



# Traffic Impact Assessment

26 Rose Crescent & 69-73 Bourke Street,  
North Parramatta NSW 2151

June 2022



**Type of Assessment:** Traffic Impact Assessment

**Site Location:** 26 Rose Crescent & 69-73 Bourke Street, North Parramatta NSW 2151

**Prepared for:** Barry Rush and Associates

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## 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 26 Rose Crescent & 69-73 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 26 Rose Crescent & 69-73 Bourke Street in North Parramatta and currently includes 3 separate lots/buildings across a total area of 2,228.70m<sup>2</sup>. The site vicinity is predominantly characterised by low-density residential dwellings.

At the site frontage, Bourke Street is a collector road that includes an undivided carriageway with a 50 km/h speed limit. It connects Church Street to the west with Gloucester Avenue to the east.

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 26 Rose Crescent & 69-73 Bourke Street in North Parramatta 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 14 dwellings (6 x 1-bedroom dwellings + 8 x 2-bedroom dwellings).

The proposal includes provision for 11 on-site car parking spaces (includes 3 disability accessible spaces). Ten of these car spaces will be accessed through a common one-way driveway (with a passing bay at the boundary) off Bourke Street while a single accessible car space is proposed to be accessed through Rose Crescent.

## **2.3 Public Transport Services**

A bus stop exists on Bourke Street (opposite Lake Parramatta Reserve), at the frontage of the lot immediately to the west of the subject site. This bus stop services route 609 (Parramatta to North Parramatta Loop Service).

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.

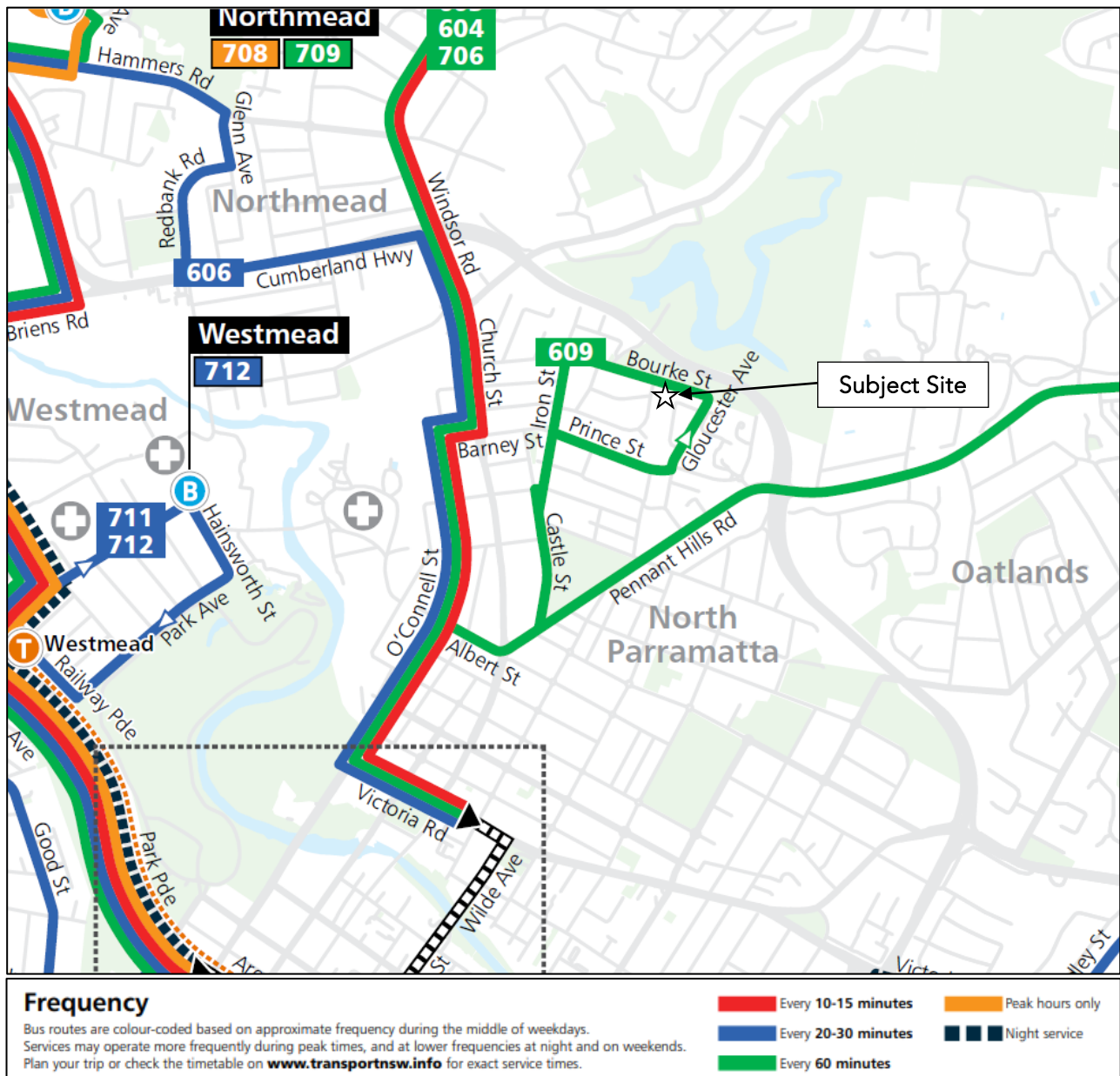


Figure 2: Local public transport services



### **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 14 dwellings should provide 3 car parking spaces (rounded up).

The proposed development includes provision for a total of 11 car spaces, which include 3 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. 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.

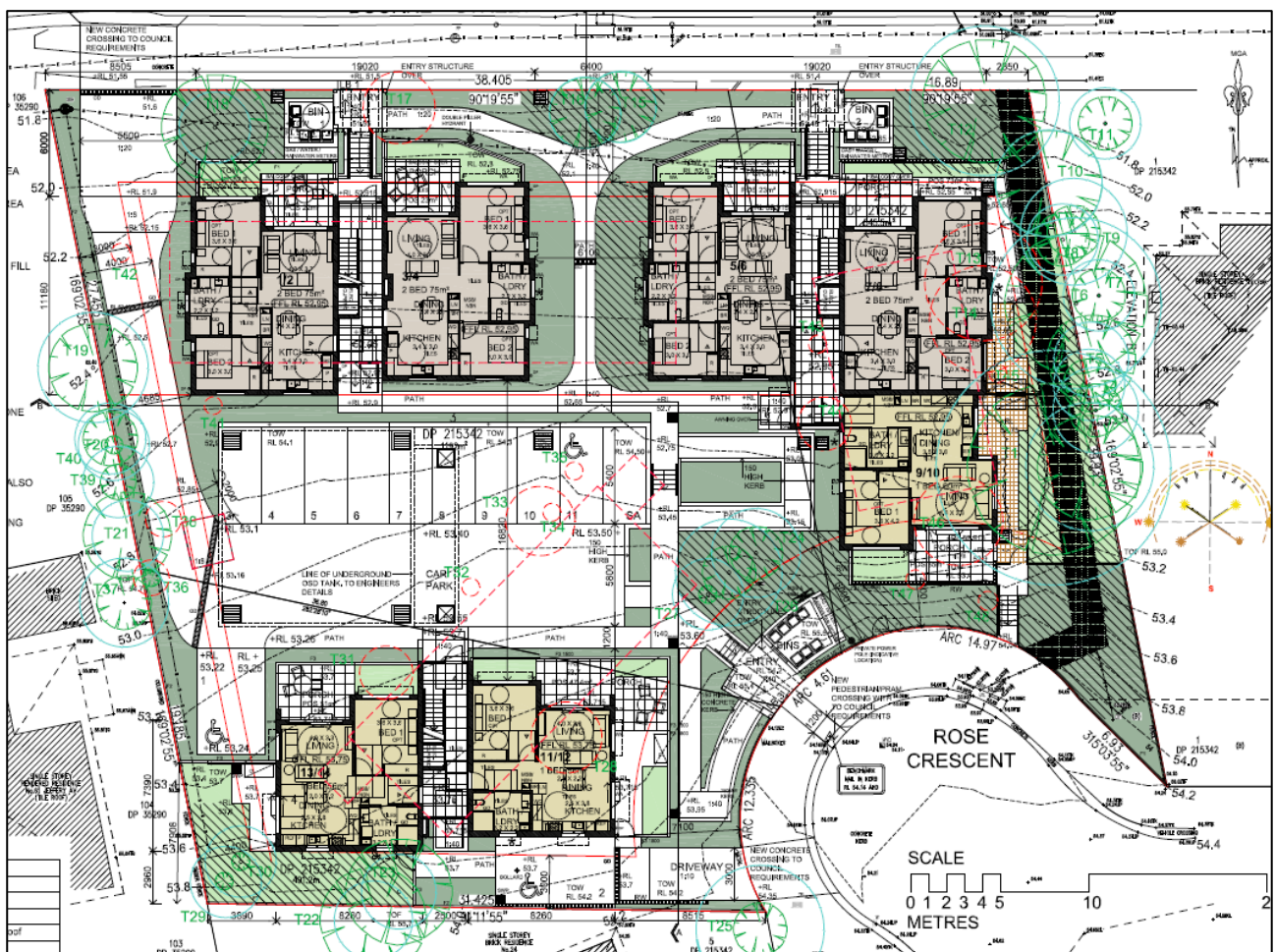


Figure 3: Proposed on-site car parking layout

#### **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 eight of the 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**

The proposed three disability accessible car spaces are designed to achieve compliance with AS 4299-1995 (Adaptable Housing) which requires 3.8m width for accessible car spaces. The proposed disability accessible 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**

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 space 11.

#### **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.

However, provision has been made at the driveway entry point (first 6m length) to accommodate two-way movements (i.e., a width of 5.5m). 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 car park (off Bourke Street) includes a 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 is >20m and it includes a maximum grade of <20% - thus complying with the AS 2890.1 requirements. The maximum graded section of the driveway ramp includes 2m lengths of transition sections (graded at 12.5%) on either end, thus complying with the grade transition requirements.

The proposed driveway ramp into the car park is one-way (outside the passing bay at first 6m). Accordingly, this proposed one-way driveway ramp is designed at 3m width (with 300mm clearance on either side from obstructions).

The single disability accessible car space that will be accessed off Rose Crescent includes a driveway ramp that is graded at 10% - this grade is less than the maximum allowable grade of 12.5% for which transitions are not required. This driveway is one-way and includes a width of 3m (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 85<sup>th</sup> percentile vehicle (B85 vehicle) used to simulate the swept paths (it is noted that this 85<sup>th</sup> percentile vehicle template is developed according to the dimensions specified in AS 2890.1-2004).

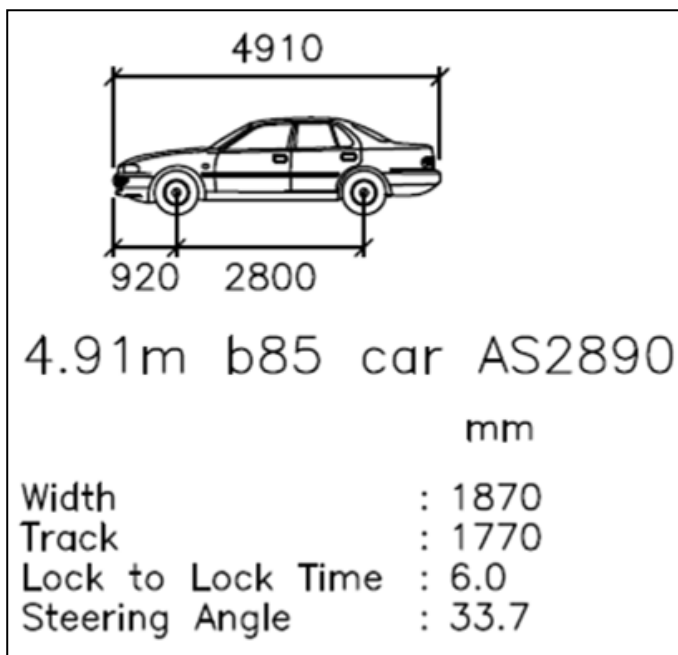


Figure 4: Template of an 85<sup>th</sup> percentile vehicle (AS2890.1-2004)

**Figures 5-11** 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).

The results of the swept paths reveal the following:

- As can be seen from **Figure 5**, a vehicle can conveniently enter car space 1 by reversing in and exit out in forward direction.
- As can be seen from **Figure 6**, the vehicle using car space 3 will undertake one correction and enter the car space in forward gear. As shown in **Figure 7**, this vehicle can reverse into the aisle and exit the site in forward gear.
- As can be seen from **Figure 8**, the vehicle using car space 4 will enter this car space by reversing in. As shown in **Figure 9**, this vehicle will require a single correction when exiting.
- As shown in **Figure 10**, the vehicle using car space 5 (similarly for car spaces 6-11) will enter the space by reversing in and exit the space in forward gear without requiring any corrections.
- **Figure 11** shows a vehicle entering the car space accessed off Rose Crescent and exiting by reversing out on to the cul-de-sac.

In summary, due to the configuration of the driveway ramp connection with the car parking aisle, the vehicles at car spaces 3 and 4 will require one correction when exiting these car spaces. This level of manoeuvrability is considered acceptable for low turnover residential developments, where the drivers will be regular users who are familiar with the layout of the car park.



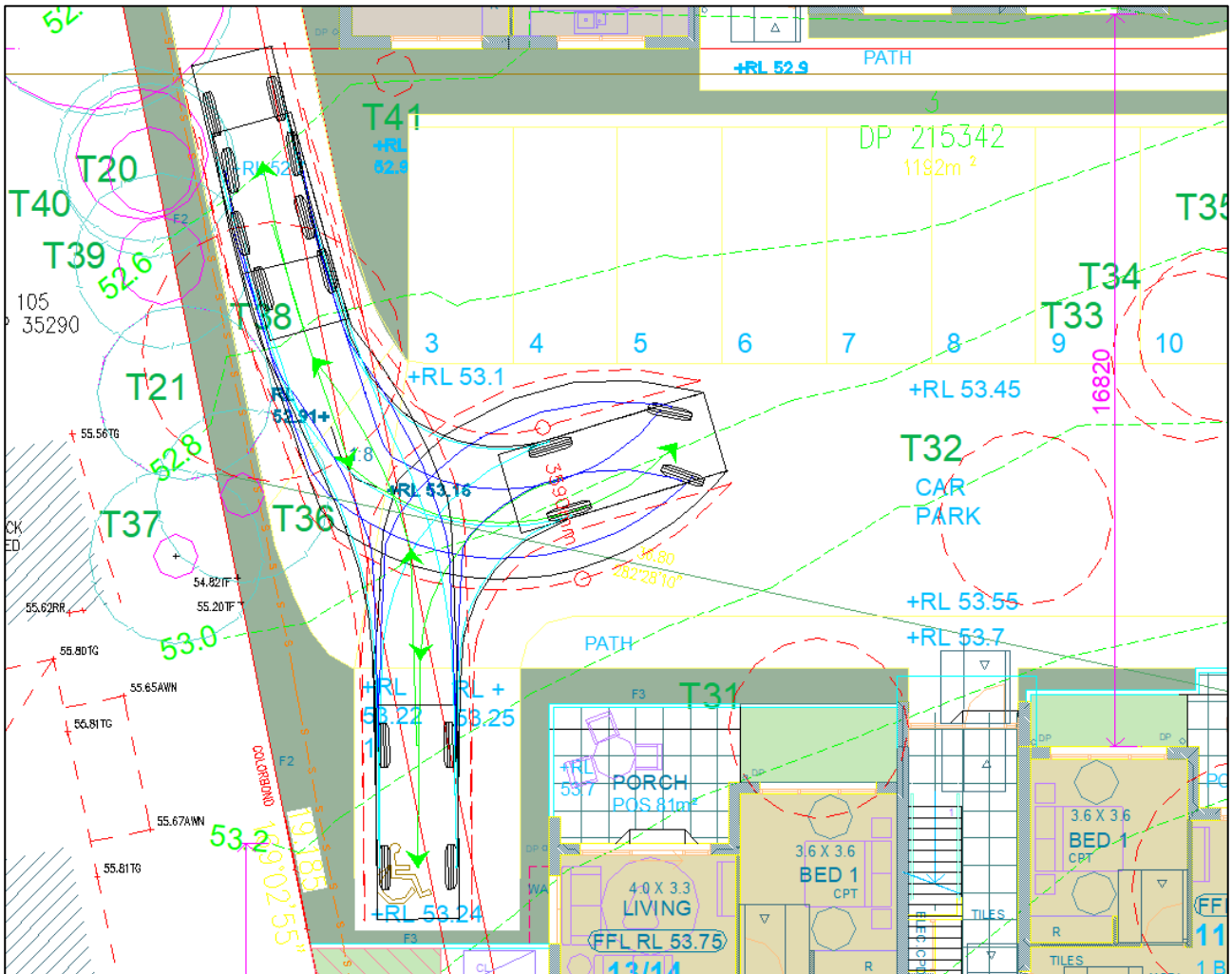


Figure 5: Entry and exit movements at car space 1

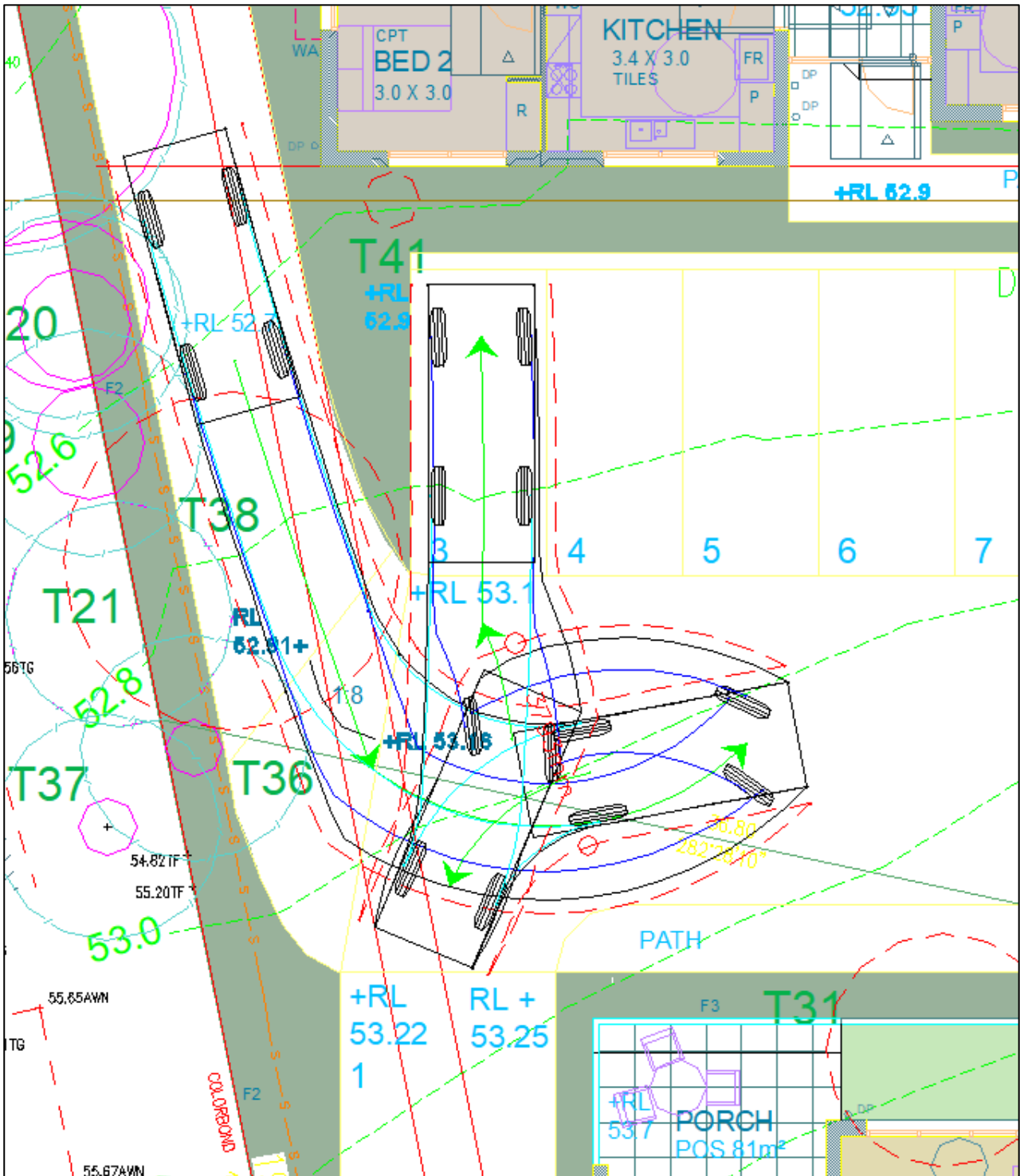


Figure 6: Entry movement at car space 3

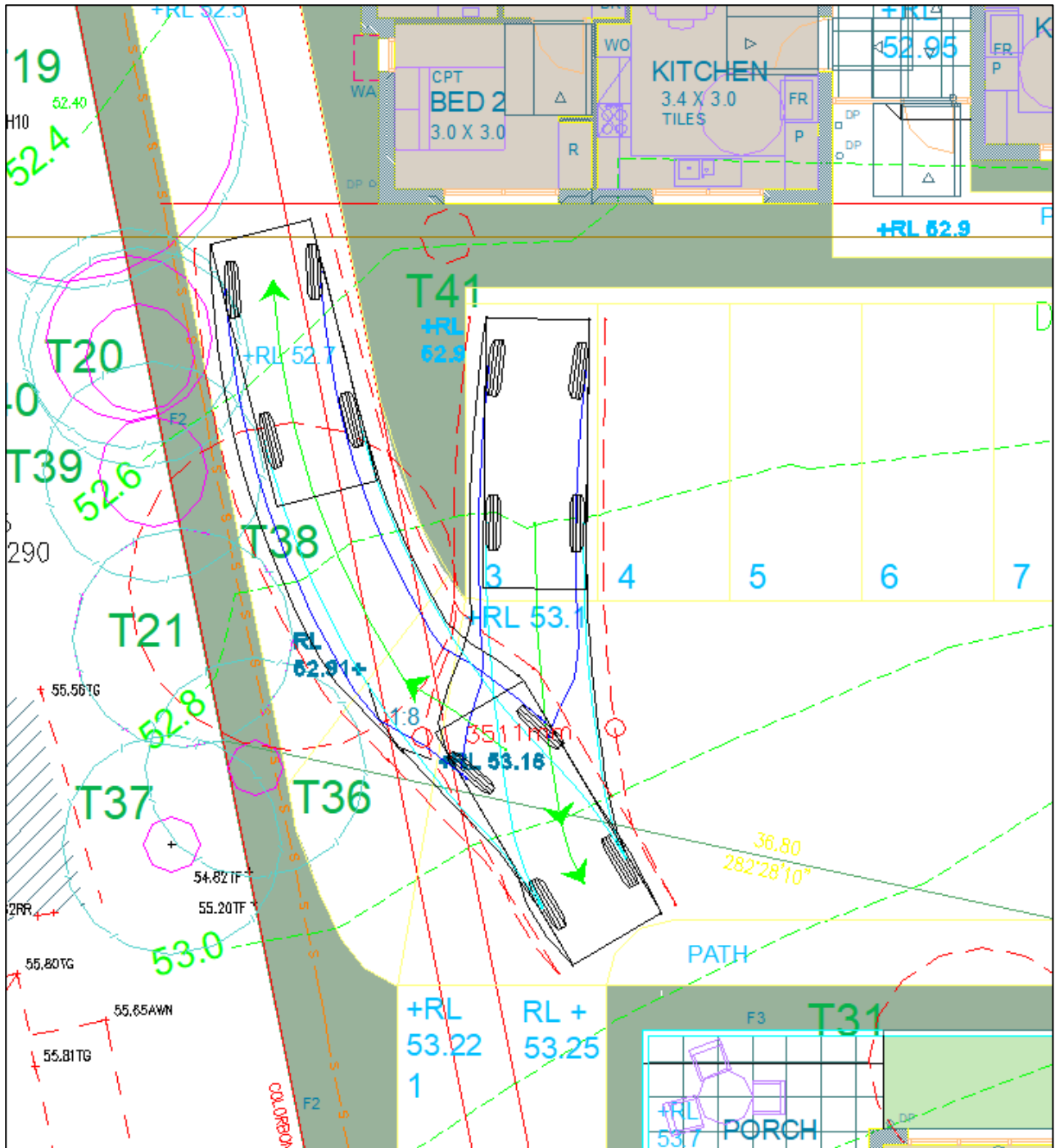


Figure 7: Exit movement at car space 3

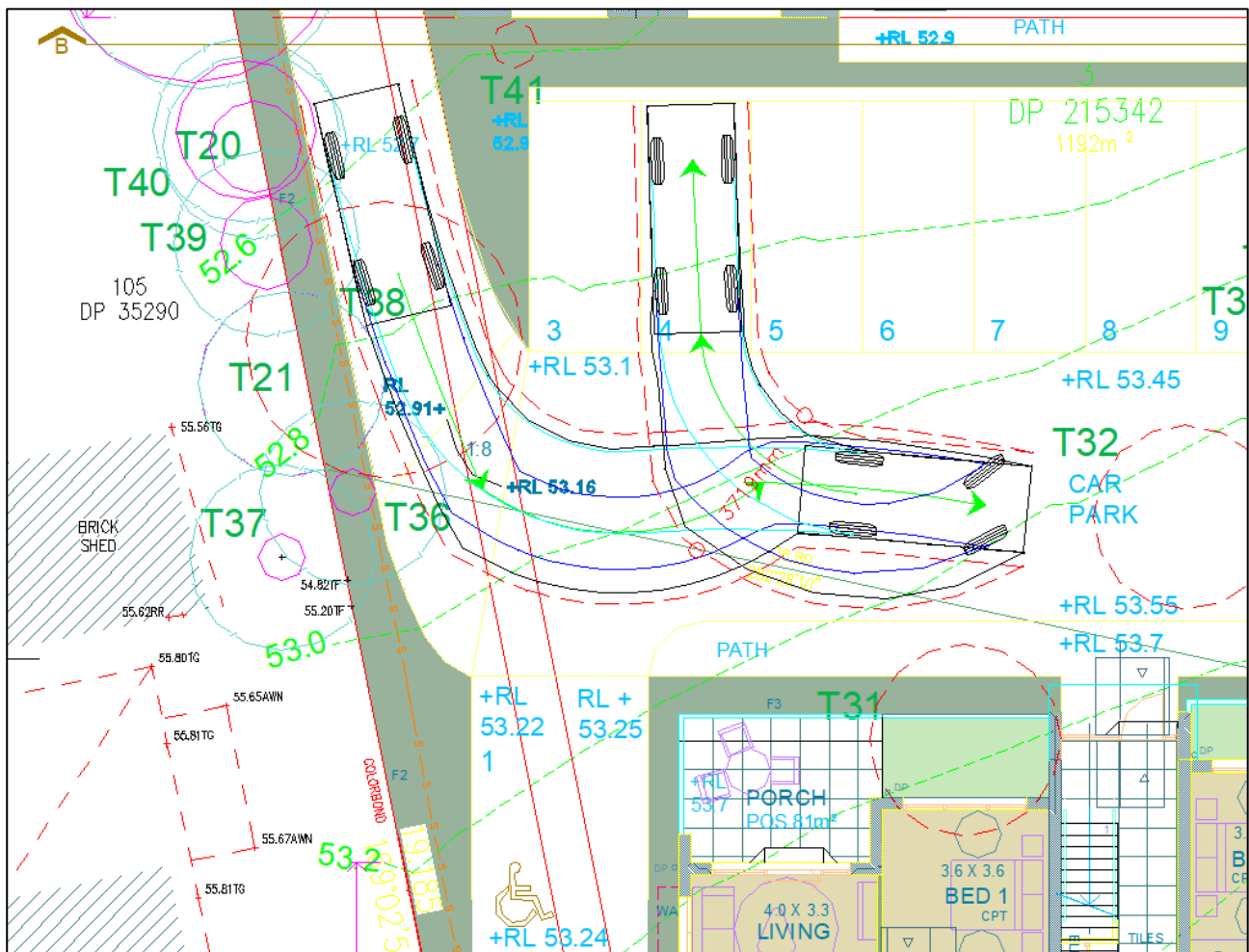


Figure 8: Entry movement at car space 4

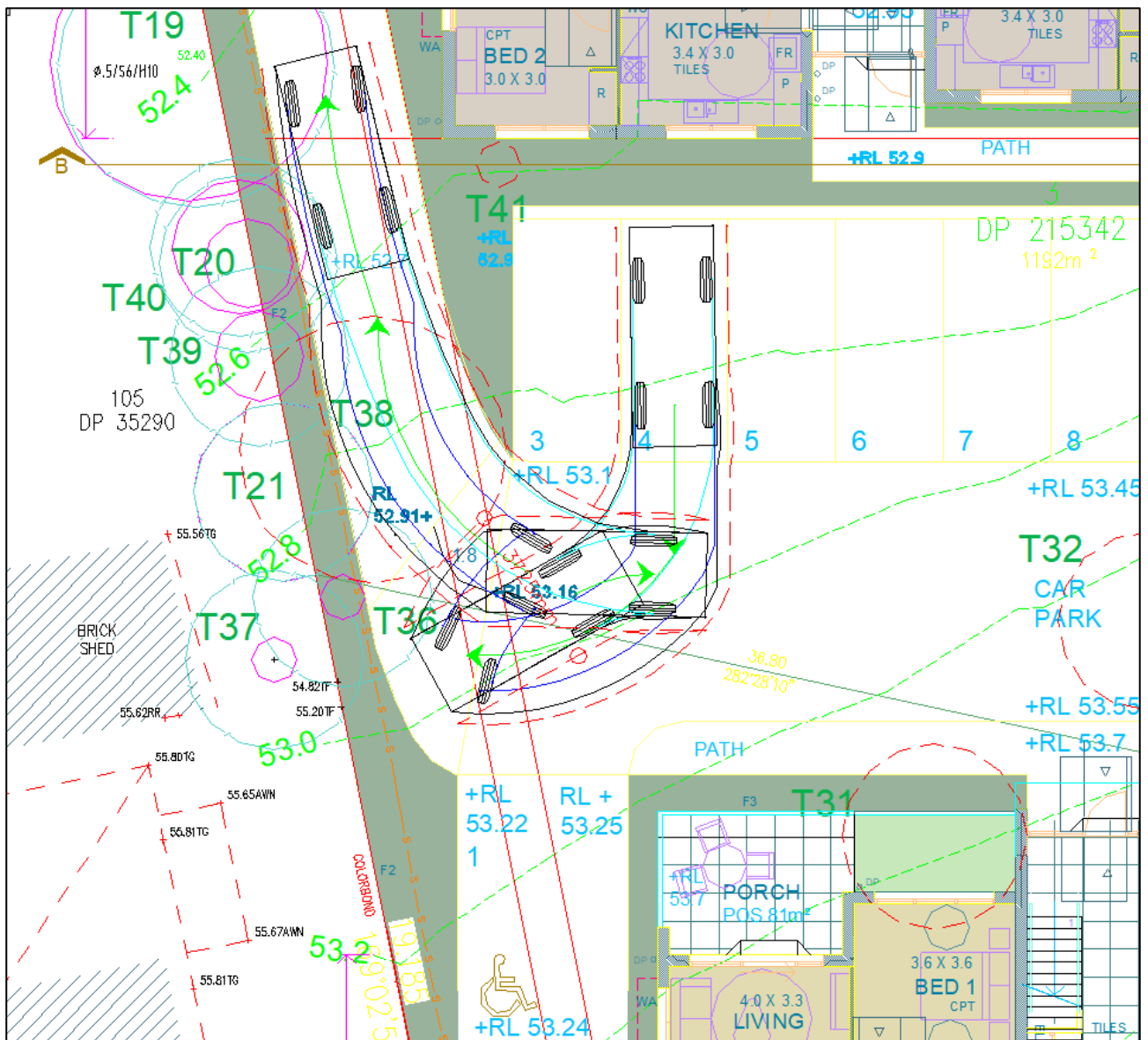


Figure 9: Exit movement at car space 4

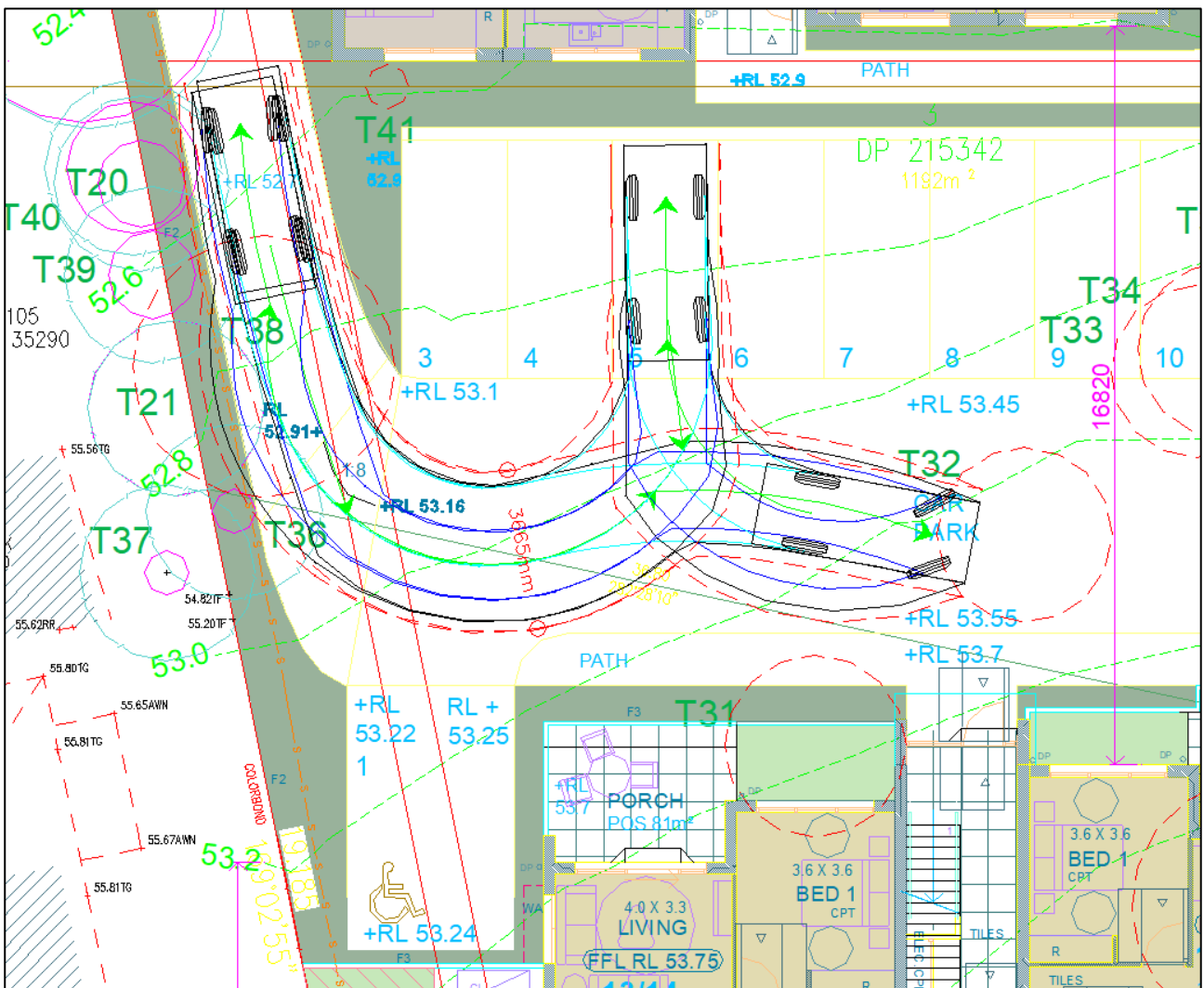


Figure 10: Entry and exit movements at car space 5



#### 4.9 Pedestrian Sight Distance Availability

adding value through resilient engineering

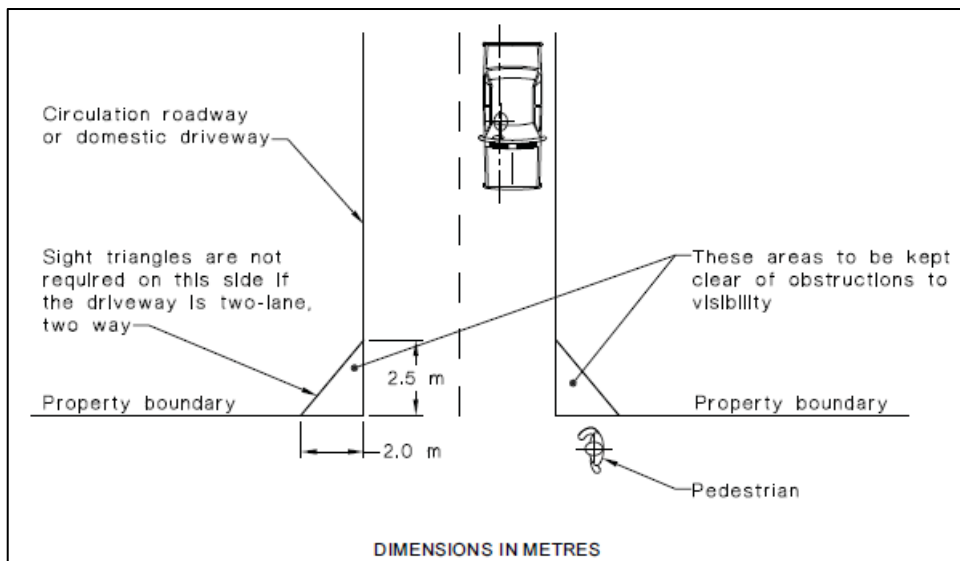


Figure 12: Pedestrian sight distance requirement (AS 2890.1)

Figure 13 illustrates the preservation of pedestrian sight triangle at the proposed vehicle access point off Bourke Street. It is noted that since the first 6m of the driveway is designed to cater for two-way movements, the pedestrian sight triangle is only required towards the left-hand side of a vehicle exiting the site. As can be seen, the required sight triangle can be fully preserved within the proposed design.

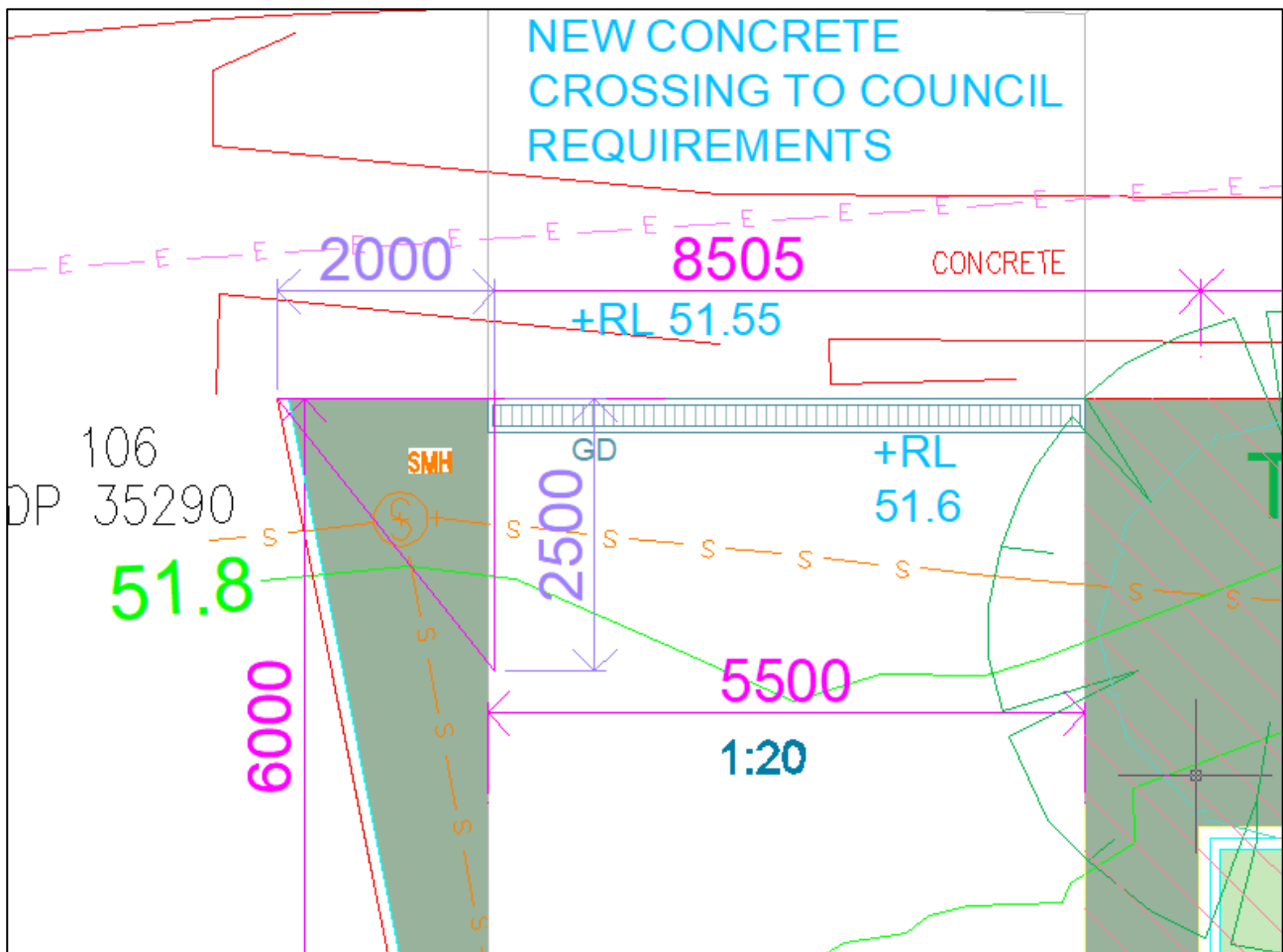


Figure 13: Proposed preservation of the pedestrian sight triangle

#### 4.10 Sight Distance for Vehicles Exiting onto Bourke Street

The proposed vehicle egress point off Bourke Street will see the drivers exiting the site sitting approximately 3.5m to the east of the site boundary (as **Figure 14**). AS 2890.1 requires a minimum safe sight distance of 45m for a default local road speed limit of 50 km/h (see **Figure 15**).

**Figure 16** shows the safe sight distance availability at the site egress point. As can be seen, the existing bus shelter to the west of the site does not encroach into the required sight envelop area to the left-hand side of a driver exiting the site, although bus stopped at this shelter can obstruct the sight lines. However, this bus stop only serves route 609, which has services every 30 minutes on weekdays between 6am to 7pm. Therefore, a stopped bus obstructing sightlines will not occur with any noticeable frequency.

The existing utility pole is located within the sightline to the right-hand side of a driver exiting the site. However, this pole occupies a negligible area within the sight envelope and is unlikely to obstruct the overall view of drivers exiting the site.

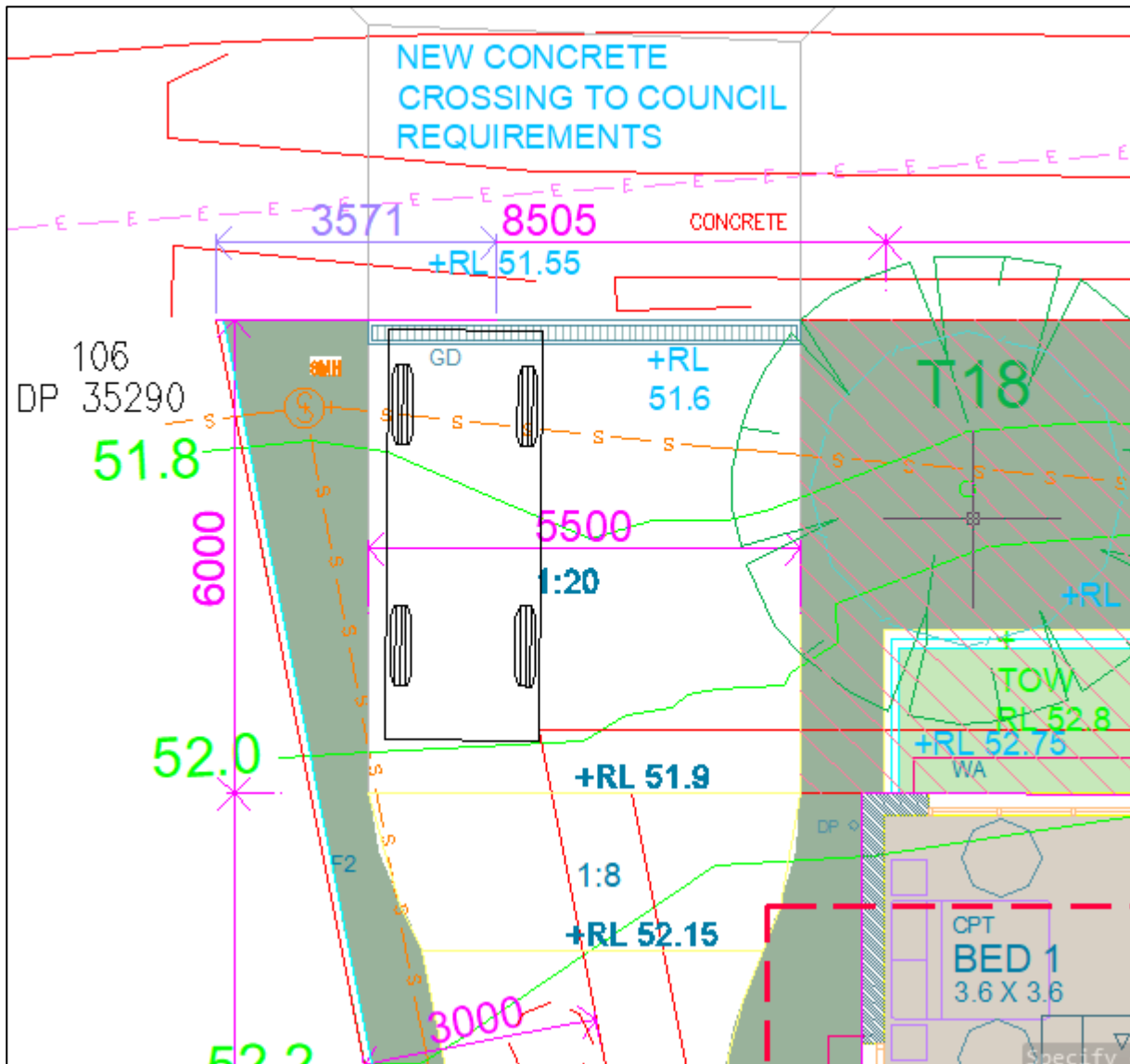


Figure 14: Typical location of an exiting driver at the site boundary

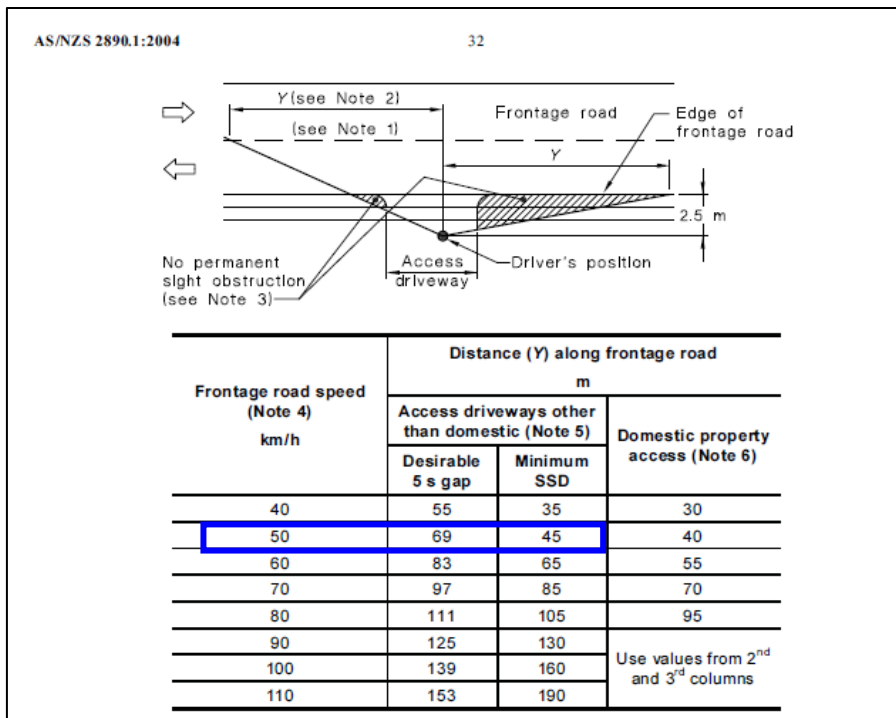


Figure 15: Safe sight distance requirement for exiting vehicles



Figure 16: Safe sight distance at the site egress location

## 5. TRAFFIC IMPACT ASSESSMENT

A traffic impact assessment was undertaken to determine the potential impacts caused by the proposed development upon 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 14 dwellings, leads to the following trip generation levels:

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

The above trips will manifest as turning movements at the midblock of Bourke Street and at the cul-de-sac of Rose Crescent.

The above-determined daily and peak hour trips are minor not expected to have any noteworthy impacts on the existing traffic operations on Bourke Street or Rose Crescent.



## 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 Housing development, located at 26 Rose Crescent & 69-73 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 100m (1-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 11 car spaces, which include 3 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 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 28 daily trips. This number of trips are considered minimal and are unlikely to eventuate into any noticeable impacts on the local road network.



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