

# SAMSA CONSULTING

TRANSPORT PLANNING & TRAFFIC ENGINEERING

3<sup>rd</sup> April 2018

NSW Department of Planning & Environment  
Level 22, 320 Pitt Street  
SYDNEY NSW 2000

Our Ref: *Ch9 Willoughby Mod2\_TA review*  
Direct line: 0414 971 956

Attention: James Groundwater

Dear James,

**MODIFICATION TO MP 10\_0198 CONCEPT PLAN FOR RESIDENTIAL DEVELOPMENT WITH  
ANCILLARY USES AND OPEN SPACE, CHANNEL 9 SITE, WILLOUGHBY**  
**Review of Traffic Impacts of Project Modification No.2**

**BACKGROUND**

The Channel 9 site at 6-30 Artarmon Road, Willoughby was the subject of a Part 3A Concept Plan Approval (*MP10\_0198* – Concept Plan Approval) that was approved on 23 December 2014. The Concept Plan Approval provides for the residential re-development of the site for up to 400 residential dwellings with small-scale non-residential uses to support the new population.

A modification (Modification No.1) to the approved Concept Plan was submitted to increase the number of dwellings from 400 to 510 and provide small-scale commercial uses. Subsequently, a further modification (Modification no.2 – the subject of this review) has been submitted.

The Modification no.2 submission included an assessment of traffic prepared by McLaren Traffic Engineering (McLaren) to assess the traffic impacts of the proposal on the site. Willoughby City Council (Council) has objected to the proposed modification and relies on previous advice provided by ARUP Pty Ltd (Arup), which raised issues with the previous similar proposal (Modification No.1) which has not progressed.

**SCOPE OF REVIEW**

The Department of Planning & Environment (DP&E) is seeking an independent review and expert traffic advice to clearly understand the traffic impacts of the proposed modification application (MOD 2) at the Channel 9 site, Willoughby.

This review has been undertaken by *Samsa Consulting Pty Ltd*, Transport Planning & Traffic Engineering Consultants, and is in response to a request to provide advice on the varying transport impact conclusions reached by consultants for the subject project.

The scope of the review focuses on the following tasks:

1. Peer review of the traffic impact assessments prepared by McLaren, GTA Consultants and Arup, identifying the assumptions utilised and the reasons for varying conclusions.

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In summary, the Modification No.2 application seeks to modify the Concept Plan Approval as follows:

- Increase the number of dwellings from 400 to 495 residential units.
- Provide small scale commercial uses including centre-based childcare facilities.
- Retention of the existing Scott Street alignment, with the intersection of Artarmon Road / Scott Street upgraded to a roundabout.
- Provision of 66 at-grade car parking spaces within the internal road for general visitor parking.
- Two (2) driveways are proposed from the internal roadway, within the envelope of Buildings G & D respectively. The north-south alignment of the internal road retains the existing Scott Street alignment, whilst the east-west alignment of the internal road is consistent with the original assessment and connects to Richmond Avenue.
- In regard to the intersection of Willoughby Road / Artarmon Road, there are no proposed works as part of the Modification No.2 application, rather the application offers a contribution of \$500,000 under a Voluntary Planning Agreement (VPA) to future works at this intersection if the RMS / Council / TfNSW decide to undertake works.

The proposed development layout of the subject site is shown in *Figure 2* following.

#### **DOCUMENTS REVIEWED**

The following documentation was reviewed:

- Arup “6-30 Artarmon Road, Willoughby, Transport Impact Assessment Review”, 15 September 2016
- Arup “6-30 Artarmon Road, Willoughby, Transport Impact Assessment (Modification 2) Review”, 19 February 2018
- Australian Standard “AS 2890.1:2004, Parking facilities, Part 1: Off-street parking”
- Australian Standard “AS 2890.2:2002, Parking facilities, Part 2: Off-street commercial vehicle facilities”
- Australian Standard “AS 2890.6:2009, Parking facilities, Part6: Off-street parking for people with disabilities”
- AustRoads “Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections”, August 2009
- AustRoads “Guide to Road Design, Part 4B: Roundabouts”, August 2009
- AustRoads “Guide to Traffic Management, Part 11: Parking”, 2008
- GTA “Nine Network Site Redevelopment, Willoughby, Transport Impact Assessment”, 18/07/2016
- McLaren Traffic Engineering “Updated Traffic & Parking Impact Assessment for the Modification Application for Approved Residential Development at Artarmon Road, Willoughby”, 30 March 2017
- Willoughby City Council Development Control Plan (DCP)
- RMS, TfNSW and Willoughby City Council – assorted submissions and responses



Figure 2: Development Site Layout

## REVIEW FINDINGS

### **Existing Road Network and Traffic Operations**

- Artarmon Road functions as a local collector road and in the vicinity of the site is aligned in an east-west direction. It is approximately 12 m wide with a travel lane and parking lane in each direction. Artarmon Road has a local area 50 km/h speed limit with unrestricted parking permitted on both sides. Peak hour traffic volumes along Artarmon Road are up to 800 vehicles per hour near the Willoughby Road intersection<sup>1</sup>.
- Willoughby Road is a classified State road (MR 641), which runs in a north-south direction. It is a two-way, undivided four-lane road with a carriageway width of approximately 13 metres. Kerbside parking is restricted along Willoughby Road in the vicinity of the Artarmon Road intersection, with clearway periods during peak times. Current daily traffic volumes along Willoughby Road are approximately 36,000 vehicles per weekday (two-way) with peak hour volumes of approximately 10,000 vehicles per hour (two-way)<sup>2</sup>.
- Artarmon Road and Willoughby Road intersect at a signal controlled junction with Small Street forming the eastern leg of the junction. There are peak directional right-turn restrictions from Willoughby Road, ie. right-turn restriction into Artarmon Road southbound during the morning peak period and right-turn restriction into Small Street northbound during the afternoon peak period. There is no controlled pedestrian crossing across the southern Willoughby Road leg of the intersection. Peak hour traffic volumes travelling through the Willoughby Road / Artarmon Road / Small Street intersection are in the order of 3,300 vehicles per hour<sup>3</sup>.
- In the vicinity of the site, Artarmon Road has a number of priority-controlled side streets including Scott Street, Edward Street and Richmond Avenue.
- Based on site observations during AM, PM and Saturday peak travel periods, existing road network performance along Willoughby Road, Artarmon Road and the Willoughby Road / Artarmon Road / Small Street intersection are considered to be congested with particular congestion occurring during the Saturday midday period, most likely due to high traffic volumes and the absence of the weekday peak directional right-turn restrictions off Willoughby Road.

### **Public Transport**

- Bus routes 257, 272, 343 and M40 operate from bus stops on either side of Willoughby Road just north of the Artarmon Road / Small Street intersection. These bus services are relatively heavily used.

### **Traffic Generation**

- It is considered that the adopted traffic generation (0.25 to 0.32 trips per peak hour per dwelling) is in accordance with RTA "*Guide to Traffic Generating Developments*". This level of traffic generation is considered to be relatively minor in the context of the major road network, ie. traffic generated by the development is generally within any daily variations in peak hour or daily traffic volumes that are likely to occur at the Willoughby Road / Artarmon Road / Small Street intersection. At the subject intersection, development traffic would constitute an approximate increase of 3% of current intersection traffic during the peak hours, while for Willoughby Road, the increase would be approximately 1.5% during the peak hours and/or across the day. It is noted that the impact on Artarmon Road itself is significant with an increase of approximately 20% of current peak hour traffic.

<sup>1</sup> Based on *Appendix A* of GTA TIA report

<sup>2</sup> 2016 traffic data from RMS traffic count station ID: 33098 (Willoughby Road, 90 m south of Small Street)

<sup>3</sup> Based on *Appendix A* of GTA TIA report

### ***Intersection Performance of Willoughby Road / Artarmon Road / Small Street***

- It is agreed with the findings of the McLaren report that the additional traffic generated by the proposed development would not necessarily require an intersection upgrade of the existing Artarmon Road / Willoughby Road / Small Street intersection. The intersection operations in the future (ie. post development) would be most affected by background traffic volumes along the surrounding road network rather than the addition of development traffic. It is evaluated that approximately 3% additional traffic is anticipated to travel through the subject intersection due to the subject development – this level of traffic increase is likely to be within any daily variations in peak hour or daily traffic volumes that are occurring at present.

There are some relatively minor inconsistencies between the two comparable modelling analyses undertaken by Arup and McLaren including approach traffic volumes and signal cycle timing. However, the Arup assessment generally mirrors the McLaren assessment and indicates only minor level of service changes between pre and post-development traffic operations and a worst-case LoS D for the intersection (during Saturday peaks with full development), which is considered to be adequate.

It is noted that the Arup assessment included additional (future) development traffic generation in the surrounding area. It is disagreed that all future developments should be used in a traffic assessment because surrounding developments would be subject to their own development application process and their use in the assessment of the subject development proposal would over-estimate the traffic generation in the area resulting in poorer intersection performance results. It is thought that all development in the area needs to be considered as part of cumulative impacts but this should be the role of the relevant road and/or planning authorities, ie. Willoughby Council, RMS, etc.

It is noted that for the full development case with additional surrounding development and the provision of a pedestrian crossing across the southern leg of the Artarmon Road / Willoughby Road / Small Street intersection, the initial Arup assessment (September 2016) indicates queues back along Artarmon Road potentially past the proposed Scott Street roundabout access point. In the McLaren assessment and the revised Arup assessment (February 2018), the queues do not extend back to Scott Street, most likely due to the moderation of additional surrounding development used for traffic generation as well as the absence of the additional pedestrian crossing across the southern intersection leg. It is agreed that the queue lengths would not likely extend back to the Scott Street roundabout. In any case, queuing back past the roundabout should not significantly affect road safety or operations at the roundabout because the Artarmon Road eastbound through movements need to give way to entering Scott Street traffic from the development.

### ***Proposed Artarmon Road / Scott Street Roundabout***

- It is agreed with the findings of the Arup report that there are potential road safety issues with providing a roundabout controlled junction along Artarmon Road at Scott Street due to the significant downslope approach from the west – approximate 10% grade for eastbound approach to the junction. AustRoads guidelines indicate a maximum 6% downgrade for the approach to a roundabout<sup>4</sup>. This may also have implications for the design of the roundabout including service relocation and adjacent land acquisition.

Arup also suggests that there may be sight-line road safety issues between vehicles approaching the roundabout along Scott Street and westbound Artarmon Road traffic. This is difficult to ascertain until a design is prepared for the roundabout junction showing horizontal and vertical geometry, signage and pavement markings.

<sup>4</sup> Section 4.10.2 of AustRoads "Guide to Road Design, Part 4B: Roundabouts", August 2009

It is agreed with GTA report (July 2016) that the existing priority-controlled T-junction at Scott Street / Artarmon Road would operate adequately with the addition of development traffic and that the proposed roundabout is not considered to be critical to the development proposal.

### **Vehicle Swept Path Issues**

- It is agreed with the findings of the McLaren report that there are no significant swept path issues along the internal road network for service vehicles.

McLaren noted that 9.8 m long garbage truck vehicles would cross the centrelines of the approach and/or departure sides of turn movements. However, it is agreed with their assessment that the full width of a driveway access may be utilised during 'occasional or regular service' (as per AS 2890.2), such as for a garbage collection service. Based on this standard, the swept path analysis provided by McLaren was considered to be suitable.

With respect to removalist trucks, Arup initially adopted a 12.5 m long truck while McLaren adopted a smaller 10 m long truck for their respective assessments. McLaren based their shorter length on the loading bay length because Willoughby Council's DCP does not stipulate the dimensions of a removalist truck. This is considered to be reasonable and thus satisfies the swept path assessment. While Arup's approach is more conservative, it is considered to be unreasonable to use such a cautious approach for vehicles that may only be accessing the site sporadically – this is acknowledged by the latest Arup report (February 2018).

### **On-Street Parking Issues**

- It is agreed with the findings of the Arup report that while there will be no net-loss of on-street parking in the area due to the subject proposed development, Artarmon Road residents reliant on parking outside / adjacent to their properties would be impacted by the proposal. Moreover, it is agreed with Willoughby Council that car spaces in the public domain have more utility and value than car spaces in the private domain. In this regard, on-street parking internal to the development site should be clearly identified to compensate for loss of parking on Artarmon Road and Richmond Avenue, ie. the number of lost on-street parking spaces should be designated as residents parking only, with effected residents of Artarmon Road (between Edward Street and Willoughby Road) eligible to park in the car spaces near the Artarmon Road access point and effected residents in Richmond Avenue eligible to park in the car spaces near the Richmond Avenue access point.

Moreover, any visitor parking spaces proposed within the basement areas of the development may not be fully utilised due to the potential difficulty for visitors to find and access parking in basement areas. This may be mitigated by suitable wayfinding and other information signage for visitors. There is also the issue of how secure access will be maintained to residents while allowing visitors unsecured access to basement parking areas - this issue is not insurmountable and depends on the car park management systems adopted.

### ***Pedestrian Crossing at the Willoughby Road / Artarmon Road / Small Street Intersection***

- It is disagreed with the findings of the McLaren report that any intersection upgrade at Artarmon Road / Willoughby Road / Small Street should not include a controlled pedestrian crossing across the southern leg of the intersection despite this potentially impacting on intersection operations, ie. traffic signal phasing.

A pedestrian crossing across each intersection leg would discourage pedestrians from crossing Willoughby Road in an uncontrolled manner. This is pertinent because of the likely increased pedestrian demand between the subject proposed development and the active open space on the eastern side of Willoughby Road including land uses such as Willoughby Leisure Centre, Willoughby Squash Centre, Bicentennial reserve, etc.

Moreover, the provision of pedestrian crossings across all intersection legs is standard RMS policy for new and/or upgraded intersections, unless it can be demonstrated that the treatment is impractical.

It is acknowledged that the provision of an additional pedestrian crossing across the southern intersection leg would likely adversely impact traffic signal phasing and intersection operations (as suggested by Arup in their intersection assessment inclusive of an additional pedestrian crossing).

### ***VPA Contribution***

- It is considered that the \$500,000 contribution proposed to be provided towards any future upgrade works at the Artarmon Road / Willoughby Road / Small Street intersection would only provide for some basic intersection / road upgrade treatments. A significant (full) intersection upgrade is likely to cost over \$5 million when allowance is made for the following components:
  - Significant utility and pavement drainage adjustments including design and investigation costs.
  - Amendments to traffic signal phasing are likely to be substantial, eg. including provision of a pedestrian crossing across the southern leg of Willoughby Road.
  - Apart from any new pavement areas (eg. for road widening, slip-lanes, etc.) there would be pavement milling and re-sheeting for potentially the extent of the project.
  - Property acquisition may be significant.
  - Various road occupancy license costs would be required.
  - If business' are impacted during construction (eg. along Willoughby Road), there may be compensation costs.
  - Community consultation requirements.
  - Environmental assessment requirements, eg. large trees would potentially be impacted on the eastern side of Willoughby Road in particular.

Notwithstanding the above, it is considered that the proposed \$500,000 contribution would be adequate given the minor nature of the development's traffic increases impacting on the subject intersection operations. The funding shortfall could be obtained from other upcoming / future developments and/or RMS from which the major through traffic flows contribute the most to the intersection's traffic volumes and impacts.

## **CONCLUSIONS**

The following has been concluded from a comparative review of assessments for the subject development.

- The additional traffic generated by the proposed development would not necessarily require an intersection upgrade of the existing Artarmon Road / Willoughby Road / Small Street intersection.
- There are potential road safety issues with providing a roundabout controlled junction along Artarmon Road at Scott Street but these would be confirmed once a design has been provided. It is noted that the proposed roundabout is not considered to be critical to traffic operations.
- It is considered that there are no significant swept path issues along the internal road network for service vehicles.
- While there will be no net-loss of on-street parking in the area due to the subject proposed development, Artarmon Road residents reliant on parking outside / adjacent to their properties would be impacted by the proposal.
- Any intersection upgrade at Artarmon Road / Willoughby Road / Small Street should include a controlled pedestrian crossing across the southern leg of the intersection so that pedestrians are discouraged from crossing Willoughby Road in an uncontrolled manner.
- It is considered that the \$500,000 contribution proposed to be provided towards any future upgrade works at the Artarmon Road / Willoughby Road / Small Street intersection would only provide for some basic intersection / road upgrade treatments. However, it is considered that this level of contribution would be adequate given the minor nature of the development's traffic increases impacting on the subject intersection operations.

If you have any queries with respect to the above, please do not hesitate to contact the undersigned.

Yours faithfully,



ALAN SAMSA

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