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Subject Macquarie University - Impact of M2 Upgrade

Date 7 October 2011

Job No/Ref 220034/JPH

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## 1 Introduction

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The purpose of this short report is to outline the likely impacts of the M2 Upgrade on both internal Macquarie University roads and the wider Macquarie Park area, including consideration of the upcoming closure of Technology Place at Talavera Road. The analysis is primarily based on traffic forecasts contained in the project Environmental Assessment, and will give MQU a good understanding of any implications relevant to ongoing master planning of the campus.

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## 2 Description of M2 Upgrade

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The M2 Upgrade is currently under construction and is expected to be completed in 2013.

The M2 Upgrade involves widening the motorway to typically provide three lanes in each direction, provision of a number of new interchanges and provision of a consistent 100 km/h speed limit along its entire length.

Motorway access to the Macquarie Park area is currently only available for traffic to/from the west. Full access to/from the east (including Sydney CBD, Lane Cove Tunnel etc) will be provided as part of the project, via:

- Provision of new east facing on-ramp at Christie Road, with a toll on opening of approximately \$2.40
- Provision of new east facing off-ramp at Herring Road/Talavera Road, with a toll on opening of approximately \$2.40

This will involve:

- Improvement and physical widening of Talavera Road, between Research Park Drive (entrance of Macquarie Graduate School of Management) and Alma Road, to provide typically two through lanes in each direction and right turn bays at intersections.
- Physical widening of Christie Road bridge to 5 lanes over the M2 Motorway including the provision of new traffic control signals on Christie Road at the northern ramps.
- Major upgrade of two Talavera Road intersections as described below.

### 2.1 Talavera Road / Christie Road / Technology Place Intersection

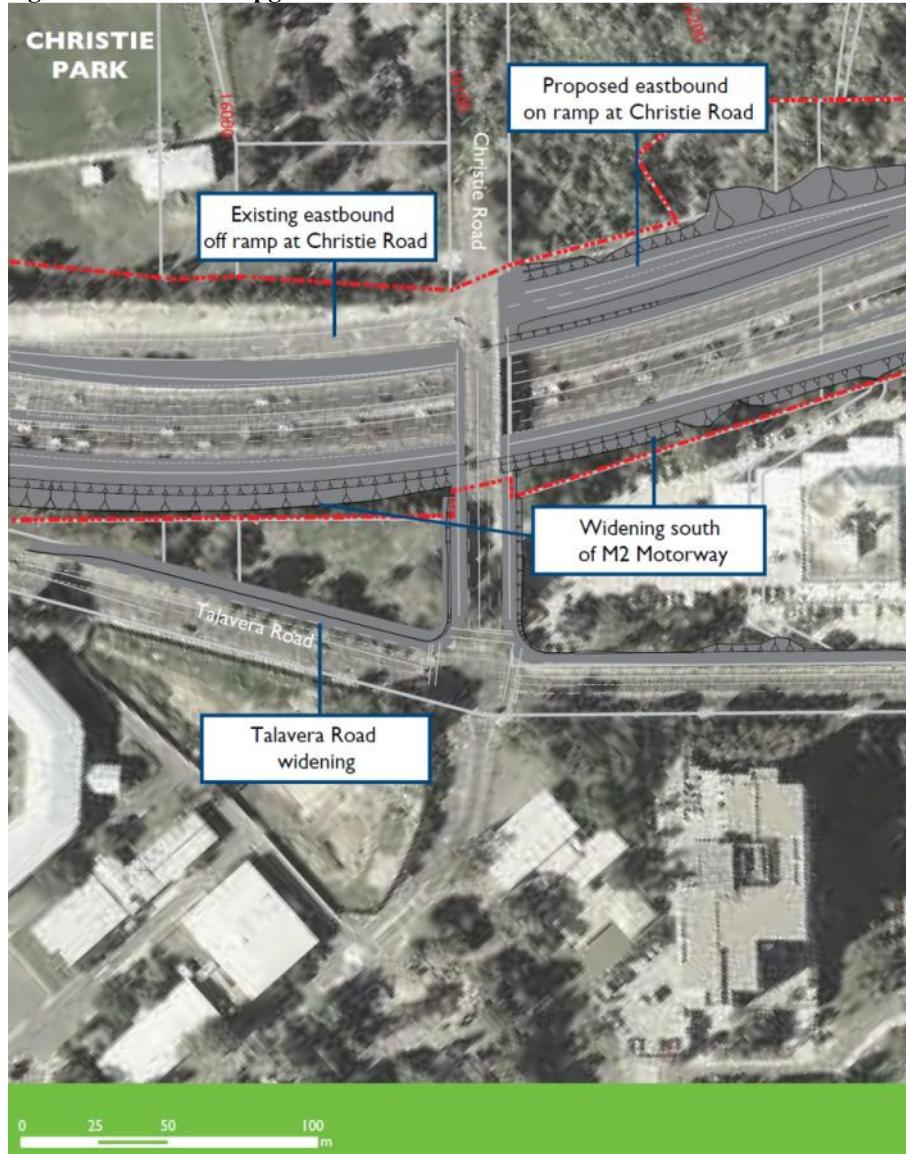
The proposed configuration of the Talavera Road / Christie Road / Technology Place intersection as part of the M2 Upgrade project is as follows (refer to Figure 1):

- Christie Road, in its current configuration, consists of three lanes with one northbound lane and two southbound lanes. Christie Road and the Christie Road Bridge would be widened from three existing lanes to five lanes. The widening would accommodate northbound right turning lanes for the new east facing on-ramp and southbound turning lanes onto Talavera Road. There would be new traffic control signals at the existing off-ramp and new on-ramp.

- Two northbound Christie Road lanes would provide access to the new east facing on-ramp. There would be three southbound lanes including two left turning lanes onto Talavera Road and one lane for traffic turning right onto Talavera Road.
- Talavera Road currently has one traffic lane in either direction and one parking lane on either side of the road between Research Park Drive and Christie Road. Between Christie Road and Herring Road, Talavera Road has two eastbound lanes and one westbound lane, with an additional short westbound right turn lane into Christie Road. In the vicinity of Christie Road, Talavera Road would be widened to accommodate:
  - Two eastbound lanes between Research Park Drive and Herring Road.
  - A lengthened westbound right turn lane into Christie Road.

This configuration will be amended with the proposed closure of Technology Place at Talavera Road.

**Figure 1 Indicative Upgrade Sketch: Talavera Road / Christie Road / Technology Place Intersection**



Source: M2 Upgrade Environmental Assessment

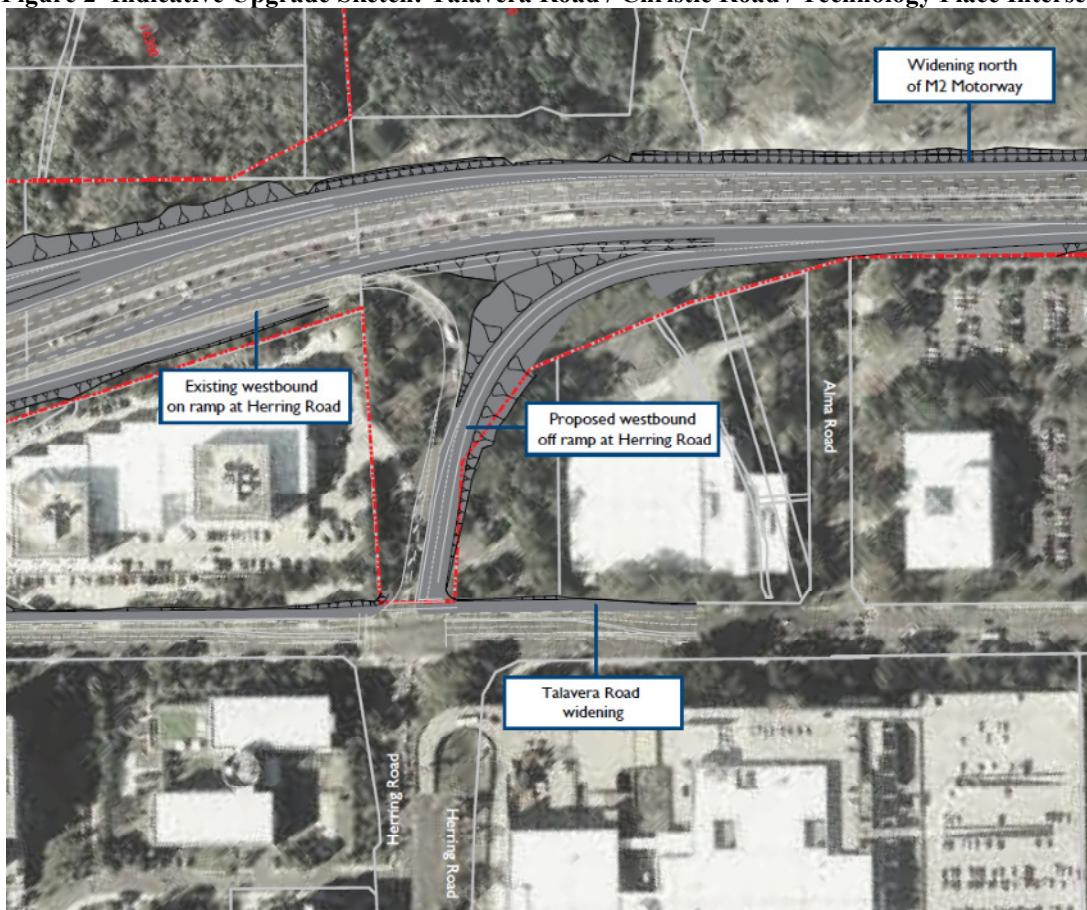
Note: The above configuration will be amended with the proposed closure of Technology Place at Talavera Road

## 2.2 Talavera Road / Herring Road Intersection

The proposed configuration of the Talavera Road / Herring Road intersection as part of the M2 Upgrade project is as follows (refer to Figure 2):

- Herring Road north of Talavera Road is northbound only. It currently comprises two lanes plus shoulder accessing a west facing on-ramp, where the two lanes merge to one immediately after the road bends to be parallel with the M2. Herring Road would be widened on its eastern side between Talavera Road and the M2 to accommodate the new east facing off-ramp. At the intersection with Talavera Road, there would be three additional lanes – two dedicated left turning lanes and one right turning lane from Herring Road onto Talavera Road. The straight through southbound movement to Herring Road would **not be permitted**.
- Currently, Talavera Road has two eastbound lanes to the east of Christie Road, with a bus only lane for the right turn into Herring Road. Talavera Road has two westbound lanes to the east of Herring Road, including a right turn lane to the M2 westbound on-ramp. In the vicinity of Herring Road, Talavera Road would be widened to accommodate an additional westbound right turn lane into Herring Road on-ramp (two right turn lanes).
- The existing no right turn (buses excepted) from Talavera Road eastbound into Herring Road would **be maintained**.

**Figure 2 Indicative Upgrade Sketch: Talavera Road / Christie Road / Technology Place Intersection**



Source: M2 Upgrade Environmental Assessment

### 3 Forecast Traffic Impacts in Vicinity of Macquarie University

Existing and forecast future traffic volumes at key locations are presented in Table 1. The values are based on the project Environmental Assessment unless otherwise stated.

**Table 1 Existing and Forecast Traffic Volumes (average weekday vehicles)**

| Road                           | Location                    | Base   | M2 Upgrade | Change |
|--------------------------------|-----------------------------|--------|------------|--------|
| <b><i>State Roads</i></b>      |                             |        |            |        |
| M2                             | Beecroft Rd to Christie Rd  | 81,150 | 86,230     | +5,080 |
|                                | Christie Rd to Lane Cove Rd | 78,600 | 79,800     | +1,200 |
|                                | Lane Cove Rd to Delhi Rd    | 54,150 | 62,270     | +8,120 |
| M2 EB off-ramp                 | Christie Rd                 | 5,000  | 5,100      | +100   |
| M2 EB on-ramp                  | Christie Rd                 | 0      | 2,320      | +2,320 |
| M2 WB on-ramp                  | Herring Rd                  | 5,000  | 5,100      | +100   |
| M2 WB off-ramp                 | Herring Rd                  | 0      | 3,170      | +3,170 |
| Epping Road                    | West of Vimiera Rd          | 44,550 | 44,050     | -500   |
| Lane Cove Road                 | South of Lady Game Dr       | 92,950 | 92,150     | -800   |
| <b><i>University Roads</i></b> |                             |        |            |        |
| Research Park Drive*           | North of Waterloo Rd        | 5,300  | 6,000      | +700   |

\*Arup estimate

The traffic forecasts suggest that most regional roads in the vicinity of the M2 (e.g. Epping Road, Lane Cove Road) will experience a slight decrease in traffic. This can mainly be attributed to the increased capacity of the M2 and increased reliability in travel times making the motorway more attractive.

It can be seen that traffic using the west-facing Macquarie Park ramps is likely to be significantly higher than traffic using the east-facing ramps. This is mainly because most of the M2 is situated to the west of the Macquarie Park area. In terms of cost-per-km use of the east-facing ramps will be relatively expensive.

Traffic volumes in the Macquarie Park area are forecast to increase slightly on the following roads as a result of the M2 Upgrade:

- Talavera Road between Research Park Drive and Khartoum Road
- Herring Road between Talavera Road and Epping Road
- Waterloo Road between Herring Road and Khartoum Road
- Research Park Drive and Innovation Road

Traffic volumes in the Macquarie Park area are forecast to decrease slightly on the following roads as a result of the M2 Upgrade:

- Talavera Road between Khartoum Road and Lane Cove Road
- Waterloo Road between Khartoum Road and Lane Cove Road
- Culloden Road
- Vimiera Road

The main benefit of the new east-facing ramps will be to improve access to the Marsfield – Macquarie Park area, i.e. the area north of Epping Road and west of Lane Cove Road. The ramps will allow existing trips that currently use Epping Road to remain on the motorway network for longer. However, the new ramps are unlikely to draw significant traffic from the wider area due to the proximity of the eastern end of the M2 at North Ryde. The toll on the new ramps will also influence usage. Business users are more likely to pay the toll for use of a relatively short stretch of motorway compared to private users such as commuters.

The configuration of the new east-facing ramps and the local road network are critical to the assignment of traffic movements in the area:

- The straight through southbound movement to Herring Road from the M2 east-facing off-ramp would not be permitted. Traffic wishing to head straight down Herring Road will have to either turn left and use Khartoum Road or turn right and use Research Park Drive or Culloden Road. This restriction, coupled with the toll for a relatively short stretch of motorway, may also result in some traffic not using the M2 but using Epping Road instead.
- The bus-only right turn movement from Talavera Road to Herring Road is an existing restriction, contributing to traffic movements from the existing eastbound off-ramp at Christie Road only, and is unlikely to contribute to any further changes in traffic patterns.
- The restrictions at the Talavera Road / Christie Road / Technology Place intersection requested by the University will slightly reduce the attractiveness of Research Park Drive as a through route.

University-generated and through traffic on some internal University roads may increase as a result of the M2 upgrade. The new east-facing ramps will result in a redistribution of some University-generated trips to/from the east, although this may be offset by a decrease in traffic on other internal roads.

It is estimated that as a result of the M2 Upgrade daily traffic on Research Park Drive may increase by as much as 700 vehicles per day or between 10-15%, although it is possible that there may end up being no noticeable change. Any increase would be a combination of University-generated and new non-University through traffic. A significant proportion of any increase in traffic, however, is likely to be University-generated traffic that is re-distributed from other routes.

## 4 Conclusions

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It is likely that the M2 Upgrade will result in a small increase in traffic volumes on some Macquarie Park roads and a small decrease on other roads. Traffic volumes on some University roads may increase slightly but this is likely to be offset by a decrease on other roads.

In summary, it is highly unlikely that the M2 Upgrade will result in a major increase in traffic through and around the University. Therefore, most previous traffic and master planning for the University remains valid.