URBIS

TRAFFIC IMPACT ASSESSMENT – 1129-1131 PITTWATER ROAD, COLLAROY NSW 2097

Prepared for
LOTUS PROJECT MANAGEMENT
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1. INTRODUCTION

1.1. PURPOSE AND OBJECTIVE

This Traffic Impact Assessment (TIA) has been prepared by Urbis on behalf of Lotus Project Management. The TIA will accompany a Development Application (DA) that seeks consent for the development of a 4-storey multi-unit mixed-use development at 1129-1131 Pittwater Road in Collaroy.

This report is structured into the following sections:

- Section 2: Describes the existing transport conditions in the locality and provides an overview of the proposed development;
- Section 3: Assesses the statutory parking provision requirements applicable for the proposal;
- Section 4: Provides a review of the proposed on-site car parking design against the requirements outlined in the relevant Australian Standards;
- Section 5: Provides an estimate of the peak period traffic impact anticipated to be generated by the proposed development onto the surrounding local road network; and
- Section 6: Provides the summary and conclusions of the study.

2. BACKGROUND AND EXISTING CONDITIONS

2.1. SITE DESCRIPTION AND LOCAL ROAD NETWORK

The site is located at 1129-1131 Pittwater Road in Collaroy and is two separate lots. At the site frontage, Pittwater Road is a 6-lane State Road with a speed limit of 60 km/hr. The site is zoned Local Centre (B2) and in the immediate site vicinity is predominantly local shops, with Collaroy Beach on the eastern side of Pittwater Street.

Figure 1 shows an aerial perspective of the site.

Figure 1 - Location of the site

Source: Nearmap

2.2. DETAILS OF THE PROPOSED DEVELOPMENT

The proposal is a consolidation of the two lots at 1129 and 1131 Pittwater Road and demolition of the existing buildings with construction of a 4 storey multi-unit building comprising:

- Two (2) commercial units on the ground level (total GFA of 228.2 m^2)
- 23 boarding rooms across levels 1 and 2
- One (1) x three (3) bedroom unit for the manager of the boarding house at level 3.

On-site parking is proposed within the ground and basement levels of the building. Vehicle access will be provided from an existing Right of Way (which runs beneath the neighbouring building at 1-5 Collaroy Street, to the west of the site) that connects to Collaroy Street. This Right of Way access arrangement is demonstrated in **Figure 1**.

Appendix A provides photographs of the site and the right of way, obtained during a site inspection.

2.3. PUBLIC TRANSPORT SERVICE ACCESSIBILITY

The locality of the site was assessed for public transport options likely to be utilised by prospective residents. This assessment identified that the site lies within comfortable walking distance to several bus routes, as listed below in **Table 1**.

Table 1 - Local public transport services

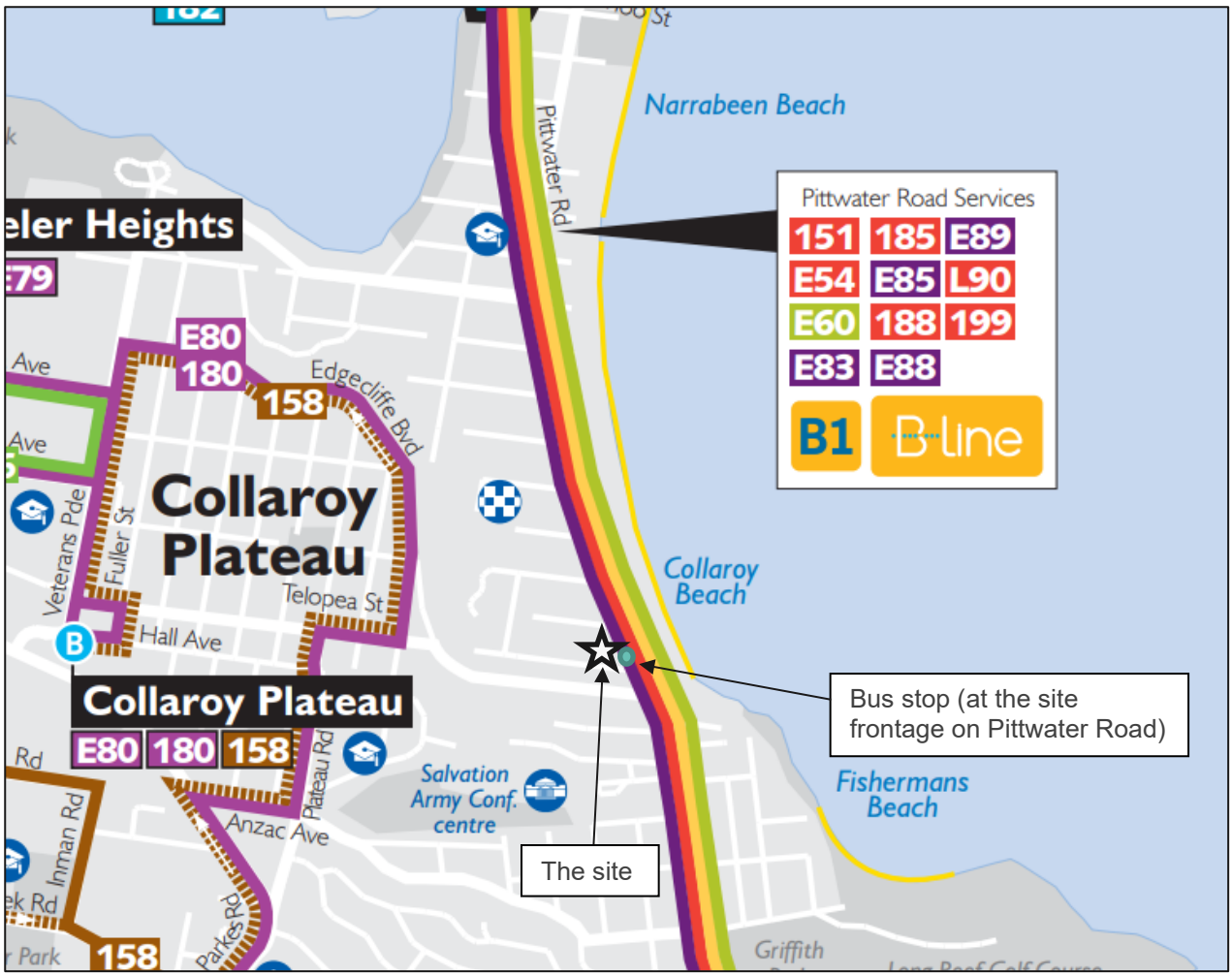
Service	Coverage	Location	Walking Distance	Frequency-Weekday			
				AM	Midday	PM	Weekend daytime
151	Mona Vale - City QVB	1125 Pittwater Road	20 metres	Night Service			
185	Mona Vale – Warringah Mall via Warriewood	1125 Pittwater Road	20 metres	30 min	30 min	30 min	30 min
188	Avalon Beach - City QVB	1125 Pittwater Road	20 metres	Night Service			
199	Palm Beach - Manly	1125 Pittwater Road	20 metres	6-14 min	15 min	10-15 min	15 min
B1	Mona Vale - Wynyard	1125 Pittwater Road	20 metres	2-7 min	10 min	2-7 min	Sat: 8-12 min Sun: 10 min
E54	Mona Vale – Milsons Point	1125 Pittwater Road	20 metres	6-9 min	N/A	6-9 min	N/A
E60	Mona Vale - Chatswood	1125 Pittwater Road	20 metres	30 min	N/A	30 min	N/A
E83	North Narrabeen - Wynyard	1125 Pittwater Road	20 metres	10-15 min	N/A	25-40 min	N/A

Service	Coverage	Location	Walking Distance	Frequency-Weekday			
				AM	Midday	PM	Weekend daytime
E85	Mona Vale – Wynyard via Warriewood	1125 Pittwater Road	20 metres	15 min	N/A	15-20 min	N/A
L90	Palm Beach - Wynyard	1125 Pittwater Road	20 metres	N/A	60 min	N/A	60 min

Source: Transport for NSW, 2020, via Google Maps

Figure 2 shows the bus network map for the site vicinity, outlining the coverage of the bus services listed in **Table 1**.

Figure 2 – Bus network map for the site vicinity



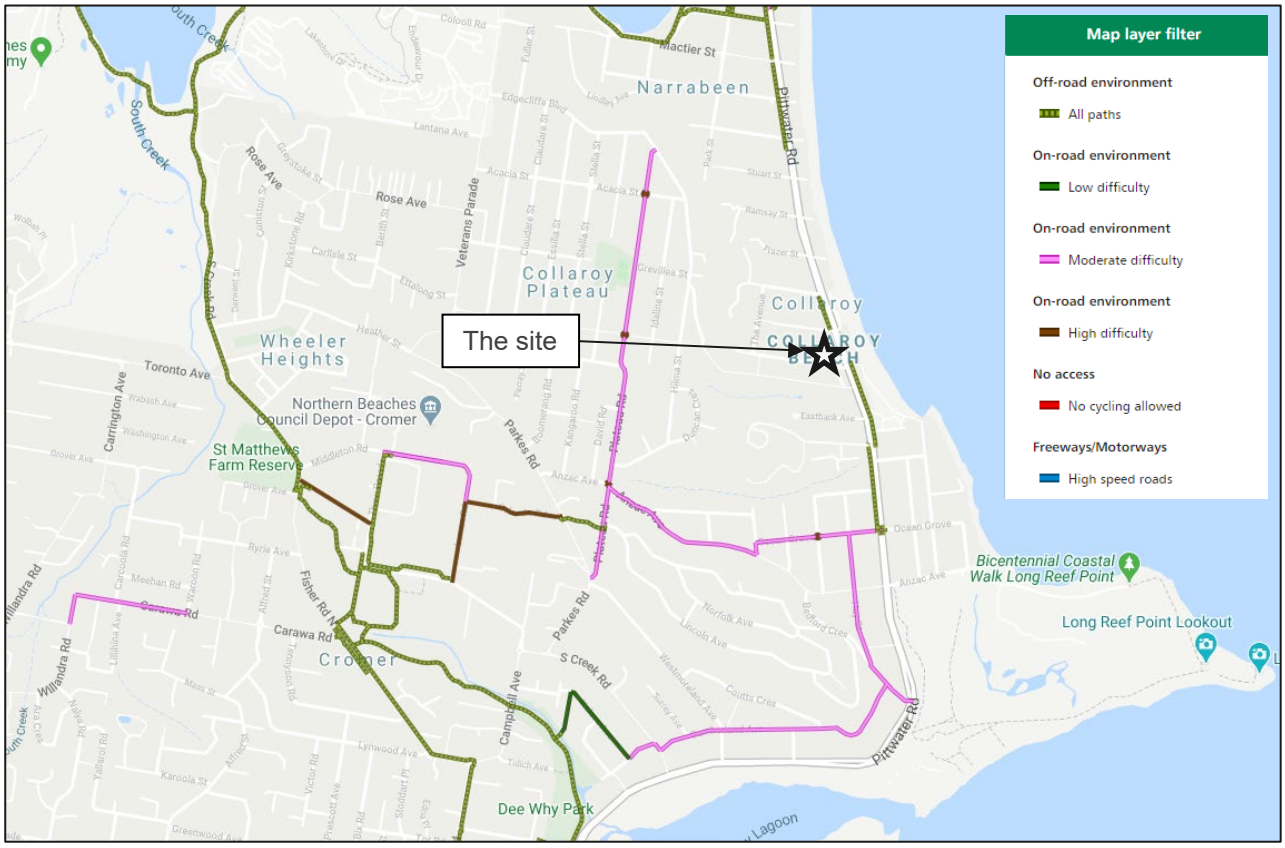
Source: Transport for NSW

The site has good, frequent bus connections to local areas and the CBD throughout the entire week with public transport being a viable alternative to private vehicle trips for those wishing to travel to and from the site.

2.4. ACTIVE TRANSPORT ASSESSMENT

The site locality was assessed for infrastructure that encourages modes of active travel. It was identified that the local road network (which includes Pittwater Road, Collaroy Street and Alexander Street) provide footpaths on both sides for convenient pedestrian travel. Marked foot crossings are available across all legs at the Pittwater Road/Collaroy Street intersection. This facilitates pedestrian access to the beach and the bus stops on the opposite side of the road from the site. Pittwater Road also has a bike path within the locality of the site, as illustrated in **Figure 3**.

Figure 3 - Cycling network within the site locality



Source: Transport for NSW – Cycleway Finder

3. PARKING PROVISION ASSESSMENT

3.1. CAR PARKING PROVISION REQUIREMENTS

The statutory car parking provision requirement for the boarding house and commercial components of the proposed development were determined under the NSW State Environmental Planning Policy (SEPP): Affordable Rental Housing 2019* and the Warringah Development Control Plan (DCP) 2011, respectively.

**The DCP states that parking requirements for boarding houses must be compared to developments with a similar purpose. Therefore, the parking provision in the SEPP was used.*

Table 2 summarises the car parking provision calculation for the proposal.

Table 2 - Car parking provision requirement

Component	Number proposed/GFA	Parking rate	Parking requirement
Boarding rooms and manager's units	23 boarding rooms and 1 manager's unit	SEPP: 0.5 car spaces per boarding room + at least 1 space provided for each person employed in connection with the development and who is resident on the site	12.50
Commercial units	2 units with a total GFA of 228.2 m^2	DCP: 1 space per 40 m^2 GFA	5.71
Overall car parking provision requirement			19 (rounded up to the nearest whole number)

The proposal includes provision for 21 car spaces (one (1) disability accessible car space at ground level and 20 car spaces on the basement level including two (2) disability accessible spaces), meeting the requirement for 19 spaces is therefore satisfied.

Seven (7) car spaces will be allocated for the commercial component (including two (2) car spaces in tandem configuration) and 14 car spaces are allocated for the boarding house component.

3.2. BICYCLE PARKING PROVISION REQUIREMENTS

The bicycle parking provision requirement for the proposal was calculated based on the rates provided in the DCP, as summarised in **Table 3**.

Table 3 - Bicycle parking provision requirements

Component	Number proposed/GFA	Parking rate	Parking requirement
Boarding rooms and manager's units	26 rooms (23 boarding rooms and the manager's unit which includes 3 rooms)	1 space per 10 beds for residents + 1 space per 20 beds for visitors	3.90
Commercial units	2 units with a total GFA of 228.2 m^2	1 space per 200 m^2 GFA for staff + 1 space per 750 m^2 GFA over 1,000 m^2	1.14
Overall bicycle parking provision requirement			6 spaces (rounded up)

The proposal includes provision for 6 bicycle parking spaces (within the basement level), which satisfies the DCP requirement.

4. CAR PARKING DESIGN REVIEW

This section provides a review of the proposed on-site car parking design against the minimum requirements outlined in the Australian Standards (AS 2890.1:2004, AS 2890.2:2002, AS 2890.3:2015 and AS 2890.6:2009). The proposed on-site car parking includes:

- One small rigid vehicle (SRV) loading bay, one disability accessible car space and one waiting bay at the ground level; and
- 20 car spaces (includes 2 disability accessible spaces and 2 car spaces in tandem configuration), 3 motorcycle spaces and 6 bicycle spaces at the basement level.

4.1. CAR SPACE DIMENSIONS

Based on AS 2890.1, the proposed 90-degree car spaces (except for the disability accessible car spaces) and the waiting bay can be categorised under user class 1A (residential, domestic and employee parking). Such spaces are required to be 2.4 m wide by 5.4 m long with 5.8 m of aisle width. The proposed design satisfies the above requirements.

4.2. DISABILITY ACCESSIBLE CAR SPACE DIMENSIONS

The disability accessible parking spaces shall be designed per AS 2890.6, as follows:

- The disability accessible car parking space should be designed at 2.4 m width and 5.4 m length;
- Shared space of equal dimensions shall be provided adjacent to the car parking space; and
- Both the car parking space and the shared space should include appropriate line-markings. The shared space should include a bollard to prevent motorists from parking at this location.

The proposed 3 disability accessible car spaces comply with the above requirements.

4.3. SERVICE BAY DIMENSIONS

Provision has been made for a small rigid vehicle loading bay within the ground level. This loading bay is designed at 6.4 m length and 3.5 m width, as required by AS 2890.2.

4.4. LATERAL CLEARANCE REQUIREMENTS

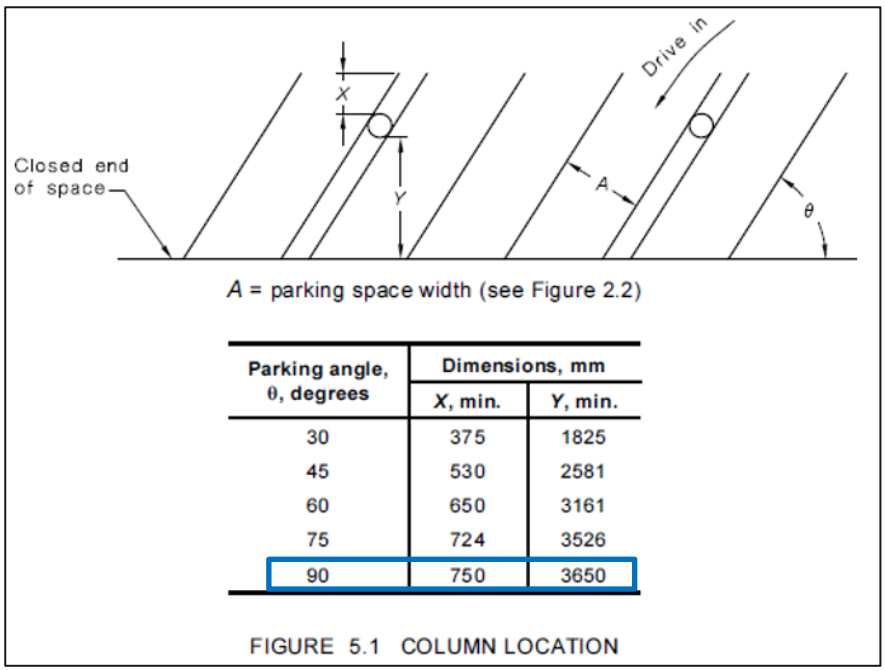
AS 2890.1 requires the provision of an additional 300 mm clearance (for door opening) when car spaces are located adjacent to vertical obstructions higher than 150 mm. Car space 16 at basement level 1 is located adjacent to a wall on one side. As such, this space has been designed to include a 300 mm additional clearance beyond the minimum space width requirement.

Where car spaces are located adjacent to a blind aisle (end of the aisle), AS 2890.1 requires the aisle to be extended by an additional 1 m to allow reverse exit manoeuvres by the vehicles parked in these spaces. Car spaces 13 and 14 are located adjacent to a blind aisle and the aisle at this location has been extended by 1 m.

4.5. COLUMN LOCATION

The column positioning requirements are outlined in **Figure 4** (extracted from AS 2890.1). Since the car parking spaces are proposed at 90-degree angles, the columns between car spaces shall include an Xmin dimension of 750 mm and an Ymin dimension of 3,650 mm. The proposed columns within the basement level comply with the above requirement.

Figure 4 - Column positioning requirements



Parking angle, θ, degrees	Dimensions, mm	
	X, min.	Y, min.
30	375	1825
45	530	2581
60	650	3161
75	724	3526
90	750	3650

FIGURE 5.1 COLUMN LOCATION

Source: AS 2890.1:2004

4.6. DRIVEWAY AND RAMP GRADE

The driveway to the site connects with the ROW at the boundary with the adjacent site. The initial section of the driveway (minimum of 4 m) has been graded at 1:12, to comply with the gradient requirement outlined in AS 2890.2 for a small rigid vehicle (since the initial section of the driveway will be used by a small rigid vehicle to access the loading bay for waste collections). **Figure 5** illustrates the proposed driveway and ramp gradients.

AS 2890.1 states the grade requirements for straight ramps at private or residential car parks as follows:

(a) Longer than 20 m—1 in 5 (20%) maximum.

(b) Up to 20 m long—1 in 4 (25%) maximum. The allowable 20 m maximum length shall include any parts of grade change transitions at each end that exceed 1 in 5 (20%).

(c) A stepped ramp comprising a series of lengths each exceeding 1 in 5 (20%) grade shall have every two lengths separated by a grade of not more than 1 in 8 (12½%) and at least 10 m long.

Where the difference in grade between two sections of ramp or floor is greater than 1:8 (12.5%) for a summit grade change or greater than 1:6.7 (15%) for a sag grade change, the ramp must include a transition section of at least 2 m to prevent vehicles scraping or bottoming.

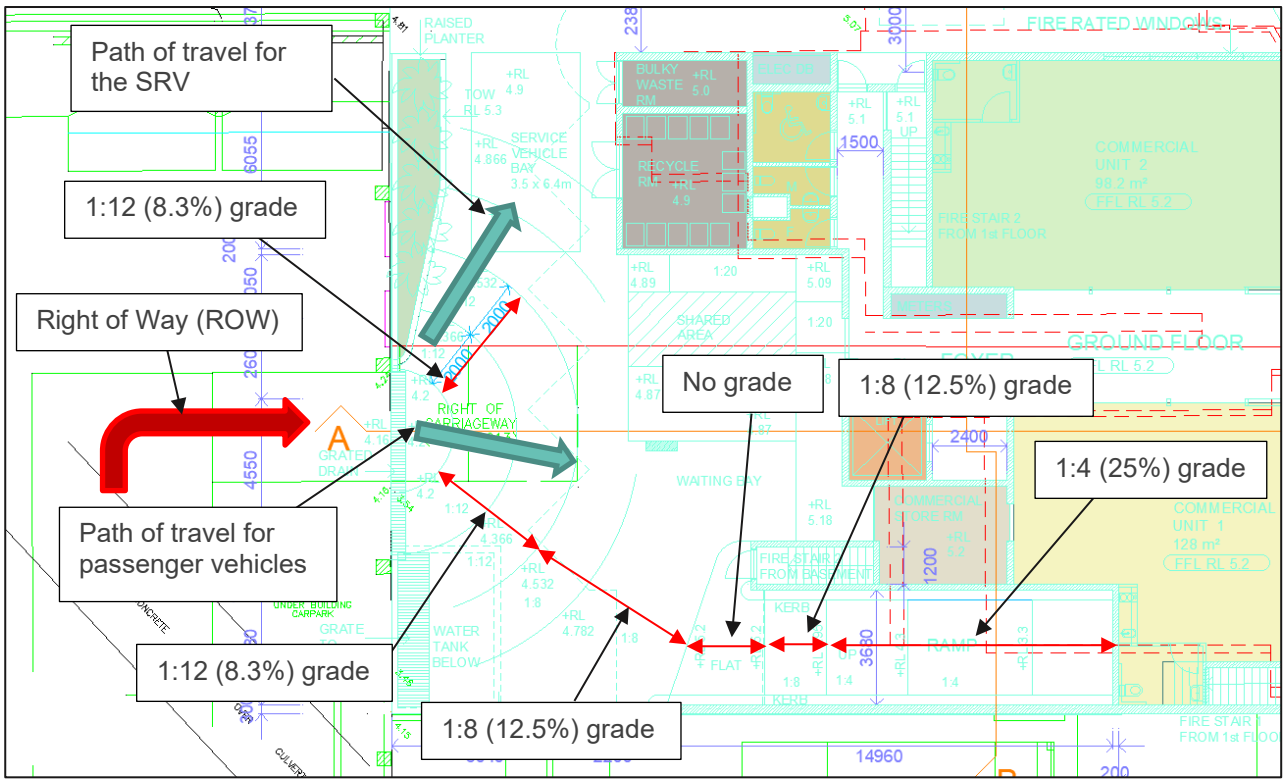
The proposed ramp which connects the ground level with the basement level is less than 20 m long and includes a maximum grade of 25%. The changes of grade (at either end of the 25% graded ramp section) have been transitioned through sections which satisfy the minimum length requirement of 2 m. The summit and sag grade changes along the driveway do not exceed 12.5% and 15%, respectively, complying with the relevant gradient change requirements.

4.7. RAMP WIDTH

The proposed access to the car parking area can be categorised under access category 1 (User class 1A facility, < 25 car spaces, frontage road local) in AS 2890.1. Therefore, the entry/exit combined access points should provide at least 3m width.

The ramp from the ground level to the basement is a one-way ramp. The minimum one-way ramp width requirement, for straight sections, as per AS 2890.1:2004 is 3 m. Additionally, when the ramp is located adjacent to a wall, 300 mm clearance is required. This results in a total ramp width of 3.6 m (3 m ramp width + 300 mm clearance on either side). The proposed ramp includes a minimum width of 3.68 m, which complies with the above requirement.

Figure 5 - Proposed driveway grades



4.8. HEADROOM REQUIREMENTS

For the proposed basement level car parking area, the design vehicle is a disability accessible car. As per AS 2890.6, this vehicle requires a headroom of 2.5 m minimum above the car space (a minimum headroom clearance of 2.2 m is required along the path of the vehicle to and from the disability accessible car space). These required vertical clearances are available throughout the basement level. The ROW (through which the vehicles will enter the site) includes a minimum headroom clearance of 2.5 m along the path of travel for the vehicles.

4.9. GRADIENTS WITHIN PARKING MODULES

AS 2890.1 stipulates that parking modules, at maximum, should have a grade of 1 in 16 (measured in any direction other than parallel to the angle of parking). Additionally, AS 2890.6 requires that the disability accessible car parking spaces and the shared areas shall not exceed a crossfall of 1:40 in any direction. The proposed car parking spaces are at grade and therefore comply with the above requirements.

4.10. MOTORCYCLE SPACES

AS 2890.1 requires that spaces are 2.5 m long and 1.2 m wide for 90-degree motorcycle spaces. The proposed 6 motorcycle spaces within the basement level comply with this requirement.

4.11. BICYCLE SPACES

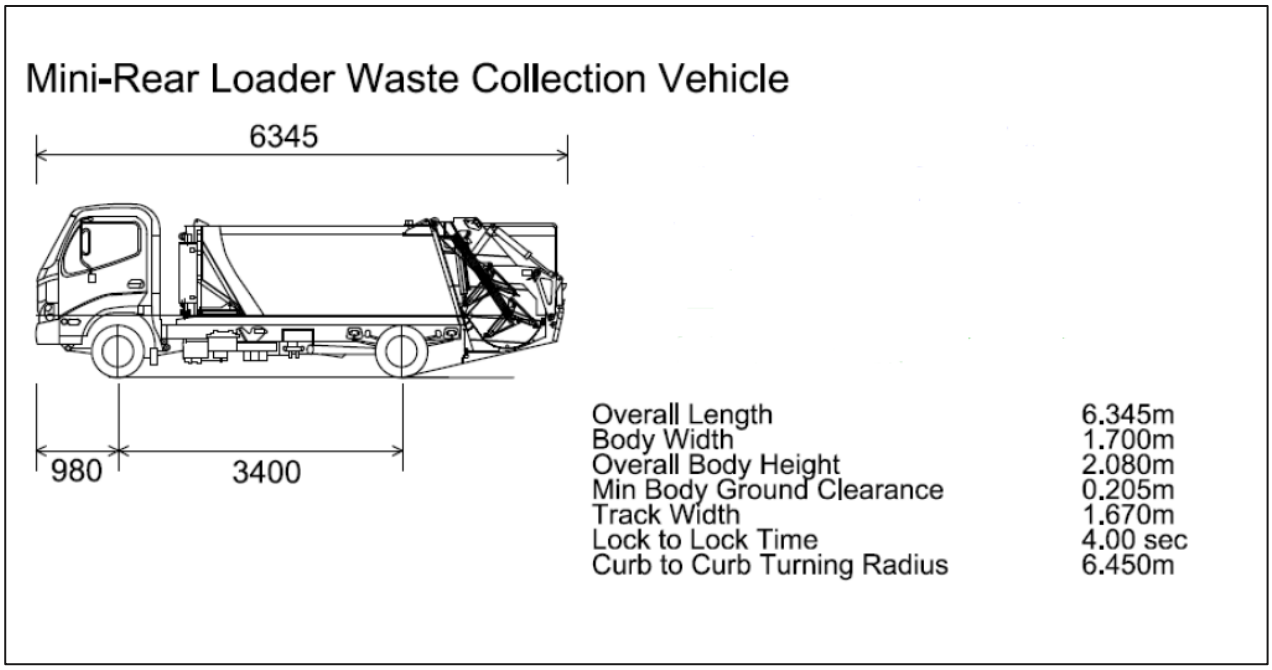
Bicycle parking is proposed using horizontal bicycle racks, AS 2890.3 requires a spacing envelope of 1.8 m long by 0.5 m wide. The proposed 6 horizontal bicycle racks (within the basement level) have been designed at 1.8 m length and 0.5 m width.

4.12. SERVICE VEHICLE MANOEUVRABILITY

The largest vehicle that can access the site is governed by the constraints of the Right of Way (ROW) configuration (site visit photographs are presented in **Appendix A** of this report). As such, a Waste Wise Mini rear loader is nominated as the largest vehicle to access the site (for waste collections). The dimensions of this vehicle are smaller than those of a small rigid vehicle as outlined in AS 2890.2.

As shown in **Figure 6**, the Waste Wise Mini rear loader is only 2.08 m high, 6.4 m long and 1.7 m wide (excluding wing mirrors) and can fit within the constraints of the existing car park adjacent to the site (through which vehicles will access the site).

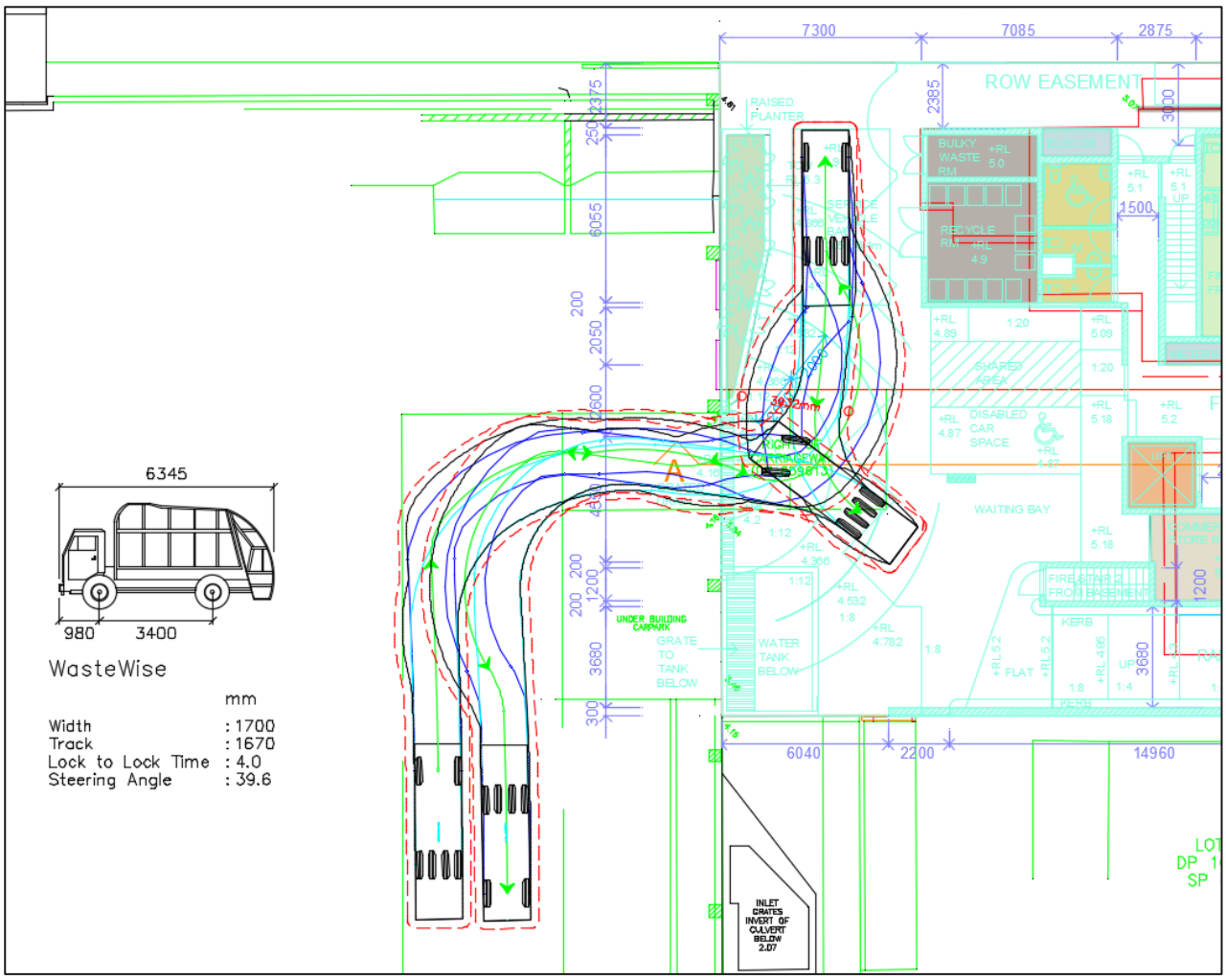
Figure 6 - Key dimensions of the Waste Wise Mini rear loader



Source: Waste Wise (NSW)

The anticipated manoeuvrability conditions of the Waste Wise Mini rear loader were investigated through a swept path test using a vehicle template (using AutoTURN software) which reflects the key dimensions of this vehicle as shown in **Figure 6**. The result of this swept path test, along with the vehicle template used, is illustrated in **Figure 7**. It is noted that the Blue and Cyan colour lines in the swept paths indicate the front and rear tyre tracks of the vehicle, respectively, while the Black colour of the swept paths indicate the vehicle body (the dashed Red lines of the swept paths indicate the 300 mm vehicle body clearance envelop). As can be seen from this swept path result, a Waste Wise Mini rear loader can access the site/loading bay through the ROW and reverse within the site (without any additional correctional manoeuvres) to exit in forward gear.

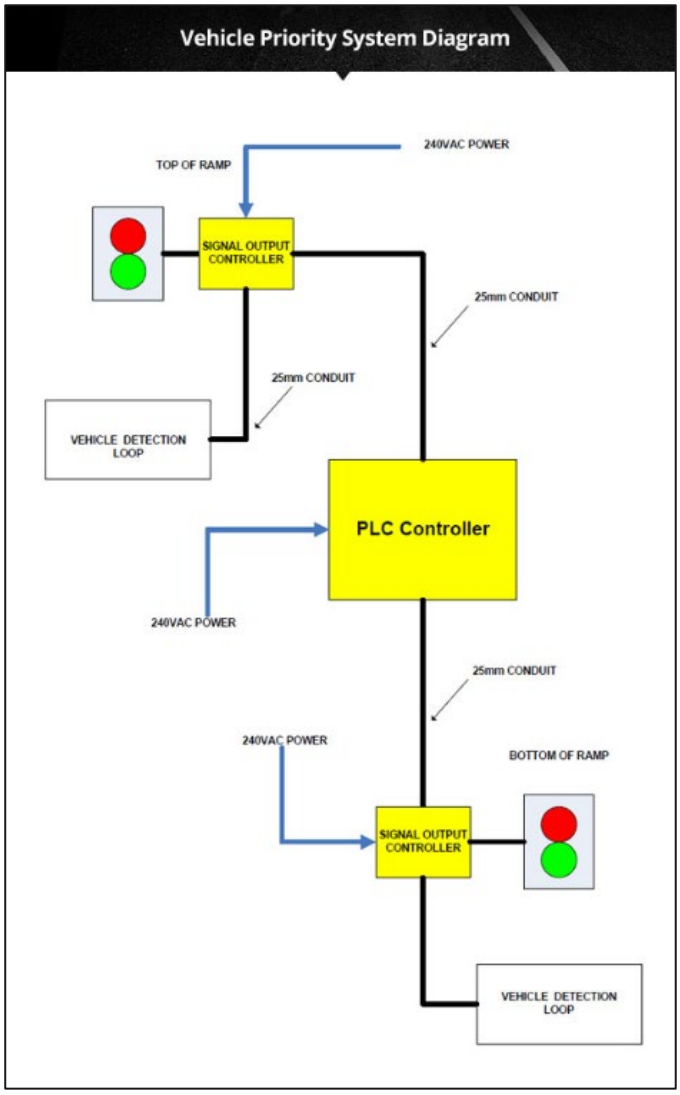
Figure 7 - The swept path of the Waste Wise Mini rear loader



4.13. CONFLICT MANAGEMENT AT RAMP ACCESS POINTS

To manage the potential conflicts between the vehicles travelling in opposite directions, a vehicle priority system is proposed at the ramp entry points. This system includes vehicle detection loops at the top and the bottom of the ramp. When a vehicle triggers this loop detector, Red lights flash at the opposite end, indicating the drivers should give way (see **Figure 8**). More information about this system is available at https://www.trafficparking.com.au/vehicle-priority-systems.php

Figure 8 - Proposed vehicle priority system



Source: TPS Group

The anticipated manoeuvrability conditions of vehicles at the ramp access points were investigated through swept path tests, using a vehicle template (developed in AutoTURN software) based on the dimensions stipulated in AS 2890.1 for a 99th percentile (B99) vehicle.

Figure 9 and **Figure 10** show the swept path results obtained for the anticipated vehicle movements at the ramp access points, at the ground and basement level, respectively. It is noted that the Blue and Cyan colour lines in the swept paths indicate the front and rear tyre tracks of the vehicle, respectively, while the Black colour of the swept paths indicate the vehicle body (the Green colour line indicated the centreline of the swept path while the dashed Red colour lines indicate the 300 mm vehicle body clearance envelop).

Figure 9 shows a B99 vehicle exiting the ramp while another B99 vehicle is entering the ramp, at ground level. The vehicle entering the site will be notified of the on-coming vehicle that is exiting the ramp by the traffic signal. Subsequently, the vehicle wishing to enter the ramp can pull into the waiting bay and allow the other vehicle to exit the site.

Figure 10 shows a B99 vehicle exiting the ramp while another B99 vehicle is wishing to enter the ramp, at basement level. The vehicle wishing to enter the ramp will be notified of the on-coming vehicle that is exiting the ramp by the traffic signal. Subsequently, the vehicle wishing to enter the ramp can park at the waiting area (which will be line marked directly behind the motorcycle spaces) and allow the other vehicle to exit the ramp.

Figure 9 - Management of vehicle conflicts at ground level

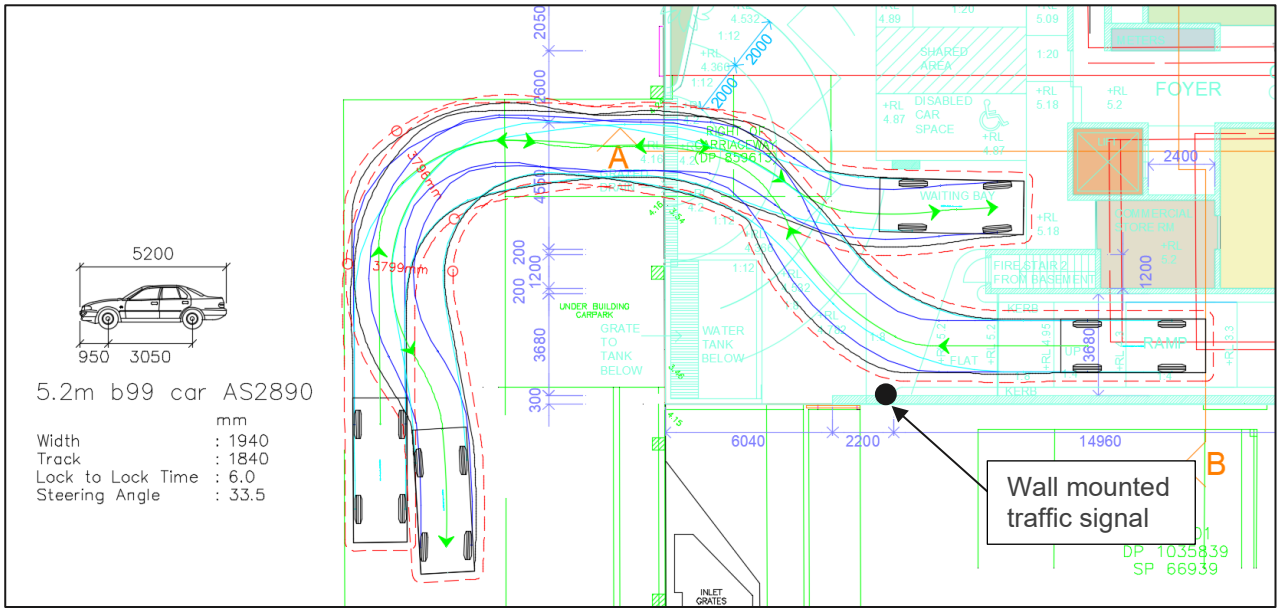
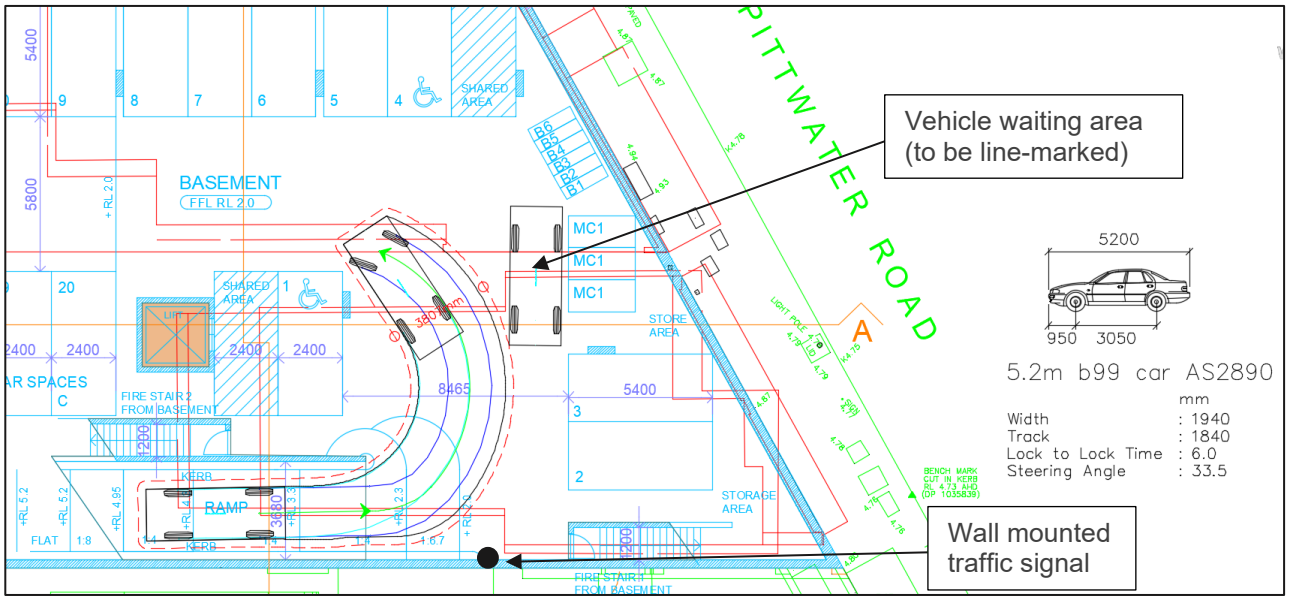


Figure 10 - Management of vehicle conflicts at basement level



5. TRAFFIC IMPACT ASSESSMENT

A traffic impact assessment was undertaken to determine potential impacts expected from the proposed development upon the local road network.

The Guide to Traffic Generating Developments (RMS, 2002) or the Updated Traffic Surveys Technical Direction (RMS, 2013) does not provide trip rates for boarding houses. As such, the traffic generation potential of the boarding house component of the proposed development has been assumed to be similar to that of a high density residential flat building. Trip rates for high-density residential flat buildings are provided in the Updated Traffic Surveys Technical Direction (RMS, 2013) as follows:

- AM peak (1 hour) vehicle trips - 0.19 per unit;
- PM peak (1 hour) vehicle trips - 0.15 per unit; and
- Daily vehicle trips - 1.52 per unit.

Concerning the proposed commercial units, the following trip rates from the RMS Guide (2002) for 'office and commercial' uses have been used:

- PM peak hour vehicle trips – 2 per 100 m^2 GFA; and
- Daily vehicle trips – 10 per 100 m^2 GFA.

Table 4 summarises the anticipated traffic generation potential from the proposed development, based on the above-identified trip rates.

Table 4 - Anticipated traffic generation levels

Period	Boarding House*	Office Premises	Total Trips
AM Peak	24 units X 0.19 trips per unit = 4.56 trips	228.2 m^2 GFA x (2/100) trips** = 4.56 trips	10 AM peak hour trips
PM Peak	24 units X 0.15 per unit = 3.60 trips	228.2 m^2 GFA x (2/100) trips** = 4.56 trips	9 PM peak hour trips
Daily	24 units X 1.52 per unit = 36.48 trips	228.2 m^2 GFA x (10/100) trips** = 22.82 trips	60 daily trips

**the boarding house manager's unit has also been included in the total number of boarding house units*

***the AM peak trip generation rate for the office premises has been assumed to be the same its PM peak trip generation rate (since the RMS Guide does not provide AM peak trip generation rates for commercial land uses)*

The above-identified daily and peak period trip figures are considered insignificant and are unlikely to have any noticeable impacts on the existing traffic conditions within the site locality. These trips will be realised as turning movements into and out of Collaroy Street at its signalised intersection with Pittwater Road and the midblock of Collaroy Street (into and out of the existing vehicle access point for 1-5 Collaroy Street). Since Collaroy Street is a local road which only serves a limited number of local residential land uses, the minor increase in midblock turning movements are unlikely to have any significant delay implications to through traffic.

6. CONCLUSIONS

Based on this traffic impact assessment, the following can be concluded:

- The site has public transport accessibility through bus connections to the surrounding local areas and the CBD throughout the week;
- The local street network includes paved footpaths and signalised crossings for convenient pedestrian travel. Also, Pittwater Road has a shared path within the proximity of the site;
- The proposal includes a statutory parking provision requirement of 19 car parking spaces. The proposed development includes provision for 21 car spaces, satisfying this requirement;
- The proposal includes provision for 6 bicycle parking spaces (within the basement level), satisfying the relevant statutory requirement of 6 spaces;
- The proposed on-site car parking design is compliant against the minimum requirements outlined in the relevant Australian Standards;
- The swept path tests carried out indicate that provision of a traffic signal system along with a waiting bay area at each level is a workable solution for managing the conflicting movements at ramp access points;
- The largest vehicle to access the site will be a Waste Wise Mini rear loader. Based on the swept path test results, this vehicle can access the site/loading bay through the ROW and reverse within the site (without any additional correctional manoeuvres) to exit in forward gear; and
- The proposed development includes a traffic generation potential of 60 daily trips, 10 AM peak hour trips and 9 PM peak hour trips. These trip figures are considered minimal and are unlikely to have any noticeable impacts on the existing traffic conditions within the site locality.

DISCLAIMER

This report is dated 27 March 2020 and incorporates information and events up to that date only and excludes any information arising, or event occurring, after that date which may affect the validity of Urbis Pty Ltd **(Urbis)** opinion in this report. Urbis prepared this report on the instructions, and for the benefit only, of Lotus Project Management **(Instructing Party)** for the purpose of Traffic Impact Assessment **(Purpose)** and not for any other purpose or use. To the extent permitted by applicable law, Urbis expressly disclaims all liability, whether direct or indirect, to the Instructing Party which relies or purports to rely on this report for any purpose other than the Purpose, and to any other person which relies or purports to rely on this report for any purpose whatsoever (including the Purpose).

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All surveys, forecasts, projections and recommendations contained in or associated with this report are made in good faith and on the basis of information supplied to Urbis at the date of this report, and upon which Urbis relied. Achievement of the projections and budgets set out in this report will depend, among other things, on the actions of others over which Urbis has no control.

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This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the reasonable belief that they are correct and not misleading, subject to the limitations above.

APPENDIX A SITE PHOTOGRAPHS

Picture 1: Existing access point off Collaroy Street

Picture 2: Location of the ROW

Picture 3: ROW into the site

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