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Traffic Impact Assessment

41 – 43 Owen Avenue, Wyong NSW 2259

February 2023

Type of Assessment: Traffic Impact Assessment

Site Location: 41 – 43 Owen Avenue, Wyong NSW 2259

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TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

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 41 – 43 Owen Avenue in Wyong ('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 41 – 43 Owen Avenue in Wyong and currently includes 2 separate lots/residential dwellings (lot 41 includes a single vehicle crossover off Owen Avenue while lot 43 includes one off Cutler Drive). The site vicinity is predominantly characterised by low-density residential dwellings.

The overall site has frontage to both Owen Avenue and Cutler Drive. At the site frontage, both Owen Avenue and Cutler Drive include one traffic lane in each direction with a double barrier median along the centre of the carriageways. Cutler Drive includes kerbside parking on both sides.

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 2 lots at 41 and 43 Owen Avenue in Wyong 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 6 dwellings (2 x 1-bedroom dwellings + 4 x 2-bedroom dwellings).

The proposal includes provision for 4 on-site car parking spaces (includes 2 disability accessible spaces). These car spaces will be accessed through a common one-way driveway off Cutler Drive.

2.3 Public Transport Services

The subject site has easy access to bus stops on Pacific Highway (240m from the site, 3 minute walk) that service the following bus routes (in both directions):

- 19 (Wyong to Gosford)
- 26 (Wallsend to Newcastle West via Kotara & Newcastle Interchange)
- 78 (Tuggerah to Lake Haven via Wadlaba & Warnervale)
- 80 (Tuggerah to Lake Haven via Pacific Hwy & Lake Haven Dr)
- 81 (Lake Haven to Tuggerah via Kanwal, Wyongah & Wadalba)
- 93 (Bulli via East Woonona)
- 94 (Budgewoi to Tuggerah via San Remo & Wyong)

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 6 dwellings should provide 2 car parking spaces (rounded up).

The proposed development includes provision for a total of 4 car spaces (including 2 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.

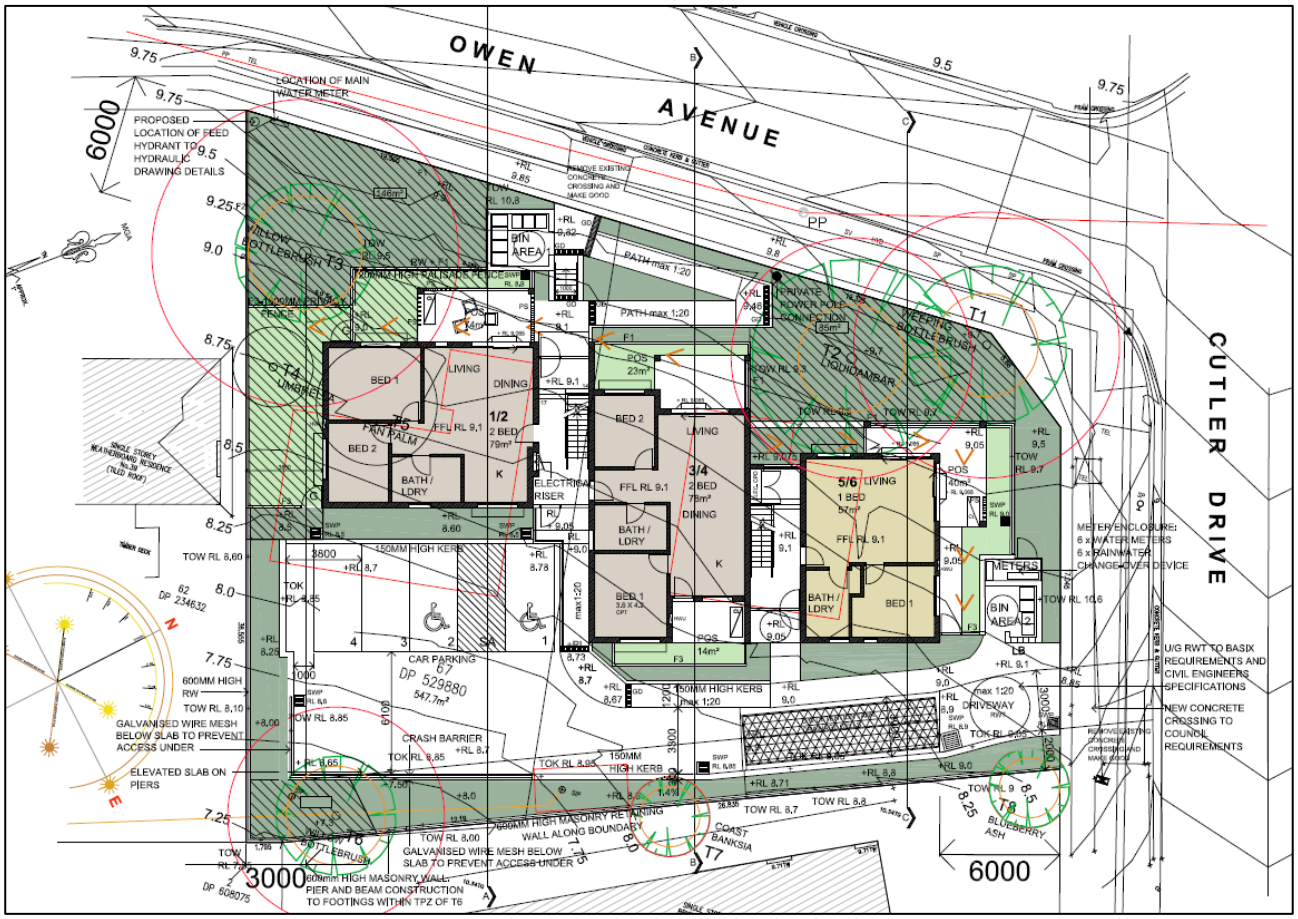

Figure 3: Proposed on-site car parking layout

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 (with 300mm clearance added to car space width and aisle width, when obstructions are present).

The proposed regular car spaces 3 and 4 comply with the above dimensional requirements. Note that since car space 4 is located at a blind aisle, it has been designed at a width of 3.4m which includes 2.4m minimum space width + 1m extension to car space and the aisle. This arrangement complies with the AS 2890.1 requirements.

In addition, it is noted that due to the presence of the crash barrier wall on the opposite side of the aisle, the aisle width includes a 300mm additional clearance beyond the minimum 5.8m, as required by AS 2890.1.

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 + 300mm clearance when obstructions are present);
- 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 disability accessible car spaces comply with the above requirements.

*car space 1 is located adjacent to an obstruction that is higher than 150mm. therefore, this car space is designed at 2.7m width (it includes an additional 300mm door opening clearance beyond the minimum space width of 2.4m).

4.3 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 module is capable of complying with the above requirements.

4.4 Driveway Width

Based on AS 2890.1, the proposed access to the car parking area (off Cutler Drive) 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. The proposed vehicle access driveway is 3m wide (with 300mm clearance from obstructions on either side).

AS 2890.1 states that "as a guide, 30 or more movements in a peak hour (in and out combined) would usually require provision for two vehicles to pass on the driveway, i.e., a minimum width of 5.5 m. On long driveways, passing opportunities should be provided at least every 30 m." The proposal does not have: (1) a traffic generation potential of 30 or more peak hour movements, and (2) a driveway that is longer than 30m. As such, a passing bay is not required for this proposal.

4.5 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 Cutler Drive) includes a maximum grade of 5%.

4.6 Driveway 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, after the first 6m long section at the boundary, is less than 20m. Given the level difference between the start and the end of the driveway, it is evident that the driveway can be designed at well below 25% maximum allowable grade and below the 12.5% grade limit above which transition sections are required. Therefore, the proposed driveway can be provided as a single section with a uniform grade that is below 12.5%.

4.7 Level Difference between the Car Spaces and Area at the Eastern Boundary

A level difference >600mm exists between the edge of the car parking aisle and the landscaped area at the eastern site boundary (see Figure 6).

In such situations, AS 2890.1 requires provision of a 1.3m high barrier to prevent vehicles from running over the edge of the raised parking level. This barrier shall be designed structurally for loading requirements of AS 1170.1. This requirement from AS 2890.1 is extracted in Figure 5.

Figure 6 shows the section view of the proposed crash barrier which satisfies the relevant AS 2890.1 requirement.

2.4.5.3 *Barriers*

Barriers shall be constructed to prevent vehicles from running over the edge of a raised platform or deck of a multi-storey car park including the perimeter of all decks above ground level. They are required wherever the drop from the edge of the deck to a lower level exceeds 600 mm. At drops between 150 mm and 600 mm, wheel stops (see Clause 2.4.5.4) shall be provided. Barriers shall comply with the following requirements:

(a) They shall be designed structurally for the loading requirements of AS/NZS 1170.1.

(b) If at the end of a parking space, they shall be at least 1.3 m high so that drivers of cars backing into the space can see the barrier above the rear of the car.

NOTE: The upper portion of such a barrier may be a light structure provided for sighting purposes only.

(c) They shall not be made from brickwork, unreinforced concrete or other materials likely to shatter on impact.

Figure 5: AS 2890.1 Barrier Design Requirement

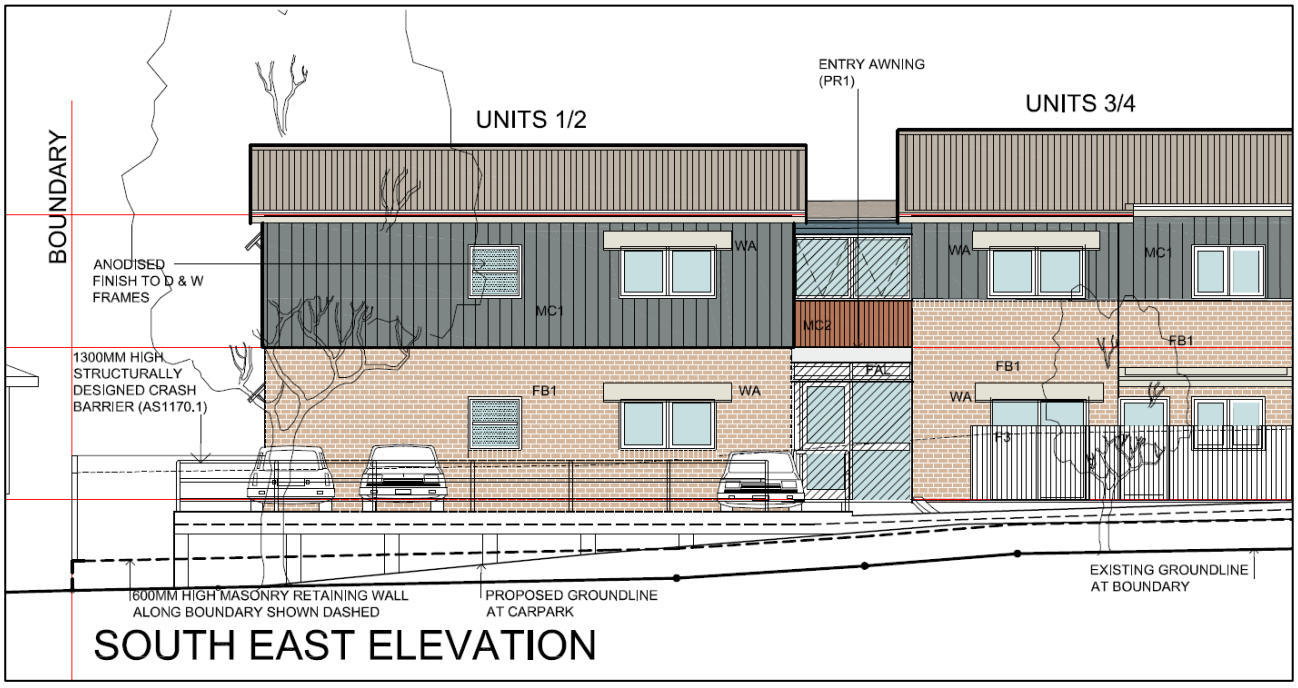

Figure 6: Proposed Barrier along the Edge of the Parking Aisle

4.8 Vehicle Manoeuvrability Conditions

In order to investigate the anticipated manoeuvrability conditions of vehicles using the proposed car spaces, swept path assessments were undertaken using AutoTURN software (the industry standard vehicle swept path assessment software). Figure 7 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).

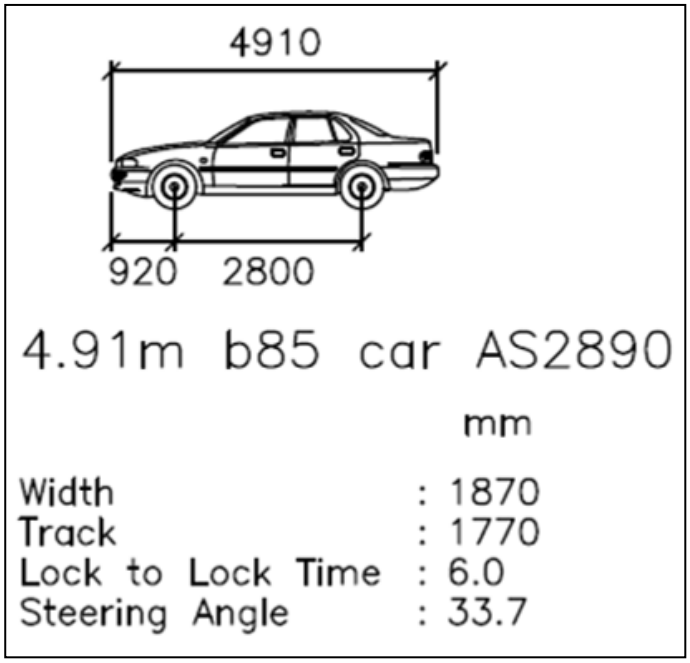

Figure 7: Template of an 85th Percentile Vehicle (AS2890.1-2004)

Figures 8-12 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 8 and Figure 9, vehicles can conveniently enter car spaces 1 and 2 by reversing in and exit out in forward direction without any corrections.
- As can be seen from Figure 10, the vehicle using car space 3 will undertake one correction and enter the car space in forward gear. It can exit out in forward gear without any corrections.
- As can be seen from Figure 11, the vehicle using car space 4 will enter this car space forward in (without any corrections). It can exit out in forward gear without any corrections.

In summary, the above identified 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.

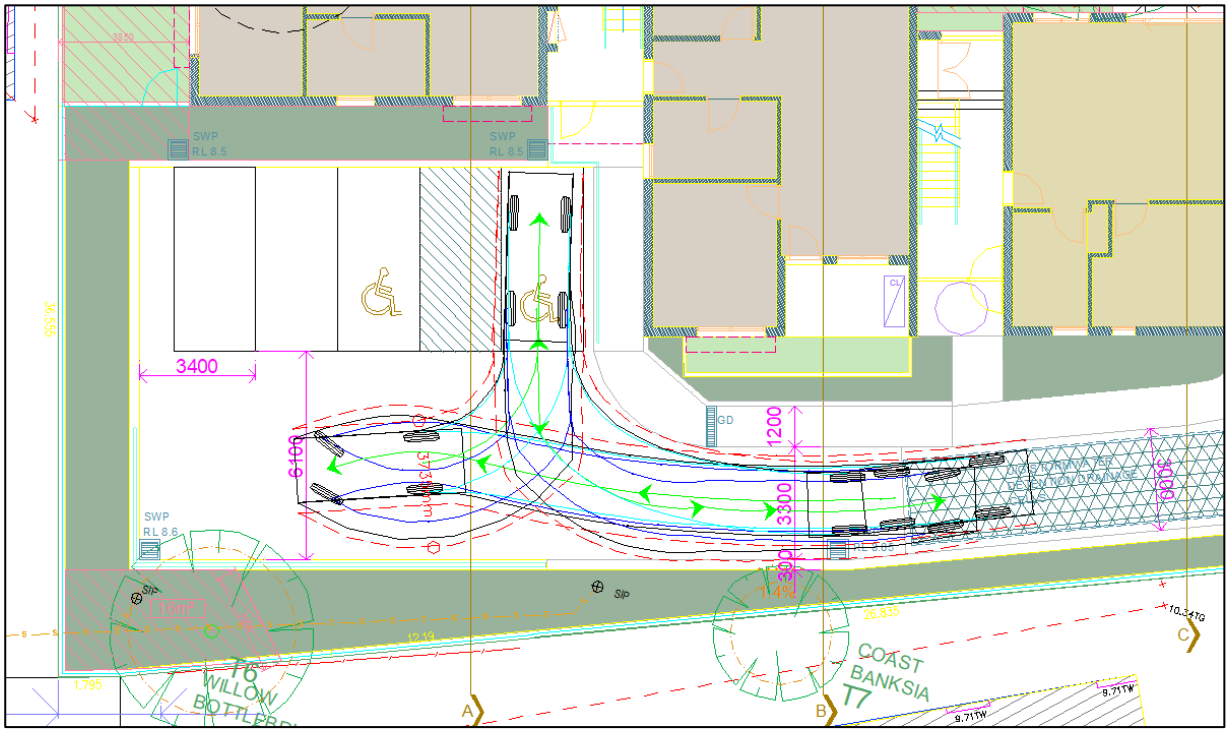

Figure 8: Entry and Exit Movements at Car Space 1

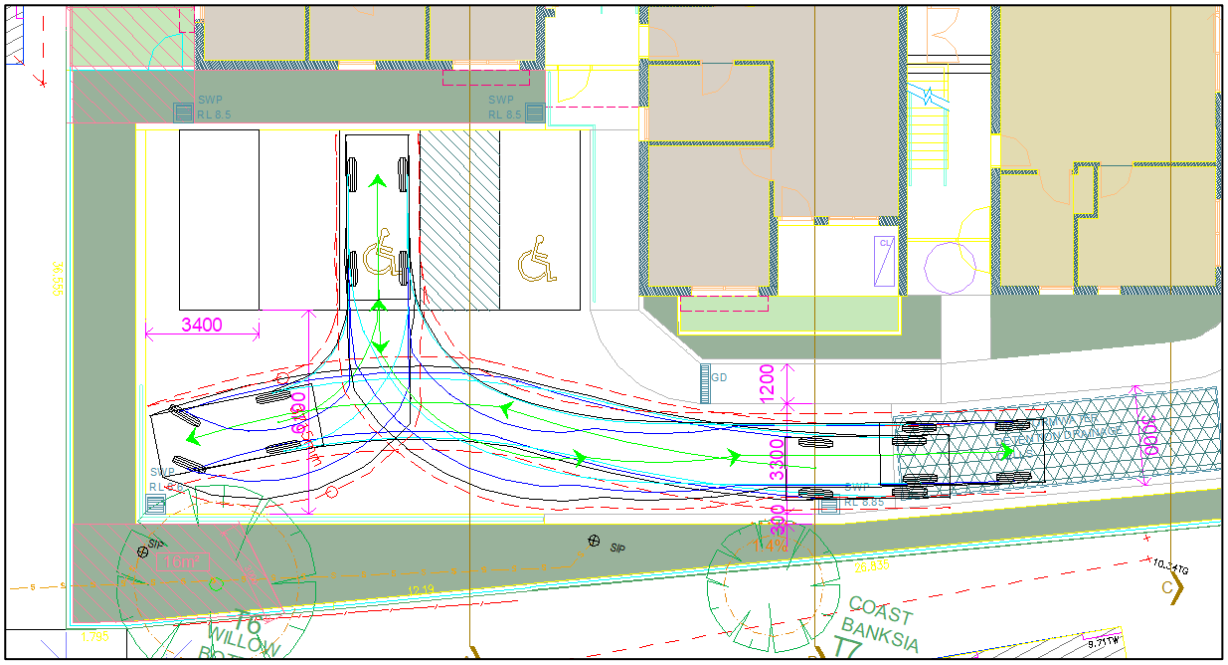

Figure 9: Entry and Exit Movements at Car Space 2

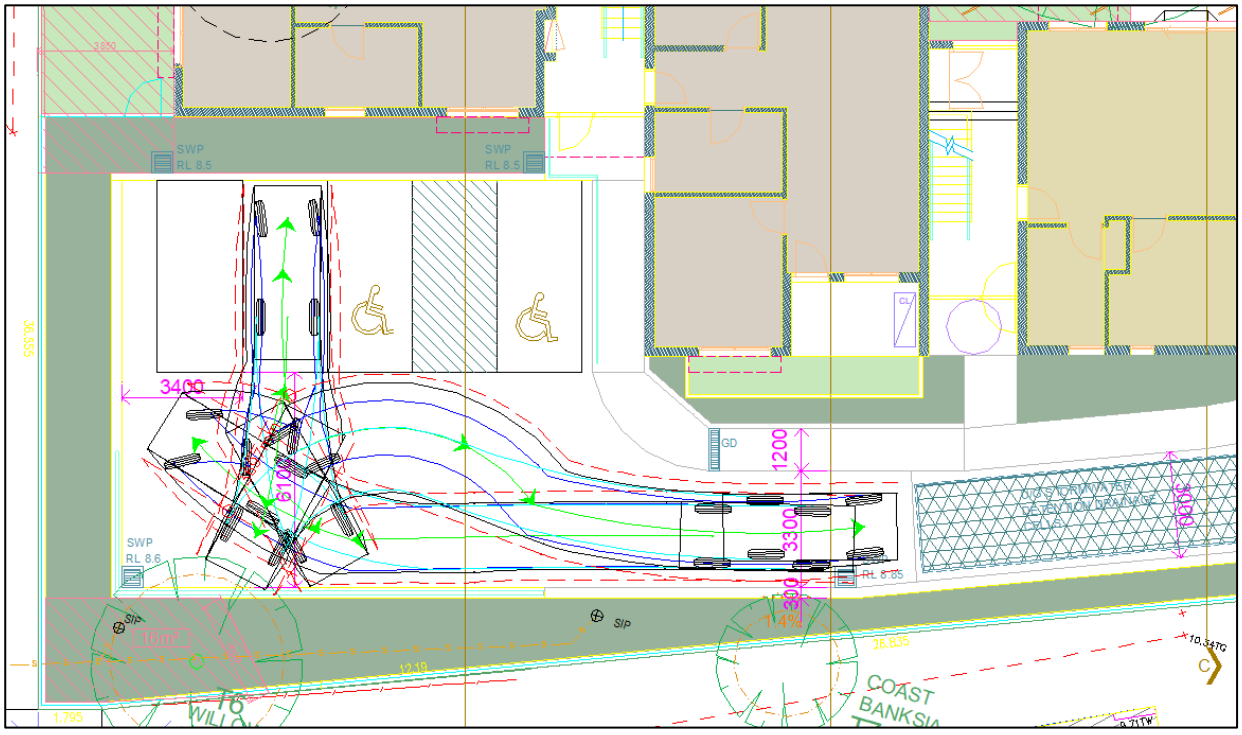

Figure 10: Entry and Exit Movements at Car Space 3

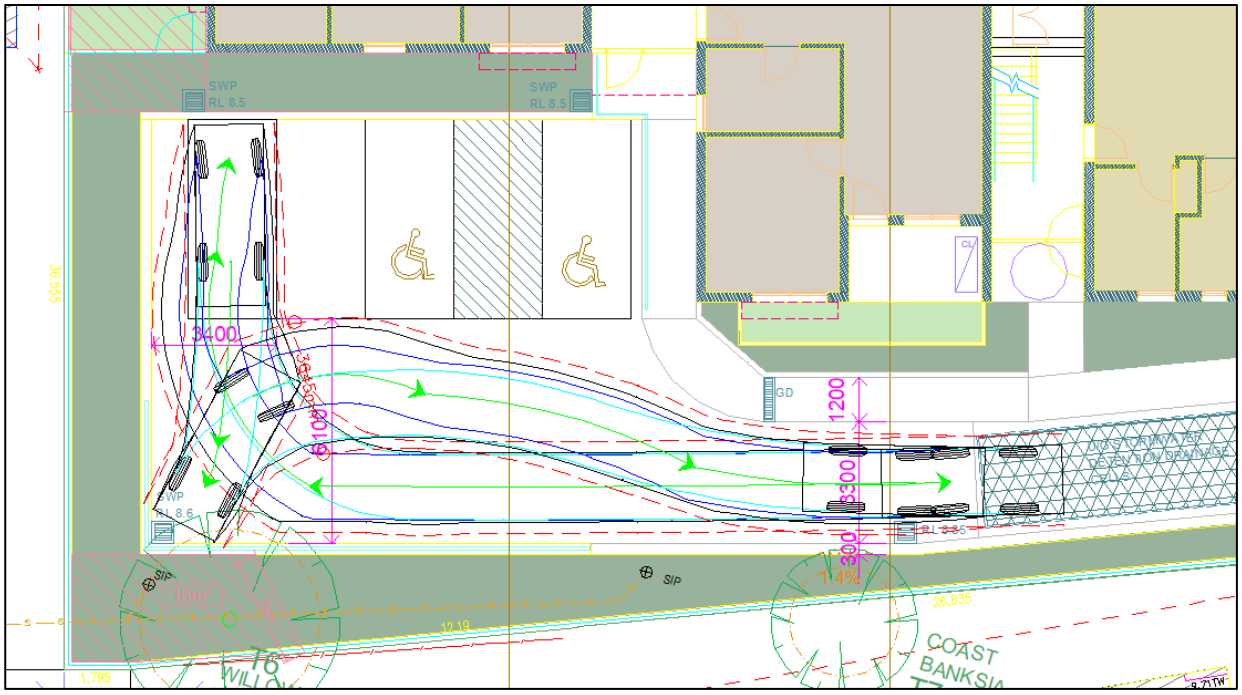

Figure 11: Entry and Exit Movements at Car Space 4

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 12.

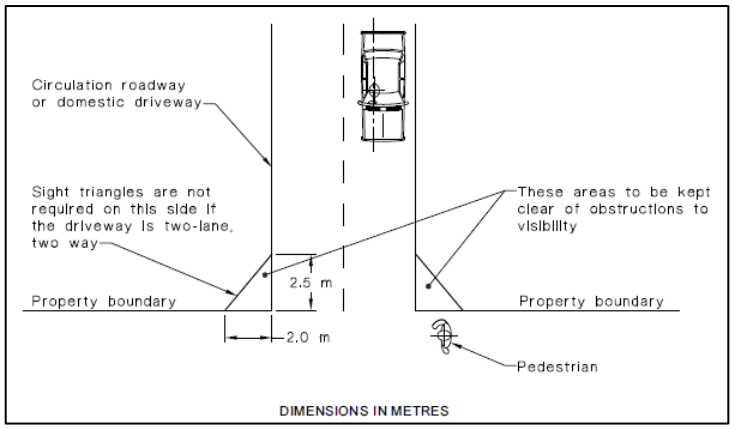

Figure 12: Pedestrian Sight Distance Requirement (AS 2890.1)

Figure 13 illustrates the preservation of pedestrian sight triangle at the proposed vehicle access point off Cutler Drive.

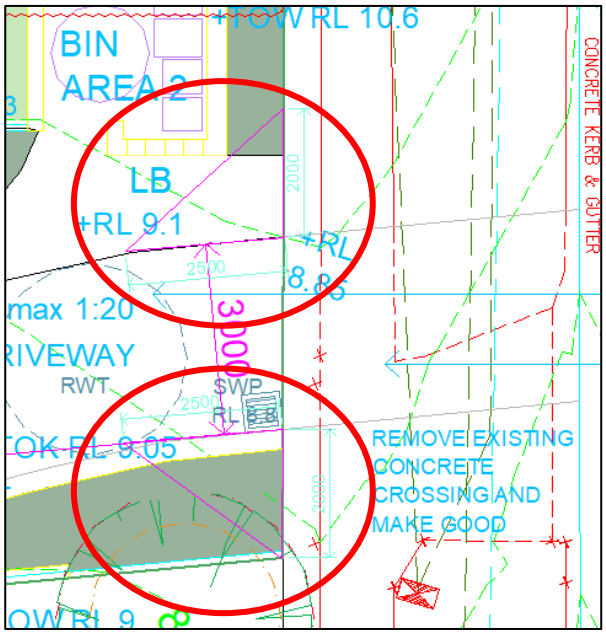

Figure 13: Proposed Preservation of the Pedestrian Sight Triangle

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

**this land use is deemed to most closely represent the nature of the current proposal*

Applying the higher end of the above rates to the proposed development which includes 6 dwellings, leads to the following trip generation levels:

- 12 daily trips, and
- 2 evening peak hour trip.

The above trips will manifest as turning movements at the midblock of Cutler Drive.

The above-determined daily and peak hour trips indicate a conservative (on the high side) estimate since the traffic generation potential of the existing two dwellings within the subject land has not been offset. In any event, the traffic generation potential of the proposal is considered to be minor and is therefore not expected to have any noteworthy impacts on the existing traffic operations on Cutler Drive.

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 41 – 43 Owen Avenue in Wyong.

The subject site is serviced by several bus routes, that can be accessed from bus stops located on Pacific Highway, within a 240m (3-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 2 car parking spaces. The proposed development includes provision for a total of 4 car spaces, which include 2 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 2890.6. It was found that the proposed car park design is generally compliant with the relevant design requirements. The swept path assessments carried out revealed 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 2 trips in the evening peak hour and 12 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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