Reference: N124470

11 October 2017

Australian Turkish Maarif Foundation
15-19 Gelibolu Parade
AUBURN NSW 2144

Attention: Semih Asaroglu (Project Manager)

Dear Semih

RE: 2 PERCY STREET, AUBURN (PP-2/2017)
ADDENDUM - TRANSPORT IMPACT ASSESSMENT

Australian Turkish Maarif Foundation (ATMF) has engaged GTA Consultants (GTA) to provide additional traffic analysis to satisfy requests from Cumberland Council (Council) for the proposed school development at 2 Percy Street, Auburn. This additional information is provided in response to the Council resolution of 6 September 2017, item c: i, ii and iii.

GTA was commissioned by ATMF to undertake a transport impact assessment for the proposed development. GTA prepared a Transport Impact Assessment[1] in July 2017 and the report was submitted as part of the Planning Proposal for the site.

This addendum letter has been provided in response to Council's comments via the Minutes of the Cumberland Independent Hearing & Assessment Panel Meeting dated 9 August 2017, as follows:

c. *a revised Transport Impact Assessment incorporating further modelling taking into account the increased FSRs that resulted from LEP Amendment 8 to Auburn LEP 2010 and taking into account any revisions to the planning proposal request and Councils Traffic modelling undertaken for the Draft Auburn and Lidcombe Town Centre Strategy;*

d. *if mitigation measures such as intersection upgrades are required as a result of recommendation.*

This letter should be read in conjunction with the report titled *2 Percy Street – Planning Proposal Transport Impact Assessment* report (GTA, 12 July 2017) and provides a review and additional analysis of all traffic and transport related matters associated with the potential increase in development capacity in Auburn, Lidcombe, Berala and Regents Park town centres and villages. The assessment considered the impact of the additional traffic volumes on the surrounding road network to accommodate additional floor space ratios (FSR) in the Auburn LGA, during the proposed AM and PM school peak periods.

Council has increased floor space ratio (FSR) controls applying to certain land zoned B4 Mixed Use and R4 High Density Residential under the Auburn LEP 2010. The Auburn City Urban Design Study prepared by AECOM dated 30 September 2012 identified that if the proposed increase in FSRs were achieved there would be capacity for an additional 6,566 dwellings and 162,864 m^2 of mixed use podium gross floor area (GFA) for employment uses.

[1] Transport Impact Assessment – Planning Proposal, 2 Percy Street, Auburn, GTA Consultants, 12 July 2017.

Hyder Consulting prepared a traffic impact assessment report[2] to assess the impact from the potential increase in development capacity on the road network and provided recommendations on the potential upgrading works at critical intersections required to minimise the impact from increased FSR. The additional development capacity is forecast to generate around 5,000 to 6,300 additional vehicle trips in one peak hour across the road network.

The increase in traffic volumes were extracted from the Hyder report for the intersections of:

- Boorea Road/ St Hilliers Road/ Rawson Street
- Station Road/ Rawson Street.

Background

A Planning Proposal was lodged with Council to amend the existing planning controls for the site located at 2 Percy Street, Auburn. The Planning Proposal seeks to allow additional permitted uses for the site, for the purposes of an educational establishment, which are currently prohibited under the current Light Industrial Zone (IN2).

For the purpose of this exercise, a worst case/ maximum development scenario has been used which assumes a full-scale school including kindergarten, primary and secondary school with associated administration provided on the site.

The indicative schedule for the conceptual scheme is summarised in Table 1.

Table 1: Indicative Schedule

Use	Description	Size	
		Staff	Student
Educational	Kindergarten	2	50
	Primary School	19	300
	Secondary School	21	300
	Administration Office	8	-
Total		**50**	**650**

Source: Proposed school program by Architecture Design Studio, dated 09 May 2017

For the purposes of this assessment, vehicular access is proposed at the same location of the existing crossover to St Hilliers Road along the western boundary in the north-west corner of the site. Due to the movement restrictions at the access along St Hilliers Road, any opportunity to incorporate an additional two-way vehicular access along Gelibolu Parade would be investigated during detailed design, along with appropriate entry geometry that facilitates a suitable vehicle entry and exit speeds, without compromising pedestrian and cyclist safety.

Existing Condition

The following is provided from the GTA's *Transport Impact Assessment* report to provide background context for this addendum.

Traffic Volumes

As outlined in Section 2.2 of the Transport report, traffic movement counts where undertaken at six key intersections near the site on Tuesday 5 May 2017 and Thursday 29 June 2017 to capture the traffic conditions during the school's AM and PM peak periods.

For the purpose of this assessment, the kindergarten is proposed to operate from 8:30am to 3:15pm while the primary and high schools will hold classes from 8:30am to 3:30pm, Monday to Friday.

[2] Traffic Modelling – Increased Floor Space Ratio Controls for Certain Land Zone B4 Mixed Use and R4 High Density Residential within the Auburn Local Government Area, Hyder Consulting, September 2013.

Assuming these proposed operating hours of the school, the AM and PM hour traffic volumes during the following school peak periods are used for the traffic impact assessment:

- 8:00am and 9:00am
- 3:00pm and 4:00pm.

The weekday AM and PM school peak hour traffic volumes are summarised in Figure 1 and the weekday PM commuter peak hour traffic volumes are summarised in Figure 2.

Figure 1: Existing Weekday AM and PM School Peak Hour Traffic Volumes

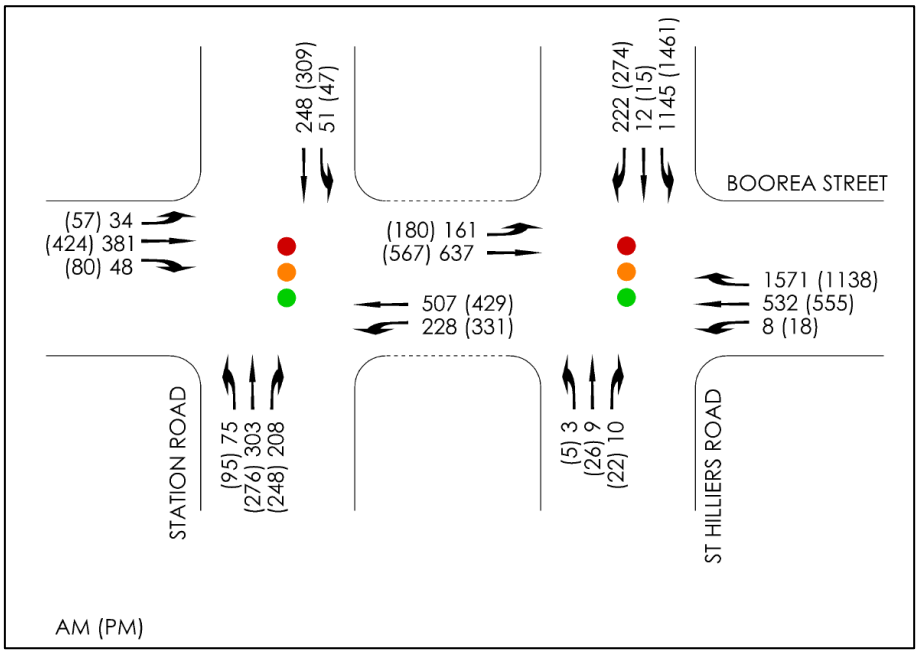
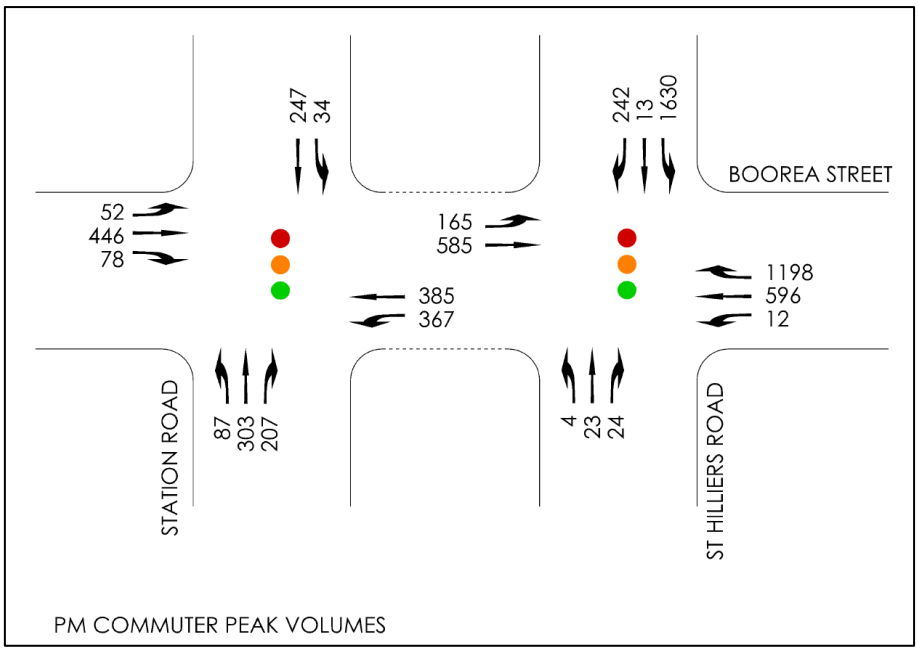


Figure 2: Existing Weekday PM Commuter Peak Hour Traffic Volumes



Intersection Operation

Table 2 presents a summary of the existing operation of both intersections, with full results presented in Attachment 1 of this letter.

Table 2: Existing Operating Conditions

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Boorea Road/ St Hilliers Road/ Rawson Street	AM School	St Hilliers Road (S)	0.15	74	6	E
		Boorea Street (SE)	0.76	29	234	C
		St Hilliers Road (NE)	0.60	29	169	C
		Boorea Street (NW)	0.74	48	126	D
		Overall	**0.76**	**33**	**234**	**C**
	PM School	St Hilliers Road (S)	0.38	75	16	E
		Boorea Street (SE)	0.66	31	171	C
		St Hilliers Road (NE)	0.64	32	205	C
		Boorea Street (NW)	0.62	40	103	D
		Overall	**0.66**	**34**	**205**	**C**
	PM Commuter	St Hilliers Road (S)	0.35	75	14	E
		Boorea Street (SE)	0.68	30	179	C
		St Hilliers Road (NE)	0.67	32	220	C
		Boorea Street (NW)	0.59	40	101	D
		Overall	**0.68**	**33**	**220**	**C**
Station Road/ Rawson Street	AM School	Rawson Street (SE)	0.59	15	149	B
		Station Road (NE)	0.60	60	68	E
		Rawson Street (NW)	0.30	20	76	B
		Station Road (SW)	0.60	44	120	D
		Overall	**0.60**	**31**	**149**	**C**
	PM School	Rawson Street (SE)	0.70	17	136	B
		Station Road (NE)	0.59	57	82	D
		Rawson Street (NW)	0.41	26	108	B
		Station Road (SW)	0.60	39	99	C
		Overall	**0.61**	**31**	**136**	**C**
	PM Commuter	Rawson Street (SE)	0.49	16	115	B
		Station Road (NE)	0.46	55	62	D
		Rawson Street (NW)	0.39	24	105	B
		Station Road (SW)	0.47	35	102	C
		Overall	**0.49**	**28**	**115**	**B**

Based on the above assessment, it is clear that the intersection of Station Road/ Rawson Street currently experiences some queuing and delays on the southwest, southeast and northwest legs during both the AM and PM peak periods.

The intersection of Boorea Street/ St Hilliers Road/ Rawson Street also experiences peak period queuing and delay on the northeast, southeast and northwest legs. Much of this congestion is influenced by the signalised intersection of Station Road/ Rawson Street.

During the PM peak period, queuing at the Station Road/Rawson Street intersection (located northwest) extends back to the Boorea Street/St Hilliers Road/Rawson Street intersection, which in turn affects the traffic efficiency and operation of this intersection. This mostly impacts traffic on the southeast and northeast legs of the Boorea Street/ St Hilliers Road/ Rawson Street intersection.

As such, it should be recognised that this impact is as a result of the Station Road/ Rawson Street intersection and associated congestion, rather than the intersection operation itself.

Notwithstanding the above, both intersections currently operate with satisfactory delays overall and a Level of Service C or better during the AM and PM peak hours.

Future Condition

Traffic Impact from Potential FSR Increase

The additional traffic generation from the potential FSR increase has been assigned to road network based on Hyder's report. The 10-year growth in traffic demand from potential FSR increase in B4 and R4 zones between 2012 and 2021 is extracted and added onto the existing 2017 traffic volumes for the two nominated intersections. This assumes that no development associated with the FSR increase has occurred between 2012 and 2017. If significant development has occurred within this time, the proposed traffic generation in this assessment will be over represented as the existing 2017 traffic surveys would account for any developments that have occurred in the last five years.

The AM and PM school peak hour traffic volumes considering the potential FSR increase (excluding the proposed school) are shown in Figure 3 and Figure 4 respectively. The PM commuter peak hour traffic volumes with the additional traffic due to the potential FSR increase is shown in Figure 5.

Figure 3: Future Weekday AM School Peak Hour + Potential FSR Increase Traffic Volumes (vehicles per hour)

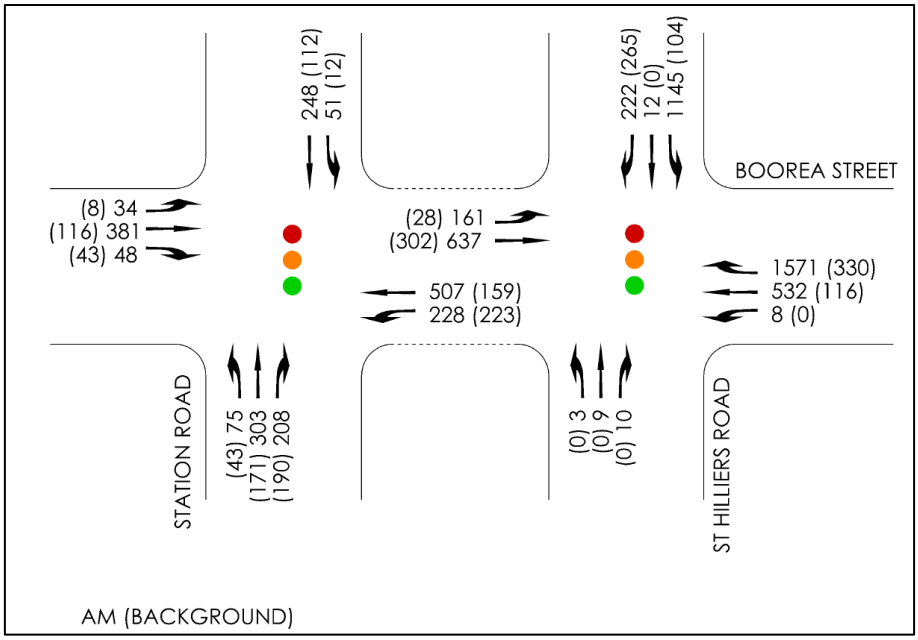


Figure 4: Future Weekday PM School Peak Hour + Potential FSR Increase Traffic Volumes (vehicles per hour)

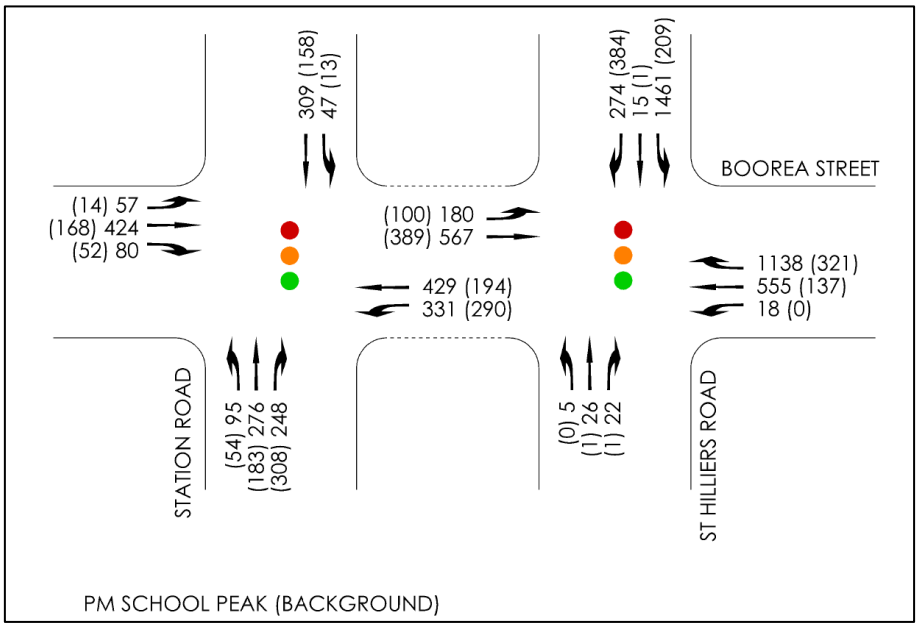
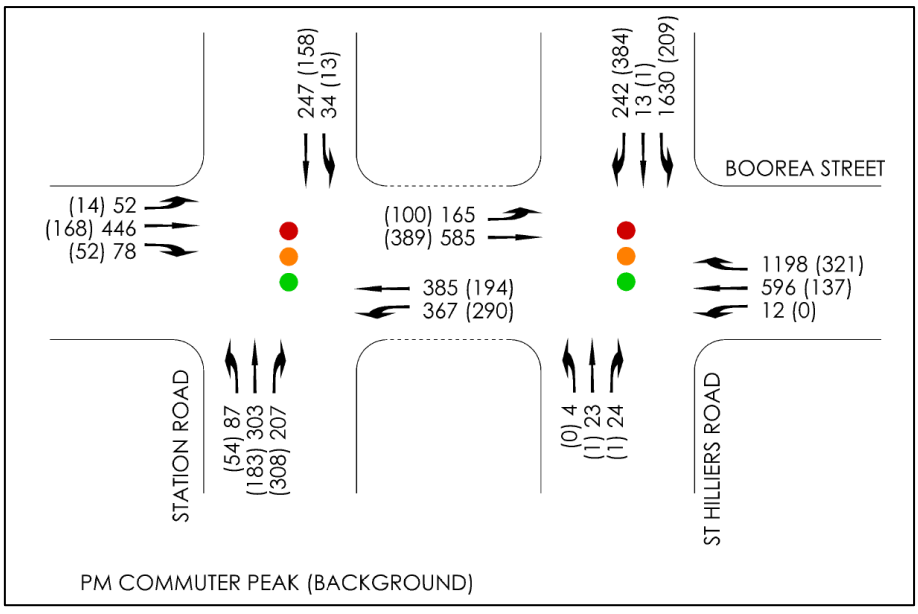


Figure 5: Future Weekday PM Commuter Peak Hour + Potential FSR Increase Traffic Volumes (vehicles per hour)



Intersection Operation

Table 3 presents a summary of the future operation of both intersections considering the potential increase in FSR (excluding the proposed School), with full results presented in Attachment 2 of this letter.

Table 3: Future Operating Conditions due to Potential FSR Increase (No Development)

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Boorea Road/ St Hilliers Road/ Rawson Street	AM School	St Hilliers Road (S)	0.18	85	7	F
		Boorea Street (SE)	1.02	92	593	F
		St Hilliers Road (NE)	0.99	52	227	D
		Boorea Street (NW)	0.96	89	299	F
		Overall	**1.02**	**78**	**593**	**E**
	PM School	St Hilliers Road (S)	0.40	75	16	E
		Boorea Street (SE)	1.01	80	394	E
		St Hilliers Road (NE)	0.98	56	382	E
		Boorea Street (NW)	0.94	71	264	E
		Overall	**1.01**	**68**	**394**	**E**
	PM Commuter	St Hilliers Road (S)	0.37	76	14	E
		Boorea Street (SE)	1.03	86	432	F
		St Hilliers Road (NE)	0.97	74	585	E
		Boorea Street (NW)	0.95	75	272	E
		Overall	**1.03**	**79**	**575**	**E**
Station Road/ Rawson Street	AM School	Rawson Street (SE)	1.13	114	658	F
		Station Road (NE)	1.07	148	161	F
		Rawson Street (NW)	0.61	24	151	B
		Station Road (SW)	1.13	95	325	F
		Overall	**1.13**	**95**	**658**	**F**
	PM School	Rawson Street (SE)	1.32	183	797	F
		Station Road (NE)	1.27	306	300	F
		Rawson Street (NW)	0.85	32	218	C
		Station Road (SW)	1.16	101	469	F
		Overall	**1.32**	**143**	**797**	**F**
	PM Commuter	Rawson Street (SE)	1.22	136	649	F
		Station Road (NE)	1.18	230	218	F
		Rawson Street (NW)	0.83	31	219	C
		Station Road (SW)	1.11	81	383	F
		Overall	**1.22**	**107**	**649**	**F**

Based on the above assessment, it is expected there would be significant traffic congestion, with both intersections experiencing peak period queuing and delays when including the potential FSR without considering the proposed School development.

Traffic Impact from Potential FSR Increase + Proposed Development

Two scenarios have been investigated as part of the assessment, considering the worst-case scenario during the AM and PM school peak hours and PM commuter peak hour. The key trip characteristics i.e. peak hour, mode share and estimates of the peak hour traffic volumes associated with the various peak hours are also set out in Table 4.

Table 4: Assessed Scenarios

Scenario	Peak Period	Mode Share	Vehicle Movements
1. School Peak Hours	AM peak hour (8:00am - 9:00am) PM peak hour (3:00pm - 4:00pm)	30% through carpooling/ children from the same family (Average of 3 students per car)	130 vehicle movements (arriving and departing)
		55% as private passenger	358 vehicle movements (arriving and departing)
		15% drive	100 vehicle movements (arriving or departing)
		100% students arrive by car	**588 vehicle movements**
		100% staff arrive by car	50 vehicle movements (arriving or departing)
		Total	**638 vehicle movements**
2. PM Commuter Peak Hour	PM peak hour (3:45pm - 4:45pm)	3% drive (20 secondary school students who have after-school activities and leave during commuter peak)	20 vehicle movements
		100% staff depart by car	50 vehicle movements
		Total	**70 vehicle movements**

Table 4 indicates that the proposed school could be expected to generate up to 638 and 70 vehicle trips during the AM/ PM school peak hours and PM commuter peak hour, respectively.

The AM and PM school peak hour traffic volumes considering the potential FSR increase and the proposed development, are shown in Figure 6 and Figure 7 respectively. The PM commuter peak hour traffic volumes with the additional traffic due to the potential FSR increase plus the proposed school, is shown in Figure 8.

Figure 6: Future Weekday AM School Peak Hour + Potential FSR Increase + Proposed Development Traffic Volumes (vehicles per hour)

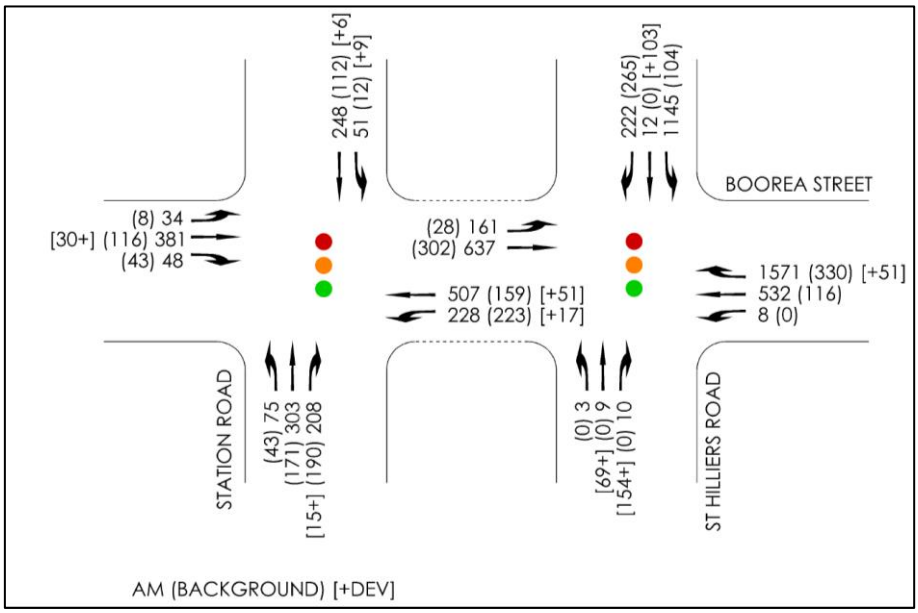


Figure 7: Future Weekday PM School Peak Hour + Potential FSR Increase + Proposed Development Traffic Volumes (vehicles per hour)

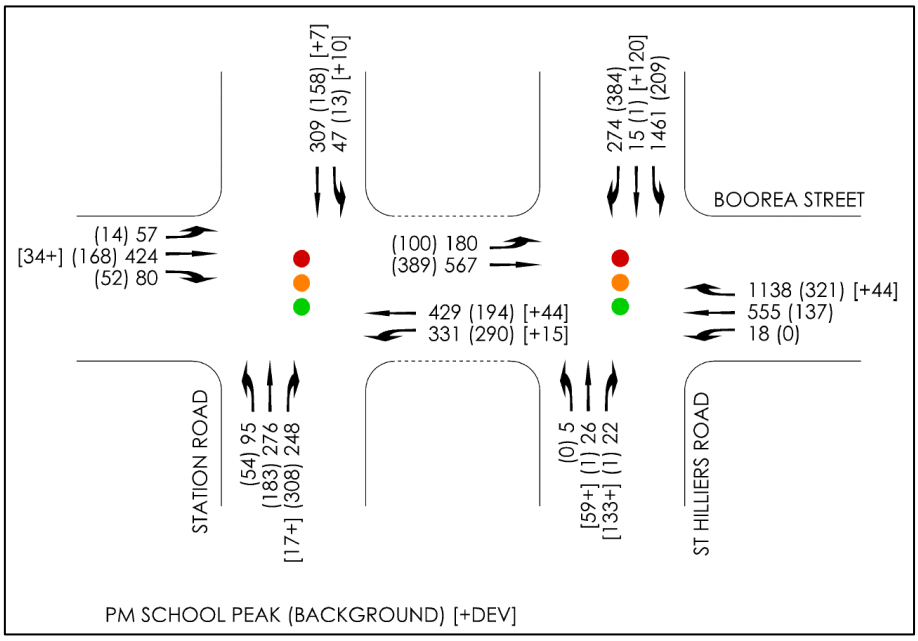
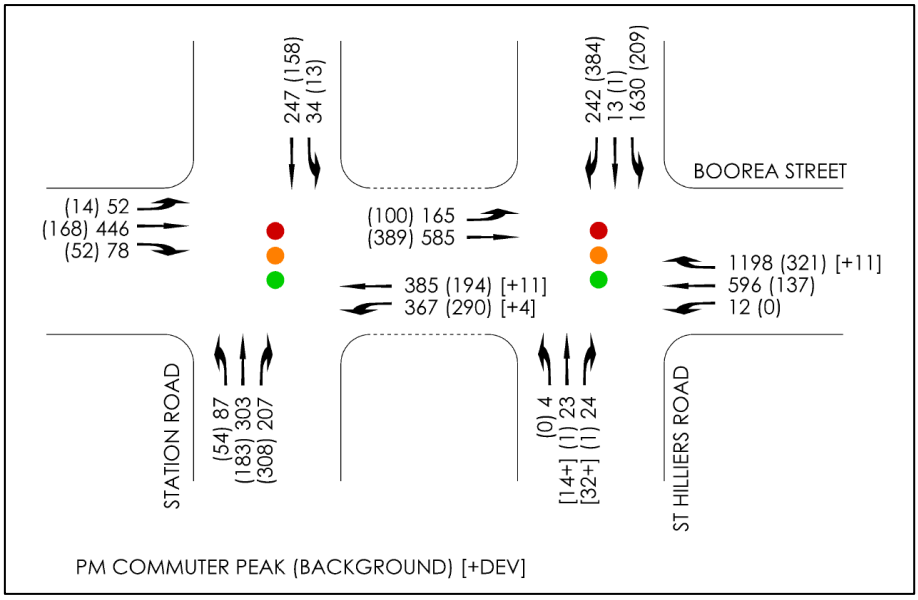


Figure 8: Future Weekday PM Commuter Peak Hour+ Potential FSR Increase + Proposed Development Traffic Volumes (vehicles per hour)



Intersection Operation

Table 5 presents a summary of the future operation of the intersection considering the potential increase in FSR plus proposed development, with full results presented in Attachment 3 of this letter.

Table 5: Future Operating Conditions due to Potential FSR Increase + Proposed Development

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Boorea Road/ St Hilliers Road/ Rawson Street	AM School	St Hilliers Road (S)	1.21	215	216	F
		Boorea Street (SE)	1.17	181	833	F
		St Hilliers Road (NE)	1.19	106	352	F
		Boorea Street (NW)	1.14	200	452	F
		Overall	**1.21**	**162**	**833**	**F**
	PM School	St Hilliers Road (S)	1.19	193	173	F
		Boorea Street (SE)	1.16	157	566	F
		St Hilliers Road (NE)	1.14	108	483	F
		Boorea Street (NW)	1.10	158	387	F
		Overall	**1.19**	**139**	**566**	**F**
	PM Commuter	St Hilliers Road (S)	0.90	82	33	F
		Boorea Street (SE)	1.01	80	419	F
		St Hilliers Road (NE)	1.01	79	576	E
		Boorea Street (NW)	0.98	89	294	F
		Overall	**1.01**	**82**	**576**	**F**
Station Road/ Rawson Street	AM School	Rawson Street (SE)	1.20	153	819	F
		Station Road (NE)	1.11	178	186	F
		Rawson Street (NW)	0.61	24	164	B
		Station Road (SW)	1.17	111	373	F
		Overall	**1.20**	**117**	**819**	**F**
	PM School	Rawson Street (SE)	1.33	196	870	F
		Station Road (NE)	1.32	342	330	F
		Rawson Street (NW)	0.85	30	224	C
		Station Road (SW)	1.32	173	656	F
		Overall	**1.33**	**174**	**870**	**F**
	PM Commuter	Rawson Street (SE)	1.21	131	644	F
		Station Road (NE)	1.18	230	218	F
		Rawson Street (NW)	0.83	29	211	C
		Station Road (SW)	1.19	114	466	F
		Overall	**1.21**	**115**	**644**	**F**

As clearly demonstrated in Table 5, based on the above assessment, both intersections would operate at an unacceptable Level of Service F and, as expected, their performances would deteriorate further when compared with the future operating conditions due to potential FSR increase.

However, it is recognised that the proposed school's generated traffic volumes remain low when compared with existing traffic volumes, with no more than nine per cent during the AM and PM school peak hours and no more than one per cent during the PM commuter peak hour, as detailed in Table 6. Therefore, the proposed school represents only a small proportion of the change in intersection operation, which is considered minimal in relation to the impact of increased FSR.

Table 6: Traffic Contributions of Potential FSR Increase and Proposed Development

Peak	Intersection	Leg	2017 Traffic	Potential FSR Increase		2 Percy Street Development	
				Site Traffic	Site Traffic Contribution	Site Traffic	Site Traffic Contribution
AM School	Boorea Road/ St Hilliers Road/ Rawson Street	Boorea Street (SE)	3,903	852	22%	206	5%
		St Hilliers Road (NE)	3,120	727	23%	223	7%
		Boorea Street (NW)	1,555	711	46%	0	0%
	Station Road/ Rawson Street	Rawson Street (SE)	1,375	700	51%	122	9%
		Station Road (NE)	636	303	48%	15	2%
		Rawson Street (NW)	1,045	369	35%	81	8%
		Station Road (SW)	1,110	782	70%	38	3%
PM School	Boorea Road/ St Hilliers Road/ Rawson Street	Boorea Street (SE)	3,761	1,057	28%	177	5%
		St Hilliers Road (NE)	3,094	1,016	33%	223	7%
		Boorea Street (NW)	747	489	65%	0	0%
	Station Road/ Rawson Street	Rawson Street (SE)	1,479	973	66%	121	8%
		Station Road (NE)	689	368	53%	17	2%
		Rawson Street (NW)	1,085	482	44%	79	7%
		Station Road (SW)	1,339	1,045	78%	39	3%
PM Commuter	Boorea Road/ St Hilliers Road/ Rawson Street	Boorea Street (SE)	4,045	1,057	26%	42	1%
		St Hilliers Road (NE)	3,271	1,016	31%	25	1%
		Boorea Street (NW)	750	489	65%	0	0%
	Station Road/ Rawson Street	Rawson Street (SE)	1,439	973	68%	14	1%
		Station Road (NE)	636	368	58%	0	0%
		Rawson Street (NW)	1,048	482	46%	11	1%
		Station Road (SW)	1,289	1,045	81%	4	0%

Potential Mitigation Measures

The locality of the proposed school provides good opportunities for implementing traffic management measures that may assist with managing traffic flows during peak times. This includes physical works, changes in existing traffic access networks and school operational activities that can be implemented by managing the school community.

Wyatt Park Recreational Precinct Masterplan

Council has recently commissioned Spackman, Mossop and Michaels Pty Ltd to develop a Plan of Management and Landscape Concept Plan, to set a clear direction forward for the Wyatt Park precinct. The master plan includes additions and upgrades including cycle/ pedestrian tracks around and throughout the park and additional car parking.

Given that around 45 per cent of the traffic depart the subject site towards the east and south via St Hilliers Road towards Olympic Drive and Boorea Street, it is possible that Church Street could be extended north-west to intersect with Percy Street. The extended Church Street is suggested to be constructed as a one-way (south-east movement only) link to allow traffic departing towards the east and south from the Gelibolu Precinct to disperse via the intersection of Olympic Drive/ Church Street. This will significantly reduce the traffic on the intersection of Boorea Road/ St Hilliers Road/ Rawson Street.

The above opportunity may require a boom gate control of the north-western end section of Church Street to maintain access to PCYC Auburn, Parramatta Basketball Association and Lidcombe Oval. This boom gate could be opened during the AM and PM peak periods (both school and commuter peak) as well as during the Friday's prayer session and during major events held at Wyatt Park, to provide access to Church Street and Olympic Drive. Outside of these peak periods, the boom gate would remain closed.

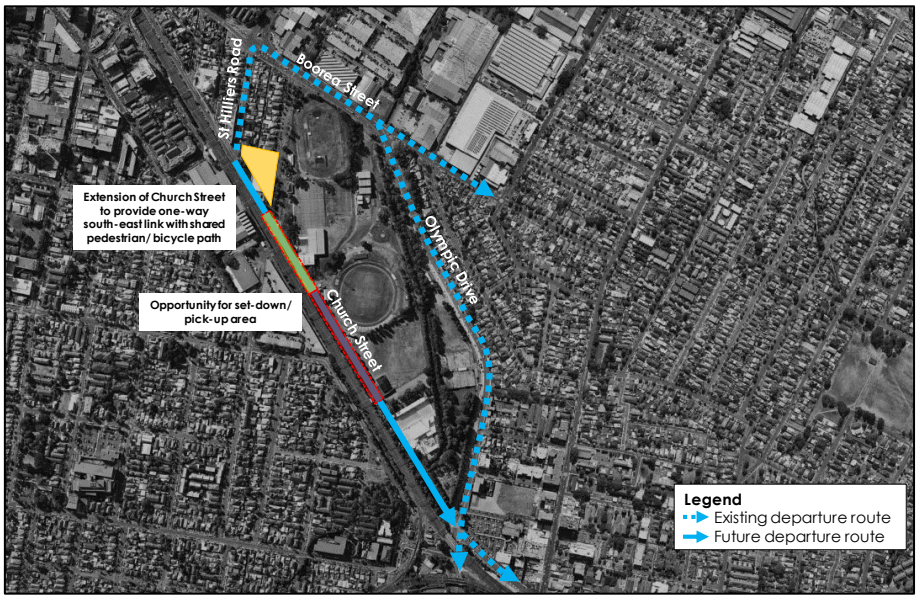
The proposed boom gate operation would prevent the use of Church Street as a "rat run" to Olympic Drive, ensuring safety for school children and Wyatt Park users while at the same time, providing access for traffic associated with the residential developments, proposed school, Wyatt Parl and Friday prayer session.

Appropriate signage will be required at the intersection of Church Street/ Percy Street to provide guidance for vehicles near the area. The signage should include "No Access When Gate Closed. Emergency Vehicles and Wyatt Park Staff Excepted"

Given the low utilisation of the existing on-street car parking along Church Street for the Council Athletic Field during the school peak hours, there may also be an opportunity to use this parking facility to cater for pick-up/ drop-off activities.

It is suggested that this proposal, as shown in Figure 9, be discussed further with Council.

Figure 9: Possible Mitigation Measures



Base source: Nearmap

School Traffic Management Plan

In addition to such mitigation measures, it is suggested that the future school could develop and implement a traffic management plan (TMP), which is commonly implemented by schools in the

metropolitan Sydney region and can work effectively to manage the traffic impacts at drop off and pick up times.

The suggested TMP can communicate the school's policies and practices around traffic management to staff, parents and the school community, and help assist schools to proactively identify and resolve any issues/ challenges. The TMP will be designed to prompt the proposed school to:

- identify their current traffic management arrangements
- identify common problems and find solutions
- develop an action plan to address issues.

A TMP will benefit schools, students, parents, caregivers, general traffic and surrounding residents. The proposed school may choose to establish a traffic management committee or appoint a traffic management champion to coordinate the development of the plan and to monitor its effectiveness. A typical TMP may include, but is not limited to:

- On-site parking within the proposed school site is reserved for selected school staff members and secondary school students.
- Parents, caregivers and other visitors to the school during the hours of 7am – 9am and 2pm - 4pm are required to park on Percy Street, Gelibolu Parade and Church Street.
- Time restricted on-street parking to discourage the use of private vehicles by school staff members and secondary school students.
- School students can be set down in the set-down and pick-up location, but the driver must remain with the vehicle.
- Kindergarten and primary school students who are being picked up from school will be brought to the pick-up location, shortly after end of class to allow for quick and efficient pick-up operation.
- Staff are to encourage parents to move efficiently through the pick-up/ drop-off zone and not to park and loiter for extended periods.
- Staff are to encourage parents who are visiting for a longer period or socialising with other parents to park outside the pick-up zone and walk the remaining distance.

Alternative Travel Options

In addition to the traffic management measures that could be implemented with a TMP, there is the potential to encourage alternative travel options by providing the following:

- A Sustainable Transport Plan for staff, students and parents that encourage the use of sustainable public transport including:
  - Identification of nearby public transport options such as Auburn and Lidcombe rail stations and bus services along Church Street, Queen Street, Rawson Street and South Parade.
  - Identification of safe walking routes
  - Identification of nearby bicycles facilities.
- A carpooling database that parents can sign up to and arrange to car share with other families.
- Initiatives that encourage active travel such as minimising the number of days that students must bring equipment, instruments and/ or books to school with them in order to minimise barriers to active travel.
- An on-site bus pick-up/ set-down facility.
- Covered bicycle parking and lockers.
- School buses from Auburn and Lidcombe Rail Stations as a means of travel for students to and from school. These services could be made available for eligible students at concession fares.

- School bus program that allows travel at no cost to eligible students. Students deemed ineligible to travel at no cost may access a school bus service upon payment of a fare.
- Considering on-site design options that incorporate drop off/ pick up areas into parking layouts.

Summary

This assessment has been based upon a worst case/ maximum scenario and indicates that the proposed development is anticipated to generate up to 638 and 70 vehicle trips during the AM/ PM school peak hours and PM commuter peak hour, respectively. The intersection of Station Road/ Rawson Street and Boorea Street/ St Hilliers Road/ Rawson Street currently experiences some queuing and delays during both the AM and PM peak periods.

With the traffic associated with the potential FSR increase, it is expected there would be significant traffic congestion causing the intersections of Station Road/ Rawson Street and Boorea Street/ St Hilliers Road/ Rawson Street to experience peak period queuing and delays regardless of any possible future school. The cumulative impact of traffic associated with the potential FSR increase and the proposed development will result in further deterioration of the intersection performance, with both intersections expected to operate at an unacceptable Level of Service F.

It is noted that the proposed development traffic represents a minor overall impact, having regard to the existing traffic volumes, with no more than nine per cent during the AM and PM school peak hours and no more than one per cent during the PM commuter peak hour. Therefore, the proposed school represents only a small proportion of the change in intersection operation, which is considered minimal in relation to the impact of increased FSR. It should also be noted that this assessment has been based upon car travel forming the 100 per cent of travel demand, where in reality, there would be opportunities to promote alternatives especially bus and train, given the site's location in relation Auburn and Lidcombe Stations.

There are a number of possible mitigation measures that can be explored further with Council such as the possibility of extending Church Street north-west to intersect with Percy Street to address future congestion issues at the intersection of Boorea Street/ St Hilliers Road/ Rawson Street. The extended Church Street is recommended to be a one-way (south-east movement only) link, with boom gate control. The impact of the traffic associated with the development can also be further reduced with the provision of other measures such as a traffic management plan, adequate bus accessibility, safer pedestrian and cycle routes/ crossings. These are items for consideration during the Development Application stage.

I trust this provides the information you require. Should you have any questions or require any further information, please do not hesitate to contact me in our Sydney office on (02) 8448 1800.

Yours sincerely

GTA CONSULTANTS

Karen McNatty
Associate

encl.

Attachment 1	SIDRA Assessment for Existing Conditions
Attachment 2	SIDRA Assessment for Future Conditions + Proposed Development
Attachment 3	SIDRA Assessment for Future Conditions + Potential FSR Increase + Proposed Development

Attachment 1

SIDRA Assessment for Existing Conditions

MOVEMENT SUMMARY

Site: 101 [Boorea Street/ St Hilliers Road AM]

AM Peak: 7:30am-8:30am
Signals - Fixed Time Isolated Cycle Time = 130 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: St Hilliers Street											
1a	L1	3	0.0	0.143	72.1	LOS E	0.8	5.7	0.99	0.68	17.8
3a	R1	9	0.0	0.143	71.5	LOS E	0.8	5.7	0.99	0.68	18.2
3b	R3	11	0.0	0.140	74.8	LOS E	0.7	4.8	0.99	0.68	13.3
Approach		23	0.0	0.143	73.1	LOS E	0.8	5.7	0.99	0.68	16.0
SouthEast: Boorea Street											
21b	L3	8	0.0	0.221	13.7	LOS B	6.2	46.7	0.38	0.34	43.0
22	T1	560	8.8	0.221	7.3	LOS A	6.2	47.0	0.38	0.34	45.3
23	R2	1654	7.8	0.752	36.2	LOS D	31.3	233.7	0.87	0.85	22.2
Approach		2222	8.1	0.752	28.8	LOS C	31.3	233.7	0.74	0.72	25.5
NorthEast: St Hilliers Road											
24	L2	1205	10.3	0.566	21.3	LOS C	22.2	169.0	0.64	0.78	29.1
24a	L1	13	8.3	0.595	64.7	LOS E	7.7	56.1	1.00	0.80	18.9
26	R2	234	5.0	0.595	66.4	LOS E	7.7	56.1	1.00	0.80	18.9
Approach		1452	9.4	0.595	29.0	LOS C	22.2	169.0	0.70	0.78	26.0
NorthWest: Rawson Street											
27	L2	169	11.2	0.738	41.8	LOS D	15.4	115.4	0.99	0.93	26.0
28	T1	671	5.3	0.738	49.0	LOS D	17.1	125.2	0.98	0.88	18.7
Approach		840	6.5	0.738	47.5	LOS D	17.1	125.2	0.98	0.89	20.2
All Vehicles		4537	8.2	0.752	32.5	LOS C	31.3	233.7	0.77	0.77	24.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	8.2	LOS A	0.1	0.1	0.35	0.35
P51	SouthEast Stage 1	53	59.3	LOS E	0.2	0.2	0.96	0.96
P52	SouthEast Stage 2	53	57.4	LOS E	0.2	0.2	0.94	0.94
P6	NorthEast Full Crossing	53	53.7	LOS E	0.2	0.2	0.91	0.91
P6S	NorthEast Slip/Bypass Lane Crossing	53	47.5	LOS E	0.2	0.2	0.86	0.86
All Pedestrians		263	45.2	LOS E			0.80	0.80

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Station Road/ Rawson Street AM]

New Site
Signals - Fixed Time Isolated Cycle Time = 130 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Rawson Street											
21	L2	240	4.8	0.174	8.8	LOS A	3.9	28.7	0.28	0.62	31.3
22	T1	534	8.5	0.590	17.3	LOS B	19.8	148.5	0.64	0.57	25.7
Approach		774	7.3	0.590	14.7	LOS B	19.8	148.5	0.53	0.59	27.2
NorthEast: Station Road											
24	L2	54	3.9	0.591	62.5	LOS E	9.5	66.9	0.99	0.80	15.8
25	T1	261	0.0	0.591	59.1	LOS E	9.7	67.9	0.99	0.80	14.9
Approach		315	0.7	0.591	59.7	LOS E	9.7	67.9	0.99	0.80	15.1
NorthWest: Rawson Street											
27	L2	36	5.9	0.298	19.4	LOS B	9.8	75.8	0.55	0.50	31.4
28	T1	401	12.3	0.298	17.9	LOS B	9.8	75.8	0.59	0.54	24.7
29	R2	51	4.2	0.298	29.2	LOS C	7.1	54.3	0.68	0.62	18.7
Approach		487	11.0	0.298	19.2	LOS B	9.8	75.8	0.60	0.55	24.6
SouthWest: Station Road											
30	L2	79	8.0	0.136	35.9	LOS C	3.5	25.9	0.74	0.70	14.5
31	T1	319	6.3	0.583	37.6	LOS C	16.2	119.7	0.86	0.74	20.1
32	R2	219	2.9	0.600	55.0	LOS D	12.2	87.9	0.96	1.01	11.3
Approach		617	5.3	0.600	43.5	LOS D	16.2	119.7	0.88	0.83	16.0
All Vehicles		2193	6.6	0.600	30.2	LOS C	19.8	148.5	0.71	0.68	19.7

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	36.3	LOS D	0.1	0.1	0.75	0.75
P6	NorthEast Full Crossing	53	16.3	LOS B	0.1	0.1	0.50	0.50
P7	NorthWest Full Crossing	53	36.3	LOS D	0.1	0.1	0.75	0.75
P8	SouthWest Full Crossing	53	17.8	LOS B	0.1	0.1	0.52	0.52
All Pedestrians		211	26.7	LOS C			0.63	0.63

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Boorea Street/ St Hilliers Road PM]

PM Peak: 3:45pm-4:45pm
Signals - Fixed Time Isolated Cycle Time = 130 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: St Hilliers Street											
1a	L1	5	0.0	0.378	73.8	LOS E	2.1	15.5	1.00	0.72	17.6
3a	R1	27	3.8	0.378	73.3	LOS E	2.1	15.5	1.00	0.72	17.9
3b	R3	23	4.5	0.318	76.3	LOS E	1.5	11.2	1.00	0.71	13.1
Approach		56	3.8	0.378	74.6	LOS E	2.1	15.5	1.00	0.72	15.9
SouthEast: Boorea Street											
21b	L3	19	0.0	0.254	17.6	LOS B	8.2	59.3	0.47	0.43	38.0
22	T1	584	4.7	0.254	11.1	LOS B	8.3	60.1	0.47	0.42	40.0
23	R2	1198	8.0	0.657	40.8	LOS D	22.7	170.0	0.87	0.83	20.6
Approach		1801	6.8	0.657	30.9	LOS C	22.7	170.0	0.74	0.70	24.6
NorthEast: St Hilliers Road											
24	L2	1538	7.7	0.639	26.4	LOS C	27.4	204.1	0.72	0.81	22.7
24a	L1	16	26.7	0.639	52.4	LOS D	15.1	112.6	0.95	0.83	21.1
26	R2	288	4.4	0.639	57.8	LOS E	15.1	112.6	0.97	0.83	20.7
Approach		1842	7.3	0.639	31.6	LOS C	27.4	204.1	0.76	0.81	22.2
NorthWest: Rawson Street											
27	L2	189	4.4	0.617	28.1	LOS C	11.2	81.1	0.92	0.82	32.3
28	T1	597	3.9	0.617	43.4	LOS D	14.2	102.5	0.95	0.80	20.3
Approach		786	4.0	0.617	39.7	LOS D	14.2	102.5	0.94	0.80	22.9
All Vehicles		4485	6.5	0.657	33.3	LOS C	27.4	204.1	0.79	0.76	23.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	11.7	LOS B	0.1	0.1	0.42	0.42
P51	SouthEast Stage 1	53	53.7	LOS E	0.2	0.2	0.91	0.91
P52	SouthEast Stage 2	53	49.2	LOS E	0.2	0.2	0.87	0.87
P6	NorthEast Full Crossing	53	52.8	LOS E	0.2	0.2	0.90	0.90
P6S	NorthEast Slip/Bypass Lane Crossing	53	46.6	LOS E	0.2	0.2	0.85	0.85
All Pedestrians		263	42.8	LOS E			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Station Road/ Rawson Street PM]

New Site
Signals - Fixed Time Isolated Cycle Time = 130 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Rawson Street											
21	L2	348	1.5	0.257	10.3	LOS A	6.9	49.3	0.35	0.65	29.6
22	T1	452	8.6	0.609	21.4	LOS B	18.1	135.9	0.69	0.61	23.1
Approach		800	5.5	0.609	16.6	LOS B	18.1	135.9	0.54	0.63	25.4
NorthEast: Station Road											
24	L2	49	4.3	0.589	59.1	LOS E	11.1	80.7	0.97	0.81	16.4
25	T1	325	4.9	0.589	55.8	LOS D	11.2	81.8	0.97	0.81	15.5
Approach		375	4.8	0.589	56.2	LOS D	11.2	81.8	0.97	0.81	15.6
NorthWest: Rawson Street											
27	L2	60	1.8	0.402	24.9	LOS B	14.8	107.8	0.66	0.61	27.8
28	T1	446	5.0	0.402	23.3	LOS B	14.8	107.8	0.69	0.63	21.5
29	R2	84	0.0	0.402	35.9	LOS C	9.3	66.7	0.77	0.71	16.0
Approach		591	3.9	0.402	25.2	LOS B	14.8	107.8	0.70	0.64	21.3
SouthWest: Station Road											
30	L2	100	2.1	0.139	30.3	LOS C	4.0	28.6	0.68	0.69	16.2
31	T1	291	1.8	0.434	30.1	LOS C	13.0	92.6	0.76	0.65	22.8
32	R2	261	0.8	0.595	50.8	LOS D	14.0	98.5	0.94	1.01	12.0
Approach		652	1.5	0.595	38.4	LOS C	14.0	98.5	0.82	0.80	17.0
All Vehicles		2417	3.9	0.609	30.7	LOS C	18.1	135.9	0.72	0.71	19.4

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	30.5	LOS D	0.1	0.1	0.69	0.69
P6	NorthEast Full Crossing	53	20.5	LOS C	0.1	0.1	0.56	0.56
P7	NorthWest Full Crossing	53	30.5	LOS D	0.1	0.1	0.69	0.69
P8	SouthWest Full Crossing	53	22.3	LOS C	0.1	0.1	0.59	0.59
All Pedestrians		211	26.0	LOS C			0.63	0.63

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Attachment 2

SIDRA Assessment for Future Conditions + Potential FSR Increase

MOVEMENT SUMMARY

Site: 101 [Station Road/ Rawson Street AM (H)]

New Site
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Rawson Street											
21	L2	475	1.3	0.373	12.7	LOS A	11.3	80.0	0.45	0.69	27.4
22	T1	701	7.6	1.127	182.2	LOS F	88.2	658.0	1.00	1.82	4.5
Approach		1176	5.1	1.127	113.8	LOS F	88.2	658.0	0.78	1.36	6.6
NorthEast: Station Road											
24	L2	66	7.7	1.074	150.6	LOS F	22.3	159.5	1.00	1.46	7.8
25	T1	379	0.6	1.074	147.0	LOS F	22.9	161.2	1.00	1.46	7.3
Approach		445	1.7	1.074	147.5	LOS F	22.9	161.2	1.00	1.46	7.3
NorthWest: Rawson Street											
27	L2	44	0.0	0.537	21.2	LOS B	20.1	151.3	0.66	0.61	30.3
28	T1	523	9.5	0.537	16.6	LOS B	20.1	151.3	0.66	0.61	25.9
29	R2	96	3.1	0.613	63.7	LOS E	5.6	40.5	1.00	0.85	10.0
Approach		663	7.9	0.613	23.7	LOS B	20.1	151.3	0.71	0.65	21.9
SouthWest: Station Road											
30	L2	124	1.8	0.159	26.0	LOS B	4.4	31.4	0.65	0.69	17.8
31	T1	499	1.3	0.939	64.9	LOS E	34.9	247.4	0.98	1.13	14.1
32	R2	419	1.6	1.127	151.9	LOS F	45.8	325.2	1.00	1.40	3.9
Approach		1042	1.5	1.127	95.3	LOS F	45.8	325.2	0.95	1.19	7.7
All Vehicles		3326	4.1	1.127	94.5	LOS F	88.2	658.0	0.85	1.18	8.2

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	34.6	LOS D	0.1	0.1	0.76	0.76
P6	NorthEast Full Crossing	53	15.5	LOS B	0.1	0.1	0.51	0.51
P7	NorthWest Full Crossing	53	34.6	LOS D	0.1	0.1	0.76	0.76
P8	SouthWest Full Crossing	53	24.1	LOS C	0.1	0.1	0.63	0.63
All Pedestrians		211	27.2	LOS C			0.67	0.67

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Station Road/ Rawson Street PM (H)]

New Site
Signals - Fixed Time Isolated Cycle Time = 115 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Rawson Street											
21	L2	654	1.3	0.855	24.7	LOS B	23.5	166.5	0.54	0.78	19.7
22	T1	656	3.8	1.315	341.4	LOS F	110.3	797.4	1.00	2.56	2.5
Approach		1309	2.6	1.315	183.3	LOS F	110.3	797.4	0.77	1.67	4.3
NorthEast: Station Road											
24	L2	63	0.0	1.273	308.9	LOS F	42.1	296.5	1.00	2.04	4.1
25	T1	492	1.1	1.273	305.6	LOS F	42.4	299.9	1.00	2.04	3.8
Approach		555	1.0	1.273	306.0	LOS F	42.4	299.9	1.00	2.04	3.8
NorthWest: Rawson Street											
27	L2	75	1.6	0.734	29.1	LOS C	30.7	218.0	0.86	0.78	25.7
28	T1	623	1.6	0.734	24.5	LOS B	30.7	218.0	0.86	0.78	21.2
29	R2	139	1.6	0.846	68.3	LOS E	8.3	58.7	1.00	1.06	9.4
Approach		837	1.6	0.846	32.2	LOS C	30.7	218.0	0.88	0.83	18.3
SouthWest: Station Road											
30	L2	157	1.2	0.169	19.7	LOS B	4.7	33.1	0.57	0.67	20.7
31	T1	483	0.9	0.757	30.5	LOS C	22.0	155.0	0.86	0.77	22.6
32	R2	585	0.3	1.161	180.4	LOS F	66.8	468.5	1.00	1.52	3.5
Approach		1225	0.7	1.161	100.7	LOS F	66.8	468.5	0.89	1.11	7.1
All Vehicles		3926	1.5	1.315	142.6	LOS F	110.3	797.4	0.86	1.37	5.8

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	27.2	LOS C	0.1	0.1	0.69	0.69
P6	NorthEast Full Crossing	53	20.1	LOS C	0.1	0.1	0.59	0.59
P7	NorthWest Full Crossing	53	27.2	LOS C	0.1	0.1	0.69	0.69
P8	SouthWest Full Crossing	53	30.0	LOS D	0.1	0.1	0.72	0.72
All Pedestrians		211	26.1	LOS C			0.67	0.67

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Boorea Street/ St Hilliers Road AM (H)]

AM Peak: 7:30am-8:30am
Signals - Fixed Time Isolated Cycle Time = 150 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: St Hilliers Street											
1a	L1	3	0.0	0.165	83.5	LOS F	0.9	6.6	0.99	0.68	16.1
3a	R1	9	0.0	0.165	83.0	LOS F	0.9	6.6	0.99	0.68	16.4
3b	R3	11	16.7	0.180	87.2	LOS F	0.8	6.4	0.99	0.68	11.8
Approach		23	7.6	0.180	85.0	LOS F	0.9	6.6	0.99	0.68	14.3
SouthEast: Boorea Street											
21b	L3	8	0.0	0.266	15.5	LOS B	9.2	67.6	0.40	0.37	40.7
22	T1	682	5.8	0.266	9.0	LOS A	9.2	67.9	0.40	0.36	42.7
23	R2	2001	5.8	1.022	120.3	LOS F	80.6	592.6	1.00	1.14	9.2
Approach		2692	5.8	1.022	91.7	LOS F	80.6	592.6	0.85	0.94	11.6
NorthEast: St Hilliers Road											
24	L2	1315	7.1	0.627	26.5	LOS C	30.5	226.7	0.70	0.80	26.2
24a	L1	13	11.1	0.985	112.7	LOS F	25.3	182.0	1.00	1.08	12.6
26	R2	513	3.0	0.985	114.3	LOS F	25.3	181.6	1.00	1.08	12.8
Approach		1840	6.0	0.985	51.6	LOS D	30.5	226.7	0.79	0.88	19.0
NorthWest: Rawson Street											
27	L2	199	2.9	0.959	90.3	LOS F	39.6	288.8	1.00	1.21	15.8
28	T1	988	6.5	0.959	89.0	LOS F	40.5	298.9	0.98	1.15	12.1
Approach		1187	5.9	0.959	89.3	LOS F	40.5	298.9	0.98	1.16	12.7
All Vehicles		5742	5.9	1.022	78.3	LOS E	80.6	592.6	0.86	0.97	13.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	9.4	LOS A	0.1	0.1	0.35	0.35
P51	SouthEast Stage 1	53	65.5	LOS F	0.2	0.2	0.94	0.94
P52	SouthEast Stage 2	53	60.9	LOS F	0.2	0.2	0.90	0.90
P6	NorthEast Full Crossing	53	53.9	LOS E	0.2	0.2	0.85	0.85
P6S	NorthEast Slip/Bypass Lane Crossing	53	48.1	LOS E	0.2	0.2	0.80	0.80
All Pedestrians		263	47.5	LOS E			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Boorea Street/ St Hilliers Road PM (H)]

PM Peak: 3:45pm-4:45pm
Signals - Fixed Time Isolated Cycle Time = 131 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: St Hilliers Street											
1a	L1	5	0.0	0.399	74.6	LOS E	2.2	16.4	1.00	0.72	17.5
3a	R1	28	6.3	0.399	74.0	LOS E	2.2	16.4	1.00	0.72	17.7
3b	R3	24	8.3	0.343	77.2	LOS E	1.6	12.2	1.00	0.71	13.0
Approach		58	6.6	0.399	75.4	LOS E	2.2	16.4	1.00	0.72	15.7
SouthEast: Boorea Street											
21b	L3	19	0.0	0.318	19.0	LOS B	11.0	79.4	0.51	0.47	36.6
22	T1	728	3.3	0.318	12.5	LOS B	11.1	80.2	0.51	0.46	38.4
23	R2	1536	3.7	1.010	112.2	LOS F	54.6	394.0	1.00	1.15	9.9
Approach		2283	3.5	1.010	79.6	LOS E	54.6	394.0	0.84	0.93	13.0
NorthEast: St Hilliers Road											
24	L2	1758	4.5	0.877	38.4	LOS D	52.5	382.0	0.94	0.93	21.3
24a	L1	17	0.0	0.976	96.5	LOS F	30.3	216.1	1.00	1.09	14.4
26	R2	693	2.2	0.976	98.3	LOS F	30.3	216.1	1.00	1.09	14.3
Approach		2467	3.8	0.976	55.6	LOS E	52.5	382.0	0.96	0.98	18.1
NorthWest: Rawson Street											
27	L2	295	0.0	0.943	67.7	LOS E	34.3	242.2	1.00	1.15	19.4
28	T1	1006	2.6	0.943	72.3	LOS E	36.9	263.9	0.98	1.12	14.2
Approach		1301	2.0	0.943	71.3	LOS E	36.9	263.9	0.98	1.13	15.4
All Vehicles		6109	3.4	1.010	68.1	LOS E	54.6	394.0	0.92	0.99	15.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	12.4	LOS B	0.1	0.1	0.44	0.44
P51	SouthEast Stage 1	53	52.4	LOS E	0.2	0.2	0.90	0.90
P52	SouthEast Stage 2	53	48.0	LOS E	0.2	0.2	0.86	0.86
P6	NorthEast Full Crossing	53	47.1	LOS E	0.2	0.2	0.85	0.85
P6S	NorthEast Slip/Bypass Lane Crossing	53	41.4	LOS E	0.2	0.2	0.80	0.80
All Pedestrians		263	40.3	LOS E			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Boorea Street/ St Hilliers Road PM Com (H)]

PM Peak: 3:45pm-4:45pm
Signals - Fixed Time Isolated Cycle Time = 131 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: St Hilliers Street											
1a	L1	4	0.0	0.349	74.3	LOS E	2.0	14.3	1.00	0.72	17.5
3a	R1	25	6.3	0.349	73.7	LOS E	2.0	14.3	1.00	0.72	17.7
3b	R3	26	8.3	0.373	77.4	LOS E	1.8	13.3	1.00	0.72	12.9
Approach		56	6.8	0.373	75.5	LOS E	2.0	14.3	1.00	0.72	15.5
SouthEast: Boorea Street											
21b	L3	13	0.0	0.329	18.6	LOS B	11.5	82.7	0.51	0.46	37.1
22	T1	772	3.3	0.329	12.1	LOS B	11.6	83.3	0.51	0.45	38.9
23	R2	1599	3.7	1.029	122.7	LOS F	59.8	431.9	1.00	1.19	9.1
Approach		2383	3.6	1.029	86.4	LOS F	59.8	431.9	0.84	0.95	12.2
NorthEast: St Hilliers Road											
24	L2	1936	4.5	0.965	67.2	LOS E	79.1	575.2	1.00	1.05	13.4
24a	L1	15	0.0	0.965	92.3	LOS F	28.1	200.5	1.00	1.07	14.9
26	R2	659	2.2	0.965	93.8	LOS F	28.1	200.5	1.00	1.07	14.8
Approach		2609	3.9	0.965	74.1	LOS E	79.1	575.2	1.00	1.06	13.9
NorthWest: Rawson Street											
27	L2	279	0.0	0.952	72.3	LOS E	35.8	253.1	1.00	1.18	18.5
28	T1	1025	2.6	0.952	75.7	LOS E	38.0	272.1	0.98	1.14	13.7
Approach		1304	2.0	0.952	74.9	LOS E	38.0	272.1	0.98	1.15	14.7
All Vehicles		6353	3.4	1.029	78.9	LOS E	79.1	575.2	0.94	1.03	13.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	12.0	LOS B	0.1	0.1	0.43	0.43
P51	SouthEast Stage 1	53	53.3	LOS E	0.2	0.2	0.90	0.90
P52	SouthEast Stage 2	53	48.8	LOS E	0.2	0.2	0.86	0.86
P6	NorthEast Full Crossing	53	47.1	LOS E	0.2	0.2	0.85	0.85
P6S	NorthEast Slip/Bypass Lane Crossing	53	41.4	LOS E	0.2	0.2	0.80	0.80
All Pedestrians		263	40.5	LOS E			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Station Road/ Rawson Street PM Com (H)]

New Site
Signals - Fixed Time Isolated Cycle Time = 115 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Rawson Street											
21	L2	692	1.3	0.860	24.4	LOS B	25.0	176.6	0.54	0.78	19.9
22	T1	609	3.8	1.224	263.1	LOS F	89.8	649.3	1.00	2.24	3.2
Approach		1301	2.5	1.224	136.2	LOS F	89.8	649.3	0.76	1.47	5.6
NorthEast: Station Road											
24	L2	49	0.0	1.183	232.9	LOS F	30.6	215.6	1.00	1.76	5.3
25	T1	426	1.1	1.183	229.6	LOS F	30.8	217.9	1.00	1.77	4.9
Approach		476	1.0	1.183	229.9	LOS F	30.8	217.9	1.00	1.77	4.9
NorthWest: Rawson Street											
27	L2	69	1.6	0.727	27.7	LOS B	30.8	218.8	0.84	0.77	26.4
28	T1	646	1.6	0.727	23.1	LOS B	30.8	218.8	0.84	0.77	21.9
29	R2	137	1.6	0.833	67.5	LOS E	8.1	57.4	1.00	1.04	9.5
Approach		853	1.6	0.833	30.6	LOS C	30.8	218.8	0.87	0.81	18.9
SouthWest: Station Road											
30	L2	148	1.2	0.166	20.8	LOS B	4.6	32.3	0.59	0.68	20.1
31	T1	512	0.9	0.830	37.6	LOS C	26.4	186.3	0.90	0.87	20.1
32	R2	542	0.3	1.111	138.7	LOS F	54.6	382.9	1.00	1.39	4.2
Approach		1202	0.7	1.111	81.1	LOS F	54.6	382.9	0.91	1.08	8.4
All Vehicles		3832	1.5	1.224	107.1	LOS F	89.8	649.3	0.86	1.24	7.3

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	28.6	LOS C	0.1	0.1	0.71	0.71
P6	NorthEast Full Crossing	53	19.0	LOS B	0.1	0.1	0.58	0.58
P7	NorthWest Full Crossing	53	28.6	LOS C	0.1	0.1	0.71	0.71
P8	SouthWest Full Crossing	53	28.6	LOS C	0.1	0.1	0.71	0.71
All Pedestrians		211	26.2	LOS C			0.67	0.67

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Attachment 3

SIDRA Assessment for Future Conditions + Potential FSR Increase + Proposed Development

MOVEMENT SUMMARY

Site: 101 [Boorea Street/ St Hilliers Road AM (H) - Dev]

AM Peak: 7:30am-8:30am
Signals - Fixed Time Isolated Cycle Time = 150 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: St Hilliers Street											
1a	L1	3	0.0	0.903	90.8	LOS F	6.9	48.0	0.96	0.97	15.2
3a	R1	82	0.0	0.903	90.3	LOS F	6.9	48.0	0.96	0.97	15.5
3b	R3	173	16.7	1.208	276.4	LOS F	27.0	216.2	1.00	1.42	4.2
Approach		258	11.2	1.208	214.9	LOS F	27.0	216.2	0.99	1.27	6.0
SouthEast: Boorea Street											
21b	L3	8	0.0	0.303	21.4	LOS C	11.9	87.0	0.52	0.46	34.4
22	T1	682	5.8	0.303	14.9	LOS B	11.9	87.4	0.52	0.46	36.1
23	R2	2055	5.8	1.174	236.7	LOS F	113.4	833.1	1.00	1.42	5.0
Approach		2745	5.8	1.174	181.0	LOS F	113.4	833.1	0.88	1.18	6.4
NorthEast: St Hilliers Road											
24	L2	1315	7.1	0.680	31.6	LOS C	34.1	253.3	0.78	0.83	23.8
24a	L1	121	11.1	1.194	257.4	LOS F	47.8	351.9	1.00	1.51	6.1
26	R2	513	3.0	1.194	259.0	LOS F	48.2	346.2	1.00	1.45	6.2
Approach		1948	6.3	1.194	105.5	LOS F	48.2	351.9	0.85	1.04	11.1
NorthWest: Rawson Street											
27	L2	199	2.9	1.141	185.9	LOS F	49.1	358.4	1.00	1.40	7.4
28	T1	988	6.5	1.141	202.9	LOS F	61.2	452.0	1.00	1.55	5.6
Approach		1187	5.9	1.141	200.1	LOS F	61.2	452.0	1.00	1.53	5.9
All Vehicles		6139	6.2	1.208	162.1	LOS F	113.4	833.1	0.90	1.21	7.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	14.6	LOS B	0.1	0.1	0.44	0.44
P51	SouthEast Stage 1	53	65.5	LOS F	0.2	0.2	0.94	0.94
P52	SouthEast Stage 2	53	60.9	LOS F	0.2	0.2	0.90	0.90
P6	NorthEast Full Crossing	53	59.1	LOS E	0.2	0.2	0.89	0.89
P6S	NorthEast Slip/Bypass Lane Crossing	53	53.0	LOS E	0.2	0.2	0.84	0.84
All Pedestrians		263	50.6	LOS E			0.80	0.80

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Station Road/ Rawson Street AM (H) - Dev]

New Site
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Rawson Street											
21	L2	493	1.3	0.387	12.8	LOS A	11.9	84.2	0.45	0.69	27.3
22	T1	755	7.6	1.202	244.0	LOS F	109.9	819.1	1.00	2.11	3.4
Approach		1247	5.1	1.202	152.7	LOS F	109.9	819.1	0.78	1.55	5.1
NorthEast: Station Road											
24	L2	76	7.7	1.114	180.5	LOS F	25.6	183.6	1.00	1.57	6.6
25	T1	385	0.6	1.114	176.9	LOS F	26.4	185.8	1.00	1.57	6.2
Approach		461	1.8	1.114	177.5	LOS F	26.4	185.8	1.00	1.57	6.2
NorthWest: Rawson Street											
27	L2	44	0.0	0.567	21.6	LOS B	21.8	163.9	0.68	0.63	30.1
28	T1	555	9.5	0.567	17.0	LOS B	21.8	163.9	0.68	0.63	25.6
29	R2	96	3.1	0.613	63.7	LOS E	5.6	40.5	1.00	0.85	10.0
Approach		695	8.0	0.613	23.8	LOS B	21.8	163.9	0.72	0.66	21.8
SouthWest: Station Road											
30	L2	124	1.8	0.159	26.0	LOS B	4.4	31.4	0.65	0.69	17.8
31	T1	499	1.3	0.939	64.9	LOS E	34.9	247.4	0.98	1.13	14.1
32	R2	435	1.6	1.170	187.4	LOS F	52.6	373.3	1.00	1.49	3.3
Approach		1058	1.5	1.170	110.7	LOS F	52.6	373.3	0.95	1.23	6.9
All Vehicles		3461	4.1	1.202	117.3	LOS F	109.9	819.1	0.85	1.28	6.9

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	34.6	LOS D	0.1	0.1	0.76	0.76
P6	NorthEast Full Crossing	53	15.5	LOS B	0.1	0.1	0.51	0.51
P7	NorthWest Full Crossing	53	34.6	LOS D	0.1	0.1	0.76	0.76
P8	SouthWest Full Crossing	53	24.1	LOS C	0.1	0.1	0.63	0.63
All Pedestrians		211	27.2	LOS C			0.67	0.67

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Boorea Street/ St Hilliers Road PM (H) - Dev]

PM Peak: 3:45pm-4:45pm
Signals - Fixed Time Isolated Cycle Time = 131 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: St Hilliers Street											
1a	L1	5	0.0	0.957	96.8	LOS F	7.5	55.5	0.97	1.06	14.5
3a	R1	91	6.3	0.957	96.3	LOS F	7.5	55.5	0.97	1.06	14.6
3b	R3	164	8.3	1.186	249.6	LOS F	23.1	173.0	1.00	1.45	4.6
Approach		260	7.4	1.186	193.1	LOS F	23.1	173.0	0.99	1.31	6.7
SouthEast: Boorea Street											
21b	L3	19	0.0	0.363	24.5	LOS C	13.3	95.6	0.61	0.55	31.7
22	T1	728	3.3	0.363	18.1	LOS B	13.4	96.5	0.61	0.54	33.2
23	R2	1582	3.7	1.161	222.4	LOS F	78.4	566.3	1.00	1.46	5.3
Approach		2329	3.5	1.161	156.9	LOS F	78.4	566.3	0.88	1.17	7.3
NorthEast: St Hilliers Road											
24	L2	1758	4.5	0.941	59.9	LOS E	66.5	483.2	1.00	1.02	15.9
24a	L1	143	0.0	1.143	206.5	LOS F	54.3	385.0	1.00	1.48	7.6
26	R2	693	2.2	1.143	208.3	LOS F	54.3	385.0	1.00	1.43	7.6
Approach		2594	3.6	1.143	107.6	LOS F	66.5	483.2	1.00	1.15	11.1
NorthWest: Rawson Street											
27	L2	295	0.0	1.096	147.7	LOS F	48.8	344.7	1.00	1.39	9.2
28	T1	1006	2.6	1.096	161.1	LOS F	54.1	386.8	1.00	1.51	6.9
Approach		1301	2.0	1.096	158.1	LOS F	54.1	386.8	1.00	1.48	7.5
All Vehicles		6484	3.4	1.186	138.9	LOS F	78.4	566.3	0.95	1.23	8.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	17.2	LOS B	0.1	0.1	0.51	0.51
P51	SouthEast Stage 1	53	52.4	LOS E	0.2	0.2	0.90	0.90
P52	SouthEast Stage 2	53	48.0	LOS E	0.2	0.2	0.86	0.86
P6	NorthEast Full Crossing	53	51.5	LOS E	0.2	0.2	0.89	0.89
P6S	NorthEast Slip/Bypass Lane Crossing	53	45.4	LOS E	0.2	0.2	0.83	0.83
All Pedestrians		263	42.9	LOS E			0.80	0.80

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Station Road/ Rawson Street PM (H) - Dev]

New Site
Signals - Fixed Time Isolated Cycle Time = 115 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Rawson Street											
21	L2	669	1.3	0.889	32.0	LOS C	27.6	195.6	0.55	0.81	16.9
22	T1	702	3.8	1.327	351.5	LOS F	120.3	869.6	1.00	2.60	2.4
Approach		1372	2.6	1.327	195.6	LOS F	120.3	869.6	0.78	1.73	4.0
NorthEast: Station Road											
24	L2	74	0.0	1.315	344.6	LOS F	46.2	325.4	1.00	2.14	3.7
25	T1	499	1.1	1.315	341.3	LOS F	46.7	329.7	1.00	2.15	3.4
Approach		573	1.0	1.315	341.7	LOS F	46.7	329.7	1.00	2.15	3.4
NorthWest: Rawson Street											
27	L2	75	1.6	0.732	27.2	LOS B	31.5	223.6	0.84	0.77	26.7
28	T1	659	1.6	0.732	22.7	LOS B	31.5	223.6	0.84	0.77	22.1
29	R2	139	1.6	0.846	68.3	LOS E	8.3	58.7	1.00	1.06	9.4
Approach		873	1.6	0.846	30.3	LOS C	31.5	223.6	0.86	0.82	19.0
SouthWest: Station Road											
30	L2	157	1.2	0.178	21.5	LOS B	4.9	34.9	0.60	0.68	19.8
31	T1	483	0.9	0.814	36.7	LOS C	24.4	172.0	0.89	0.85	20.4
32	R2	603	0.3	1.324	321.4	LOS F	93.4	655.7	1.00	1.86	2.2
Approach		1243	0.6	1.324	172.9	LOS F	93.4	655.7	0.91	1.32	4.7
All Vehicles		4060	1.5	1.327	173.7	LOS F	120.3	869.6	0.87	1.47	4.9

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	29.3	LOS C	0.1	0.1	0.71	0.71
P6	NorthEast Full Crossing	53	18.4	LOS B	0.1	0.1	0.57	0.57
P7	NorthWest Full Crossing	53	29.3	LOS C	0.1	0.1	0.71	0.71
P8	SouthWest Full Crossing	53	27.9	LOS C	0.1	0.1	0.70	0.70
All Pedestrians		211	26.2	LOS C			0.67	0.67

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Boorea Street/ St Hilliers Road PM Com (H) - Dev]

PM Peak: 3:45pm-4:45pm
Signals - Fixed Time Isolated Cycle Time = 131 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: St Hilliers Street											
1a	L1	4	0.0	0.546	73.6	LOS E	2.9	21.5	1.00	0.75	17.7
3a	R1	40	6.3	0.546	73.1	LOS E	2.9	21.5	1.00	0.75	17.9
3b	R3	60	8.3	0.902	88.6	LOS F	4.5	33.4	1.00	0.96	11.6
Approach		104	7.2	0.902	82.0	LOS F	4.5	33.4	1.00	0.87	14.2
SouthEast: Boorea Street											
21b	L3	13	0.0	0.329	18.6	LOS B	11.5	82.7	0.51	0.46	37.1
22	T1	772	3.3	0.329	12.1	LOS B	11.6	83.3	0.51	0.45	38.9
23	R2	1611	3.7	1.014	113.3	LOS F	58.0	419.0	1.00	1.16	9.8
Approach		2395	3.6	1.014	80.2	LOS F	58.0	419.0	0.84	0.93	13.0
NorthEast: St Hilliers Road											
24	L2	1936	4.5	0.965	67.4	LOS E	79.2	576.0	1.00	1.05	14.6
24a	L1	15	0.0	1.005	111.3	LOS F	30.9	220.1	1.00	1.14	12.9
26	R2	659	2.2	1.005	113.1	LOS F	30.9	220.1	1.00	1.14	12.8
Approach		2609	3.9	1.005	79.2	LOS E	79.2	576.0	1.00	1.07	14.0
NorthWest: Rawson Street											
27	L2	279	0.0	0.981	86.9	LOS F	39.9	282.2	1.00	1.25	16.2
28	T1	1025	2.6	0.981	89.1	LOS F	41.0	293.6	0.98	1.22	12.0
Approach		1304	2.0	0.981	88.7	LOS F	41.0	293.6	0.99	1.22	13.0
All Vehicles		6413	3.4	1.014	81.5	LOS F	79.2	576.0	0.94	1.05	13.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	12.0	LOS B	0.1	0.1	0.43	0.43
P51	SouthEast Stage 1	53	54.2	LOS E	0.2	0.2	0.91	0.91
P52	SouthEast Stage 2	53	49.7	LOS E	0.2	0.2	0.87	0.87
P6	NorthEast Full Crossing	53	48.0	LOS E	0.2	0.2	0.86	0.86
P6S	NorthEast Slip/Bypass Lane Crossing	53	42.2	LOS E	0.2	0.2	0.80	0.80
All Pedestrians		263	41.2	LOS E			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Station Road/ Rawson Street PM Com (H) - Dev]

New Site
Signals - Fixed Time Isolated Cycle Time = 115 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Rawson Street											
21	L2	696	1.3	0.868	26.1	LOS B	26.0	184.1	0.55	0.79	19.1
22	T1	621	3.8	1.206	247.9	LOS F	89.0	643.5	1.00	2.17	3.4
Approach		1317	2.5	1.206	130.7	LOS F	89.0	643.5	0.76	1.44	5.8
NorthEast: Station Road											
24	L2	49	0.0	1.183	232.9	LOS F	30.6	215.6	1.00	1.76	5.3
25	T1	426	1.1	1.183	229.6	LOS F	30.8	217.9	1.00	1.77	4.9
Approach		476	1.0	1.183	229.9	LOS F	30.8	217.9	1.00	1.77	4.9
NorthWest: Rawson Street											
27	L2	69	1.6	0.703	26.1	LOS B	29.7	210.8	0.81	0.75	27.3
28	T1	646	1.6	0.703	21.5	LOS B	29.7	210.8	0.81	0.75	22.8
29	R2	137	1.6	0.833	67.5	LOS E	8.1	57.4	1.00	1.04	9.5
Approach		853	1.6	0.833	29.3	LOS C	29.7	210.8	0.84	0.79	19.4
SouthWest: Station Road											
30	L2	148	1.2	0.172	22.1	LOS B	4.7	33.4	0.61	0.68	19.5
31	T1	512	0.9	0.872	44.4	LOS D	28.9	203.9	0.93	0.95	18.2
32	R2	542	0.3	1.190	204.4	LOS F	66.4	466.2	1.00	1.58	3.2
Approach		1202	0.7	1.190	113.8	LOS F	66.4	466.2	0.92	1.20	6.6
All Vehicles		3847	1.5	1.206	115.2	LOS F	89.0	643.5	0.86	1.26	6.9

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	30.0	LOS D	0.1	0.1	0.72	0.72
P6	NorthEast Full Crossing	53	17.8	LOS B	0.1	0.1	0.56	0.56
P7	NorthWest Full Crossing	53	30.0	LOS D	0.1	0.1	0.72	0.72
P8	SouthWest Full Crossing	53	27.2	LOS C	0.1	0.1	0.69	0.69
All Pedestrians		211	26.3	LOS C			0.67	0.67

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.