

18 December 2014

The Secretary  
Department of Planning and Environment  
23-33 Bridge Street  
SYDNEY NSW 2000

Attention: Amy Watson, Team Leader  
Sent by email: [Amy.Watson@planning.nsw.gov.au](mailto:Amy.Watson@planning.nsw.gov.au)

Dear Amy,

**SSD5093 – North Ryde Station Precinct “M2 Site”  
Response to Transport for NSW Submission**

We write on behalf of Urban Growth NSW to provide a response to the Transport for NSW (TfNSW) submission on the abovementioned Development Application for State Significant Development dated 19 November 2015. The following matters were raised:

1. Width of the Spine Road
2. Bus Bay intersection with Mews Road
3. Sufficient number of bus bays for articulated buses
4. Driver toilets
5. Provision of pedestrian crossings

Each of these matters is addressed with a response below and should be read with reference to Attachment A: Review of TfNSW Spine Road Lane Width Recommendation, prepared by Arc Traffic + Transport dated 3 December 2014.

**1 Width of the Spine Road**

Transport for NSW advise that bus services that could terminate and turn around at the M2 Site may use articulated buses and recommend that the Proponent demonstrate how articulated buses can safely traverse the site given the advised minimum width of new bus capable roads is 3.5m.

The Development Application for State Significant Development SSD 5093 proposes 3.25m lane widths in the Spine Road which complies with the requirements of the North Ryde Station Precinct DCP (NRSP DCP). It is understood that the TfNSW were included in the development of the North Ryde Station Precinct Transport Management and Access Plan (NRSP TMAP) and the NRSP DCP.

It is noteworthy that, Section 4.1(d) of the NRSP DCP states as an objective: “*Ensure connector streets are designed to accommodate movement of buses*” and requires the achievement of 3.25m lane widths for the Spine Road.

The NRSP TMAP provides for street design that is slightly different to the standard road typologies in the Ryde Development Control Plan 2010 (RDCP 2010) Section 4.5: Macquarie Park. The RDCP 2010 requires 3.0m lane widths. The NRSP TMAP states at Section 6.3: Street Design that:

*“3.25 m width traffic lanes proposed compared to 3.0 m width lanes in Ryde DCP. The travel lane has been increased slightly to provide more turning room for large vehicles such as delivery trucks to the rail areas and garbage trucks. This is additionally important due to positioning of trees within the parking lane which reduced the distance between overhanging branches and moving trucks. It also future proofs the streets should TfNSW decide to extend bus routes into the development at some future date (See section 7.4.4 and 11.2 for comments on this issue). State Transit Authority’s Bus Infrastructure Guideline advises that 3.2 m is appropriate for lanes to be used for buses”.*

The proposed Spine Road lane widths are consistent with the NRSP DCP and NRSP TMAP, which were prepared in consultation with government agencies, including TfNSW.

Arc Traffic + Transport have considered the recommended lane widths for the Spine Road, having regard to compliance with general bus standards, and has found that Section 4.9.3 of AusRoads RDG3 does not specifically require 3.5m lane width, but rather notes the provision of such as a “preferred width” or a “desirable width”, and these widths are not mandated. Austroads design requirements do not provide recommendations for a lower speed environment such as that within the M2 Site. A lower speed environment specifically allows for consideration of reduced widths in line with local authority requirements (i.e. NRSP DCP).

Bus movements were analysed throughout the planning of the M2 Site road and subdivision layout by Urban Growth NSW, in close consultation with TfNSW to determine appropriate bus accessible routes. The swept path analysis plans prepared in consultation with TfNSW and submitted with the SSD5093 were based on the provision of 3.25m lanes in accordance with the NRSP DCP and the required 12.5m radius swept paths.

The movement of an articulated bus through the M2 Site was assessed as part of SSD-5093, and Arc Traffic + Transport advise that the movement of an articulated bus through the M2 Site, which is not the design vehicle, can move through the M2 Site with relatively minimal lane sharing. The adoption of the 12.5m bus as the design vehicle in accordance with the relevant standards, in a local road setting, road sharing or reduced clearances will occur on occasion. Importantly, AustRoads acknowledges that the design vehicle is not necessarily the largest of the vehicles that may operate at a particular location, and is intended to represent the majority of vehicles allowed to operate at that location.

Notwithstanding the above, analysis of the articulated bus movements shows that lane sharing would occur regardless of the width of the lanes. It is advised that there would not be a significant difference between the lane sharing to/from a Spine Road with lane widths of 3.25m, or a Spine Road with lane widths of 3.5m.

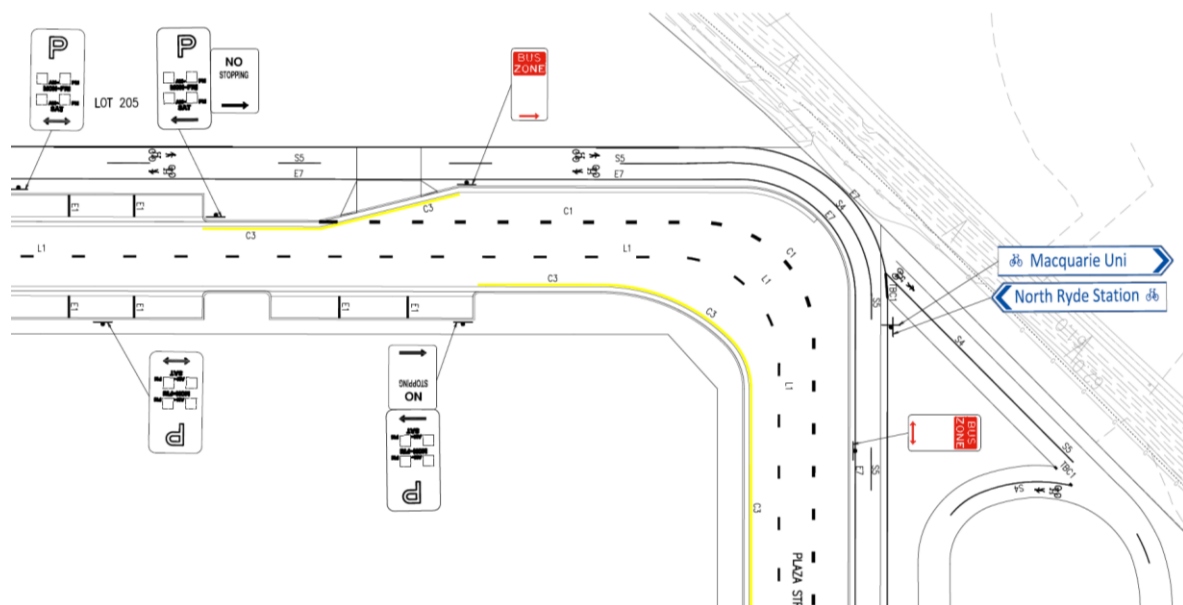
## 2 Bus Bay intersection with Mews Road

TfNSW recommend that bus bays in the Spine Road are to be designed to Austroad standards to accommodate an 18 metre articulated bus. A concern is raised that the bus bay on the Spine Road would block a Mews Road, preventing other vehicles from using this road, while the bus was stopped. TfNSW recommend the bus bay be designed to accommodate an articulated bus.

UrbanGrowth NSW invite a condition of consent adopting the recommendation of TfNSW for the bus bays in the Spine Road.

TfNSW requests written confirmation and an updated diagram that confirms that the three bus bays in the retail precinct are capable of accommodating an articulated vehicle. Signs and Line Marking Drawing C-0-5-0-4 prepared by Robert Bird Group submitted with the Response to Submissions shows the bus zone sign and line marking proposed on Park Street. Refer to drawing extract at Figure 1.

FIGURE 1 – BUS ZONE ON PARK STREET (SOURCE: DRAWING C-0-5-0-4, ROBERT BIRD GROUP)



It is confirmed that the three bus bays provided in the retail precinct on Park Street and Plaza Street are designed to accommodate articulated buses and appropriate signs and line marking were provided on the civil drawings that accompanied the Proponent's Response to Submissions report.

#### 4 Driver toilets

TfNSW have requested written confirmation that the two toilets located in the Central Park will be available for the exclusive use of bus drivers. It is the intention of UrbanGrowth NSW that the two toilets are for the exclusive use of bus drivers.

## 5 Provision of pedestrian crossings

TfNSW recommend that pedestrian crossings are to be provided in locations that are acceptable to the City of Ryde Council and are to be bus friendly. The pedestrian crossings are located in appropriate locations having regard to pedestrian desire lines and safety.

The Response to Submissions considered the comments from the City of Ryde on the exhibited SSD 5093. The City of Ryde made a submission stating that the pedestrian crossing on Plaza Street could be shortened if a tighter corner radii on Plaza Street is provided.

The corner radii provided at this location was specifically determined to meet the demands of STA buses travelling through the site, and nonetheless have been "tightened" to the extent possible to reduce pedestrian crossing distances.

If you require any further information in relation to this matter please do not hesitate to contact the undersigned on 9233 9900.

Yours sincerely,



Murray Donaldson  
Director, Planning

cc. Simeon McGovern, UrbanGrowth NSW [smcgovern@urbangrowth.nsw.gov.au](mailto:smcgovern@urbangrowth.nsw.gov.au)

**Attachment A:**

Review of TfNSW Spine Road Lane Width Recommendation, prepared by Arc Traffic + Transport, 3 December 2014



3<sup>rd</sup> December 2014

Urban Growth NSW

c/o

NPC

PO Box 1060

Crows Nest NSW 1585

Att: Craig Kelly

## Review of TfNSW Spine Road Lane Width Recommendation

Dear Craig,

Further to our recent discussions with NPC, ARC has examined an issue that has been raised by Transport for NSW (**TfNSW**) in regard to lane widths and articulated bus movements within the M2 Site. Specifically, in their correspondence to the Department of Planning & Environment (**DP&E**) dated 19<sup>th</sup> November 2014, TfNSW states the following: -

### *Spine Road Lane Widths*

#### *Issue*

- *Sydney's Bus Future is a key model strategy supporting the Long Term Transport Masterplan. It is the Government's long term plan to core-design the City's bus network. A number of high frequency routes are planned to run to Macquarie Park. The M2 site is a key location to turn buses around and that needs to be maintained. TfNSW requires the ability to rely on the M2 site for bus turn around as required.*
- *The North Ryde TMAP of 2012 at section 4.4.4 outlines the need for regular bus services to use the M2 Site. Service frequencies of a bus every 10 minutes in the peak periods and every thirty minutes in the off peak were outlined. For example, the M54 a rapid bus service between Parramatta and Macquarie Park in one service that could potentially terminate and turn around at the M2 site and this service use articulated buses.*

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- TfNSW advises the current proposal to adopt 3.25m lane widths for Spine Road does not comply with the Austroads guidelines<sup>1</sup> for new bus capable roads. The Austroads guidelines suggest new bus roads should be minimum 3.5m wide.

#### Recommendations

- The proponent demonstrates how articulated buses can safely traverse the site given the advised minimum width for new bus capable roads is 3.5 metres.

In reviewing this issue, we have relied on the following key references: -

- AustRoads Guide to Road Design Part 3: Geometric Design (**AustRoads GRD3**)
- AustRoads Design Vehicles and Turning Path Templates Guide (**AustRoads DVTPTG**)
- RTA Road Design Guide (**RTA RDG**)
- RTA NSW Bicycle Guidelines (**RTA NSWBG**)
- State Transit Authority Bus Infrastructure Guide (**STA BIG**)
- North Ryde Station Precinct Transport Management & Accessibility Plan (**NRSP TMAP**)
- North Ryde Station Precinct Development Control Plan (**NRSP DCP**)
- Ryde Development Control Plan 2014 (**Ryde DCP**)

## 1 NRSP DCP Compliance

The State Significant Development Application (**SSDA**) for the M2 Site proposes 3.25m lane widths in Spine Road which conform to the requirements of the **NRSP DCP**; road profiles through the broader North Ryde Station Precinct (**NRSP**) are shown in Table 4 of the **NRSP DCP** and provided below.

### • **NRSP DCP Table 4 Street Dimensions**

|                            | Carriageway                              | Parking                   | Planting                                                                         | Pavements                                           | Reserve  |
|----------------------------|------------------------------------------|---------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------|----------|
| <b>Spine Road</b>          | 2 x 3.25m                                | 2 x 2.5m                  | 1 x 2.5m + planting in parking bays                                              | 2 x 3.0m                                            | 20m      |
| <b>Local Road</b>          | 2 x 3.25m                                | 2 x 2.5m                  | Planting in parking bays                                                         | 2 x 3.0m                                            | 17.5m    |
| <b>Local Road M2 Edge</b>  | 2 x 3.25m                                | 1 x 2.5m<br>2.5m cycleway | Planting in parking bays                                                         | 2 x 3.0m                                            | 17.5m    |
| <b>Park Edge Street</b>    | 1 x 4.5m<br>Shared on south side of park | 1 x 2.5m                  | Planting in parking bays                                                         | 1 x 3.0m                                            | 10m      |
| <b>Park Edge Share Way</b> | 1 x 4.5m adjacent to park edge           | 1 x 2.5m                  | Planting in parking bays                                                         | 1 x 3.0m                                            | 10m      |
| <b>Station Street</b>      | 1 x 6.5m<br>1 x 4.5m                     | 1 x 2.5m                  | 1 x 3m in swale +<br>1 x 2.5m in footpath +<br>Planting in parking bays footpath | 1 x 3m<br>1 x 9m (including 2.5m for tree planting) | 28.5m    |
| <b>Commercial Street</b>   | 2 x 4m/4.5m                              | 2 x 2.5m                  | 2.0m median<br>Planting in parking bays                                          | 2 x 3.0m                                            | 21-26.0m |

Importantly, relying on the requirements of the NRSP DCP – i.e. the lane widths determined by the local authority (and in this case further to detailed consultation with TfNSW and other traffic agencies) - is specifically provided for in Section 4.2.5 and Table 4.3 of AustRoads GRD3 as per below: -

- **AustRoads GRD3 Section 4.2.5 Urban Road Widths**

*Table 4.3 [shown below] provides guidance for traffic lane widths on urban arterial roads. Lane widths to be adopted in residential, commercial and industrial areas are typically determined by the local municipality. Given the varying nature of these developments in terms of scale and traffic mix, designers should seek guidance regarding the choice of traffic lane width from the relevant municipal road authority.*

- **AustRoads GRD3 Table 4.3 Urban Arterial Road Widths**

| Element                                                                                 | Lane width (m) | Comments                                                                                                                 |
|-----------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------|
| General traffic lane                                                                    | 3.3 – 3.5      | General traffic lane widths to be used for all roads                                                                     |
|                                                                                         | 3.0 – 3.3      | For use on low speed roads with low truck volumes                                                                        |
| Service road lane                                                                       | 3.4 – 5.5      | Range of lane widths on service roads (refer to Section 4.11)                                                            |
| Wide kerbside lane                                                                      | 4.2            | Locations where there are high truck volumes (additional width provided for trucks)                                      |
|                                                                                         | 4.2 – 4.5      | Locations where motorists and cyclists use the same lane (refer Section 4.8.11 and Commentary 7)                         |
| HOV lane                                                                                | 3.5 – 4.5      | Bus lane (refer Section 4.9.2)                                                                                           |
|                                                                                         | 3.3            | Tram/light rail vehicle lane (refer Section 4.9.3)                                                                       |
| Minimum width between kerb and channel (to provide for passing of broken down vehicles) | 5.0            | Width of a single lane suitable for use in a left turn slip lane, or two lane, two way divided road with a raised median |
|                                                                                         | 2 × 4.0 (8.0)  | Width of two lanes that provide for two lines of traffic to (slowly) pass a broken down vehicle                          |

It is our understanding that Ryde Council is the relevant “municipal authority” for the M2 Site, but regardless it is the case that all relevant agencies – including TfNSW - were involved in the development of the NRSP TMAP and thence the NRSP DCP, which as shown above clearly states a requirement for 3.25m roads. Further, NRSP DCP Section 4.1(d) specifically states as an objective “Ensure connector streets are designed to accommodate movement of buses” and then requires that Spine Road (the primary connector road) provide 3.25m lane widths.

The need for bus accessibility within the M2 Site, and the provision of 3.25m lane widths to provide such accessibility, is specifically addressed in the NRSP TMAP as an outcome of consultation between Parsons Brinkerhoff and TfNSW, as detailed in the following sections of the NRSP TMAP: -

- **NRSP TMAP Section 7.4.4 Extension of Bus Services**

*Transport for NSW is currently planning for an expansion of bus services to the Macquarie Park area. Limited terminus space at current termini has prompted the need to identify new sites that could be made suitable for use as a bus terminus in the future. One site identified is the M2 Site, which may need to accommodate space for one bus route. The broad details and benefits for this proposal were seen by TfNSW as:*

- *Providing access to a bus service without having to cross a major road. TfNSW were concerned that the time and crossing locations would act as a deterrent to bus use, and that a service within the site would be more successful in reducing car use.*
- *The Spine Road (via the Wicks Road/Waterloo Road intersection), combined with terminus facilities in the retail/residential area near the M2 Motorway/Delhi Road corner of the M2 Site should be made available for one bus route.*
- *Indicative frequencies of the bus route would be every 10 minutes in peak periods and every 30 minutes during off peak, night, Saturday and Sunday.*

- **NRSP TMAP Section 6.3 Street Design**

*The proposed street design is slightly different to the standard road typologies provided in the Ryde Development Control Plan 2010 Section 4.5: Macquarie Park. From a traffic perspective, the primary differences are...*

- *3.25 m wide traffic lanes proposed compared to 3.0 m wide lanes in Ryde DCP. The travel lane has been increased slightly to provide more turning room for large vehicles such as delivery trucks to the retail areas and garbage trucks. This is additionally important due positioning of trees within the parking lane which reduces the distance between overhanging branches and moving trucks. It also future-proofs the streets should TfNSW decide to extend bus routes into the development at some future date (see section 7.4.4 and 11.2 for comments on this issue). State Transit Authority's Bus Infrastructure Guideline advises that 3.2 m is appropriate for lanes to be used by buses.*

To summarise, the proposed Spine Road lane widths conform to the NRSP DCP, a document finalised only further to consultation with key agencies including TfNSW, and which ratifies the recommendations of the NRSP TMAP by increasing lane widths to 3.25m to "future-proof" the M2 Site internal roads – and specifically the Spine Road – in the eventuality of buses accessing the M2 Site.

## 2 Compliance with General Bus Standards

As referenced in the Section 6.3 of the NRSP TMAP (above), the recommended increase in lane width from 3.0m (under the Ryde DCP) to 3.25m (under the NRSP DCP) references Section 5.2 of the STA BIG, which provides the following: -

- **STA BIG Section 5.2**

*Travel lanes*

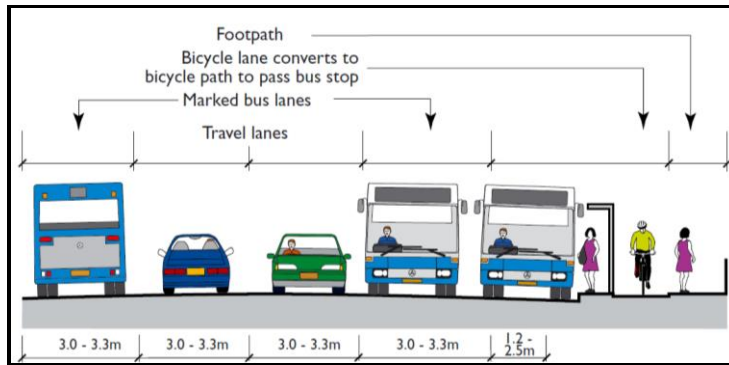
*The minimum desirable lane width for bus routes is 3.2m.*

The STA BIG requirement also aligns with other references, including: -

- **RTA RDG Section 3.2.6 Bus Routes**

- New construction of roads with bus routes should provide for a desirable lane width of 3.25m and a minimum of 3.0m.

- **RTA NSWBG Figure 5.5 Bicycle and bus lanes adjacent to a bus stop**



Finally – and as specifically referenced by TfNSW - Table 4.21 of AustRoads RDG3 provides the following: -

- **AustRoads RDG3 Table 4.21 Widths of bus travel lanes on new roads**

| Lane characteristics                   | Preferred width (m) | Desirable minimum width (m) |
|----------------------------------------|---------------------|-----------------------------|
| Kerb lanes – 60 km/h <sup>(1)</sup>    | ≥ 4.5               | 3.7                         |
| Kerb lanes – 80 km/h <sup>(2)</sup>    | ≥ 4.5               | 4.3                         |
| Kerb lanes at bus stops <sup>(3)</sup> | ≥ 5.7               | 5.5                         |
| Kerb lane + parking <sup>(4)</sup>     | ≥ 7.8               | 6.7                         |
| Other bus travel lanes <sup>(5)</sup>  | ≥ 3.5               | 3.5                         |

Section 4.9.2 of AustRoads RDG3 **does not specifically require 3.5m lane width**, but rather notes the provision of such as a “Preferred width” or a “Desirable minimum width” – these are not mandated widths such as provided by AustRoads for a host of other infrastructure, and must be considered in context. Specifically, the AustRoads GRD3 Table 4.9.2 design requirements do not provide recommendations for a lower speed environment such as that within the M2 Site, a lower speed environment which – with reference to AustRoads GRD3 Section 4.2.5 - specifically allows for consideration of reduced widths in line with local authority requirements (i.e. the NRSP DCP).

### 3 Bus Movement Analysis

Throughout the planning for the M2 Site – and through the planning of the Station Street sites – the Urban Growth NSW Project Team has worked closely with TfNSW in designing bus accessible routes.

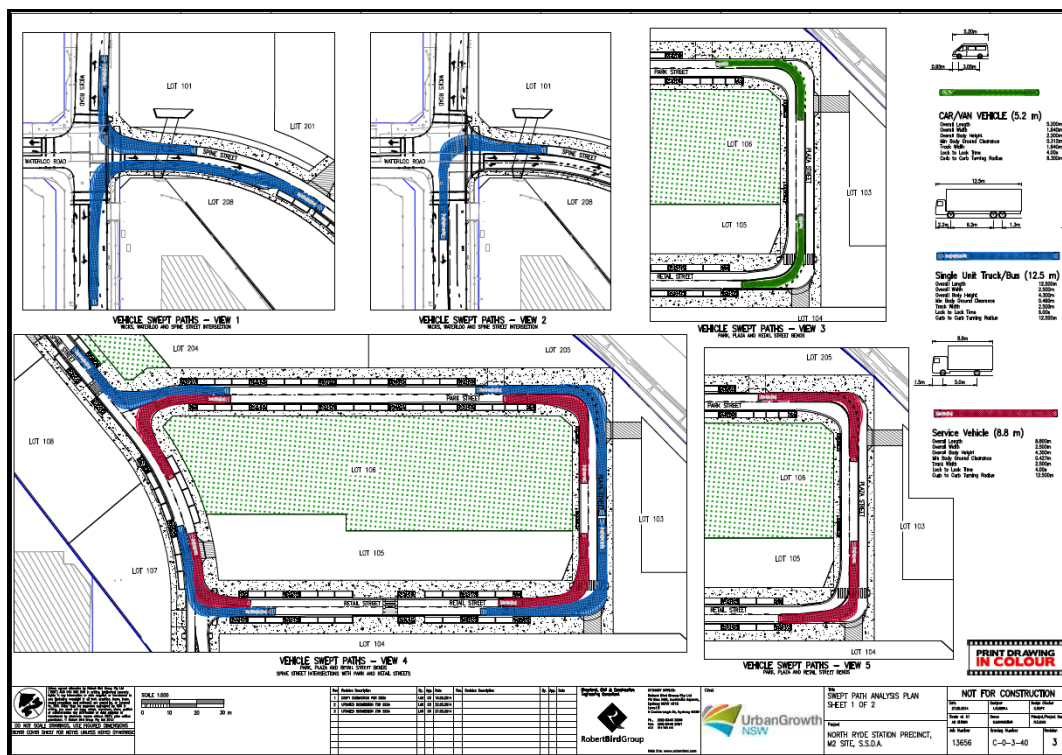
All of that planning – including all swept path analysis plans prepared in consultation with TfNSW and then submitted as part of the M2 Site SSDA and Station Sites SSDA – has been based on the provision of 3.25m lanes as per the NRSP DCP and the 12.5m radius swept path required as the assessment parameter with reference to the STA BIG as per below: -

- **STA BIG Section 2.3 Turning templates**

*State Transit specifies as a minimum the 12.5m Austroads bus template turning at 5km/h – 15km/h is to be used.*

The M2 Site swept path analysis based on these characteristics is provided in the SSDA *Plan C-0-3- 40 Swept Path Analysis Plan Sheet 1 of 2*:-

- **SSDA *Plan C-0-3- 40 Swept Path Analysis Plan Sheet 1 of 2***



Many of the key turning movements shown in the SSDA *Plan C-0-3- 40 Swept Path Analysis Plan Sheet 1 of 2* required design changes to specifically facilitate these 12.5m bus template turning paths, including 'flattening' kerb radii at key locations, but nonetheless the M2 Site – and specifically the Spine Road - provides for the movement of 12.5m buses with a turning radius of 12.5m as per the requirements of the STA BIG; and utilising 3.25m lane widths as per the requirements of the NRSP TMAP, the NRSP DCP, the STA BIG and the RTA RDG.

Notwithstanding the above – and with specific reference to the TfNSW *Recommendation* - the movement of an articulated bus through the M2 Site was also assessed as part of the SSDA process, and it has been determined that an articulated bus – which critically again is not the design vehicle with reference to the STA BIG Section 2.3 – can move through the M2 Site with relatively minimal lane sharing.

Importantly, the adoption of the 12.5m bus as the design vehicle in the STA BIG Section 2.3 in our opinion is directly related to, and supported by, AustRoads DVTPTG Section 3.1, which acknowledges that in a local road setting such road sharing or reduced clearances will occur on occasion: -

- **AustRoads DVTPTG Section 3.1**

*The design vehicle for a particular case is not necessarily the largest of the vehicles that may operate at that location. The design vehicle is intended to represent the majority of the vehicles allowed to operate at that location. The design vehicles are hypothetical vehicles whose dimensions and operating characteristics are used to establish lane widths and road geometry intersection layouts. A larger vehicle may not be precluded from using the road, but may need to operate with reduced clearances or encroach into adjacent lanes. While this may inconvenience some road users, the low frequency of such occurrences makes this acceptable.*

And further: -

- **AustRoads DVTPTG 4.1.2 Non-arterial Roads**

*The single unit truck/bus should be used for works on collector and local roads and the service vehicle is appropriate for intersections involving local streets. However, in both cases, while restrictive intersection geometry may be desired to meet traffic management and environmental objectives on local roads, it is necessary to check the layout using the next larger design vehicle template to ensure that occasional use by vehicles larger than the chosen design vehicle is viable. In this case, the larger vehicle may be allowed to encroach into other traffic lanes (including the opposing traffic direction if the intersection is unsignalised), and travel over specially designed parts of traffic islands. This is usually acceptable as the frequency of this occurrence and the inconvenience and risk to other traffic at these locations is minimal.*

However - and critically - the analysis of the articulated bus movements also shows that lane sharing by an articulated bus would occur regardless of the width of the lanes, i.e. there would be no significant difference between the lane sharing to/from a Spine Road with lane widths of 3.25m, or a Spine Road with lane widths of 3.5m.

If ARC can provide you with any further information, please do not hesitate to contact Anton Reisch by email at [antonreisch@optusnet.com.au](mailto:antonreisch@optusnet.com.au); or by phone on 9449 5160.

Yours sincerely,



Anton Reisch

Director, ARC Traffic + Transport