been given to the Macquarie Park 2007 Base Paramics Model but the methodology adopted falls short of building the development activity into the model and running the model to assess the 'with development' traffic impacts and accounting for the accumulative***

operational and functional traffic impacts in the Macquarie Park Road network. This is required so that a decision can be made on whether or not functional changes will be required at the key external intersections.

*Council makes available the Macquarie Park 2007 Base Paramics Model to the proponent / traffic consultant including reference group members by application that includes agreement to the conditions of use and payment of prescribed fees. The preference is that the proponent submit the application and fees to Council prior to using the Paramics model for a traffic impact assessment "with development". **No MPPM - application has been received for the relocation of the car park or the Hearing Hub development.***

It is noted however that the report also provides first principles methodology for assessing the traffic impacts of the Hearing Hub (see below).

See Arup comments in Overview section.

3) Traffic Generation.

It is considered that the adopted traffic generation are too low due to assumptions and methods used to determine generation rates. This explained below.

This new building contains 23,138m² GFA, 339 carparks and a loading dock. The traffic generation has been assessed using The RTA Guide to Traffic Generating Developments (GTGD) and relates trip rates per 100m² GFA to number of car parking spaces. This approach is better applied in a retail situation. It is assumed that the whole 23,138m²GFA is office & commercial floor space. The description of the development indicates an office & commercial development which is a combination health and technical usage. The RTA guide quotes employee density as 1 staff member per 29m² to 35m² for health & high-tech. usage. The RTA - GTGD gives a mode split for cars of 0.62 and car occupancy of 1.19 i.e. 52% car drivers based upon 1 staff member per 21m². The new building has the potential to contain 1000 staff or 1 staff member per 23m². The Transport Data Centre 2007 published data for Ryde LGA indicates a mode split for cars of 0.72 and car occupancy of 1.29 i.e. 55% car drivers. An alternative assessment of the traffic generation has been undertaken for comparison purposes. Using RTA figures as per Director General's requirements the traffic generation for the building is estimated to be 0.52 x 0.60 x 1000 = 312 vehicle trips in the peak period (in & out). The forecast traffic generation by ARUP is 228 vehicle trips in the peak period (in & out). The current statistical mode split data and alternative estimate based upon RTA - GTGD indicates that the adopted traffic generation rates are low.

Arup Response:

We believe the adopted traffic generation rates are appropriate for the type of development that is proposed. The adopted rate takes into account:

- **the high proportion of visitor parking spaces (60 spaces) that are unlikely to contribute to significant traffic generation during the assessed peak hours because most visitor activity is likely to occur between 9am – 4pm.**
- **the synergies with the remainder of the MU campus, i.e. a number of Hearing Hub staff will be researchers who are already on campus at other locations**
- **the relatively low rate of parking provision**
- **the good public transport provision to the site and other sustainable transport measures**

4) Trip Distribution

The main potential traffic impacts with this development will be at the external road and University road junction points that give direct access to and from the new Hearing Hub Building. They are:

- *Gymnasium Road and Culloden Road – T- intersection*
- *Technology Road/ Talavera Road /Christie Road – Traffic signal controlled*
- *Balaclava Road and Epping Road – Traffic signal controlled*
- *Waterloo Road and Herring Road – Traffic signal controlled*

The report indicates that the majority of the traffic accessing the Hearing Hub development will be via Balaclava Road and Epping Road and Waterloo Road and Herring Road intersection and as such, a traffic impact assessment has only been undertaken for these intersections. The report indicates that only minor traffic volumes would use Gymnasium Road and Culloden Road and Technology Road / Talavera Road. The report assumes that traffic impacts would be minor.

Traffic volumes and traffic distribution has been checked for this access arrangement:

Intersection (In/Out)	Total Volumes Existing		Distribution Existing	
	AM	PM	AM	PM
• Gymnasium	1401	1627	13%	24%
• Technology	1548	1849	15%	23%
• Balaclava Road			36%	27%
• Waterloo Road			36%	26%

The level of traffic at Gymnasium Road and Culloden Road and Technology Road/ Talavera Road exceeds the volumes (750 vph) at which an intersection analysis is desirable and the traffic distribution is different AM/PM. The traffic impact during the AM and PM peak periods should be demonstrated so that a decision can be made, as to whether or not functional changes will be required at the key external intersections.

Arup Response:

The future long term form of the MU internal road network is the subject of a parallel modelling exercise which is currently being undertaken. As described in this letter and in the report, the traffic impacts of the proposed development are relatively minor. We concur with the RTA’s view that the need for upgrades to any external intersections be considered as part of the Precinct E traffic modelling for the Concept Plan, rather than as part of this individual project application.

5) Traffic Volumes With & Without Development.

The report has provided existing peak hour traffic counts at external intersections and Sidra modelling for the “with” and “without” the development, based upon the existing traffic distribution and turning movement traffic pattern at each intersection. A check on the total volume of traffic assigned at each intersection indicates that there are inconsistencies with the assignment of the traffic in the Sidra models for the Base 2012 future layout case (AM & PM) – temporary carpark, Cochlear stage 1, Library, Macquarie University Private Hospital and the Project 2012 future layout case - (AM & PM) Base case plus the Hearing Hub. For example at Balaclava Road and Epping Road:

- the increase in the level of traffic between the Base 2012 and Project 2012 case is estimated to be 62vph, whereas the modelled level of traffic was found to be 124vph.
- the increase in the level of traffic between the Existing case and Base 2012 case is estimated to be 132vph, where as the modelled level of traffic was found to be 323vph. Given the inconsistencies the Sidra modelling cannot be verified.

Arup Response:

The Sidra modelling is based on traffic counts undertaken in March 2010. The Project 2012 case includes additional traffic generated by the proposed development, temporary car park (795 spaces), Cochlear Stage 1, Library and Private Hospital. It also includes a reduction in traffic in the vicinity of the proposed development due to the removal of car parks W1, W2, C1.

6) Forecasting.

The report makes reference that there is no growth in the background traffic. Extensive Paramics modelling carried out by Council for the Macquarie Park indicates that a 1 percent traffic growth rate would be realistic.

Arup Response:

Council’s comments are based on traffic data collected up until 2007 and is not based on data collected over the most recent three years. The adoption of no growth in background traffic between 2010 and

2012 is appropriate on the basis of trends evident from similar traffic counts undertaken in 2007 and then repeated in 2010. The future 2012 case does, however, take into account development that will be completed by 2012, as previously described in this letter.

7) Geometrical layouts

Geometrical layouts at the intersections were reviewed and the following inconsistencies noted.

• *Waterloo Road and Herring Road – Traffic signal controlled. The preferred layout is different to that provided in the report. The current layout currently proposed by the RTA is:*

- Waterloo Road (east): L -150m, TL, R*
- Herring Road (south): LT, T, R-100m, R-90m. The departure is T, T.*
- University Road: LT,T,R*
- Herring Road (north): R-55m,T, T, L-55m*

Arup Response:

The modelled layout was consistent with the layout proposed by the RTA at the time the modelling was undertaken in June 2010. Council will be aware that the RTA has since modified the design of the proposed improvements at this location. The modified design has been submitted to Council and was tabled at the Ryde Traffic Committee's September 2010 meeting. Sidra modelling undertaken by the RTA demonstrates that both the originally proposed layout and the currently proposed layout are likely to result in a similar level of intersection performance and therefore the modelling undertaken in June 2010 remains valid.

• *Balaclava Road and Epping Road – Traffic signal controlled. This is consistent with the existing layout although this intersection is to be upgraded by the RTA to include bus priority. In addition the relocated Macquarie Uni carpark will attract additional traffic movements. The additional traffic will put pressure on the capacity of the Epping Road east right-turn movement into Balaclava Road in the AM. That is, a second right-turn lane in Epping Road on the eastern approach is required.*

Arup Response:

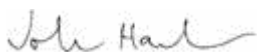
See Arup comment in Overview section.

Other matters

- A. The development is well positioned to take advantage of the existing transport infrastructure and services (train and bus).
- B. The site provides pedestrian and cycle way connectivity.
- C. The applicant has outlined the principles to be applied during construction. Separate Construction Traffic Management Plans should be submitted and approved by Council for civil works and building works that would impact on the road network that provides access to the Australian Hearing Hub development.

We trust that this letter has addressed the issues raised by the various agencies.

Yours sincerely



John Hanlon
Associate