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Traffic Impact Assessment

29-37 Dobroyd Road, Balgowlah Heights
NSW 2093

February 2022

Type of Assessment: Traffic Impact Assessment

Site Location: 29-37 Dobroyd Road, Balgowlah Heights NSW 2093

Prepared for: Woodhouse & Danks Pty Limited

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1. INTRODUCTION

APEX Engineers were engaged by Woodhouse & Danks Pty Limited to provide a traffic impact assessment as part of the development application for the proposed mixed use development at 29-37 Dobroyd Road in Balgowlah Heights.

This report is structured into the following sections:

- Section 2 Provides a review of the existing conditions and an overview of the proposed development;
- Section 3 Assesses the parking provision requirements applicable to the proposal;
- Section 4 Reviews the compliance of the proposed on-site car spaces;
- Section 5 Assesses the traffic impacts of the proposed development on the 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 subject site is located at 29-37 Dobroyd Road in Balgowlah Heights, within the Northern Beaches Council local government area. The site is triangular in shape and is zoned B1 Neighbourhood Centre (with the wider locality zoned R2 – low-density residential) under Manly Local Environmental Plan 2013.

The site has frontage to Commerce Lane along its eastern and southern boundaries. Commerce Lane includes a carriageway that is approx. 4m wide and serves as a laneway that connects Dobroyd Road (to the north) with Nolan Place (to the south).

Figure 1 shows the site location from an aerial perspective.

Figure 1: Location of the subject site

2.2 Details of the Proposed Development

The current proposal seeks to demolish the existing structures and construct a mixed use building (commercial on the ground floor and co-living on the upper floors) consisting of one (1) retail shop (30.5m^2 GFA) at ground level and twelve (12) boarding units on upper two levels. On-site car parking is provided within the ground floor level, to accommodate 7 car spaces (1 disability accessible space + 6 car spaces in the form of 3 x double stackers), 3 motorcycles and 13 bicycles. Vehicle access to the car park is proposed off Commerce Lane.

2.3 Public Transport Services

The site locality was assessed for available public transport services that were both easily accessible and provide viable alternative options to private trips. This assessment identified that the site lies within comfortable walking distance to the following two bus routes that operate on Curban Street (200m from the site, 2-minute walk)

- Route 162 - Seaforth to Manly (operates between 6am to midnight on weekdays, weekends and public holidays, with at least one service per hour).
- Route 171X - Balgowlah to City Wynyard via Clontarf (Express Service) - This service picks up passengers only at Wynyard, then picks up and sets down passengers at Neutral Bay Junction, Spit Junction, then all stops (operates Monday to Friday between 6-9am and 4-7pm).

Figure 2 outlines the local bus route map for the subject site.

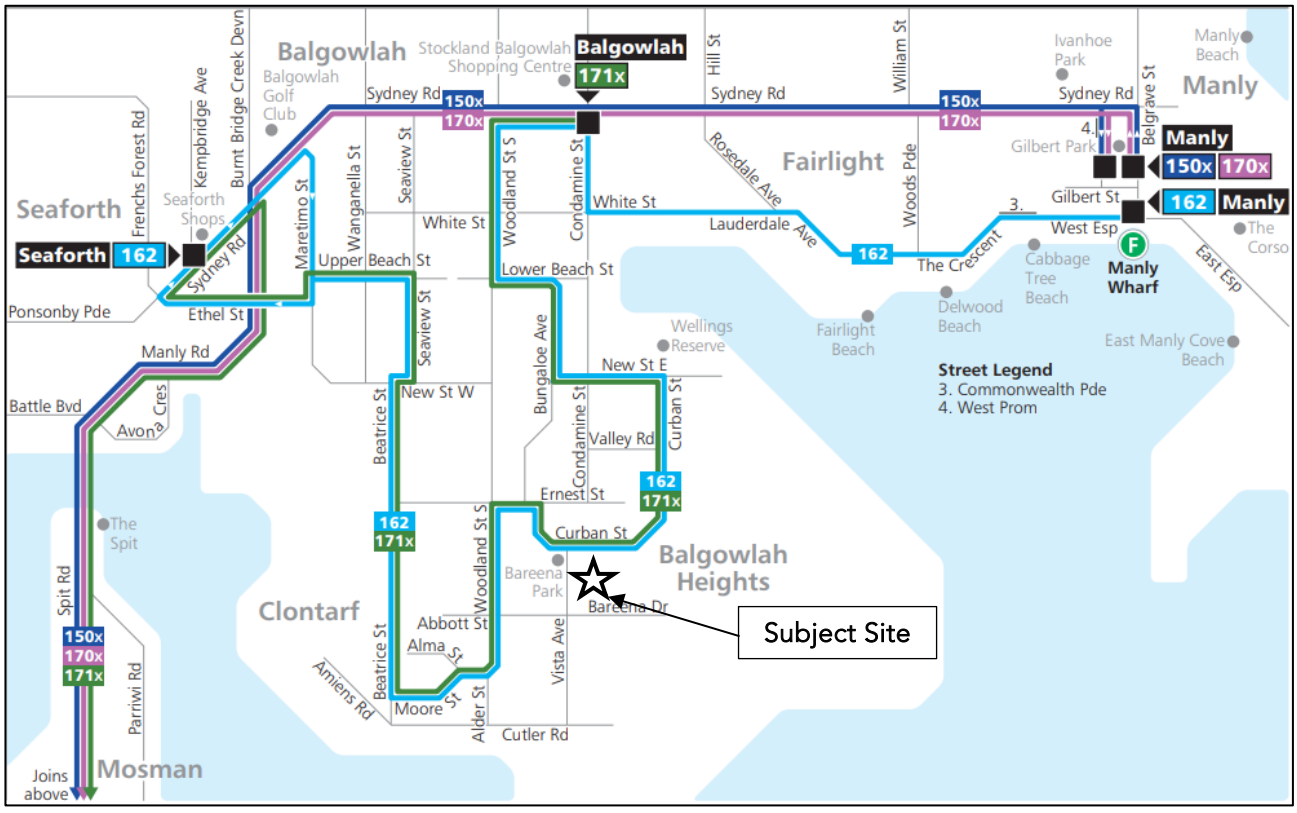

Figure 2: Local public transport map

2.4 Active Transport Infrastructure

The site locality was assessed for features within its walking catchment that encourage active travel (i.e. walking and cycling). Figures 3 and 4 illustrate the 20-minute walking and cycling catchments for the subject site. These catchments cover a large area that includes public transport stops, parks, grocery shops, and restaurants.

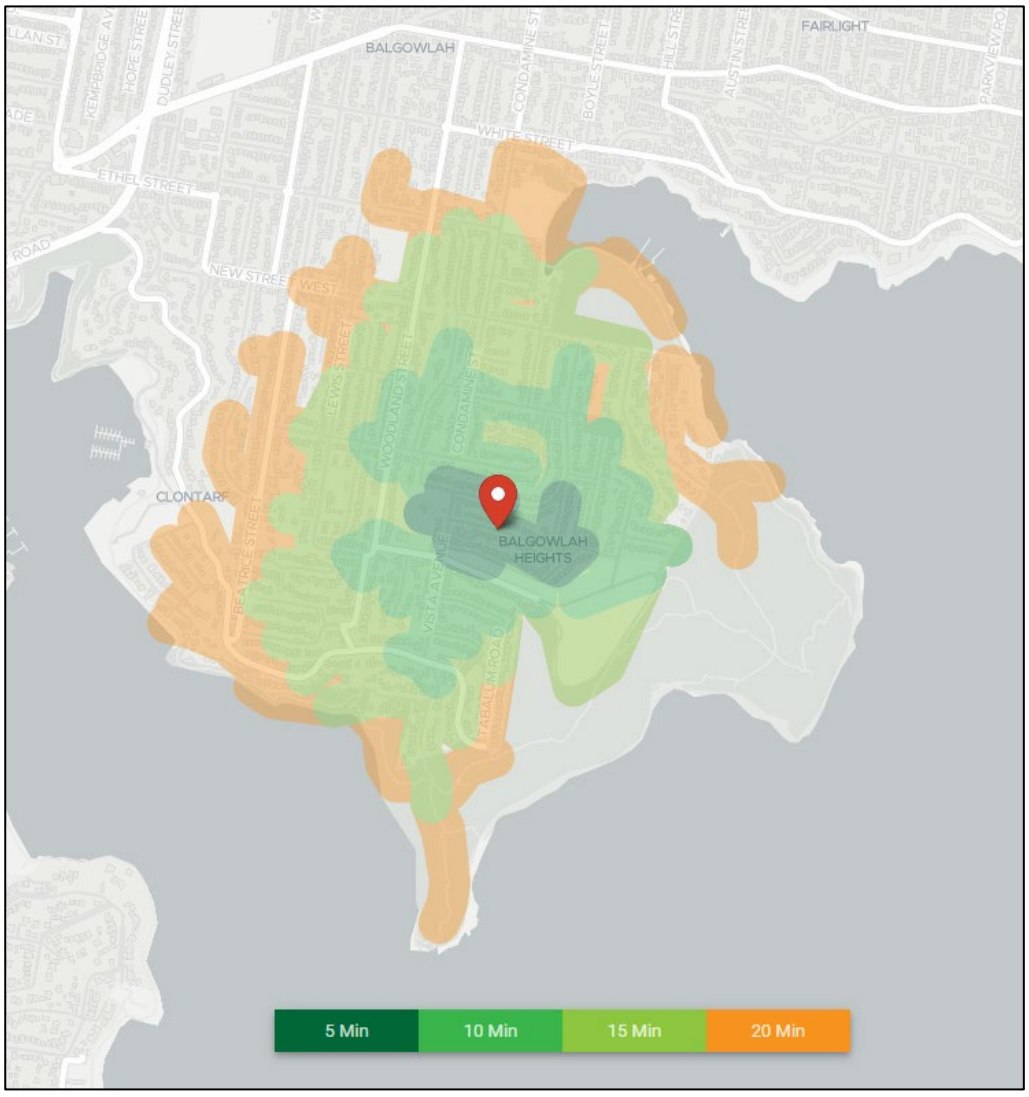

Figure 3: The 20 minute walking catchment for the site

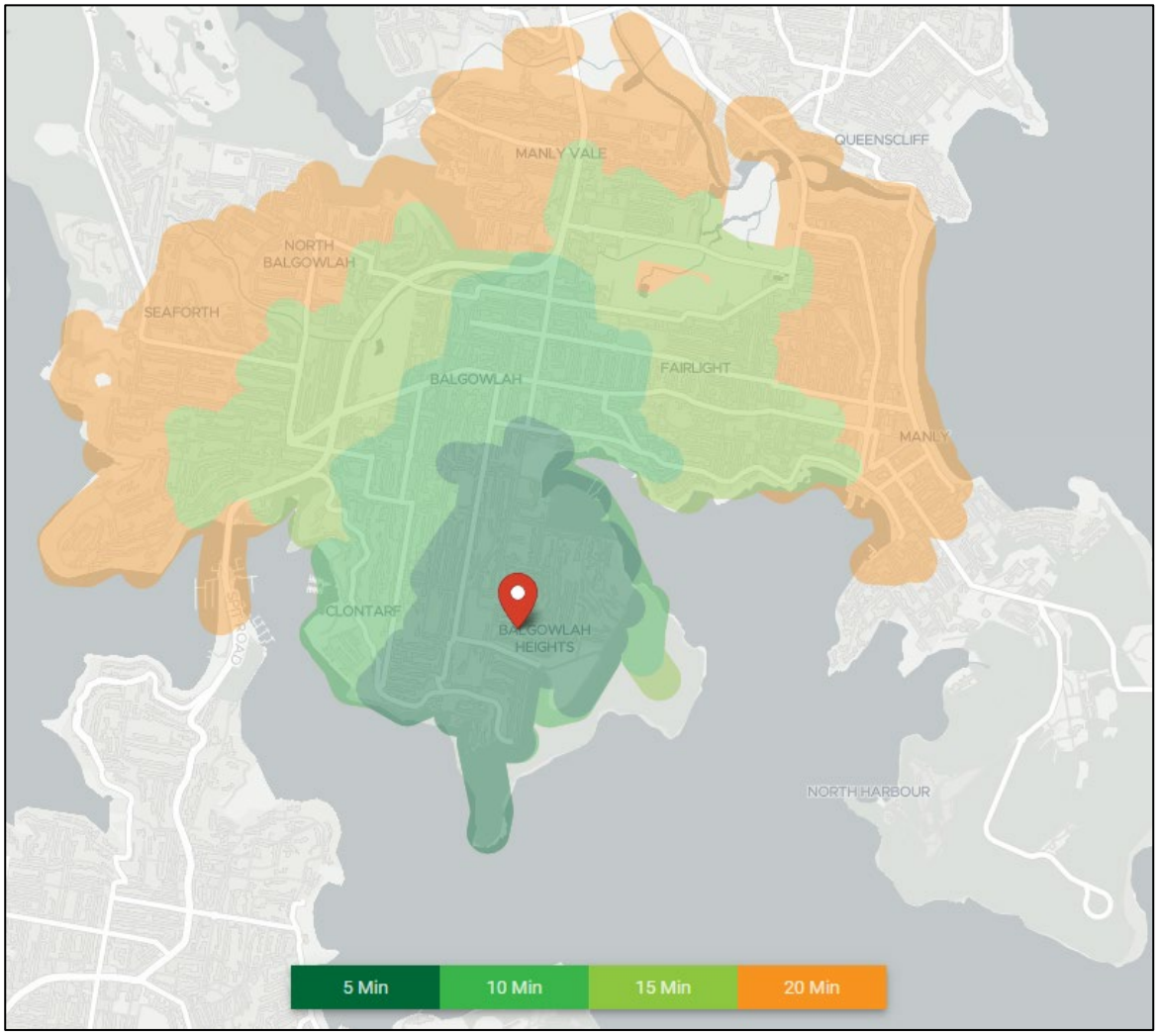

Figure 4: The 20 minute cycling catchment for the site

3. PARKING PROVISION ASSESSMENT

The following sections outline the parking provision requirements applicable to the proposed development as stipulated in the State Environmental Planning Policy (Housing) 2021 and the Manly Development Control Plan (MDCP) 2013 Amendment 14.

3.1 Car Parking Provisions

Co-living Housing Component

In relation to Co-Living housing, Clause 68.2(e) within Part 3 (Co-living housing) of State Environmental Planning Policy (Housing) 2021 states the following parking provision requirement:

(i) for development on land within an accessible area—0.2 parking spaces for each boarding room,

(ii) otherwise—0.5 parking spaces for each boarding room

In the above context, *accessible area* means land within—

(a) 800m walking distance of a public entrance to—

(i) a railway station, or

(ii) a wharf from which a Sydney Ferries ferry service operates, or

(b) 400m walking distance of—

(i) a public entrance to a light rail station, or

(ii) for a light rail station with no entrance—a platform of the light rail station, or

(c) 400m walking distance of a bus stop used by a regular bus service, within the meaning of the Passenger Transport Act 1990, that has at least 1 bus per hour servicing the bus stop between—

(i) 6am and 9pm each day from Monday to Friday, both days inclusive, and

(ii) 8am and 6pm on each Saturday and Sunday.

Bus route 162 operates within 200m of the site and it satisfies the criteria identified in subsection (C) above. As such, the subject site is considered to be within an accessible area.

Applying the accessible area parking rate of 0.2 parking spaces for each boarding room, the proposed co-living housing component with 12 rooms should provide a total of 3 car spaces (rounded up).

Ground Level Shop

In relation to Commercial Premises (including business, offices, and retail premises) not elsewhere referred to in Schedule 3 of the MDCP, it recommends the following parking rate:

1 parking space for every 40sqm of gross floor area

Applying the above parking rate to the proposed ground level shop with 30.5m^2 GFA, a parking provision requirement of 1 car space is obtained.

Total Parking Provision Requirement

The overall proposal has a parking provision requirement of 4 car spaces (3 for the co-living housing component and 1 for the shop). The current proposal includes provision for 7 on-site car spaces, which satisfies the above requirement.

3.2 Bicycle and Motorcycle Parking Provisions

Co-living Housing Component

In relation to Co-Living housing, Clause 69.2(d & e) within Part 3 (Co-living housing) of State Environmental Planning Policy (Housing) 2021 states the following bicycle and motorcycle parking provision requirements:

- at least 1 bicycle parking space will be provided for each private room, and
- at least 1 motorcycle parking space will be provided for every 5 private rooms

Based on the above rates, the proposed 12 room co-living housing component should provide 12 bicycle parking spaces and 3 motorcycle spaces (rounded up).

Ground Level Shop

In relation to other development which generates requirements for vehicular parking, bicycle parking stands are required in MDCP at a minimum rate of one stand for every

three car parking spaces with a minimum provision of one stand for each premise. On the above basis, 1 bicycle parking space is required fo the shop component of the development. No motorcycle parking requirements are stated for this component.

Total Bicycle and Motorcycle Parking Provision Requirement

Based on the above, the proposed development should provide 13 bicycle spaces and 3 motorcycle spaces. The current proposal includes provision for 3 motorcycle spaces and 13 bicycle spaces, which satisfies the above requirement.

4. PARKING DESIGN REVIEW

This section will carry out the necessary checks to certify whether the on-site car parking area has been designed to satisfy the minimum requirements outlined by the Australian Standards (AS 2890.1 and AS 2890.6). This section shall be read in conjunction with the complete site layout plans submitted as a part of the Development Application lodgement.

Figure 5 illustrates the proposed on-site car parking layout.

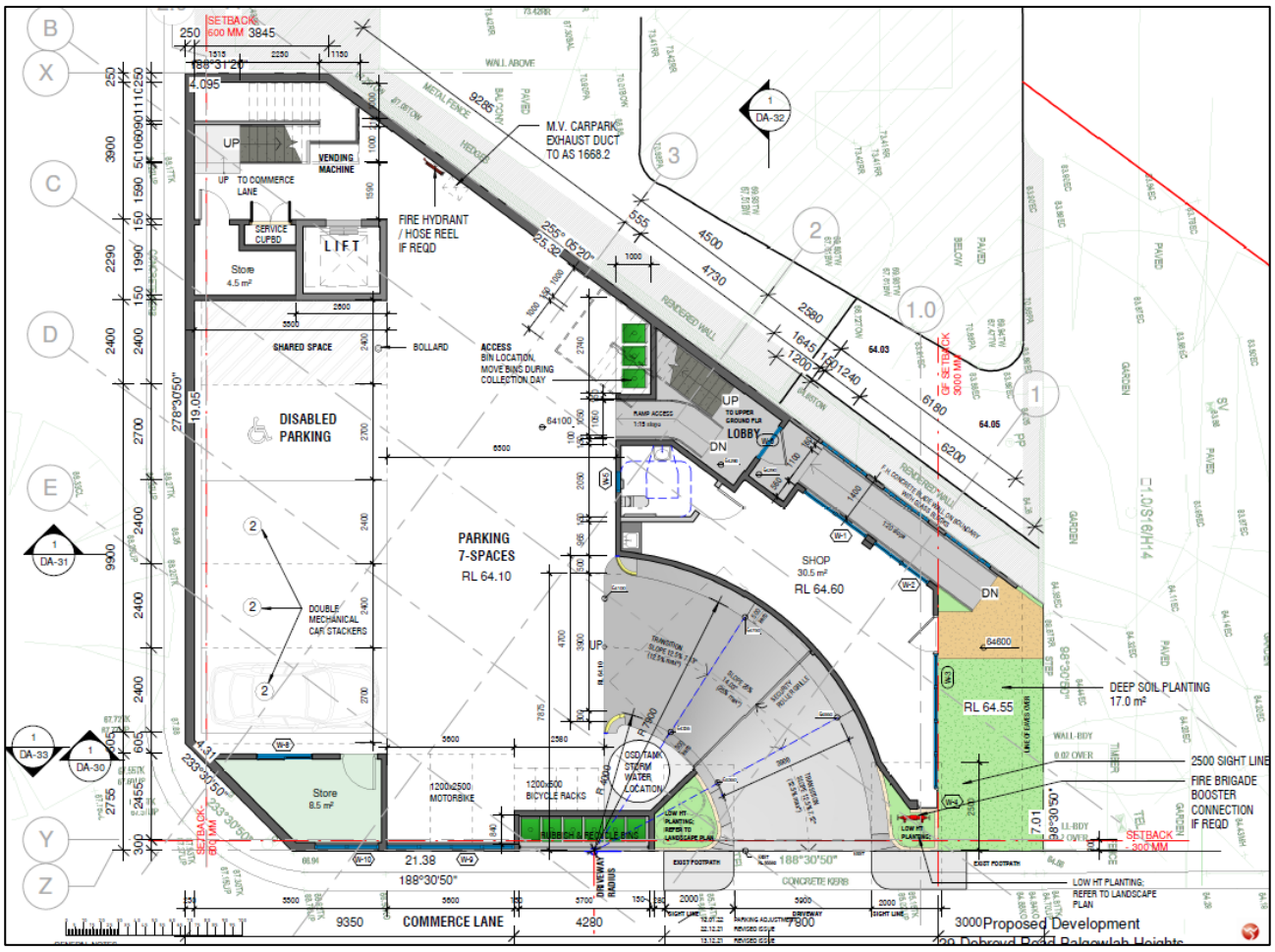

Figure 5: Proposed on-site car park layout

4.1 Regular Car Space Dimensions

Based on AS 2890.1:2004, 90-degree car spaces which are categorised under user class 1A (residential parking) are required to be 2.4m wide by 5.4m long with 5.8m of aisle width. All the regular car space dimensions and aisle widths have been designed to comply with the above-identified AS 2890.1 requirements.

Additionally, AS 2890.1 requires the provision of an additional 300mm clearance (for door opening) when car spaces are located adjacent to vertical obstructions higher than 150mm. This requirement is satisfied at the corner most car space (the car space located adjacent to the storeroom) which is designed at 2.7m.

It is noted that the proposed regular car spaces will be delivered in the form of car stackers. As such, during the construction certification stage, it should be ensured that these car spaces accommodate the clearance requirement outlined in Figure 5.2 of AS 2890.1 (extracted to Figure 6 below).

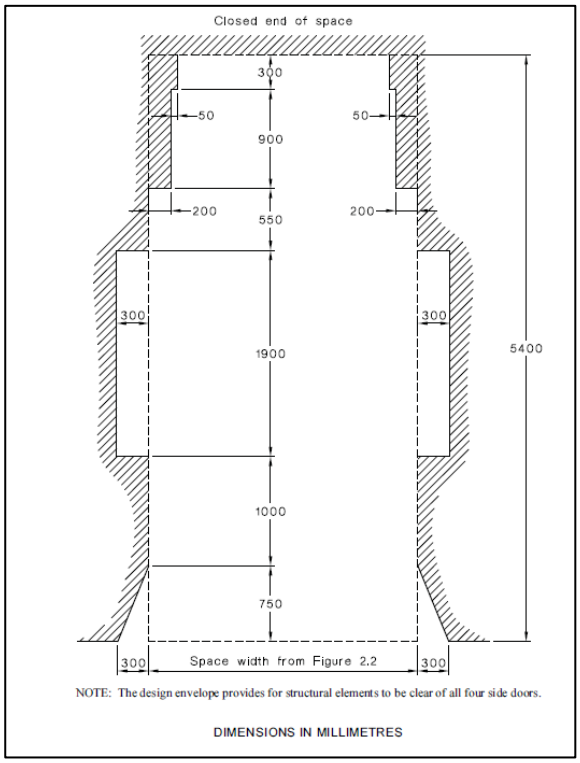

Figure 6: Car space clearance requirements (AS 2890.1)

4.2 Disability Accessible Parking Spaces

The disability accessible parking spaces shall be designed in accordance with AS 2890.6:2009, as follows;

- The disability accessible car parking space should be designed at 2.4m width and 5.4m length;
- A 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 indicate appropriate line-markings. The shared space should include a bollard in order to prevent motorists from parking at this location.

The proposed disability accessible car space complies with the above requirements.

4.3 Blind Aisle Clearance

When 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 1m in order to allow reverse exit manoeuvres by the vehicles parked in these spaces. It is noted that the proposed disability accessible car space is located at the end of the aisle. However, the required blind aisle clearance has been provided at this location (due to the presence of the adjacent shared space).

4.4 Ramp Grade

AS 2890.1-2004 states the grade requirements for straight ramps at private or residential car parks as follows:

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

(ii) 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%).

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

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

The length of the proposed ramp is less than 20m and it includes a maximum grade of 25% - thus complying with the AS 2890.1 requirements. In addition, the summit and sag grade changes do not exceed 12.5% or 15%, respectively.

Further to the above, a maximum superelevation of 5% applies to the curved ramp (as per Figure 2.9 of AS 2890.1). The proposed curved ramp complies with the above requirement in relation to superelevation.

4.5 Ramp Width

The proposed access to the car parking area (off Commerce Lane) 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 proposed ramp entry point at the boundary is 3.9m wide and therefore complies with the above requirement.

Figure 2.9 of AS 2890.1 requires the inside radius of the curved ramp sections to be at least 4m and the outside radius to be at least 7.6m. The proposed curved ramp includes an inside radius of 4m and an outside radius of 7.9m.

In relation to public facilities, Table 2.2 of AS 2890.1 states that for curved ramps with an outside radius between 7.6-11.9m, a single lane width of 3.9m is required. The proposed single-lane ramp includes an outside radius of 7.9m and is therefore designed at 3.9m width. In addition, Figure 2.9 of AS 2890.1 states clearance requirements for curved ramps – inside clearance of 0.3m and an outside clearance of 0.5m. The proposed curved ramp includes these clearances – with a total width of 4.7m (3.9m ramp width + 300mm inside clearance + 500mm outside clearance).

4.6 Headroom Clearance

For the proposed basement level car parking area, the design vehicle is the disability accessible car – this vehicle requires a headroom of 2.5m above the car space and the shared space. The proposed disability accessible car space and the shared space comply with the above requirements.

In addition, a minimum headroom clearance of 2.2m is required along the path of the vehicle to and from all car spaces. This level of vertical clearance is available throughout the proposed car parking area and along the ramp.

4.7 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). In addition, AS 2890.6 stipulates that the disability accessible car parking space and the shared area shall not exceed the grade of 1:40 in any direction. The proposed car park is at grade and therefore complies with the above requirements.

4.8 Gradient of Access Driveway

In relation to the gradient of the access driveway, AS 2890.1 requires the first 6m into the car park to include a maximum grade of 5% (1 in 20). This requirement has not been satisfied due to the site constraints. However, given the relatively small size of the car park and access off a laneway, this shortfall is unlikely to have adverse impacts on operations of traffic.

This requirement ensures the vehicles exiting the site is relatively at grade so the drivers can see the vehicles on the frontage road. The proposed car park obtains access off Commerce Lane which is a small laneway that provides access to a few properties between Dobroyd Road and Nolan Place. Therefore, the existing traffic levels on this laneway is considered to be minimal. Furthermore, the proposed car park design ensures the provision of sight splays on either side of the driveway at the boundary. This ensures the vehicles exiting the site can obtain sufficient levels of sight distance towards the traffic operating on Commerce Lane.

4.9 Vehicle Manoeuvrability Conditions

In order to investigate the anticipated manoeuvrability conditions of vehicles, entering and exiting the proposed car spaces, swept path assessments were undertaken using AutoTURN software (the industry standard vehicle swept path assessment software). The following figure illustrates the template of the 85th percentile vehicle (B85 vehicle) used to simulate the swept paths (it is noted that this 85th percentile vehicle template is developed according to the dimensions specified in AS 2890.1-2004).

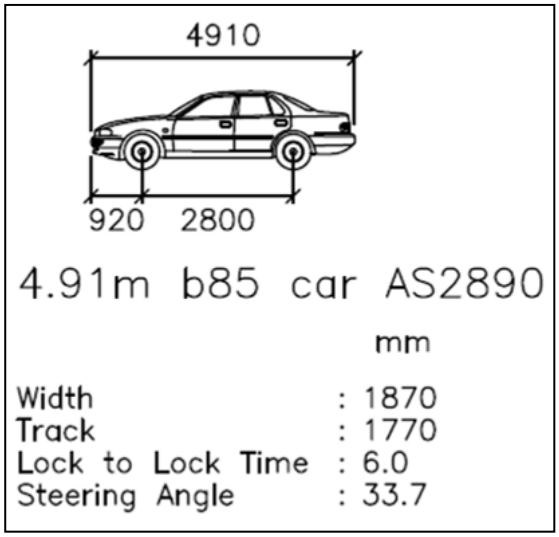

Figure 7: Template of an 85th percentile vehicle (as per AS2890.1-2004)

As can be seen from the swept path results presented below (Figures 8-11), it is evident that each vehicle can enter and exit their respective car spaces, without encroaching over adjacent obstructions and without requiring any additional correctional manoeuvres.

4.10 Motorcycle Spaces

AS 2890.1 states a requirement of 2.5m length and 1.2m width for motorcycle spaces. The proposed 3 motorcycle spaces within the car park comply with the above-identified minimum dimensional requirements.

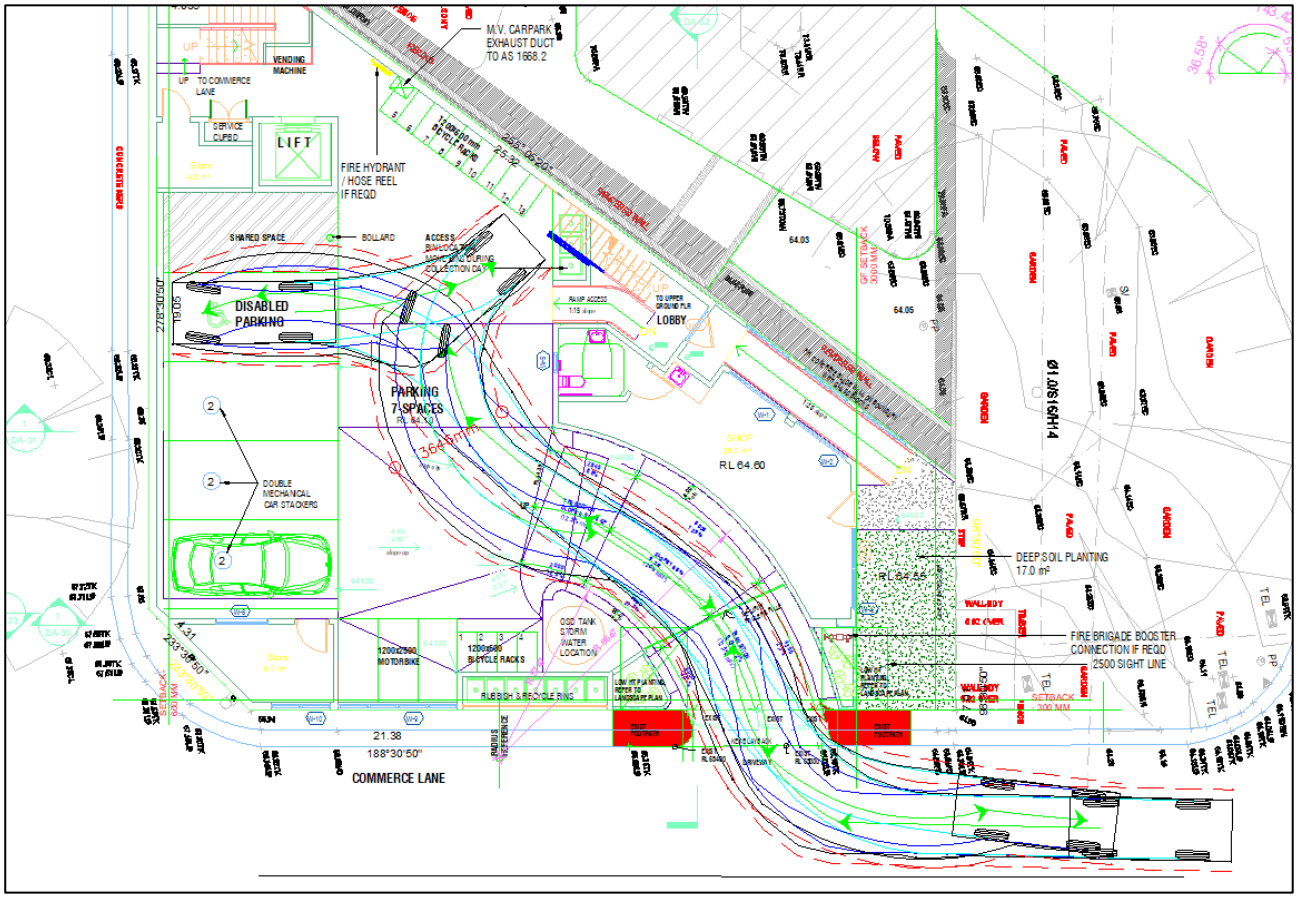

Figure 8: In and out movements at car space 1

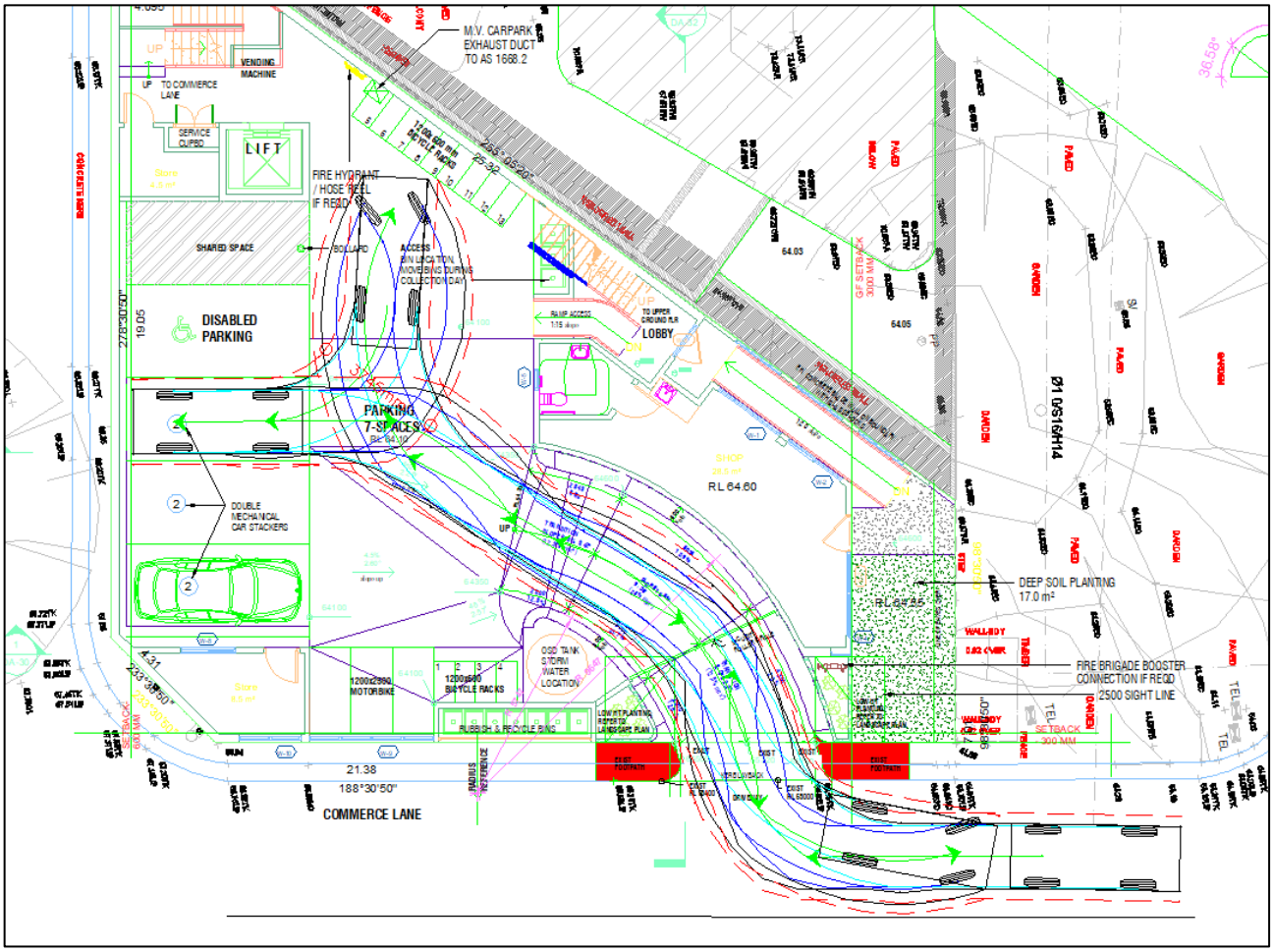

Figure 9: In and out movements at car space 2/3

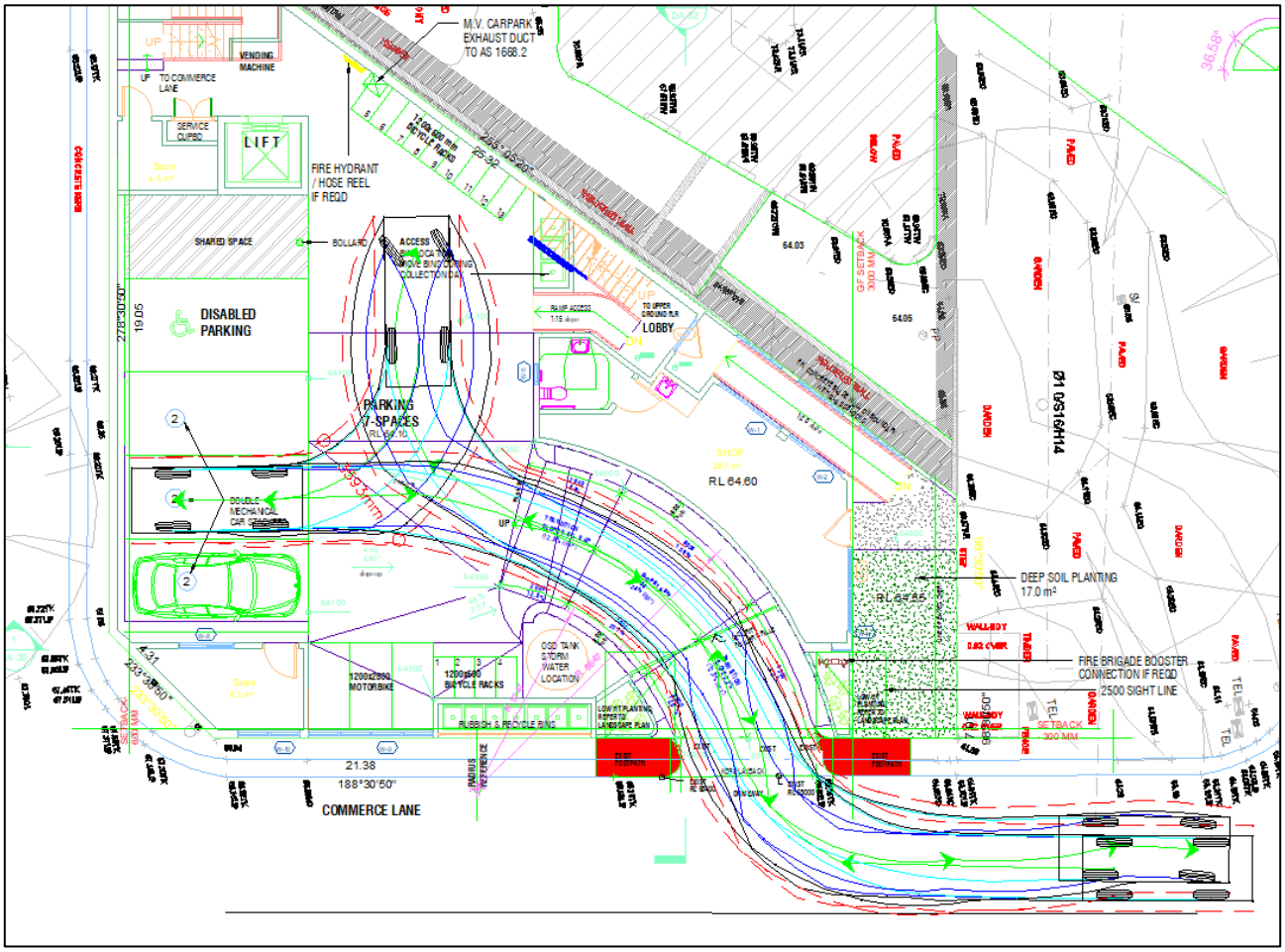

Figure 10: In and out movements at car space 4/5

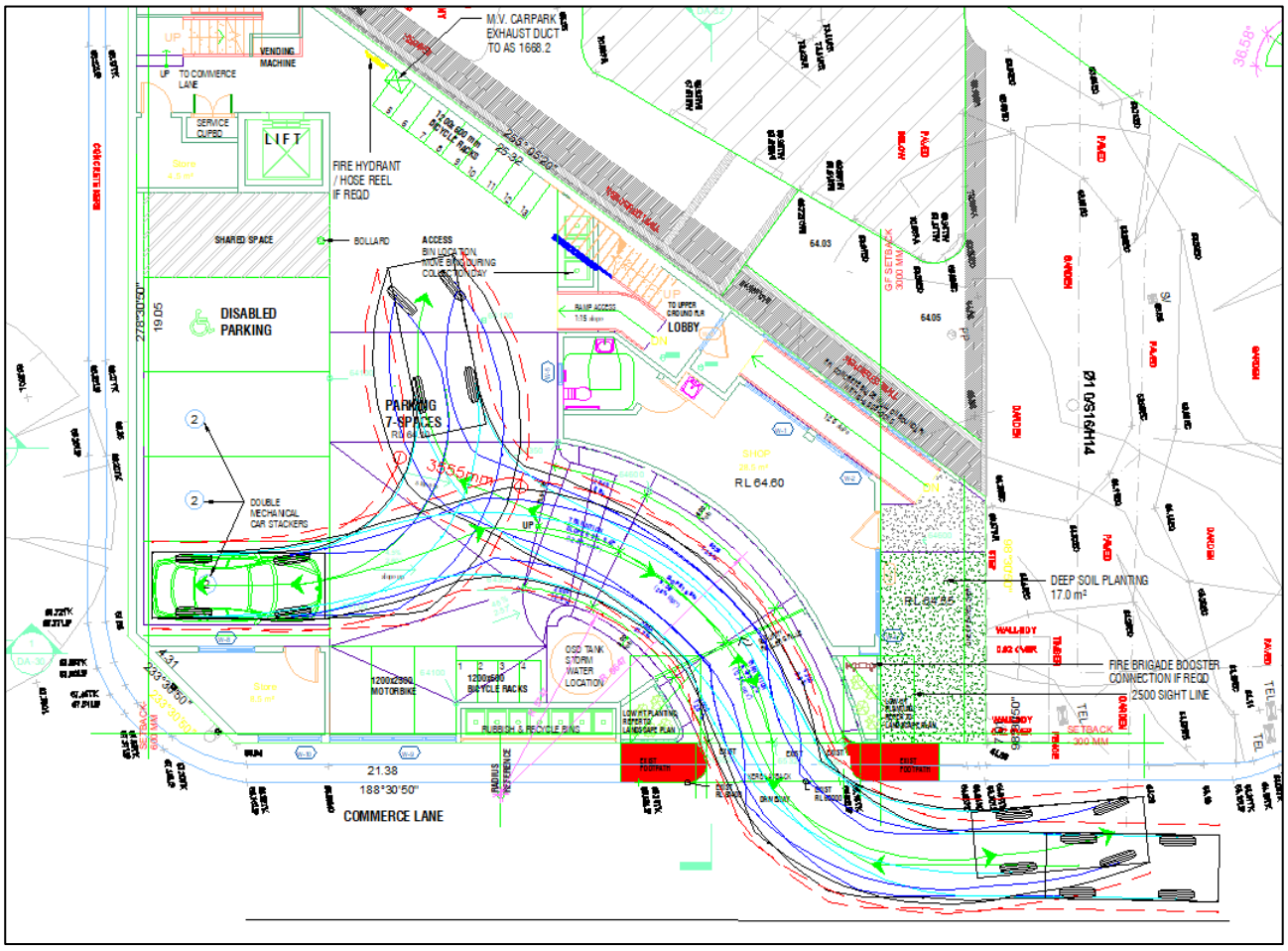

Figure 11: In and out movements at car space 6/7

5. TRAFFIC IMPACT ASSESSMENT

A traffic impact assessment was undertaken to determine potential impacts caused by the development on the local road network. According to the *Guide to Traffic Generating Developments (2002)*, a medium-density residential building will generate approximately:

- 4 - 5 daily trips per unit; and
- 0.4 - 0.5 peak hour trips per unit.

Applying the higher ends of these rates to the proposed 12-unit boarding house component of the development leads to the following trip generation levels.

- 60 daily trips; and
- 6 peak hour trips.

Based on first principles, the proposed shop within the subject site will likely generate 1 trip during each peak hour period (reflecting the staff member trips) leading to 2 daily trips.

Accordingly, the overall development will generate:

- 62 daily trips; and
- 7 peak hour trips.

The above trips will be realised as turning movements on Commerce Lane. This level of peak hour and daily trips are considered minimal and are unlikely to have any noticeable impacts on the existing traffic operations.

6. CONCLUSIONS

APEX Engineers were engaged by Woodhouse & Danks Pty Limited to provide a traffic impact assessment as part of the development application for the proposed shop top boarding house at 29-37 Dobroyd Road in Balgowlah Heights.

The local vicinity of the site is primarily residential and the subject site has easy access to two bus routes.

The overall proposal includes a statutory car parking provision requirement of 4 car spaces (3 for the boarding house component based on accessible area parking rate and 1 for the shop). The current proposal includes provision for 7 on-site car spaces, which satisfies the above requirement.

The proposal also has a statutory requirement for 3 motorcycle spaces and 13 bicycle spaces. The current proposal includes provision for 3 motorcycle spaces and 13 bicycle spaces and therefore complies with the above requirement.

The proposed on-site car parking design is compliant with the relevant requirements in AS 2890.1 and AS 2890.6, with the exception of the driveway gradient for the first 6m from the site boundary. This requirement has not been satisfied due to the site constraints. However, given the relatively small size of the car park and access off a laneway, this shortfall is unlikely to have adverse impacts on operations of traffic.

The swept path test results indicate sufficient maneuverability conditions for vehicles accessing all car spaces.

The proposed development is expected to generate 7 peak hour trips and 62 daily trips. This level of peak hour and daily trips are considered minimal and are unlikely to have any noticeable impacts on the existing traffic operations.

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