

**Design
for a better
future /**

HUNT ARCHITECTS

**ALLIED PINNACLE
FLOUR AND MAIZE MILL**

PROPOSED
MODIFICATION
(DA-318-12-2004)

wsp

NOVEMBER 2021

PUBLIC

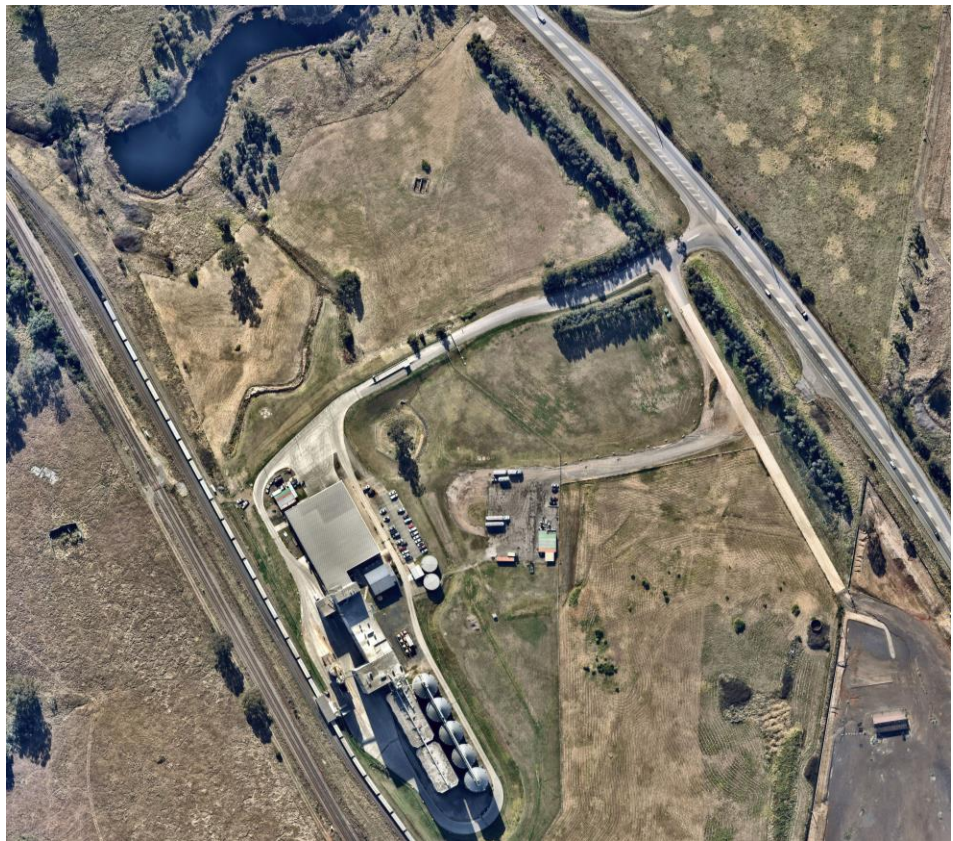
APPENDIX K

TRAFFIC AND TRANSPORT MEMORANDUM



TO: Mark Maund
FROM: Sam McCormick
Chris Chun
SUBJECT: **Allied Pinnacle Traffic and Transport Memorandum**
OUR REF: PS124818-P&M-MEM-001-RevA
DATE: **6 October 2021**

This memorandum addresses the traffic and transport impacts associated with the proposed upgrades to the Allied Pinnacle site development located at Picton Road in Maldon NSW, shown in Figure 1.1 below.



Source: *nearmap*

Figure 1.1 Allied Pinnacle site

Within the Wollondilly Shire Council, the site is located in an industrial zone with adjacent residential and rural areas around Picton, Douglas Park and Wilton. Proposed upgrades to the site include an external expansion to the northwest corner of the existing building

The WSP team was unable to attend a site visit based on the current state-wide lockdown preventing non-essential travel. Additionally, traffic surveys were originally scoped although deemed not suitable as they would likely show an inaccurate measure of very low traffic volumes with the state in lockdown. Therefore, historical traffic survey data from Tuesday 10 March 2020 has been provided by Trans Traffic Survey (TTS) from before the COVID pandemic. This survey was conducted at the Picton Road / Menangle Road intersection upstream of the site and has been reviewed to assess the impact of the proposed development. This data enabled an investigation into the worst-case scenario for traffic and helped to inform potential impacts to the surrounding network. Detailed surveys are available in Appendix A.

Based on these traffic surveys, peak hours for the site are:

- **AM peak** 7:30 am – 8:30 am
- **PM peak** 4:15 pm – 5:15 pm

For this assessment, a 1% growth per annum (p.a.) has been applied as a conservative measure to estimate the future background volumes for 2030 scenarios. The following scenarios have been modelled to assess the impacts of the expanded site:

- **2020 Existing** – existing layout and arrangement using 2020 survey data (TTS).
- **2020 with Development** – existing layout and arrangement using 2020 survey data (TTS) plus development generated traffic.
- **2030 Future Base** – existing layout and arrangement using 2020 survey data (TTS) with 1% p.a. growth rate to 2030.
- **2030 with Development** – existing layout and arrangement using 2020 survey data (TTS) with 1% p.a. growth rate to 2030 plus development generated traffic.

A previous development application report, *Report on the Assessment Development Application No DA-318-12-2004-I* (Department of Infrastructure, Planning and Natural Resources, July 2005) (“2004 DA Report”), has been reviewed with regards to the traffic and transport impacts section (Section 6.4). Some of the information has been brought through in this assessment including assumptions around the original development’s traffic generation numbers for both staff and visitors. Similarly, the directional splits of this traffic have been brought through in this investigation with the assumption that these traffic movements have not changed.

1. TRAFFIC GENERATION AND DISTRIBUTION

TRAFFIC GENERATION

The site’s expansion is relatively small compared to the existing development. Likely additional traffic generated by the site has been provided by the client including the following employee numbers:

- 5 trucks (heavy vehicles, HV) per day
- 10 passenger vehicles (light vehicles, LV) per day

The expansion’s size and purpose as a combined warehouse extension and engineering area indicate it is for employees only and thus no additional visitor numbers have been included.

It is assumed that the generated vehicle numbers all enter the site during the AM peak and all exit during the PM peak, shown in Table 1.1.

Table 1.1 Peak distribution

	IN	OUT
AM	100%	0%
PM	0%	100%

TRAFFIC DISTRIBUTION

The 2004 DA Report assumes 28 (52%) of the generated 54 employee light vehicles access the site from the west, with 26 (48%) light vehicles accessing from the east. All heavy vehicles are assumed to access the site from the east via the Hume Highway only.

Similarly, the 2004 DA Report assumes all construction vehicles originate from Metropolitan Sydney and therefore access the site by using the Hume Highway. This means all entering construction vehicles to site enter turning left in from Picton Road and exit right out onto Picton Road.

These directional splits are shown in Figure 1.1 where light vehicle and heavy vehicle volumes are represented by green and red numbers respectively.

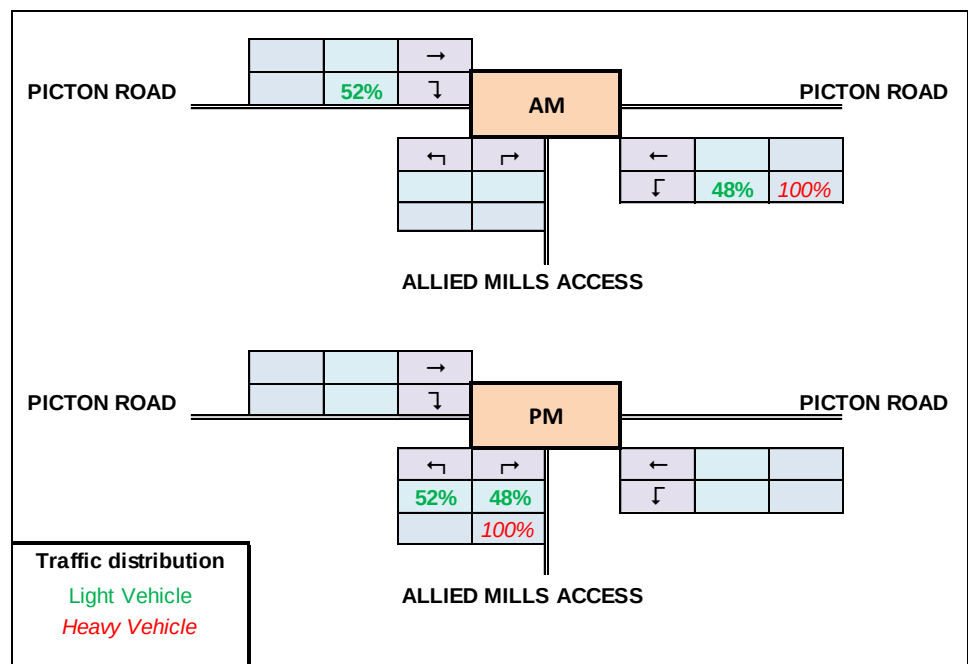


Figure 1.1 Directional splits

As the site has not changed in size since 2004, it is assumed that the development's traffic generation has not changed. Considering this, Table 1.2 shows existing traffic generation and Figure 1.2 displays their movements in and out of the site.

Table 1.2 Existing site traffic generation

	EMPLOYEES	VISITORS	TOTAL
Light Vehicles (LV)	54	21	75
Heavy Vehicles (HV)	33	2	35

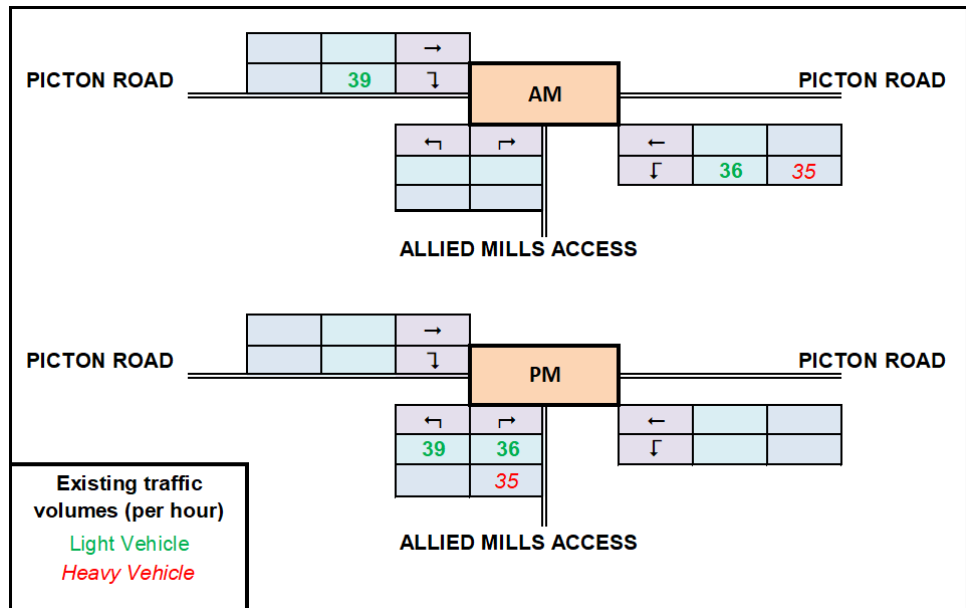


Figure 1.2 Distributed existing site traffic generation

Based on these assumptions above, additional traffic to be generated by the increased development is distributed as shown in Figure 1.3.

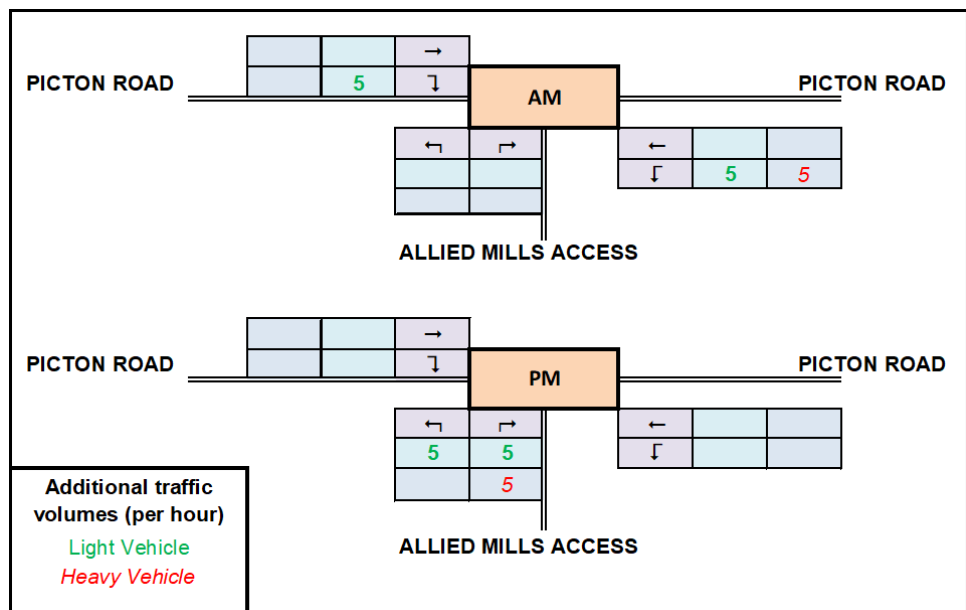


Figure 1.3 Additional development traffic generation

The total generation of the development, including existing and proposed based on the proposed upgrades, will therefore be **85 light vehicles** and **40 heavy vehicles** with an assumption that all of these enter the site during the AM peak all exit during the PM peak to represent a worst-case scenario.

2. OPERATIONAL IMPACTS

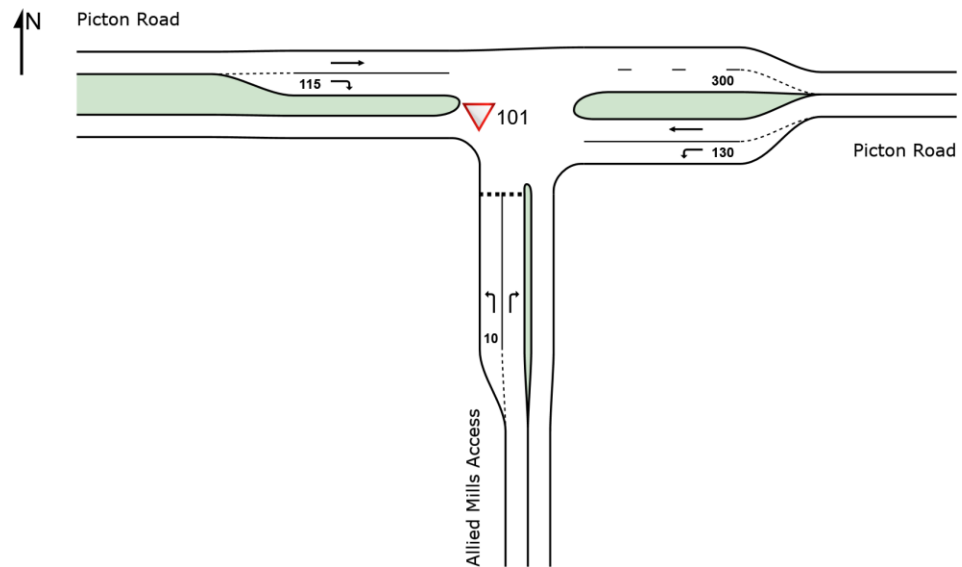
2.1 INTERSECTION OPERATION

The operation of the site access intersection has been assessed using the SIDRA Intersection modelling software, adopting the estimated 2020 base traffic volumes and the site generated traffic volumes for a typical weekday. An aerial image of the intersection is provided in Figure 2.1, with the SIDRA layout provided in Figure 2.2.



Source: Nearmap

Figure 2.1 Intersection of Picton Road and site access (aerial)



Source: *SIDRA Intersection*

Figure 2.2 Intersection of Picton Road and site access (SIDRA layout)

The Traffic Modelling Guidelines (Transport for NSW – formerly Roads and Maritime Services, 2013) specifies that intersection operation is generally measured by degree of saturation, Level of Service and 95th percentile base of queue distance.

SIDRA Intersection measures these elements, with the intersection level of service being a measure of the average delay at the intersection, as defined by the criteria set out in Table 2.1.

Table 2.1 *SIDRA Intersection Level of Service criteria*

Level of service	Average delay (seconds per vehicle)	Criteria for traffic signals	Criteria for give way and stop signs
A	<14	Good operation	Good operation
B	15 to 28	Good operation with acceptable delays and spare capacity	Good operation with acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Near capacity	Near capacity and accident study required
E	57 to 70	At capacity, at signals, incidents will cause excessive delays	At capacity, requires other control mode
F	>70	Extra capacity required	At capacity, requires other control mode

Source: *Adopted from Guide to Traffic Generating Developments (Roads and Maritime Services, 2002)*

Table 2.2 presents a summary of the site access intersection operation during the weekday AM and PM peak hours, adopting the traffic generation. The full modelling results are presented in Appendix B.

It should be noted that the critical movement for the level of service at a priority-controlled intersection is the movement with the worst delay and therefore, this has been reported in Table 2.2.

Table 2.2 Site access intersection operation

Year	Scenario	Volume	Degree of Saturation	Average delay (seconds)	95 th percentile queue (metres)			Level of Service
					South	East	West	
2020	Existing AM	1233	0.060	10.5	<5	<5	<5	A
	Development AM	1248	0.069	10.6	<5	<5	<5	A
	Existing PM	1339	0.409	32.4	16	<5	<5	C
	Development PM	1354	0.467	34.1	19	<5	<5	C
2030	Existing AM	1350	0.066	11.1	<5	<5	<5	A
	Development AM	1365	0.075	11.3	<5	<5	<5	A
	Existing PM	1467	0.532	45.3	21	<5	<5	D
	Development PM	1482	0.608	49.3	26	<5	<5	D

2.2 RESULTS SUMMARY

Table 2.2 shows that the existing (2020 Existing Scenario) site access intersection should generally operate well during the AM peak hour, with Level of Service A, and with diminished yet acceptable performance during the PM Peak hour, at Level of Service C. This is due largely to the delay and queues experienced by right turning vehicles out of the site access and across opposing westbound through traffic volumes of up to 782 vehicles. 2020 With Development scenarios show a similar trend with the AM and PM peaks performing at Level of Service A and C respectively with no distinguishable change in the AM Peak, and a two seconds increase in delay and additional queuing in the PM Peak.

The future 2030 Scenarios show negligible increases under one second in delay for the AM Peaks. This is due to the background growth of 1% per annum, expected to operate with a maintained Level of Service A and negligible increases in delay and queueing.

The PM peak shows worsened performance with 45.3 seconds delay and 21 metre queues for the 2030 Existing PM and 49.3 seconds delay and 26 metre queues for the 2030 With Development PM scenario. This is likely due to heavy vehicle movements out of the site given the opposing westbound through traffic volumes of up to 908 vehicles. Overall, this remains an acceptable operational performance at Level of Service D given the main movements at this intersection are east-west through movements that are not impacted by the development's traffic.

2.3 OPERATIONAL IMPACTS

Key operational impacts are listed below:

- Minor increase in delay for right turn movements into the site access during both the AM and PM peaks between 2020 and 2030 scenarios due to slight increase in development traffic.
- Key impact is during the PM peak hour with right turning vehicles exiting site having to compete with opposing westbound through traffic of up to 782 vehicles in 2020 and 902 vehicles in 2030.

- 2020 and 2030 PM peak diminished performance is largely due to background traffic growth along Picton Road with additional growth potentially requiring intersection treatments to address worsening conditions for site access.

3. CONSTRUCTION IMPACTS

3.1 CONSTRUCTION WORKFORCE

Construction workforce will include a maximum of 15 to 25 staff per day, at an average of 10 to 15. The construction plant required for works include:

- 5 tonne excavator
- Bobcat
- Tip truck
- 2.5 tonne forklift
- Franna crane
- Concrete truck & pump
- 2 x 19' EWP

The above equipment represents the likely construction vehicles on site to a maximum of 25 light vehicle and five heavy vehicle inbound movements during the AM peak and outbound during the PM peak.

3.2 CONSTRUCTION IMPACTS

Given that the total proposed construction traffic volumes (25 LV, 5 HV) is less than that proposed to be generated by the development with upgrades (85 LV, 40HV), quantitative traffic assessment has not been undertaken for the construction period. The impacts of construction traffic would not eclipse those noted within the 2020 With Development scenario.

With all construction vehicles proposed to access the site via the Hume Highway, however the likely impacts are minimal based on low volumes of the generated construction traffic.

- Construction vehicles exiting during the PM peak turning right out of the site across the opposing westbound traffic flows of up to 782 vehicles may experience some increased delays.
- Potential delays or congestion at the Hume Highway's western ramps as vehicles exit the highway during the AM peak, merging with westbound traffic along Picton Road. Similarly, potential worsening performance of the southbound on-ramp with additional construction vehicles at this location mixing with existing vehicles.

4. MITIGATION MEASURES

4.1 OPERATIONAL IMPACT MITIGATION

The operational impacts are largely due to background traffic growth along Picton Road and the need for vehicles entering and exiting the site to cross the westbound through movement. Potential intersection treatments such as a formalised basic left turn lane with a longer lane length should be implemented to increase storage capacity on the southern leg (Allied Mills Access). However, it won't be required until 2030. Such treatments to address greater background growth up to and beyond 2030 (noting 1% p.a. has been assumed for this assessment) would require further investigation.



APPENDIX A HISTORICAL TRAFFIC SURVEYS

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY



trafficsurvey.com.au



Intersection of Picton Rd and Menangle Rd, Razorback

GPS -34.193092, 150.644081

Date:	Tue 10/03/20
Weather:	Overcast
Suburban:	Razorback
Customer:	McLaren

North:	Menangle Rd
East:	Picton Rd
South:	N/A
West:	Picton Rd

Survey	AM:	6:00 AM-10:00 AM
Period	PM:	3:00 PM-7:00 PM
Traffic	AM:	7:30 AM-8:30 AM
Peak	PM:	4:15 PM-5:15 PM

All Vehicles

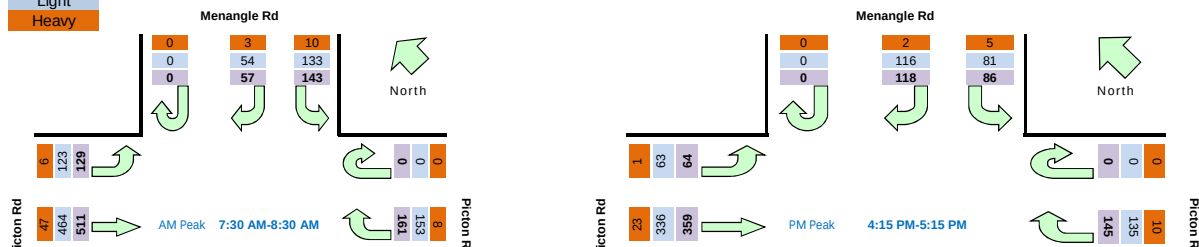
Time		North Approach Menangle Rd			East Approach Picton Rd			West Approach Picton Rd			Hourly Total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	Hour	Peak
6:00	6:15	0	2	17	0	6	41	0	141	13	1099	
6:15	6:30	0	4	27	0	7	65	0	165	16	1161	
6:30	6:45	0	10	22	0	20	87	0	141	21	1184	
6:45	7:00	0	16	24	0	14	80	0	147	13	1258	
7:00	7:15	0	8	27	0	21	68	0	140	18	1303	
7:15	7:30	0	4	39	0	26	75	0	145	18	1323	
7:30	7:45	0	13	52	0	39	68	0	166	37	1346	Peak
7:45	8:00	0	22	29	0	34	94	0	123	37	1292	
8:00	8:15	0	10	27	0	54	89	0	95	27	1259	
8:15	8:30	0	12	35	0	34	94	0	127	28	1252	
8:30	8:45	0	15	32	0	45	88	0	105	36	1189	
8:45	9:00	0	20	33	0	46	103	0	84	20	1103	
9:00	9:15	0	18	24	0	38	85	0	100	30	1019	
9:15	9:30	0	13	24	0	24	100	0	88	18		
9:30	9:45	0	12	18	0	20	80	0	75	30		
9:45	10:00	0	10	13	0	25	90	0	64	20		
15:00	15:15	0	19	14	0	25	96	0	91	9	1150	
15:15	15:30	0	17	30	0	29	90	0	93	16	1212	
15:30	15:45	0	31	28	0	20	97	0	100	26	1319	
15:45	16:00	0	21	17	0	40	131	0	104	6	1357	
16:00	16:15	0	18	12	0	36	134	0	99	17	1415	
16:15	16:30	0	26	24	0	36	190	0	86	20	1448	Peak
16:30	16:45	0	34	22	0	39	142	0	86	17	1442	
16:45	17:00	0	33	19	0	29	183	0	97	16	1425	
17:00	17:15	0	25	21	0	41	161	0	90	11	1413	
17:15	17:30	0	28	20	0	38	172	0	103	15	1373	
17:30	17:45	0	33	26	0	25	149	0	78	12	1281	
17:45	18:00	0	32	20	0	24	182	0	93	14	1200	
18:00	18:15	0	35	19	0	20	168	0	57	10	1025	
18:15	18:30	0	29	9	0	20	123	0	87	16		
18:30	18:45	0	16	9	0	17	124	0	66	10		
18:45	19:00	0	12	11	0	11	81	0	64	11		

Peak Time		North Approach Menangle Rd			East Approach Picton Rd			West Approach Picton Rd			Peak total
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	
7:30	8:30	0	57	143	0	161	345	0	511	129	1346
16:15	17:15	0	118	86	0	145	676	0	359	64	1448

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy





Light Vehicles

Time		North Approach Menangle Rd			East Approach Picton Rd			West Approach Picton Rd		
Period Start	Period End	U	R	L	U	R	WB	U	EB	L
6:00	6:15	0	1	13	0	5	29	0	124	13
6:15	6:30	0	4	25	0	5	53	0	152	15
6:30	6:45	0	9	18	0	20	79	0	121	21
6:45	7:00	0	16	22	0	14	70	0	136	13
7:00	7:15	0	6	25	0	21	52	0	125	18
7:15	7:30	0	4	39	0	25	62	0	132	17
7:30	7:45	0	13	46	0	37	56	0	156	32
7:45	8:00	0	22	27	0	33	81	0	115	37
8:00	8:15	0	9	25	0	52	75	0	85	27
8:15	8:30	0	10	35	0	31	86	0	108	27
8:30	8:45	0	15	30	0	45	75	0	89	36
8:45	9:00	0	18	33	0	41	95	0	71	19
9:00	9:15	0	15	24	0	36	73	0	86	30
9:15	9:30	0	12	24	0	24	86	0	78	18
9:30	9:45	0	12	17	0	18	70	0	68	30
9:45	10:00	0	9	13	0	24	77	0	51	19
15:00	15:15	0	18	14	0	23	84	0	80	9
15:15	15:30	0	17	29	0	28	78	0	81	16
15:30	15:45	0	29	27	0	18	84	0	94	26
15:45	16:00	0	20	11	0	40	121	0	95	6
16:00	16:15	0	17	10	0	33	124	0	88	16
16:15	16:30	0	24	21	0	35	178	0	83	19
16:30	16:45	0	34	21	0	35	135	0	81	17
16:45	17:00	0	33	19	0	27	171	0	88	16
17:00	17:15	0	25	20	0	38	151	0	84	11
17:15	17:30	0	27	19	0	38	170	0	95	15
17:30	17:45	0	33	26	0	23	144	0	75	12
17:45	18:00	0	32	17	0	22	173	0	91	14
18:00	18:15	0	35	19	0	20	162	0	55	10
18:15	18:30	0	29	9	0	20	121	0	85	15
18:30	18:45	0	16	8	0	17	121	0	61	10
18:45	19:00	0	12	10	0	11	78	0	61	11

Peak Time		North Approach Menangle Rd			East Approach Picton Rd			West Approach Picton Rd			Peak total
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	
7:30	8:30	0	54	133	0	153	298	0	464	123	1225
16:15	17:15	0	116	81	0	135	635	0	336	63	1366

Heavy Vehicles

Time		North Approach Menangle Rd			East Approach Picton Rd			West Approach Picton Rd		
Period Start	Period End	U	R	L	U	R	WB	U	EB	L
6:00	6:15	0	1	4	0	1	12	0	17	0
6:15	6:30	0	0	2	0	2	12	0	13	1
6:30	6:45	0	1	4	0	0	8	0	20	0
6:45	7:00	0	0	2	0	0	10	0	11	0
7:00	7:15	0	2	2	0	0	16	0	15	0
7:15	7:30	0	0	0	0	1	13	0	13	1
7:30	7:45	0	0	6	0	2	12	0	10	5
7:45	8:00	0	0	2	0	1	13	0	8	0
8:00	8:15	0	1	2	0	2	14	0	10	0
8:15	8:30	0	2	0	0	3	8	0	19	1

8:30	8:45	0	0	2	0	0	13	0	16	0
8:45	9:00	0	2	0	0	5	8	0	13	1
9:00	9:15	0	3	0	0	2	12	0	14	0
9:15	9:30	0	1	0	0	0	14	0	10	0
9:30	9:45	0	0	1	0	2	10	0	7	0
9:45	10:00	0	1	0	0	1	13	0	13	1
15:00	15:15	0	1	0	0	2	12	0	11	0
15:15	15:30	0	0	1	0	1	12	0	12	0
15:30	15:45	0	2	1	0	2	13	0	6	0
15:45	16:00	0	1	6	0	0	10	0	9	0
16:00	16:15	0	1	2	0	3	10	0	11	1
16:15	16:30	0	2	3	0	1	12	0	3	1
16:30	16:45	0	0	1	0	4	7	0	5	0
16:45	17:00	0	0	0	0	2	12	0	9	0
17:00	17:15	0	0	1	0	3	10	0	6	0
17:15	17:30	0	1	1	0	0	2	0	8	0
17:30	17:45	0	0	0	0	2	5	0	3	0
17:45	18:00	0	0	3	0	2	9	0	2	0
18:00	18:15	0	0	0	0	0	6	0	2	0
18:15	18:30	0	0	0	0	0	2	0	2	1
18:30	18:45	0	0	1	0	0	3	0	5	0
18:45	19:00	0	0	1	0	0	3	0	3	0

Peak Time		North Approach Menangle Rd			East Approach Picton Rd			West Approach Picton Rd			Peak total
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	
7:30	8:30	0	3	10	0	8	47	0	47	6	121
16:15	17:15	0	2	5	0	10	41	0	23	1	82



APPENDIX B SIDRA MOVEMENT SUMMARIES

MOVEMENT SUMMARY

▼ Site: 101 [2020 AM Picton Road / Allied Mills Access (Site Folder: 2020)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Allied Mills Access														
1	L2	1	0	1	0.0	0.001	8.3	LOS A	0.0	0.0	0.49	0.59	0.49	56.2
3	R2	1	0	1	0.0	0.002	11.7	LOS A	0.0	0.1	0.57	0.63	0.57	54.4
Approach		2	0	2	0.0	0.002	10.0	LOS A	0.0	0.1	0.53	0.61	0.53	55.3
East: Picton Road														
4	L2	71	35	75	49.3	0.054	7.9	LOS A	0.0	0.0	0.00	0.63	0.00	51.9
5	T1	506	55	533	10.9	0.292	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		577	90	607	15.6	0.292	1.0	NA	0.0	0.0	0.00	0.08	0.00	74.8
West: Picton Road														
11	T1	615	57	647	9.3	0.355	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.7
12	R2	39	0	41	0.0	0.060	10.5	LOS A	0.2	1.5	0.56	0.78	0.56	55.6
Approach		654	57	688	8.7	0.355	0.7	NA	0.2	1.5	0.03	0.05	0.03	77.7
All Vehicles		1233	147	1298	11.9	0.355	0.9	NA	0.2	1.5	0.02	0.06	0.02	76.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▼ Site: 101 [2020 wDev AM Picton Road / Allied Mills Access
(Site Folder: 2020)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Allied Mills Access														
1	L2	1	0	1	0.0	0.001	8.3	LOS A	0.0	0.0	0.49	0.59	0.49	56.2
3	R2	1	0	1	0.0	0.002	11.8	LOS A	0.0	0.1	0.58	0.64	0.58	54.3
Approach		2	0	2	0.0	0.002	10.1	LOS A	0.0	0.1	0.54	0.62	0.54	55.2
East: Picton Road														
4	L2	81	40	85	49.4	0.062	7.9	LOS A	0.0	0.0	0.00	0.63	0.00	51.9
5	T1	506	55	533	10.9	0.292	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		587	95	618	16.2	0.292	1.1	NA	0.0	0.0	0.00	0.09	0.00	74.3
West: Picton Road														
11	T1	615	57	647	9.3	0.355	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.7
12	R2	44	0	46	0.0	0.069	10.6	LOS A	0.3	1.8	0.57	0.80	0.57	55.5
Approach		659	57	694	8.6	0.355	0.8	NA	0.3	1.8	0.04	0.05	0.04	77.5
All Vehicles		1248	152	1314	12.2	0.355	1.0	NA	0.3	1.8	0.02	0.07	0.02	75.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2020 PM Picton Road / Allied Mills Access (Site Folder: 2020)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Allied Mills Access														
1	L2	39	0	41	0.0	0.095	12.3	LOS A	0.3	2.1	0.70	0.87	0.70	53.0
3	R2	71	35	75	49.3	0.409	32.4	LOS C	1.6	16.0	0.88	1.03	1.14	35.6
Approach		110	35	116	31.8	0.409	25.3	LOS B	1.6	16.0	0.81	0.97	0.98	40.3
East: Picton Road														
4	L2	1	0	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	65.4
5	T1	782	51	823	6.5	0.440	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.6
Approach		783	51	824	6.5	0.440	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.6
West: Picton Road														
11	T1	445	28	468	6.3	0.250	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
12	R2	1	0	1	0.0	0.002	12.8	LOS A	0.0	0.1	0.68	0.71	0.68	53.7
Approach		446	28	469	6.3	0.250	0.1	NA	0.0	0.1	0.00	0.00	0.00	79.7
All Vehicles		1339	114	1409	8.5	0.440	2.2	NA	1.6	16.0	0.07	0.08	0.08	73.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2020wDev PM Picton Road / Allied Mills Access
(Site Folder: 2020)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Allied Mills Access														
1	L2	44	0	46	0.0	0.107	12.4	LOS A	0.3	2.4	0.70	0.87	0.70	52.9
3	R2	81	40	85	49.4	0.467	34.1	LOS C	1.9	19.1	0.89	1.05	1.22	35.0
Approach		125	40	132	32.0	0.467	26.5	LOS B	1.9	19.1	0.82	0.99	1.04	39.8
East: Picton Road														
4	L2	1	0	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	65.4
5	T1	782	51	823	6.5	0.440	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.6
Approach		783	51	824	6.5	0.440	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.6
West: Picton Road														
11	T1	445	28	468	6.3	0.250	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
12	R2	1	0	1	0.0	0.002	12.8	LOS A	0.0	0.1	0.68	0.71	0.68	53.7
Approach		446	28	469	6.3	0.250	0.1	NA	0.0	0.1	0.00	0.00	0.00	79.7
All Vehicles		1354	119	1425	8.8	0.467	2.5	NA	1.9	19.1	0.08	0.09	0.10	72.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2030 AM Picton Road / Allied Mills Access (Site Folder: 2030)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Allied Mills Access														
1	L2	1	0	1	0.0	0.002	8.8	LOS A	0.0	0.0	0.52	0.61	0.52	55.8
3	R2	1	0	1	0.0	0.002	12.8	LOS A	0.0	0.1	0.62	0.65	0.62	53.7
Approach		2	0	2	0.0	0.002	10.8	LOS A	0.0	0.1	0.57	0.63	0.57	54.7
East: Picton Road														
4	L2	71	35	75	49.3	0.054	7.9	LOS A	0.0	0.0	0.00	0.63	0.00	51.9
5	T1	559	61	588	10.9	0.323	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		630	96	663	15.2	0.323	0.9	NA	0.0	0.0	0.00	0.07	0.00	75.2
West: Picton Road														
11	T1	679	63	715	9.3	0.392	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.7
12	R2	39	0	41	0.0	0.066	11.1	LOS A	0.2	1.7	0.58	0.81	0.58	55.1
Approach		718	63	756	8.8	0.392	0.7	NA	0.2	1.7	0.03	0.04	0.03	77.8
All Vehicles		1350	159	1421	11.8	0.392	0.8	NA	0.2	1.7	0.02	0.06	0.02	76.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▼ Site: 101 [2030 wDev AM Picton Road / Allied Mills Access
(Site Folder: 2030)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Allied Mills Access														
1	L2	1	0	1	0.0	0.002	8.8	LOS A	0.0	0.0	0.52	0.61	0.52	55.8
3	R2	1	0	1	0.0	0.002	12.9	LOS A	0.0	0.1	0.62	0.66	0.62	53.6
Approach		2	0	2	0.0	0.002	10.9	LOS A	0.0	0.1	0.57	0.63	0.57	54.7
East: Picton Road														
4	L2	81	40	85	49.4	0.062	7.9	LOS A	0.0	0.0	0.00	0.63	0.00	51.9
5	T1	559	61	588	10.9	0.323	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		640	101	674	15.8	0.323	1.1	NA	0.0	0.0	0.00	0.08	0.00	74.7
West: Picton Road														
11	T1	679	63	715	9.3	0.392	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.7
12	R2	44	0	46	0.0	0.075	11.3	LOS A	0.3	1.9	0.59	0.83	0.59	55.0
Approach		723	63	761	8.7	0.392	0.8	NA	0.3	1.9	0.04	0.05	0.04	77.5
All Vehicles		1365	164	1437	12.0	0.392	0.9	NA	0.3	1.9	0.02	0.06	0.02	76.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2030 PM Picton Road / Allied Mills Access (Site Folder: 2030)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Allied Mills Access														
1	L2	39	0	41	0.0	0.114	14.2	LOS A	0.4	2.5	0.75	0.90	0.75	51.6
3	R2	71	35	75	49.3	0.532	45.3	LOS D	2.1	21.1	0.93	1.08	1.32	31.7
Approach		110	35	116	31.8	0.532	34.2	LOS C	2.1	21.1	0.86	1.02	1.12	36.7
East: Picton Road														
4	L2	1	0	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	65.4
5	T1	863	56	908	6.5	0.486	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.5
Approach		864	56	909	6.5	0.486	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.5
West: Picton Road														
11	T1	492	31	518	6.3	0.276	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
12	R2	1	0	1	0.0	0.003	14.5	LOS A	0.0	0.1	0.73	0.74	0.73	52.4
Approach		493	31	519	6.3	0.276	0.1	NA	0.0	0.1	0.00	0.00	0.00	79.7
All Vehicles		1467	122	1544	8.3	0.532	2.7	NA	2.1	21.1	0.07	0.08	0.08	73.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.
 Minor Road Approach LOS values are based on average delay for all vehicle movements.
 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▼ Site: 101 [2030 wDev PM Picton Road / Allied Mills Access
(Site Folder: 2030)]

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Allied Mills Access														
1	L2	44	0	46	0.0	0.129	14.2	LOS A	0.4	2.8	0.76	0.90	0.76	51.5
3	R2	81	40	85	49.4	0.608	49.3	LOS D	2.6	25.6	0.94	1.12	1.45	30.6
Approach		125	40	132	32.0	0.608	36.9	LOS C	2.6	25.6	0.87	1.04	1.21	35.7
East: Picton Road														
4	L2	1	0	1	0.0	0.001	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	65.4
5	T1	863	56	908	6.5	0.486	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.5
Approach		864	56	909	6.5	0.486	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.5
West: Picton Road														
11	T1	492	31	518	6.3	0.276	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
12	R2	1	0	1	0.0	0.003	14.5	LOS A	0.0	0.1	0.73	0.74	0.73	52.4
Approach		493	31	519	6.3	0.276	0.1	NA	0.0	0.1	0.00	0.00	0.00	79.7
All Vehicles		1482	127	1560	8.6	0.608	3.2	NA	2.6	25.6	0.07	0.09	0.10	72.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Vehicle movement LOS values are based on average delay per movement.
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 NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
 Delay Model: SIDRA Standard (Geometric Delay is included).
 Queue Model: SIDRA Standard.
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ABOUT US

WSP is one of the world's leading professional services consulting firms. We are dedicated to our local communities and propelled by international brainpower. We are technical experts and strategic advisors including engineers, technicians, scientists, planners, surveyors and environmental specialists, as well as other design, program and construction management professionals. We design lasting solutions in the Transport & Water, Property & Buildings, Earth & Environment, and Mining & Power sector as well as offering strategic Advisory, Engagement & Digital services. With approximately 6,100 talented people in more than 50 offices in Australia and New Zealand, we engineer future ready projects that will help societies grow for lifetimes to come. www.wsp.com/en-au/.

