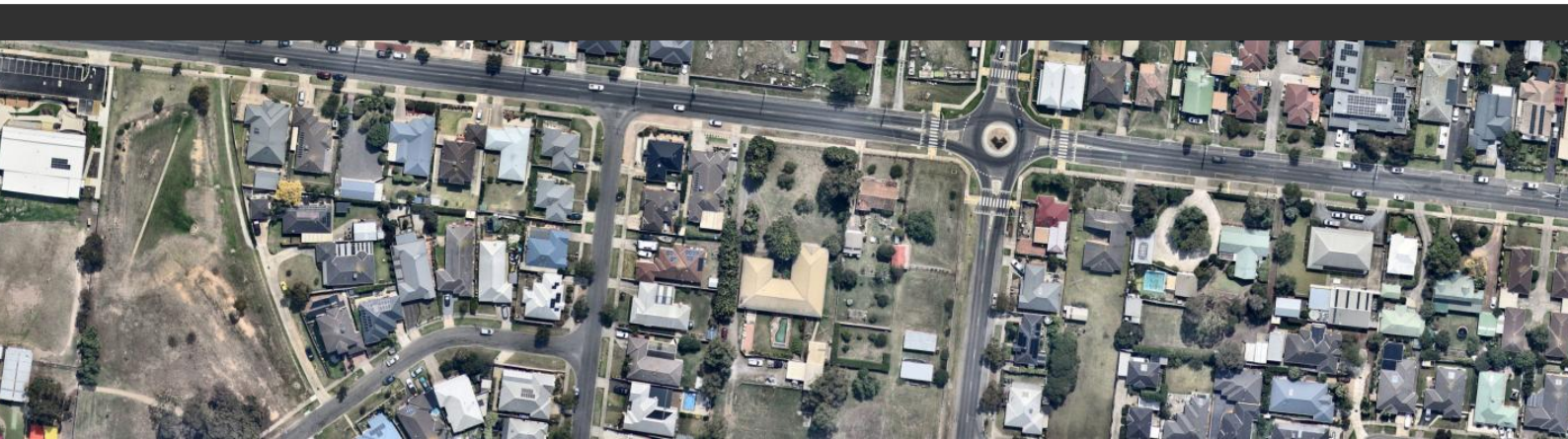




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98 Marshalltown Road, Grovedale

Transport Impact Assessment



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2 July 2026

onemilegrid

ABN: 79 168 115 679

(03) 9939 8250
 Wurundjeri Woiworung Country
 56 Down Street
COLLINGWOOD, VIC 3066
www.onemilegrid.com.au



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APPENDICES

APPENDIX A SWEPT PATH DIAGRAMS

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1 INTRODUCTION

onemilegrid has been requested by Marshalltown Road Grovedale Land Pty Ltd to undertake a Transport Impact Assessment of the proposed childcare centre at 98 Marshalltown Road, Grovedale.

As part of this assessment the subject site has been inspected with due consideration of the development proposal, traffic data has been sourced, and relevant background information has been reviewed.

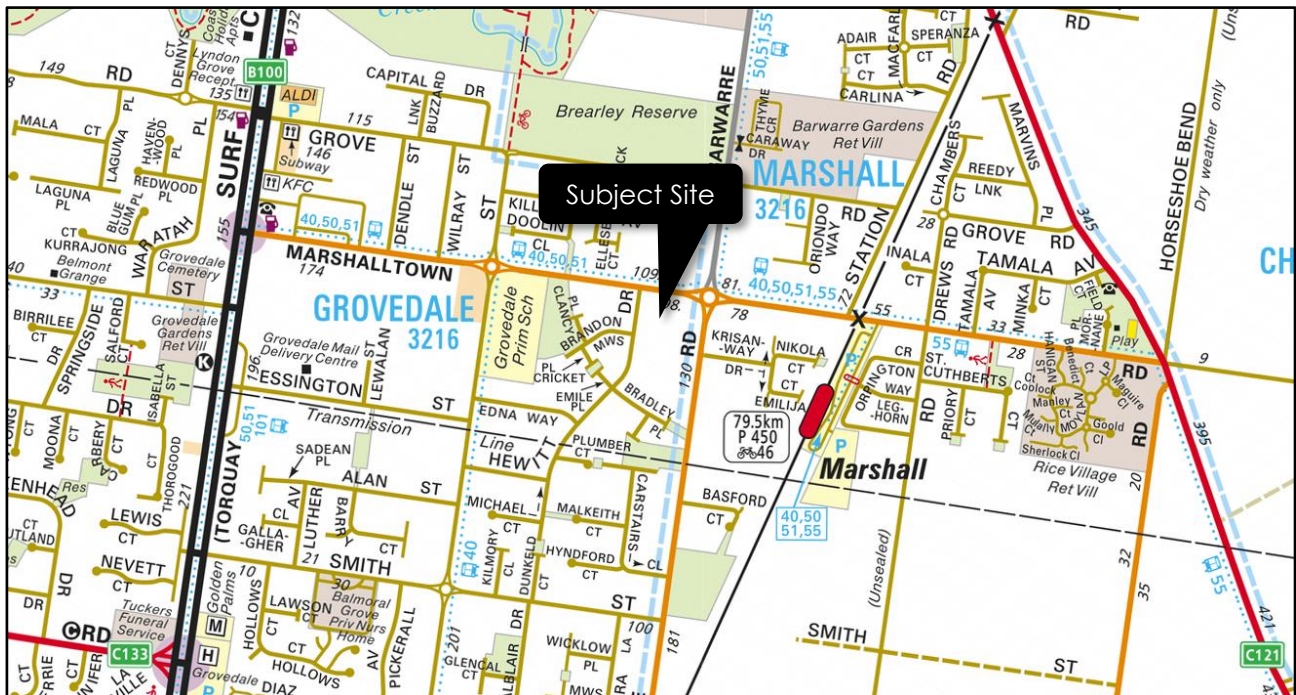
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2 EXISTING CONDITIONS

2.1 Site Location

The [broader site](#) is addressed as 98 Marshalltown Road, Grovedale, and is located south side of Marshalltown Road, approximately 50 metres west of the Marshalltown Road / Barwarre Road roundabout, as shown in Figure 1. The subject site comprises the north-west portion of the broader site, leaving a portion of the frontage of the site to provide future access to future development at the rear of the proposed childcare centre subject to this application.

Figure 1 Site Location



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The broader site is currently occupied by a single dwelling and is currently accessible by a single crossover to Marshalltown Road located in the north-west corner of site.

Land use in the immediate vicinity of the site is primarily residential in nature, and includes Grovedale Primary School, an IGA supermarket and a large format retail precinct further afield to the west, and Marshall Railway Station further afield to the east.

An aerial view of the subject site is provided in Figure 2.

Figure 2 Site Context (22nd March 2026)



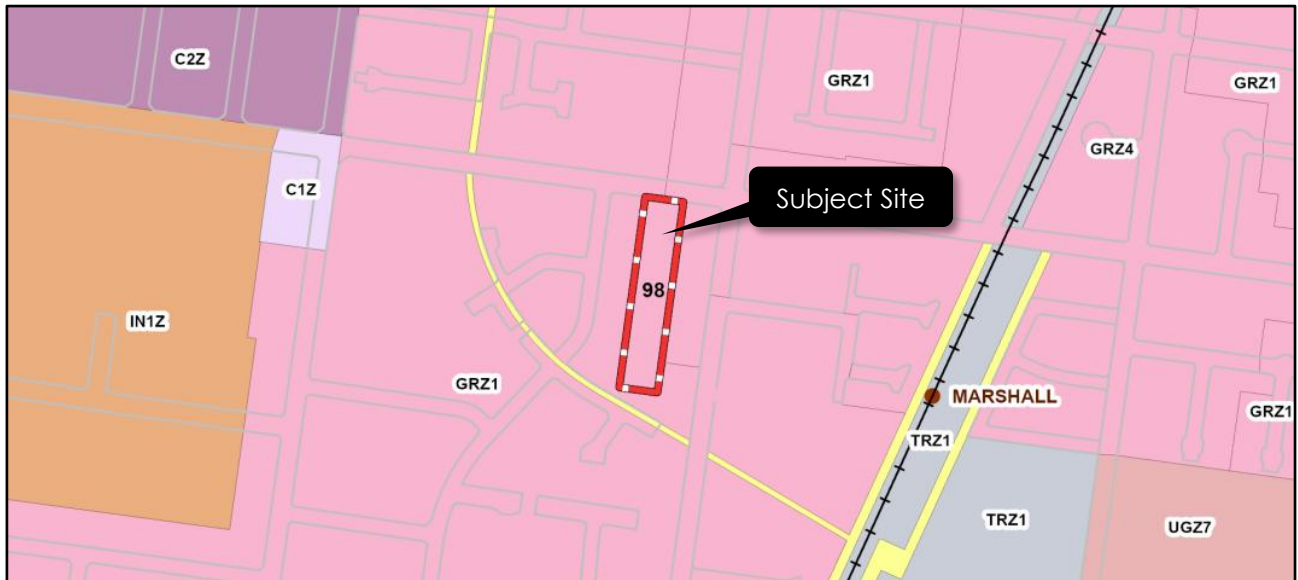
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2.2 Planning Zones and Overlays

It is shown in Figure 3 that the site is located within a General Residential Zone (GRZ).

Figure 3 Planning Scheme Zones



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2.3 Road Network

2.3.1 Marshalltown Road

Marshalltown Road is a local road generally aligned east-west, running between Barwon Heads Road in the east and Torquay Road in the west. Marshalltown Road provides a single traffic lane in each direction adjacent to the site. Unrestricted kerbside parking is provided on each side of the road.

A 60 km/h speed limit applies to Marshalltown Road in the vicinity of the site.

The cross-section of Marshalltown Road at the frontage of the site is shown in Figure 4.

Figure 4 Marshalltown Road, looking west adjacent to the subject site



Image date: June 2026

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2.4 Traffic Volumes

Traffic volume, speed and classification surveys were undertaken by Trans Traffic Survey on behalf of **onemilegrid** on Marshalltown Road adjacent the site, for a one-week period from Monday 27th April 2026 to Sunday 3rd May 2026 inclusive. The results of the surveys are summarised in Table 1.

Table 1 Traffic Volume and Speed Surveys

			<i>Direction of Travel</i>		
			Both Directions	Westbound	Eastbound
Traffic Volume : (Vehicles/Day)	Weekdays Average		7,713	3,802	3,911
	7 Day Average		7,006	3,476	3,530
Weekday	AM	8:00AM	636	364	272
Peak hour start	PM	3:00PM	744	366	378
Speeds : (Km/Hr)	85th Percentile		49.0	48.5	49.5
	Average		44.0	43.8	44.3
Classification % :	Light Vehicles up to 5.5m		94.0 %	94.2 %	93.8 %

It should be noted that the 85th percentile and average speeds recorded throughout the survey period were well below the speed limit of 60 km/h and are representative of the safe driving conditions in the vicinity of the site.

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2.5 Sustainable Transport

2.5.1 Public Transport

The subject site has very good public transport accessibility with numerous train and bus services available within walking distance of the site. Marshall Railway Station is located a 10 minute walk from the site, and provides access to V/Line train services as well as bus routes 40, 52, 54 and 55. Bus routes 40 and 55 are also accessible on Marshalltown Road.

The full public transport provision in the vicinity of the site is shown in Figure 5 and detailed in Table 2.

Figure 5 Public Transport Provision

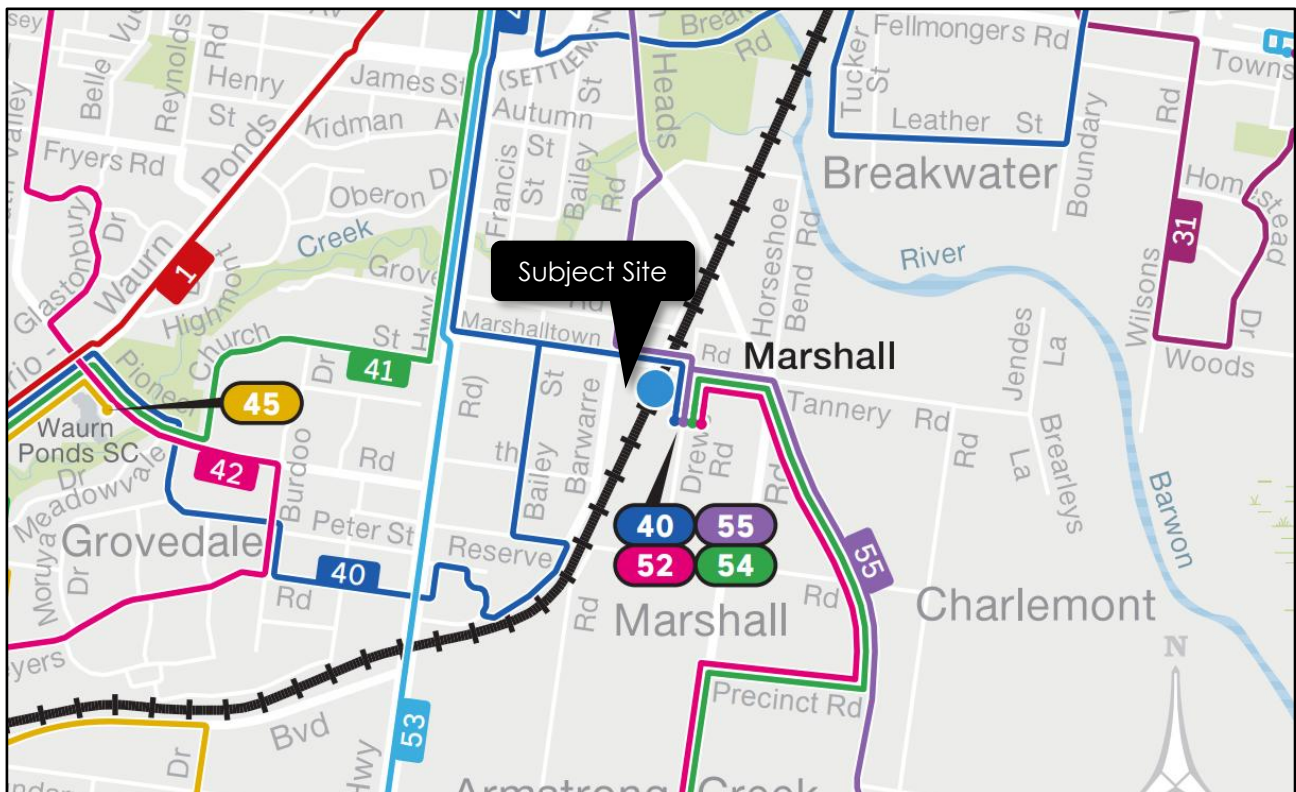


Table 2 Public Transport Provision

Mode	Route No.	Route Description	Nearest Stop/Station
V/Line Train		Geelong Line	
Bus	52	Jan Juc to Marshall Station	Marshall Railway Station
	54	Torquay to Marshall Station	
	40	Geelong to Deakin via Breakwater	Barwarre Road / Marshalltown Road
	55	Geelong to Ocean Grove via Barwon Heads	

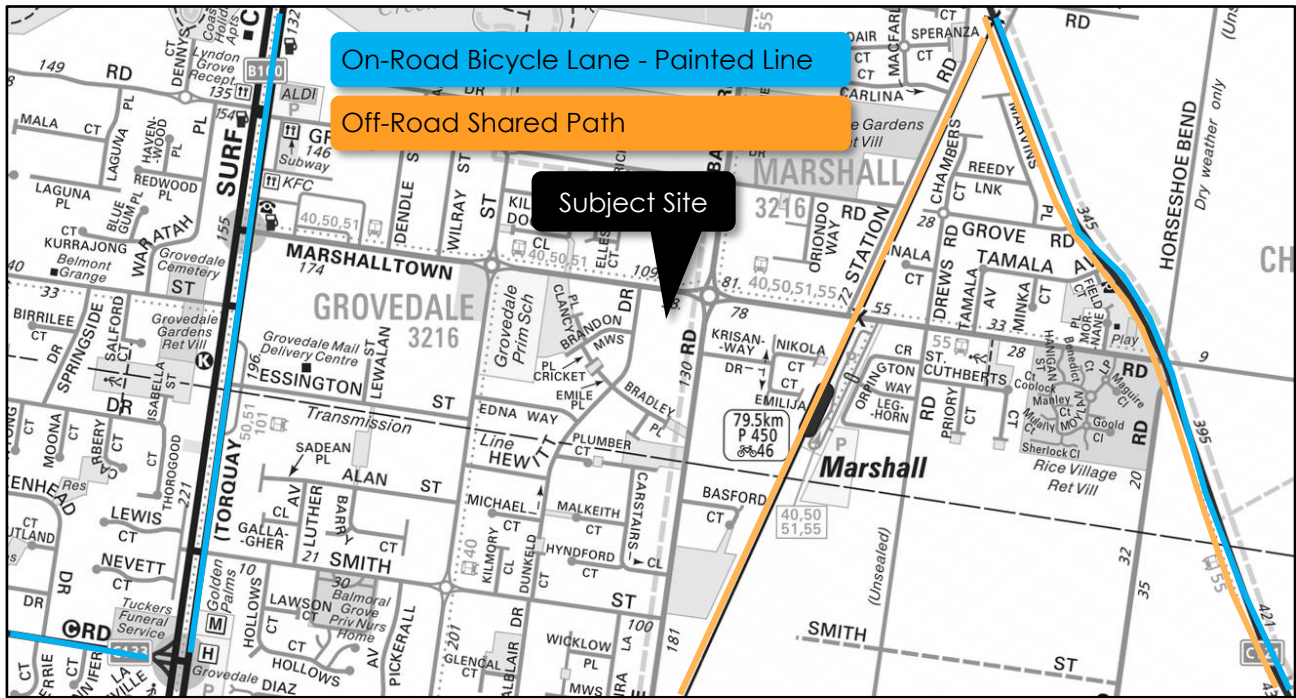
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2.5.2 Bicycle Facilities

2.5.2.1 Existing Infrastructure

The area surrounding the subject site provides cycling facilities, as indicated in Figure 6.

Figure 6 Bicycle Facilities



As indicated above, the site has access to the following bicycle routes:

- Bicycle lanes on Torquay Road, Barwon Heads Road and Pioneer Road; and
- Off-road shared paths along Barwon Heads Road and the railway line.

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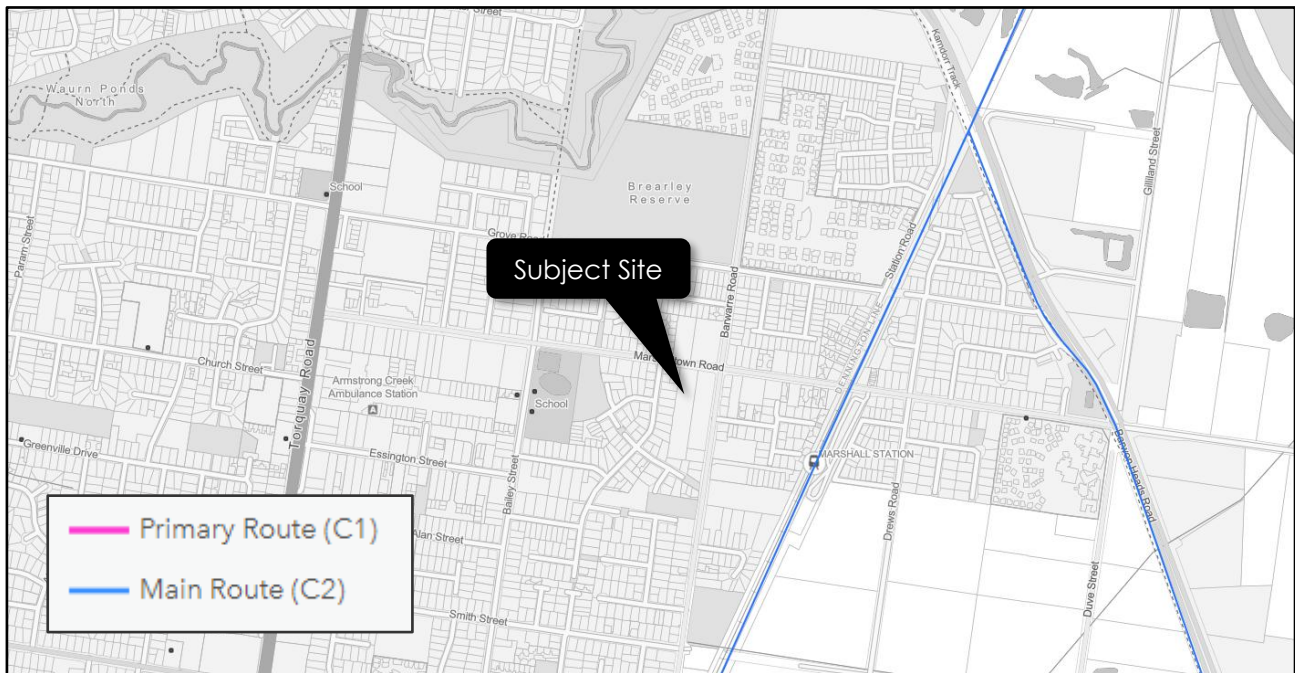
2.5.2.2 Strategic Cycling Corridors

Strategic Cycling Corridors are important routes for cycling for transport and link up important destinations including the Central City, National Employment and Innovations Clusters, Metropolitan Activity Centres and other destinations of metropolitan and regional significance.

Strategic Cycling Corridors (SCC) are considered to be the arterials for bicycles, and have been designed to provide connected, low stress and safe routes, intended primarily for the use of cyclists for transport (rather than recreation).

The SCCs in the vicinity of the site are shown in Figure 7.

Figure 7 Strategic Cycling Corridors



It is shown that Main Routes are identified along the railway line and Barwon Heads Road.

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3 DEVELOPMENT PROPOSAL

3.1 General

It is proposed to develop the subject site for the purposes of a childcare centre. The childcare centre is proposed to accommodate up to 123 children, with a maximum of 30 employees on-site at any one time. The childcare centre will have a gross floor area of 835 m², and is proposed to operate 5 days per week.

3.2 Pedestrian Facilities

The proposed development includes pedestrian access to Marshalltown Road at the west of the frontage.

3.3 Bicycle Parking and End-of-Trip Facilities

A total of four bicycle spaces are proposed in the form of two double-sided on-ground hoops adjacent to the site entrance. Primary bicycle access is provided via the car park accessway, with secondary access provided via the pedestrian path to Marshalltown Road.

3.4 Car Parking and Vehicular Access

A total of 25 car spaces are proposed in an on-site car park, including 8 tandem pairs, and an accessible parking space. All rear spaces of the tandem pairs will be allocated to staff. Allowance has also been made for future electrical vehicle charging within the car park.

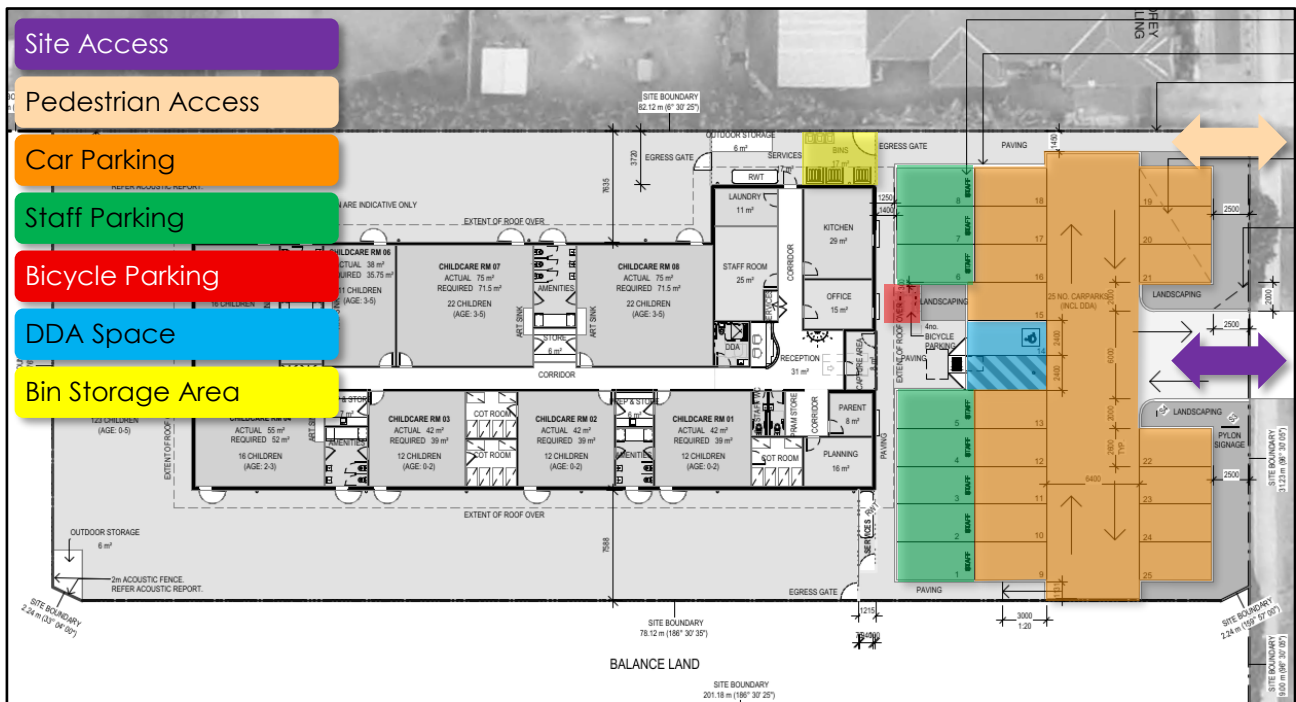
Vehicle access is provided via a crossover to Marshalltown Road located centrally along the frontage. The existing crossover will be removed and reinstated with kerb and channel, with no net change to the quantity of on-street parking.

3.5 Bin Storage

A bin storage area is located on the ground floor, adjacent to the car park. Waste collection will be undertaken by a private contractor. The waste collection vehicle will enter the site to prop for collection, and turnaround within the car park to exit the site in a forward direction. Waste collection will occur outside of centre operating hours.

The site layout and access are shown in Figure 8.

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Figure 8 Site Layout and Access

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4 DESIGN ASSESSMENT

4.1 Greater Geelong Planning Scheme – Clause 52.06

4.1.1 General

onemilegrid has undertaken an assessment of the car parking layout and access for the proposed development with due consideration of the Design Standards detailed within clause 52.06-9 of the Planning Scheme. A review of those relevant Design Standards is provided in the following sections.

4.1.2 Design Standard 1: Accessways

A summary of the assessment for Design Standard 1 is provided in Table 3.

Table 3 Clause 52.06-9 Design Assessment – Design Standard 1

Requirement	Comments
Be at least 3 metres wide.	Satisfied – Minimum width of accessway is 6 m
Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres wide.	Satisfied – Changes of direction are between accessways of more than 4.2 m wide
Allow vehicles parked in the last space of a dead-end accessway in public car parks to exit in a forward direction with one manoeuvre.	Satisfied
Provide at least 2.1 metres headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8 metres.	N/A – No overhead obstructions
If the accessway serves four or more car spaces or connects to a road in a Transport Zone 2 or Transport Zone 3, the accessway must be designed so that cars can exit the site in a forward direction.	Satisfied
Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long if the accessway serves ten or more car parking spaces and is either more than 50 metres long or connects to a road in a Transport Zone 2 or Transport Zone 3.	N/A – Does not connect to a Transport Zone and accessway is less than 50 m. Nevertheless, the proposed accessway is wide enough to accommodate concurrent ingress and egress movements
Have a corner splay or area at least 50 per cent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900 mm in height.	Satisfied – Splays are provided on the exit side of the accessway clear of landscaping or obstructions greater than 900 mm height
If an accessway to four or more car parking spaces is from land in a Transport Zone 2 or Transport Zone 3, the access to the car spaces must be at least 6 metres from the road carriageway.	N/A – Does not connect to a Transport Zone

In addition, **onemilegrid** have prepared a swept path analysis demonstrating simultaneous entry and exit at the site access with 99.8th percentile passenger vehicle (B99). The swept path analysis is attached in Appendix A.

4.1.3 Design Standard 2: Car Parking Spaces

A summary of the assessment for Design Standard 2 is provided in Table 4.

Table 4 Clause 52.06-9 Design Assessment – Design Standard 2

Requirement	Comments
Car parking spaces and accessways must have the minimum dimensions as outlined in Table 2 of Design Standard 2.	Satisfied – Car parking spaces are dimensioned in accordance with Table 2
A wall, fence, column, tree, tree guard or any other structure that abuts a car space must not encroach into the area marked 'clearance required' on Diagram 1 of Design Standard 2, other than: - A column, tree or tree guard, which may project into a space if it is within the area marked 'tree or column permitted' on Diagram 1. - A structure, which may project into the space if it is at least 2.1 m above the space.	Satisfied – The car park is designed in accordance with Diagram 1 A height clearance in excess of 2.1 m is provided
Car spaces in garages or carports must be at least 6 m long and 3.5 m wide for a single space and 5.5 m wide for a double space measured inside the garage or carport.	N/A – Spaces are within a car park
Where parking spaces are provided in tandem (one space behind the other) an additional 500 mm in length must be provided between each space.	Satisfied
Where two or more car parking spaces are provided for a dwelling, at least one space must be under cover.	N/A – No residential parking is provided
Disabled car parking spaces must be designed in accordance with Australian Standard AS2890.6-2009 (disabled) and the Building Code of Australia. Disabled car parking spaces may encroach into an accessway width specified in Table 2 of Design Standard 2 by 500 mm.	Satisfied – The accessible space is provided with dimensions in accordance with the relevant standard, including a length of 5.4 m

4.2 Tandem Car Spaces

onemilegrid is aware that Council has raised concerns about the eight tandem spaces provided for staff use. Council's chief concern is that the tandem spaces may create conflicts between pedestrians and vehicles, particularly in the vicinity of the shared zone provided for the accessible space.

As noted above, the rear tandem spaces are designated exclusively for staff parking. Staff at childcare centres typically arrive on site prior to the commencement of the morning drop-off period and depart following the afternoon pick-up period. As such, during the periods when parent and visitor parking demand is at its highest, the rear tandem spaces are expected to be occupied by staff vehicles and therefore operate as a static environment.

Accordingly, vehicles accessing the front tandem spaces during the peak drop-off and pick-up periods will generally do so in circumstances where the rear staff vehicles are already parked. In practical terms, the front spaces will operate in a similar manner to conventional parking spaces, with limited vehicle movements occurring within the rear tandem spaces during periods of high pedestrian activity.

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While occasional staff vehicle movements may occur throughout the day, these movements are expected to be infrequent and will take place within a low-speed environment where drivers and pedestrians are aware of and expecting the presence of other road users. Given the relatively low traffic volumes within the car park, the good visibility available throughout the site and the low operating speeds, the risk of pedestrian and vehicle conflict associated with the tandem spaces is considered to be low and not materially greater than that associated with a conventional at-grade car parking layout.

With respect to Council's concerns regarding the adjacent shared area, it is considered that the presence of a tandem parking space does not materially alter the operation or safety of the shared zone. Whether the adjacent parking space is configured as a standard space or as part of a tandem arrangement, drivers entering or exiting a parking space are required to remain alert to the presence of pedestrians and other vehicles. The shared area is clearly visible from the parking spaces and includes a bollard as per AS2890.1.

The proposed tandem parking arrangement also enables a more efficient use of the available site area. By reducing the overall parking footprint, the design allows a greater proportion of the site to be dedicated to childcare facilities and outdoor play areas whilst still accommodating the required parking demand on-site. This assists in minimising potential parking impacts external to the site and supports an efficient overall site layout.

Based on the above, the proposed tandem spaces are considered satisfactory.

It is also noted that tandem parking arrangements have been approved as part of a number of childcare developments within the City of Greater Geelong, including:

- 89 Aphrasia Street, Newtown ;
- 70-72 Portarlington Road;
- 332 Autumn street, Geelong West;
- Unit 24, 28 Bellmore Drive, Norlane; and
- 215 Aberdeen Street, Newtown.

These examples demonstrate that tandem parking arrangements are an accepted design response within childcare developments where they are appropriately managed and allocated.

4.3 Waste Collection

A bin storage area is located on the western boundary of the site adjacent to the car park. Bins will be transferred by staff/cleaning contractors to the waste collection vehicle for collection on collection days. For access the waste truck enters and exits the site in a forward direction. To allow for turning around the truck is required to utilise car spaces. To allow for this, waste will be collected outside of the operating hours of the centre.

Refer to the Waste Management Plan for further information.

4.4 Bicycle Parking

The bicycle hoops have been designed in accordance with the Australian Standard; specifically, they are provided at one metre centres, with an envelope of 1.8 metres provided for bicycles and a 1.5 metre access aisle.

In addition, all bicycle parking spaces proposed have been provided as on-ground hoops exceeding the Australian Standard requirement for 20% of spaces being provided on-ground.

4.5 Loading and Garbage

The site has been designed to accommodate vehicles up to an 8.8 metre medium rigid vehicle (MRV). Swept path diagrams have been prepared illustrating an 8.8 metre (MRV) accessing the on-site car park. These swept path diagrams are provided in Appendix A.

5 LOADING

Clause 65 (Decision Guidelines) of the Greater Geelong Planning Scheme identifies that *"Before deciding on an application or approval of a plan, the responsible authority must consider, as appropriate: The adequacy of loading and unloading facilities and any associated amenity, traffic flow and road safety impacts."*

Given the size and nature of the proposed childcare centre, it is not considered necessary to provide an on-site loading bay. It is expected that the majority of deliveries will occur via small vans and utility vehicles, which can utilise the on-site parking outside of peak operational periods, or adjacent kerbside parking on Marshalltown Road.

Nonetheless, swept path diagrams have been prepared illustrating that service vehicles up to an 8.8 metre medium rigid vehicle (MRV) can access the on-site car park to represent waste collection. These swept paths are provided in Appendix A.

The provision for loading is therefore considered appropriate for the proposed use.

6 BICYCLE PARKING

The bicycle parking requirements for the subject site are identified in Clause 52.34 of the Greater Geelong Planning Scheme. The Planning Scheme does not specifically refer to parking requirements for childcare centre uses, therefore, no bicycle parking is required.

Regardless, it is proposed to provide four bicycle spaces adjacent to the entrance of the site for both staff and visitor use.

Considering the above, the proposed provision of bicycle parking exceeds the requirements of the Planning Scheme, and is therefore considered appropriate.

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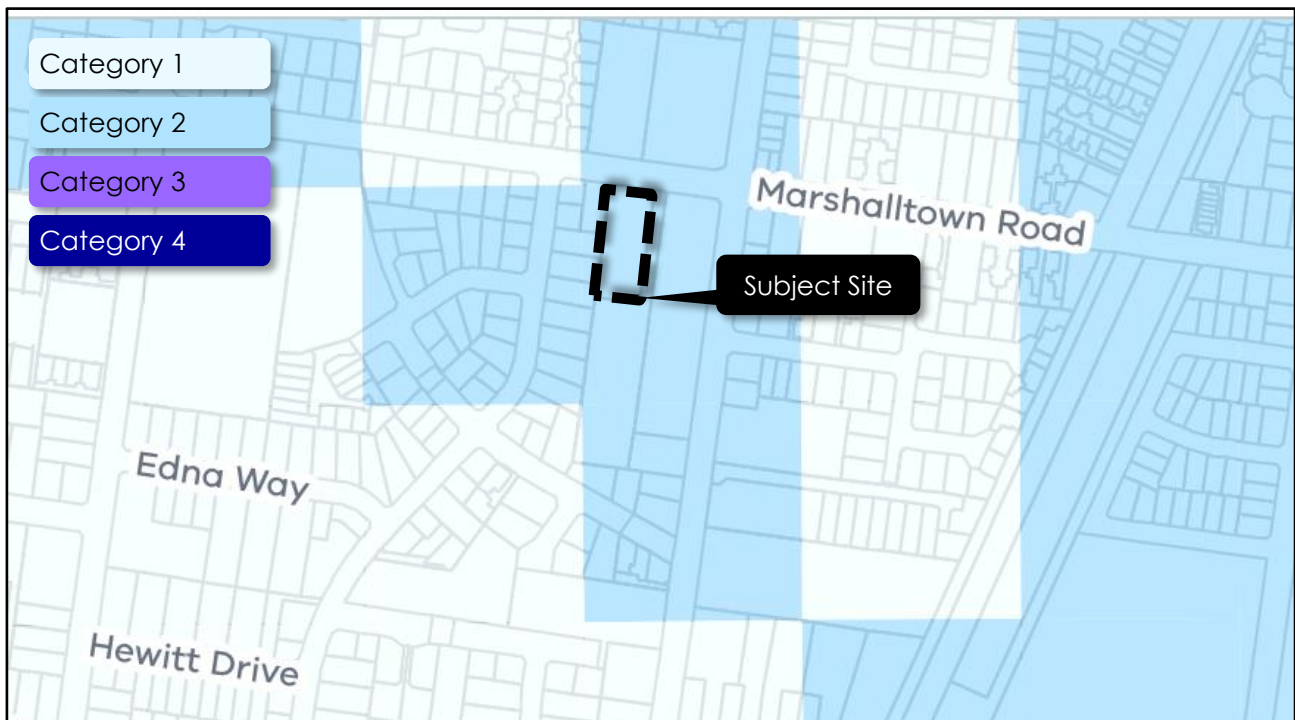
7 CAR PARKING

7.1 Statutory Car Parking Requirements

The car parking requirements for the subject site are identified in Clause 52.06 of the Greater Geelong Planning Scheme, which provides different requirements depending on the public transport accessibility of the site. This can be determined from the land category, which is identified in the Car Parking Requirement Maps published by the Department of Transport and Planning.

The subject site is situated within Category 2, as shown in Figure 9.

Figure 9 Car Parking Requirement Map



The resulting car parking requirements for the proposed development are shown in Table 5.

Table 5 Clause 52.06 – Car Parking Requirements

Use	No/Area	Rate	Car Parking Measure	Total
Childcare centre	30	0.5	to each employee	15

Based on the above calculations, a minimum of 15 parking spaces are required for the proposed development.

It is proposed to provide a total of 25 car parking spaces to service the proposed development, which is in excess of the minimum Planning Scheme requirements outlined above.

The provision of car parking is therefore considered to be appropriate to satisfy the parking demands generated by the development.

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7.2 Accessible Car Parking

The National Construction Code specifies the minimum requirements for provision of accessible car parking.

The proposed childcare centre, classified as a Class 9B building, requires provision of one accessible car space for every 50 car parking spaces or part thereof for the first 1,000 spaces, and then 1 space per 100 car parking spaces or part thereof in excess of 1,000 spaces.

Noting the proposed provision of 25 car spaces on-site, the National Construction Code (NCC) requires at least one accessible car space on-site.

The proposed provision of one accessible car parking space thus satisfies the NCC requirements.

8 TRAFFIC

8.1 Traffic Generation

8.1.1 Case Studies

In order to establish traffic generation rates for similar uses, **onemilegrid** undertook turning movement surveys of existing childcare centres at 418 Mt Dandenong Rd, Croydon (Goodstart Early Learning Croydon) and 18 Grange Road, Alphington (Smart Start Early Learning and Development Centre).

The surveys were undertaken at both sites on Tuesday 10th October 2017 from 6:30am to 6:30pm.

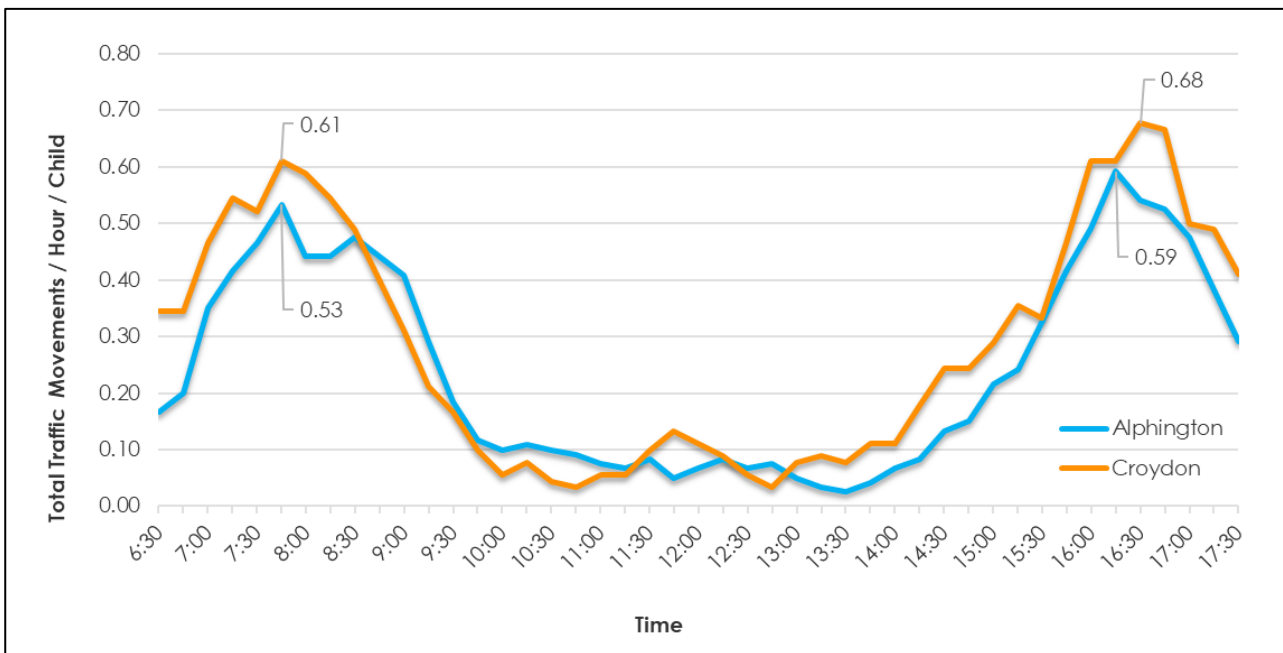
Both sites were specifically selected because of a large supply of on-site car parking, and their location along a main road where on-street parking could not be utilised for parent pick-up and drop-off.

A summary of the case-study results is provided in Table 6 below, representing the peak traffic generation in relation to the maximum number of childcare places.

Table 6 Childcare Case Study – Traffic Generation (Movements/Child)

Site	No. Places	AM Peak				PM Peak			
		Time	In	Out	Total	Time	In	Out	Total
Alphington	120	7:45am-8:45am	0.28	0.25	0.53	4:15pm-5:15pm	0.28	0.32	0.59
Croydon	90	7:45am-8:45am	0.33	0.28	0.61	4:30pm-5:30pm	0.32	0.36	0.68
Average			0.31	0.27	0.57		0.30	0.34	0.64

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Figure 10 Childcare Case Study – Traffic Generation

Information provided by the operator suggests that both centres were effectively operating at capacity during the survey periods.

For the purposes of a conservative assessment, a traffic generation rate of 0.65 and 0.70 movements per child will be adopted for the AM and PM peak hours respectively. Traffic movements will be assumed to be evenly split between inbound and outbound movements.

Based on the above survey results, the anticipated traffic generated by the proposed development is shown in Table 7.

Table 7 Anticipated Traffic Generation – Total Movements

Period	Inbound	Outbound	Total
AM Peak	40	40	80
PM Peak	43	43	86

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8.1.2 Diverted Trips

It is commonly acknowledged that a high proportion of vehicle trips to a childcare centre are as a result of diverted trips; from a vehicle which is already on the road network as part of another trip (i.e., a vehicle diverting to a childcare centre on the way from work to home).

In order to ascertain the proportion of unique trips versus diverted trips generated by the proposed development, data collected as part of the Victorian Integrated Survey of Travel and Activity (VISTA) was analysed specifically for childcare centre, with the results shown in Table 8.

Table 8 Diverted Trips Proportion – VISTA 2012-2016

Use	Daily	AM Peak	PM Peak	Off Peak
Childcare	49%	42%	74%	39%

It is shown above that a high proportion of daily trips generated to a childcare centre are diverted trips, and further, during the peak hours, the percentage of diverted trips increases. Consequently, the number of unique vehicles trips generated by the proposed development will be much lower than the total traffic generation of the site, as shown below in Table 9.

Table 9 Anticipated Traffic Generation – Unique Movements

Period	Inbound	Outbound	Total
AM Peak	23	23	46
PM Peak	11	11	22

8.2 Traffic Distribution

Considering the location of the site in relation to the arterial road network, public transport facilities, schools, recreation and retail and employment precincts, the directional distribution shown in Table 10 has been adopted.

Table 10 Adopted Directional Traffic Distribution

Origin/Destination	Percentage
Marshalltown Road – East	50%
Marshalltown Road – West	50%

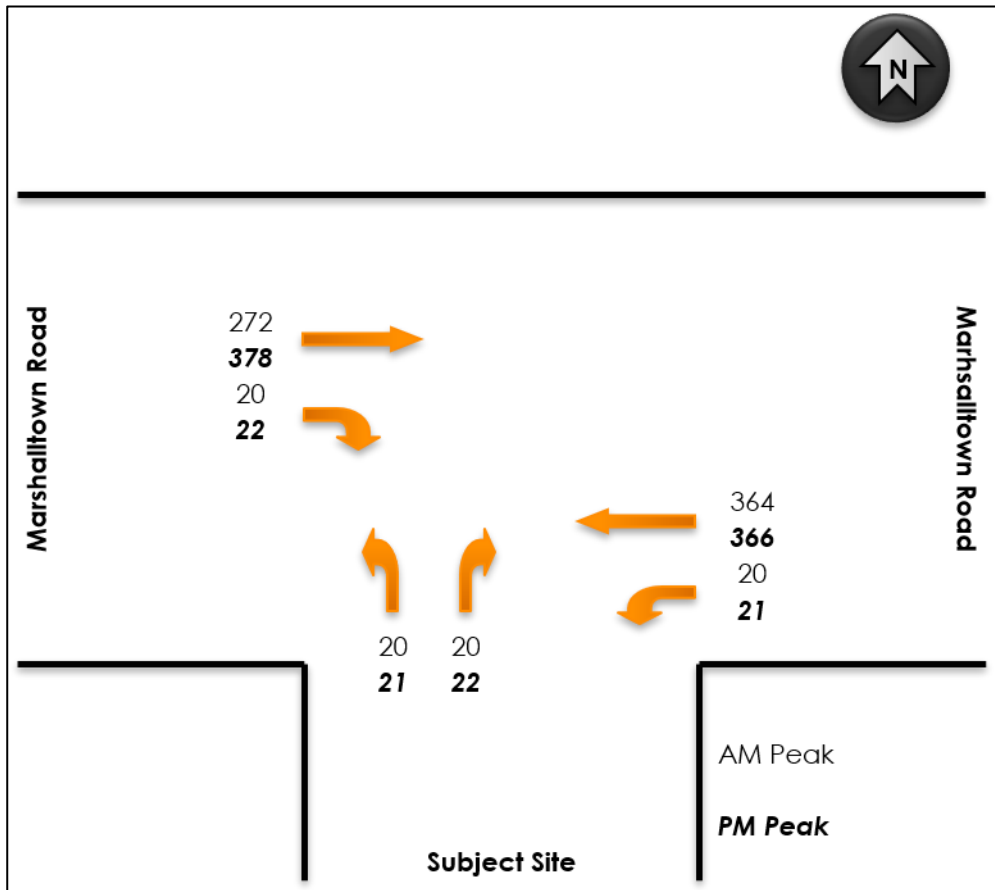
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8.3 Resultant Future Traffic Volumes

Based on the above, the future intersection volumes at the subject site / Marshalltown Road intersection can be calculated by combining the existing volumes with the traffic anticipated to be generated by the proposed development.

The resultant peak hour traffic volumes are shown in Figure 11.

Figure 11 Resultant Future Traffic Volumes



8.4 Traffic Impact

Reviewing the volumes above, a maximum of 21 vehicle movements per hour are expected to be generated for any one movement, equivalent to approximately one vehicle trip every three minutes. This is quite low in traffic engineering terms, and can be comfortably accommodated by the site access to Marshalltown Road.

Additionally, the anticipated traffic volumes are very low compared to the existing traffic along Marshalltown Road, and are not expected to have a notable impact on the flow of through traffic along Marshalltown Road.

Based on the foregoing, the traffic impact of the proposed development can be comfortably accommodated by the site access intersection, and Marshalltown Road.

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9 CONCLUSIONS

It is proposed to develop the subject site for the purposes of a childcare centre.

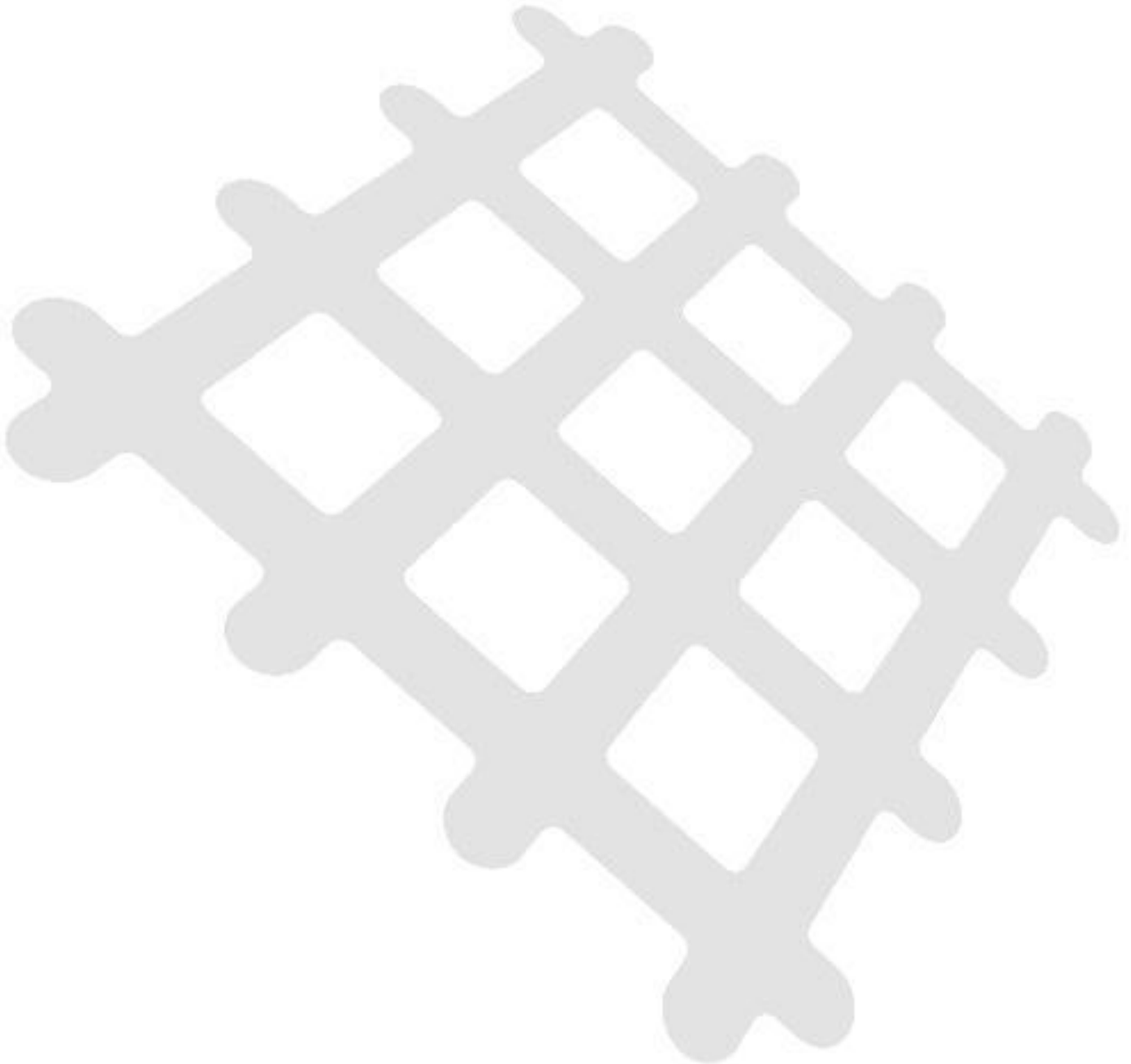
Considering the analysis presented above, it is concluded that:

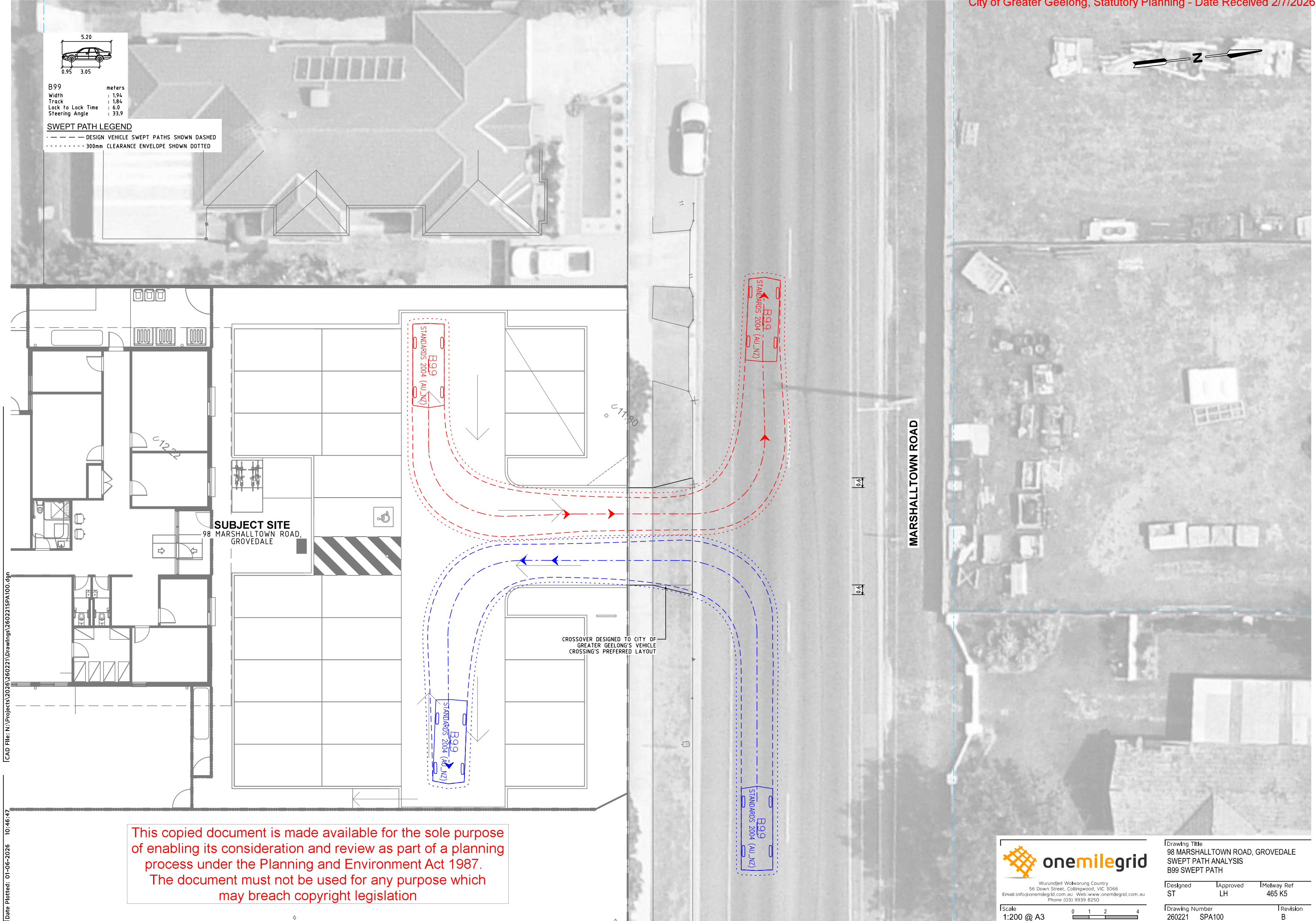
- The proposed bicycle parking and access design is considered appropriate;
- The proposed provision of bicycle parking is in excess of the statutory requirements and is considered satisfactory;
- The car parking layouts and accesses have been designed generally in accordance with the requirements of the Planning Scheme and are considered appropriate;
- The use of tandem car parking for staff is considered appropriate and does not represent a safety concern;
- The proposed provision of car parking meets the statutory requirements for car parking and is considered acceptable;
- The anticipated traffic volumes generated by the development can be comfortably accommodated by the site access intersection, and Marshalltown Road; and
- There are no traffic engineering reasons which would preclude a permit from being issued for this proposal.

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Appendix A Swept Path Diagrams

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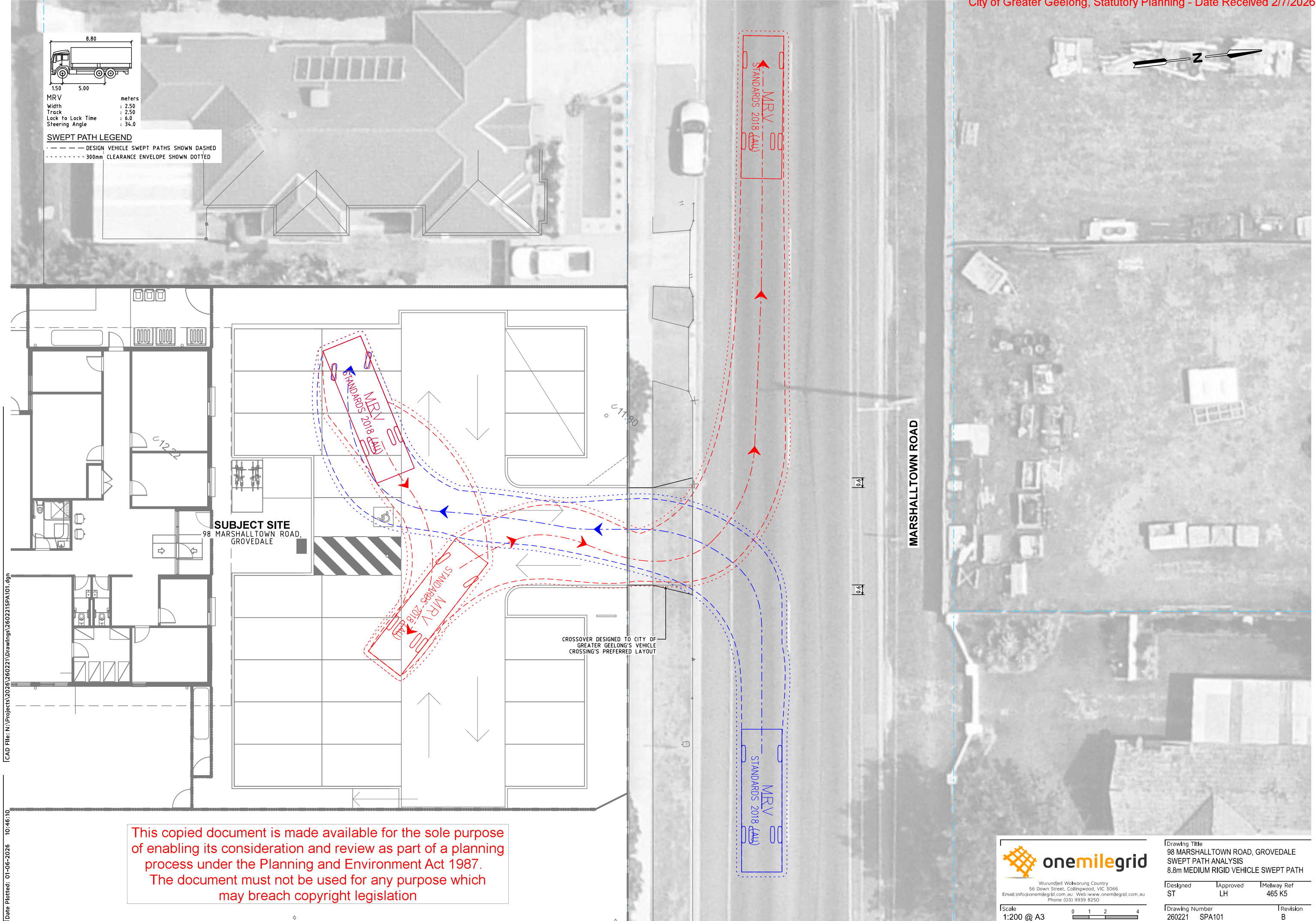




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onemilegrid
Wurundjeri Woiwurrung Country
56 Down Street, Collingwood, VIC 3066
Email: info@onemilegrid.com.au Web: www.onemilegrid.com.au
Phone (03) 9939 8250

Scale
1:200 @ A3

0 1 2 4

Drawing Title 98 MARSHALLTOWN ROAD, GROVEDALE SWEPT PATH ANALYSIS 8.8m MEDIUM RIGID VEHICLE SWEEP PATH		
Designed ST	Approved LH	Melway Ref 465 K5
Drawing Number 260221 SPA101	Revision B	