

Appendix C
Traffic Impact Assessment Report

**Traffic Impact Assessment
495 Coolac Road, Coolac
Proposed Service Centre
For: Allspec and Partners
Date: 25th July 2017**



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Version No.	Author	Reviewed by:	Date:
Preliminary Draft	A.M.	G.C	14.07.17
2	A.M.	Client	24.07.17
3	A.M.	Client	25.07.17
4			

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Definitions

DA:	Development Application
Proposal:	Construction of a service centre comprising of a convenience store and 3 food outlets
RMS:	Road and Maritime Services
LEP:	Gundagai Council LEPP 2011
AS2890.1:	Australian Standard for Off-Street Parking Facilities AS2890.1-2004
AS2890.2:	Australian Standard for Off-Street Commercial Vehicle Facilities AS2890.2-2002
AS2890.6:	Australian Standard for Parking Facilities Part 6: Off-Street Parking for People with Disabilities
NHVR:	National Heavy Vehicle Regulator

1. Introduction

Caldwell & Kent Consulting (CKC) have been engaged by Allspec and Partners to assist with the Development Application process for the proposed Service Centre at 495 Coolac Road, Coolac which is part of the Gundagai Council LGA. The proposed development will include the construction of a service centre consisting of a convenience store and 3 food outlets- with associated parking provided on-site suitable to accommodate both private cars and heavy vehicles including B-double (25m long vehicle).



Figure 1-Site Location (Source Google Maps)

The purpose of this report is to present the traffic and parking assessment associated with the proposed service centre, and to determine the implications of the projected change in traffic activity on the surrounding road network.

The report is structured as follows:

- Section 2: Site Description
- Section 3: Overview of Existing Traffic Conditions
- Section 4: Description of the Proposed Development
- Section 5: Traffic Impact Assessment
- Section 6: Parking Provision
- Section 7: Access Arrangements
- Section 8: Conclusions and Recommendations
- Section 9: Attachments

The following documents were referenced for the preparation of this report:

- Gundagai Local Environmental Plan 2011 (LEP 2011);
- The Road and Maritime Services Guide to Traffic Generating Development;
- Guide to Traffic Management – Part 4a: Unsignalised and Signalised Intersections;
- Australian Standard for Parking Facilities Part 1: Off-Street Car Parking (AS2890.1-2004);
- Australian Standard for Parking Facilities Part 3: Off-Street Bicycle Parking Facilities (AS2890.3 - 1993)
- Australian Standard for Parking Facilities Part 6: Off-Street Parking for People with Disabilities (AS2890.6-2009);
- Traffic Engineering Handbook: Institute of Transportation Engineers, Seventh Edition

2. Site Description

The subject site is located within the Cootamundra – Gundagai Regional Council LGA (formerly known as Gundagai Council) and is zoned as “RU1- primary production”.

Coolac is part of Riverina region of NSW and in accordance with the 2011 Census data, it has a population of approximately 365 people. It is located at approximately 17 kilometres north of Gundagai which is a major town centre in the Riverina region.

The subject site occupies Lot 100 DP1065752 and is located on the north-eastern corner of Muttama Road and Coolac Road occupying an area of approximately 9.6 ha. The site is currently occupied by a Greenfield site. The site is bounded by a rural property to the north, Hume Highway to the east, Muttama Road to the south and Coolac Road to the west.

The site is located within a predominantly rural area which includes a nearby motel which is located directly opposite the site. The following image shows the location and size of the Site area:



Figure 2-Site Location (Source Google Earth)

A site visit was undertaken on Tuesday the 6th June 2017 to meet the design team, Council representatives and RMS. In addition we were able to observe the operation of the existing road network and the site photographs are presented below.



Figure 3-Existing Site – viewed from Muttama Road



Figure 4-Intersection of Coolac Road and Muttama Road

2.1. Road Classification Map

The following map shows the hierarchy of the surrounding road network as classified by Road and Maritime Services (RMS). The site is easily accessible via the interchange that connects Hume Highway with Muttama Road which then leads to the Coolac Road intersection.

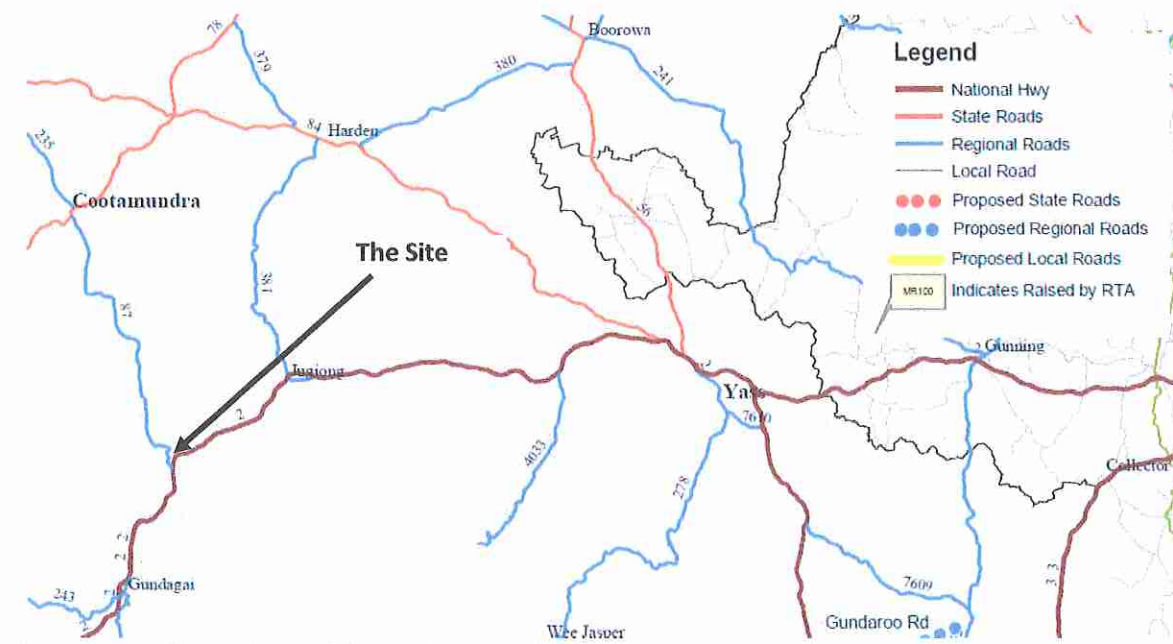


Figure 5-Surrounding Road Network (Source Six Maps Website)

3. Overview of the Existing Traffic Conditions

3.1. Description of Road Environment

Hume Highway is a major interstate highway which connects southern NSW with Victoria. It follows a north-south alignment, and operates as a major transport route for both tourist and commercial vehicles between Sydney and Melbourne. Within the vicinity of Coolac, the highway is divided and is comprised of two traffic lane in each direction.

Muttama Road is classified as a regional road and follows an east-west alignment. The carriageway is undivided and comprises one traffic lane in each direction. It has a posted speed limit of 60kph with no on-street parking permitted within the vicinity of the site. The intersection of Muttama Road and the Hume Highway operates as a diamond interchange with motorist along Muttama Road having priority over the vehicles exiting the Highway from the ramp system.

The Muttama Road/Hume Highway Interchange was opened in 2009 and is therefore expected to comply with all modern road standards for heavy vehicles - including the ability to accommodate B-doubles within the ramp system.

Coolac Road is classified as a local road and follows a north – south alignment. The carriageway is undivided and comprises one traffic lane in each direction. The intersection of Coolac Road with Muttama Road operates as an “offset T-intersection” with motorist travelling along Muttama Road having priority over the vehicle on Coolac Road.

3.2 National Heavy Vehicle Regulator (NHRV)

A review of the NHRV website suggests that the Muttama Interchange is designated as a B-Double route allowing movements along Muttama Road. Therefore we can assume that this road has been assessed by the relevant authorities as being suitable for B-Double vehicles.

Coolac Road is not included in the NHRV register as suitable for B-double vehicles; and therefore we anticipate that approval to use this road for B-doubles would require a separate application.

3.3 Existing Traffic Counts

Roads and Maritime Services (RMS) collects traffic volume information across more than 600 permanent roadside collection device stations which includes vehicle speed and vehicle classification data. This information is publicly available on the RMS website.

A section of Hume Highway located to the north of the Muttama interchange includes a permanent count station(classifier) and the average daily traffic flow are summarised in the table below. Hourly vehicle movements have been shown graphically on the following page.

Table 1- vehicle flow data

Station Id	Location		Direction	Year	Traffic Flow (veh/day)		
					Light Vehicle	Heavy Vehicle	Total
6139	Hume Highway	North of Muttama Road interchange	Northbound	2015	2977	1572	4549
6136	Hume Highway	North of Muttama Road interchange	Southbound	2015	2644	1567	4211
6139	Hume Highway	North of Muttama Road interchange	Northbound	2016	3052	1603	4655
6136	Hume Highway	North of Muttama Road interchange	Southbound	2016	2895	1623	4518
6139	Hume Highway	North of Muttama Road interchange	Northbound	2017	3333	1673	5006
6136	Hume Highway	North of Muttama Road interchange	Southbound	2017	3247	1665	4912

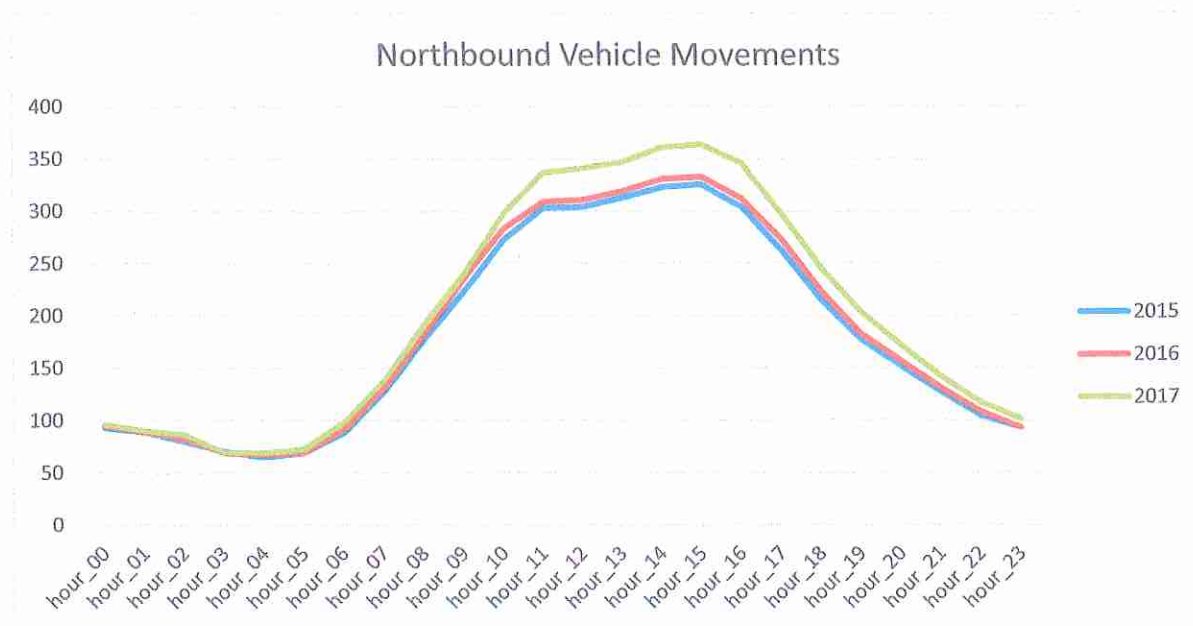


Figure 6-Northbound Hume Highway Vehicle Movements

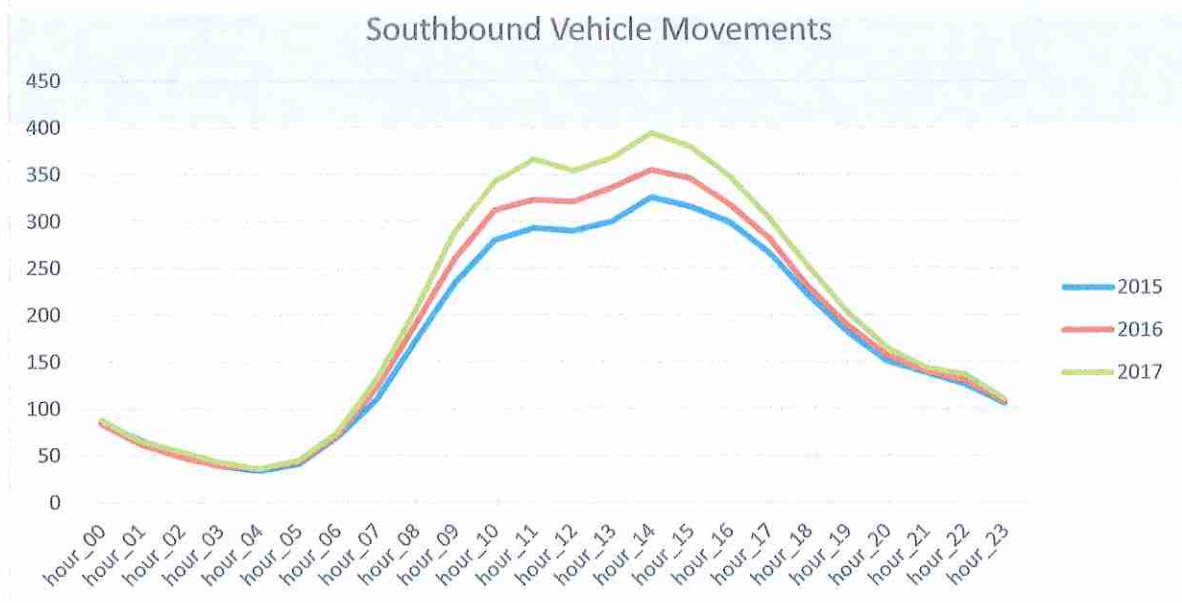


Figure 7-Southbound Hume Highway vehicle Movements

4. Description of the Proposed Development

The development proposal involves the construction of a service centre and will include the following elements:

- Convenience Store – with one service counter.
- Storage room
- Toilets (M & F)
- Office space for manager
- Additional Storage
- Petrol Pumps x 4 for light vehicle
- Petrol Pumps x 4 for heavy vehicle
- Restaurant accommodating 244 seats comprising 72 outdoor and 172 indoor seats
- Restaurant customer toilets (M & F)
- Disabled toilets for both the convenience store and restaurant visitors
- On-site parking for both trucks and light vehicles

The total building area for the service centre including the restaurant use will be approximately 1,258sqm. In addition to the above the proposal will include the following community facilities:

- Children playground;
- Outdoor picnic area ; and
- A dog park

As part of the proposal two one-way driveways will be introduced on Coolac Road frontage. Truck parking will be provided along the eastern boundary of the site (i.e. to the rear of the proposed convenience store) whereas the light motor parking including caravans will be provided to the west of the proposed convenience store.

Architectural plans associated with the proposal have been prepared by Allspec Partners, and the plans indicating the proposed site and parking arrangement are presented as **Attachment A**. The following image provides an overview of the proposal.

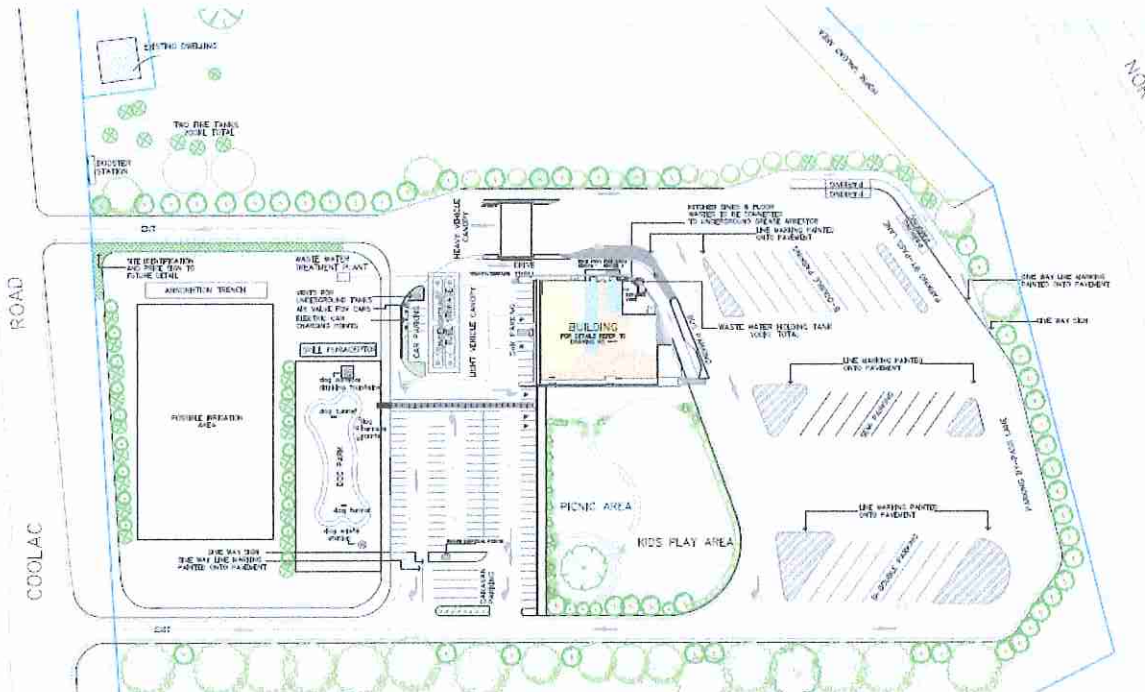


Figure 8- Proposed Service Centre Plan

5. Traffic Impact Assessment

5.1. Trip Generation

The traffic activity associated with the proposal has been calculated with reference to the 'RMS Guide to Traffic Generation Developments' (the Guide). The proposal involves the construction of a service centre to accommodate a service station with a convenience store occupying an area of approx 330sqm and 3 food outlets having a capacity of 244 seats.

In relation to a service station, Section 3.6.2 of the RMS Guide specifies the following traffic generation rates:

Section 3.6.2 - Service stations and convenience stores.

Rates. Evening peak hour vehicle trips = $0.04 A(S) + 0.3 A(F)$.

or

Evening peak hour vehicle trips = $0.66 A(F)$ Average vehicle trips (9 pm-12 midnight) = $0.6 A(F)$.

where.

$A(S)$ = area of site (m²). $A(F)$ = gross floor area of convenience store (m²). Factors.

The Guide includes the following for reference:

"Daily trip generation rates depend on the site's operating hours. For example, at one convenience store surveyed over 24 hours, the total daily trip generation was 19 times the evening peak hour generation. For trips associated with fuel sales, the total daily trip generation was 17 times the evening peak hour generation.

The proportion of fuel trips to store trips can vary substantially depending upon the location of the service station and the time of day. Convenience stores surveyed in 1990, indicated that the average percentage of total trips between 3.00 and 6.00 pm for fuel, was 46% (whether goods were purchased as well or not). Between 9.00 pm and 12.00 am the equivalent figure was 29%."

The proposal involves retaining a major proportion of the site as a Greenfield area therefore, it is considered appropriate to determine the traffic activity with reference to the convenience store area. The proposed convenience store will occupy an area of 330sqm and application of the above traffic generation rates would result in 217.8 (say 218) vehicle trips/hour during evening peak hour.

In relation to the proposed restaurant use Section 3.7.1 of the RMS Guide identifies the proposed restaurant use as a 'Drive-in take away food outlet' and references the following two major restaurants:

- McDonalds; and
- Kentucky Fried Chicken(KFC).

Based on the traffic flow surveys conducted by RMS the above restaurants experience the following evening peak hour traffic generation:

McDonalds Restaurant – 180 veh/hr (average development);

KFC – 100 veh/hr (average development)

At this stage the tenancy details are not finalised and there is no information available about the potential occupier of the proposed restaurant facility. If we adopt a conservative approach and assume the proposed restaurant will be occupied by McDonalds Restaurant – then during evening peak hour it has a potential to generate a 180 vehicle trips per hour.

In conclusion, based on the traffic generation rates presented by RMS, during evening peak period the site has a potential to generate approximately 408 vehicle trips comprising the following:

Service Station – 218 veh/hr; and

Restaurant Use – 180 veh/hr.

Given the proposed facility will be predominantly used by the motorists (including commercial trucks travelling along Hume Highway), it is important to consider the existing traffic flows along the Highway. A review of the hourly traffic flows along the RMS count station (classifier), located on a section of Hume Highway to the north of the Muttama interchange, indicates the following peak hour flows:

- Northbound traffic flows – 364 veh/hr; and
- Southbound traffic flows – 394 veh/hr

RMS guide recommends the proposed facility has a potential to generate 408 vehicle trips per hour which represent approximately 54% of the peak hourly flow along the Hume Highway. Given the fact there are service stations, including restaurants, located further north and south of the Muttama interchange - it is highly unlikely to expect that 1 in every 2 vehicles travelling on the Highway will use the proposed facility. Therefore we consider the potential traffic activity based on the RMS guide to be unrealistically high.

If we consider that 10% - 15% of motorists (i.e. during peak hourly flow) travelling along the Highway will use the proposed facility (which may be higher than anticipated); we can expect an evening peak hour traffic generation of 114 vehicle per hour. This will consist of 57 inbound trips and 57 outbound trips – representing one vehicle movement every minute or so.

5.2. Impact Assessment

The development is proposed on a site which is located within the close proximity of the Muttama Interchange. Muttama Road is classified as a Regional Road and in accordance with RMS NSW Road Classification Review (published in 2004) has a capacity to carry up to 1,000 vehicles per hour. Furthermore, this interchange was completed in 2009 and therefore, we can assume it will have sufficient capacity to cater for this marginal increase.

The highway carries a peak hour traffic flow of 394 vehicle per hour (in the southbound direction), if we assume these vehicles arrive in a continuous manner then the traffic flow indicates that this will create a headway (i.e. distance between the back of the car to the front of the subsequent car) of 9 seconds or so. This headway is considered adequate for the traffic exiting the site to merge on Highway.

In conclusion, the proposal is likely to generate a maximum of 114 vehicle trips an hour comprising of 57 inbound and 57 outbound trips – representing a vehicle trip every minute or so. This increase is highly unlikely to have any negative impact on the operation of the surrounding road network including the Muttama Interchange.

6. Parking Provision

6.1. Planning Requirements

Typically, the on-site parking provision is established with reference to the local planning controls. Given, the site is located within Gundagai Council's LGA, we referred to Gundagai Local Environmental Plan 2011 (LEP 2011) to establish on-site parking requirements. The LEP does not include any information in relation to the parking requirements for neither a service station nor a restaurant. In absence of local controls, the Standard practice is to determine the on-site parking provision with reference to RMS Guide to traffic generating development.

In relation to the on-site parking requirement for a service station, Section 5.7.2 specifies the following parking provision rates:

Five (5) spaces per 100sqm GFA of Convenience store

The proposed service station will accommodate a convenience store occupying an area of 330sqm and application of the above parking provision rates would result in an on-site parking provision of 16.5 (say 17) car spaces

Restaurant Use

Section 5.8.1 of the Guide specifies the following on-site parking requirements for Drive-in take away food outlets:

- 1 space per 2 seats (internal) or
- 1 space per 3 seats (internal and external)

Application of the above to the proposed restaurant use accommodating 244 seats (comprising 72 outdoor and 172 indoor seats) would result in an on-site parking provision of 82 car spaces.

Thus, in this regard the proposed development would potentially generate an on-site parking demand of 99 car spaces. Please note the above parking demand represents the proposed two uses (i.e. service station and the restaurant use operate independently). As these uses are operating in close proximity, it is likely there will be an overlap across each of these uses, which will reduce the on-site parking demand.

6.2. Proposed Parking Provision

The proposed parking provision is summarised in the table below:

Table 2- Proposed On-Site Parking

Type of parking	Number
Car spaces	In excess 100
Petrol Service bays (not included in calculation)	16
Truck parking spaces	22
Total parking provision (ex. petrol service bays)	126

The proposed on-site provision of 126 spaces, including 22 truck spaces, is compliant with the requirement recommended within the RMS Guide. In this regard, the proposed on-site parking provision is considered suitable to service the proposed development and is unlikely to result in increased on-street parking.

7. Access Arrangements

7.1. Car Parking Arrangement

The proposed car parking arrangement has been assessed according to the requirements listed in AS2890.1 (2004). As part of the proposal, a total of 126 spaces including 22 truck parking spaces will be provided.

Table 1.1 of AS2890.1 provides a classification of the off-street parking facilities based on various land uses, which is essential in determining the associated parking space dimensions. The majority of the development is proposed to be occupied by customers. Therefore, the proposed parking provision has been assessed against the 'Type 3' user class with a 90 degree parking space configuration. In relation to the Type 3 user class, Figure 2.2 of the AS2890.1 specifies the following parking dimensions:

- Space width – 2.6 metres
- Space length – 5.4 metres
- Aisle width – 5.8 metres

The space dimension of the open air car spaces were measured at a minimum of 2.6 metres wide and 5.4 metres long, with an associated apron width exceeding 5.8 metres, thereby meeting the minimum requirements stipulated by AS2890.1.

In this regard, the proposed car parking arrangement has been designed in accordance with the Australian Standard.

7.2. Driveway Arrangement

As part of the proposal, all vehicular access to the site will be provided via two one-way driveways along the Coolac Road frontages. Table 3.1 & Table 3.2 of AS2890.1 specifies the width of the access driveway, which is directly proportional to the on-site parking provision and also the type of frontage road.

Coolac Road is classified as Local Road and the proposed car park will accommodate approximately 126 parking spaces including 22 truck spaces. It is noted that Table 3.1 classifies proposed driveway as 'Category 2', Table 3.2 subsequently recommends the driveway width should be within a range of 6.0-9.0 metres, as a combined entry and exit. *NOTE: Driveways are normally combined, but if separate, both entry and exit widths should be 3.0 m min.*

Additionally Section 6 of the RMS Guide recommends if the service station is used by heavy vehicles, then the entry driveway should be separated from the exit driveway and each driveway should have a minimum width of 8m. The width of the proposed driveways is as follows:

- Coolac Road Northern driveway (entry) – 9m width
- Coolac Road Southern driveway (exit) – 9m width

Using these dimensions, all two driveways are well in excess of the minimum requirements and are therefore considered compliant with the Standard.

Additionally in order to access the driveway configuration we have undertaken Swept Path Analysis utilising the AutoTrack simulation software. The Swept Path Analysis was undertaken utilising the recommended vehicle type and is presented as **Attachment B**. The Swept Path Analysis concluded that the width of the driveway is suitable to service the proposed development.

7.3. Sight Distance

Section 3.2 of AS2890.1 specifies the recommended sight distance associated with the driveway. The sight distance requirement is prescribed in accordance with the posted speed limit along the frontage road.

The proposed development will be accessible via two driveways located along the Coolac Road frontage, which has a posted speed limit of 50kph. In addition the proposed development will be accessible via a driveway located along the Coolac Road frontage which has a posted speed limit of 50kph. During our site visit we observed the vehicles were travelling under the posted speed limit.

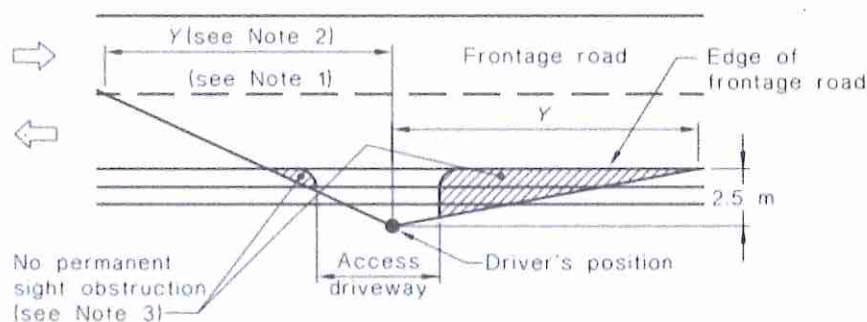


Figure 9- Sight Distance AS2890.1

Section 3.2.4 of the Standard specifies a desirable visibility distance of 69 metres, and a minimum distance of 45 metres for streets having a posted speed limit of 50kph. The lower the speed limit, the lower the sight distance requirements are. In order to provide a robust assessment, the site has been assessed against the higher of the two speed limits state above (i.e. 50kph). The proposed driveway is located on a straight section of Coolac Road; however, we note the existing angle parking located along the site frontage inhibits the visibility and should therefore be removed.

7.4. Traffic Management Treatments

It is noted that at smaller scale service stations, drivers have been known to informal misuse the entry/exit arrangement of service stations (i.e. entering via the exit driveway).

Based on the extended length of the exit driveway and the number of heavy vehicles exiting the site, the misuse of the exit driveway (for someone accidentally entering the site) is not acceptable.

Therefore we would like to consider the installation of a median along the section of Coolac Road to prevent vehicles from turning right into the southern driveway.

Additional signage is also required that easily distinguishes each driveway to arriving motorists including: ENTRY sign and EXIT sign

7.5. Servicing

A private contractor will be engaged for servicing the site. As discussed, earlier the driveway arrangement associated with the proposed service centre is adequate to service a Standard B-double and typically, a refuse collection vehicles are similar to a 12.5m heavy rigid vehicle(HRV) – thus, the proposed driveway will be suitable to be used by a HRV. Additional operational details of refuse collection will be provided at a later stage.

8. Conclusions and Recommendations

- The provision of 126 parking spaces, including 22 truck space, for the proposed development is considered sufficient to manage the project parking demand;
- Based on the information provided, the proposal does not generate any increase in safety risk to pedestrians or drivers as a result of the access and parking configuration;
- The proposed development will not negatively impact the current traffic conditions;
- The existing site configuration is considered adequate allow adequate turning area for a B-Double to enter and exit the Site – 90 degrees to the driveway;
- An assessment of the car park layout, including the circulatory ramp, proposed parking spaces and associated aisle width, indicate the car park layout is compliant with the relevant applicable Standards (AS2890.1-2004, AS2890.2 & AS2890.6).

9. Attachments

A - Architectural Plan indicating Access and Car Park Arrangement

B - Turning Path Assessments:

Swept Path Assessment of B-Double (25m long) ACCESSING THE SITE