



Transport Review

Warrawong Plaza State Assessment Planning Proposal

for

NSW Department of Planning & Environment

## Document Control

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# 1 Introduction

## 1.1 Overview

arc traffic + transport has been engaged by the NSW Department of Planning & Environment (**DPE**) to prepare a **Review** of the transport characteristics of a proposed mixed-use development (the **Proposal**) at Warrawong Plaza (the **Plaza**) located at 43 – 65 Cowper Street, Warrawong (the **Site**).

Based on currently available reports, the Proposal generally provides for the following:

- 1,300 high density residential dwellings.
- Approximately 11,000m<sup>2</sup> gross floor area (**GFA**) of additional non-residential floorspace.
- New internal and interface road infrastructure.
- Ancillary access, parking and servicing infrastructure.

Details of the Proposal are provided in the broader planning submission that will be assessed by DPE under the auspices of the State Assessed Planning Proposal (**SAPP**) pilot program, which is designed to fast-track developments which DPE consider have considerable merit further to appropriate planning considerations.

From the outset, it is important to note that based on additional information provided by the Applicant to DPE, it is anticipated that the Proposal will be revised, and specifically remove the proposed increase in non-residential floorspace. In the context of the potential traffic impacts of the Proposal, this is a very significant change, as the trip generation of the non-residential component of the Proposal would generate a level of additional traffic requiring much more detailed analysis than has been provided to date.

As such, while the Review in the first instance focuses on the Proposal as identified in the SAPP, arc traffic + transport has also provided a separate review of the Proposal should the non-residential floorspace be removed, i.e. the Proposal provides only for new residential dwellings.

## 1.2 Review Tasks

The Review has been prepared to examine the access, traffic and parking characteristics of the Proposal, and moreover to provide DPE an appropriate level of confidence that the Proposal can be supported further to these considerations; whether additional information needs to be provided to properly assess the Proposal; or whether there is the potential for the Proposal to impact local transport networks if not revised.

As such, the Review includes specific consideration of the following:

- The existing characteristics of the Site, as well as the [short-term] characteristics of the Site further to the recent Development Application (**DA**) approval that provides for a new Woolworths supermarket.

- The existing and future characteristics of the Warrawong Town Centre (the **Town Centre**) in which the Site lies.
- The existing and future base (i.e. without the Proposal) operation of the local road network.
- Existing and future proposed public and active transport services and infrastructure.
- Proposed land uses and yields.
- Proposed access to the road network.
- The trip generation and distribution of the Site further to the Proposal, and the potential impact of those trips on the local road network.
- Parking requirements and provisions.
- Servicing requirements and provisions.

### 1.3 Reference Documents

#### 1.3.1 SAPP Documents

Key documents accompanying the SAPP application referenced in the Review include:

- Planning Proposal: Warrawong Plaza – 43-65 Cowper Street, Warrawong, December 2023 prepared by Ethos Urban (**PP Report**);
- Transport Aspects of Planning Proposal for Residential and Retail Development 43 – 65 Cowper Street, Warrawong, September 2023, prepared by Colston, Budd, Rogers and Kafes (**TIA V1**);
- Transport Aspects of Planning Proposal for Residential and Retail Development 43 – 65 Cowper Street, Warrawong, December 2023, prepared by Colston, Budd, Rogers and Kafes (**TIA V2**);
- Warrawong Plaza Planning Proposal Urban Design Report December 2023, prepared by CHROFI and Turf Design Studio (**UD Report**);
- Response to Request for Information, December 2023, prepared by Colston, Budd, Rogers and Kafes (**Transport Response**); and
- Response to Request for Information, December 2023, prepared by Ethos Urban (**RFI Response**).

#### 1.3.2 Planning Documents

The Site lies within the Wollongong Local Government Area (**LGA**); key Wollongong City Council (**Council**) documents referenced in the Review include:

- Wollongong Development Control Plan 2009 (**Wollongong DCP**);
- Wollongong Local Environmental Plan 2009 (**Wollongong LEP**); and
- Warrawong Town Centre Master Plan (**WTC MP**).

### 1.3.3 Traffic & Transport Guidelines

The Review also references the following technical reports and guidelines:

- Guide to Traffic Generating Development 2002, Roads & Traffic Authority (**RTA Guide**); and
- Guide to Traffic Generating Developments – Updated Traffic Surveys 2013, Roads & Maritime (**RMS Guide**).

### 1.4 September 2023 Agency Correspondence

Further to the submission of a Preliminary Planning Proposal in September 2023, Council, TfNSW and DPE provided the Applicant with initial feedback in regard to the Proposal, and in many instances requested that additional information be provided to allow a more detailed assessment of the Proposal.

Correspondence received from these agencies referenced in the Review includes:

- Letter to Applicant, 22/11/2023 prepared by DPE (**DPE RFI**);
- Wollongong City Council Officer's Comments, 21/11/2023 (**Council RFI**); and
- Transport for NSW letter to DPE, 1/11/2023 (**TfNSW RFI**).

### 1.5 Summary Findings

Further to our review of all available information relating the Proposal, and with specific reference to the RFIs noted above, it is clear that the detailed transport assessment requested by DPE, TfNSW and Council further to their review of TIA V1 has not been provided in TIA V2. Moreover, we have identified additional issues that have not been considered in either TIA V1 or TIA V2 which have the potential to significantly impact the local road network.

With reference to our review of the Proposal, as well as the feedback provided in the RFIs, [Table 1](#) provides a summary of what we consider to be the key issues relating to the Proposal; the way these issues have been addressed in TIA V2; and what we considered to be the outstanding issues require further detailed assessment.

Table 1: Summary Review Findings

| Issue                           | Summary Response   | Outstanding Issues to be Addressed   | Review Reference   |
|---------------------------------|--|--|--|
| <b>SAPP Land Use and Yields</b> | <p>The various SAPP reports include different land use and yield estimates for the Site, particularly in relation to the definition of the proposed Site GFA/GLFA. Based on our discussions with DPE, it was our understanding that the Proposal (and in turn TIA V2) would include revisions to the Preliminary Proposal submitted to DPE in September 2023; however, the land uses and yields in TIA V2 are identical to those assessed in TIA V1.</p> <p>As discussed in <a href="#">Section 1.1</a>, information provided to DPE by the Applicant suggests that a revised Proposal will be prepared that does not include additional non-residential floorspace; again however, the Review in the first instance has relied on the land uses and yield estimates detailed in TIA V2.</p> | <p>It is essential that the land uses and yields proposed align across all supporting SAPP documents.</p> <p>From a traffic perspective, the Site will generate a significantly higher number of trips than identified in TIA V2 further to the application of appropriate trip rates.</p> <p>As such, there is the real potential for the Proposal to have a significant impact on the operation of the local road network.</p> | <p><a href="#">Section 3.2</a></p> <p><a href="#">Section 3.4</a></p>                                    |
| <b>Trip Generation</b>          | <p>TIA V2 adopts trip rates for the residential component of the Proposal that reflect high density trip rates in Sydney metropolitan centres, which are unrepresentative of the trip generation of future residential dwellings at the Site.</p> <p>TIA V2 essentially concludes that the commercial (retail) component of the Proposal will generate little if any traffic. Based on previous assessments of the Site, this is simply not the case.</p> <p>The peak trip generating period of the Site is the Saturday late morning/early afternoon peak period, and this Saturday peak will also generate the most additional trips further to the Proposal. However, TIA V2 provides no consideration of the Saturday peak.</p>  | <p>As per above, the Proposal will generate significantly more trips than identified in TIA V2, the potential impact of which has not been appropriately assessed.</p>   | <p><a href="#">Section 3.4</a></p> <p><a href="#">Section 3.5</a></p> <p><a href="#">Section 3.6</a></p> |
| <b>Trip Distribution</b>        | <p>The Proposal will result in a significant redistribution of trips as a result of the removal of the primary Cowper Street driveway to the rooftop car park; the design of the internal road network; and changed traffic conditions arising from the WTC MP, particularly in Cowper Street and at its intersection with King Street. TIA V2 provides no information in regard to the future distribution of trips in the local road network.</p>  | <p>The Proposal (and the WTC MP) will result in significant changes to the distribution of trips in the local road network, the potential impact of which has not been addressed.</p>  | <p><a href="#">Section 3.3</a></p> <p><a href="#">Section 3.4.4</a></p>                                  |

Table 1: Summary Review Findings (continued)

| Issue                          | Summary Response   | Outstanding Issues to be Addressed  | Review Reference |
|--------------------------------|--|---|------------------|
| <b>General Traffic Growth</b>  | <p>TIA V2 does not provide any consideration of background traffic growth, which will add a significant number of additional trips to the local road network. It is standard practice to provide an assessment of future base conditions, generally being 10 years further to the completion of development, and indeed each development stage.</p> <p>Future growth factors can be determined with reference to Council's TRACKS strategic transport model, and consideration of the redevelopment of the former Bunnings and Port Kembla Hospital sites is also required.</p> <p>In addition, a recent Site approval provides for a new Woolworths supermarket, which in and of itself will generate hundreds of additional trips to the local road network; again, these additional trips have not been considered in TIA V2.</p> | <p>Any traffic analysis needs to account for future base conditions, as these are what the relative impacts of the Proposal must be measured against.</p> <p>Without consideration of background and other growth not associated with the Proposal, it is impossible to assess these relative impacts.</p>                                      | Section 3.5      |
| <b>Road Network Operations</b> | <p>TIA V2 provides analysis of 2 intersections, being Northcliffe Drive and the primary Site driveway (Access Point 1 – <b>AP 1</b>) and Northcliffe Drive &amp; King Street. Notwithstanding the need to expand the traffic analysis to include all Site access intersections and other key intersections in the vicinity of the Site, even the analysis of these 2 intersections requires redress, as the analysis does not include the actual trip generation of the Site further to the Proposal; the redistribution of trips in the local road network; or background traffic growth and the like.</p>  | <p>The additional trip generation of the Site will without doubt impact the operation of the local road network; without detailed traffic analysis of all Site and local intersections to determine the extent of said impacts, and mitigation measures that may be required, it is simply not possible to provide support for the Proposal</p> | Section 3.6      |



Table 1: Summary Review Findings (continued)

| Issue  | Summary Response   | Outstanding Issues to be Addressed  | Review Reference |
|--|--|---|------------------|
| <b>Public Transport</b>                            | The low trip rates adopted in TIA V2 are to some extent dependent on a high use of public transport; however, there is no information available to support the contention that public transport will provide for any significant number of residential and visitor trips such as would allow the use of such low trip rates.   | As per above, the Proposal will generate significantly more trips than identified in TIA V2, the potential impact of which has not been appropriately assessed. | Section 2.4      |
| <b>Active Transport</b>                            | The low trip rates adopted in TIA V2 are to some extent dependent on a high use of active transport; however, there is no information available to support the contention that active transport will provide for any significant number of residential and visitor trips.  | As per above.   | Section 2.5      |
| <b>Deferral to Future Development Applications</b> | <p>TIA V2 and the RFI Response suggest that many assessment tasks can be deferred to future Development Applications; this is not supported. Simply, the operation of the local road network further to the completion of all stages of development is required to ensure that the Proposal does not rule out, or be ruled out by, the future operation of the local road network.</p> <p>This is also relevant to key design issues such as the internal road network and access to parking and service areas; while a detailed design assessment (per compliance with the relevant Australian Standards) is not required at the time, the fundamental operation of the internal road network needs to be determined from the outset.</p>                     | A full assessment of the traffic characteristics of the Proposal must be undertaken from the outset to mitigate any potential impacts in future years.          |                  |
| <b>Reliance of Existing Planning Controls</b>      | <p>Both TIA V2 and the PP Report identify the potential trip generation of the Site further to the application of existing planning controls, and conclude that the Proposal is supportable given that the additional trip generation of the Site (per the Proposal) would be significantly lower than that generated if the Site were developed in accordance with those planning controls.</p> <p>This argument is not supported; while the existing controls may allow for more development, it is nonetheless essential that the trip generation of any development can be supported by the local road network, i.e. the fact that the Site <i>could</i> generate more trips than proposed does not in and of itself provide support for the Proposal.</p> | It is our opinion that there is no merit to this argument.  | Section 3.7      |

Table 1: Summary Review Findings (continued)

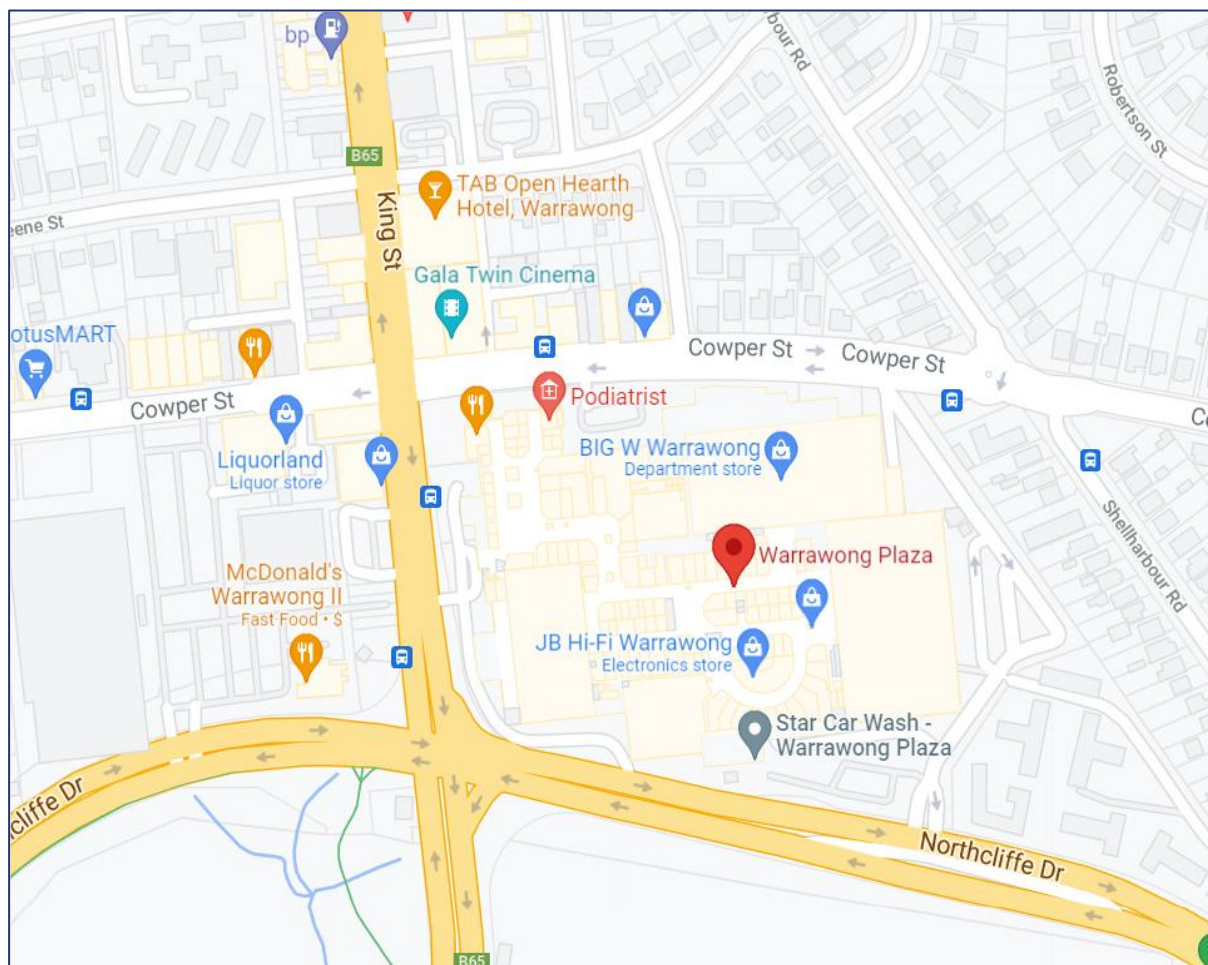
| Issue  | Summary Response   | Outstanding Issues to be Addressed   | Review Reference |
|--|--|--|------------------|
| <b>Service Vehicles</b>                                | <p>There is no information available in regard to how deliveries etc will be made from service areas along the eastern side of the Site and all residential and retail areas across the Site.</p> <p>The proposed service vehicle route will also require that all trucks depart to Cowper Street, which is a poor outcome given the intended pedestrianisation of Cowper Street in the WTC MP. It also means that trucks will be required to use local roads for some trips.</p>  | While it is the case that service vehicles currently use Cowper Street, requiring all trucks to use Cowper Street will reduce amenity and potential increase safety risks.   | Section 3.8.1    |
| <b>King Street Pedestrian Access</b>                   | The Proposal provides a key pedestrian access point to King Street generally mid-block between Cowper Street and Northcliffe Drive. While this will provide good access to the King Street bus stops, it would be preferable to provide the primary access point close to the signalised pedestrian crossings at the intersection of King Street & Cowper Street.  | This pedestrian access location is not in accordance with best design principles but in and of itself could be supported.  | Section 3.8.2    |
| <b>Internal Road</b>                                   | The purpose and operation of the internal road is unclear, and the design of the internal road south of Cowper Street, where it provides two-way movements, requires further clarification. There is also a suggestion that a significantly higher number of trips will be generated to/from the Cowper Street driveways.  | The operation and design of the internal road requires further assessment.   | Section 3.8.3    |
| <b>Revised Proposal: No Non-Residential Floorspace</b> | <p>As discussed in <a href="#">Section 1.1</a>, information provided to DPE by the Application suggests that a revised proposal may be prepared that does not include the non-residential floorspace. The removal of the non-residential floorspace would significantly improve the potential for the Proposal to be acceptable to DPE (and <a href="#">arc traffic + transport</a>) given the resulting reduction in Site trips.</p> <p>This does not mean that a more detailed assessment (of a revised proposal) will not be required, but in our opinion the scope of that revised proposal would be significantly less than detailed in sections above for the current proposal, and moreover the potential impacts on local transport networks would be similarly reduced.</p> | <p>The potential traffic impacts associated with a revised proposal would be significant lower than the current Proposal.</p> <p>While additional traffic analysis will certainly be required, the scope of work will be reduced, and moreover it is our opinion that a balanced number of new dwellings could be provided at the Site without significantly impacting local transport networks.</p> | Section 4        |

## 2 Existing Conditions

### 2.1 Site Location

The Site is located at 43 – 65 Cowper Street, Warrawong, and is bordered by Cowper Street to the north, Northcliffe Drive to the south, low density residential dwellings to the east and King Street to the west. The Site is shown in its local context in Figure 1.

Figure 1: Site Location



Source: Google

### 2.2 Existing Site Characteristics

#### 2.2.1 Land Use

The Plaza provides approximately 44,000m<sup>2</sup> of Gross Lettable Floor Area (**GLFA**), and provides a wide variety of retail stores including:

- 3 full line supermarkets (including the recently approved Woolworths which is currently nearing completion);
- Faster trade retail stores (such as Target and Big W);

- Specialty retail stores, cinemas and food and beverage premises.

### 2.2.2 Access

The Site provides numerous entry and exits points to on-site parking and serving areas, including:

- 3 access points to Cowper Street;
- 1 access point to King Street;
- 2 access points to Northcliffe Drive.

From the primary Cowper Street and Northcliffe Drive access points, vehicles are able to circulate to parking across the Site, and these access points also for service vehicles access to a number of internal service areas.

It is noted that as part of the Woolworths development, a car park management system will be installed, which will control access at the primary access points.

### 2.2.3 Trip Generation

With reference to recent surveys at all Site access points, and consideration of the recently approved Woolworths, the Site generates approximately:

- 850 vehicle trips per hour (**vph**) in the weekday AM peak
- 1,750 vph in the weekday PM peak; and
- 1,900vph in the Saturday (late morning/early afternoon) peak.

### 2.2.4 Trip Distribution

With reference to the recent surveys, approximately 70% of trips are via Northcliffe Drive, and 30% via Cowper Street.

### 2.2.5 Parking

Further to the completion of the Woolworths development, the Site will provide approximately 1,550 parking spaces; parking surveys indicate that spare parking capacity is available during all peaks.

### 2.2.6 Servicing

The Site provides a number of internal service areas; other than the Woolworths service area in the eastern part of the Site, all other service areas are accessed via aisles which also provide access to parking areas.

## 2.3 Road Network

A detailed assessment of the current or future base operation of the road network is outside of the scope of work provided in this Review, and moreover it is incumbent for the Applicant to provide such an assessment.

Notwithstanding, reference to recent Site reports indicates that key intersections in the vicinity of the Site operate at an acceptable Level of Service (**LOS**), though the intersections of King Street & Cowper Street and King Street & Northcliffe Drive operate at approximately 80% - 85% of capacity. The only intersection that performs poorly is that of Northcliffe Drive and the primary Northcliffe Drive access point, though it is noted that the Proposal would provide for this intersection to be signalised.

## 2.4 Public Transport

### 2.4.1 Existing Bus Services

The Site is well serviced by local and sub-regional bus routes, with key services available to/from Wollongong, Shellharbour, Dapto and Port Kembla. Bus stops are provided in both Cowper Street and King Street near pedestrian access points to the Site.

It is noted that there are no long term strategies to provide new bus routes or additional bus services in Warrawong at this time; while developments such as the Proposal will provide opportunities for new or additional services, the travel time between the Site and key sub-regional centres (such as Wollongong) is much shorter by private vehicle than it currently is by bus.

### 2.4.2 Potential Bus Services

Notwithstanding current conditions, while appearing to be relatively isolated (within the sub-region), Warrawong is well located to provide a future bus hub for additional public transport services. In this regard, there are (or will be) significant new development/attractors to the north (Wollongong and Port Kembla); south (Shellharbour and Shell Cove); east (a revitalised Port Kembla); and west (West Dapto Release Area) that will require public transport connectivity.

If considered in this context, the most logical road for future bus services along a north-south axis would be King Street, while Northcliffe Drive would be the most logical road for services along an east-west axis; the most logical meeting place for these axis would be Warrawong.

Bus stops are currently provided in King Street north and south of Cowper Street, i.e. well located within Warrawong. However, Northcliffe Drive in the immediate vicinity of the Site does not provide the best location for bus stops (when considering pedestrian accessibility and amenity); this has obviously been recognised by local bus operators, with buses through the Town Centre instead routed via Shellharbour Road, Cowper Street and First Avenue. This does provide a high level of accessibility within the Town Centre, which will only be further enhanced by the WTC MP, particularly in Cowper Street.

As discussed in [Section 2.4.1](#), population growth across the Wollongong LGA will be the primary driver for more bus services. It is also the case that residents in the area overwhelmingly use private vehicles for all trips given the faster travel times to key sub-regional centres. As such, it will take time for new or addition services to be come viable for local operators, but in the medium to long term there is good potential for bus services to become an important mode of travel for those living, working or visiting the Town Centre (and Site).

Finally, it is important to remember that public transport is an essential means of providing transport equality. For those who can't drive or afford a private vehicle, bus services allow people the freedom of movement that they would otherwise be denied. Consideration of such by all key stakeholders is essential, noting that expediting new bus services in the short term would likely require more subsidisation of services, but the long term benefits of such would be significant.

## 2.5 Active Transport

The primary pedestrian entry to the Plaza is located at the corner of King Street and Cowper Street, and additional pedestrian entry points are located in King Street and Cowper Street. Pedestrian footpaths are provided on all roads adjacent to the Site, and the intersections of King Street & Cowper Street and King Street & Northcliffe Drive provide signalised crossing of all approaches.

Shared paths are provided in Northcliffe Drive and King Street south of Northcliffe Drive, and it is noted that the WTC MP will provide for Cowper Street to provide a more pedestrian friendly environment, with widened footpaths and new pedestrian crossings mid-block east and west of King Street. As discussed in [Section 2.4](#), these works will also improve general accessibility to bus stops in Cowper Street.

## 3 The Proposal

### 3.1 Overview

As discussed, the Proposal provides a mixed use development including residential units and additional retail/commercial floorspace. Sections below provide a review of the Proposal which focuses on general traffic and transport considerations, as well as the way in which the issues raised in the RFIs have been addressed in TIA V2.

We note again the potential for a revised proposal without additional non-residential floorspace; this revised proposal is examined in more detail in [Section 4](#).

### 3.2 Proposed Land Uses and Yields

From the outset, it is important to note that the land uses and yields proposed are not fully detailed in the SAPP documents. While both TIA V2 and the PP Report identify the development of 1,300 residential dwellings, the Executive Summary of the PP Report then identifies an *expansion of retail and employment-generating land uses, with a target capacity of **at least** 55,000m<sup>2</sup> GLAR/NLA which represents a 25% increase compared to the existing shopping centre (c.44,000m<sup>2</sup>).*

Further, the PP Report then more specifically identifies a **requirement** to increase retail GLFA by 25%, while also providing **complementary** commercial office, educational, child care, health and wellness uses that serve the local community.

TIA V2 states that the Proposal will provide *a reconstructed shopping centre of some 55,000m<sup>2</sup>, including other uses such as education, specialty offices, health/wellness centre, child care centre, pub and cinemas*. More importantly in the context of this Review, Section 8.5 of TIA V2 then states that:

*These uses will have significantly lower traffic generations than the other retail uses. The peak times for some of these components, such as the cinemas and pub, will occur during the evenings, at times when the shopping centre is less busy. Some of the uses, such as the education facility, offices and child care centre, would not generally be open on weekends.*

It is of course essential that full details of the retail and other components of the Site be provided from the outset, as the type of non-residential floorspace proposed will significantly influence the trip generation rates required for the traffic analysis.

### 3.3 Access

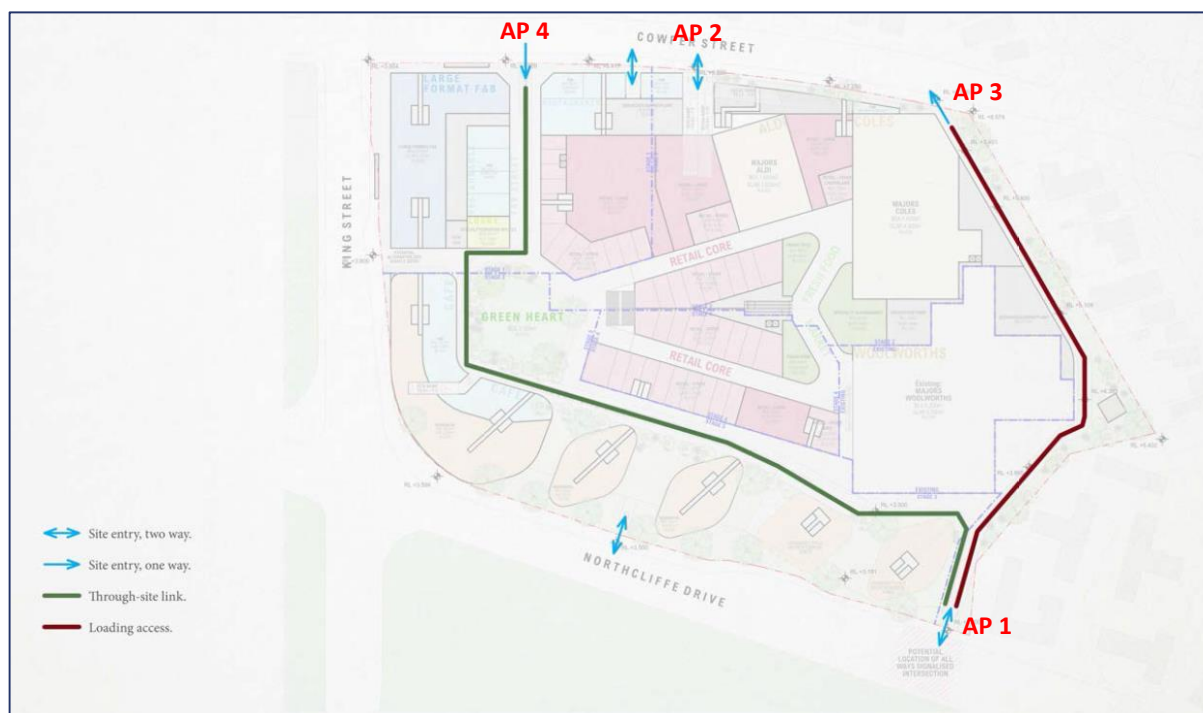
#### 3.3.1 Road Network Access

With reference to the UD Report, 4 access points will be provided in Cowper Street, and 2 access points will be provided in Northcliffe Drive.

These access points are shown in the Vehicle Access plan provided in the UD Report, which is reproduced below, noting that we have named the key access points for ease of reference.



Figure 2: Urban Design Report Vehicle Access Plan



Source: UD Report

While the **Northcliffe Drive & AP 1** intersection will be upgraded to a signalised intersection, the Cowper Street access points and additional Northcliffe Drive access point would all provide for left in/left out movements only given the location of central medians in both roads.

With regard to the access point in Cowper Street between AP 2 and AP 4, it is noted that this access point is not shown in the more detailed plans provided in the UD Report.

### 3.3.2 Internal Access

With reference to the Basement plans provided in the UD Report, it is difficult to specifically identify which on-site parking areas are to be accessed from each access point. Importantly, it appears that the majority of parking is to be accessed by AP 2, not AP 1 as detailed in TIA V2. Comments in the Council RFI relating to *parking and access arrangements* appear to confirm a contention that a significant proportion of trips will be via Access 2, stating that *parking and access arrangement appears to send all parking traffic from Buildings C-1, C-2, D, E, F and G...to Cowper Street*.

As such, more detailed information in regard to the number and type (residential or non-residential) of parking spaces served by each access point is required to better inform the assessment of trip distribution and then road network operations.



### 3.3.3 Warrawong Town Centre Master Plan Changes

As part of the WTC MP, the right turn from Cowper Street (east) to King Street (north) will be banned, while a new right turn lane will be provided from Cowper Street to Taurus Street opposite the Site.

While further information is not available, the new right turn lane appears to be provided for the relatively high northbound trip demand currently generated from AP 3 from the existing rooftop car park at the Plaza. We note also that the WTC MP then provides for the signalisation of the intersection of King Street & Montgomery Street to accommodate additional northbound trips.

Importantly, AP 2 is located to the west of this right turn lane to Taurus Street; this means that all departure trips from AP 2 would be through or left turn trips at the intersection of King Street & Cowper Street, which is significant given the likely higher demand for trips to the north (Wollongong and M1) which would need to travel via Cowper Street, First Avenue South and Greens Street to return to King Street (at the Montgomery Street intersection).

### 3.3.4 Access Summary

It is clear that the location of the proposed access driveways, as well as the local road changes arising from the WTC MP, will result in changes to the distribution of trips in the road network; this has not been addressed in TIA V2 (see also [Section 3.4.4](#)).

## 3.4 Trip Generation & Distribution

### 3.4.1 Residential Trip Rates

The trip rates assigned to the residential component of the Proposal are based on high density developments in metropolitan centres in Sydney, i.e. centres with good access to public transport (including rail), employment and every day services that are simply not available at the Site. While TIA V2 references TfNSW surveys – which we understand to mean the RMS Guide – it does not then use the regional rates (based on sites in Wollongong and Newcastle, again with significantly better access to public transport and services) specifically identified in the RMS Guide.

These regional centre high density residential trip rates are:

- 0.53 trips per dwelling in the AM peak;
- 0.32 trips per dwelling in the PM peak; and
- 0.57 trips per dwelling in the Saturday peak.

TIA V2 uses a trip rate of 0.19 trips per dwelling in the weekday AM and PM peaks to arrive at a trip generation estimate of 250vph for the residential component of the Proposal; referencing the RMS Guide trip rates above, the actual trip generation of the residential component of the Proposal is more likely to be approximately:

- 690vph in the AM peak;
- 420vph in the PM peak; and

- 750vph in the Saturday peak.

### 3.4.2 Shopping Centre GFA Trip Rates

As discussed in [Section 3.2](#), a more detailed breakdown of the land uses for the non-residential component of the Proposal is required to accurately determine its trip generation.

Notwithstanding, based on the PP Report a minimum of 11,000m<sup>2</sup> GLFA of retail floorspace is *required*, with other land uses (as identified in TIA V2) being *complimentary* to this retail floorspace.

The trip generation of shopping centre floorspace generally considers the type of retail being provided; for example, a supermarket will generate more trips than a department store or specialty retail. Notwithstanding, using the average trips rates for the existing Site as identified in recent surveys and detailed RMS shopping centre reports, if the additional GLFA proposed has the same general mix of retail types as the existing Plaza, the Site's additional trip generation would be approximately:

- Approximately 280vph in the AM peak;
- Approximately 500vph in the PM peak; and
- Approximately 660vph in the Saturday peak.

By comparison, TIA V2 estimates that the additional non-residential floorspace would generate only 50 – 100vph in all peak periods.

### 3.4.3 Trip Generation Summary

With reference to the above, it is clear that the Proposal has the potential to generate a significantly higher number of additional vehicle trips than estimated in TIA V2; a summary of the trips identified in TIA V2 and the trips identified in sections above, is provided in [Table 2](#).

**Table 2: Trip Generation Summary**

| Surveyed Trips                 | TIA Yield | AM Trip Rate | AM Trips    | PM Trip Rate | PM Trips    | Sat Trip Rate | Sat Trips     |
|--------------------------------|-----------|--------------|-------------|--------------|-------------|---------------|---------------|
| Market Dwellings               | 1,300     | 0.53         | 689         | 0.32         | 416         | 0.58          | 754           |
| <b>Total Residential Trips</b> |           |              | <b>689</b>  |              | <b>416</b>  |               | <b>754</b>    |
| Retail                         | 11,000    | 2.52         | 277         | 4.56         | 502         | 5.99          | 659           |
| <b>Total GFA Trips</b>         |           |              | <b>277</b>  |              | <b>502</b>  |               | <b>659</b>    |
| <b>Total Additional Trips</b>  |           |              | <b>966</b>  |              | <b>918</b>  |               | <b>1,413</b>  |
| <b>TIA V2 Trips</b>            |           |              | <b>357</b>  |              | <b>357</b>  |               | <b>357</b>    |
| <b>TIA V2 v Review</b>         |           |              | <b>-609</b> |              | <b>-561</b> |               | <b>-1,056</b> |

With reference to [Table 2](#), it is clear that the additional trip generation of the Site further to the Proposal as determined in TIA V2 is significantly lower than the potential trip generation of the Site referencing appropriate trip rates. While the potential exists for some further reductions in the total additional trips in the road network further to consideration of passing trade and more shared trips, there is no question that the potential impact on the road network arising from this level of additional trip generation requires detailed assessment.

#### 3.4.4 Trip Distribution

As previously discussed, the relocation and reduction in Site access points; changes in Cowper Street and at the King Street & Cowper Street intersection further to the WTC MP; and the location of internal parking will result in changes to the distribution of trips in the road network.

TIA V2 provides no information in regard to the future distribution of trips other than at the Northcliffe Drive intersections with AP 2 and with King Street, with the flow diagrams in Figure 1 and Figure 2 of TIA V2 indicating a trip assignment in line with the existing surveyed distribution of trips at these intersections. It is noted that these flow diagrams show that all trips are assigned to AP 1, i.e. no trips are assigned to AP 2 or any other access points.

### 3.5 Future Base Conditions

#### 3.5.1 Background Traffic Growth

TIA V2 does not provide any consideration of background traffic growth in the road network providing access to the Site. It is standard practice for a 10 year forecast to be provided to ensure that new development can be accommodated under future base conditions; this is even more important in regard to the Proposal given the staging of development indicates that the Site would not be fully redeveloped for many years, by which time traffic volumes in all key roads are anticipated to have increased further to broader development in the sub-region.

#### 3.5.2 Woolworths

As discussed, a new Woolworths supermarket is currently under construction at the Site, which will generate a significant number of additional trips; these trips need to be considered in the development of the future base scenario.

#### 3.5.3 Former Bunnings Site

The former Bunnings site in Northcliffe Drive has recently reopened for bulky goods premises, but we understand it is not yet full occupied and as such not generating a full complement of vehicle trips. The future generation of this site (further to full occupancy) needs to be accounted for in the assessment of future base conditions.

### 3.5.4 Port Kembla Hospital

Similarly, TIA V2 notes the current redevelopment of the former Port Kembla Hospital site in Cowper Street west of Fairfax Road. The potential exists that the redeveloped site may generate fewer trips than the former hospital, but it is also the case that the recent traffic surveys may not have accounted for the trip generation of the site once the redevelopment is complete.

## 3.6 Traffic Impacts

The only detailed traffic analysis provided in TIA V2 is SIDRA analysis of the intersections of Northcliffe Drive & King Street, and Northcliffe Drive & AP 1. Regardless of the SIDRA analysis being provided for just these intersections (where in our opinion many other intersections also require analysis), and moreover the low number of additional trips assigned to these intersections, there are other concerns with the analysis, including:

- No consideration of average annual growth to a forecast year after the completion of the redevelopment;
- No consideration of the recent Woolworths approval, which will generate hundreds of additional trips to these intersections;
- No consideration of the redevelopment of the former Bunnings site and former Port Kembla Hospital site;
- No consideration of the redistribution of trips that will occur based on proposed changes to the Site access point locations, and further to the WTC MP;
- All trips being assigned to AP 1, with no consideration of trips generated to the Cowper Street access point which – as discussed in [Section 3.3.2](#) – are anticipated to generate a significant proportion of Site trips; and
- No assessment of the Saturday peak, during which the existing generation of the Site peaks, and during which the Site will generate the most additional peak trips.

Notwithstanding all of these concerns, the SIDRA analysis indicates that the Northcliffe Drive & King Street intersection would operate with little spare capacity in the PM peak even without consideration of these issues.

At this time therefore, it is not possible to provide support for the Proposal further to traffic considerations, as – simply – the analysis provided in TIA V2 does not appropriately consider future base conditions, nor in turn the potential impact of additional Site trips. Not only are there concerns relating to the underlying assessment of trip generation and distribution, but there are also numerous other intersections and roads that will require detailed analysis to ensure that the Proposal does not rule out, or be ruled out by, the future operation of the road network.

arc traffic + transport, as well as the key referral agencies, have previously identified the scope of work required to properly examine the Proposal, but TIA V2 provides no additional analysis other than of the Northcliffe Drive & King Street intersection. As such, we could not provide support for the Proposal given that these additional assessment tasks have not been undertaken in TIA V2 (see also [Section 5.2](#)).

### 3.7 Reference Development

Briefly, both the PP Report and TIA V2 note that the Site's current planning controls would provide for development significantly in excess of that provided for in the Proposal, generating (based on hypothetical land uses and yields) some 6,000vph – 6,500vph in the peak periods according to TIA V2.

This is not in our opinion a valid supporting argument for the Proposal; while the Proposal may generate fewer trips than this *reference development*, that does not in and of itself mean that the Proposal is acceptable, i.e. it does not remove the need for a detailed assessment of **all relevant planning considerations**, including traffic and transport.

### 3.8 Additional Issues

#### 3.8.1 Service Vehicle Access

Based on the available SAPP documents, it is difficult to determine how appropriate service vehicle access would be provided across the Site. The only service route identified in the Vehicle Access plan ([Figure 2](#)) is a one-way route between AP 1 and AP 3, and there is no information as to how deliveries to individual sites would occur.

In addition, this will force all trucks to use Cowper Street between AP 2 and King Street. At present, service areas are provided across the Site such that the truck generation to Cowper Street is relatively low, and as such truck trips would increase in a section of Cowper Street which the WTC MP specifically identifies for greater pedestrianisation.

Finally, there is an existing demand for truck trips to turn right from Cowper Street (east) to King Street (north). It is not clear whether the proposed right turn lane from Cowper Street to Taurus Street per the WTC MP has been designed to accommodate truck movements (up to and including a 20m Articulated Vehicle), or whether they could manoeuvre properly from AP 3 to this right turn lane. Regardless, this will force more trucks into either Taurus Street and Montgomery Street, or into Cowper Street, First Avenue South and Green Street to return to King Street (at Montgomery Street) given the right turn restriction at King Street.

#### 3.8.2 Pedestrian Access to King Street

As identified in the RFIs, a major pedestrian access point to the Site is located in King Street mid-block between Cowper Street and Northcliffe Drive.

This is not a preferable location for such a prominent access point; while it will provide the most direct access to bus stops in King Street, it would be preferable to maintain key pedestrian access as close as possible to the signalised pedestrian crossings at the King Street & Cowper Street intersection. We note also that there is little potential for a signalised pedestrian crossing in King Street mid-block between Cowper Street and Northcliffe Drive given the proximity of the King Street & Cowper Street and King Street & Northcliffe Drive signalised intersections.

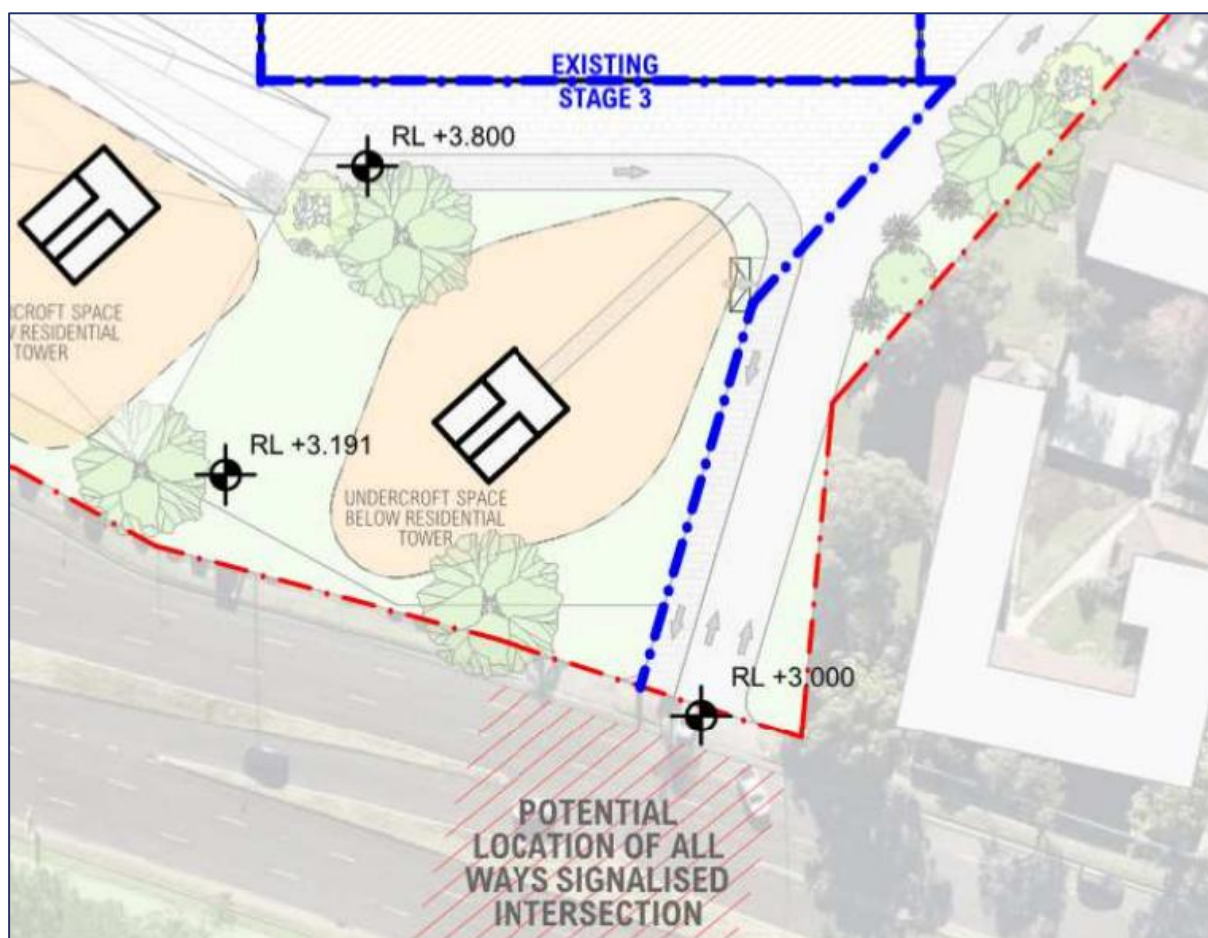
Notwithstanding the above, this issue in and of itself would be in no way fatal to the Proposal.

### 3.8.3 Internal Road

The purpose and operation of the internal road is unclear. In this regard, the Vehicle Access plan indicates that this will be a one-way link between AP 4 and AP 1, but the UD Report plans show two way access in the section of the internal road immediately south of Cowper Street.

The UD Report plans also indicate that the internal road would link to Northcliffe Drive immediate west of AP 1 which would not be permitted; this connection is shown in Figure 3 below.

Figure 3: Internal Road Connection to Northcliffe Drive



Source: UD Report

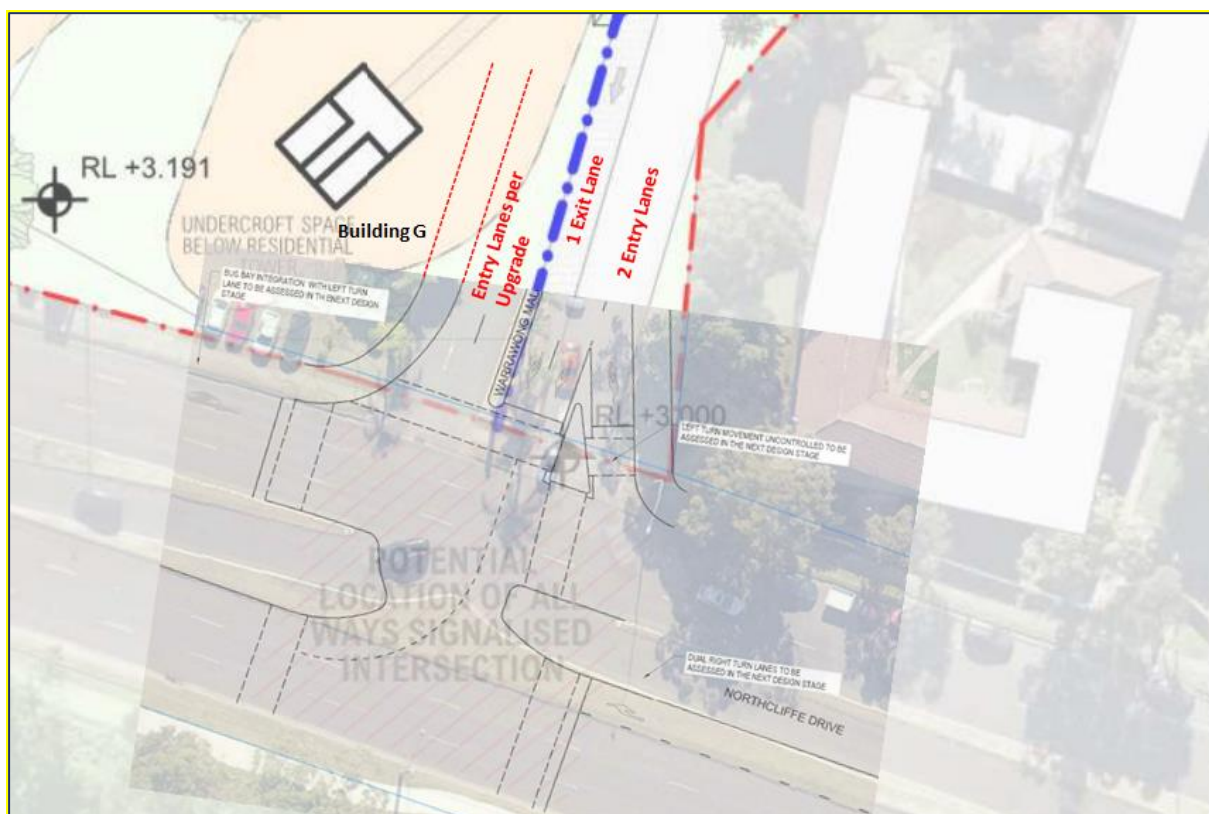


### 3.8.4 AP 1 Design

Further to the above, the broader design of AP 1 shown in the UD Report plans is very different to the intersection upgrade plan in Appendix C of TIA V2. Per Figure 3 above, the UD Report ground floor plan shows 2 entry lanes and - as discussed - 1 exit lane from Internal Road (west of the entry lanes). As such, the design shown in the UD Report plans provides no exit lanes from the Site to Northcliff Drive other than from Internal Road.

While acknowledging that the plans will evolve, the UD Report plans should be updated to show the proposed upgrade of Northcliffe Drive & AP 1 as the area required for the upgrade is significantly larger than shown as being available in the UD Report plans. Indeed, this would appear to require the redesign of Building G as the entry lanes for the upgraded intersection would otherwise run through Building G, as shown in Figure 4 below.

Figure 4: Northcliffe Drive & AP 1 Intersection Upgrade



Finally, the UD Report plans then show the entry lanes merging to a single lane providing access to the service vehicle road (through to AP 3), i.e. no access to internal parking. This again points to the need for more information in regard to internal circulation and what parking is accessed via each proposed access point as discussed in Section 3.3.2.

## 4 Revised Proposal

### 4.1 Overview

As discussed in [Section 1.1](#), the Applicant has advised DPE of the potential for the Proposal to be revised, and specifically for the additional non-residential floorspace identified in the current Proposal to be removed. We understand that the number of new dwellings might also be reduced in a revised proposal, but more detail in this regard is not available.

Sections below provide a high level review of the potential traffic and transport issues arising from a revised proposal, noting from the outset that a detailed assessment of a revised proposal should still need to be completed prior to DPE being satisfied that new development can be accommodated at the Site.

### 4.2 Trip Generation

#### 4.2.1 Appropriate Trip Rates

With reference to [Section 3.4.1](#), the trip rates adopted in TIA V2 for the residential component of the Proposal are simply not supportable, as they reflect high density development in regional and sub-regional centres in metropolitan Sydney with significantly greater access to employment, everyday services and public transport.

Further to the application of revised trips rates, it is estimated that the residential component of a revised proposal would generate:

- 690vph in the AM peak;
- 420vph in the PM peak; and
- 750vph in the Saturday peak.

#### 4.2.2 Trip Rate Reductions

While the general potential to reduce the number of residential parking spaces at the Site is discussed in TIA V2, the discussion does not extend to the potential reduction in vehicle trips arising from a reduction in parking spaces.

With reference to the RMS Guide, trips rates per residential parking space are generally 25% lower than trip rates per residential dwelling. The SEPP Housing allows for lower parking rates to be adopted where a site has good access to public transport and services, and in turn consideration of the lower high density parking rates provided in the RTA Guide for sub-regional centres.

More information will be required to support a contention that residential parking could be reduced, particularly given the potential for any parking demand that is not met on-site to spill into local residential streets to the east and north-east of the Site. In this regard, more information would be required in regard to the following:



- Details of travel mode changes/targets, and specifically how public and active transport could reduce the demand for private vehicle trips.
- Details of the internalisation of trips (i.e. within the Site), noting that there is a considerable amount of data available in regard to the breakdown of trip purpose which could support a contention that – for example – a reasonable percentage of shopping, personal or child care trips would be contained within the Site.

Overall therefore, there is the potential to reduce the residential trips rates identified in [Section 4.2.1](#), but more information will need to be provided by the Applicant to justify any reductions.

### 4.3 Traffic Impacts

Notwithstanding that a reduced trip generation would result from the removal of the non-residential floorspace, the Site would still generate a significant number of additional trips to the road network, and certainly enough additional trips to warrant a detailed traffic assessment.

## 5 Conclusions & Recommendations

### 5.1 Conclusions

Further to our review of the Proposal, arc traffic + transport has concluded that the Proposal is not supportable at this time further to transport considerations. In summary:

- The precise land uses and yields are not confirmed.
- The proposed access to the Site is unclear, and more information is required in regard to the distribution of trips to the major access points in Cowper Street and Northcliffe Drive.
- The trip generation of the Site will be significantly higher than determined in TIA V2 further to consideration of appropriate residential and retail trip rates.
- The distribution of trips both to/from the Site and in the local road network will change further to Site access changes and works proposed in the WTC MP; TIA V2 provides no assessment of these distribution changes.
- The scope of traffic analysis in TIA V21 is very limited, with no analysis of other key local roads and intersections through which additional traffic will be generated.
- With regard to the SIDRA analysis that is provided, this analysis does not consider key traffic issues such as:
  - Background traffic growth;
  - The trip generation of Woolworths;
  - The trip generation of the redeveloped Bunnings and Port Kembla Hospital sites;
  - The redistribution of trips arising from the new Site access and WTC MP proposals; and
  - The Saturday peak, during which the Site currently generate peak traffic, and during which the Proposal will add the most traffic.
- The suggestion that the Proposal can be supported referencing the higher trip generation associated with a reference development alone is without merit, as a detailed traffic assessment would be required regardless of the scale of development, and indeed the scale of development would be limited to the amount of additional traffic that the road network (either with or without upgrades) could accommodate.
- Service vehicle access requires additional assessment, and specific consideration of:
  - The means of transport goods between service areas and all residential and retail areas within the Site;
  - The increase in truck (and general vehicle) volumes in Cowper Street; and
  - The distribution of truck trips, noting the need to accommodate a 20.0m articulated design vehicle, and minimising the number of additional trucks using roads.

- Primary pedestrian access should be maintained near the intersection of King Street & Cowper Street to take advantage of the signalised pedestrian crossings.
- The purpose and operation of the internal road is unclear, and the design of the internal road approach to Northcliffe Drive does not align with design guidelines.

## 5.2 Recommendations

Further to the above, it is clear that the Proposal can not be supported based on transport considerations. As such, we can only recommend that the Applicant undertake a comprehensive assessment of the access, traffic and parking characteristics of the Proposal in accordance with the recommendations in the RFIs. Based on our Review, this assessment would need to include the following:

- Assessment of existing road network operations, including traffic surveys and SIDRA analysis of the following intersections in the weekday AM and PM and Saturday peaks:
  - All Plaza access points;
  - King Street & Montgomery Avenue;
  - King Street & Northcliffe Drive;
  - Cowper Street & Shellharbour Road; and
  - Cowper Street & First Avenue.
- Assessment of Future Base road network conditions; this would include consideration of the following:
  - Average annual growth rates in the sub-regional road network referencing Council's TRACKS strategic transport model;
  - Approved or proposed developments in the local area that may generate trips to the key intersections, including the approved Woolworths and the redeveloped Bunnings and Port Kembla Hospital sites; and
  - Determination of a Future Base year for the analysis, which is generally accepted to provide a 10 year forecast further to the completion of all development, not just the initial stages of development.
- Assessment of existing and future public and active transport opportunities, including:
  - Bus routes between the Site and key regional work and service destinations;
  - Active transport paths across the Town Centre and to/through the Site; and
  - End of journey provisions.
- Assessment of the Proposal, including:
  - Breakdown of all development components;

- Review of proposed Site access points and local road network changes to determine what existing trips may be redistributed, and where the additional trips will access the Site;
- Determination of appropriate trip rates referencing the RMS Guide or survey data of similar sites, with due consideration of factors such as trip internalisation, shared trips and linked trips;
- Assignment of trips to the key intersections in the AM, PM and Saturday peaks under Future Base conditions;
- SIDRA analysis or the like of all key intersections;
- Determination of any and all intersection upgrades;
- Internal access roads, including the different access routes to retail and residential parking;
- Determination of appropriate parking rates, including due consideration of reduced parking rates to in turn reduce vehicle trips; and
- Servicing requirements and provisions, noting that there are currently a number of service areas across the Site.

Only further to the preparation of a transport assessment that fully examines all of the tasks identified above could a determination be made by DPE, TfNSW and Council in regard to the viability of the Proposal from a transport perspective.

### 5.3 Revised Proposal

With reference to the potential revised proposal, there may be the opportunity to reduce the scope of work identified above for the assessment of the current Proposal, but overall the assessment requirements would not be significantly different unless it could be demonstrated that the residential trip rates can be substantially reduced, or further to reductions in the dwelling yield as well as the removal of the non-residential floorspace.

### 5.4 Summary

As stated, at this time it is not possible for us to support the Proposal in its current form. However, we are available to discuss the issues identified in the Review with the Applicant and their representatives to determine whether there is a viable forward path available to allow development of the Site.

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