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130 Wellington Street Mosman Park
Proposed Mixed Use Development

Traffic Engineering Peer Review

Prepared for:
Mosman Heights Action Group

August 2021

130 Wellington Street Mosman Park

Prepared for: Mosman Heights Action Group
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1 Introduction

This peer review has been undertaken by Urbii on behalf of Mosman Heights Action Group (MHAG), with regards to the proposed mixed-use development, located at 130 Wellington Street, Mosman Park.

The subject site is located on the south-west corner of Wellington Street and Manning Street, as shown in Figure 1. The subject site is currently occupied by an IGA and several independent commercial and retail tenancies. The proposed development entails a mix of townhouses, apartments, a mix of retail and commercial tenancies and some modifications to the streetscape.

A Development Application (DA) has been submitted to the State Development Assessment Unit (SDAU). The DA was made open for public comment on Tuesday 20th July 2021.

Urbii has been engaged by MHAG to undertake a peer review of the Transport Impact Assessment (TIA) report submitted with the DA and to also undertake an independent, high-level review of traffic, parking and safety.

The key outcomes of the peer review and assessment are documented in this report.

Figure 1: Subject site

2 Referenced documents and standards

The development application documents, technical standards and guidelines referenced in undertaking this peer review may include, but are not limited to:

- **Development Application plans** – *1. Proposed Development Plans (Appendix E)*;
- **Traffic report** – *130 Wellington Street, Mosman Park* TIA, Flyt, June 2021;
- **Landscape report;**
- **Architect report;**
- WAPC *Transport Impact Assessment Guidelines Vol 4. Individual Developments;*
- AS-NZS 2890.1-2004 - *Off-street Car Parking Facilities*;
- AS-NZS 2890.2-2018 - *Off-street Commercial Vehicle Facilities*;
- AS-NZS 2890.5-2020 - *On-street Parking*;
- RTA *Guide to traffic generating developments;*
- Main Roads WA – Treatment of Crash Locations Course; and,
- Austroads Research Report AP-R509-16 – Safe System Assessment Framework.

For ease of reference, the term “the TIA” refers to the traffic report prepared by Flyt. The term “this report” refers to this peer review document. Both these terms are used throughout this peer review report.

3 Transport impact assessment review

The Transport Impact Assessment (TIA) prepared for the proposed development was reviewed against the requirements of the WAPC *Transport Impact Assessment Guidelines Vol 4. Individual Developments.*

The peer review focuses on the technical aspects of the reporting. Selected key components of the TIA have been reviewed individually as follows:

3.1.1 Section 2: Introduction

The TIA identifies the development as generating more than 100 vehicle trips per hour (vph) in the peak hour and requires a TIA level of reporting.

The WAPC *Transport Assessment Guidelines 2016* identifies the proposed development as being "High Impact" (Figure 2). The TIA correctly identifies the level of reporting required. The TIA also notes that the site currently accommodates land uses and generates traffic, therefore the net impact of traffic will be lower. This is a reasonable comment and in line with regular practice.

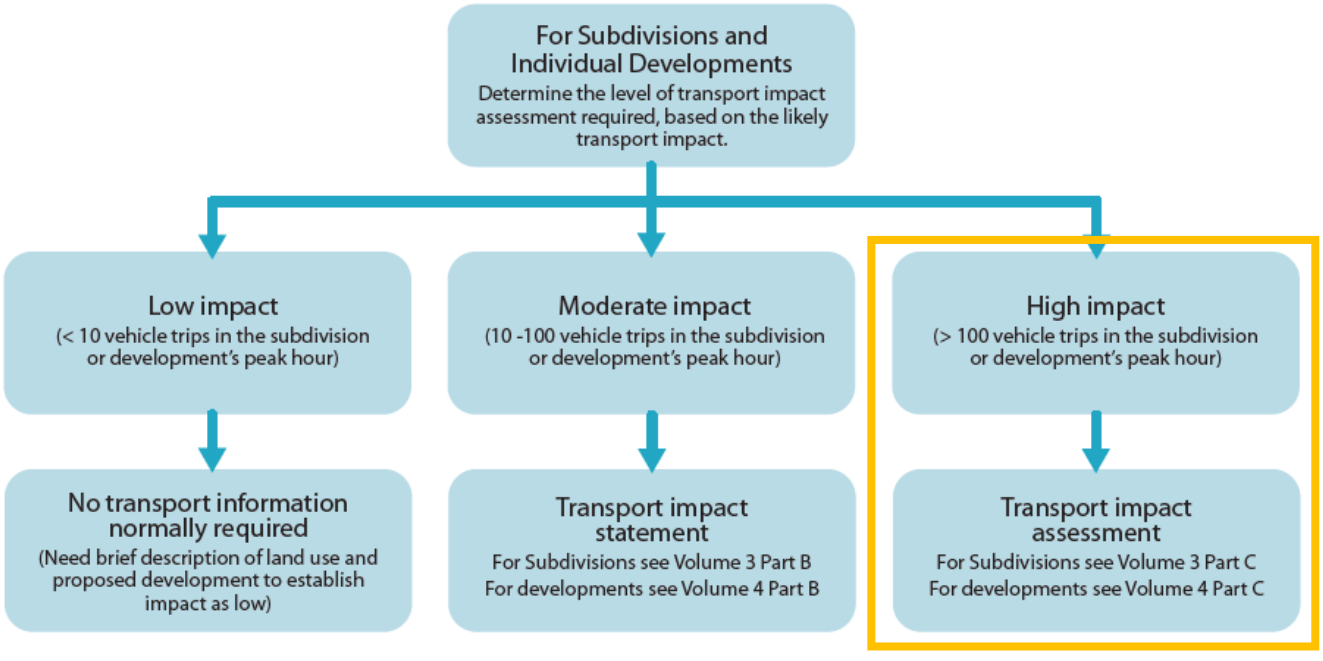

Figure 2: WAPC Transport Assessment Guidelines – reporting requirements

3.1.2 Section 3: Proposed development

Land use description

- The TIA provides a description of the existing land uses and surrounding context.
- The proposed development uses listed in the TIA closely match the DA plans reviewed.

3.1.3 Section 4: Vehicle access and parking

Access description

- The proposed access arrangements are described with reasonable accuracy. It should be noted that Figure 6 of the TIA does not reflect that there is a conflicting traffic movement for basement entry and exit. The way the arrows are drawn give the impression that there is no vehicle conflict at the basement ramp intersection with Turnbull Way. Outbound vehicles will need to turn right, which conflicts with inbound vehicles which are travelling straight.

Existing parking profile

- The TIA recorded peak parking occupancy of 64% on Friday at around 3pm and Saturday at around 11:15am.
- Parking surveys undertaken by Flyt indicated a parking provision rate of 1 bay per 24m2. Urbii has undertaken a review of retail / commercial car parking requirements which is presented in Section 4.1 of this report.
- There is some review of crash rates associated with on-street car parking at various locations presented in the TIA. The TIA states there is no evidence of substantial safety issues associated with the 90-degree car parking.
- The TIA mentions that there is a safety benefit for tightening the kerb radii at the intersection of Samson Street / Manning Street:

"For Manning Street, safety in design could be improved through tightening of kerb radii at intersections of Wellington Street and Samson Street, installation of entrance treatments such as pavement changes and deflection at the roundabout, improved signage and line markings, installation of landscaping treatments and use of other traffic management measures as required."

It is agreed that some traffic management measures are required on Manning Street and at the intersection of Manning Street / Samson Street. This is addressed in further detail in Section 4 of this report.

Onsite parking schedule

- The onsite parking schedule presented in the TIA is consistent with DA plans.

Parking

- The proposed development provides 128 residential car bays (101 required).
- The development proposes reciprocal use of retail/commercial parking for residential visitors - 60 bays reciprocal (12 visitor bays required).
- Two car share bays are also provided. It should be noted that the car share bays are suitable for use by residents but does not help to support any shortfall in retail, commercial and residential visitor car parking.
- At present there are 97 onsite bays servicing the existing development.
- The planning scheme calculations presented in the TIA indicate 146 bays are required for non-residential proposed land uses. 60 bays are proposed to be provided onsite with reciprocal use as residential visitor car parking.
- Including on-street parking provision, there are a total of 83 bays available for non-residential uses.
- The TIA reported a surveyed benchmarked car parking provision of 1 bay per 24m2 NLA and surveyed comparable centres. There is no methodology provided for estimating the "NLA" of the surveyed centres. In general, it is better to work with Gross Leasable Floor Area (GLFA) when calculating parking for retail-oriented land uses. The proposed development plans provide a GLFA measurement which should be used for the parking demand estimate calculations. A parking demand analysis is presented in Section 4.1 of this report, which uses GLFA.

Other parking considerations

- The calculations presented in the TIA conclude that 83 bays are required for the non-residential land uses.
- The TIA presents an argument that alternative modes of transport can reduce the commercial parking demand, with cycling, walking and end of trip facilities being accommodated.
- The TIA recommends that a Parking Management Plan (PMP) be prepared for the proposed development. Urbii agrees that a PMP should be prepared and recommends a Delivery and Service Vehicle Management Plan also be prepared for the development.

3.1.4 Section 5: Provision for service vehicles

- The swept path sketches presented in the TIA are not scaled, high-quality sketches. The swept path tracking is questionable, showing an unconventional track with wheels being turned at various points to negotiate a single bend (Figure 3). There is also insufficient detail provided regarding the truck template used for the swept path. Review of the TIA swept path indicates the 90-degree bend near the car park ramp on Turnbull Way is very tight for accommodating truck movements.
- There is insufficient detail provided on the size and frequency of delivery and service vehicles for the proposed development. Given the size and number of tenancies, the largest truck size of 8.8m for the supermarket tenancy and 6.4m for other tenancies seems small. Use of smaller trucks will result in increased frequency of truck movements in Turnbull Way. This will result in reduced amenity for the development and residents.

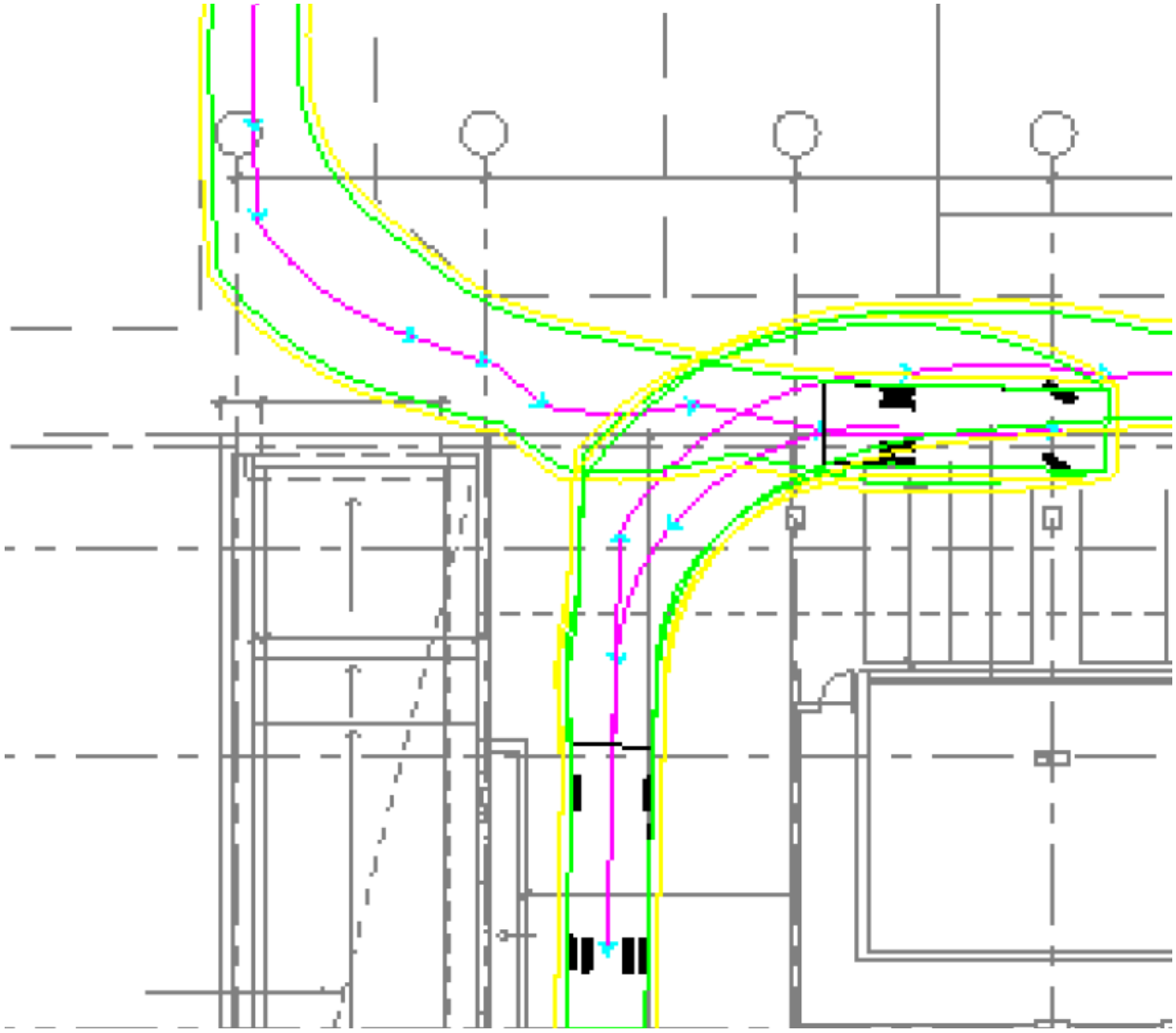

Figure 3: Ground floor loading dock swept path 8.8m truck

Source: 130 Wellington Street, Mosman Park TIA, Flyt (June 2021)

3.1.5 Section 6: Daily traffic volumes

Existing traffic volumes

- The existing AM peak hour occurs from 8:15am to 9:15am – 113 vph in & 100 vph out.
- PM peak hour occurs from 5:00pm to 6:00pm – 106 vph in & 98 vph out.

Trip generation

- There is a lack of detailed documentation regarding how trip rates were applied. For example, what was the assumed floor area for retail (food) and retail (non-food). Some trip rates are provided at the start of the section, but no calculation was shown on how the rates were applied to obtain the result.
- It seems that three different methods were used to calculate traffic for the same development. Each method resulted in a different trip generation estimate.
- The TIA estimates 220 vph in the AM peak hour and 240 vph in the PM peak hour as the worst-case scenario.

- Urbii has undertaken an independent trip generation estimate, to assess the accuracy of the trip generation estimated in the TIA. Further details are provided in Section 4.2.

Trip distribution

- Figures 33 to 36 from the TIA indicate 24% of inbound traffic driving on Turnbull Way and 23% of outbound traffic driving on Turnbull Way (AM peak hour). For the PM peak hour, the distribution is 30% of inbound traffic and 23% of outbound traffic. This is not consistent with Section 6.3.4 of the TIA, which estimates approximately 42% inbound and 38% outbound traffic via Turnbull Way in the PM peak hour.
- As there is a lack of trip generation information categorised by land use components, it is difficult to assess the accuracy of the trip distribution. It is noted that 100% of residential car parking bays are in the basement. 72% of retail/commercial car bays are provided via Turnbull Way. Therefore, the percentage distribution of development traffic on Turnbull Way as presented in the TIA is quite low relative to parking distribution. It would be beneficial if there was a sensitivity analysis presented which adopted a traffic distribution which matched the distribution of car parking on the site.
- An argument may be made to justify the trip distribution on the basis that the basement bays are harder for people to find and less convenient to use, and therefore more people would prefer to use the on-street car parking. However, this is a negative outcome for the proposed development. The off-street car parking bays should be provided in a way which is easy to find and use.

SIDRA Modelling

- The assumptions presented in the TIA for traffic modelling and analysis seem to contradict the overall goals and design philosophy of the development. The landscape and architecture reports aim to minimise impact on the streetscape by removing crossovers and accommodating all on-site access via Turnbull Way via a single basement car park entry. However, the trip distribution assumptions in the TIA state that most of the development traffic will be generated to on-street parking adjacent to the site.
- The SIDRA network model does not include an assessment of the basement intersection with Turnbull Way. There are conflicting movements with vehicles turning right out of the basement ramp needing to give way to vehicles entering the basement ramp. These movements are not modelled in SIDRA. Additionally, the traffic volumes on Turnbull Way as analysed in the TIA are low relative to the parking distribution.
- The SIDRA analysis in the TIA concludes that the roundabout intersection will operate at a good level of service with minimal delays and queuing. However, the SIDRA analysis does not account for the high percentage of on-street car parking maneuvers on Manning Street, which are forecast in the TIA. The TIA indicates that 46% of all development traffic will use the 15 on-street parking bays on Manning Street (two of the bays are ACROD bays so 13 regular on-street bays). If this does occur, then there will be congestion on Manning Street as motorists wait for on-street bays to become available. The very high forecast turnover of on-street parking on Manning Street will also reduce the amenity of the street and contradict the design intent of the development. It will not be pleasant for people to use the pedestrian verge enhancements and parklet on Manning Street, while there is such a high turnover of 90-degree bays on the street.

- The WAPC *Transport Impact Assessment Guidelines* recommend that a TIA typically forecasts traffic for a 10-year post-development scenario. The reviewed TIA provides a sensitivity test of doubling traffic volumes in the SIDRA model. However, there is no formal 10-year post development analysis.

3.1.6 Section 7: Traffic management on frontage streets

- The description of surrounding roads and intersections is reflective of the existing situation.
- More consideration should be given to the existing intersection of Manning Street / Samson Street. Further detail is provided in Section 4.4 of this report.
- There is a lack of local traffic counts on adjacent roads. It would be beneficial to deploy local traffic counters to measure the traffic volume, 85th percentile speed and percentage heavy vehicles on adjacent roads.
- The TIA notes relatively narrow footpaths in the locality.

3.1.7 Section 8: Public transport access

- The TIA notes the existing public transport facilities at the time of preparation of the TIA.
- The embayed bus stop will be replaced with a built-out bus stop. Urbii agrees that the bus stop embayment should be removed to create increased verge space for the street. The new bus stop should be DDA compliant.

3.1.8 Section 9: Existing pedestrian network

- The TIA rates pedestrian connectivity as “excellent”:

“The site has an excellent level of pedestrian connectivity resulting from the grid network in the area. Footpaths are located on at least one side of all surrounding streets. The surrounding streets are all local access roads which means traffic volumes and speeds tend to be low, creating a safer and more enjoyable walking environment.”

Although footpaths are provided on local roads, it needs to be noted that the footpaths are relatively narrow. Landscaping is blocking travel along verges on some streets. The footpath is set right against the road with no off-set. This reduces the comfort and safety of pedestrians walking to and from the proposed development.

Refer to Figures 4 & 5 for some examples of existing pedestrian constraints in the local area.

- The TIA states that the proposed pedestrian amenity will be high adjacent to the development due to the removal of ground level site parking. However, in our view, the introduction of on-street car parking which is forecast to accommodate most of the development traffic movements will also impact pedestrian amenity. Particularly for pedestrian crossing and the attractiveness for pedestrians ‘dwelling’ outside the development. This is addressed further in subsequent sections of this report.

Figure 4: Example of existing pedestrian constraints on Samson Street

Source: Google Streetview Imagery

Figure 5: Example of existing pedestrian constraints at Manning Street / Samson Street

Source: Google Streetview Imagery

3.1.9 Section 10: Cycle access and amenity

- The TIA assesses that existing cycle accessibility is “average”.
- The TIA documents the level of bicycle parking provision for the proposed development. The proposed development provides a good level of bicycle parking and end of trip facilities which is commendable.

4 Supplementary transport assessment

Supplementary transport analysis and assessment is presented in this section of the peer review.

It should be noted that substantial technical analysis and reporting is outside the scope of this peer review. However, some supplementary assessment is undertaken to help highlight some issues which need to be addressed. Assigning responsibility to address different issues is also outside the scope of this peer review.

4.1 Parking requirements

Urbii has undertaken an independent parking demand calculation for the non-residential component of the proposed development.

- The adopted floor area for the purpose of this calculation is 2,208m^2 Gross Lettable Area Retail (GLAR) as shown on the DA plans. This is assumed to be equivalent to Gross Leasable Floor Area (GLFA) as per RTA NSW *Guide to traffic generating developments*. It should be noted that the supermarket back of house area of 145m^2 is not included in the GLAR total specified on the DA plan. As seen in the extract below, stock storage areas are usually included in calculations for parking and traffic generation. Therefore, if we adopt the GLAR as specified on the plan, this will produce a generous 'best-case' parking demand estimate for the proposed development, because the stock storage area was not included in the floor area.

> Gross leasable floor area is preferred to gross floor area for this land use category, because it refers most specifically to the factor that generates / attracts trips. The term *gross leasable floor area* means the sum of the areas at each floor of a building. In this instance, the area of each floor is taken to be the area within the internal faces of the walls, excluding stairs, amenities, lifts, corridors and other public areas, but including all stock storage areas. As a guide, about 75% of the gross floor area is deemed gross leasable floor area. However, this percentage can vary substantially between developments.

Source: RTA NSW *Guide to traffic generating developments*

The RTA *Trip Generation and Parking Demand Surveys of Shopping Centre Analysis Report* (Halcrow, 2011) was referenced for a comparison table of parking demand rates and parking provision rates.

Table 1 provides a comparison of average parking demand rates for shopping centres with rates from AU, NZ, US and UK. For this development, a peak parking demand rate of 4.07 bays per 100m^2 is considered reasonable, which is the rate measured by RTA NSW.

Table 2 provides a comparison of average parking supply rates for shopping centres with rates from AU, NZ, US and UK. As a rule of thumb for efficient car park circulation and function, parking demand should not exceed 80-85% of parking supply.

Table 1: Comparison of different parking demand rates

	Weekday (non-Friday)	Thursday	Friday	Saturday	Sunday
NSW	-	3.72	3.43	4.07	3.50
NZ TDB	-	2.95	3.06	3.13	4.17
US ITE	2.74	-	3.16	3.09	2.20
UK TRICS	-	2.34	4.44	4.45	3.53

Rates represent demand for parking bays per 100m^2 of GLFA

Source: RTA *Trip Generation and Parking Demand Surveys of Shopping Centre Analysis Report*

Table 2: Comparison of parking supply rates

STORE SIZE	NSW	NZ TDB	UK TRICS	US ITE
0-10,000	4.9	4.5	-	4.5-5.1
10,000-20,000		2.6	5.2	
20,000-30,000	4.6	3.2	4.5	5.4
30,000-40,000		0.6	-	
40,000-50,000	4.0		-	6.0
50,000-60,000			-	
60,000-70,000	4.6		-	
70,000-80,000			-	5.6
Above 80,000	3.7		-	
			-	

Rates represent supply of parking bays per 100m^2 of GLFA

Source: RTA *Trip Generation and Parking Demand Surveys of Shopping Centre Analysis Report*

For this development, a parking supply rate of 4.9 bays per 100m^2 is considered reasonable, which is the rate measured by RTA NSW.

Applying the above rates results in the following car parking calculations for the non-residential component of the proposed development:

- Peak parking demand: 4.07 x (2,208/100) = 90 bays.
- Parking supply: 4.9 x (2,208/100) = 108 bays.

The proposed development provides a total of 83 car parking bays for the non-residential land uses. Up to 12 of these bays may be utilised for residential visitor parking at times, leaving 71 car parking spaces available for non-residential parking. This is as significant shortfall from the likely peak parking demand for the development.

In our view, a minimum of **102 bays** should be available for non-residential car parking, which can be shared in reciprocal fashion with residential visitors. The car parking calculations in the TIA are based on Net Lettable Area (NLA) and exclude stock storage areas and are therefore underestimating the parking demand of the development.

4.2 Trip generation

The traffic volume that will be generated by the proposed development has been estimated using trip generation rates derived with reference to the following sources:

- RTA NSW Guide to traffic generating developments; and,
- RTA NSW *Technical direction TDT 2013/4A*.

The trip generation rates adopted are detailed in Table 3. The *Shopping Centres* definition in the RTA guide includes a wide range of land uses integrated in one centre, this includes supermarkets, slow and fast trade retail, food and beverage, medical and other offices. Therefore, the trip rate for *Shopping Centre* was applied to the whole site.

Table 3: Adopted trip rates for traffic generation

Land use	Trip rate source	Daily rate	Weekday PM Peak Hour	Weekend Midday Peak	WD-IN	WD-OUT	WE-IN	WE-OUT
Shopping Centre	RTA NSW	121 trips per 100m2	12.3 trips per 100m2	16.3 trips per 100m2	50%	50%	50%	50%
Townhouse	RTA NSW - Medium density residential building	5	0.5	0.25	65%	35%	50%	50%
Apartments	RTA NSW - High density residential building	3.14	0.41	0.2	65%	35%	50%	50%

Note: The weekend midday trip rates for residential land uses were assumed to be 50% of the weekday PM peak hour

The estimated traffic generation of the proposed development is detailed in Table 4. The trip generation rates in Table 3 were applied to the land use components to estimate the net increase in traffic.

The proposed development is estimated to generate a total of 2,946 vehicles per day (vpd), 307 vehicles in the weekday PM peak hour and 378 vehicles in the weekend midday peak hour. Approximately 30% of the non-residential traffic would be passing trade.

Table 4: Daily and peak hour traffic generation

Land use	Quantity	Daily Trips	Weekday PM peak traffic	Weekend midday peak traffic	WD Peak		WE Peak	
					IN	OUT	IN	OUT
Shopping Centre	2208	2672	272	360	136	136	180	180
Townhouse	7	35	4	2	3	1	1	1
Apartments	76	239	31	16	20	11	10	6
Total Proposed Dev.		**2946**	**307**	**378**	**159**	**148**	**191**	**187**

The proposed development TIA underestimates the development traffic in two ways:

- The floor area is likely to be underestimated, although this is not clear as the adopted floor area for traffic calculations is not presented.
- The trip rates adopted are lower than typically used for robust traffic analysis. Additionally, it appears that no weekend midday peak hour analysis was undertaken, which typically generates higher retail traffic.

4.3 Trip distribution

The following distribution of non-residential car parking is proposed for the development:

- Parking accessed via Turnbull Way: 60/83 bays (72%).
- On-street parking Manning Street: 15/83 bays (18%).
- On-street parking Samson Street: 8/83 bays (10%).

Assuming that all the non-residential car parking bays are equally attractive and accessible, will result in the following estimated development traffic on Turnbull Way:

- Weekday daily traffic = (2672 x 72%) + (35 x 90%) + (239 x 90%) = 2,250vpd.
- Weekend peak hour traffic = (360 x 72%) + (2 x 90%) + (16 x 90%) = 275vph.

The TIA presents substantially lower numbers of forecast traffic on Turnbull Way, with limited justification of why most of the non-residential traffic will not access the only entry into the off-street retail car park.

With limited information presented, we assume that the TIA modelling distribution reflects an underlying issue that the basement entry via Turnbull Way is not attractive to customers in terms of ease of access and ease of wayfinding and convenience.

It is not ideal that the TIA forecasts 60-75% of all development traffic will utilise on-street parking. This will cause congestion on the roads and disruption to traffic in general, particularly with people waiting for cars to maneuver in and out of 90-degree on-street parking.

4.4 External streetscape and intersection treatments

The existing intersection of Manning Street / Samson Street is located at the south-east corner of the subject development site. This intersection, shown in Figure 6, is not configured to contemporary best practice. There is a four-way intersection, with no roundabout treatment. The minor road legs of Samson Street do not intersect Manning Street at a 90-degree angle. The kerb radii are very large and promote high turning speeds for vehicles. The pedestrian crossing distance is quite large, for example almost 15m on the eastern leg. The pedestrian kerb ramp on the eastern side of Manning Street leads pedestrians into the intersection, with no ramp or footpath continuation on the other side of Samson Street.

Safe systems engineering would require some modifications or treatments at this intersection. Ideally, a roundabout would be provided, which will control vehicle approach speeds in all directions of travel, define right of way and improve potential crash angles to achieve safer outcomes.

Alternative treatments may include raised threshold treatments at the intersection and tightening of kerb radii, which was also touched on in the TIA.

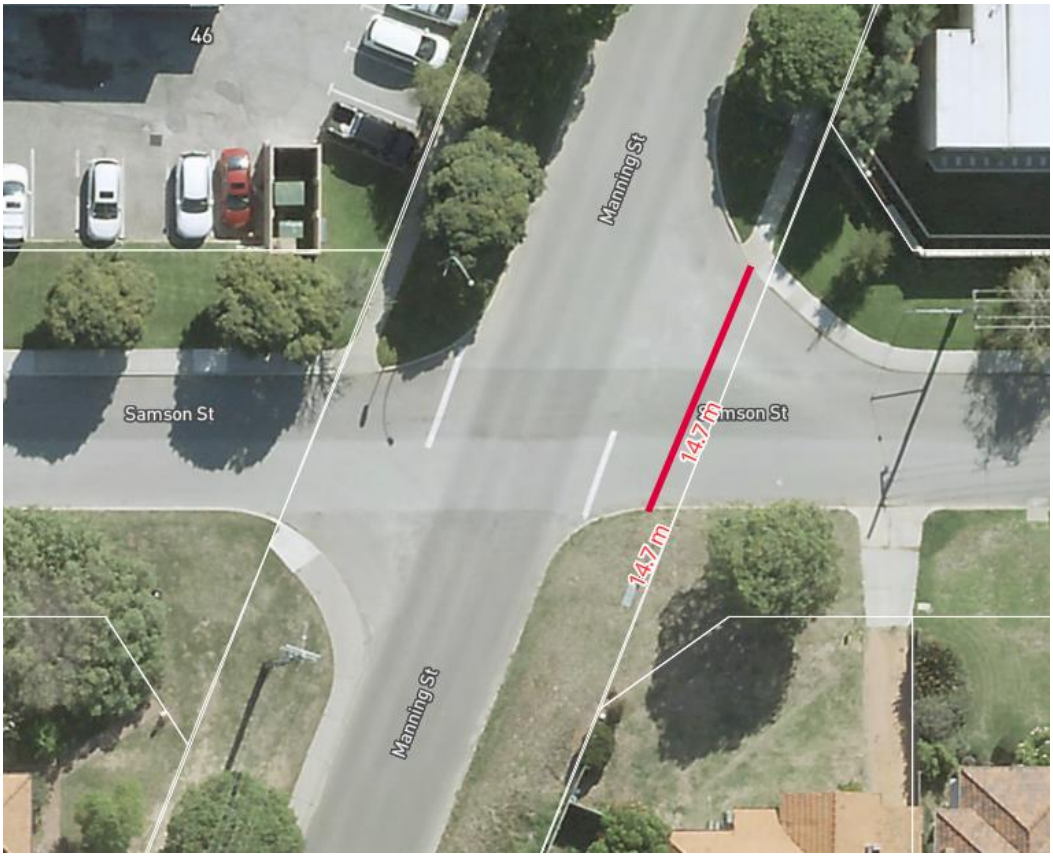

Figure 6: Existing intersection of Manning Street / Samson Street

Additionally, the proposed car parking on Manning Street should be configured to only be utilised for left turn entries, with parking potentially provided on both sides of the street. Car parking can be less than 90-degree angle or parallel (subject to compliance with relevant standards). A median strip with landscaping should be provided and a formal pedestrian crossing with refuge should be incorporated into the design. The road surfacing should be differentiated to help slow

traffic and consideration be given to lower speed limits through the section of Manning Street between Wellington Street and Samson Street (30km/h or lower).

A local suburban IGA in Baldivis was referenced as an example of street treatments used to slow down traffic in front of a suburban retail development. Figure 7 shows an aerial view of the local street. Pavers and raised threshold treatments are used at intersections on either side of the street (Figures 8 & 9). Right turn movements into street parking bays are restricted with a median island and integrated pedestrian crossing refuges (Figure 10).

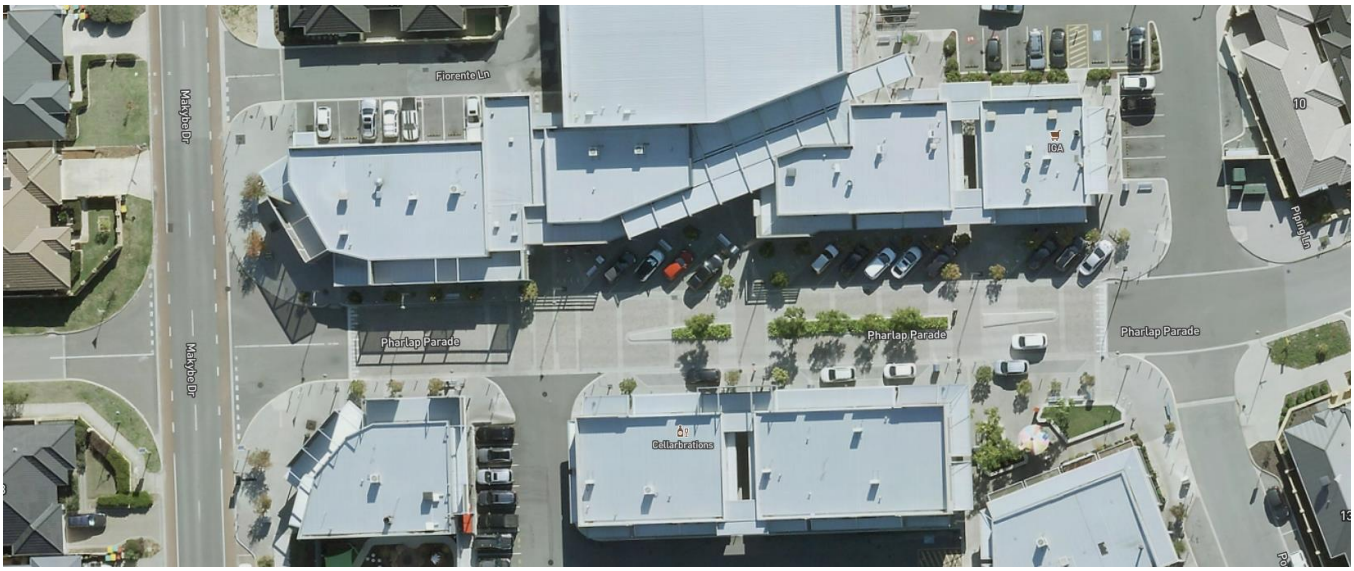

Figure 7: IGA Baldivis – aerial view

Figure 8: IGA Baldivis – street entry looking east

Figure 9: IGA Baldivis – street entry looking west

Figure 10: IGA Baldivis – on-street parking treatments

4.5 Service vehicles

It is recommended that a Delivery and Service Vehicle Management Plan be prepared for the proposed development. This plan should provide details including but not limited to:

- Anticipated schedule, type and frequency of all delivery and service vehicles for the development.
- Proposed management measures.
- Assumed service vehicle dimensions and turning circle specifications.
- Swept path analysis undertaken by a qualified traffic or civil engineer, with no turn wheels from stop and realistic path tracking (no irregular maneuvers in the middle of turns).
- High quality scaled swept path sketches in minimum A3 size format.

4.6 Vehicle access, circulation and parking review

A high-level review of the proposed development plans was undertaken, and the following feedback is provided for consideration:

4.6.1 Basement ramp and car park

- The width of the basement garage entry (between walls) appears to be 5.64m. AS2890.1 requires a minimum of 6.1m for a two-way roadway bound by vertical obstructions higher than 150mm.
- Swept path analysis should be provided for the basement ramps to show satisfactory two-way circulation for a B99 and B85 car.
- The grade transitions on the ramps seem insufficient to accommodate the steep grades. It is recommended that a profile section of the ramps be prepared, and a ground clearance template be applied to ensure that no vehicle scraping will occur.
- The route from the refuse store on basement level 1 to the refuse lift seems far. Is there opportunity to facilitate an alternative waste collection arrangement from the secondary loading area on ground level?
- Consideration should be given to providing a painted bicycle lane on the ramp so that cyclists have a separate lane for walking their bicycles up the ramp. The ramp grades are steep and not all cyclists are able to cycle up the ramp to exit the car park. There are 82 bicycle parking spaces in basement level 1, it will be quite slow to accommodate these bicycle movements via lift. Alternatively, consider providing the bike parking on the ground level.
- Residential bays 4 to 13 on Basement Level 1 are bound by a wall. The aisle width should typically be 6.1m as per AS2890.1. Some justification is required for the reduced aisle width. Bays 13 and 14 at the end of this aisle seem difficult for maneuvering, how will cars exit from these bays?

4.6.2 Manning Street

- For 90-degree on-street car parking, with high-turnover use, AS2890.5 specifies a dimension of 10.8m required from the kerb line to the centre of the road.
- As detailed in Figure 11, approximately 8.8m is provided from the end of the proposed on-street parking bays to the midpoint of Manning Street. Vehicles turning left to enter the parking bays will have to swing almost completely into the opposing traffic lane to enter a parking bay. An indicative swept path is shown in Figure 12, which conceptually demonstrates the left turn parking maneuver.
- 45-degree angle parking should be considered as it will reduce the space required for vehicle maneuvers and vehicles will not need to cross into opposing traffic to enter or exit parking bays.

Figure 11: On-street parking and manoeuvring dimension

Figure 12: Indicative swept path – vehicle turning left into on-street parking bay

5 Recommendations for consideration

In our assessment, Urbii has a generally positive view of the proposed mix of land uses for the subject site. Providing a mix of residential, retail and commercial uses provides a local convenience and amenity for the neighbourhood. Sustainable planning and transport are promoted through much of the design features, such as the streetscape enhancements that are largely within the subject site boundaries. It is also commendable that bicycle parking and end of trip facilities are provided, and the overall approach to activating the site frontages is good.

Some traffic and parking issues have been identified through review of the DA plans and TIA. There is some risk that the good design work that has been done may be impacted by other issues.

In general, Urbii is supportive of avoiding a car-centric view of matters. However, if traffic and parking issues are not addressed then there could be impacts on the locality and proposed development.

There are potentially many different options for addressing the issues identified in this peer review. Detailed investigation and analysis of remedial measures is outside the scope of our work. Some general recommendations are respectfully offered for further consideration, to assist with the DA process and achieving a good outcome:

1) Investigate streetscape improvements outside of the subject site, particularly for Manning Street. If the proposed development is relying on the addition of high-turnover car parking on Manning Street, then additional treatments are required to slow down traffic and reduce conflicting car parking maneuvers. Consideration should be given to providing 45-degree parking on Manning Street, which is easier for cars to park in. The road surface should be differentiated from regular roads and speed limits should be lowered. A pedestrian zebra crossing should be provided. These measures will assist the proposed development with delivering its goal of a pleasant streetscape environment for people to walk and cycle to the site.

2) Consider remedial measures at the intersection of Manning Street and Samson Street.

3) Reallocate car parking for the proposed development:
    a. Basement Level 2: 105 bays for residents (101 required) plus 2 car share bays. Residents who only have one car parking bay allocated for their dwelling may book car share bays on days they may need a second car.
    b. Basement Level 1: all 75 car bays allocated for reciprocal retail/commercial and residential visitor parking.
    c. Street parking: Unallocated but controlled with time restrictions to encourage higher turnover (approximately 29 car bays).
    d. The proposed alternative parking allocation will provide 107 car bays for residents (101 required). It will also provide 104 car bays for the reciprocal use of retail/commercial and residential visitors (estimated requirement of 102 bays).

4) A Parking Management Plan (PMP) should be prepared to confirm the allocation and management of parking.

5) A delivery and service vehicle management plan should be prepared to document the frequency and type of delivery and service vehicles and to confirm satisfactory maneuvering space.

6) Ensure that all vehicle access, circulation and parking areas are designed in accordance with Australian Standards AS2890. Justify minor departures from AS2890.1 with a performance-based assessment.

7) Provide a separate vehicle access crossover, driveway and ramp for retail/commercial and residential visitor car parking on Basement Level 1. Ideally, vehicle access to Basement Level 1 should be accommodated via Manning Street or Samson Street. SIDRA analysis should be undertaken to confirm that a single access to Basement Level 1 is sufficient. Access to Basement level 2 can be through Basement Level 1 or via a separate access and ramp via Turnbull Way if feasible. This will distribute low-volume residential traffic to Turnbull Way and higher levels of retail traffic to higher order streets. This will also make basement parking access more convenient and easier to find for customers, which will reduce the pressure and use of on-street car parking and improve the streetscape. Reducing traffic on Turnbull Way will also improve the environment for other “place activation” uses.

Appendices

Appendix A: AS2890.5 – Guidance for on-street parking dimensions

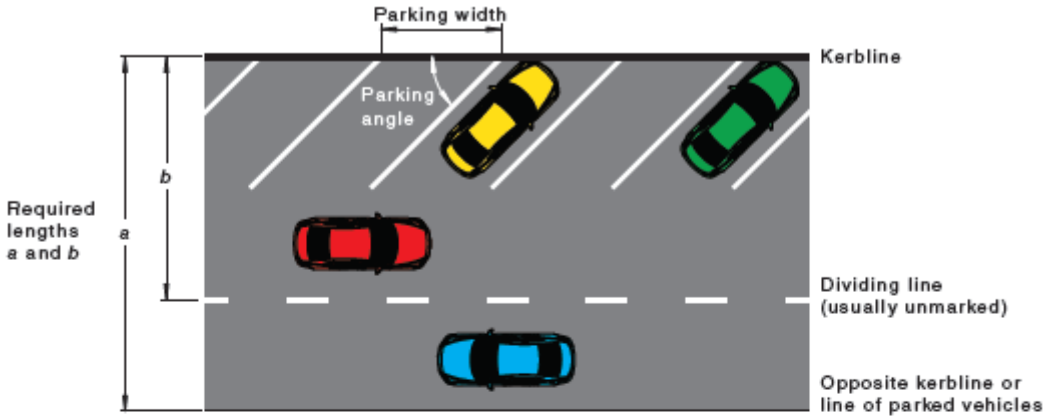

Figure 3.2 — Angle parking parameters

Table 3.3 — Parking space dimensions for angle parking on roads with speed limit 50 km/h or less and less than 200 vehicles/hour

Use classification (see Table 3.2)	30° angle parking			45° angle parking				60° angle parking				90° angle parking			
	Low	Med	High	Low	Med	High	Acc	Low	Med	High	Acc	Low	Med	High	Acc
Required width	4.2	4.6	5.0	3.4	3.5	3.7	3.4	2.8	2.9	3.0	2.8	2.4	2.5	2.6	2.4
Required length (see Note 1)															
L1 = park to wall or high kerb (>150 mm), no overhang	7.5	7.4	7.3	9.1	8.9	8.7	8.7	10.6	10.3	10.0	10.0	11.6	11.2	10.8	10.8
L2 = park to low kerb (not >150 mm), 600 mm overhang	7.2	7.1	7.0	8.7	8.5	8.3	8.3	10.0	9.7	9.4	9.4	11.0	10.6	10.2	10.2
L3 = park to wheel stops at right angles to parking direction	7.6	7.7	7.8	9.4	9.3	9.2	9.2	10.8	10.6	10.3	10.3	11.6	11.2	10.8	10.8

NOTE 1 Either (a) the distance from kerb line to opposite side of road for <200 vehicles/hour in any given hour in both directions, or (b) the distance from kerb line to dividing line for other traffic volumes. Both (a) and (b) include manoeuvre space.

NOTE 2 For further details on dimensions and additional shared area for accessible parking see Clause 4.5.

Figure 13: AS2890.5 – On-street angle parking dimensions