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# **Mentone Grammar School**

## Transport Impact Assessment



# **ADVERTISED PLAN**

210308TIA001F-F.docx

4 November 2021

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**onemilegrid**

ABN: 79 168 115 679

(03) 9939 8250  
56 Down Street

**COLLINGWOOD, VIC 3066**

[www.onemilegrid.com.au](http://www.onemilegrid.com.au)

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## DOCUMENT INFORMATION

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<b>Signature</b>		<b>Signature</b>	

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### APPENDIX A SWEEP PATH ASSESSMENT

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## 1 INTRODUCTION

onemilegrid has been requested by Mentone Grammar School to undertake a Transport Impact Assessment of the proposed expansion of Mentone Grammar School.

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

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## 2 EXISTING CONDITIONS

### 2.1 Site Location

Mentone Grammar School is located to the west of the Warrigal Road / Como Parade West intersection, addressed as 63 Venice Street, Mentone. The campus also includes the properties at the following addresses:

- 75-77 Naples Road, Mentone;
- 33-35 Warrigal Road, Mentone; and
- 37 Warrigal Road, Mentone.

The subject site is located within a portion of the broader Mentone Grammar campus generally bound by Warrigal Road, Naples Road, and Lucerne Street, as shown in Figure 1. The subject site has a frontage to Naples Road and is generally in line with the existing sports field.

Figure 1 Site Location



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An aerial view of the subject site in the context of its surrounds is provided in Figure 2. Vehicle access to this portion of the campus is provided via a crossover to Lucerne Street. This crossover provides access to an at-grade car park.

**Figure 2 Site Context (29 April 2021)**



Copyright Nearmap

Land use in the immediate vicinity of the site is primarily residential in nature, with St Bede's College located to the south along Naples Road.

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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



The site falls within the Principal Public Transport Network Area, as shown in Figure 4.

Figure 4 Principal Public Transport Network Area Map



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## 2.3 Road Network

### 2.3.1 Warrigal Road

Warrigal Road is an arterial road generally aligned north-south, running between Beach Road in the south and continuing north beyond Nepean Highway. Warrigal Road provides a single traffic lane and kerbside parking lane in each direction adjacent to the site. Kerbside parking is generally unrestricted on both sides of the road in the vicinity of the site.

The cross-section of Warrigal Road at the frontage of the site is shown in Figure 5.

Figure 5 Warrigal Road looking north (left) and south (right)



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### 2.3.2 Naples Road

Naples Road is a local road generally aligned northwest-southeast, running between Warrigal Road in the east and circulating around to Beach Road in the west. Naples Road provides a single traffic lane and kerbside parking in each direction adjacent to the site. Kerbside parking is provided on both sides of the road, generally restricted to 2-hour parking between 9:00 AM and 5:00 PM School Days. A Bus Zone is located along the southern side of Naples road adjacent the subject site with spaces for approximately 3 buses.

The cross-section of Naples Road at the frontage of the site is shown in Figure 6.

Figure 6 Naples Road looking southeast (left) and northwest (right) from the subject site



### 2.3.3 Lucerne Street

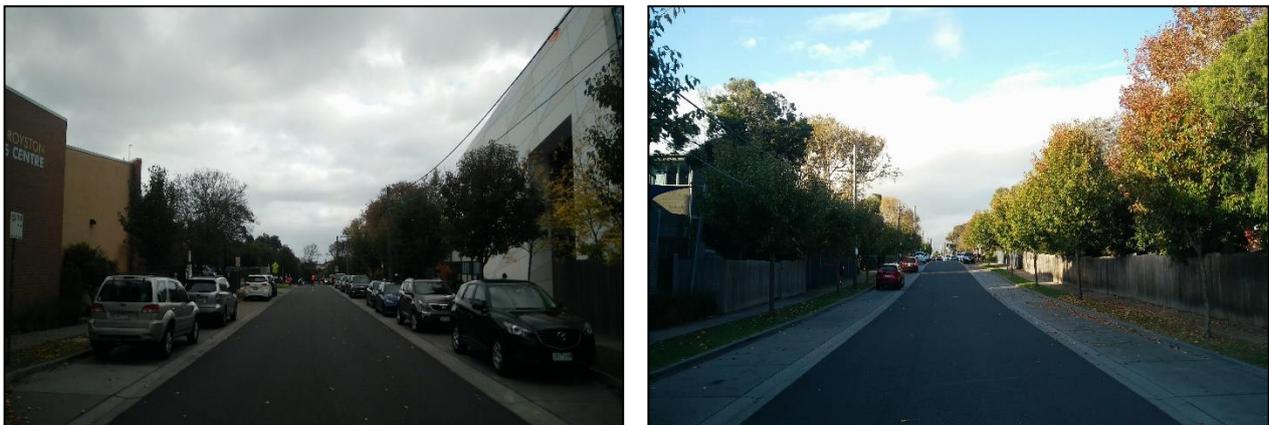
Lucerne Street is a local road generally aligned northeast-southwest, running between Como Parade West in the northeast and Naples Road in the southwest. Lucerne Street acts as a two-way roadway providing for traffic in both directions with indented kerbside parking provided on both sides of the road.

Kerbside parking on the northern side is generally restricted to 10-minute parking between 8:00 AM and 9:00 AM, and 3:00 PM and 4:00 PM Monday to Friday.

Kerbside parking on the southern side is restricted as a Bus Zone between 9:00 AM and 3:00 PM School Days and as No Parking between 8:00 AM and 9:00 AM, and 3:00 PM and 4:00 PM School Days.

The cross-section of Lucerne Street at the frontage of the site is shown in Figure 7.

**Figure 7 Lucerne Street looking southwest (left) and northeast (right)**



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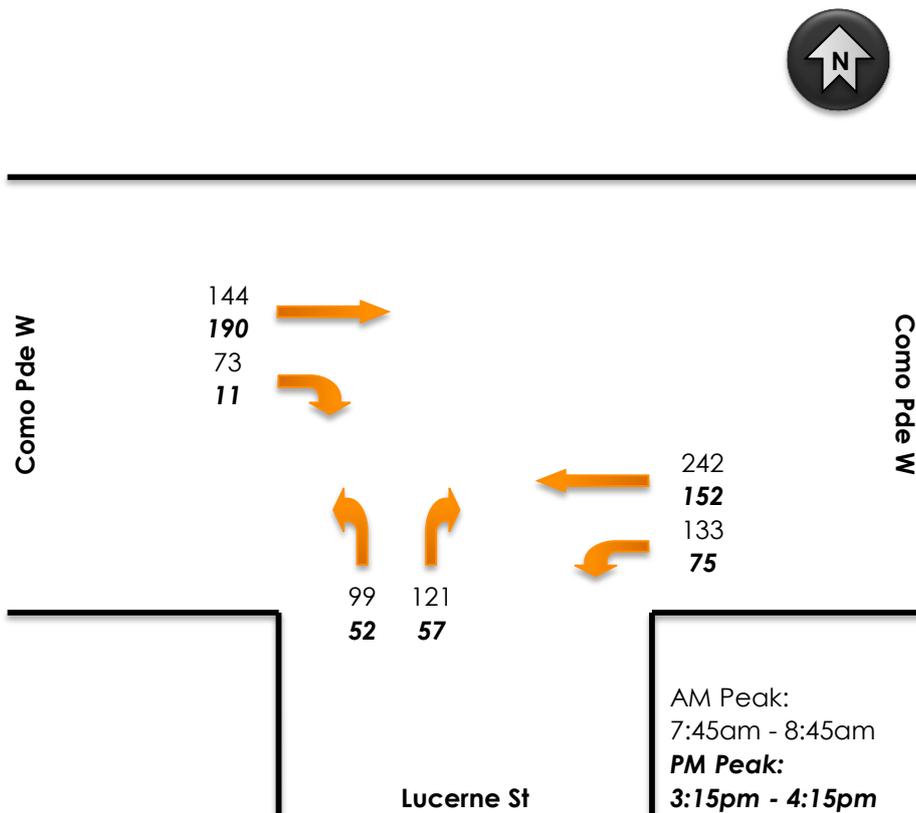
## 2.4 Traffic Volumes

Traffic volume surveys were undertaken by Trans Traffic Survey on behalf of **onemilegrid** on Tuesday 11<sup>th</sup> May 2021, between 7:00 AM and 10:00 AM and between 1:30 PM and 4:30 PM. The surveys were undertaken at the following intersections in the vicinity of the site:

- Warrigal Road / Naples Road;
- Como Parade West / Lucerne Street; and
- Lucerne Street / Naples Road.

The peak hour results of the surveys are shown in Figure 8 to Figure 10.

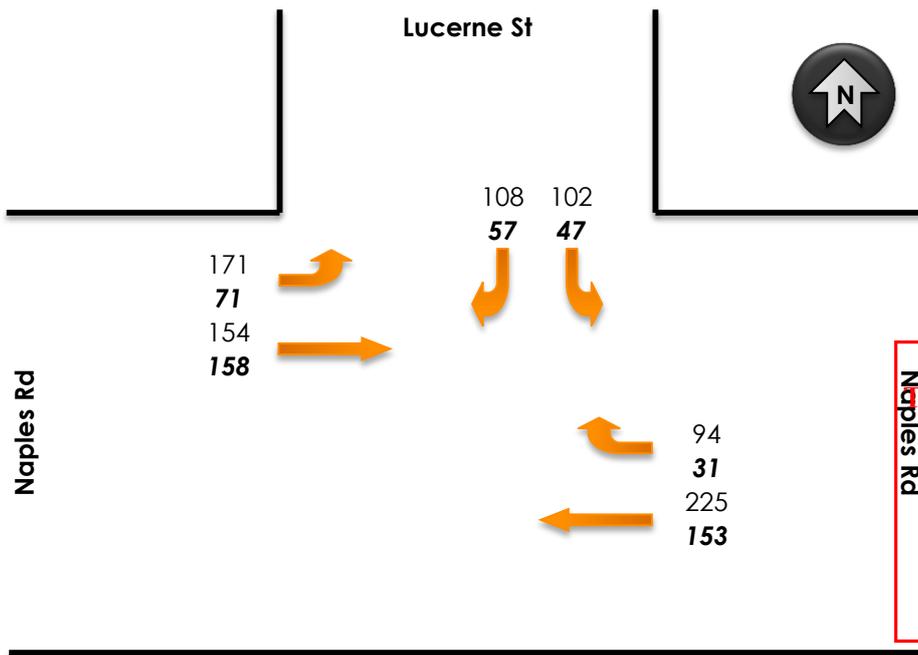
**Figure 8 Existing Traffic Volumes Como Parade West / Lucerne Street - May 2021**



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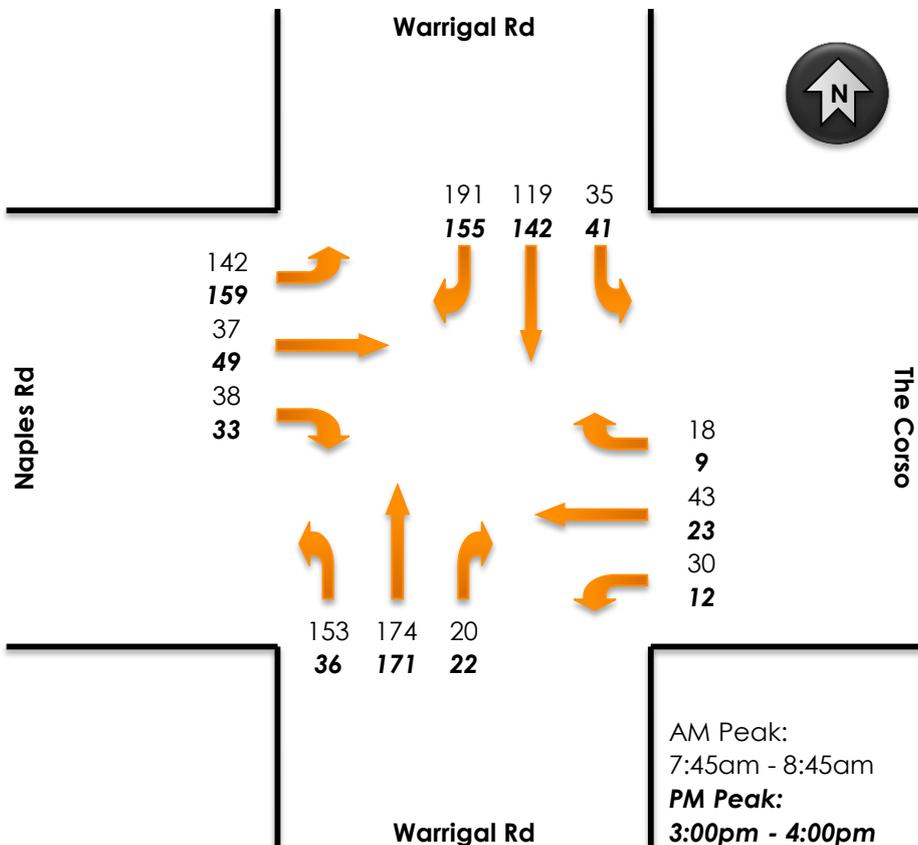
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Figure 9 Existing Traffic Volumes Lucerne Street/Naples Road – May 2021



AM Peak:  
7:45am - 8:45am  
**PM Peak:**  
3:00pm - 4:00pm

Figure 10 Existing Traffic Volumes Warrigal Road/Naples Road/The Corso - May 2021



AM Peak:  
7:45am - 8:45am  
**PM Peak:**  
3:00pm - 4:00pm

In addition, traffic volume, speed and classification surveys were undertaken by Trans Traffic Survey on behalf of **onemilegrid** at the northern end of Lucerne Street and eastern end of Naples Road, for a one-week period from Tuesday 11<sup>th</sup> May 2021 to Monday 17<sup>th</sup> May 2021 inclusive. The results of the surveys are summarised in Table 1 and Table 2.

**Table 1 Traffic Volume and Speed Surveys – Lucerne Street**

<i>Time Period</i>	<i>Direction</i>	<i>Traffic Volume (vpd)</i>	<i>Average Speed (km/h)</i>	<i>85<sup>th</sup> Percentile Speed (km/h)</i>
Weekday Average	Northeast-bound	1,072	30.5	36.6
	Southwest-bound	1,066	30.7	35.7
	Both Directions	2,138	30.5	36.1
7 Day Average	Northeast-bound	973	32.6	38.4
	Southwest-bound	959	32.3	36.9
	Both Directions	1,932	32.6	37.7

**Table 2 Traffic Volume and Speed Surveys – Naples Road**

<i>Time Period</i>	<i>Direction</i>	<i>Traffic Volume (vpd)</i>	<i>Average Speed (km/h)</i>	<i>85<sup>th</sup> Percentile Speed (km/h)</i>
Weekday Average	Southeast-bound	1,897	34.8	38.5
	Northwest-bound	1,704	35.7	40.1
	Both Directions	3,601	35.6	39.4
7 Day Average	Southeast-bound	1,718	33.7	37.2
	Northwest-bound	1,478	36.0	40.0
	Both Directions	3,196	34.9	38.5

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## 2.5 Traffic Conditions

### 2.5.1 General

To assess the operation of the surveyed intersection, the traffic volumes have been input into SIDRA Intersection, a traffic modelling software package.

The SIDRA Intersection software package has been developed to provide information on the capacity of an intersection with regard to a number of parameters. Those parameters considered relevant are, Degree of Saturation (DoS), 95th Percentile Queue, and Average Delay as described below.

**Table 3 SIDRA Intersection Parameters**

Parameter	Description	
Degree of Saturation (DoS)	The DoS represents the ratio of the traffic volume making a particular movement compared to the maximum capacity for that particular movement. The value of the DoS has a corresponding rating depending on the ratio as shown below.	
	Degree of Saturation	Rating
	Up to 0.60	Excellent
	0.61 – 0.70	Very Good
	0.71 – 0.80	Good
	0.81 – 0.90	Fair
	0.91 – 1.00	Poor
Above 1.00	Very Poor	
	It is noted that whilst the range of 0.91 – 1.00 is rated as 'poor', it is acceptable for critical movements at an intersection to be operating within this range during high peak periods, reflecting actual conditions in a significant number of suburban signalised intersections.	
Average Delay (seconds)	Average delay is the time delay that can be expected for all vehicles undertaking a particular movement in seconds.	
95th Percentile (95%ile) Queue	95%ile queue represents the maximum queue length in metres that can be expected in 95% of observed queue lengths in the peak hour	

The results of the analysis are provided in Table 4 to Table 9.

### 2.5.2 Warrigal Road / Naples Road / The Corso

The intersection of Warrigal Road / Naples Road / The Corso is shown to operate under excellent conditions during both the AM and PM peak hours.

**Table 4 Warrigal Road / Naples Road / The Corso – AM Peak Hour**

Approach	D.o.S.	Avg Delay	Queue (m)
Warrigal Road (S)	0.200	2.9	1.6
The Corso	0.136	8.2	3.5
Warrigal Road (N)	0.245	5.1	9.7
Naples Road	0.248	7.5	7.2
<b>Intersection</b>	<b>0.248</b>	<b>5.1</b>	<b>9.7</b>

**Table 5 Warrigal Road/Naples Road/The Corso – PM Peak Hour**

<i>Approach</i>	<i>DoS</i>	<i>Avg. Delay (sec)</i>	<i>Queue (m)</i>
Warrigal Road (S)	0.132	1.6	1.6
The Corso	0.063	7.7	1.6
Warrigal Road (N)	0.215	4	8
Naples Road	0.253	7.1	7.5
<b>Intersection</b>	<b>0.253</b>	<b>4.4</b>	<b>8</b>

### 2.5.3 Naples Road / Lucerne Street

The intersection of Naples Road / Lucerne Street is shown to operate under excellent conditions during both the AM and PM peak hours.

**Table 6 Naples Road / Lucerne Street – AM Peak Hour**

<i>Approach</i>	<i>D.o.S.</i>	<i>Avg Delay</i>	<i>Queue (m)</i>
Naples Road (E)	0.233	2.8	7.1
Lucerne Street	0.285	8	8.2
Naples Road (W)	0.206	3	0
<b>Intersection</b>	<b>0.285</b>	<b>4.1</b>	<b>8.2</b>

**Table 7 Naples Road / Lucerne Street – PM Peak Hour**

<i>Approach</i>	<i>DoS</i>	<i>Avg. Delay (sec)</i>	<i>Queue (m)</i>
Naples Road (E)	0.114	1.3	1.9
Lucerne Street	0.111	6.8	2.9
Naples Road (W)	0.134	1.8	0
<b>Intersection</b>	<b>0.134</b>	<b>2.6</b>	<b>2.9</b>

### 2.5.4 Como Parade West / Lucerne Street

The intersection of Como Parade West / Lucerne Street is shown to operate under excellent conditions during both the AM and PM peak hours.

**Table 8 Como Parade West / Lucerne Street – AM Peak Hour**

<i>Approach</i>	<i>D.o.S.</i>	<i>Avg Delay</i>	<i>Queue (m)</i>
Lucerne Street	0.425	14.3	17.5
Como Parade West (E)	0.150	2.0	0
Como Parade West (W)	0.188	3.7	6.5
<b>Intersection</b>	<b>0.425</b>	<b>5.8</b>	<b>17.5</b>

**Table 9 Como Parade West / Lucerne Street – PM Peak Hour**

<i>Approach</i>	<i>DoS</i>	<i>Avg. Delay (sec)</i>	<i>Queue (m)</i>
Lucerne Street	0.142	10.2	4.1
Como Parade West (E)	0.084	1.9	0
Como Parade West (W)	0.116	0.5	0.8
<b>Intersection</b>	<b>0.142</b>	<b>3</b>	<b>4.1</b>

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## 2.6 Public Transport

The full public transport provision in the vicinity of the site is shown in Figure 11 and detailed in Table 10.

Figure 11 Public Transport Provision



Table 10 Public Transport Provision

Mode	Route No.	Route Description	Nearest Stop/Station
Train		Frankston Line	Mentone/Parkdale
Bus	708	Hampton Station to Carrum Station via Highett & Southland & Chelsea Heights	Como Parade West
	811	Dandenong - Brighton via Heatherton Road & Springvale	Como Parade West
	812	Dandenong - Brighton via Parkmore Shopping Centre	Como Parade West

The site has very good public transport accessibility, with bus services accessible from the immediate vicinity of the site and access to the train network approximately 800 metres to the northwest or southeast at Mentone and Parkdale Railway Stations respectively.

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### 3 DEVELOPMENT PROPOSAL

---

#### 3.1 General

It is proposed to expand the existing operations of the school to provide for additional students and a new under-croft parking area.

The new building will allow for an increased student capacity, providing facilities to accommodate an additional 150 students. The school projects additional staff members at a ratio of 1 staff member per 12 students, which would result in an additional 13 staff members.

The new under-croft parking area proposes the provision of 84 additional car parking spaces, including 2 accessible/DDA bays.

It is proposed to provide a total of 32 bicycle parking spaces in the landscaped areas nearby the new parking structure.

Additionally, it is proposed to create a new crossover to Warrigal Road to provide for vehicle access to the existing maintenance sheds, as the new building footprint will encroach on the existing access to the sheds.

#### 3.2 Access and Circulation

The proposed under croft parking area will provide for additional staff parking and a new pick-up/drop-off area.

The car park proposes the construction of two access points to Naples Road, with the northwestern access point facilitating entry only movements and the southeastern access facilitating exit only movements.

The proposed access points may result in the loss of up to 4 on-street parking spaces along the Naples Road frontage.

To facilitate student pick-up and drop-off activities, vehicles will enter the site from Naples Road, and circulate to the northeastern end of the parking area and then move toward the drop-off/pick-up spaces along the southeastern boundary. The proposed parking, access and pick-up layout are shown in Figure 12.

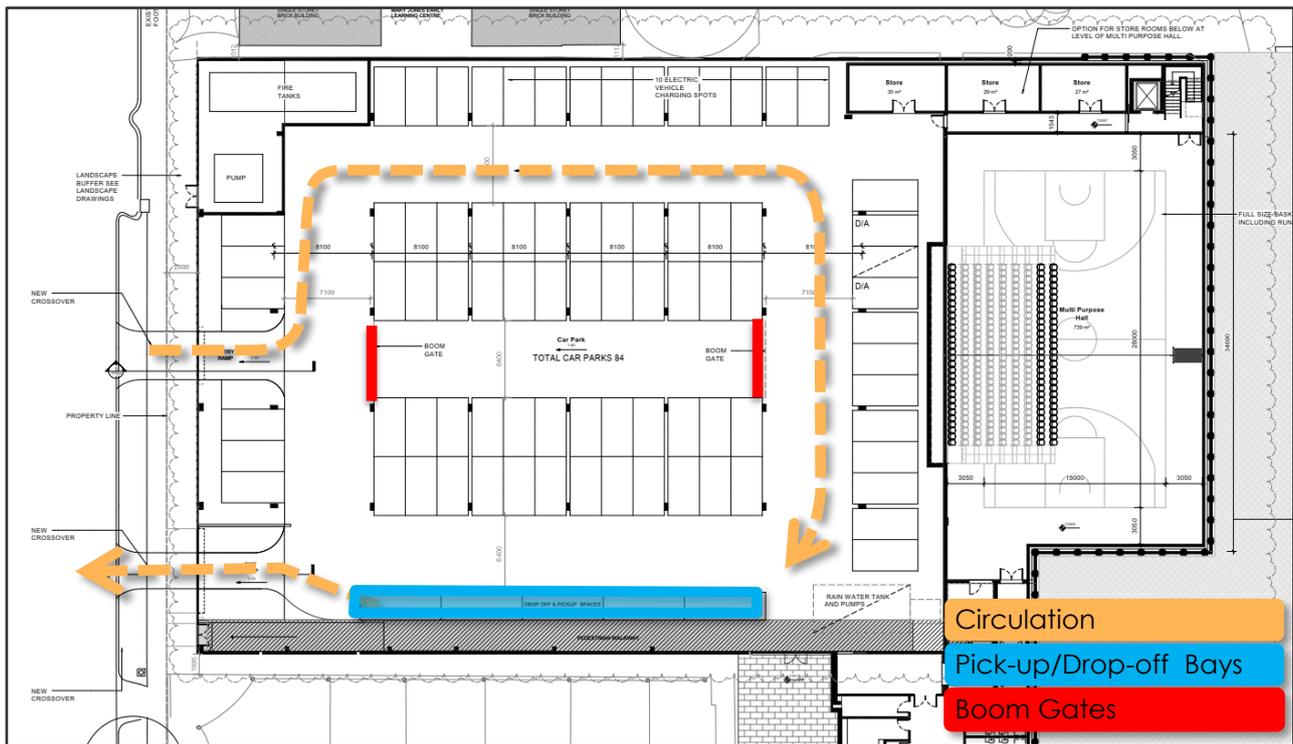
The central portion of the car park will be allocated as staff parking. Boom gates will be provided to separate this staff area from the general pick up and drop off circulation areas.

As noted above, it is also proposed to create a new crossover to Warrigal Road to provide vehicle access to the existing maintenance sheds.

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**Figure 12 Parking, Access, and Pick-up Layout**



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## 4 DESIGN ASSESSMENT

### 4.1 Kingston Planning Scheme – Clause 52.06

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 section.

#### 4.1.1 Design Standard 1 – Accessways

A summary of the assessment for Design Standard 1 for the Naples Road accesses is provided in Table 11. An assessment of the Warrigal Road maintenance vehicle access is provided in Table 12.

Swept path assessments for the Naples Road and Warrigal Road access points are provided in Appendix A.

**Table 11 Clause 52.06-9 Design Assessment – Design Standard 1 (Naples Road Access)**

<i>Requirement</i>	<i>Comments</i>
Be at least 3 metres wide	Satisfied
Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres wide	Satisfied
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	N/A – no dead-end aisles
Provide at least 2.1 metres headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8 metres	Satisfied – a minimum height clearance of 2.2 metres is achieved
If the accessway serves four or more car spaces or connects to a road in a Road Zone, the accessway must be designed so that cars can exit the site in a forward direction	Satisfied – all cars can exit in a forward direction
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 Road Zone	Satisfied – two accessways are proposed to facilitate concurrent entry and exit 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 900mm in height.	Satisfied – the 2.5 m setback of the building from the property boundary provides the required corner splay
If an accessway to four or more car parking spaces is from land in a Road Zone, the access to the car spaces must be at least 6 metres from the road carriageway.	N/A – does not connect to a Road Zone

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**Table 12 Clause 52.06-9 Design Assessment – Design Standard 1 (Warrigal Road Access)**

<i>Requirement</i>	<i>Comments</i>
Be at least 3 metres wide	Satisfied
Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres wide	Satisfied
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	N/A – private parking area.
Provide at least 2.1 metres headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8 metres	Satisfied – a minimum height clearance of 2.2 metres is achieved
If the accessway serves four or more car spaces or connects to a road in a Road Zone, the accessway must be designed so that cars can exit the site in a forward direction	It is recommended to provide a break in the proposed fence adjacent to the maintenance compound, to allow vehicles to turn around within the site and exit in a forward direction.
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 Road Zone	N/A – accessway does not provide access to 10 or more car parking spaces.
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 900mm in height.	Satisfied – the existing wall will be removed in the vicinity of the access point to provide the prescribed pedestrian sight triangles.
If an accessway to four or more car parking spaces is from land in a Road Zone, the access to the car spaces must be at least 6 metres from the road carriageway.	Satisfied

## 4.1.2 Design Standard 2 – Car Parking Spaces

All angled car spaces on-site are proposed with a minimum width of 2.6 metres, length of at least 4.9 metres and are accessed from aisles of no less than 6.4 metres. The parallel pick-up/drop-off bays are provided with a width of 2.3 metres, length of 6.7 metres and an aisle in excess of 3.6 metres. The proposed car parking space dimensions are in accordance with Design Standard 2 of the Planning Scheme.

Spaces have been provided with adequate clearance to columns, walls and other high obstructions in accordance with adjacent to walls have been suitably widened in accordance with Diagram 1 of Design Standard 2 of the Planning Scheme.

The accessible bays are provided with a length of 5.4 metres and a width of 2.6 metres, and an adjacent shared area of the same dimensions, in excess of the Australian Standard for Off-Street Parking for People with Disabilities AS2890.6.

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### 4.1.3 Design Standard 3 – Gradients

The site access points are graded no steeper than 1:10. As such grades and transitions accord with the requirements of Clause 52.06 of the Kingston Planning Scheme.

## 4.2 Bicycle Parking

Bicycle parking is proposed in the form of in-ground hoops, which are spaced at 1.0 m offsets. An allowance of 1.8 m is made for bicycles parked at the rails, while an access aisle of 1.5 m is provided.

These dimensions accord with the requirements of the Australian Standard for bicycle parking facilities (AS 2890.3:2015), while also accommodating the bicycle dimensions specified under Clause 52.34 of the Kingston Planning Scheme.

## 4.3 Kingston Planning Scheme - Clause 52.29

The development proposal is subject to the requirements of Clause 52.29 of the Kingston Planning Scheme which applies to land adjacent to a Road Zone Category 1 (Warrigal Road) and aims to ensure appropriate access is provided to identified roads.

Relevant to the proposed development, the Clause states that a permit is required to create or alter access to a road in a Road Zone, Category 1, and that the proposal is to be referred to the relevant referral authority (in this case the Department of Transport / VicRoads).

Before deciding on the appropriateness or otherwise of an application to alter access to the Road Zone, the responsible authority must consider the following:

- The Municipal Planning Strategy and the Planning Policy Framework.
- The views of the relevant road authority.
- The effect of the proposal on the operation of the road and on public safety.
- Any policy made by the relevant road authority pursuant to Schedule 2, Clause 3 of the Road Management Act 2004 regarding access between a controlled access road and adjacent land.

The proposal seeks to implement a new crossover to Warrigal Road, because the access to the maintenance shed from the existing Warrigal Road crossover would be impeded by the footprint of the proposed building. It is expected that vehicle movements to and from this access will be limited in numbers, used by maintenance workers only, and will be designed in accordance with the requirements of Clause 52.06 of the Kingston Planning Scheme. It is therefore considered that this proposed access is appropriate.

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## 5 BICYCLE PARKING

The bicycle parking requirements for the subject site are identified in Clause 52.34 of the Kingston Planning Scheme, which specifies the following requirements for the different components of the proposed development.

Clause 52.34 states “Where the floor area occupied by an existing use is increased, the requirement for bicycle facilities only applies to the increased floor area of the use.” The bicycle parking requirements therefore only apply to the proposed increase in floor area, and are summarised below. It is noted this refers to the floor area, whereas the measure for a secondary school is based on staff and student numbers, however the principle remains the same.

**Table 13 Clause 52.34 – Bicycle Parking Requirements**

Component	No/Area	Requirement	Total
Secondary school	13 staff	1 space per 20 employees	1
	150 students	1 space per 5 pupils	30
<b>Total</b>		<b>Students</b>	<b>30</b>
		<b>Employees</b>	<b>1</b>

Where 5 or more employee bicycle spaces are provided, employee facilities are required in accordance with Clause 52.34 of the Kingston Planning Scheme. As only 1 staff space is required, additional facilities are not required.

It is proposed to provide a total of 32 bicycle parking spaces.

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

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## 6 CAR PARKING

### 6.1 Statutory Car Parking Requirements

The car parking requirements for the subject site are identified in Clause 52.06 of the Kingston Planning Scheme. In this regard, Clause 52.06 stipulates that where any part of the land is identified as being within the Principal Public Transport Network Area, the Column B car parking rates apply to the proposed development. As shown in Figure 4, the site is located within the Principal Public Transport Network Area, and therefore, the Column B rates apply, as shown below.

Additionally, Clause 52.06 also specifies that:

*'Where an existing use is increased by the measure specified in Column C of Table 1 for that use, the car parking requirement only applies to the increase, provided the existing number of car parking spaces currently being provided in connection with the existing use is not reduced.'*

Table 14 outlines the statutory requirements for the proposed developments.

**Table 14 Clause 52.06 – Car Parking Requirements**

Use	No.	Rate	Car Parking Measure	Total
Secondary school	13 staff	1.2 spaces	to each employee that is part of the maximum number of employees on the site at any time	15
<b>Total</b>				<b>15</b>

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

It is proposed to provide 84 additional parking spaces well in excess of the requirements. The proposed parking provision is therefore considered appropriate.

### 6.2 Accessible Car Parking

The Building Code of Australia (BCA) specifies the minimum requirements for provision of accessible car parking.

The proposed school expansion, classified as a Class 9B building, requires provision of one accessible car spaces for every 100 car parking spaces or part thereof.

Noting the proposed provision of 84 car spaces on-site, the BCA requires at least one accessible car space on-site.

The proposed provision of two spaces thus satisfies the BCA requirements.

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## 7 TRAFFIC

### 7.1 Traffic Generation

#### 7.1.1 Students

In order to determine the likely traffic generation of the use, **onemilegrid** has undertaken a review of the most recently available Victorian Integrated Survey of Travel and Activity (VISTA) data. Data within the Kingston LGA suggests that 26% of pick-up/drop-off activity was by car, although it should be recognised that this data represented a relatively small sample size.

To allow assessment for a larger sample size, data for neighbouring LGAs was also considered, including Frankston, Greater Dandenong, Monash, Glen Eira and Bayside. For trips to secondary schools within the broader area (including Kingston), the data suggests that 50% of pick-up/drop-off activity was by car, with the remainder comprising bus, bicycle and walking trips.

It is expected that each vehicle will carry more than 1 student on average with an adopted rate of 1.2 students per car.

The vehicle occupancy and anticipated pick-up/drop-off rate by car gives an anticipated traffic generation rate of 0.83 movements per student during both the morning drop-off and afternoon pick-up periods, distributed evenly in the inbound and outbound directions.

Application of this rate to the proposed 150 students gives 125 movements during the AM and PM school peak hours, including 63 inbound and 63 outbound movements.

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#### 7.1.2 Staff

In determining the proportion of staff who may drive to the site, a review of journey to work data from the 2016 Census suggests that 86% of work journeys to Kingston were by car, suggesting an additional 11 vehicle movements during the AM and PM peaks for staff. It is expected that all staff movements will be inbound during the AM peak hour and outbound during the PM peak hour.

## 7.2 Traffic Distribution

The following assumptions have been made in order to assess the impacts of the proposed parking area and school expansion on the surrounding road network:

- All staff movements will be inbound during the AM peak hour and outbound during the PM peak hour;
- All movements associated with the new parking area will be via the Warrigal Road / Naples Road / The Corso intersection;
- Traffic distribution of additional volumes at the Warrigal Road / Naples Road / The Corso intersection will have the same distribution as existing:
  - + Outbound movements in the AM peak have an 80%/20% split to the north and south respectively;
  - + Inbound movements in the AM peak have a 55%/45% split from the north and south respectively;
  - + Outbound movements in the PM peak have an 80%/20% split to the north and south respectively; and
  - + Inbound movements in the PM peak have an 80%/20% split from the north and south respectively.

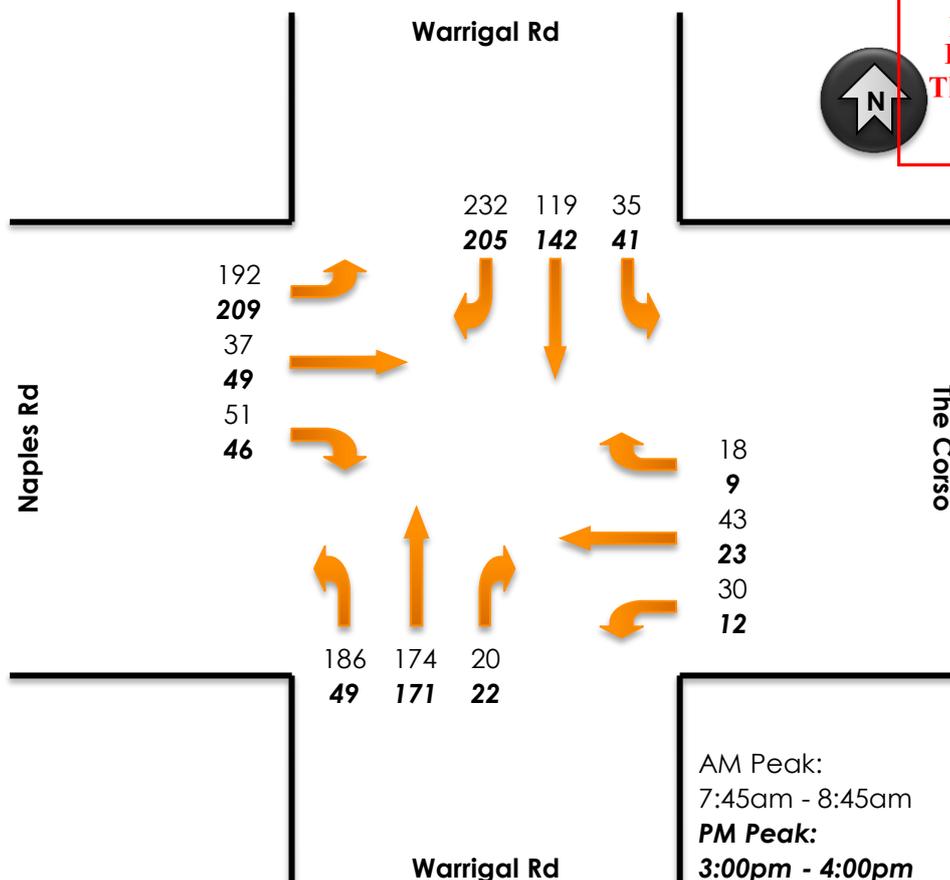
It is acknowledged that there may be some redistribution of existing traffic volumes around the site, due to the introduction of the off-street car parking area from Naples Road. It is difficult to quantify the extent to which this redistribution will occur, however it is expected that if anything this redistribution would reduce existing traffic volumes at nearby intersections (such as the Naples Road / Lucerne Street and Como Parade West / Lucerne Street intersections).

## 7.3 Traffic Impact

### 7.3.1 Peak Hour Traffic

Based on the above assumptions and the expected traffic generation, the future intersection volumes at the Warrigal Road/Naples Road/The Corso have been determined. The resultant peak hour traffic volumes are shown in Figure 13.

**Figure 13 Resultant Future Traffic Volumes**



To assess the operation of the Warrigal Road / Naples Road / The Corso intersection, the traffic volumes have been input into SIDRA Intersection, a traffic modelling software package. The results of the analysis compared to the existing conditions results are shown below in Table 15.

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**Table 15 Warrigal Road / Naples Road / The Corso – Existing / Future Conditions**

Approach	DoS		Avg. Delay (sec)		Queue (m)	
	Existing	Future	Existing	Future	Existing	Future
AM Peak						
Warrigal Road (S)	0.200	0.245	2.9	3.2	1.6	2.0
The Corso	0.136	0.189	8.2	9.8	3.5	4.7
Warrigal Road (N)	0.245	0.333	5.1	6.1	9.7	15.3
Naples Road	0.248	0.396	7.5	9.2	7.2	15.3
PM Peak						
Warrigal Road (S)	0.132	0.147	1.6	1.8	1.6	1.8
The Corso	0.063	0.077	7.7	8.6	1.6	1.9
Warrigal Road (N)	0.215	0.270	4.0	4.5	8.0	10.8
Naples Road	0.253	0.357	7.1	7.9	7.5	12.6

As shown above the intersection is expected to continue to operate under excellent conditions during both the morning and afternoon peak hours with minimal queues and delays experienced by motorists.

The level of traffic expected to be generated by the development is therefore expected to have minimal impact on the operation of the intersection and the surrounding road network.

As noted in Section 7.2, there is potential for some redistribution of existing traffic volumes around the site, with drivers instead accessing the site from the new Naples Road access. This could result in slightly higher traffic volumes utilising the Warrigal Road / Naples Road / The Corso intersection, however it is clear from the analysis presented above that there is spare capacity at the intersection to accommodate additional volumes if needed. As such this redistribution is not expected to result in any issues from a traffic capacity perspective.

### 7.3.2 Daily Traffic

As outlined in Section 2.4 of this report, Naples Road currently carries in the order of 3,600 vehicles per day (two-way volume).

Based on the cross-section of Naples Road at the site frontage, which comprises a marked traffic lane in either direction clear of designated kerbside parallel parking provision, it is considered that this section of Naples Road functions as a connector street. Connector streets can carry target volumes of up to 7,000 vehicles per day.

Traffic volumes anticipated to be generated by the proposed development comprise:

- Staff inbound movements during the morning peak hour - 11 vehicle movements;
- Drop off movements during the morning peak hour – 125 vehicle movements (two-way);
- Staff outbound movements during the afternoon school peak hour – 11 vehicle movements; and
- Pick up movements during the afternoon school peak hour – 125 vehicle movements (two-way).

This gives a total of 272 additional vehicle movements per day. It is clear that with this additional traffic, the daily volume on Naples Road would still be well within the 7,000 vehicles per day upper limit for a connector street.

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## 8 RESPONSE TO COUNCIL COMMENTS

Planning referral advice from Kingston City Council dated 3 September 2021 has been reviewed, with responses to traffic engineering matters provided in Table 16 below.

**Table 16** Table Title

Comment	Response
<p>There are some noticeable discrepancies between SIDRA analysis provided by the applicant and Council conducted analysis for Lucerne/Naples intersection based on the same data provided in the applicant's traffic report. Please refer to the appendix in this letter for details.</p> <p>Based on Council's experience and community concerns raised in the past, the intersection of Lucerne Street/Naples Road causes the traffic to queue up along Naples Road northbound.</p>	<p><b>onemilegrid</b> has reviewed the SIDRA analysis provided by Council and has undertaken additional sensitivity checks in terms of traffic volumes, peak flow factors, and gap acceptance parameters. Each of these sensibility checks returned a lower level of utilisation and additional spare capacity compared the Council analysis.</p> <p>The assessment presented in this report adopts peak flow factors of 84% in the AM peak hour and 90% in the PM peak hour as observed in the turning movement counts undertaken at the intersection. As such the 'demand flows' assessed in the model are actually marginally higher than those that were analysed in the Council assessment.</p> <p>The analysis in this report utilises the 'Two Way Sign Control' gap acceptance calibration that is built into the SIDRA 9 software package, to calibrate critical gaps and follow up headways based on the geometry of the intersection. Additional checks have been undertaken utilising the gap acceptance parameters specified in the Austroads guide, and the model returned results comparable to those presented in this report.</p> <p>Without having the Council SIDRA model to review, it is not possible to determine where the differences between our model and the Council model lie. Nevertheless, it should be recognised that even when assessing the outputs of the Council model, it should be recognised that the intersection is shown to operate under excellent conditions in the AM and PM peak hours with minimal queues and delays to be expected.</p>

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Depending on the result of analysis required in item 1, it is strongly encouraged that the applicant considers a right turn bay on Naples Road into the proposed carpark to allow some queuing space for right turn vehicles without blocking the through traffic on Naples Road.

Based on the above, it is not considered necessary to provide a right turn lane along Naples Road as queues and delays are anticipated to be minimal.

It is expected that there will be a minor increase in traffic volumes in the precinct as a result of the additional students, however overall volumes would be split between the car park access and the Naples/Lucerne intersection.

It should be recognised that the existing pick up and drop off area accessed from Lucerne Street will be retained, and therefore existing traffic volumes will be split between the two locations.

As such it is expected that the right turn volume into the new car park would be less than the right turn volume currently experienced from Naples Road into Lucerne Street, which itself is expected to be reduced due to the provision of the new car park.

Conservatively considering the Council analysis of the Naples Road / Lucerne Street intersection, there is currently a 95<sup>th</sup> percentile queue of 1.5 vehicles for the right turn movement from Naples Road onto Lucerne Street, which in turn results in an entirely reasonable 2.0 second average delay to the through movement on Naples Road. Similarly low levels of queuing and delay would be expected at the car park access.

Traffic generation and distribution analysis is recommended to be conducted for the proposed carpark entrance and exit on Naples Road.

As above, the provision of the new pick-up/drop-off area is expected to divert traffic away from the Naples/Lucerne intersection. While the Lucerne Street pick up and drop off area will be retained, the provision of the new pick up and drop off area accessed from Naples Road is expected to draw existing traffic away from the Naples Road / Lucerne Street intersection.

The intersection is expected to continue to operate under excellent conditions with an expected increase in performance as right turn volumes from Naples Road to Lucerne Street are anticipated to decrease.

Similarly, the proposed access is expected to operate under excellent conditions given the similar arrangement, further facilitated with a separated exit point.

A SIDRA analysis is recommended for the Lucerne Street and Naples Road intersection future conditions.

As the new parking area will also divert traffic from the Lucerne Street pick up areas it is difficult to determine the exact impact that may occur. However, as traffic is to be diverted away from the intersection it is expected that it will continue to operate as existing or experience an improvement in performance.

Sight line splays are required at the exit of the carpark (it is noted this would be achieved if the building were setback 5 metres as previously recommended)

The building line is proposed to be positioned 2.5 metres back from the property boundary. The sight distance triangles for exiting vehicles are comfortably accommodated within the setback.

The accessible parking spaces should be increased to 5.4m long.

The proposed accessible parking spaces are provided with a length of 5.4 metres.

## 9 CONCLUSIONS

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It is proposed to construct a new building on the subject site, including a new under-croft car parking area.

The new parking area will be accessed via two crossovers from Naples Road, with one facilitating ingress movements and the other facilitating egress movements.

A total of 84 car parking spaces will be provided, including 2 accessible / DDA spaces. In addition, 32 bicycle parking spaces will be provided.

Based on the foregoing analysis, it is concluded that:

- The design of the proposed car parking, bicycle parking and access arrangements are generally in accordance with relevant design standards and are considered appropriate, pending the following matters being incorporated;
  - ✦ Providing pedestrian sight triangles on both sides of the proposed egress crossover to Naples Road, and at the proposed maintenance vehicle access on Warrigal Road; and
  - ✦ Providing a break in the proposed fence adjacent to the maintenance vehicle area, to allow vehicles to turn around on-site and exit to Warrigal Road in a forward direction.
- The proposed provision of staff and student bicycle parking meets the requirements of the Planning Scheme, and is therefore considered appropriate;
- The proposed supply of car parking is in excess of the requirements and is therefore considered appropriate; and
- The proposed development is expected to have minimal impact on the surrounding road network when compared to the existing operation, with intersections around the site expected to continue with spare capacity following the expansion of the use.

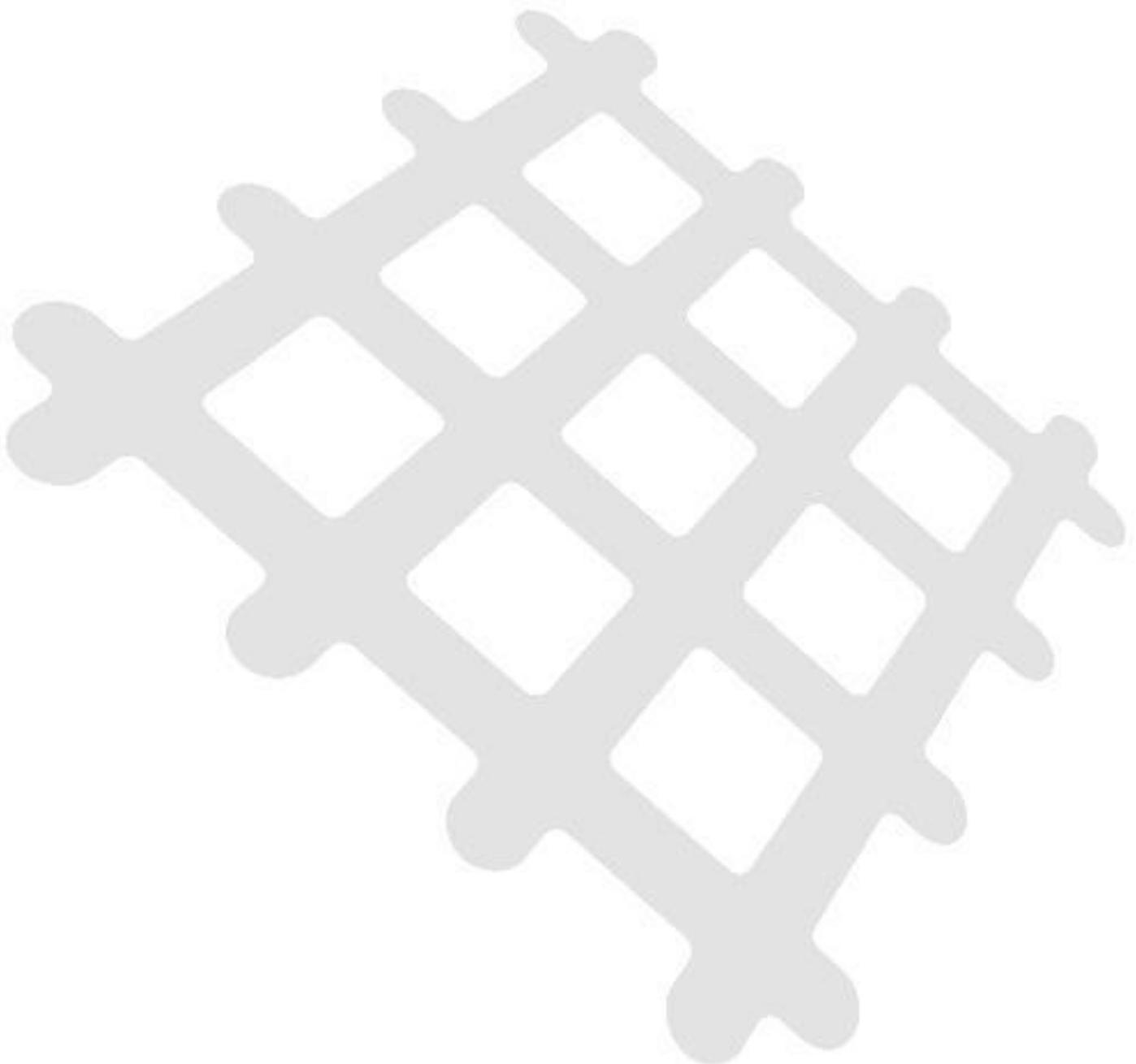
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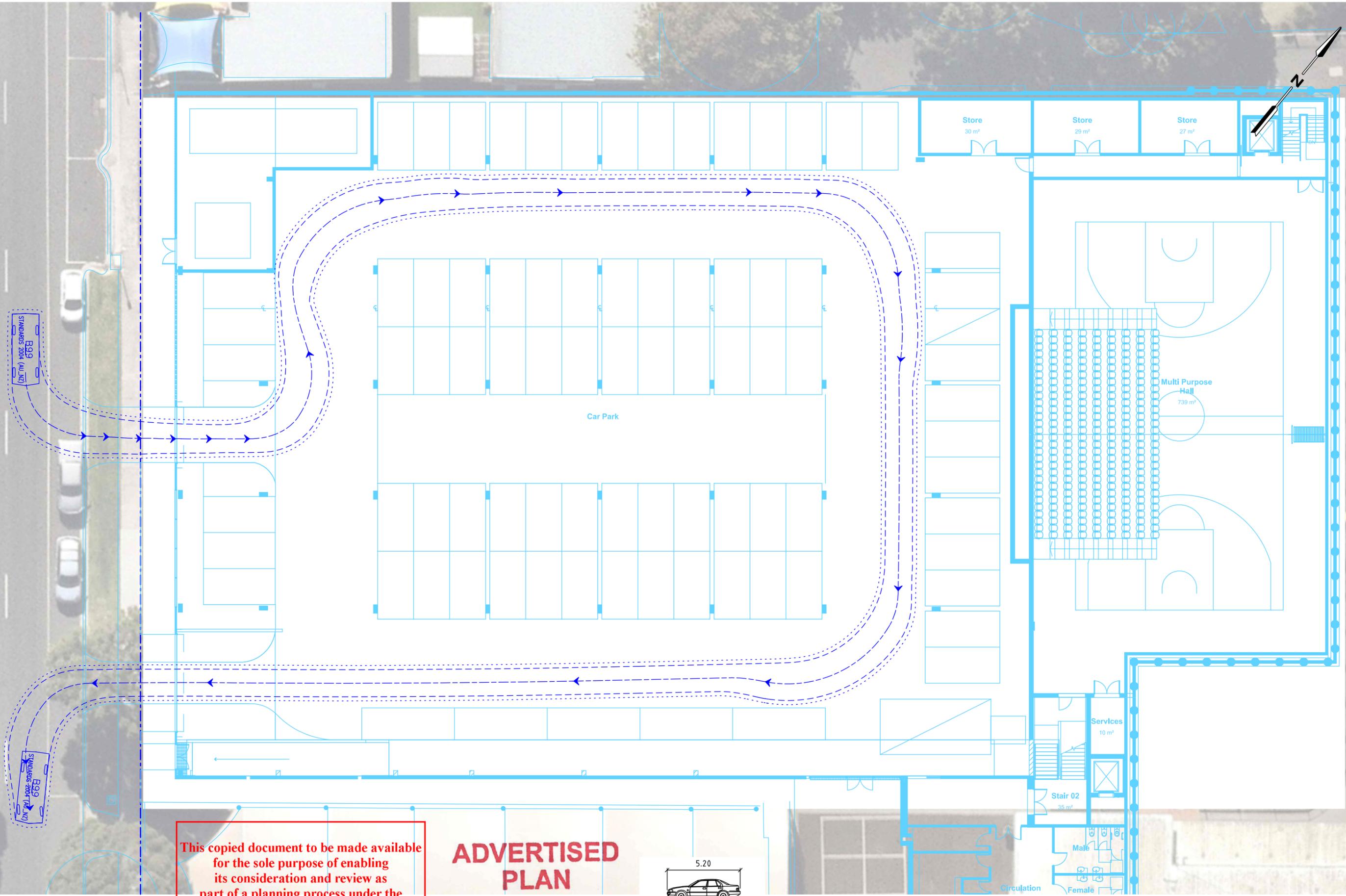
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# Appendix A Swept Path Assessment

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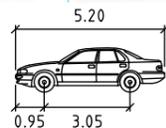
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B99	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

## SWEPT PATH LEGEND

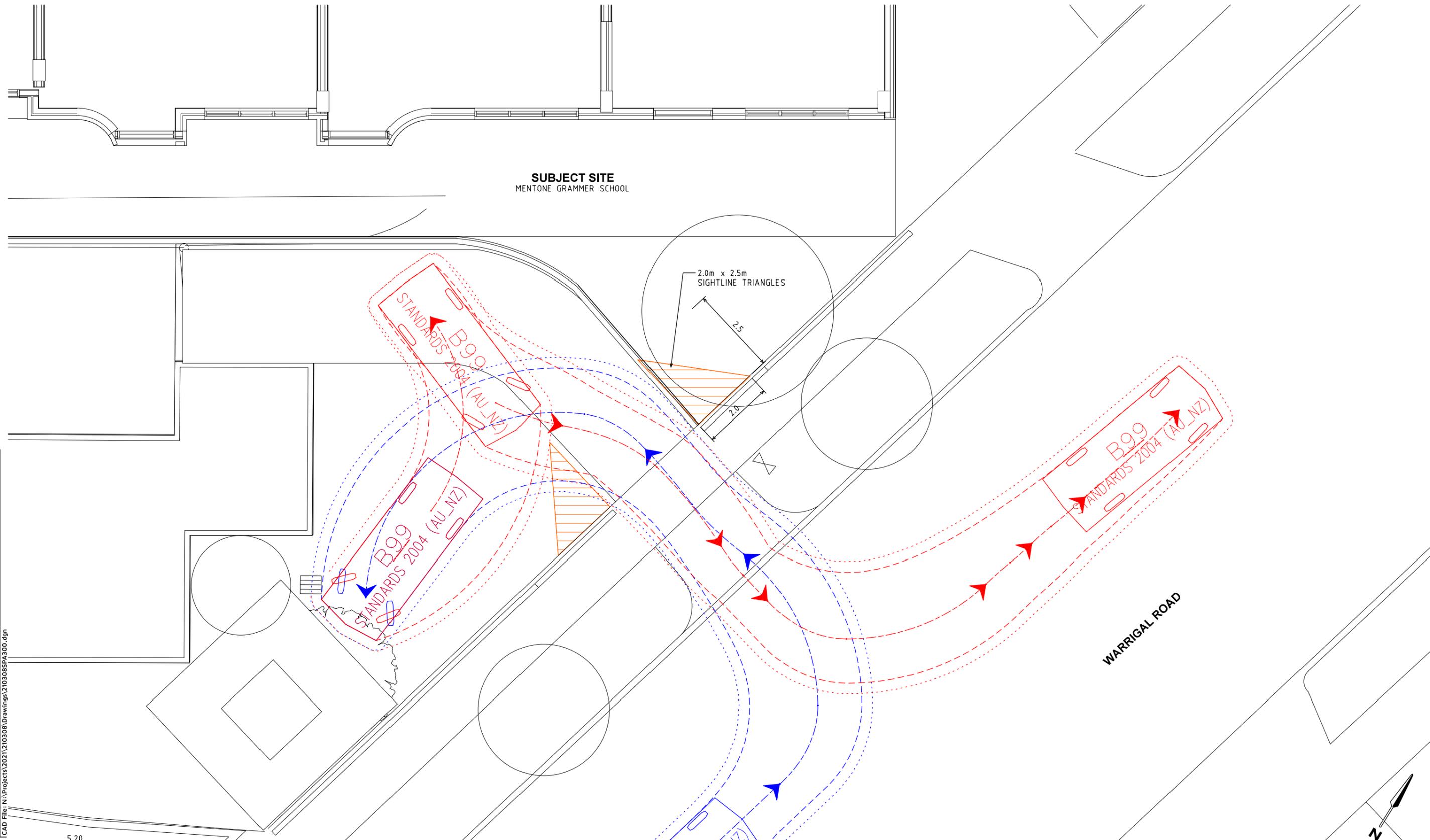
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**onemilegrid**  
TRAFFIC ENGINEERING  
56 Down Street, Collingwood, VIC 3066  
Email: info@onemilegrid.com.au Web: www.onemilegrid.com.au  
Phone (03) 9939 8250

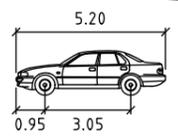
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Drawing Title 63 VENICE STREET MENTONE BASEMENT VEHICLE ACCESS SWEPT PATH ANALYSIS		
Designed MOB	Approved SV	Midway Ref 87 A8
Project Number 210308	Drawing Number SPA100	Revision B

**SUBJECT SITE**  
MENTONE GRAMMER SCHOOL



CAD File: N:\Projects\2021\210308\Drawings\210308SPA300.dgn



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B99 meters

Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

**SWEPT PATH LEGEND**

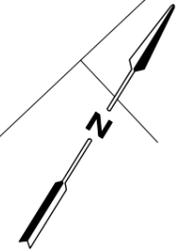
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Email: info@onemilegrid.com.au Web: www.onemilegrid.com.au  
Phone (03) 9939 8250

Scale 1:100 @ A3



Drawing Title  
63 VENICE STREET, MENTONE  
VEHICLE SITE ACCESS  
SWEEP PATH ANALYSIS

Designed RG	Approved SV	Metway Ref 87 A8
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Project Number 210308	Drawing Number SPA300	Revision A
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