



Traffic Impact Assessment

57-61 Bourke Street, North Parramatta NSW 2151

May 2022



Type of Assessment: Traffic Impact Assessment

Site Location: 57-61 Bourke Street, North Parramatta NSW 2151

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TABLE OF CONTENTS

1. Introduction.....	4
2. Background and Existing Conditions.....	5
2.1 Site Description and Local Road Network	5
2.2 Details of the Proposed Development.....	6
2.3 Public Transport Services	6
3. Parking Provision Assessment	8
4. Car Parking Design Review	9
4.1 Regular Car Space Dimensions.....	10
4.2 Disability Accessible Car Space Dimensions	10
4.3 Lateral Clearances.....	10
4.4 Gradients within Parking Modules.....	11
4.5 Circulation / Vehicle Conflicts	11
4.6 Gradient of Access Driveway	11
4.7 Ramp Width and Grade.....	12
4.8 Vehicle Manoeuvrability Conditions.....	13
4.9 Pedestrian Sight Distance Availability	19
5. Traffic Impact Assessment	21
6. Conclusions	22

LIST OF FIGURES AND TABLES

Figure 1: Location of the subject site	5
Figure 2: Local public transport services	7
Figure 3: Proposed on-site car parking layout.....	9
Figure 4: Template of an 85 th percentile vehicle (AS2890.1-2004)	13
Figure 5: Vehicle movements at the passing bay	14
Figure 6: Entry and exit movements at car space 4.....	15
Figure 7: Entry and exit movements at car space 7	16
Figure 8: Entry and exit movements at car space 2 (similarly for car spaces 3 and 6)	17
Figure 9: Entry and exit movements at car space 1 (similarly for car space 5)	18
Figure 10: Pedestrian sight distance requirement (AS 2890.1)	19
Figure 11: Proposed preservation of the pedestrian sight envelop.....	20

1. INTRODUCTION

APEX Engineers were engaged by Barry Rush and Associates to provide a traffic impact assessment as a part of the development application for the proposed Seniors Housing development, located at 57-61 Bourke Street in North Parramatta ('subject site').

This report has been 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 relevant statutory parking provision requirements applicable to the subject development;
- **Section 4** Provides a review of the proposed car park design under the relevant Australian Standards;
- **Section 5** Provides an estimate of the traffic impact anticipated to be generated by the proposed development on 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 subject site is located at 57-61 Bourke Street in North Parramatta and currently includes 3 separate residential dwellings across a total area of 1,937.50m². The site vicinity is predominantly characterised by low-density residential dwellings.

At the site frontage, Bourke Street includes an undivided carriageway with kerbside parking. A 50 km/h speed limit applies to traffic on Bourke Street.

Figure 1 below highlights the site location from an aerial perspective.



Figure 1: Location of the subject site

2.2 Details of the Proposed Development

The subject proposal involves consolidating the existing 3 lots at 57, 59 and 61 Bourke Street to construct a multi-dwelling Seniors Housing development under the State Environmental Planning Policy (Housing) 2021 (Housing SEPP), with the subject development application to be made by a social housing provider.

The proposed development includes 12 dwellings (6 x 1-bedroom dwellings + 6 x 2-bedroom dwellings). The site will provide 9 on-site car parking spaces (including 4 disability accessible spaces) with 7 car spaces provided within the main car park and accessed through a common one-way driveway off Bourke Street whereas the remaining 2 car spaces will be accessed through separate driveways at eastern and western ends of the site.

2.3 Public Transport Services

The subject site is located within <150m (2-minute walk) from bus stops on Bourke Street that service bus route 609 (Parramatta to North Parramatta (Loop Service)) in both directions.

Bus route 609 operates as follows:

- Between 6am to 7pm, Monday to Friday, with a minimum service frequency of 1 per hour;
- On Saturdays, between 9am to 5pm, with a minimum service frequency of 1 per hour; and
- On Sundays and public holidays, between 10am to 4pm, with a minimum service frequency of 1 per 4 hours.

Figure 2 shows the local public transport network map for the subject site.

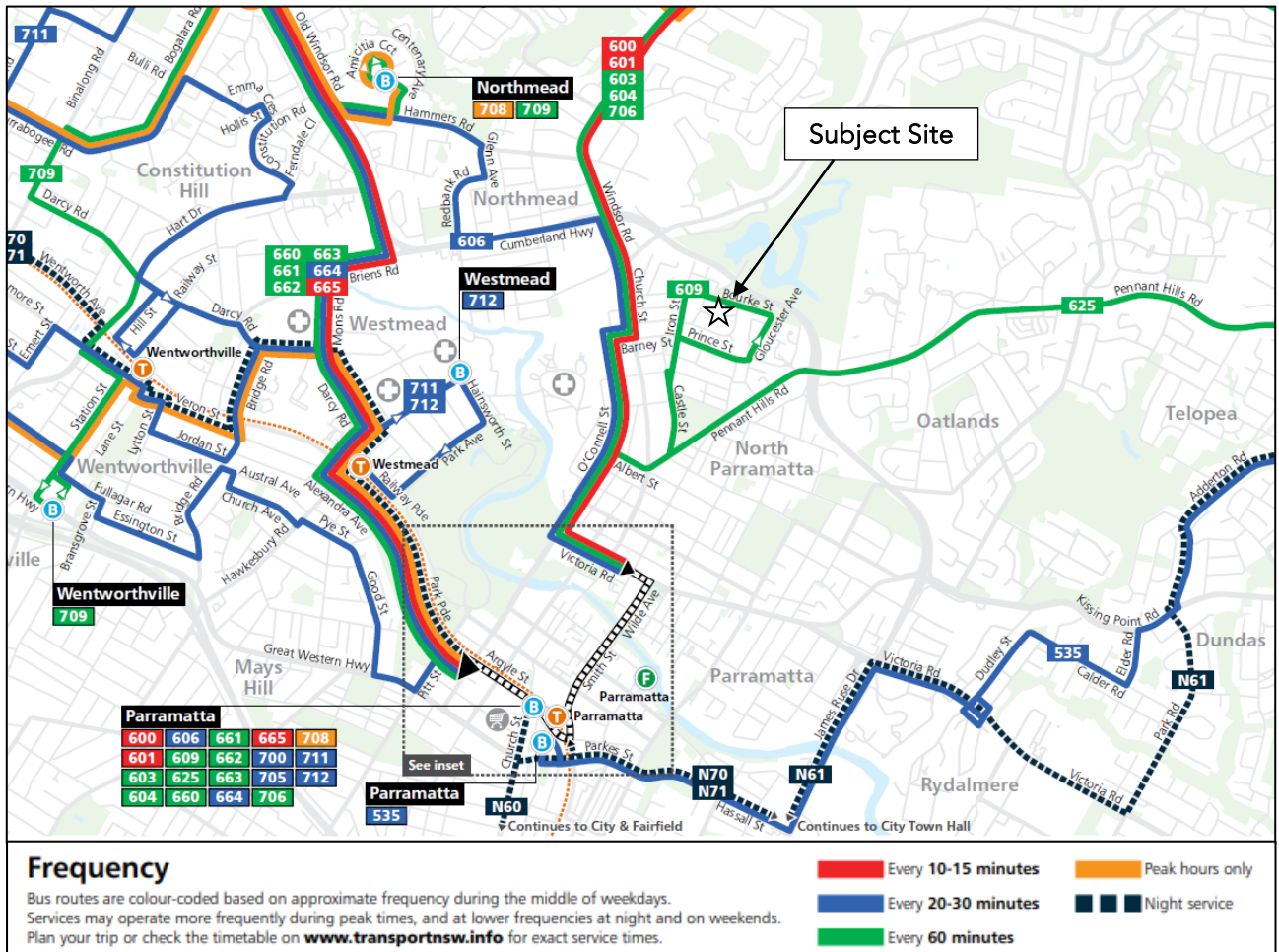


Figure 2: Local public transport services

3. PARKING PROVISION ASSESSMENT

In relation to independent living units, Section 108(2)(j) of the State Environmental Planning Policy (Housing) 2021 (Housing SEPP) states a requirement of 1 car space for every 5 dwellings when the development application is made by a social housing provider (which is the case for the current proposal).

Applying the above parking rate, the proposed development with 12 dwellings should provide 3 car parking spaces (rounded up).

The proposed development includes provision for a total of 9 car spaces, including 4 disability accessible car spaces. Therefore, the proposed development satisfies the relevant minimum parking provision requirement.

4. CAR PARKING DESIGN REVIEW

This section provides a review of the proposed on-site car parking design against the minimum requirements in the Australian Standards (AS 2890.1 – 2004, AS 2890.6 – 2009 and AS 4299-1995). This section shall be read in conjunction with the complete site layout plans submitted as a part of the Development Application lodgement.

Figure 3 illustrates the proposed on-site car parking layout plan at the subject site.

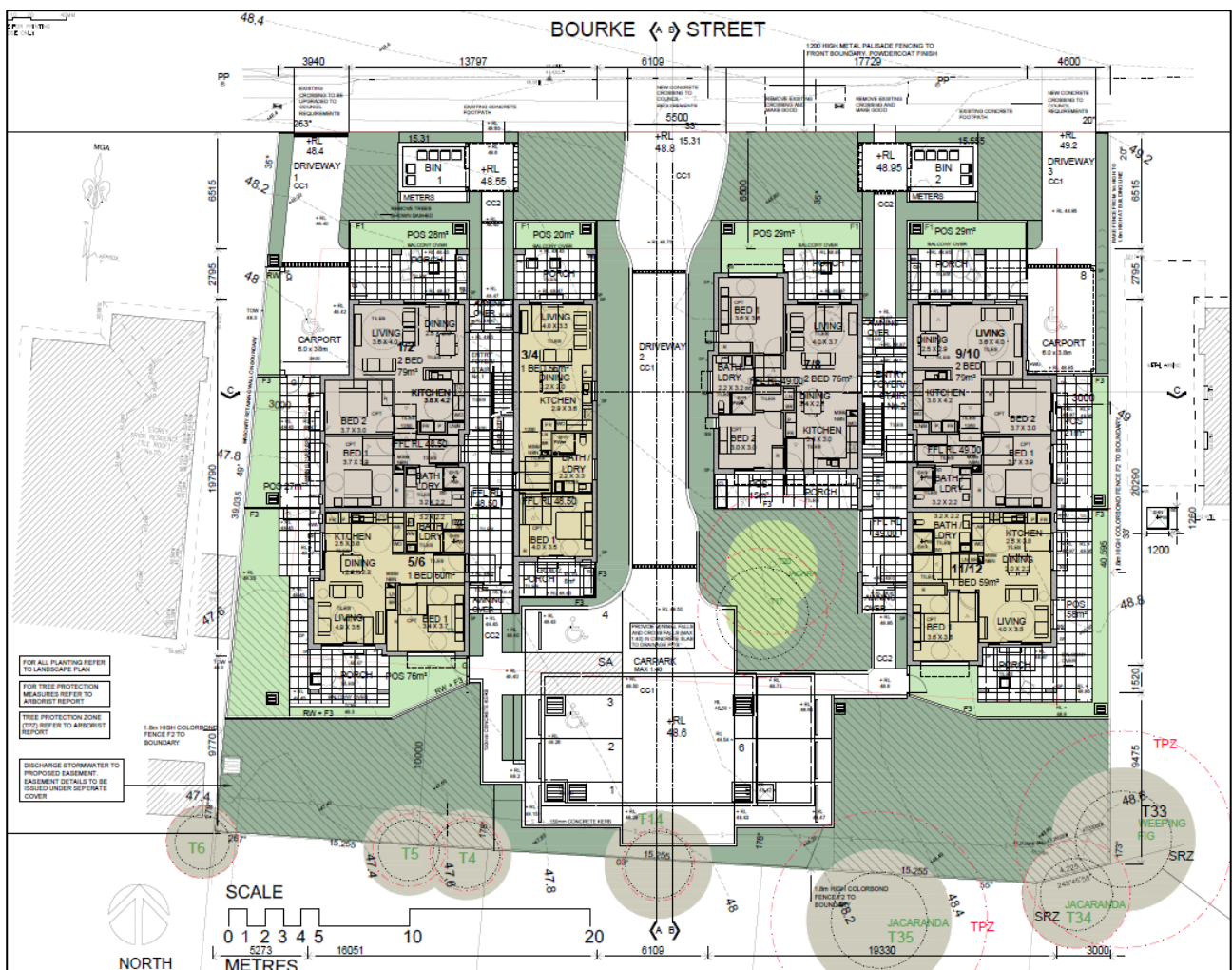


Figure 3: Proposed on-site car parking layout

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 five regular car space dimensions and aisle widths have been designed to comply with the above-identified AS 2890.1 requirements.

4.2 Disability Accessible Car Space Dimensions

Based on AS 2890.6 – 2009, the disability accessible car spaces should be designed as follows:

- The disability accessible car parking space should be designed at 2.4m width and 5.4m length (with 5.8m aisle width);
- 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.

Both proposed two disability accessible car spaces, within the main car park, comply with the above requirements.

The two disability accessible car spaces that will be accessed through separate driveways (on the eastern and western boundary of the site) are designed to achieve compliance with AS 4299-1995 (Adaptable Housing) which requires 3.8m width for accessible car spaces. These spaces are 3.8m wide by 5.4m long, with 5.8m aisle width – these dimensions comply with the requirements in AS 4299-1995 (Adaptable Housing).

4.3 Lateral Clearances

Based on AS 2890.1 – 2004, when car spaces are located adjacent to vertical obstructions (>150mm high), a further 300mm clearance is required beyond the minimum car space width for door opening. None of the proposed car spaces are located adjacent to vertical obstructions (note that all kerbing around the car parking area is nominated at <150mm height) – therefore, the above requirement is not applicable.

At blind aisles (end of an 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 the corner spaces. This required 1m extension is available within the proposed design (adjacent to car spaces 1 and 5).

4.4 Gradients within Parking Modules

AS 2890.1 states 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 states 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 parking modules are at grade and therefore comply with the above requirements.

4.5 Circulation / Vehicle Conflicts

Based on AS 2890.1, the proposed access to the car parking area (off Bourke Street) is categorised under access category 1 (<25 car spaces, frontage road local). Therefore, the entry/exit combined access points should provide at least 3m in width. This requirement is satisfied at the two driveways which provide access to single disability accessible spaces on the eastern and western ends of the site.

However, for the main car park, provision has been made at the driveway entry point (first 6m length) to accommodate two-way movements (i.e., a width of 6.1m – which includes the 5.5m minimum two-way width + 300mm clearance on either side from obstructions). This vehicle storage bay at the driveway entry point will ensure that the motorists entering the car park from Bourke Street can give way to another motorist exiting the car park (thus preventing vehicles queuing backs to the frontage road).

4.6 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). The first 6m into the proposed main car park (off Bourke Street) includes a maximum grade of 5%.

4.7 Ramp Width and 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 than 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 driveway ramp to the main car park is greater than 20m and it includes a maximum grade of <20% - thus complying with the AS 2890.1 requirements. The maximum grade required for this ramp to achieve the 200mm drop between the site boundary and the car parking area is well below the grade at which AS 2890.1 requires transition sections. Therefore, no transition sections are considered necessary for this ramp.

The proposed driveway ramp into the main car park is one-way (beyond the first 6m of site frontage). Accordingly, this proposed one-way driveway ramp is designed at 3.6m width (3m minimum ramp width + 300mm clearance on either side from obstructions).

The driveways on the eastern and western ends of the site that provide access to single disability accessible car spaces include driveway ramps that are graded at <12.5% (i.e., less than the maximum allowable grade of 12.5% for which transitions are not required). These two driveways are one-way and include 3m width (with 300mm clearance on either side from obstructions).

4.8 Vehicle Manoeuvrability Conditions

In order to investigate the anticipated manoeuvrability conditions of vehicles at critical locations, swept path assessments were undertaken using AutoTURN software (the industry standard vehicle swept path assessment software). **Figure 4** 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).

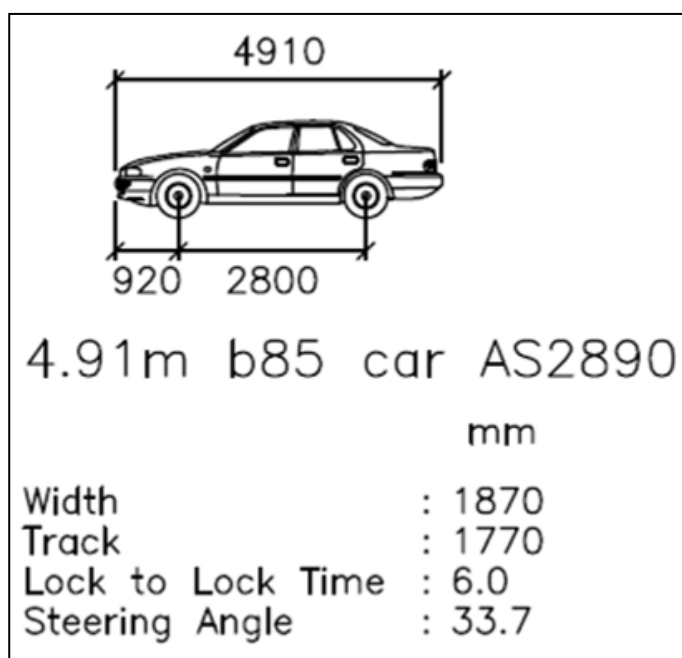


Figure 4: Template of an 85th percentile vehicle (AS2890.1-2004)

Figures 5-9 illustrate the results obtained from the swept path analysis.

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 300mm vehicle body clearance envelop).

As can be seen from **Figure 5**, a vehicle can conveniently exit the site while another vehicle is waiting within the proposed passing bay.

Figures 6-9 show the anticipated manoeuvres of vehicle using the car spaces. As can be seen, vehicles can enter and exit each car space without any additional correctional manoeuvres.

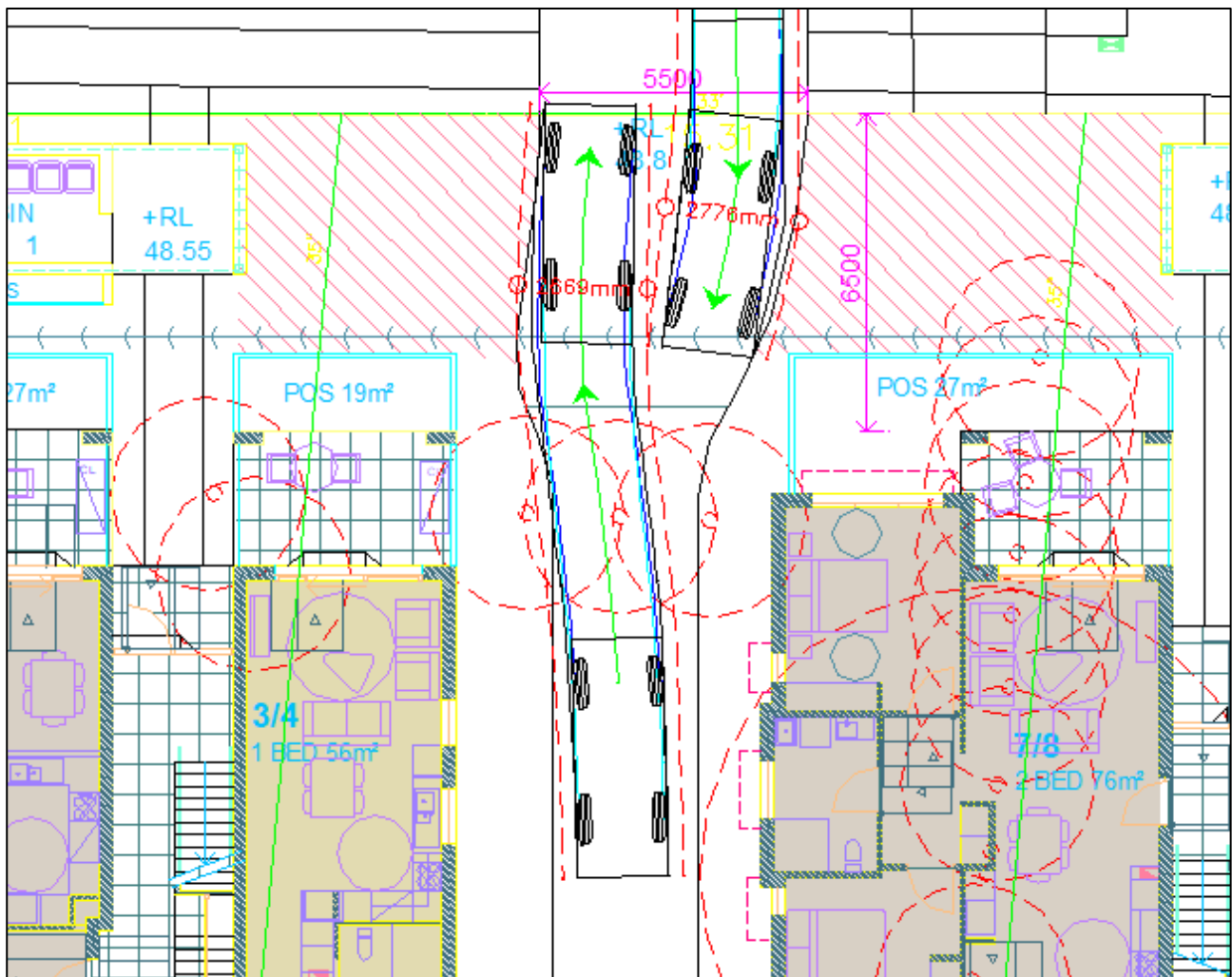


Figure 5: Vehicle movements at the passing bay

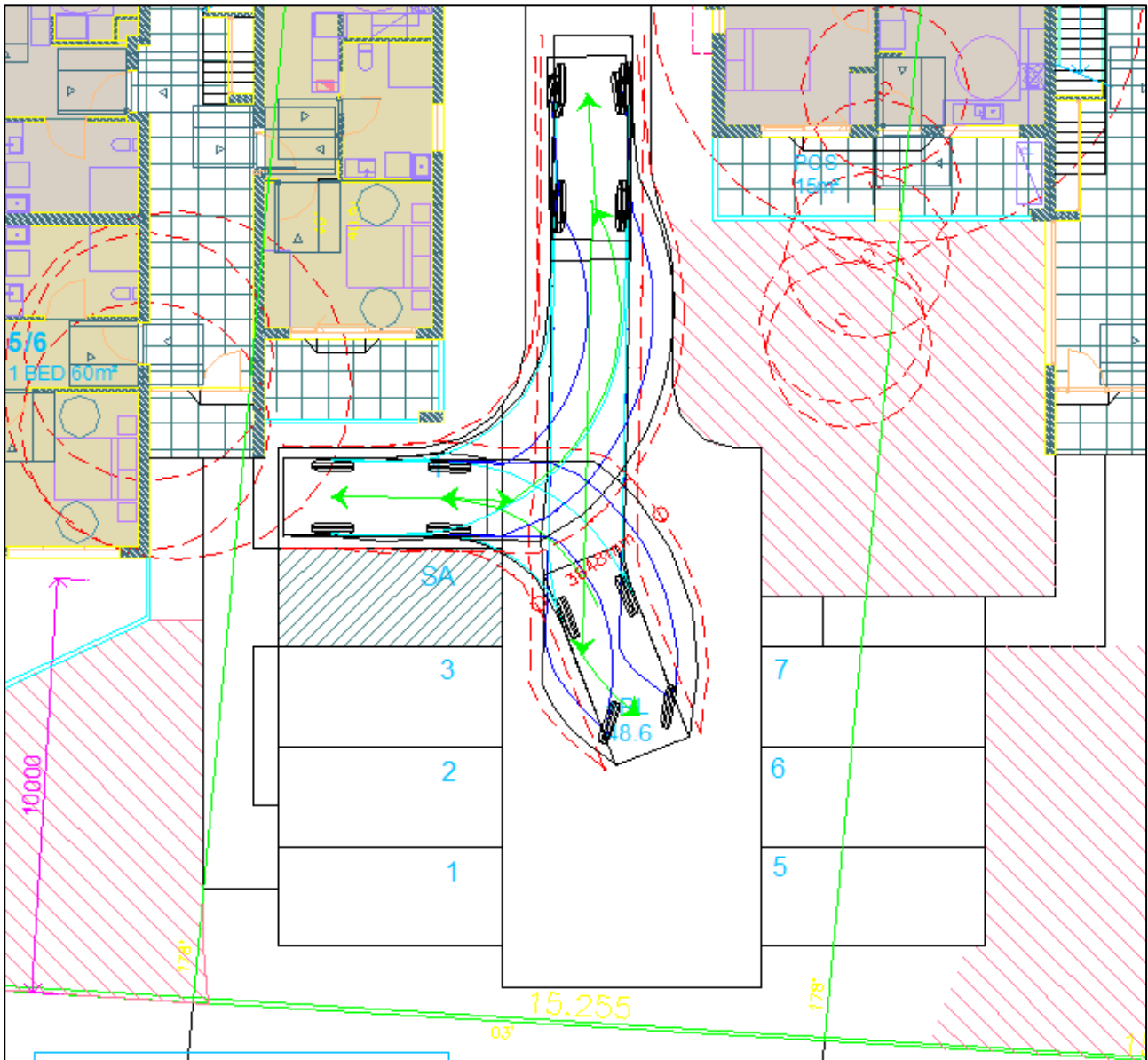


Figure 6: Entry and exit movements at car space 4

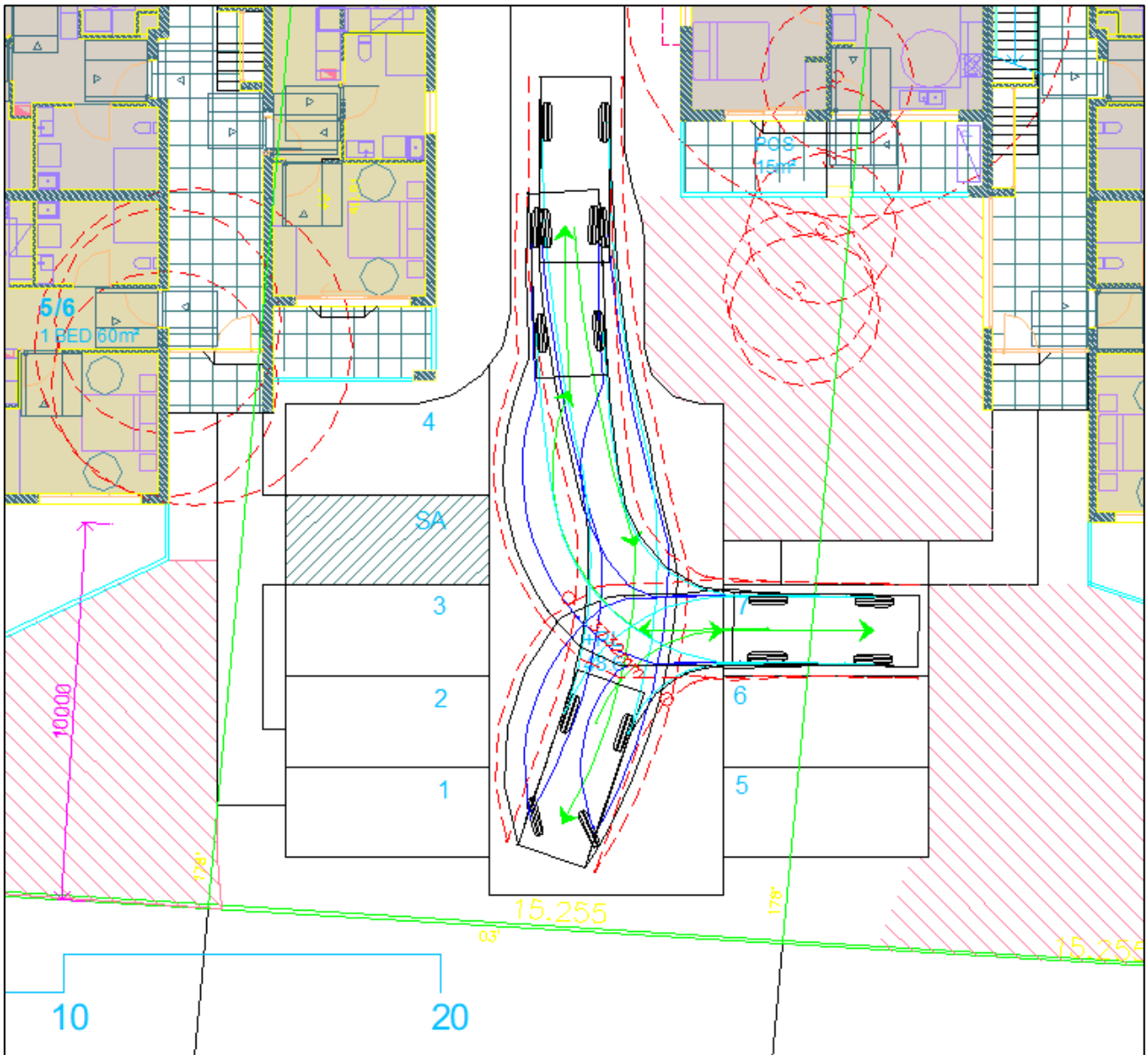


Figure 7: Entry and exit movements at car space 7

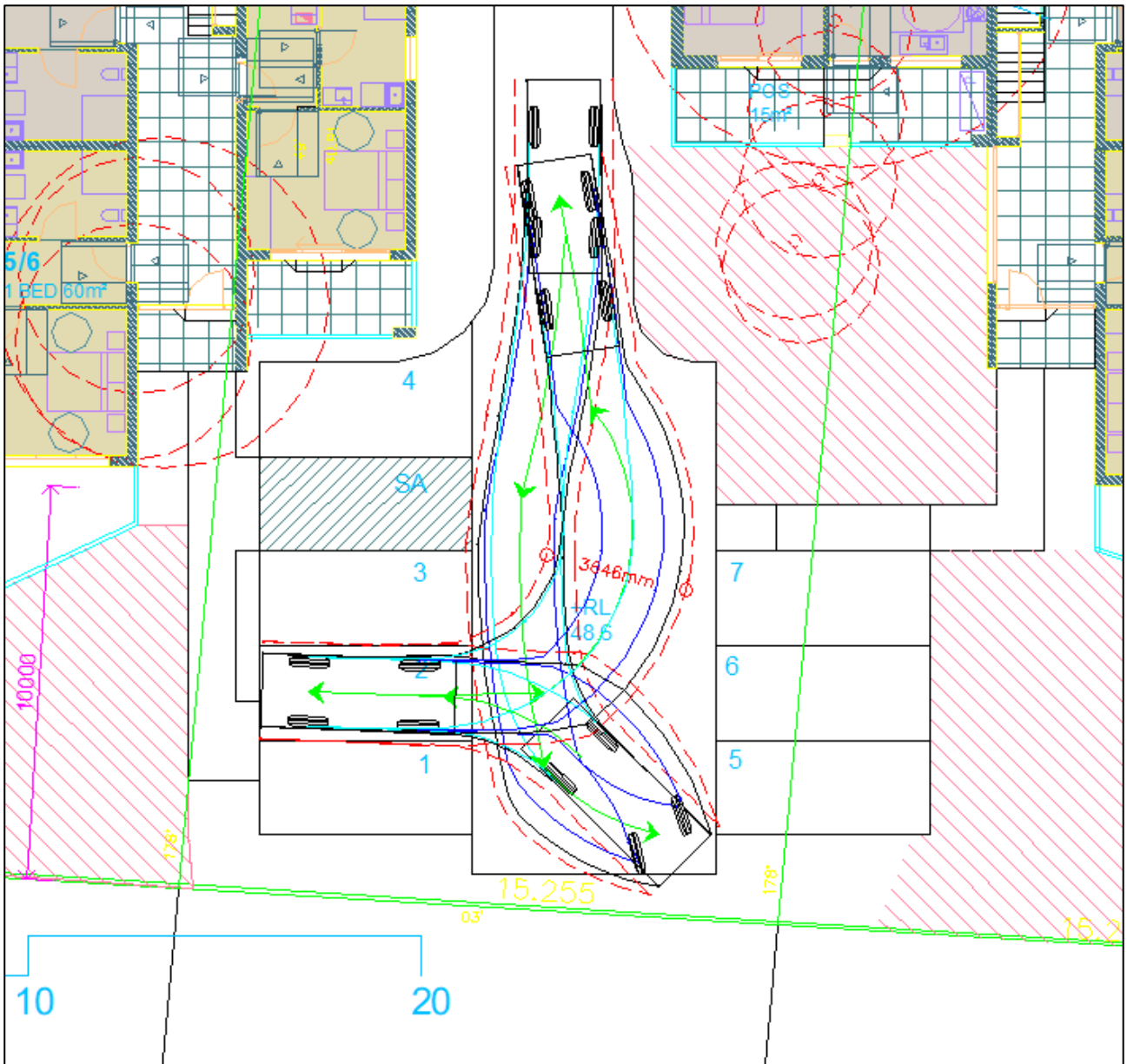


Figure 8: Entry and exit movements at car space 2 (similarly for car spaces 3 and 6)

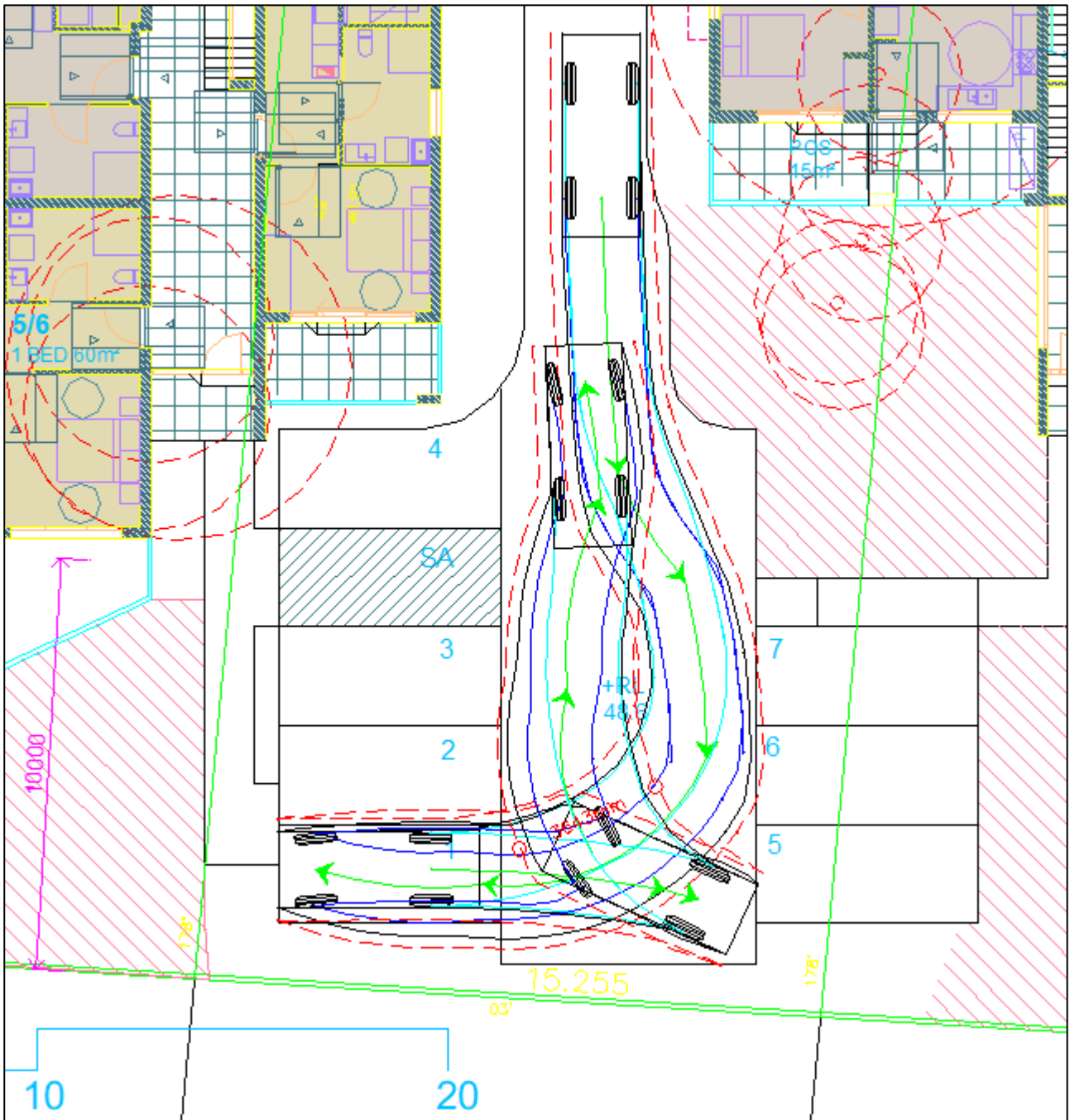


Figure 9: Entry and exit movements at car space 1 (similarly for car space 5)

4.9 Pedestrian Sight Distance Availability

AS 2890.1 requires a sight triangle of 2.5m length by 2m width, to be provided at the site egress location, to ensure sufficient sight distance availability for pedestrians. This requirement is illustrated in **Figure 10**.

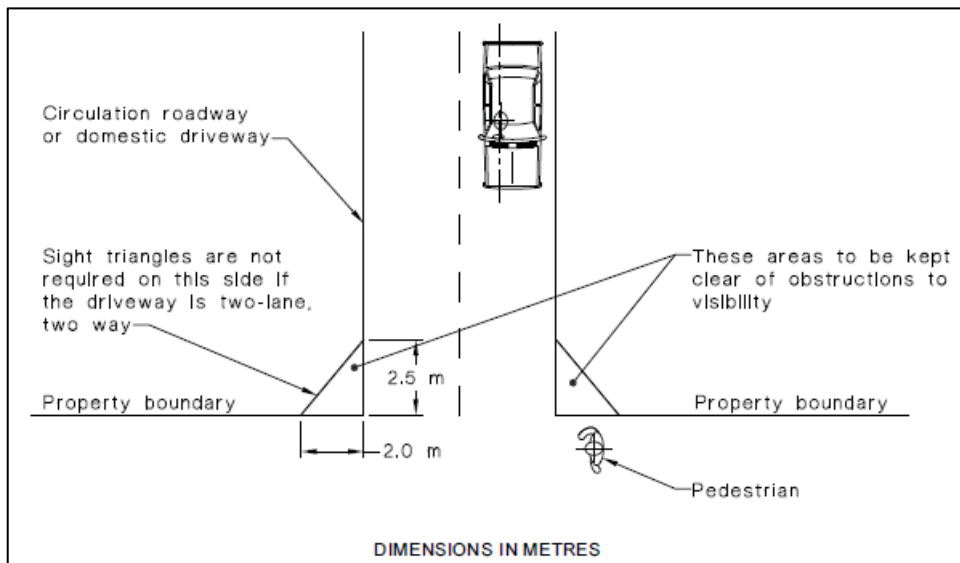


Figure 10: Pedestrian sight distance requirement (AS 2890.1)

Figure 11 illustrates the preservation of pedestrian sight triangles at the proposed sight access point off Bourke Street. It is noted that since the first 6m of the driveway is designed to cater for tow way movements, the pedestrian sight triangle is only required towards the left-hand side of a vehicle exiting the site. As can be seen, this sight triangle can be fully preserved of obstructions within the constraints of the proposed design.

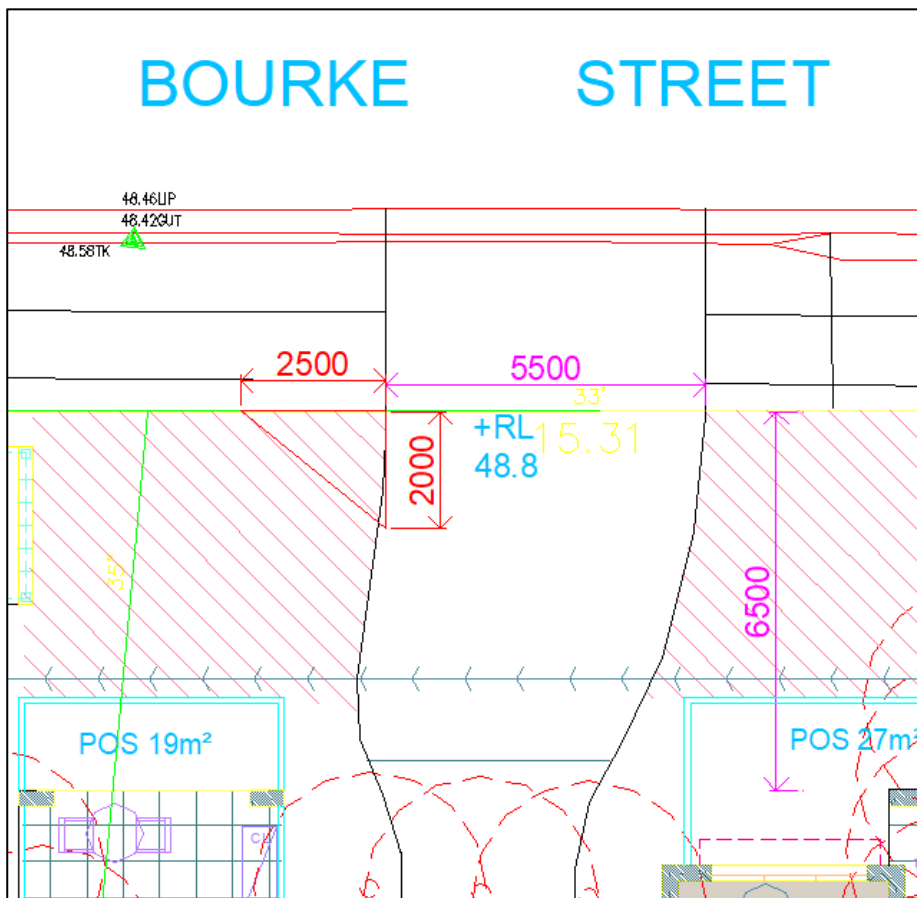


Figure 11: Proposed preservation of the pedestrian sight envelop

5. TRAFFIC IMPACT ASSESSMENT

A traffic impact assessment was undertaken to determine the potential impacts caused by the proposed development on the local road network. According to the *Guide to Traffic Generating Developments (RMS 2002)*, housing for aged and disabled persons include the following trip generation features:

- Daily vehicle trips = 1-2 per dwelling, and
- Evening peak hour vehicle trips = 0.1-0.2 per dwelling

Applying the higher end of the above rates to the proposed development which includes 12 dwellings, leads to the following trip generation levels:

- 24 daily trips, and
- 3 evening peak hour trip.

The above trips will manifest as turning movements at the midblock of Bourke Street, at the site frontage.

The above-determined peak hour trips are minor and are not expected to have any noteworthy impacts on the existing traffic operations on Bourke Street, particularly since there will likely be no net difference between the traffic-generating potential of the proposal compared to that of the existing 3 residential dwellings within this site (based on the RMS Guide, a residential dwelling generates, on average, 0.85 trips in each peak hour period. Applying this to the existing 3 residential dwellings within the subject site leads to 3 trips, which is equivalent to the trip generation potential of the proposal).

6. CONCLUSIONS

APEX Engineers were engaged by Barry Rush and Associates to provide a traffic impact assessment as a part of the development application for the proposed Seniors Living development, located at 57-61 Bourke Street in North Parramatta.

The subject site is serviced by one bus route, which can be accessed from bus stops located on Bourke Street, within a 150m (2-minute walk) of the subject site.

Based on the parking rates prescribed in Section 108(2)(j) of the State Environmental Planning Policy (Housing) 2021 (Housing SEPP), the proposed development should provide 3 car parking spaces. The proposed development includes provision for a total of 9 car spaces, including 4 disability accessible car spaces. Therefore, the proposed development satisfies the relevant minimum parking provision requirement.

The proposed car parking design was assessed with reference to AS 2890.1, AS 2890.6 and AS 4299-1995. It was found that the proposed car park design is compliant with the relevant design requirements. The swept path assessments carried out reveal sufficient manoeuvrability conditions for vehicles using the proposed car park.

The daily and evening peak hour trip generations for the proposed development were determined from the trip rates provided in the Guide to Traffic Generating Developments (RMS, 2002) for housing for the elderly. Based on these rates, the proposed development is estimated to generate 3 trips in the evening peak hour and 24 daily trips. This number of trips are considered minimal and are unlikely to eventuate into any noticeable impacts on the local road network particularly since there will likely be no net difference between the traffic-generating potential of the proposal compared to that of the existing 3 residential dwellings within this site.



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