Snowy Mountains Grammar School Limited

Snowy Mountains Grammar School - Senior School Learning Hub

Final Traffic Assessment

February 2021

Table of contents

Table index

Figure index

Appendices

1. Introduction

1.1 Background

GHD has been commissioned by Snowy Mountain Grammar School (SMGS) Limited to undertake transport planning and traffic engineering to support the development of the proposed Senior School Learning Hub.

SMGS currently has a population of (approximately):

- 120 primary school students
- 264 high school students
- 50 staff

The Senior School Learning Hub will be located within the high school, will support an increase of additional 44 students at SMGS and consists of a two-storey building with the following facilities:

- Additional classrooms
- Outdoor learning areas
- Science labs
- Seminar areas

No additional teaching staff are proposed as part of the Senior School Learning Hub development.

1.2 Subject Site

The SMGS is located at 6339 Kosciuszko Road, Jindabyne within the Snowy Monaro Regional Council Local Government Area (LGA).

The location of the SMGS Campus and the proposed location of the Senior School Learning Hub is displayed in Figure 1-1.

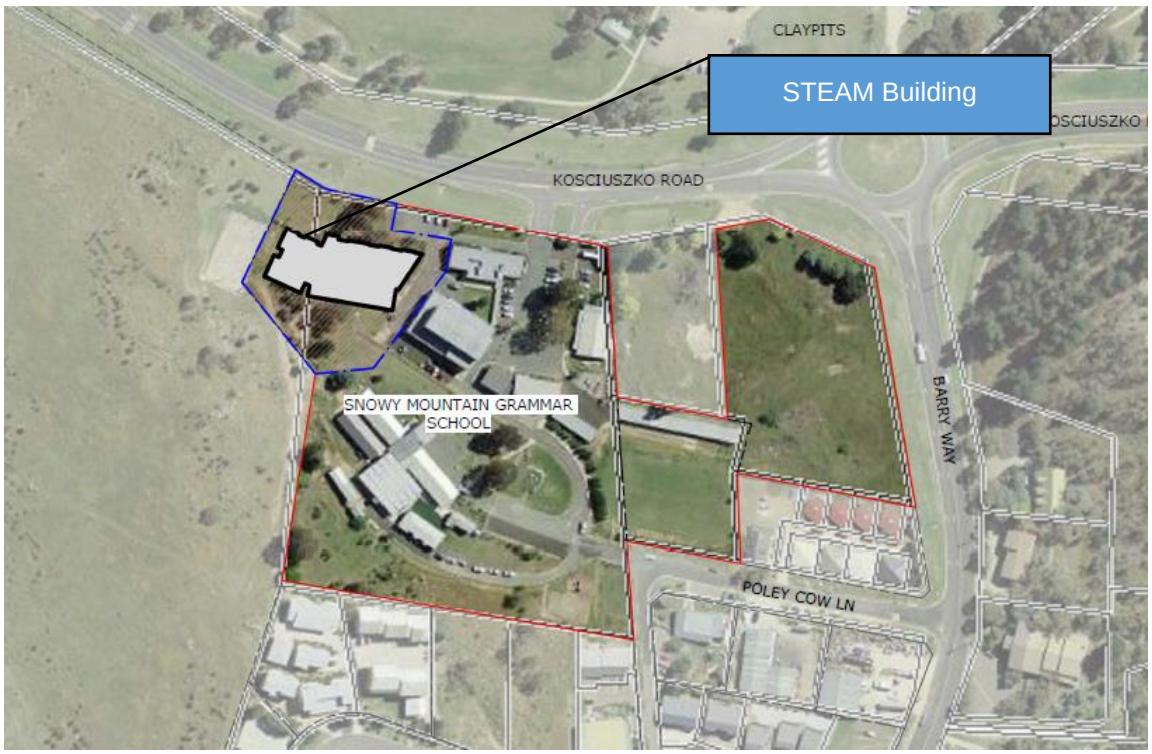

Figure 1-1 SMGS Subject Site

Under the current arrangement, the primary school is accessed from Poley Cow Lane and the secondary school (including all school bus activity) is accessed from Kosciuszko Road.

It is noted that the current access arrangement at the secondary school will not be impacted by the construction of the Senior School Learning Hub, with access and egress continuing to be maintained from Kosciuszko Road.

The ground floor and first-floor layouts of the proposed Senior School Learning Hub are displayed in Appendix A.

1.3 Assumptions and Limitations

The following assumptions were made as part of this study:

- Traffic surveys (from the 28th August 2019) and intersection modelling were undertaken using SIDRA 8 Network at the intersection of the Kosciuszko Road/SMGS Access.
- It is assumed that the vehicle activity associated with the current student and staff populations have been captured in the traffic surveys.
- Trip generation for the Steam Building has been based undertaken on a first-principles basis.
- The Senior School Learning Hub is expected to be completed before the commencement of the 2023 school year.
- SIDRA analysis has been undertaken for the current situation (2019), the 2023 horizon year and 2030 horizon year.
- A four percent annual growth rate was applied to current traffic volumes to determine the background 2023 and 2030 traffic volumes.

1.4 Background Data

The NSW Government is currently developing “Go Jindabyne”, a master plan that will support the ongoing development of Jindabyne, while accounting for its alpine setting and its importance as a tourist destination, particularly in winter months.

Additionally, the NSW Government has announced the establishment of a Special Activation Precinct (SAP) in the Snowy Mountains Regions, to increase tourism and grow the regional economy.

As part of these scope of works, the NSW Government is planning upgrades to the traffic and transport facilities in Jindabyne and its surrounds.

To support these upgrades the NSW Government commissioned the Go Jindabyne Mobility and Connectivity Study (2019).

The study recommends the potential implementation of a bypass of Jindabyne, to reduce the impact of traffic to and from the ski fields and promote walking and cycling for residents and visitors.
Currently, the NSW Government has not publicly committed to funding the Jindabyne Bypass.

Other recommendations of the Study include:

- Review speed limits along Kosciuszko Road in the vicinity of the town centre
- Provide more cycle facilities in Jindabyne
- Improve pedestrian crossings of Kosciuszko Road

1.5 Report Outline

This Traffic Assessment addresses the following:

- Section 2 – Existing Conditions – a review of the existing road and transport conditions, traffic volumes and crash data.
- Section 3 –Impact Assessment – an assessment of the trip generation and parking characteristics of the proposed SMGS Senior School Learning Hub and the performance of the intersections following the development.
- Section 4 – Summary and Conclusions.

2. Existing Conditions

2.1 Existing Road Network Characteristics

2.1.1 Road Hierarchy

Functional road classification involves the relative balance of the mobility and access functions. Transport for NSW define four levels in a typical functional road hierarchy, ranking from high mobility and low accessibility to high accessibility and low mobility. These road classes are:

- **Arterial Roads –** generally controlled by Transport for NSW, typically no limit in flow and designed to carry vehicles long distance between regional centres.
- **Sub-Arterial Roads** – can be managed by either Transport for NSW or local council. Typically, their operating capacity ranges between 10,000 and 20,000 vehicles per day, and their aim is to carry through traffic between specific areas in a sub-region, or provide connectivity from arterial road routes (regional links).
- **Collector Roads** – provide connectivity between local roads and the-arterial road network and typically carry between 2,000 and 10,000 vehicles per day.
- **Local Roads** – provide direct access to properties and the collector road system and typically carry between 500 and 4,000 vehicles per day.

2.1.2 Kosciuszko Road

Kosciuszko Road is a 95 km arterial road in the Snowy Mountains which links from Snowy Mountains Highway at Pine Valley in the northeast, to Kosciuszko National Park in the southwest. It passes through the towns of Berridale and Jindabyne and currently provides access to the SMGS Campus (secondary school).

In proximity to the SMGS Campus, Kosciuszko Road has the following characteristics:

- Two-way road with two traffic lanes in each direction
- A posted speed limit of 40 km/h during peak school hours
- A posted speed limit of 60 km/h to the east of SMGS
- A posted speed limit of 80 km/h to the west of SMGS

As displayed in Figure 2-1 and Figure 2-2, Kosciuszko Road provides two travel lanes in either direction and permits right turn movements both in and out of the SMGS Campus.

Figure 2-1 Kosciuszko Road, looking west of the SMGS Campus access

Figure 2-2 Kosciuszko Road, looking east towards SMGS Campus access

2.2 Existing Road Network Performance

2.2.1 Existing Traffic Volume

Jindabyne experiences significant increases in traffic in wintertime, associated with the ski resorts in the adjacent Snowy Mountains. Traffic sampling for this project was undertaken in August 2019 as a typical peak winter season. The peak season typically runs for up to 6 weeks, with the most intense traffic generation in school holiday periods, when SMGS will not be open.

This sampling in 2019 is more representative of the usual seasonal peak traffic than winter in 2020 when the ski season was severely disrupted by precautionary responses to the Covid-19 pandemic.

GHD engaged TTM Consulting Pty Ltd to undertake traffic surveys at the intersection of the Kosciuszko Road/SMGS Access on the 28th August 2019 to capture wintertime weekday school road network operating conditions.

The surveys were conducted between 7:00 am – 9:30 am and 2:30 pm – 4:00 pm to capture vehicle activity during peak periods of school operation.

The peak-hour survey conducted for the traffic network indicates that the morning peak hour occurs between 7:45 am - 8:45 am, while the afternoon peak hour occurs between 3:00 pm – 4:00 pm.

The current peak hour traffic volumes at the intersection of interest are displayed Figure 2-3.

With respect to the heavy vehicle (buses) turning in an out of the site, it is noted that:

- Generally, there were higher volumes of buses in the PM peak compared to the AM peak.
- There were higher volumes of bus activity in the AM period, recorded in the 15 minutes after the identified peak.

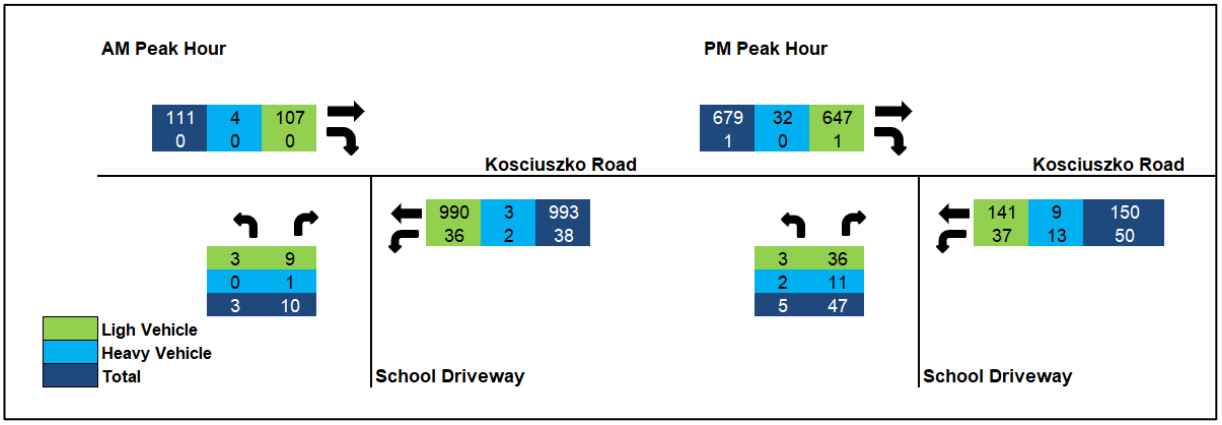

Figure 2-3 Current Peak Hour Traffic Volumes

A copy of the traffic survey undertaken for the intersection of interest is included in Appendix B.

2.2.2 Mid-Block Analysis

Table 2-1 (from the *Roads and Maritime Guide to Traffic Generating Developments*) indicates the mid-block capacities for urban roads.

Table 2-1 Urban Road Mid-Block Capacities

Level of Service	One Lane veh/h (SMGS Access)	Two Lanes veh/h (Kosciuszko Road)
A	200	900
B	380	1,400
C	600	1,800
D	900	2,200
E	1,400	2,800

In accordance with the above criteria (corresponding to a LoS A and B), the traffic survey data indicate that the roads in this vicinity of the SMGS Campus currently operate within the acceptable limits of their mid-block capacities.

2.2.3 Intersection Performance

The performance of the existing road network is largely dependent on the operating performance of key intersections, which are critical capacity control points on the road network. SIDRA 8 intersection modelling software was used to assess the performance of the Kosciuszko Road/SMGS Access intersection.

The criteria for evaluating the operational performance of intersections is provided by the Guide to Traffic Generating Developments (Roads and Maritime Services, 2002. The criteria for evaluating the operational performance of intersections is based on a qualitative measure (i.e. Level of Service), which is applied to each band of average vehicle delay.

The base traffic model for the Kosciuszko Road/SMGS Access Intersection was developed using the AM and PM peak hour survey data and the current intersection geometry.

Existing peak hour performance at the key intersection was analysed using SIDRA 8. The geometry of the intersection, as modelled in SIDRA 8, is displayed in Figure 2-4.

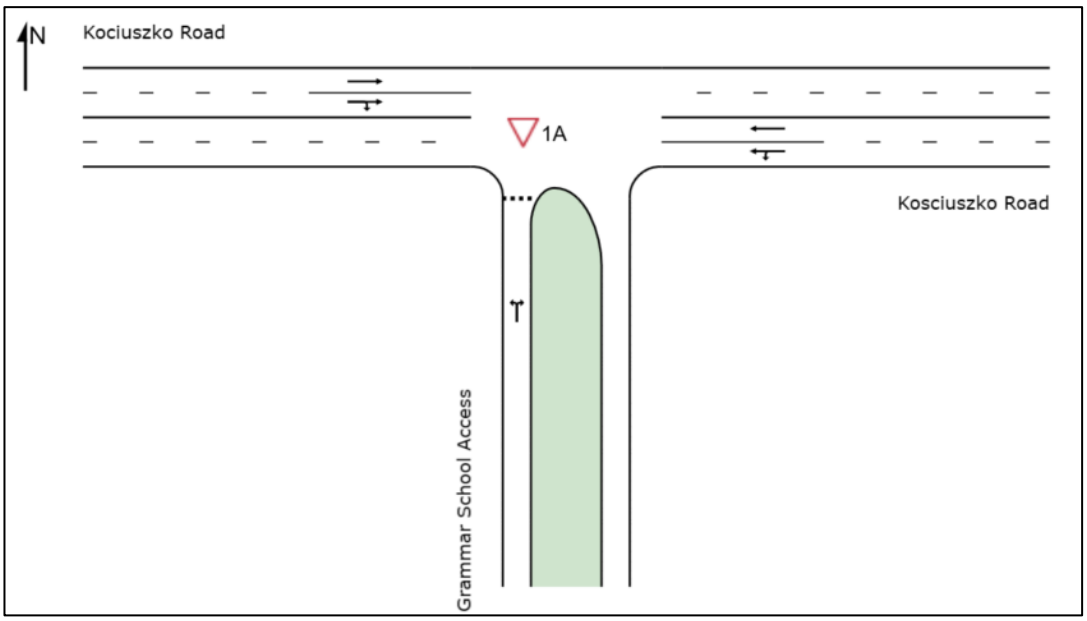

Figure 2-4 SIDRA Intersection Geometry

A summary of the results of the SIDRA analysis for the peak winter weekday AM and PM operation for the existing situation are shown in Table 2-2.

Table 2-2 Weekday Intersection Operations (2019)

Intersection	Existing Operation					
	AM Peak			PM Peak		
	Av Delay (sec)	LOS	95th % Queue (m)	Av Delay (sec)	LOS	95th % Queue (m)
Kosciuszko Road and SMGS Access						
SMGS Access	22.0	C	1	19.0	C	3
Kosciuszko Road - East	0.2	A	0	1.4	A	0
Kosciuszko Road - West	0.4	A	0	0.0	A	0
All vehicles	**0.5**	**A**		**1.4**	**A**	

The data in Table 2-2 indicates that the intersection of interest currently operates with a good Level of Service (LoS) and minimal delays during peak periods of network operation.

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3. Impact Assessment

3.1 Trip Generation

The Senior School Learning Hub is expected to result in an increase of approximately 44 students.

Based on discussion with SMGS staff, it is noted that:

- A very small number of students currently walk or drive themselves to school.
- Of the current students (excluding boarders) 30 percent use buses and 70 percent are typically dropped off or picked up by their parents.
- Some parents will have multiple children at the school, and a car occupancy of 1.3 students per vehicle has been assumed.

In accordance with these assumptions (70 percent vehicle and 1.3 students per vehicle), the Senior School Learning Hub building is expected to generate 25 trips (inbound and outbound) in AM and PM peak periods.

3.2 Trip Distribution

The existing traffic survey data indicates the volumes of inbound vehicles turning right into the SMGS Campus during peak periods of activity is negligible (up to one vehicle an hour). This is consistent with:

- The majority of vehicle trips generated by the school coming from Jindabyne.
- Vehicles form the west can undertake a U-turn at the roundabout of Kosciuszko Road/Barry Way and turn left into the SMGS campus.

Similarly, the majority of outbound vehicles turn right out of the SMGS and travel east towards Jindabyne.

The trips expected associated with the Senior School Learning Hub have been distributed onto the road network in accordance with the traffic patterns identified in the existing traffic surveys, (to and from Jindabyne). This is summarised as follows:

- In the AM peak:
  - 100 percent of trips will turn left into the school, from Jindabyne.
  - 75 percent of trips will turn right out of the school, to Jindabyne.
  - 25 percent of trips will turn left out of the school, away from Jindabyne.
- In the PM peak
  - 100 percent of trips will turn left into the school, from Jindabyne.
  - 100 percent of trips will turn right out of the school, to Jindabyne. (Conservative assumption).

3.3 Background Traffic

As stated previously, the Senior School Learning Hub is expected to be completed before the commencement of the 2023 school year.

To determine appropriate background traffic growth, reference has been made to Jindabyne's population growth.

The Census data for 2006, 2011 and 2016 provided by the Australian Bureau of Statistics records identifies the population for Jindabyne (postcode 2627) as follows:

- 2006 – 2,359 people
- 2011 – 2,789 people
- 2016 – 3,046 people

The census data indicates that been 2006 and 2016 the population of Jindabyne increased by 33 percent at an average of 3.3 percent growth per year.

However, to be conservative and to account for the ongoing growth of Jindabyne and its surrounds, an annual growth rate of four percent has been applied the current volumes to determine the 2023 and 2030 background traffic volumes.

3.4 Traffic Impact

3.4.1 Introduction

The intersection of interest has been assessed for two horizon year periods using SIDRA 8 as followings:

- 2023 when the Senior School Learning Hub building will be operational.
- 2030 accounting for ten years of background traffic growth.

For each horizon year, two scenarios have been assessed, as follows:

- A “no-build” scenario, accounting for background traffic growth.
- A “build” scenario accounting for the background traffic growth and the expected peak hour traffic associated with the Senior School Learning Hub.

3.4.2 2023 Analysis

The 2023 no-build traffic volumes are displayed in Figure 3-1 and the 2023 build traffic volumes are displayed in see Figure 3-2.

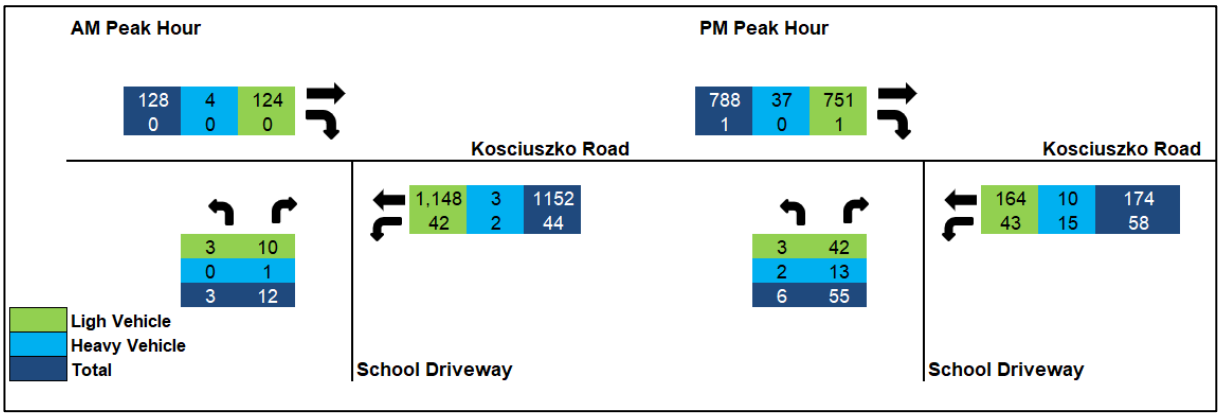


Figure 3-1 2023 No Build Traffic Volumes

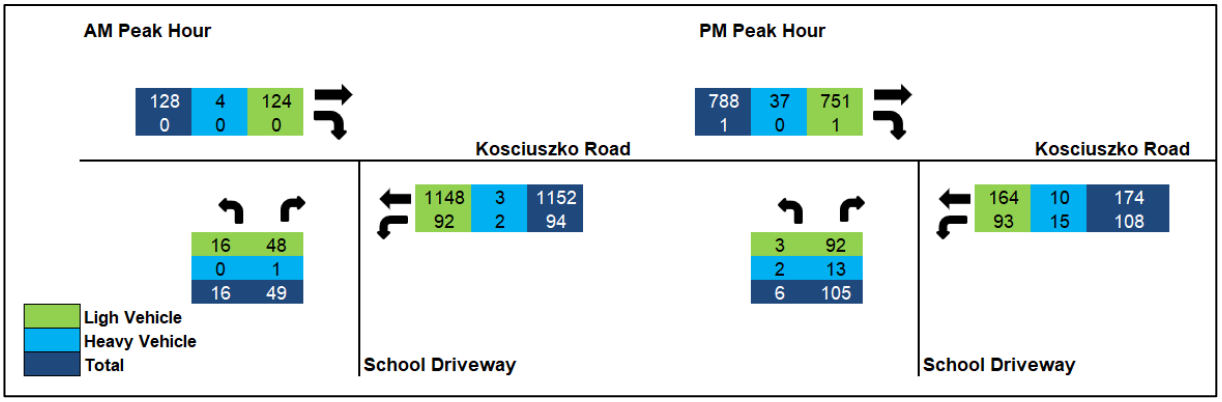


Figure 3-2 2023 Build Traffic Volumes

The 2023 “no-build” SIDRA results are displayed in Table 3-1 and the 2023 “build” SIDRA results in Table 3-2.

Table 3-1 2023 No Build SIDRA Results

Intersection	Existing Operation					
	AM Peak			PM Peak		
	Av Delay (sec)	LOS	95th % Queue (m)	Av Delay (sec)	LOS	95th % Queue (m)
Kosciuszko Road and SMGS Access						
SMGS Access	31.7	C	3	26.7	B	0
Kosciuszko Road - East	0.2	A	0	1.3	A	0
Kosciuszko Road - West	0.5	A	0	0.0	A	0
All vehicles	**0.5**	**A**	**-**	**1.6**	**A**	**-**

Table 3-2 2023 Build SIDRA Results

Intersection	Existing Operation					
	AM Peak			PM Peak		
	Av Delay (sec)	LOS	95th % Queue (m)	Av Delay (sec)	LOS	95th % Queue (m)
Kosciuszko Road and SMGS Access						
SMGS Access	34.8	C	7	28.9	C	14
Kosciuszko Road - East	0.3	A	0	1.7	A	0
Kosciuszko Road - West	0.6	A	1	0.0	A	0
All vehicles	**1.3**	**A**	**-**	**2.5**	**A**	**-**

The results in Table 3-1 and Table 3-2 indicate that the intersection formed by the school access and Barry Way is expected to operate with a good LoS in the 2023 horizon, both with and without the trips generated by the proposed Senior School Learning Hub.

The 2023 SIDRA outputs are included in Appendix C.

3.4.3 2030 Analysis

The 2030 no-build traffic volumes are displayed in Figure 3-3 and the 2030 build traffic volumes are displayed in see Figure 3-4.

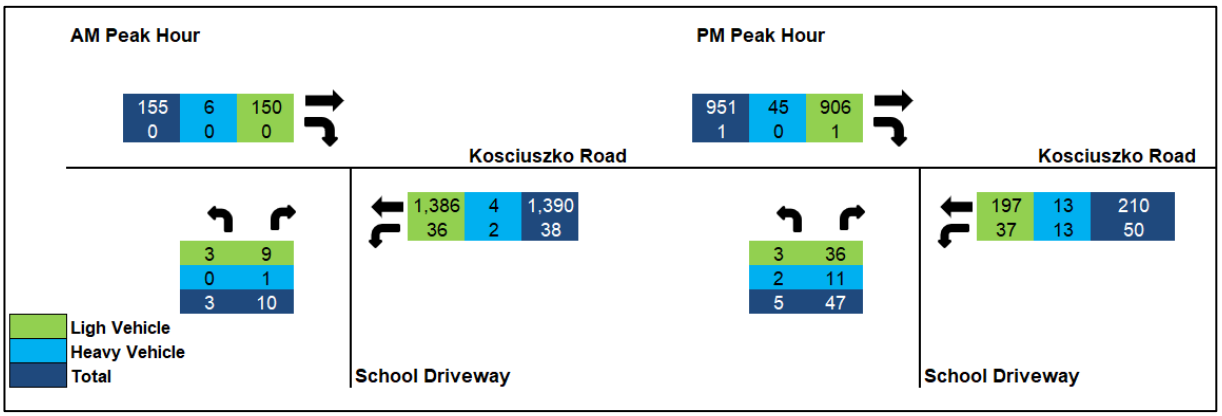


Figure 3-3 2030 No Build Traffic Volumes

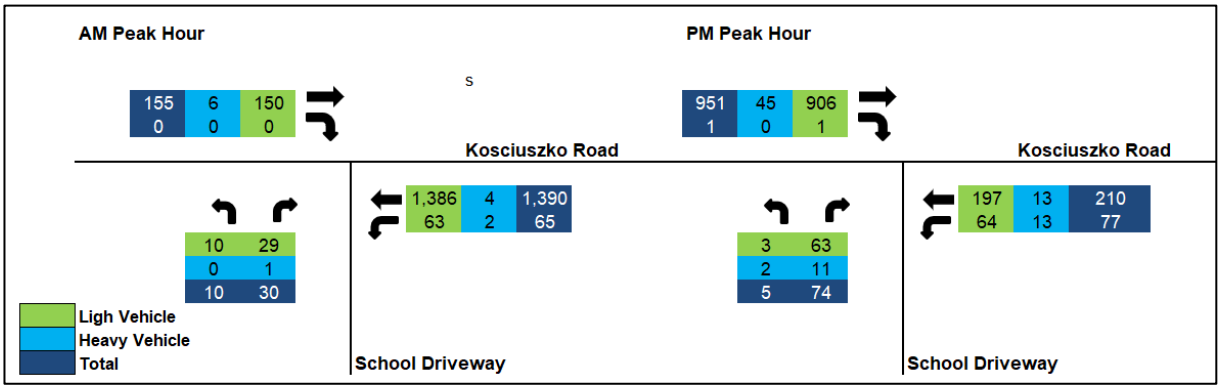


Figure 3-4 2030 Build Traffic Volumes

The 2030 “no-build” SIDRA results are displayed in Table 3-3 and the 2030 “build’ SIDRA results in Table 3-4.

Table 3-3 2030 No Build SIDRA Results

Intersection	Existing Operation					
	AM Peak			PM Peak		
	Av Delay (sec)	LOS	95th % Queue (m)	Av Delay (sec)	LOS	95th % Queue (m)
Kosciuszko Road and SMGS Access						
SMGS Access	64.9	E	5	49.4	D	15
Kosciuszko Road - East	0.2	A	0	1.1	A	0
Kosciuszko Road - West	0.9	A	1	0.0	A	0
All vehicles	**0.8**	**A**	**-**	**2.3**	**A**	**-**

Table 3-4 2030 Build SIDRA Results

Intersection	Existing Operation					
	AM Peak			PM Peak		
	Av Delay (sec)	LOS	95th % Queue (m)	Av Delay (sec)	LOS	95th % Queue (m)
Kosciuszko Road and SMGS Access						
SMGS Access	90.8	F	15	59.7	E	24
Kosciuszko Road - East	0.3	A	0	1.5	A	0
Kosciuszko Road - West	1.0	A	1	0.0	A	0
All vehicles	**2.5**	**A**	**-**	**3.9**	**A**	**-**

The results in Table 3-3 and Table 3-4 indicate that in the 2030 horizon year:

- The intersection of interest is expected to operate with an overall good LoS in the “no-build” and “build” and “no-build” scenarios
- Due to heavy eastbound and westbound traffic volumes on Kosciuszko Road, vehicles seeking to exit the SMGS Campus would experience relatively long delays.

It is noted that theses SIDRA results are based on surveys undertaken in Jindabyne’s peak winter season. Outside of peak season, the traffic volumes on Kosciuszko Road are expected to be significantly less than those used in the SIDRA analysis.

As stated previously a four percent annual growth rate was applied to the survey data on Kosciuszko Road, to determine the 2030 background traffic volumes. This is considered to be conservative rate, particularly as a bypass may be constructed in Jindabyne prior to 2030.

As a scenario test, the 2030 “build” scenario has also been undertaken using a 2.5 percent annual growth rate. Theses traffic volumes are displayed in Figure 3-5 and the SIDRA results are displayed in Table 3-5.

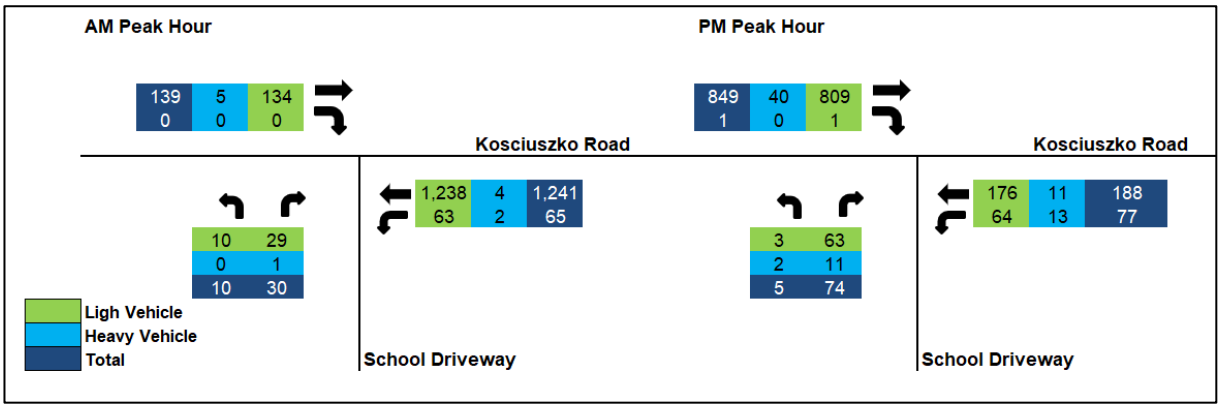


Figure 3-5 2030 Build Traffic Volumes (2.5 percent annual growth rate)

Table 3-5 2030 Build SIDRA Results (2.5 percent annual growth rate)

Intersection	Existing Operation					
	AM Peak			PM Peak		
	Av Delay (sec)	LOS	95th % Queue (m)	Av Delay (sec)	LOS	95th % Queue (m)
Kosciuszko Road and SMGS Access						
SMGS Access	47.5	D	10	36.3	C	17
Kosciuszko Road - East	0.3	A	0	1.7	A	0
Kosciuszko Road - West	0.1	B	1	0.0	A	0
All vehicles	**1.6**	**A**	**-**	**2.8**	**A**	**-**

The results in Table 3-5 indicates that with the 2.5 percent annual growth rate, the intersection of interest is expected to operate with a good level of service in the 2030 horizon year of analysis.

The 2030 SIDRA outputs are included in Appendix D.

3.5 Construction Impacts

It is proposed to provide access to the construction compound via a temporary gravel driveway adjacent to the west of SMGS.

The location of the driveway is intended to minimise the impacts of construction vehicles on school operations, particularly to avoid conflict between construction traffic and pedestrian and school related traffic.

The Senior School Learning Hub construction contractors will be required to:

- Obtain permission from TfNSW to construct the proposed temporary access driveway.
- Commission a Construction Traffic Management Plan (CTMP) to ensure that public safety is maintained at all times and that wherever possible interruption to the use of public space is minimised. This is expected to include:
  - The type and volume of construction vehicles
  - Vehicle approach departure routes to the site.
  - Parking areas for construction personal.

– Queuing or marshalling areas for trucks.
– Traffic Control Plans indicating the site location and spacing of all signage and devices, pavement markings, any containment fencing and barriers, arrow boards and/or variable message signage, and roadwork speed zones.

GHD will share information (as required) to support the development of the CTMP.

If right turns, inbound or outbound are required at the temporary construction access, traffic controllers may be required to support the safety of vehicle movements on Kosciuszko Road,

3.6 Parking Impacts

It is noted that SMGS currently provides 80 parking spaces.

SMGS provides an overflow parking area, that is used by the small number of students who drive themselves to school (approximately 10 – 15 vehicles a day), [1]as displayed in Figure 3-6 and Figure 3-7.

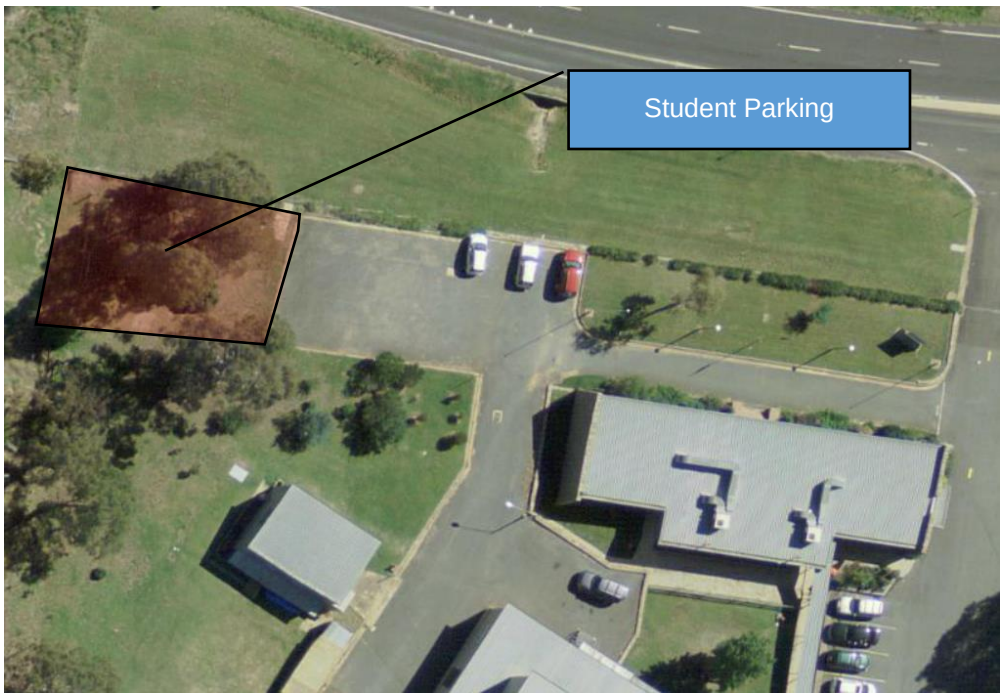


Figure 3-6 Student Parking Location

[1] Based on information provided by the school principal.

Figure 3-7 Student Parking Area

During the development of the Senior School Learning Hub, this parking area will be allocated to construction workers. It will revert to a student car park once the construction of the Senior School Learning Hub has been completed.

The construction of the Senior School Learning Hub will result in the permanent loss of 12 parking bays as displayed in Figure 3-8.

Figure 3-8 Proposed loss of Parking

Accounting for a reduction in 12 spaces, the remaining provision of 68 parking spaces is expected to accommodate the typical demand associated with teachers (approximately 50) and year 12 students who drive (approximately 10 - 15 per day).

It is also noted that as part of the proposed school expansion, a separate development application is being sought for a future Sports Precinct (at the south-east of the SMGS Campus), including two basketball courts and a football field. The Sports Precinct will provide a car park with 17 spaces, which will typically be available for use by staff.

For “educational establishments” the Snowy River Development Control Plan 2013 (DCP) specifies the following minimum parking requirements:

- One parking space per employee
- One parking space per ten students in year 12

As stated previously, SMGS currently has a population of (approximately):

- 120 primary school students
- 264 high school students
- 50 staff

Accounting for the Senior School Learning Hub building the high school student population will increase to 308 students, of which approximately 50 students would be in year 12.

Applying the DCP rate:

- 50 parking spaces are required for teachers
- 5 parking spaces are required for year 12 students

Accounting for the loss of the 12 parking spaces and the addition of the future Sports Precinct, SMGS will provide a total of 85 parking bays.

Accordingly, the provision of parking at SMGS associated with the development of the Senior School Learning Hub building is expected to exceed DCP specifications and accommodate the typical parking demand.

4. Summary and Conclusion

GHD has been commissioned by Snowy Mountain Grammar (SMGS) to undertake transport planning and traffic engineering to support the development of the proposed Science, Technology, Engineering, the Arts and Mathematics Building at the school.

The Senior School Learning Hub is expected to be completed before the commencement of the 2023 school year.

The Senior School Learning Hub will be located within the high school and will support an increase of additional 44 students at SMGS and consists of a two-storey building with the following facilities:

- Additional classrooms
- Outdoor learning areas
- Science labs
- Seminar areas

It is noted that the current access arrangement at the high school will not be impacted by the construction of the Senior School Learning Hub.

To support the ongoing development of Jindabyne, the NSW Government commissioned the Go Jindabyne Mobility and Connectivity Study (2019). The study recommends the potential implementation of a bypass of Jindabyne, to reduce the impact of traffic to and from the ski fields and promote walking and cycling for residents and visitors. This work is being picked up through the Snowy Mountains Special Activation Precinct. The final Masterplan for Jindabyne has not yet been published but is expected to address the proposed bypass. If implemented, the bypass will result in a reduction of traffic numbers on Kosciuszko Road past SMGS.

To be conservative it has been assumed that the Senior School Learning Hub will generate 25 inbound and 25 outbound trips during peak AM and PM periods of school activity.

SIDRA analysis has been undertaken for the current situation (2019), the 2023 horizon year and 2030 horizon year.

To be conservative and to account for ongoing Jindabyne and its surrounds, an annual growth rate of four percent has been applied the current volumes to determine the 2023 and 2030 background traffic volumes.

Analysis using SIDRA 8 software indicates that in 2023 the intersection of Kosciuszko Road and the school access is expected to operate with a good LoS during peak periods of road network operation, accounting for the vehicle activity associated with the assumed traffic growth of Jindabyne.

In the 2030 horizon year, the intersection is expected to operate with an overall good LoS, however, vehicles exiting the school are expected to experience long delays in peak season due to heavy traffic volumes on Kosciuszko Road (both with and without the proposed Senior School Learning Hub).

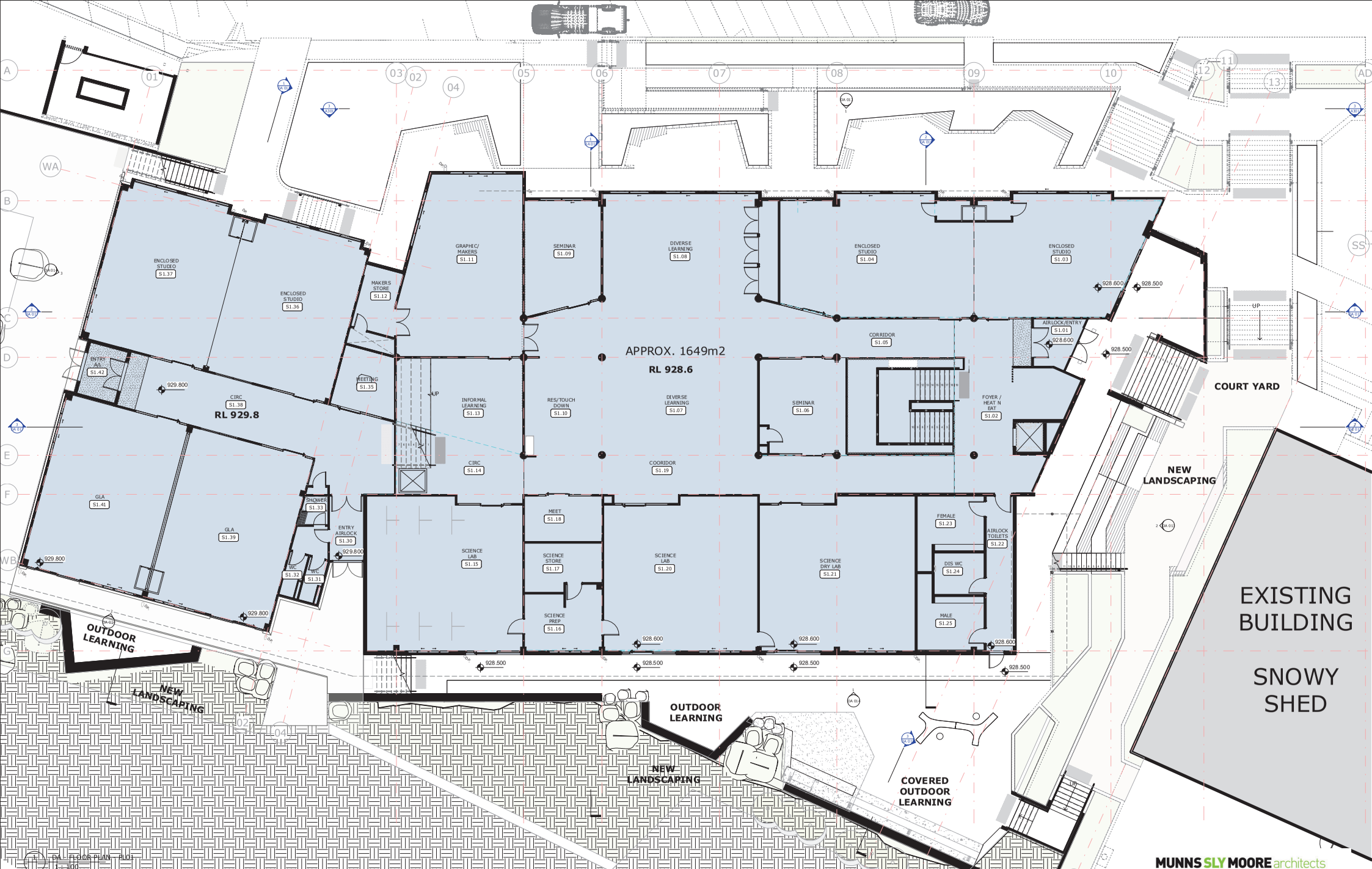
Using a reduced annual growth rate of 2.5 percent for the 2030 horizon year (potentially associated with the introduction of a bypass), the intersection of interest is expected to operate with a good LoS on all of its legs.

It is proposed to provide access to the construction compound via a temporary gravel driveway adjacent to the west of SMGS. The location of the driveway is intended to minimise the impacts of construction vehicles on school operations.

The construction of the Senior School Learning Hub will result in the permanent loss of 12 parking spaces within the SMGS Campus. However, an additional 17 parking spaces will be provided as part of the development of the future Sports Precinct within the SMGS. The proposed parking provision exceeds Council's DCP specifications and accommodate the typical parking demand.

Appendices

Appendix A – Senior School Learning Hub Layout



DA - FLOOR PLAN - 1001
1 : 100

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NO.	DATE	DESCRIPTION
1	08/02/2021	DA ISSUE

NOTES
1. Use figured dimensions. Do not scale from drawings.
2. All dimensions are in millimetres, except levels and drawings to scale of 1:500 and smaller which are given in metres.
3. Drawings to be read in conjunction with specifications and/or schedules.
4. Contractor to verfiy all dimensions and levels on site prior to commencing any work or making of shop drawings, and seek instructions if any discrepancies are found.

NEW LEARNING ENVIRONMENTS

Spectrum Property & Projects

SMGS SNOWY MOUNTAINS GRAMMAR SCHOOL
CHALLENGE BELONG EXPLORE

PROJECT: SMGS - SENIOR SCHOOL
CLIENT:

DRAWING: FLOOR PLAN - LEVEL 1
STATUS: DA
DATE: 08/02/2021 FILE: C:\Revit Mv Documents\4186_SMGS_Stage 1_CF_jsmeal@munnsslymoore.com.au.rvt
DRAWN: Author CHECKED: Checker VERIFIED: Checker
LOT: DP: ADDRESS: PROJECT ADDRESS

1 : 100 @ A1

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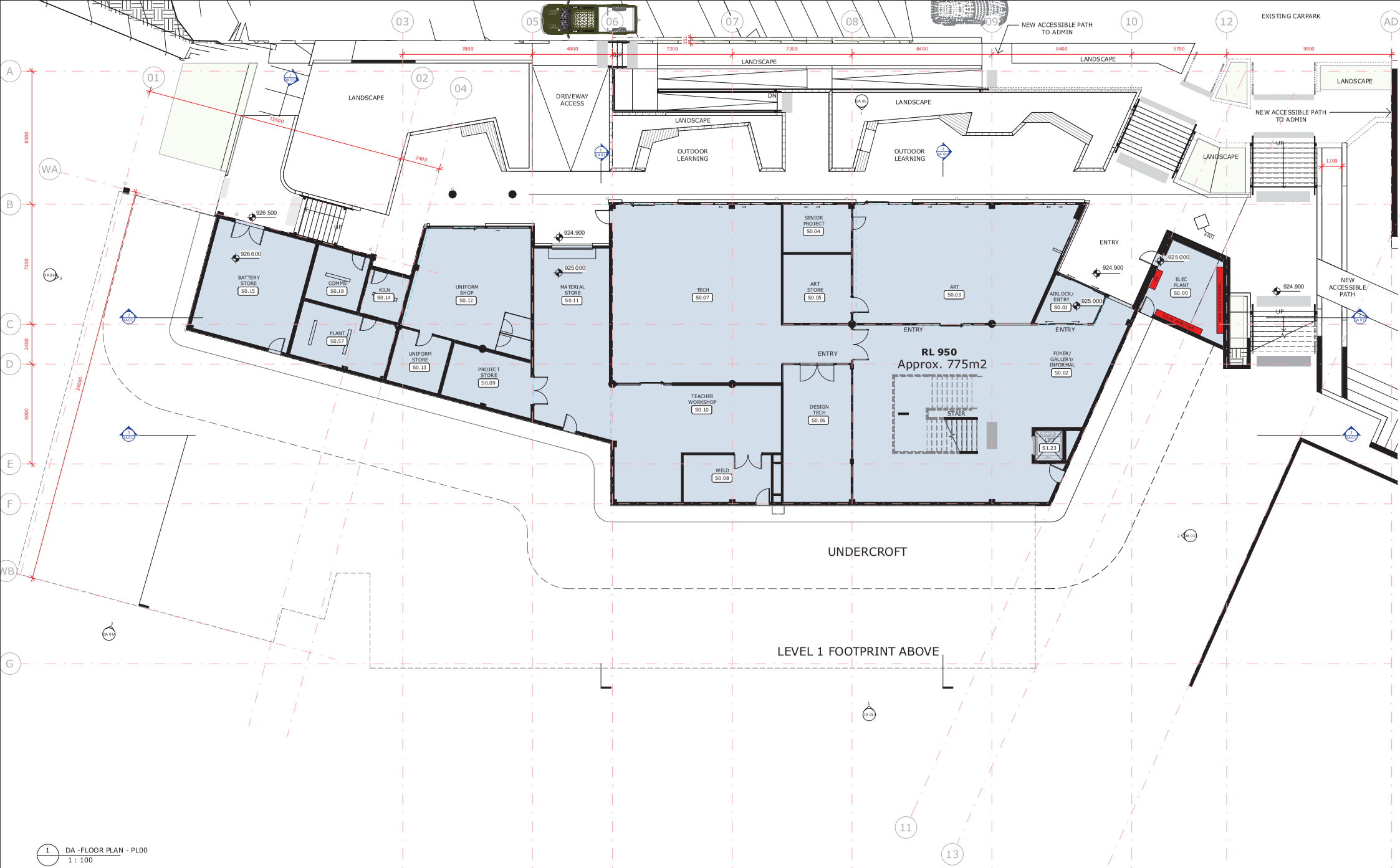
PROJECT NO.	DRAWING NO.	REVISION
4186	DA 010	1



1 DA -FLOOR PLAN - PL00
1 : 100

3/02/2021 11:46:44 AM C:\Revit\My Documents\4186_SMGS_Stage 1_CF_jsmeal@munnsslymoore.com.au.rvt

NO.	DATE	DESCRIPTION
1	08/02/2021	DA ISSUE

NOTES
1. Use figured dimensions. Do not scale from drawings.
2. All dimensions are in millimetres, except levels and drawings to scale of 1:500 and smaller which are given in metres.
3. Drawings to be read in conjunction with specifications and/or schedules.
4. Contractor to verfiy all dimensions and levels on site prior to commencing any work or making of shop drawings, and seek instructions if any discrepancies are found.

NEW LEARNING ENVIRONMENTS

Spectrum Property & Projects

SNOWY MOUNTAINS GRAMMAR SCHOOL
CHALLENGE BELONG EXPLORE

PROJECT SMGS - SENIOR SCHOOL
CLIENT
1 : 100 @ A1

DRAWING FLOOR PLAN - GROUND FLOOR
STATUS DA
DATE 08/02/2021 FILE C:\Revit\My Documents\4186_SMGS_Stage 1_CF_jsmeal@munnsslymoore.com.au.rvt
DRAWN Author CHECKED Checker VERIFIED Checker
LOT: DP: ADDRESS: PROJECT ADDRESS

MUNNS SLY MOORE architects
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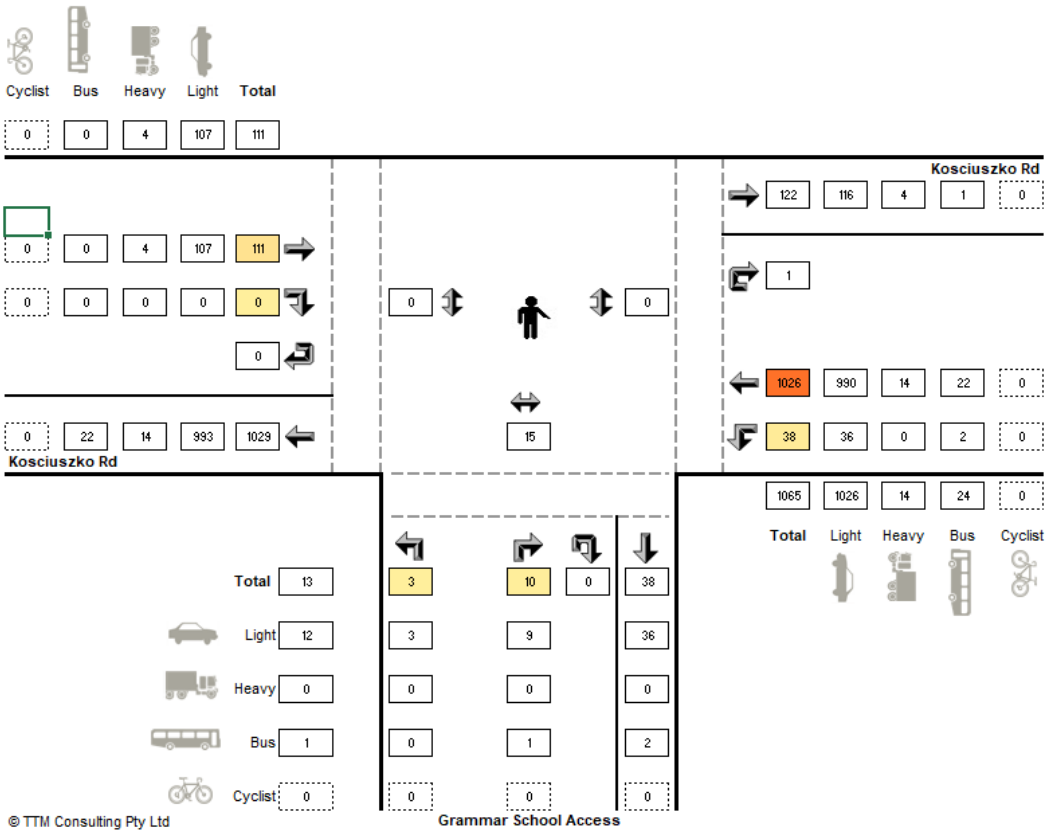
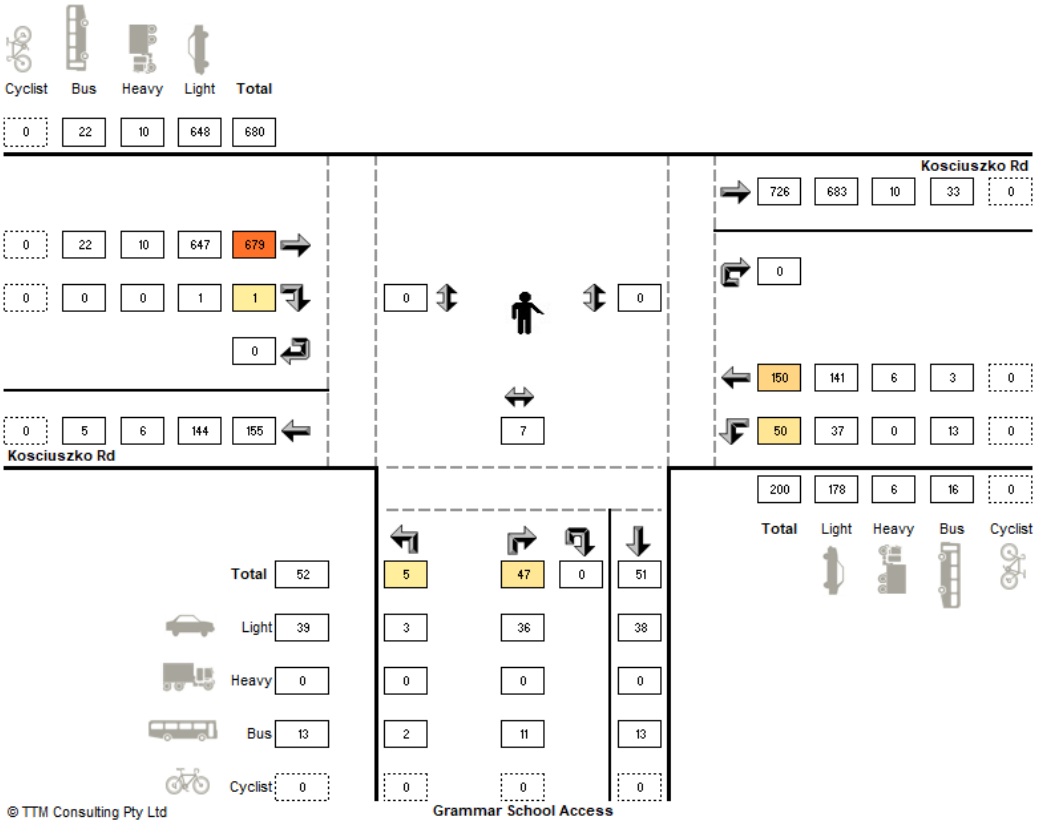
PROJECT NO.	DRAWING NO.	REVISION
4186	DA 009	1

Appendix B Traffic Survey Outputs

AM Peak



PM Peak



Appendix C – 2023 SIDRA Outputs

MOVEMENT SUMMARY

▽ Site: 1A [2023_ AM_Kosciuszko - Access Road - No Build (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Grammar School Access														
1	L2	3	0	3	0.0	0.111	6.5	LOS A	0.3	2.5	0.88	0.92	0.88	28.4
3	R2	10	1	11	10.0	0.111	39.3	LOS C	0.3	2.5	0.88	0.92	0.88	13.5
Approach		13	1	14	7.7	0.111	31.7	LOS C	0.3	2.5	0.88	0.92	0.88	19.6
East: Kosciuszko Road														
4	L2	38	2	40	5.3	0.319	5.6	LOS A	0.0	0.0	0.00	0.04	0.00	47.4
5	T1	1151	3	1212	0.3	0.319	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
Approach		1189	5	1252	0.4	0.319	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.5
West: Kociuszko Road														
11	T1	128	4	135	3.1	0.037	0.4	LOS A	0.1	0.4	0.03	0.00	0.03	59.4
12	R2	1	0	1	0.0	0.037	17.6	LOS B	0.1	0.4	0.07	0.01	0.07	56.2
Approach		129	4	136	3.1	0.037	0.5	NA	0.1	0.4	0.03	0.00	0.03	59.4
All Vehicles		1331	10	1401	0.8	0.319	0.5	NA	0.3	2.5	0.01	0.03	0.01	59.1

MOVEMENT SUMMARY

▽ Site: 1A [2023_ PM_Kosciuszko - Access Road - No Build (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Grammar School Access														
1	L2	5	2	5	40.0	0.304	6.6	LOS A	1.1	9.4	0.72	0.87	0.85	29.7
3	R2	47	11	49	23.4	0.304	28.9	LOS C	1.1	9.4	0.72	0.87	0.85	15.1
Approach		52	13	55	25.0	0.304	26.7	LOS B	1.1	9.4	0.72	0.87	0.85	18.1
East: Kosciuszko Road														
4	L2	50	13	53	26.0	0.065	5.8	LOS A	0.0	0.0	0.00	0.27	0.00	40.8
5	T1	174	10	183	5.7	0.065	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	59.2
Approach		224	23	236	10.3	0.065	1.3	NA	0.0	0.0	0.00	0.13	0.00	57.8
West: Kociuszko Road														
11	T1	788	37	829	4.7	0.217	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	59.9
12	R2	1	0	1	0.0	0.217	6.8	LOS A	0.0	0.1	0.00	0.00	0.00	57.3
Approach		789	37	831	4.7	0.217	0.1	NA	0.0	0.1	0.00	0.00	0.00	59.9
All Vehicles		1065	73	1121	6.9	0.304	1.6	NA	1.1	9.4	0.04	0.07	0.04	57.7

MOVEMENT SUMMARY

▽ Site: 1A [2023_ AM_Kosciuszko - Access Road - Build (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Grammar School Access														
1	L2	10	0	11	0.0	0.311	10.9	LOS A	1.0	7.4	0.89	0.99	1.03	27.6
3	R2	30	1	32	3.3	0.311	42.8	LOS D	1.0	7.4	0.89	0.99	1.03	12.7
Approach		40	1	42	2.5	0.311	34.8	LOS C	1.0	7.4	0.89	0.99	1.03	19.0
East: Kosciuszko Road														
4	L2	65	2	68	3.1	0.327	5.6	LOS A	0.0	0.0	0.00	0.06	0.00	46.7
5	T1	1151	3	1212	0.3	0.327	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
Approach		1216	5	1280	0.4	0.327	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.3
West: Kociuszko Road														
11	T1	128	4	135	3.1	0.037	0.4	LOS A	0.1	0.5	0.03	0.00	0.03	59.4
12	R2	1	0	1	0.0	0.037	18.4	LOS B	0.1	0.5	0.07	0.01	0.07	56.1
Approach		129	4	136	3.1	0.037	0.6	NA	0.1	0.5	0.03	0.00	0.03	59.4
All Vehicles		1385	10	1458	0.7	0.327	1.3	NA	1.0	7.4	0.03	0.06	0.03	57.9

MOVEMENT SUMMARY

▽ Site: 1A [2023_ PM_Kosciuszko - Access Road - Build (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Grammar School Access														
1	L2	5	2	5	40.0	0.436	9.0	LOS A	1.8	14.1	0.75	0.94	1.00	29.1
3	R2	74	11	78	14.9	0.436	30.2	LOS C	1.8	14.1	0.75	0.94	1.00	14.4
Approach		79	13	83	16.5	0.436	28.9	LOS C	1.8	14.1	0.75	0.94	1.00	16.4
East: Kosciuszko Road														
4	L2	77	13	81	16.9	0.072	5.7	LOS A	0.0	0.0	0.00	0.37	0.00	38.4
5	T1	174	10	183	5.7	0.072	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	59.1
Approach		251	23	264	9.2	0.072	1.7	NA	0.0	0.0	0.00	0.18	0.00	56.6
West: Kociuszko Road														
11	T1	788	37	829	4.7	0.217	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	59.9
12	R2	1	0	1	0.0	0.217	7.0	LOS A	0.0	0.1	0.00	0.00	0.00	57.3
Approach		789	37	831	4.7	0.217	0.1	NA	0.0	0.1	0.00	0.00	0.00	59.9
All Vehicles		1119	73	1178	6.5	0.436	2.5	NA	1.8	14.1	0.05	0.11	0.07	56.4

Appendix D – 2030 SIDRA Outputs

MOVEMENT SUMMARY

▽ **Site: 1A [2030_ AM_Kosciuszko - Access Road - No Build (Site Folder: General)]**

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Grammar School Access														
1	L2	3	0	3	0.0	0.221	12.9	LOS A	0.6	4.7	0.95	0.99	1.00	21.8
3	R2	10	1	11	10.0	0.221	80.4	LOS F	0.6	4.7	0.95	0.99	1.00	8.0
Approach		13	1	14	7.7	0.221	64.9	LOS E	0.6	4.7	0.95	0.99	1.00	12.7
East: Kosciuszko Road														
4	L2	38	2	40	5.3	0.383	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	47.6
5	T1	1390	4	1463	0.3	0.383	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
Approach		1428	6	1503	0.4	0.383	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.5
West: Kociuszko Road														
11	T1	156	6	164	3.8	0.046	0.8	LOS A	0.1	0.9	0.04	0.00	0.04	59.0
12	R2	1	0	1	0.0	0.046	26.1	LOS B	0.1	0.9	0.08	0.01	0.08	55.3
Approach		157	6	165	3.8	0.046	0.9	NA	0.1	0.9	0.04	0.00	0.04	59.0
All Vehicles		1598	13	1682	0.8	0.383	0.8	NA	0.6	4.7	0.01	0.02	0.01	58.8

MOVEMENT SUMMARY

▽ **Site: 1A [2030_ PM_Kosciuszko - Access Road - No Build (Site Folder: General)]**

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Grammar School Access														
1	L2	5	2	5	40.0	0.485	16.0	LOS B	1.8	15.2	0.85	0.99	1.13	24.4
3	R2	47	11	49	23.4	0.485	53.0	LOS D	1.8	15.2	0.85	0.99	1.13	9.9
Approach		52	13	55	25.0	0.485	49.4	LOS D	1.8	15.2	0.85	0.99	1.13	12.3
East: Kosciuszko Road														
4	L2	50	13	53	26.0	0.075	5.8	LOS A	0.0	0.0	0.00	0.23	0.00	41.7
5	T1	210	13	221	6.2	0.075	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	59.2
Approach		260	26	274	10.0	0.075	1.1	NA	0.0	0.0	0.00	0.11	0.00	58.1
West: Kociuszko Road														
11	T1	951	45	1001	4.7	0.262	0.1	LOS A	0.0	0.1	0.00	0.00	0.00	59.9
12	R2	1	0	1	0.0	0.262	7.1	LOS A	0.0	0.1	0.00	0.00	0.00	57.3
Approach		952	45	1002	4.7	0.262	0.1	NA	0.0	0.1	0.00	0.00	0.00	59.9
All Vehicles		1264	84	1331	6.6	0.485	2.3	NA	1.8	15.2	0.04	0.06	0.05	57.0

MOVEMENT SUMMARY

▽ **Site: 1A [2030_ AM_Kosciuszko - Access Road - Build (Site Folder: General)]**

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Grammar School Access														
1	L2	10	0	11	0.0	0.609	42.2	LOS C	2.1	14.9	0.96	1.11	1.34	18.4
3	R2	30	1	32	3.3	0.609	107.0	LOS F	2.1	14.9	0.96	1.11	1.34	6.1
Approach		40	1	42	2.5	0.609	90.8	LOS F	2.1	14.9	0.96	1.11	1.34	10.3
East: Kosciuszko Road														
4	L2	65	2	68	3.1	0.391	5.6	LOS A	0.0	0.0	0.00	0.05	0.00	47.0
5	T1	1390	4	1463	0.3	0.391	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
Approach		1455	6	1532	0.4	0.391	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.4
West: Kociuszko Road														
11	T1	156	6	164	3.8	0.046	0.8	LOS A	0.1	1.0	0.04	0.00	0.04	58.9
12	R2	1	0	1	0.0	0.046	27.4	LOS B	0.1	1.0	0.09	0.01	0.09	55.1
Approach		157	6	165	3.8	0.046	1.0	NA	0.1	1.0	0.04	0.00	0.04	58.9
All Vehicles		1652	13	1739	0.8	0.609	2.5	NA	2.1	14.9	0.03	0.05	0.04	56.7

MOVEMENT SUMMARY

▽ Site: 1A [2030_ PM_Kosciuszko - Access Road - Build (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Grammar School Access														
1	L2	5	2	5	40.0	0.685	27.4	LOS B	3.0	23.9	0.88	1.13	1.49	22.5
3	R2	74	11	78	14.9	0.685	61.9	LOS E	3.0	23.9	0.88	1.13	1.49	8.5
Approach		79	13	83	16.5	0.685	59.7	LOS E	3.0	23.9	0.88	1.13	1.49	10.1
East: Kosciuszko Road														
4	L2	77	13	81	16.9	0.083	5.7	LOS A	0.0	0.0	0.00	0.32	0.00	39.5
5	T1	210	13	221	6.2	0.083	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	59.0
Approach		287	26	302	9.1	0.083	1.5	NA	0.0	0.0	0.00	0.16	0.00	57.2
West: Kociuszko Road														
11	T1	951	45	1001	4.7	0.262	0.1	LOS A	0.0	0.1	0.00	0.00	0.00	59.9
12	R2	1	0	1	0.0	0.262	7.3	LOS A	0.0	0.1	0.00	0.00	0.00	57.3
Approach		952	45	1002	4.7	0.262	0.1	NA	0.0	0.1	0.00	0.00	0.00	59.9
All Vehicles		1318	84	1387	6.4	0.685	4.0	NA	3.0	23.9	0.05	0.10	0.09	55.0

MOVEMENT SUMMARY

▽ Site: 1A [2030_ AM_Kosciuszko - Access Road - Build - Scenario Test (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Grammar School Access														
1	L2	10	0	11	0.0	0.398	16.3	LOS B	1.3	9.5	0.92	1.03	1.13	24.8
3	R2	30	1	32	3.3	0.398	57.9	LOS E	1.3	9.5	0.92	1.03	1.13	10.2
Approach		40	1	42	2.5	0.398	47.5	LOS D	1.3	9.5	0.92	1.03	1.13	15.9
East: Kosciuszko Road														
4	L2	65	2	68	3.1	0.351	5.6	LOS A	0.0	0.0	0.00	0.06	0.00	46.8
5	T1	1242	4	1307	0.3	0.351	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
Approach		1307	6	1376	0.5	0.351	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.4
West: Kociuszko Road														
11	T1	139	5	146	3.6	0.040	0.5	LOS A	0.1	0.6	0.03	0.00	0.03	59.3
12	R2	1	0	1	0.0	0.040	21.2	LOS B	0.1	0.6	0.07	0.01	0.07	55.8
Approach		140	5	147	3.6	0.040	0.7	NA	0.1	0.6	0.04	0.00	0.04	59.2
All Vehicles		1487	12	1565	0.8	0.398	1.6	NA	1.3	9.5	0.03	0.05	0.03	57.6

MOVEMENT SUMMARY

▽ Site: 1A [2030_ PM_Kosciuszko - Access Road - Build - Scenario Test (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Grammar School Access														
1	L2	5	2	5	40.0	0.513	12.6	LOS A	2.1	16.8	0.80	1.00	1.15	27.2
3	R2	74	11	78	14.9	0.513	38.0	LOS C	2.1	16.8	0.80	1.00	1.15	12.3
Approach		79	13	83	16.5	0.513	36.3	LOS C	2.1	16.8	0.80	1.00	1.15	14.2
East: Kosciuszko Road														
4	L2	77	13	81	16.9	0.076	5.7	LOS A	0.0	0.0	0.00	0.35	0.00	38.9
5	T1	187	11	197	5.9	0.076	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	59.1
Approach		264	24	278	9.1	0.076	1.7	NA	0.0	0.0	0.00	0.17	0.00	56.9
West: Kociuszko Road														
11	T1	849	40	894	4.7	0.234	0.1	LOS A	0.0	0.1	0.00	0.00	0.00	59.9
12	R2	1	0	1	0.0	0.234	7.1	LOS A	0.0	0.1	0.00	0.00	0.00	57.3
Approach		850	40	895	4.7	0.234	0.1	NA	0.0	0.1	0.00	0.00	0.00	59.9
All Vehicles		1193	77	1256	6.5	0.513	2.8	NA	2.1	16.8	0.05	0.10	0.08	56.1

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Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A	M Lucas	S. Clarke	On file	J Wearne	On file	18/12/2020
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