



Traffic Engineering Assessment

Proposed Service Station

41 Monbulk Road, Mount Evelyn



February, 2022

G27274R-03A



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1. Introduction

prepare a traffic engineering assessment for a proposed service station development at 41 Monbulk Road, Mount Evelyn.

This report provides our traffic engineering assessment of the parking and traffic issues associated with the proposed development.

2. Existing Conditions

2.1. Site Locality

The subject site is located on the east side of Monbulk Road, approximately 200m south of Clegg Road in Mount Evelyn, as shown in Figure 1 below.

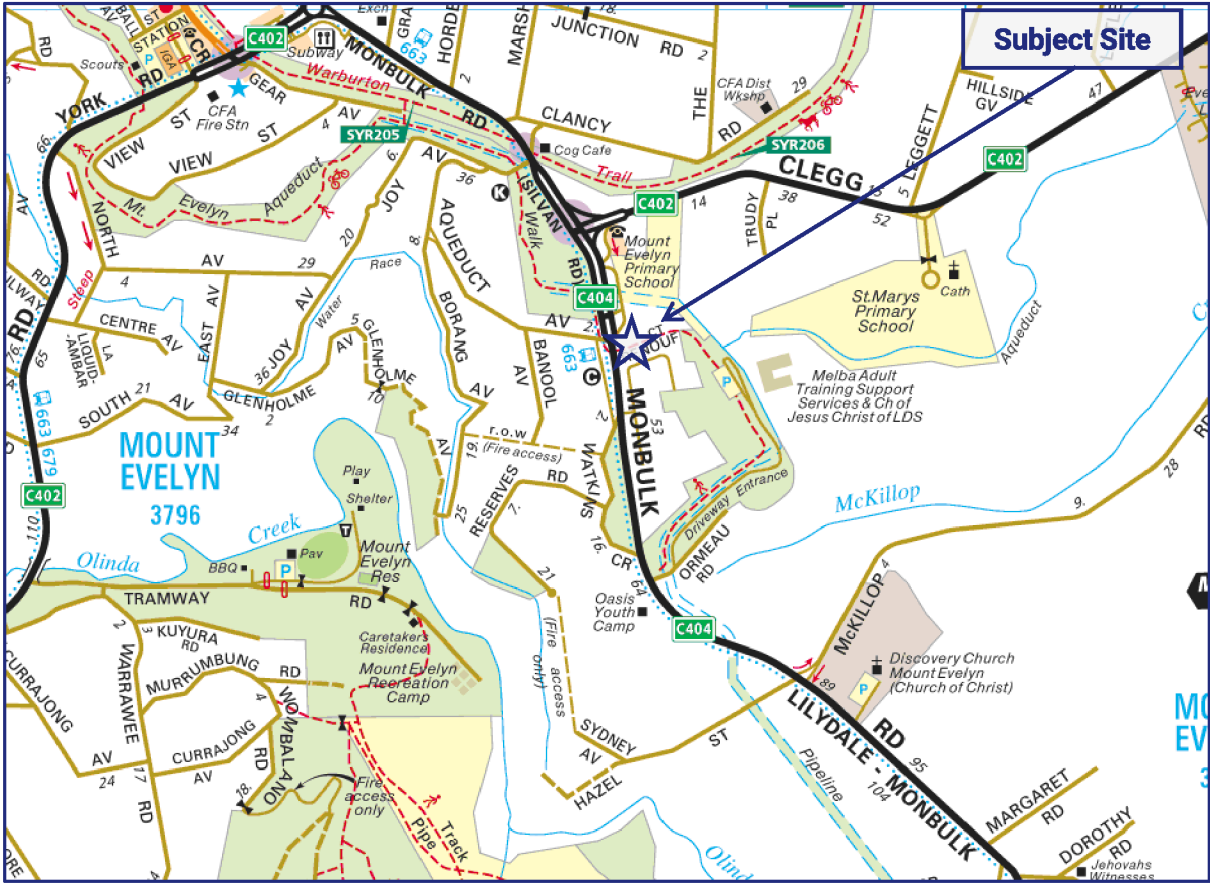


Figure 1: Locality Map

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The site is currently occupied by Mt Evelyn Garden & Produce. The site has an area of approximately 4,333m² and a frontage to Monbulk Road of approximately 43.5m.

An aerial and site frontage photograph are presented at Figures 2 and 3 below.



Figure 2: Aerial Photograph (November 2021)



Figure 3: Site Frontage viewed from Monbulk Road

2.2. Land Use

The subject site is located within the Industrial Zone – Schedule 3 (IN3Z) under the Yarra Ranges Planning Scheme as presented at Figure 4.

The site is affected by a Bushfire Management Overlay (BMO) and an Environmental Significance Overlay – Schedule 2 (ESO2).

Non-residential land uses surrounding the site include:

- Mount Evelyn Primary School approximately 60m north of the subject site,
- Mahamevnawa Buddhist Meditation Centre approximately 110m to the east,
- Car restorations immediately to the north of the site,
- An early learning centre approximately 100m southwest of the site,
- Watkins Crescent Reserve is located approximately 200m, respectively, south of the site, and
- Ormeau Road Reserve which is abuts the rear of the site.

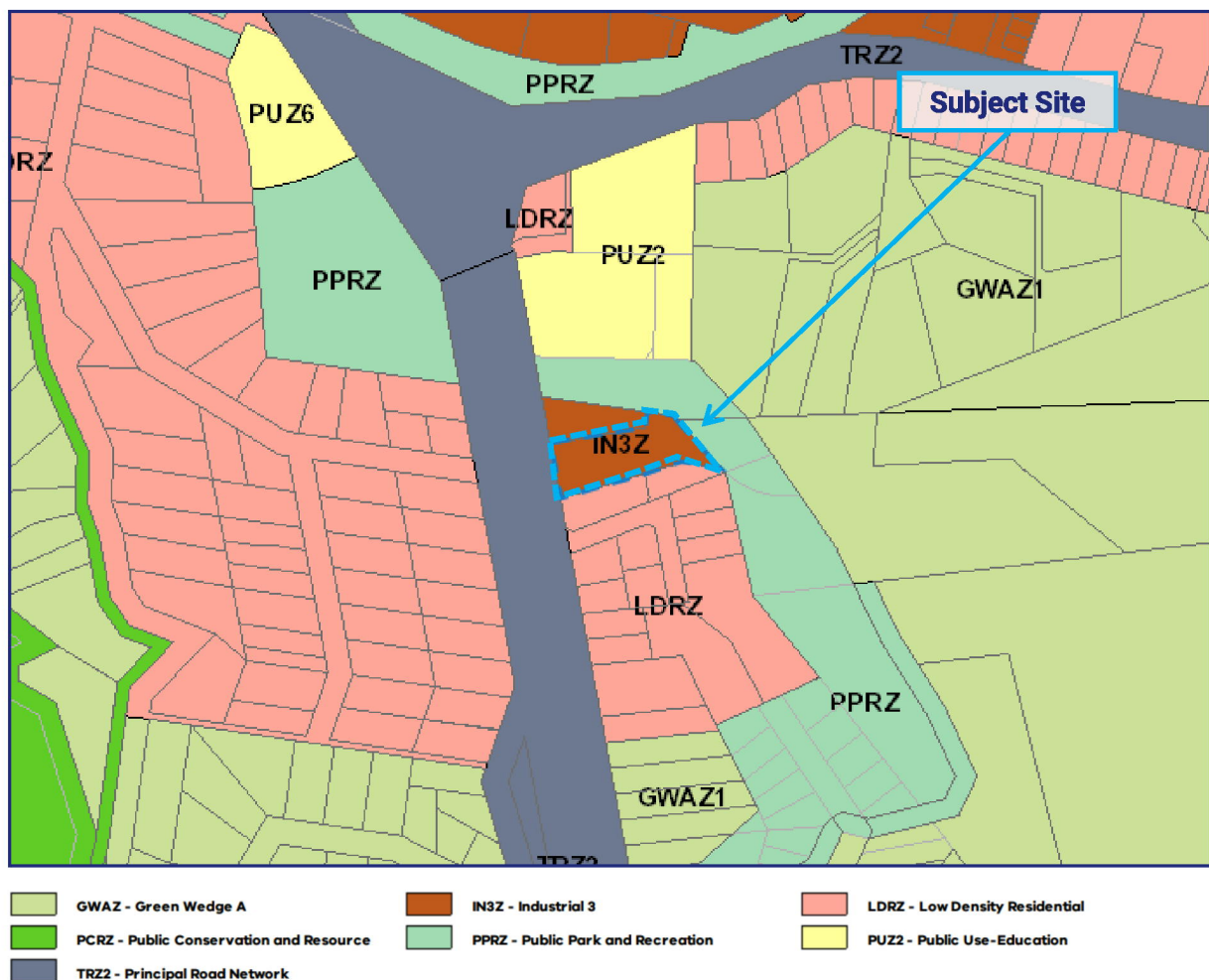


Figure 4: Land Use Zoning Map

2.3. Road Network

Monbulk Road is a state arterial road and Transport Zone 2 (TRZ2) aligned in a general north-south direction. Monbulk Road in the vicinity of the site provides a single traffic lane in each direction. Local widening is provided on both sides of the road at crossovers and side roads to facilitate movements of larger vehicles.



Figure 5: Monbulk Road view North



Figure 6: Monbulk Road view South

3. Existing Traffic Volume

Traffic Group has sourced existing traffic volume data from the Department of Transport's (DoT) online Arcgis database. Monbulk Road in the vicinity of the subject site is shown to have a two-way daily traffic volume of 7,500 vehicle movements (3,800 northbound and 3,700 southbound).

During the PM peak period, the data shows 359 vehicles travelling northbound and 398 vehicles travelling southbound.

4. Proposal

The application is for construction of a service station including the sale of food, drinks, and other convenience goods, a car wash and trailer hire.

The service station comprises six petrol dispensers.

A drive-through facility is provided which will allow customers to purchase prepared food and snacks, coffee, juice and other beverages, and convenience grocery items from the in-store range. There is no sale of branded fast-food or take-away food from the drive-through facility.

There are 10 linemarked car parking spaces provided on-site with additional spaces located adjacent to fuel dispensers.

A copy of the proposed development plans (dated February 2022) is attached at Appendix A.

5. Car Parking Assessment

5.1. Statutory Car Parking Requirement

Clause 52.06 of the Planning Scheme sets out the statutory requirements for car parking. The purposes of Clause 52.06 are:

- *To ensure that car parking is provided in accordance with the Municipal Planning Strategy and the Planning Policy Framework.*
- *To ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities on the land and the nature of the locality.*
- *To support sustainable transport alternatives to the motor car.*
- *To promote the efficient use of car parking spaces through the consolidation of car parking facilities.*
- *To ensure that car parking does not adversely affect the amenity of the locality.*
- *To ensure that the design and location of car parking is of a high standard, creates a safe environment for users and enables easy and efficient use.*

Clause 52.06-6 states:

Where a use of land is not specified in Table 1 or where a car parking requirement is not specified for the use in another provision of the planning scheme or in a schedule to the Parking Overlay, before a new use commences or the floor area or site area of an existing use is increased, car parking spaces must be provided to the satisfaction of the responsible authority.

Service station is not listed in the table at Clause 52.06-5 and accordingly, parking is to be provided to the satisfaction of the Responsible Authority.

The fuel sales part of a service station does not generally generate a car parking demand apart from the spaces adjacent to each dispenser, except for a parking space for the employee at the register. The ancillary sale of food, drinks and other convenience items included within the definition of service station indicates part of the site will operate similar to a convenience shop and the rate for convenience shop is appropriate for the purposes of determining a car parking requirement for that part of the control building.

The car wash and dog wash is generally self service and will not generate parking demands beyond a single employee space.

The trailer hire will be run from the kiosk and will not generate its own car parking demands.

It is significant to note that many of those who make use of the fuel sales service will also be the ones buying convenience goods and accordingly, there is an overlap in the parking demand.

Having regard to the above, we expect that the car parking demand will be as follows:

- Up to six persons associated with the ancillary sale of food, drinks and convenience goods,
- One vehicle at each fuel dispenser,
- Two employee spaces (one for the kiosk and one for the car wash), and
- Up to two spaces for the dog wash.

We consider that the provision of 16 on-site car parking spaces (including six at the dispensers) will meet the expected peak car parking demand and the Responsible Authority should be satisfied with the provision.

5.2. Car Park Layout

The car parking layout and design has been assessed against the relevant Clauses within the Planning Scheme and the relevant Australian Standards (where applicable).

The key elements of the design are as follows:

- All accessways are at least 3m wide.
- Swept path diagrams have been prepared, attached at Appendix B, demonstrating manoeuvring with a B99 design vehicle through drive-thru facility.
- All vehicles can enter and exit the site in a forwards direction.
- A minimum 2.1m headroom clearance is achieved beneath overhead obstructions throughout the site.
- Each of the proposed 90-degree car spaces is at least 2.6m wide and 4.9m long, accessed via a 6.4m aisle, and is compliant with the dimensions of Clause 52.06-9.
- A disabled parking space is provided in accordance with AS/NZS 2890.6:2009, including a 2.4m wide space with an adjacent 2.4m shared area.

We are satisfied that the proposed parking layout is in accordance with the relevant requirements of both the Planning Scheme and Australian Standard (where applicable) and will work well.

6. Traffic Assessment

6.1. Traffic Generation

Service Station

The RTA Guide to Traffic Generating Developments (2002) (RTA Guide) sets out traffic generation rates based on survey data collected in New South Wales for a range of land uses. This guide is referred to in the Austroads Guide which is used by the Department of Transport (DOT), and is generally regarded as the standard for metropolitan development characteristics.

The RTA Guide sets out the following formula for calculating traffic generation for service stations and ancillary convenience stores:

- *Evening peak hour vehicle trips = 0.66A(F)*

Where A(F) is the gross floor area of the convenience store (excluding restaurant/seating areas).

It is significant to note that the RTA rate is a general rate which does not differentiate between sites located on outer metropolitan arterial roads and congested inner city arterials.

In our experience, a service station would typically aim to capture between 3%-5% of vehicles on the road, i.e. 38 vehicles undertaking a total of 76 movements (38 IN and 38 OUT).

The service station traffic is primarily expected to be from passing trade.

The RTA rate gives an expected traffic generation of in the order of 171 vehicle movements in the PM peak hour. It is our view that this significantly over estimates the traffic that could reasonably be expected to attend this site. Notwithstanding, for the purposes of a very robust assessment, we have used the RTA rate.

Car Wash

In our experience, car wash land uses do not typically generate any significant traffic volumes during the commuter PM peak period. For the purposes of a robust assessment, we have assumed 16 movements, i.e. each of the wash bays servicing two cars during this period.

6.2. Traffic Distribution and Impact

The proposed development may generate up to 187 movements in the PM commuter peak hour.

We anticipate that there will be few new traffic movements to the road network during commuter peak periods as a result of the proposed development, with most trips generated from passing trade.

For the purpose of a robust analysis, all traffic to and from the site has been modelled as new traffic to the road network.

It has been assumed that traffic to/from the site will primarily be via the north (70%) and that there will be an even split of traffic entering and exiting the site.

Given that there is not turning data available for Aqueduct Avenue, we have assumed nominal turning volumes to/from this Aqueduct Avenue during the peak period.
A turning movement diagram showing the expected traffic distribution is shown at Figure 7.

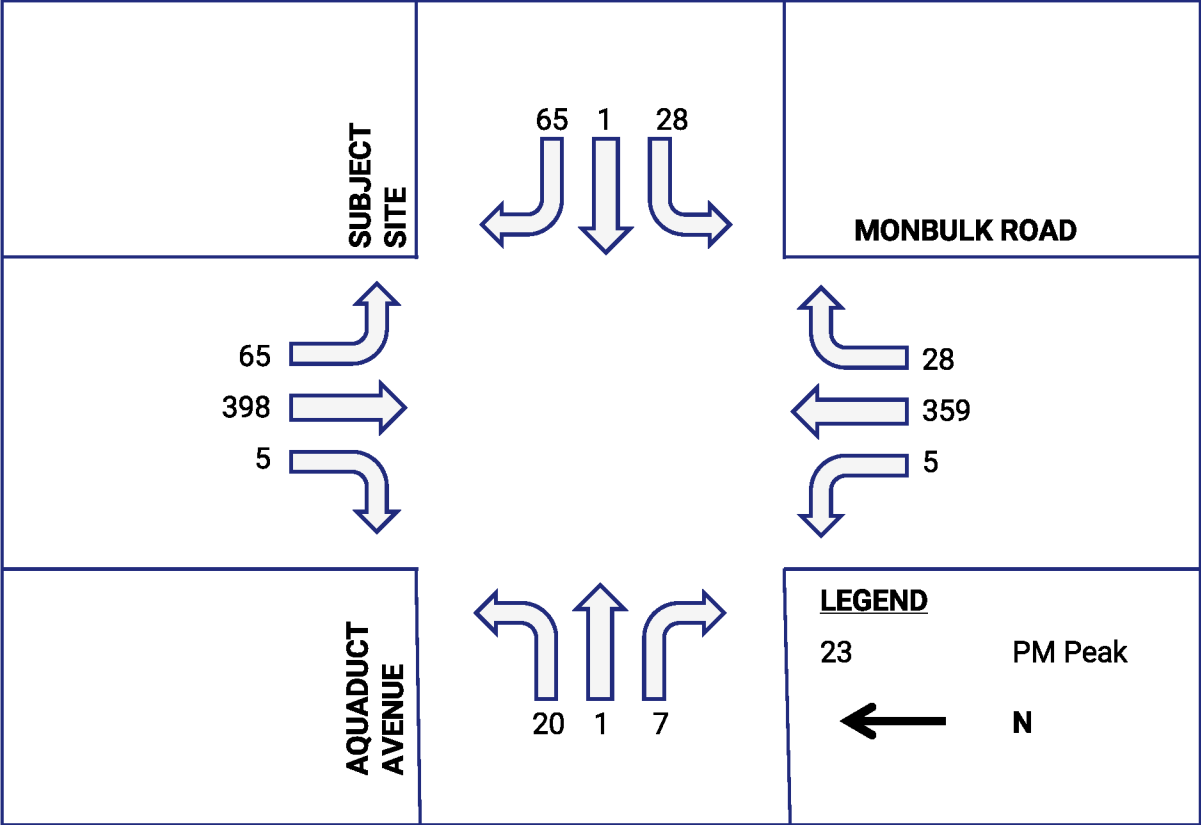


Figure 7: Traffic Distribution Post Development

In order to facilitate the higher number of turning movements from the north, we recommend that a left-turn slip lane be formalised. The pavement on the east side of the road on the north approach to the site is already widened and any further widening to allow for the left turn lane would be minimal.

A SIDRA assessment of the proposed access arrangements has been undertaken assuming 10 years growth at 2% per annum for Monbulk Road and Aqueduct Avenue. The key outputs are summarised in Table 1 below.

Table 1: Site Access SIDRA Outputs

Approach	Degree of Saturation	Average Delay (sec)	95 th Percentile Queue (m)
South Approach – Monbulk Road	0.280	1.2 sec	3.8m
East Approach – Site Egress	0.415	15.1 sec	12.5m
North Approach – Monbulk Road	0.268	0.8 sec	0.6m
West Approach – Aqueduct Avenue	0.077	14.4 sec	2.0m

For unsignalised intersections, degrees of saturation less than 0.8 are considered to be good operating conditions.

As can be seen in the above tables, the degrees of saturation are low and the crossovers are expected to operate with excellent conditions.

We note that vehicles exiting the site to Monbulk Road are expected to experience minor delays and queues but these are confined internally to the site and are not expected to impact on the external road network.

7. Loading Collection

Traffix Group has reviewed the loading arrangements for the proposed service station.

Swept path diagrams have been prepared, attached at Appendix B, which show a 19m semi-trailer refuelling the petrol station, entering and exiting in a forwards directions and being stored wholly within the site when refuelling.

We note that some modifications will be required to the turning area at the rear of the site.

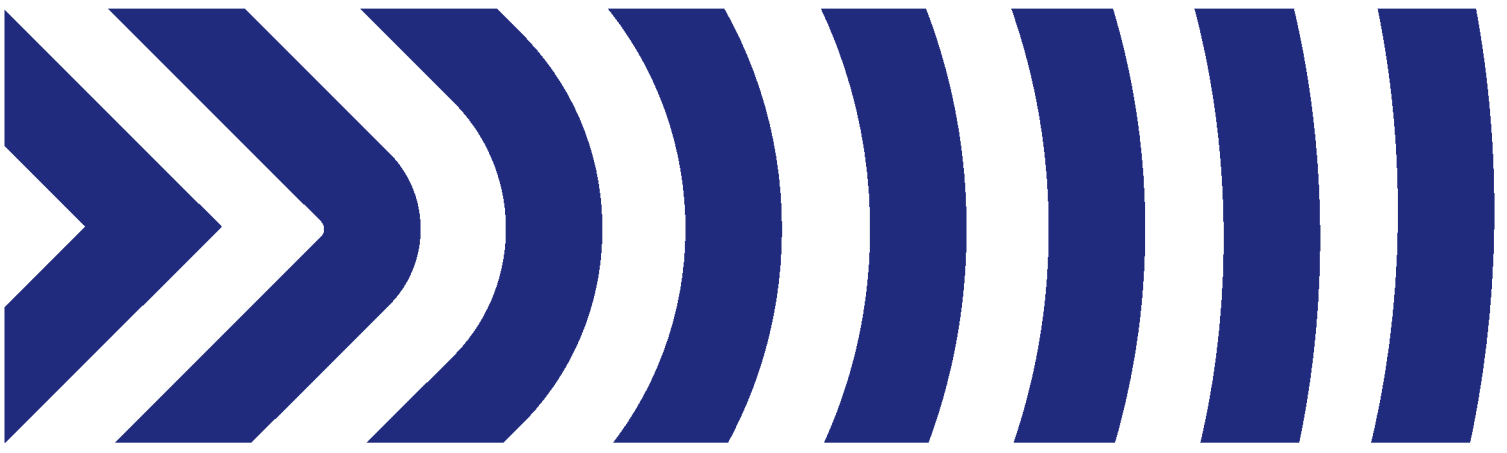
The waste refuse area is located to the east of the drive-thru entry and will be serviced by appropriate waste collection vehicles. We understand that waste collection will occur after hours when on-site activity is low.

Accordingly, the provision for loading is appropriate and will not adversely affect the safety or traffic flow of the subject site.

8. Conclusion

Having undertaken a traffic engineering assessment for the proposed service station at 41 Monbulk Road, Mount Evelyn, we are of the opinion that:

- a) the proposed development is required to provide parking to the satisfaction of the Responsible Authority,
- b) the overall car parking on the site exceeds the expected car parking demand and should satisfy the requirement of the Responsible Authority,
- c) the layout of the carpark and access arrangements complies with the design standards of Clause 52.06-9 of the Planning Scheme and relevant Australian Standards (where applicable),
- d) we recommend that a left-turn lane be constructed to facilitate the majority turning movement (left-IN) to the site,
- e) a peak hour traffic volume of 187 vehicles may be generated by the site in the PM peak hour, however, the majority of the movements are expected to be passing trade,
- f) there will be no adverse impact to the external road network as a result of the proposed development,
- g) there is ample loading area associated with the proposed development to allow for suitable loading and delivery arrangements without impacting on the safety or traffic flow of the subject site, and
- h) there are no traffic engineering reasons why a planning permit for the proposed service station at 41 Monbulk Road, Mount Evelyn, should be not be granted.



Appendix A

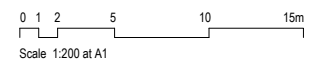
Proposed Development Plan

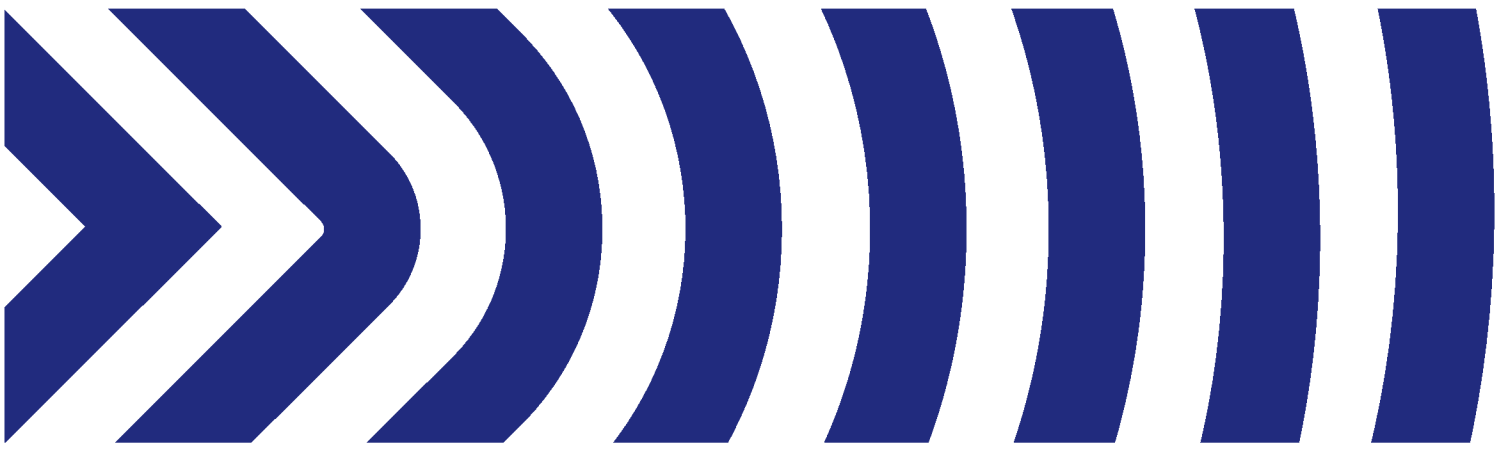


SITE PLAN
1:200 AT A1



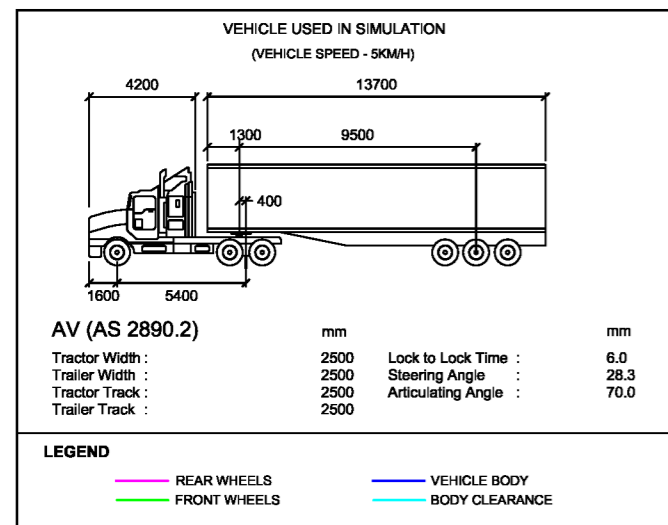
OTR MOUNT EVELYN
41 MONBULK ROAD, MOUNT EVELYN VIC 3796





Appendix B

Swept Path Diagrams



SITE PLAN
1:200 AT A1



REV	DATE	NOTES
A	14/02/2022	

41 MONBULK ROAD, MOUNT EVELYN
PROPOSED SERVICE STATION DEVELOPMENT

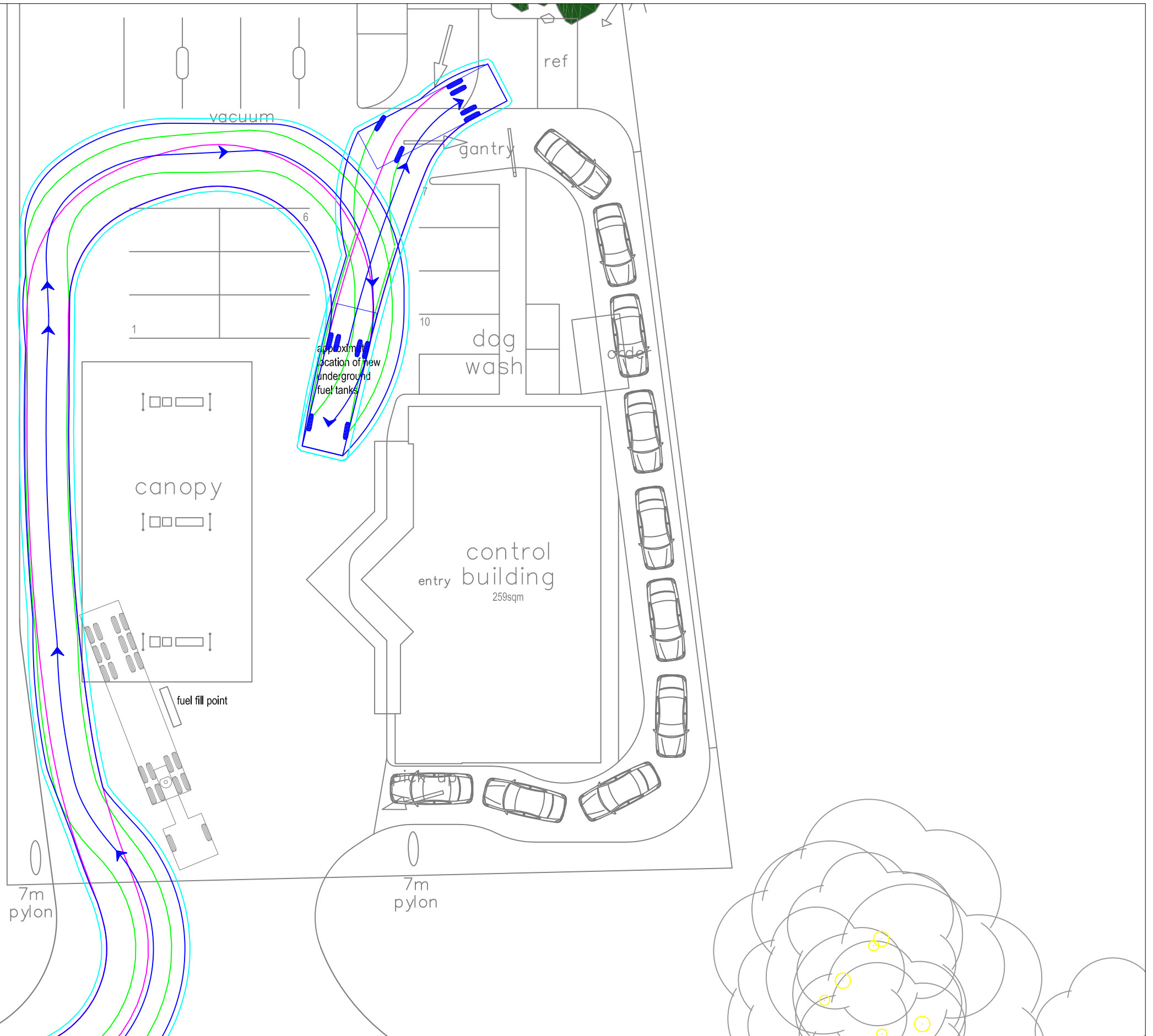
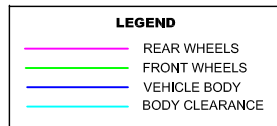
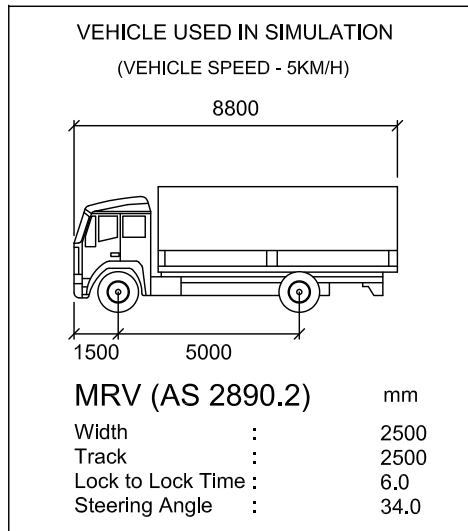
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SHEET NO.: 01



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0 5 10

WASTE COLLECTION



S I T E
P L A N
1:200 AT A1

REV	DATE	NOTES	DESIGNED BY	CHECKED BY
A	14/02/2022		D. MILDER	J. PLACE

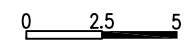
41 MONBULK ROAD, MOUNT EVELYN
PROPOSED SERVICE STATION DEVELOPMENT

GENERAL NOTES:

FILE NAME: 27274-03
SHEET NO.: 03



SCALE:
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