

Traffic Statement

To: Emma Bunn

From: Ken Hollyoak

Date: 1 September 2020

TTPP REF: 18472

CC: Santi Botross, Clinton Cheung

**RE: ST MATTHEWS CATHOLIC COLLEGE
REVISED TRAFFIC FLOW DISTRIBUTIONS**

Overview

The Transport Planning Partnership (TTPP) has prepared this traffic statement in response to Transport for NSW (TfNSW) and Mid-Western Regional Council (Council) submissions regarding traffic, transport and parking concerns raised for the St Matthews Catholic College project (SSD-9872).

As a summary, TfNSW and Council's concerns centre on the traffic flow distribution, on-site pick-up/drop-off activities, and parking provisions and circulation which have been presented in the Traffic Impact Assessment (TIA).

In response to submissions relating to development traffic flow distribution, this traffic statement has been prepared to re-assess a revised traffic flow distribution on the surrounding road network. Furthermore, this revised analysis makes consideration for the proposed development at the recently proposed development at 238 Broadhead Road, Spring Flat.

Other submissions have been addressed through amendments to the car park layout by providing improved on-site circulation; off-street car parking provision for staff, students and visitors; and, increased Kiss and Drop capacity accommodating student pick-up and drop-off activities. These submissions have been addressed in the *Response to Submissions* prepared by _planning Pty Ltd which refers to the revised Site Plan. The revised site plan is provided in Attachment Two of the *Response to Submissions*, and shows 82 car parking spaces (increased from 75 spaces) and 25 pick-up/drop-off spaces (increased from 12 spaces) to be provided on-site.

Revised Traffic Flow Distribution and SIDRA Modelling

In response to TfNSW and Council submissions to traffic flow distributions as reported in the TIA, TTPP has undertaken a revised SIDRA modelling analysis of future year scenarios. Namely, the opening year of future school having full population growth in year 2026, and 10 years following the opening of the future school in year 2036). The 2026 opening year of the future school reflect is based on 59 staff full-time equivalent staff and a student population of 680 high school students.

Further to this, the future modelled scenarios consider the traffic generation associated with the nearby proposed residential subdivision development that is located at 238 Broadhead Road, Spring Flat.

The revised traffic distribution reflects the most direct route to/from the school site based on the place of residence of current high school students. In addition to this, the traffic distribution on the road network accounts for the additional traffic associated with the proposed residential subdivision development which has been distributed to the Broadhead Road – Bruce Road intersection to assess a ‘worse case’ scenario for this intersection.

Adjacent Proposed Development – 238 Broadhead Road, Spring Flat

Since preparation of the Traffic Impact Assessment as part of the SSD Application for St Matthews Catholic College, a Development Application has been lodged with Mid-Western Regional Council (Council) seeking approval to subdivide No. 238 Broadhead Road, Spring Flat (Lot 4 DP1206488) into 24 allotments.

Broadhead Road divides the site. The western side of the site has frontage to Robertson Road (unformed). Two unformed east-west road reserves divide the site. There is an existing dwelling and associated outbuildings on the site along with two existing bores. The site has formally been used as grazing land and is mostly cleared of trees. Sawpit Gully traverses the north-western part of the site.

The whole of the site is zoned R5 – Large Lot Residential and subdivision is permissible with the consent of Council. The DA seeks to provide 21 residential lots with lots 22 and 23 forming public reserve, and lot 24 forming the remaining residue of the parcel. The location of the proposed subdivision within context of the St Matthews SSD is shown in Figure 1.

Given that there would be common routes between the SSD and DA sites, a cumulative traffic assessment has been prepared having consideration for the DA.

Figure 1: Proposed Subdivision Locality



Subdivision Layout Plan source: Mid-Western Regional Council Minutes Meeting 12 August 2020

DA Site Trip Generation

As mentioned, the area is zoned as R5 – Large Lot Residential which permits the development of “dwelling houses”. By definition of Council's Local Environmental Plan (LEP), a dwelling house means a building containing only one dwelling. Therefore, RMS trip generation rates for low density residential dwellings would be applicable to the residential lots as part of this development.

While the morning peak hour for residential dwellings would coincide with the school's morning peak hour, it is unlikely that the evening peak hour (from 4pm) would coincide with the school's afternoon peak hour (2.45-3.45pm). Therefore, a cumulative traffic assessment has been carried out during the school AM peak hour. During the school PM peak hour, traffic associated with the proposed residential dwellings has not been assessed cumulatively with the school traffic generation.

RMS' Technical Direction TDT 2013/04a (TDT 2013/04a) contains peak hourly trip generation rates for low density residential dwellings in regional areas. The weekday morning peak hourly trip generation rate is stipulated as 0.71 trips per dwelling. Applying this rate to the proposed 21 residential lots generates a rate of up to 15 vehicle trips in the morning peak hour.

In-line with typical directional trip rates for residential dwellings, the morning vehicle distribution associated with the DA is assumed as follows:

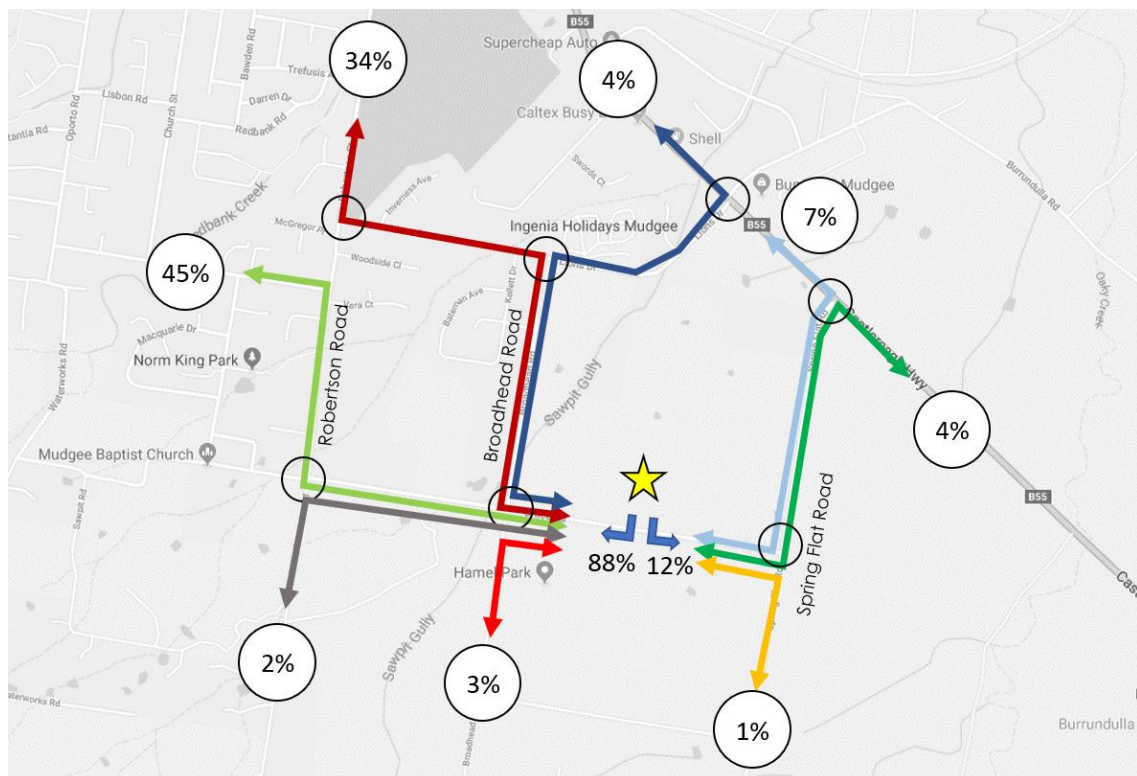
- Inbound Trips: 20% of total trip generation = 3 inbound trips
- Outbound Trips: 80% of total trip generation = 12 outbound trips.

Therefore, the proposed subdivision development is estimated to generate approximately 3 inbound vehicle trips and 12 outbound vehicle trips. It has been assumed that all traffic associated with the residential development would access the development via the Broadhead Road – Bruce Road intersection. At this intersection, these vehicle trips have been distributed predominately into Mudgee town centre via Broadhead Road (60%) northbound while the remaining trips are split equally east and west between Bruce Road east/ Spring Flat Road (20%) and Bruce Road west/ Robertson Road (20%), respectively.

Revised SIDRA Modelling Results

Updated traffic modelling has been undertaken which considers the proposed school traffic generation distributed to the east on Bruce Road. The traffic distribution reflects the most direct route to/from the site based on the place of residence of current high school students attending St Matthew's Catholic College. Consideration has also been given to future development growth towards the south of the proposed school site. The revised traffic flow distribution of school-generated trips is illustrated in Figure 2.

Figure 2: Future School Traffic Distribution Split



Based on the above, the cumulative development traffic generation (i.e. adjacent traffic generation and school traffic generation) are illustrated in Figure 3 and Figure 4 for the AM peak hour and PM peak hour respectively. As noted above, the PM peak hour does not include the nearby residential traffic generation as the DA's evening peak hour does not coincide with the school's afternoon peak hour.

Updated traffic modelling has been carried out to assess eight intersections surrounding the subject site, including the future school site access. SIDRA Network software (version 8.0) has been used to assess intersection performance during AM and PM school peak periods.

In addition to existing conditions ("base case") scenario as assessed in the TIA report, four future scenarios have been analysed, namely:

- Scenario 1 – 2026 Future Case with DA traffic and without SSD traffic. This also considers background traffic growth of 2.0% p.a. in Mudgee up to year 2026.
- Scenario 2 – 2026 Future Case with DA traffic and SSD traffic, with background traffic growth of 2.0% p.a. in Mudgee up to year 2026.
- Scenario 3 – 2036 Future Case with DA traffic and without SSD traffic. This also considers background traffic growth of 2.0% p.a. in Mudgee up to year 2036.
- Scenario 4 – 2036 Future Case with DA traffic and SSD traffic, with background traffic growth of 2.0% p.a. in Mudgee up to year 2036.

As mentioned earlier, modelling for Year 2026 reflects conditions for the opening year of the future school based on 59 staff full-time equivalent staff and a student population of 680 high school Modelled Year 2036). Modelling for Year 2036 reflects conditions 10 years following the opening of the future school whilst it operated at full enrolment capacity.

For completeness, the modelling results for existing conditions are presented in Table 1. The revised SIDRA modelling results for the abovementioned future scenarios are summarised Table 2 to Table 5.

A summary of changes to the SIDRA modelling results, specifically average delay, due to the future high school is provided in Table 6.

Figure 3: AM Peak Traffic Flow Diagram

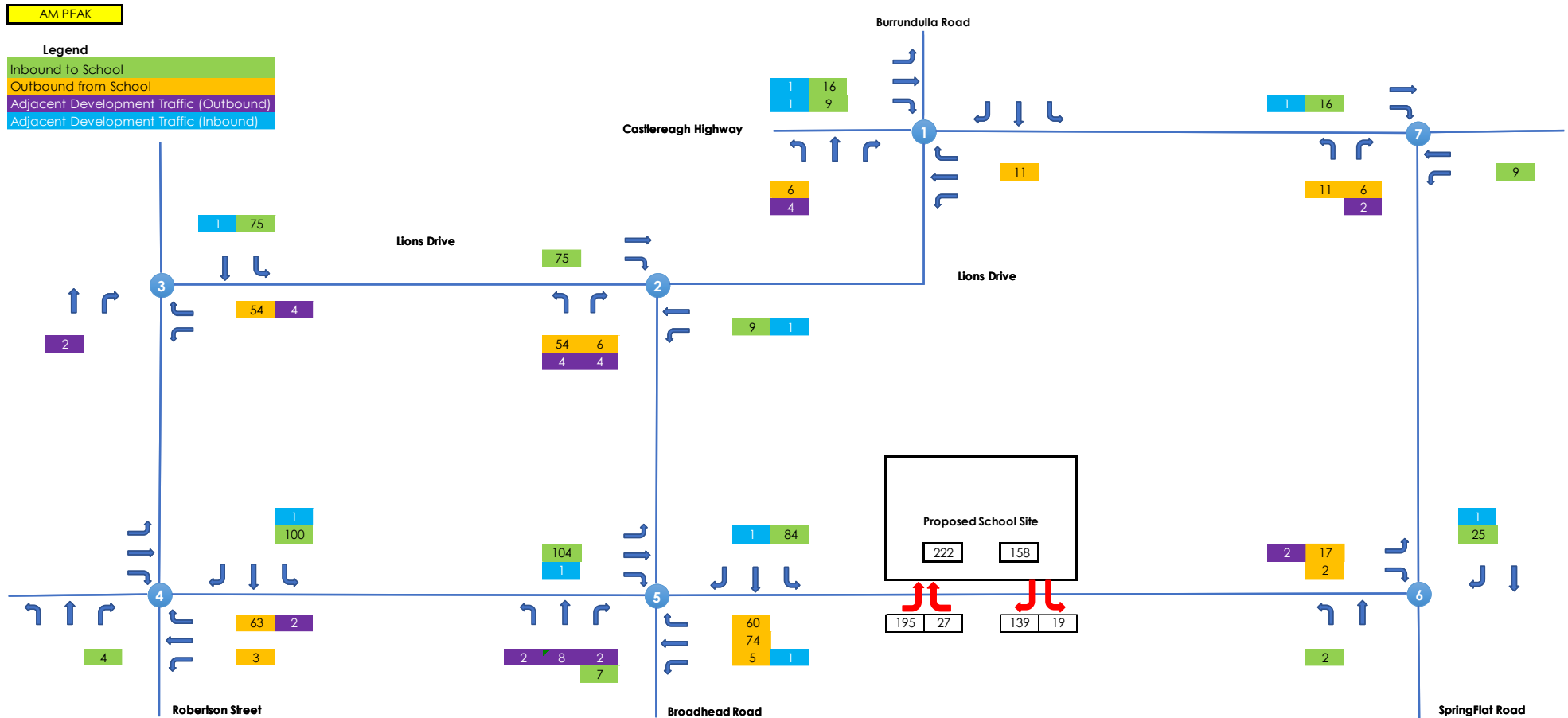


Figure 4: PM Peak Traffic Flow Diagram

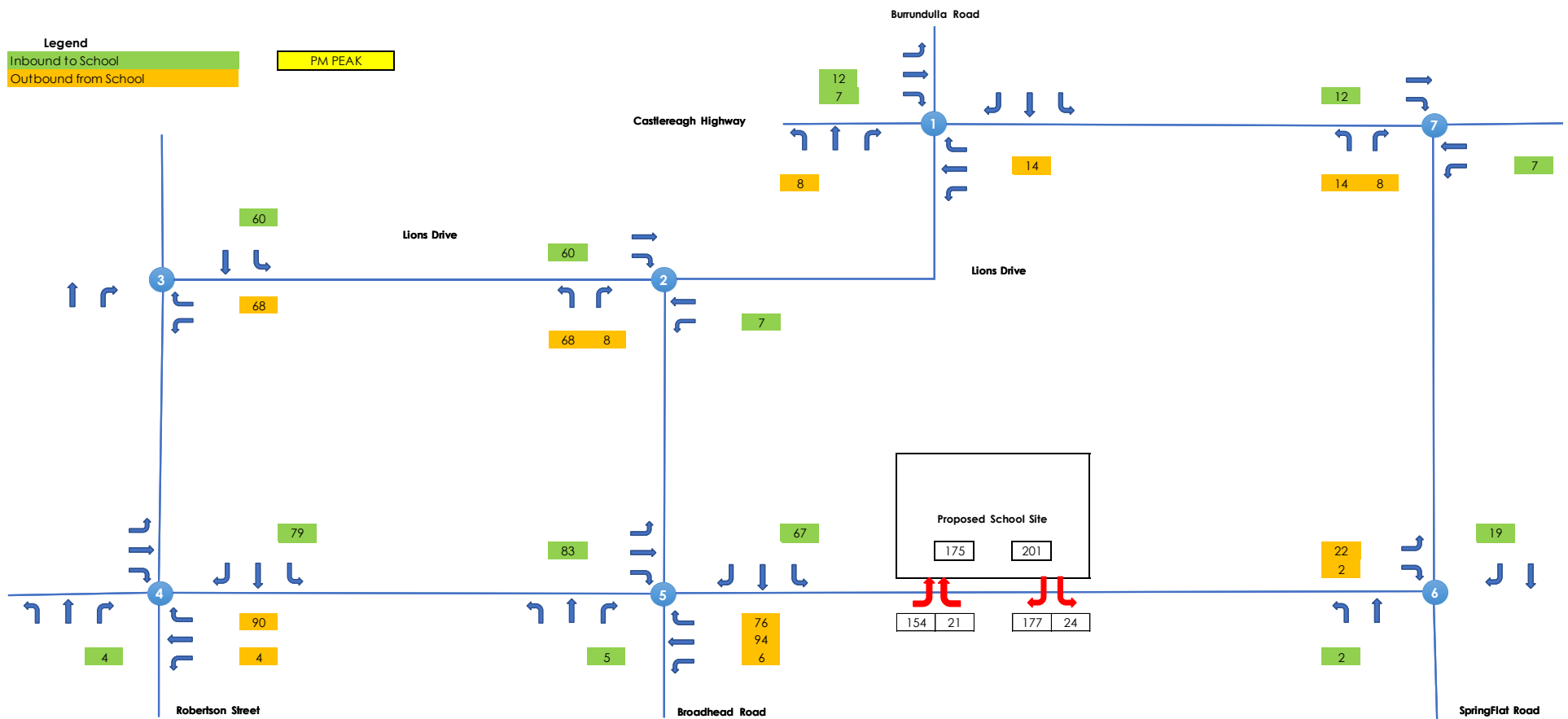


Table 1: Modelling Results for Scenario 0 (Existing Conditions)

Intersection	AM Peak			PM Peak		
	Average Delay (s)	LoS	Average Queue Length (m)	Average Delay (s)	LoS	Average Queue Length (m)
1 Castlereagh Hwy/ Lions Dr/ Burrundulla Rd	15	B	8	14	A	15
2 Broadhead Rd/ Lions Dr	6	A	1	5	A	0
3 Lions Dr/ Robertson St	6	A	4	6	A	4
4 Bruce Rd/ Robertson Rd	5	A	0	5	A	0
5 Broadhead Rd/ Bruce Rd	5	A	0	5	A	0
6 Spring Flat Rd/ Bruce Rd	9	A	0	8	A	0
7 Spring Flat Rd/ Castlereagh Hwy	9	A	1	8	A	0
8 Future School Site Access	-	-	-	-	-	-

Table 2: Modelling Results for Scenario 1 (Year 2026)

Intersection	AM Peak			PM Peak		
	Average Delay (s)	LoS	Average Queue Length (m)	Average Delay (s)	LoS	Average Queue Length (m)
1 Castlereagh Hwy/ Lions Dr/ Burrundulla Rd	18	B	4	17	B	8
2 Broadhead Rd/ Lions Dr	6	A	0	6	A	0
3 Lions Dr/ Robertson St	6	A	2	6	A	2
4 Bruce Rd/ Robertson Rd	5	A	0	5	A	0
5 Broadhead Rd/ Bruce Rd	5	A	0	5	A	0
6 Spring Flat Rd/ Bruce Rd	9	A	0	8	A	0
7 Spring Flat Rd/ Castlereagh Hwy	9	A	0	8	A	0
8 Future School Site Access	-	-	-	-	-	-

Table 3: Modelling Results for Scenario 2 (Year 2026)

Intersection	AM Peak			PM Peak		
	Average Delay (s)	LoS	Average Queue Length (m)	Average Delay (s)	LoS	Average Queue Length (m)
1 Castlereagh Hwy/ Lions Dr/ Burrundulla Rd	20	B	5	19	B	9
2 Broadhead Rd/ Lions Dr	6	A	2	6	A	1
3 Lions Dr/ Robertson St	6	A	3	6	A	3
4 Bruce Rd/ Robertson Rd	5	A	1	5	A	1
5 Broadhead Rd/ Bruce Rd	6	A	2	5	A	1
6 Spring Flat Rd/ Bruce Rd	8	A	0	8	A	0
7 Spring Flat Rd/ Castlereagh Hwy	9	A	0	8	A	0
8 Future School Site Access	4	A	1	4	A	2

Table 4: Modelling Results for Scenario 3 (Year 2036)

Intersection	AM Peak			PM Peak		
	Average Delay (s)	LoS	Average Queue Length (m)	Average Delay (s)	LoS	Average Queue Length (m)
1 Castlereagh Hwy/ Lions Dr/ Burrundulla Rd	25	B	7	24	B	13
2 Broadhead Rd/ Lions Dr	6	A	0	6	A	0
3 Lions Dr/ Robertson St	6	A	3	6	A	2
4 Bruce Rd/ Robertson Rd	5	A	0	5	A	0
5 Broadhead Rd/ Bruce Rd	5	A	0	5	A	0
6 Spring Flat Rd/ Bruce Rd	9	A	0	8	A	0
7 Spring Flat Rd/ Castlereagh Hwy	9	A	0	9	A	0
8 Future School Site Access	-	-	-	-	-	-

Table 5: Modelling Results for Scenario 4 (Year 2036)

Intersection	AM Peak			PM Peak		
	Average Delay (s)	LoS	Average Queue Length (m)	Average Delay (s)	LoS	Average Queue Length (m)
1 Castlereagh Hwy/ Lions Dr/ Burrundulla Rd	28	B	7	28	B	15
2 Broadhead Rd/ Lions Dr	7	A	2	6	A	1
3 Lions Dr/ Robertson St	6	A	3	6	A	3
4 Bruce Rd/ Robertson Rd	5	A	1	5	A	1
5 Broadhead Rd/ Bruce Rd	6	A	2	5	A	2
6 Spring Flat Rd/ Bruce Rd	8	A	0	8	A	0
7 Spring Flat Rd/ Castlereagh Hwy	10	A	1	9	A	0
8 Future School Site Access	4	A	1	4	A	2

Table 6: Summary of Changes to Average Delay

Intersection	Year 2026, comparing without SSD and with SSD		Year 2036, comparing without SSD and with SSD	
	AM	PM	AM	PM
1 Castlereagh Hwy/ Lions Dr/ Burrundulla Rd	+2 s	+2 s	+3 s	+4 s
2 Broadhead Rd/ Lions Dr	-	-	+1 s	-
3 Lions Dr/ Robertson St	-	-	-	-
4 Bruce Rd/ Robertson Rd	-	-	-	-
5 Broadhead Rd/ Bruce Rd	+1	-	+1 s	-
6 Spring Flat Rd/ Bruce Rd	-1s	-	-1 s	-
7 Spring Flat Rd/ Castlereagh Hwy	-	-	+1 s	-
8 Future School Site Access	-	-	-	-

All future traffic modelling scenarios make consideration for the revised SSD traffic distribution along Bruce Road east, the proposed nearby residential subdivision, and future annual traffic growth. With this in mind, the future local road network would continue operate at level of services A and B once the future high school is proposed to operate at full capacity in 2026. Comparatively, the future development would result in up to an additional two seconds in average delay per vehicle (at the Castlereagh Highway – Lions Road – Burrundulla Road junction) which would have a negligible impact on the network operation. Some intersections would experience a change of plus or minus one second, or no change at all which would also have an unnoticeable impact to the surrounding road network performance.

A comparison of modelling results for 2036 scenarios without and with the future high school indicate a very minor increase in average delay. There would be up to an additional four seconds in average delay per vehicle at the same intersection as above, while some intersection would experience a change of plus or minus one second, or no change at all.

Overall, the proposed development is not expected to adversely impact the future performance of the local road network. Having consideration for revised traffic flow distribution and cumulative traffic impacts with the nearby proposed residential subdivision development, future operation of the surrounding road network would be maintained at good levels of service A and B with minimal delay and queue lengths at all nearby intersections.