



Traffic Impact Assessment

24 Valencia Road, Carmel WA 6076

January 2019



APEX ENGINEERS

Type of Assessment: Traffic Impact Assessment

Site Location: 24 Valencia Road, Carmel WA 6076

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1. Introduction

APEX Engineers were engaged by Mr. Dinu Ekanayake to provide a traffic impact assessment as a part of the development application for the proposed Valencia Aged Care development at 24 Valencia Road in Carmel WA.

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 car parking provision requirements applicable for the subject development;
- **Section 4** Provides a review of proposed on-site car parking design against 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 includes a land area of approx. 12,143 square metres and is located fronting Valencia Road. The site currently includes a nursing home with on-site car parking at site frontage. Valencia Road, at the site frontage, is a local road which includes an undivided carriageway providing one traffic lane in each direction. It connects Carmel Road East (to the northwest) with Union Road (to the southeast). The site vicinity is characterised predominantly by low density residential premises and undeveloped land.

Figure 1 below illustrates the location of the subject site from a street map view while **Figure 2** illustrates the site in aerial perspective. **Figure 3** illustrates the view of Valencia Road, as seen at the site frontage.

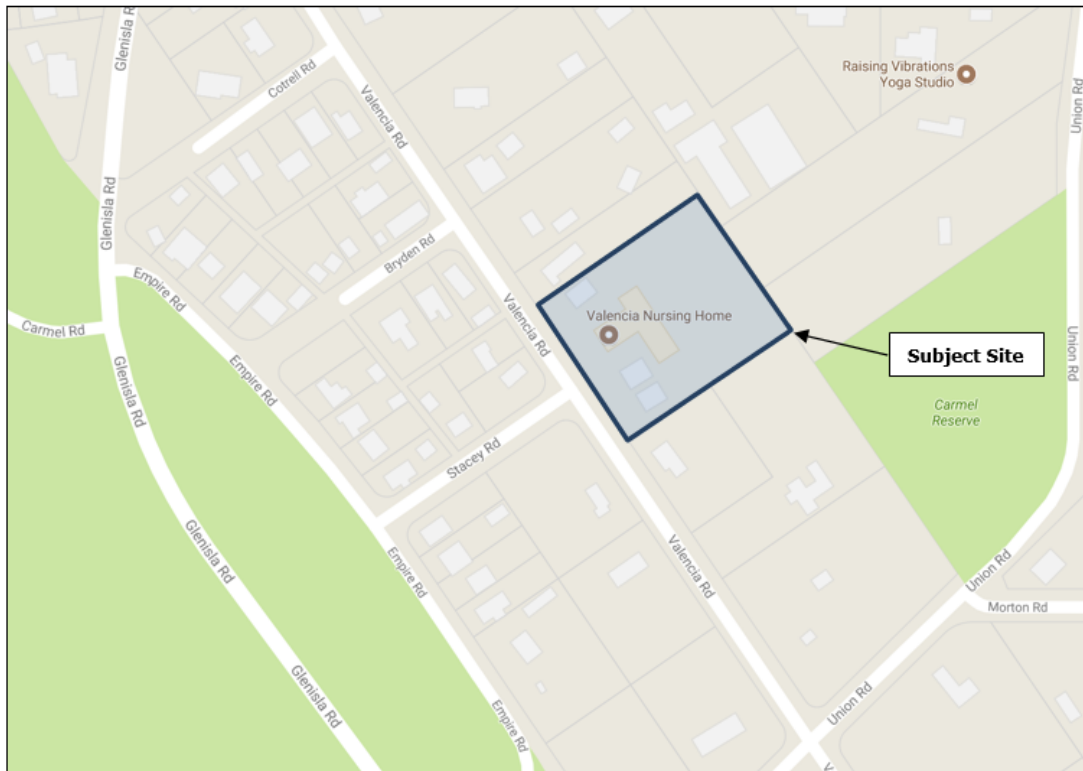


Figure 1: Location of the Subject Site (Street map view)

The subject site is not located within an area that is serviced by any public transport services. Also, Valencia Road does not include any paved pedestrian footpaths or cycling infrastructure. Recent crash data (for 2012-2016), obtained from the Council's Traffic Engineer, indicate that only 1 crash had occurred which required medical attention, in Valencia Road, between Carmel Road East and Union Road.

2.2 Proposal Details

The subject proposal seeks to expand the operations of the existing nursing home located at 24 Valencia Road in Carmel. The Applicant has an Aged Care Bed Licence to provide a maximum of 120 beds for Valencia Nursing Home.

It is understood that the existing nursing home currently includes a total of 66 beds and 14 staff members. The proposed development seeks to construct a new building within the land located at the rear of the existing nursing home. The proposed building will include 80 new beds with 16 new staff members. However, once the

new facility is built and operational (80 beds), the existing facility will be modified such that it will only have 40 beds, fulfilling the obligations to only operate 120 beds under the approved Licence. Therefore, the number beds under proposed full operation compared to current operation, will be an increase of 54 beds (120 minus 66).



Figure 2: Location of the Subject Site (Aerial view)



Figure 3: Valencia Road as seen at the Site Frontage

3. Parking Provision Requirements

The car parking provision requirements for the proposed development were determined in accordance with the parking rates prescribed in Table 3 of Shire of Kalamunda Local Planning Scheme No. 3. In relation to 'Aged Residential Care' developments, this policy document stipulates a requirement of *1 car space per employee plus 1 car bay per 10 beds*.

The following table illustrates the car parking provision applicable to the overall site.

Table 1: Statutory Parking Provision Requirements

Component	Quantity	Statutory parking provision rate	Required car spaces
Number of staff	30 (existing site includes 14 staff members; the proposed site will include 16 staff members)	1 car space per employee	30 car spaces
Number of beds	120 (the proposed site will provide 80 beds – once this proposed development is operational the 66 beds at the existing site will be reduced to 40 beds.)	1 car bay per 10 beds	12 car spaces
Total car parking provision requirement			42 car spaces

As per the above table, the overall site should provide 42 on-site car parking spaces. The proposed development includes provision of 50 on-site car parking spaces (includes three disability accessible car spaces) at four locations (see **Figure 4**). Therefore, the proposed on-site parking provision conveniently satisfies the Council DCP parking provision requirement.

4. Parking Design Review

Figure 4 illustrates the locations of the proposed car parking areas (it is noted that the subject proposal seeks to upgrade the existing on-site hard stand car parking area at the site frontage, so that it satisfies the Australian Standard requirements). Accordingly, all the car parking spaces proposed on-site, have been assessed for design compliance against the requirements outlined in AS 2890.1 and AS 2890.6.

4.1 Regular Car Spaces

The following points must be read with reference to **Figure 4**;

- It is noted that car parking spaces provided within areas labelled A, B and C are to be used by both staff and visitors. Therefore, these car spaces are designed to satisfy the dimensional requirements for the critical user class (i.e. the visitors). The car parking spaces provided within the area labelled E will be allocated exclusively for staff.
- The proposed car parking area labelled **A**, provides a total of 7 x 90-degree, car parking spaces (excluding the two accessible car spaces). The visitor car spaces (i.e. the critical user class) are categorised as user class 3 (short term parking at hospitals and medical centres) under AS 2890.1:2004. These car spaces are required to be designed at 2.6m width by 5.4m length, with an aisle width of 5.8m behind the car spaces. All proposed car spaces, within this area, comply with the above identified dimensional requirements.
- The proposed car parking area labelled **B**, provides a total of 29 x 60-degree car parking spaces. The visitor car spaces (i.e. the critical user class) are categorised as user class 3 (short term parking at hospitals and medical centres) under AS 2890.1:2004. These car spaces are required to be designed to satisfy dimensions A (=2.6m), B (=3m), C₂ (5.1m) and aisle width (4.3m) as outlined in **Figure 5**. The proposed design satisfies all of the above identified minimum dimensional requirements. Note that these car spaces include an overhang at the end of the space – accordingly, provision has been

made for a 600mm length of unobstructed area immediate at the front of each car space.

- The proposed car parking area labelled **C**, provides a total of 4 x 90-degree, car parking spaces. The visitor car spaces (i.e. the critical user class) are categorised as user class 3 (short term parking at hospitals and medical centres) under AS 2890.1:2004. These car spaces are required to be designed at 2.6m width by 5.4m length, with an aisle width of 5.8m behind the car spaces. All proposed car spaces, within this area, comply with the above identified dimensional requirements.
- The proposed car parking area labelled **E**, provides a total of 7 x 90-degree, car parking spaces (excluding the accessible car space). The staff car spaces are categorised as user class 1A (employee parking) under AS 2890.1:2004. These car spaces are required to be designed at 2.4m width by 5.4m length, with an aisle width of 5.8m behind the car spaces. All proposed car spaces, within this area, comply with the above dimensional requirements.

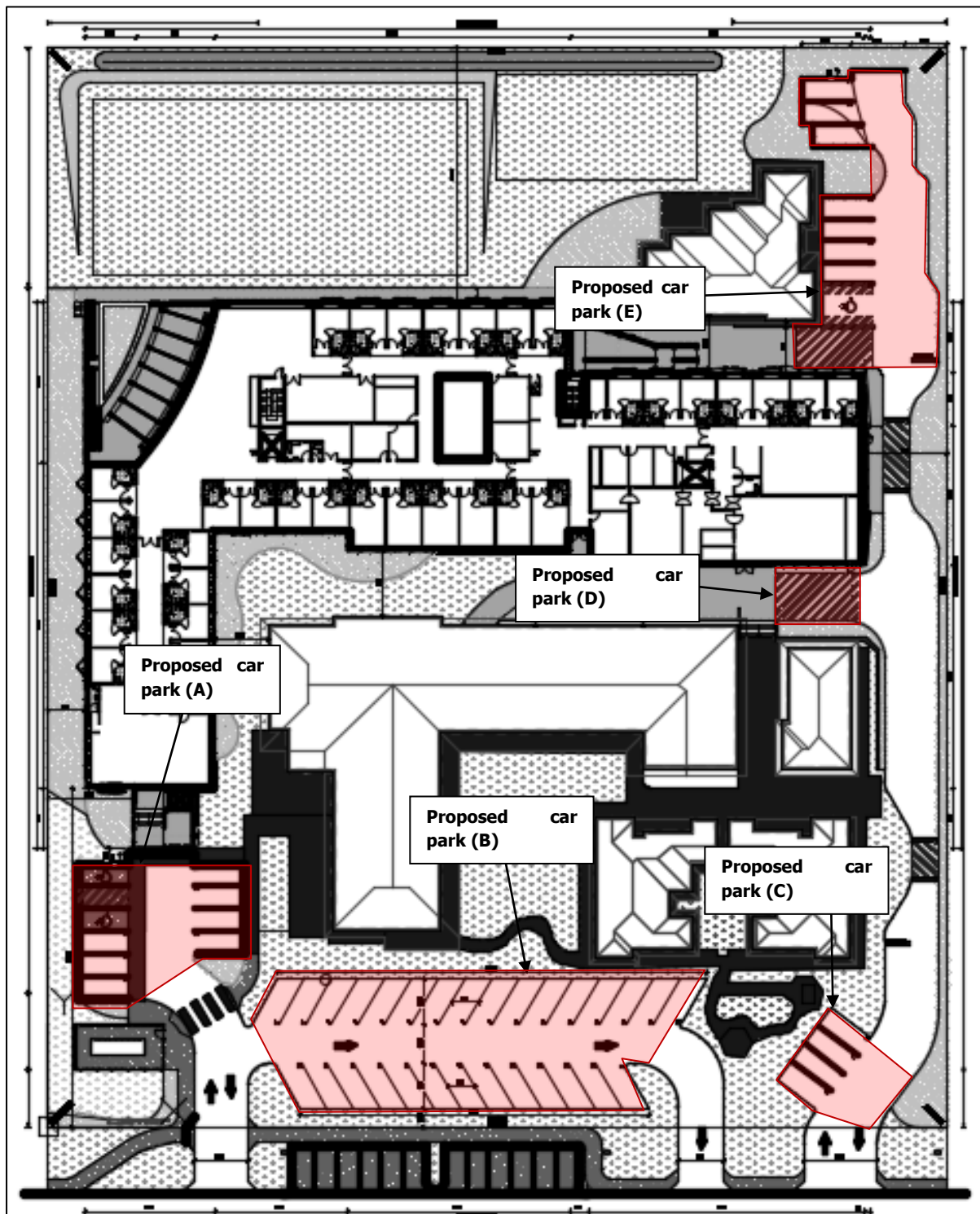


Figure 4: Existing and Proposed Car Parking Areas

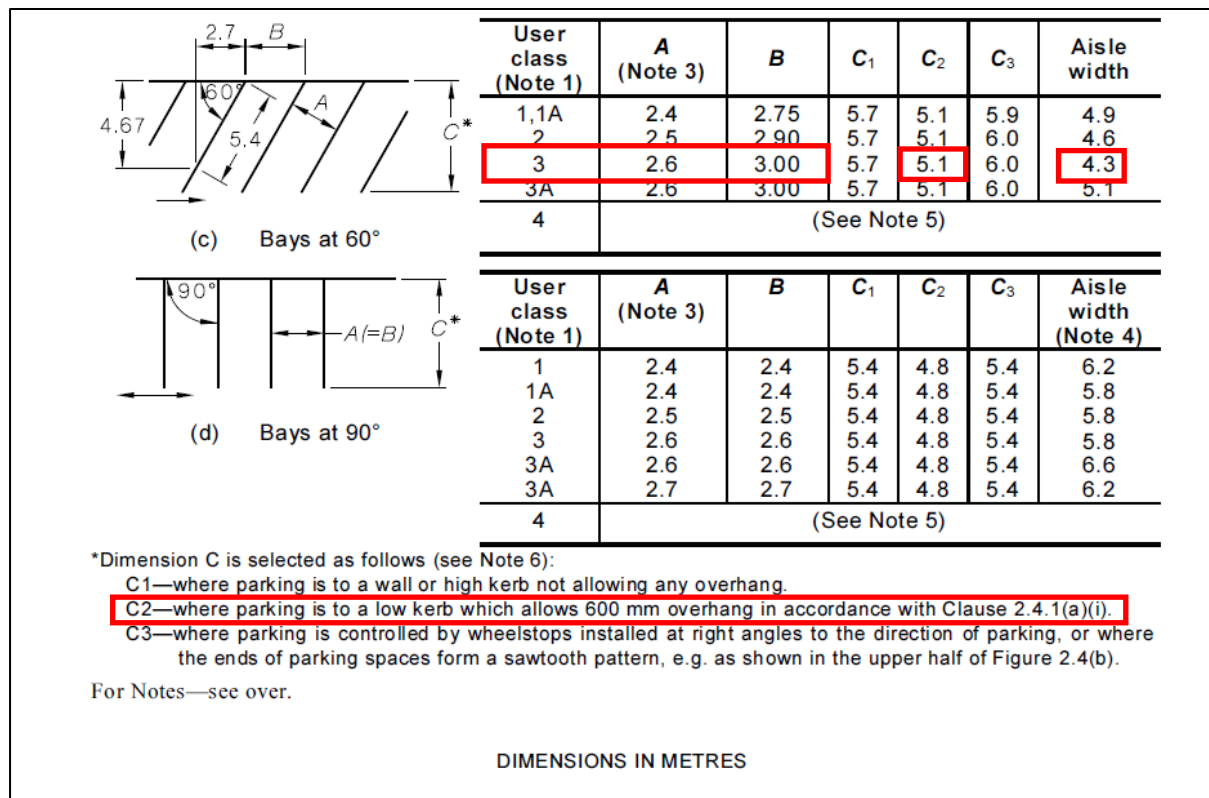


Figure 5: Dimensional Requirements for 60-Degree Parking Spaces (AS 2890.1)

4.2 Disability Accessible Car Spaces

The subject proposal includes provision for 3 disability accessible spaces (2 located within the area labelled **A** and 1 located within the area labelled **E**, in **Figure 4**). According to AS 2890.6:2009, disability accessible parking spaces shall be designed with minimum dimensions of 2.4m width and 5.4m length and an aisle width of 5.8m. Each accessible car space shall be accompanied by a shared space, located adjacent to it, possessing equal dimensions. All 3 proposed disability accessible car spaces have been designed to satisfy the above requirements.

4.3 Additional Lateral Clearances

When car spaces are located adjacent to a blind aisle (end of 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 car space 5/6 within the area labelled **A** and car space 50 within the area labelled **E** in **Figure 4**

are located at the end of the aisle. Accordingly, the aisles have been extended by 1m at these locations.

4.4 Gradients within Parking Modules

AS 2890.1 stipulates that parking modules, at maximum, should have a maximum grade of 1 in 16 (measured in any direction other than parallel to the angle of parking) and 1 in 20 (measured parallel to the angle of parking). The proposed parking modules do not include any grades beyond 1 in 20 and are therefore compliant with the above requirement. In addition, AS 2890.6 stipulates that the disability accessible car parking spaces and the shared areas shall not exceed the grade of 1:40 in any direction. The proposed disability accessible car parking spaces are at grade with no gradients.

4.5 Two Way Driveway Width

AS 2890.1 requires combined two-way access driveways to be 5.5m wide (minimum). All two-way driveway sections within the proposed car parking area are designed to satisfy the minimum width requirement of 5.5m.

4.6 Ambulance Parking

The subject proposal includes an ambulance bay within the car parking area **E** (as outlined in **Figure 4**). It is noted that the typical ambulance is categorised as a small rigid vehicle (SRV). Based on AS 2890.2, an SRV will require a service bay of 3.5m width and 6.4m length. The ambulance service bay within the proposed car parking area **E** is designed at 4.6m width and 8.4m length, which conveniently satisfies the above identified dimensions.

4.7 Delivery Vehicle Parking

The proposed development is expected to receive deliveries through 8.8m Medium Rigid Vehicles (MRVs). Based on AS 2890.2, an MRV will require a service bay of 3.5m width and 8.8m length. The proposed delivery bay within the car parking area **D** (as per **Figure 4**) is designed at 5m width and 9m length, which conveniently satisfies the above identified dimensions.

4.8 Swept Path Assessment

Swept path tests have been undertaken (using AutoTURN software - the industry standard vehicle swept path assessment software) for the anticipated critical movements within the proposed car parking areas. The following sub-sections illustrate the results of swept path tests for various scenarios.

4.8.1 Ambulance Access

A swept path assessment has been undertaken for a typical ambulance, in order to investigate the manoeuvrability conditions of this vehicle within car parking area **E**. The following figure illustrates the template of the ambulance used in the swept path simulation (note that this ambulance template includes dimensions slightly larger than a typical SRV as specified in AS 2890.2, therefore the swept path test results are deemed conservative).

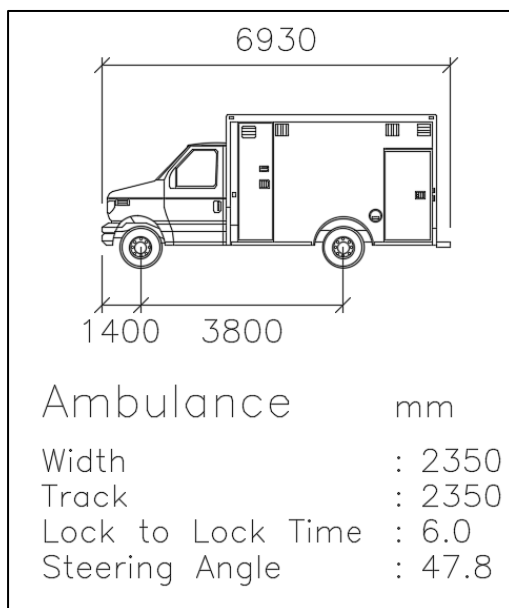


Figure 6: Template of the Ambulance Used to Simulate Swept Path

The following figure indicates the swept path results obtained for the anticipated movements of the ambulance, within the proposed car parking area. 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 Red colour of the swept paths indicate the vehicle body envelop.

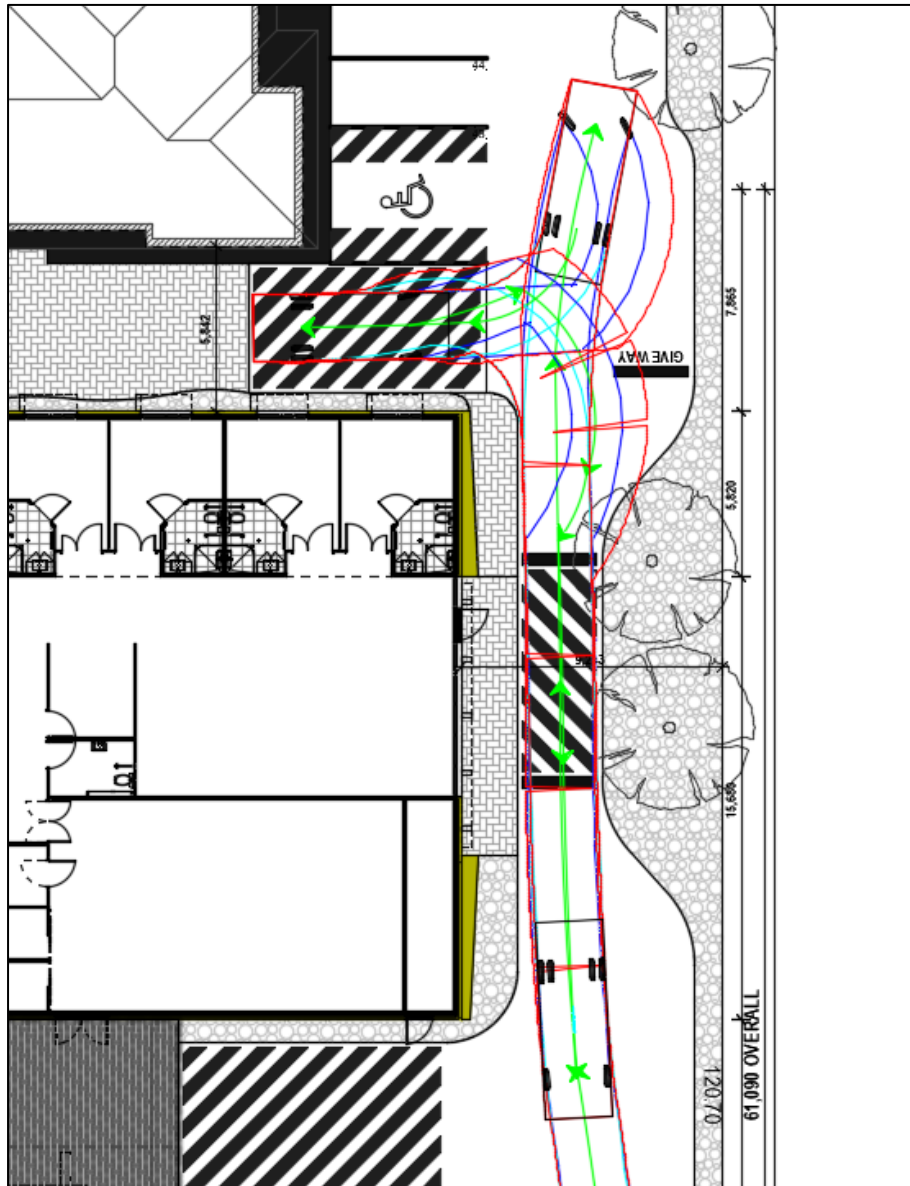


Figure 7: Swept Path for an Ambulance within the Proposed Car Park

As can be seen from the above figure, a typical ambulance can sufficiently manoeuvre inside car parking area **E** (the vehicle tyre tracks always remain within paved areas), within the proposed design constraints. This vehicle can enter the site in forward motion and reverse into the ambulance bay and exit forward onto Valencia Road along the driveway.

4.8.2 Medium Rigid Vehicle Access

A swept path assessment has been undertaken for an MRV, in order to investigate the manoeuvrability conditions of this vehicle within car parking area **D**. The following figures illustrate the template of the MRV used to simulate the swept path (it is noted that this vehicle template is developed according to the dimensions specified in AS 2890.2).

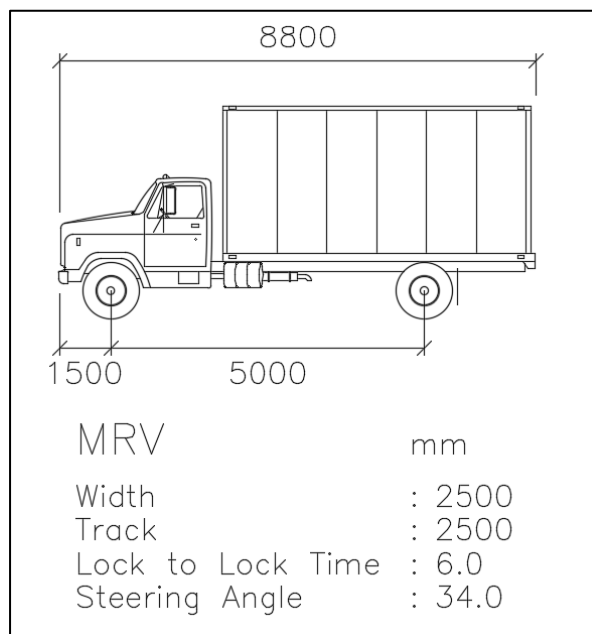


Figure 8: Template of the MRV Used to Simulate Swept Path

The following figure indicates the swept path results obtained for the anticipated movements of the MRV, within the proposed car parking area **D**. 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 Red colour of the swept paths indicate the vehicle body envelop.

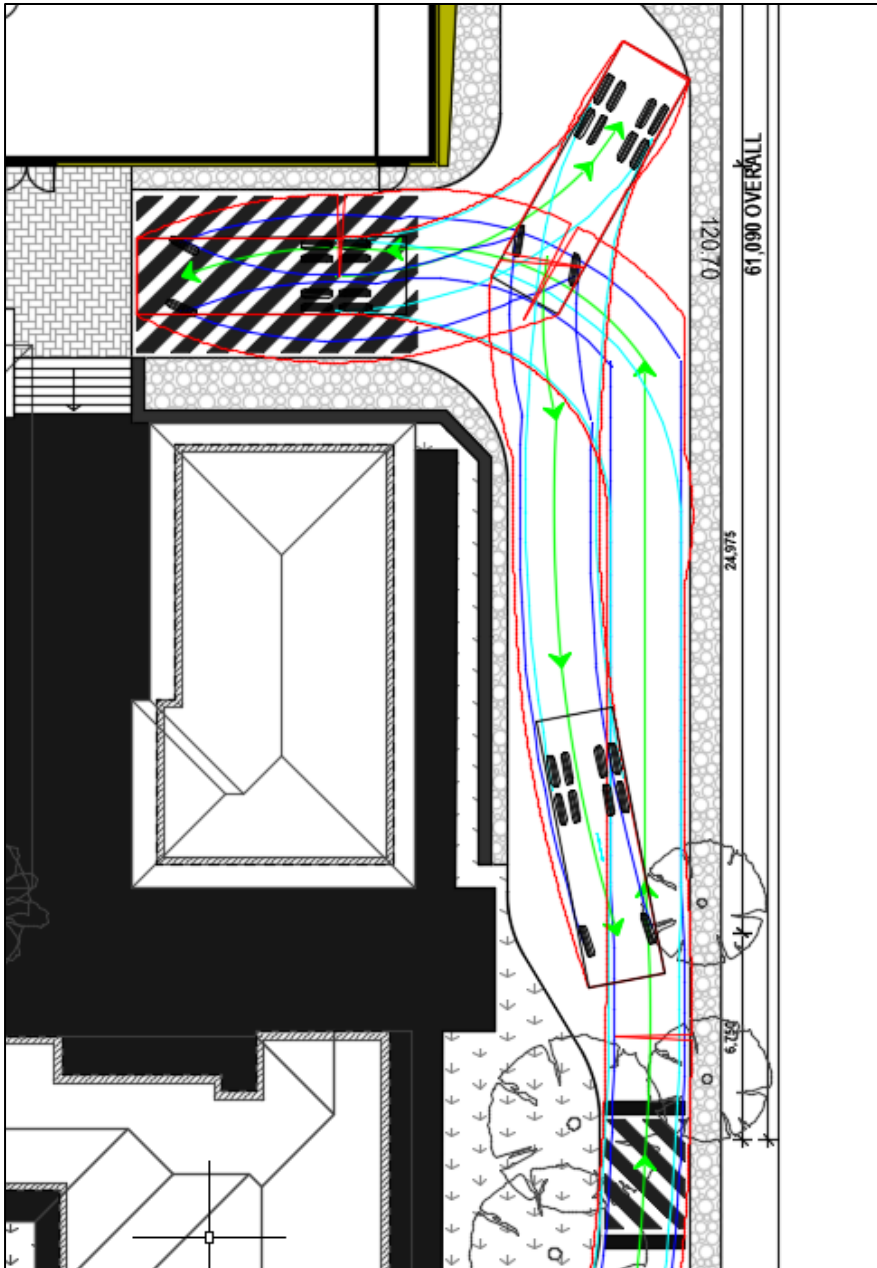


Figure 9: Swept Path for an MRV within the Proposed Car Park

As can be seen from the above figure, the 8.8m MRV can sufficiently manoeuvre inside the car parking area **D** (the vehicle tyre tracks always remain within paved areas), within the proposed design constraints. This vehicle can enter the site in forward motion and reverse into the loading bay and exit forward onto Valencia Road.

4.9 Simultaneous Vehicle Movements

The long driveway along the south eastern boundary of the site includes two locations where the two-way driveway width reduced to a one-way driveway width, thus requiring the drivers entering the site to give way to the drivers exiting the site. These locations are to be appropriately line marked and sign posted as per the site plans.

The aged care centre management should time the delivery/waste collection vehicles (MRVs) so that they do not interfere with each other (i.e. no more than one delivery truck to be accommodated within the site at any one time). Furthermore, in order to minimise the potential conflicting movements, the delivery/waste collection vehicle schedule should actively avoid the start and end times of staff shifts (when the staff vehicles are likely to use the driveway).

4.10 Night Time Amenity

In order to retain the amenity for the neighbours, the aged care centre management should inform all staff not to utilise the car spaces located within car parking area **E** (as outlined in **Figure 4**) during the night time (generally after 8pm). This information should be provided to staff verbally as well as through sign postings within the parking area.

The following table illustrates the records of ambulance visits to the Valencia aged care centre between August 2018 to January 2019. As can be seen, the average number of returns to the aged care centre by ambulance is approx. 6 per month. Therefore, such infrequent ambulance movements are unlikely to impact on the amenity of the neighbours. The drivers of the ambulance vehicles using the bay within car parking area **E** must be made aware not to use the ambulance sirens after 8pm, in order to retain the neighbourhood amenity.

Table 2: Ambulance Visits to Valencia Nursing Home

AMBULANCE VISITS TO VALENCIA NURSING HOME AUG 2018 - JAN 2019			
Date	Pick up by Ambulance	Return by Ambulance	Remarks
6-Aug-18	1	0	
8-Aug-18	1	0	
9-Aug-18	2	1	One Way
10-Aug-18	0	1	
11-Aug-18	0	1	
15-Aug-18	3	3	
20-Aug-18	1	0	
21-Aug-18	1	2	
25-Aug-18	1	1	
6-Sep-18	1	1	
8-Sep-18	1	1	
12-Sep-18	1	0	
13-Sep-18	0	1	
14-Sep-18	1	1	
19-Sep-18	1	0	
21-Sep-18	0	1	
24-Sep-18	1	0	
26-Sep-18	1	1	
28-Sep-18	0	1	
16-Oct-18	1	0	One Way
17-Oct-18	2	1	
23-Oct-18	2	2	
24-Oct-18	1	2	
25-Oct-18	1	0	
26-Oct-18	1	1	
29-Oct-18	1	1	
1-Nov-18	0	1	
8-Nov-18	1	1	
15-Nov-18	1	0	
17-Nov-18	1	1	
22-Nov-18	1	1	
27-Nov-18	0	1	
2-Dec-18	1	0	
4-Dec-18	0	1	
5-Dec-18	1	0	
8-Dec-18	1	0	
9-Dec-18	1	1	
10-Dec-18	0	1	
15-Dec-18	1	0	
19-Dec-18	0	1	
22-Dec-18	2	1	
26-Dec-18	1	0	
27-Dec-18	0	1	
3-Jan-19	0	1	
14-Jan-19	0	1	
16-Jan-19	1	1	
Total	39	37	
Avg/ Month	7	6	

5. Traffic Impact Assessment

A traffic impact assessment was undertaken to determine in potential impacts caused by the proposed development upon the local road network. In estimating the anticipated number of daily and peak hour trips, the trip rates stipulated in the *RMS Guide to Traffic Generating Developments (2002)* have been used. In relation to 'Housing for aged and disabled persons', this document stipulates the following daily and peak hour trips rates;

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

Adopting the higher end values of the trip rates stipulated above, for conservative estimation, the existing development (with 66 beds/dwellings) is estimated to generate 132 daily trips and 14 peak hour trips. Using the same rates, the proposed 54 bed (dwelling) net expansion of the existing nursing home will generate some 108 daily trips and 11 peak hour trips. This indicates a traffic generation potential of 240 daily trips and 25 peak hour trips for the entire development (existing + proposed). Note that most of these trips are likely to be realised by cars or other light passenger vehicles, with the exception of one or two trucks which service the site.

The above established additional daily and peak hour trips for the proposal can be considered as a good conservative estimate. In any case, the derived peak hour traffic generation level for the proposed component of the entire site is considered to be low. The estimated 11 peak hour trips will likely include a split of 50% in and 50% out trips (i.e. some 6 trips entering the site and 6 trips existing the site, in the peak hour period). These trips will generally be spread out across the hour (i.e. no bunched arrivals or departures are expected).

All these trips will be realised at the midblock of Valencia Road. It is noted that Valencia Road is a local road, which predominantly caters for the low-density residential dwellings located on either side. Therefore, the existing levels of through



traffic on Valencia Road is expected to be well below its capacity. As a result, the predicted peak hour traffic generated from the proposal is unlikely to eventuate into any adverse impacts on existing traffic conditions within the site vicinity.

6. Conclusions

APEX Engineers were engaged by Mr. Dinu Ekanayake to provide a traffic impact assessment as a part of the development application for the proposed Valencia Aged Care development at 24 Valencia Road in Carmel WA.

The subject proposal seeks to expand the operations of the existing nursing home located at 24 Valencia Road in Carmel. It is understood that the existing nursing home currently includes a total of 66 beds and 14 staff members. The proposed development seeks to construct a new building within the land located at the rear of the existing nursing home. The proposed development seeks to construct a new building within the land located at the rear of the existing nursing home. The proposed building will include 80 new beds with 16 new staff members. However, once the new facility is built and operational (80 beds), the existing facility will be modified such that it will only have 40 beds, fulfilling the obligations to only operate 120 beds under the approved Licence.

A parking provision assessment was undertaken for the subject proposal, using the parking rates prescribed in Table 3 of Shire of Kalamunda Local Planning Scheme No. 3, for 'Aged Residential Care' developments. Accordingly, a statutory parking provision requirement of 42 car spaces was established for the overall site (existing + proposed components). The proposed development includes provision of 50 on-site car parking spaces (including three disability accessible car spaces), thus conveniently satisfying the Council DCP parking provision requirement.

The proposed car park design was assessed with reference to the AS 2890.1:2004 and AS 2890.6:2009. It was found that the overall design was in compliance with the relevant design standards. The swept path assessments undertaken confirmed that all anticipated movements by an ambulance and a medium rigid truck, can be accommodated within the proposed design constraints.

The daily and peak hour trip generations for the proposed development were determined from the trip rates stipulated in the Guide to Traffic Generating Developments (RMS, 2002) in relation to 'Housing for aged and disabled persons'. Adopting the higher end values of the trip rates offered within this guide, the proposed 54 bed net expansion of the existing nursing home will generate some 108 additional daily trips and 11 additional peak hour trips. The established net additional peak hour traffic generation level for the proposed site is considered to be low, since the 11 peak hour trips will likely include a split of 50% in and 50% out trips (i.e. some 6 trips entering the site and 6 trips exiting the site, in the peak hour period). These trips will generally be spread out across the hour (i.e. no bunched arrivals or departures are expected). All these trips will be realised at the midblock of Valencia Road. It is noted that Valencia Road is a local road, which predominantly caters for the low-density residential dwellings located on either side. Therefore, the existing levels of through traffic on Valencia Road is expected to be well below its capacity. As a result, the predicted peak hour traffic generated from the proposal is unlikely to eventuate into any adverse impacts on existing traffic conditions within the site vicinity.

In light of the above, the proposed development is expected to accommodate its own parking demand and will impose generally negligible traffic impacts to the local road network.

Appendix A: WAPC Transport Impact Statement Guidelines

ITEM	PROVIDED	COMMENTS/PROPOSALS
Proposed development		
existing land uses	Yes	
proposed land use	Yes	
context with surrounds	Yes	
Vehicular access and parking		
access arrangements	Yes	
public, private, disabled parking set down/pick up	Yes	
Service vehicles (non-residential)		
access arrangements	Yes	
on/off-site loading facilities	Yes	
Service vehicles (residential)		
rubbish collection and emergency vehicle access	Yes	
Hours of operation (non-residential only)	Yes	
Traffic volumes		
daily or peak traffic volumes	Yes	
type of vehicles (for example, cars, trucks)	Yes	
Traffic management on frontage streets	N/A	
Public transport access		
nearest bus/train routes	N/A	
nearest bus stops/train stations	N/A	
pedestrian/cycle links to bus stops/ train station	N/A	



APEX ENGINEERS

ITEM	PROVIDED	COMMENTS/PROPOSALS
Pedestrian access/facilities		
existing pedestrian facilities within the development (if any)	N/A	
proposed pedestrian facilities within development	N/A	
existing pedestrian facilities on surrounding roads	N/A	
proposals to improve pedestrian access	N/A	
Cycle access/facilities		
existing cycle facilities within the development (if any)	N/A	
proposed cycle facilities within development	N/A	
existing cycle facilities on surrounding roads	N/A	
proposals to improve cycle access		
Site specific issues		
Safety issues		
identify issues	N/A	
remedial measures	N/A	

Proponent's name Mr. Dinu Ekanayake
Company Roshana Group of Companies **Date** 31/01/2019
Transport assessor's name Mr. Supun (Sam) Perera
Company APEX Engineers **Date** 31/01/2019