WINDRADYNE ESTATE SUBDIVISION, BATHURST
TRAFFIC IMPACT ASSESSMENT

FOR

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Project No: P3802 Version No: 004 Issue date: 1 May 2020

DOCUMENT CONTROL SHEET

Issue History

Report File Name	Prepared by	Reviewed by	Issued by	Date	Issued to
P3802.001R Windradyne Estate Subdivision Bathurst TIA	S. Daizli	T. Wheatley	T. Wheatley	3/9/18	Glen James, AT&L
P3802.002R Windradyne Estate Subdivision Bathurst TIA	S. Daizli	T. Wheatley	T. Wheatley	27/2/19	Glen James, AT&L
P3802.003R Windradyne Estate Subdivision Bathurst TIA	S. Daizli	T. Wheatley	T. Wheatley	26/3/19	Glen James, AT&L
P3802.004R Windradyne Estate Subdivision Bathurst TIA	S. Daizli	SP. Power	S. Daizli	1/5/20	Glen James, AT&L

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1. INTRODUCTION

1.1 BACKGROUND

Bitzios Consulting was engaged by AT&L to undertake a Traffic Impact Assessment (TIA) for the proposed Windradyne Estate Subdivision (subdivision), in the Bathurst Regional Local Government Area, NSW. It is located west of the existing residential areas on the north-western side of the Mitchell Highway/ Bradwardine Road roundabout and will comprise 250 residential dwellings across 205 residential lots (including 45 dual occupancy lots) and an internal road network connecting to Richardson Street and Governors Parade.

In addition, this report makes reference to the Seaman Development, which is a potential future development that is not related to the subdivision, but the traffic assessment includes it to determine if it will have an impact on the subdivision. The Seaman Development is located west of the existing Bathurst Trade Centre on the south-western side of the roundabout and is expected to comprise 55 large residential dwellings and 68 commercial spaces.

An aerial view of the sites is shown in Figure 1.1.

Adapted from Google Maps

Figure 1.1: Site Locations

1.2 PREVIOUS TIA REPORT

Traffic Matters was previously engaged by Bathurst Regional Council to undertake the original TIA for the above developments. Their report (*Windradyne Estate and Proposed Seaman Development Traffic Impact Assessment*, dated 8 March 2016) assessed a proposed additional roundabout on the Mitchell Highway, approximately 720 metres west of the Bradwardine Road roundabout.

1.3 SCOPE OF WORKS

The purpose of this TIA was to assess whether the subdivision can proceed without the additional Mitchell Highway roundabout through utilisation of Richardson Street and Governors Parade as the only access points. The scope of works included the following tasks:

- assess the proposed development trip generation impacts on the local traffic network without direct access to the Mitchell Highway;
- undertake existing and future SIDRA modelling of the Mitchell Highway/Bradwardine Road, Bradwardine Road/Larkin Street and Bradwardine Road/Suttor Street intersections; and
- review the proposed access roads throughout the subdivision and integration with the existing road network, including Richardson Street, Opperman Way, Suttor Street, Colville Street, and Governors Parade.

2. EXISTING CONDITIONS

2.1 EXISTING SITE

The existing site comprises rural land zoned R1 General Residential and RE1 Public Recreation under the Bathurst Regional Local Environmental Plan 2014 and is used for the grazing of livestock.

2.2 ROAD NETWORK

2.2.1 Mitchell Highway

The Mitchell Highway is a two-way, two-lane state road running east-west between Bathurst and Orange. It is a rural highway with unsealed shoulders, a signposted 80km/h speed limit approximately 350 metres west of the Bradwardine Road roundabout and a signposted 60km/h speed limit east of this point.

2.2.2 Bradwardine Road

Bradwardine Road is a two-way, two-lane local road running north-south between Eglington Road and south of the Mitchell Highway. It is a collector road with kerbside parking, and signposted 60km/h and 50km/h speed limits north and south of the Mitchell Highway roundabout respectively. Trucks 12 tonnes and over (buses excepted) are not permitted to use Bradwardine Road between the Mitchell Highway and Larkin Street, as indicated by signposting.

2.2.3 Suttor Street

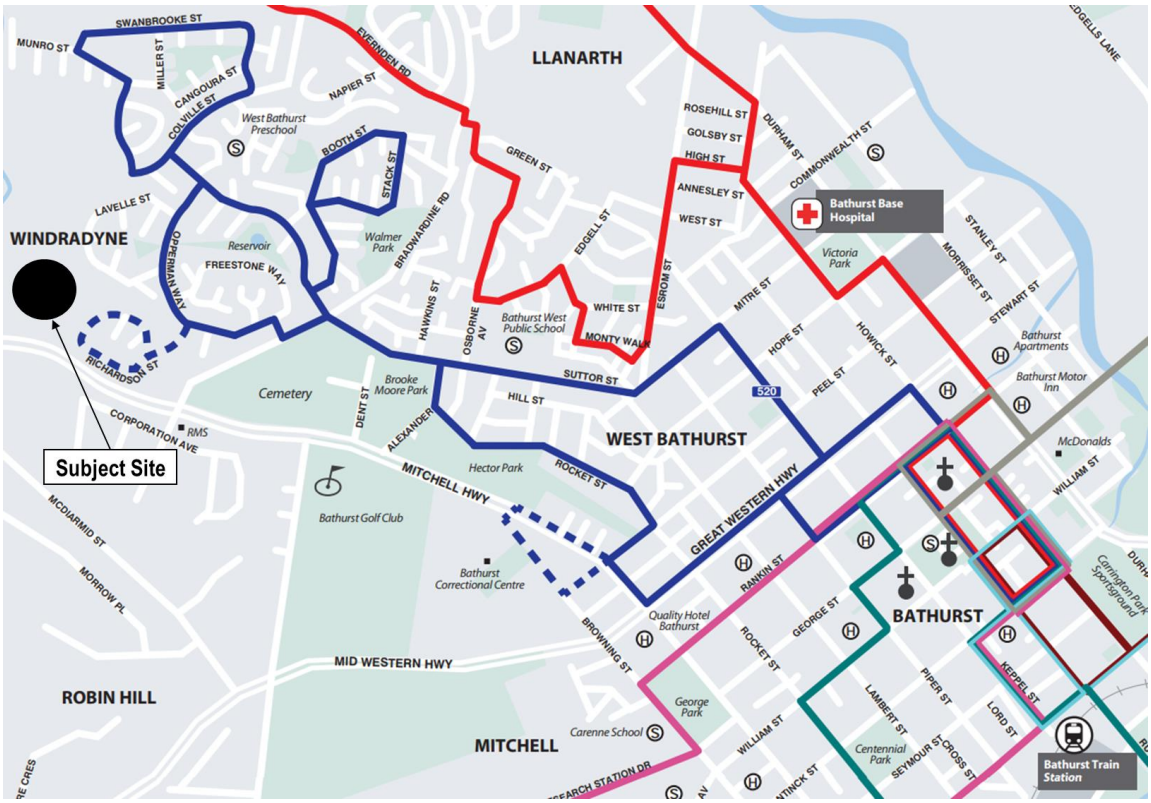
Suttor Street is a two-way, two-lane local road running east-west between Mitre Street and Colville Street. It has kerbside parking, and signposted 50km/h and 60km/h speed limits north and south of the Bradwardine Road roundabout respectively.

2.2.4 Larkin Street, Richardson Street and Governors Parade

Larkin Street, Richardson Street and Governors Parade are all two-way, two-lane local roads within the existing residential areas on the north-western side of the Mitchell Highway/Bradwardine Road roundabout. These have kerbside parking, access driveways to all properties and a default 50km/h urban speed limit.

2.3 BUSES

Bus route 520, operated by Bathurst Buslines, runs between Bathurst and Windradyne via West Bathurst. Limited services run on a loop around Richardson Street and Ussher Crescent every 1-2 hours Monday to Friday, with one service on Saturday. The nearest bus stops on the main route are located on Messenger Street and Suttor Street near the Bradwardine Road roundabout, with services running more frequently. A map showing all local bus routes is shown in Figure 2.1.

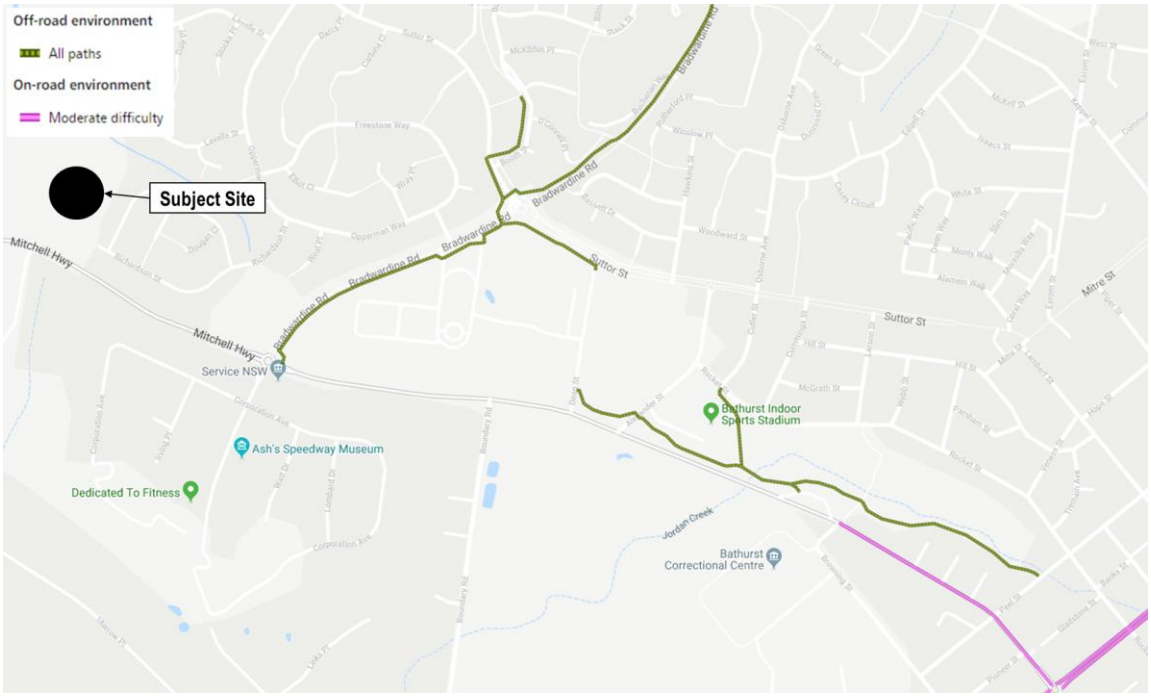


Source: Bathurst Buslines Timetable & Map

Figure 2.1: Local Bus Network

2.4 WALKING AND CYCLING

No formal footpaths are provided along the local roads, even though footway areas exist. A shared path is provided along the eastern side of Bradwardine Road between the Mitchell Highway and Suttor Street, and along the western side further north. There is also a short shared path along the southern side of Suttor Street between Dean Street and Booth Street, though it does not connect with the wider cycling network. A map showing all local cycling routes is shown in Figure 2.2. Additional walking/cycling routes are proposed throughout Windradyne under the Bathurst Regional Development Control Plan 2014 Map No. 5.



Source: Transport for NSW Cycleway Finder

Figure 2.2: Local Cycleways

3. TRAFFIC ASSESSMENT

3.1 DEVELOPMENT TRAFFIC GENERATION

3.1.1 Estimated Traffic Generation

The trips generated by the proposed development have been calculated in order to determine the additional trips generated onto the surrounding road network. The traffic generation was calculated using rates provided in the *Transport for NSW TDT 2013/04a Guide to Traffic Generating Developments Updated traffic surveys*. The trip generation rates adopted were the same rates used in the previous TIA report, being the average morning and evening peak hour rates for low density residential dwellings in regional areas, which are deemed appropriate. Table 3.1 provides the AM and PM peak hour traffic volumes generated by the proposed development. The dual occupancy lots counted as two separate dwellings.

Table 3.1: Development Traffic Generation

Land Use	Dwellings	AM Peak Trip Generation Rate	PM Peak Trip Generation Rate	AM Peak Generated Traffic Volume	PM Peak Generated Traffic Volume
Residential	250	0.71/dwelling	0.78/dwelling	178 trips	195 trips

As shown above, the proposed development is projected to yield a significant number of trips in both the AM and PM peaks, which is expected given its large scale. The vast majority of trips are likely to occur to and from the east-adjacent catchment, which includes Bathurst Town Centre and surrounding key attractors. The additional local walking/cycling routes proposed may increase cycling trips, particularly to Bathurst Town Centre. Further development traffic analysis in terms of estimated directional split, trip distribution onto the surrounding road network and SIDRA intersection analysis is detailed below.

3.2 DIRECTIONAL SPLIT

Conventional traffic directional splits were assumed when determining the directional splits for the proposed development. Table 3.2 shows the in/out traffic splits for the AM and PM peak hours.

Table 3.2: Assumed In/Out Traffic Splits

AM Peak Split		AM Peak Volume		PM Peak Split		PM Peak Volume	
In	Out	In	Out	In	Out	In	Out
20%	80%	36	142	80%	20%	156	39

3.3 TRIP DISTRIBUTION

The development trip distribution was estimated by interrogating the surrounding road network and Australian Bureau of Statistics 2016 Journey to Work data, as well as incorporating knowledge of existing employment and activity areas. Based on the proposed layout, we have assumed that 75% of development traffic will use Richardson Street and 25% will use Governors Parade. Table 3.3 shows the traffic volumes that will use the two access points.

Table 3.3: Richardson Street and Governors Parade Traffic Volumes

Access Point	AM Peak		PM Peak	
	In	Out	In	Out
Richardson Street	27	107	117	29
Governors Parade	9	35	39	10

Using the above traffic volumes, the assumed trip distributions for each access point are shown graphically in Figure 3.1 and Figure 3.2. These are expected to be largely similar in both the AM and PM peaks.

Adapted from Google Maps

Figure 3.1: Development Trip Distribution – Richardson Street

Adapted from Google Maps

Figure 3.2: Development Trip Distribution – Governors Parade

Based on the above trip distributions, the traffic volumes for each route are summarised in Table 3.4.

Table 3.4: Route Traffic Volumes

Route	AM Peak		PM Peak	
	In	Out	In	Out
RICHARDSON STREET				
Suttor Street East	20	91	88	22
Mitchell Highway East	4	5	18	4
Mitchell Highway West	3	11	12	3
GOVERNORS PARADE				
Suttor Street East	7	30	33	8
Mitchell Highway East	1	2	2	0
Mitchell Highway West	1	3	4	1

3.4 SIDRA Intersection Analysis

3.4.1 Overview

Analysis of the Mitchell Highway/Bradwardine Road and Bradwardine Road/Suttor Street roundabouts, and the Bradwardine Road/Larkin Street give way intersection was undertaken using SIDRA Intersection software (version 8.0) to assess the operational impact of proposed development traffic at these intersections without direct access to the Mitchell Highway. Using traffic counts (as described below), the above trip distributions and a future background traffic growth rate of 1.8% compounded per year, the analysis was undertaken for the same peak hours used in the previous TIA report (7:45-8:45am and 4:15-5:15pm) under the 2018 base and 10-year horizon 2028 base and with development (subdivision)

scenarios. The background traffic growth rate was determined based on local population growth forecasts between 2016 and 2031. This is a conservative approach in the absence of other information.

For completeness, an additional scenario that also included expected traffic from the Seaman Development was also assessed. The previous report's traffic generation and trip distribution assumptions for the Seaman Development were used, though it has been assumed that all trips will use the Mitchell Highway/ Bradwardine Road intersection.

The Mitchell Highway/Bradwardine Road intersection was modelled as an isolated intersection and the Bradwardine Road/Larkin Street and Bradwardine Road/Suttor Street intersections were modelled as a SIDRA network.

3.4.2 Level of Service

Level of Service (LoS) is a measure of an intersection's operational performance and is related to the average number of seconds vehicles are delayed at each approach. Table 3.5 shows the standard criteria adopted by Transport for NSW in assessing the LoS of roundabouts and give way intersections.

Table 3.5: Level of Service Criteria for Roundabouts and Give Way Intersections

Level of Service	Average Delay (sec/veh)	Roundabouts	Give Way Signs
A	<14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; roundabouts require other control mode	At capacity, requires other control mode
F	>70	Flow breakdown; forced flow	Intersection failure

Source: Transport for NSW Guide to Traffic Generating Developments (2002) Table 4.2

3.4.3 Degree of Saturation

Degree of Saturation (DoS) is a measure of an intersection's operating capacity (i.e. volume/capacity ratio). The *Transport for NSW Traffic Modelling Guidelines (2013)* state that the maximum practical degree of saturation for roundabouts is 0.85 and for sign-controlled intersections is 0.80.

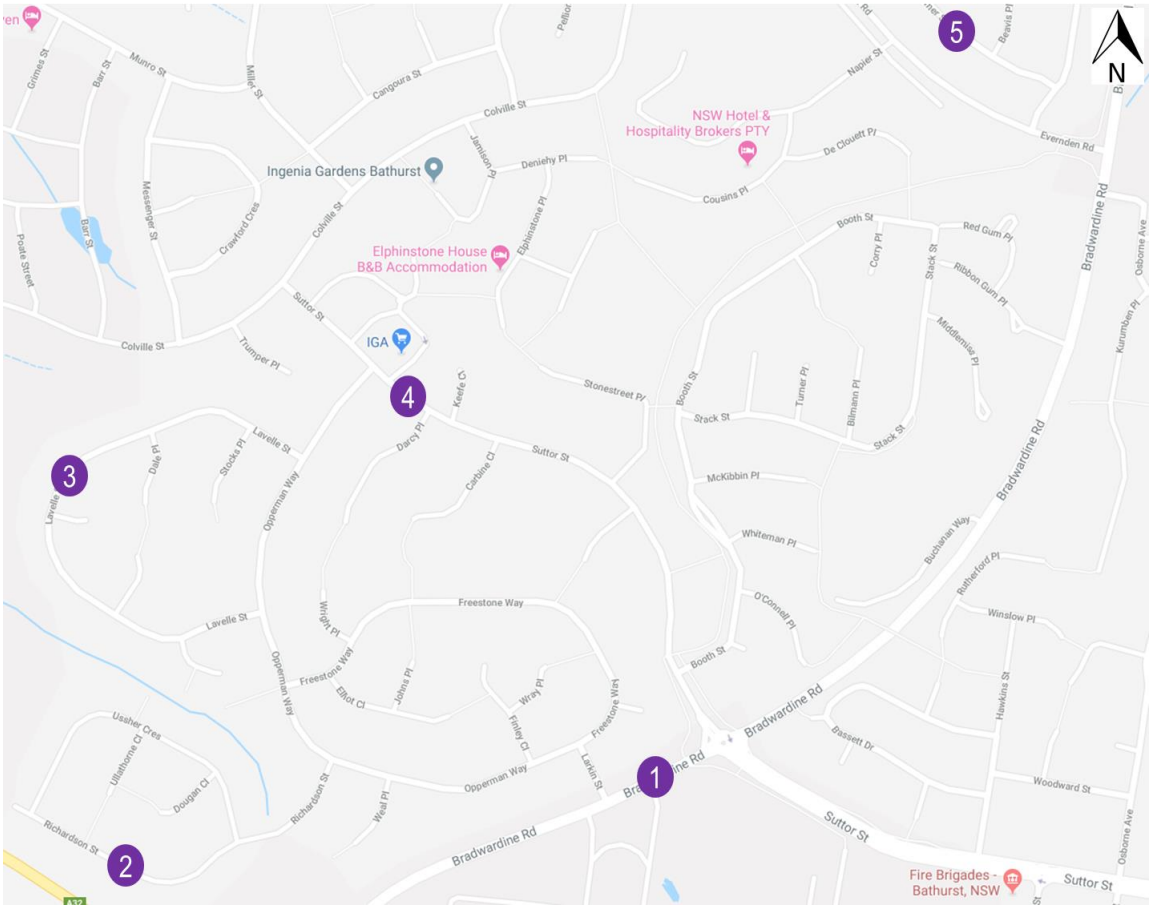
3.4.4 Traffic Counts

The Mitchell Highway/Bradwardine Road intersection counts from the previous TIA report, undertaken on Tuesday 8 December 2015, were used for our assessment. In the absence of counts for the Bradwardine Road/Larkin Street and Bradwardine Road/Suttor Street intersections, previous bidirectional MetroCount tube counts for the locations below were used as a baseline for turning volumes.

Given tube counts that don't separate the traffic volumes into turning movements were used for the SIDRA analysis, only an approximation of intersection impacts can be determined.

The below count locations are shown in Figure 3.3:

1. Bradwardine Road between Larkin Street and Suttor Street – Tuesday 5 March 2013;
2. 27 Richardson Street – Tuesday 8 June 2010;
3. 26 Lavelle Street – Tuesday 14 March 2017;
4. 97 Suttor Street – Tuesday 20 March 2018; and
5. Evernden Road – Tuesday 4 April 2017.



Adapted from Google Maps

Figure 3.3: Tube Count Locations

3.4.5 Existing Performance

Table 3.6 summarises the 2018 AM and PM peak base intersection performance.

Table 3.6: Intersection SIDRA Results Summary – 2018 Base

Intersection	AM Peak				PM Peak			
	Degree of Saturation (v/c)	Average Delay (sec/veh)	Level of Service	95th Percentile Queue (m)	Degree of Saturation (v/c)	Average Delay (sec/veh)	Level of Service	95th Percentile Queue (m)
Mitchell Highway/ Bradwardine Road	0.30	11	A	14	0.37	11	A	20
Bradwardine Road/ Larkin Street	0.18	6	A	3	0.24	8	A	5
Bradwardine Road/ Suttor Street	0.18	10	A	9	0.29	11	A	12

As shown above, all three intersections currently perform well within acceptable Level of Service and Degree of Saturation in both the AM and PM peaks. Furthermore, queuing does not extend between adjacent intersections.

3.4.6 Future Performance

Table 3.7 summarises the 2028 AM and PM peak base intersection performance.

Table 3.7: Intersection SIDRA Results Summary – 2028 Base

Intersection	AM Peak				PM Peak			
	Degree of Saturation (v/c)	Average Delay (sec/veh)	Level of Service	95th Percentile Queue (m)	Degree of Saturation (v/c)	Average Delay (sec/veh)	Level of Service	95th Percentile Queue (m)
Mitchell Highway/ Bradwardine Road	0.38	12	A	19	0.47	13	A	28
Bradwardine Road/ Larkin Street	0.22	7	A	4	0.29	9	A	7
Bradwardine Road/ Suttor Street	0.22	10	A	12	0.36	11	A	16

As shown above, all three intersections currently perform well within acceptable Level of Service and Degree of Saturation in both the AM and PM peaks. Furthermore, queuing does not extend between adjacent intersections.

Table 3.8 summarises the 2028 AM and PM peak with development intersection performance.

Table 3.8: Intersection SIDRA Results Summary – 2028 With Development

Intersection	AM Peak				PM Peak			
	Degree of Saturation (v/c)	Average Delay (sec/veh)	Level of Service	95th Percentile Queue (m)	Degree of Saturation (v/c)	Average Delay (sec/veh)	Level of Service	95th Percentile Queue (m)
Mitchell Highway/ Bradwardine Road	0.40	12	A	20	0.49	13	A	30
Bradwardine Road/ Larkin Street	0.23	7	A	6	0.36	11	A	13
Bradwardine Road/ Suttor Street	0.27	11	A	15	0.37	11	A	17

As shown above, all three intersections are expected to perform well within acceptable Level of Service and Degree of Saturation in both the AM and PM peaks with development. Furthermore, queuing does not extend between adjacent intersections.

Table 3.9 summarises the 2028 AM and PM peak with both developments intersection performance.

Table 3.9: Intersection SIDRA Results Summary – 2028 With Both Developments

Intersection	AM Peak				PM Peak			
	Degree of Saturation (v/c)	Average Delay (sec/veh)	Level of Service	95th Percentile Queue (m)	Degree of Saturation (v/c)	Average Delay (sec/veh)	Level of Service	95th Percentile Queue (m)
Mitchell Highway/ Bradwardine Road	0.51	16	B	32	0.64	18	B	50
Bradwardine Road/ Larkin Street	0.23	8	A	6	0.37	11	A	13
Bradwardine Road/ Suttor Street	0.27	11	A	15	0.37	11	A	17

As shown above, all three intersections are expected to perform well within acceptable Level of Service and Degree of Saturation in both the AM and PM peaks with both developments. Furthermore, queuing does not extend between adjacent intersections.

Based on the SIDRA modelling, the Seaman Development is expected to slightly increase delays by only 4 or 5 seconds at the Mitchell Highway/Bradwardine Road intersection, but have no discernible impact to traffic delays at the other two intersections.

Detailed SIDRA outputs are provided in **Appendix A**.

3.5 LOCAL ROAD NETWORK IMPACT

Based on the above trip distributions, the traffic volumes generated onto the local road network by the 250 residential dwellings are summarised in Table 3.10.

Table 3.10: Local Road Network Traffic Volumes

Road	AM Peak	PM Peak
Richardson Street	134	146
Opperman Way	134	146
Larkin Street	134	146
Suttor Street east of Bradwardine Road	147	151
Suttor Street west of Bradwardine Road	44	49
Colville Street	44	49
Governors Parade	44	49

As shown above, a significant number of AM and PM peak hour trips are expected to be generated onto Richardson Street, Opperman Way, and Suttor Street east of Bradwardine Road towards the Mitre Street/ Lambert intersection. This is the most likely route given that Suttor Street provides the shortest route from the development to Bathurst Town Centre, rather than via the Mitchell Highway.

However, given that average delays at the Bradwardine Road/Larkin Street intersection are expected to increase by about only 1 second, the follow-on impact to Richardson Street and Opperman Way would be minimal. Furthermore, Richardson Street and Opperman Way are both internal roads, provide a relatively short journey to the nearest major road (Bradwardine Road in approximately 1km or two minutes) and development-generated traffic will not travel on a significant portion of the local road network.

The existing traffic volume on Opperman Way west of Larkin Street has been estimated as 185 vehicles per hour (vph) in the AM peak and 204 vph in the PM peak, based on the traffic generation rates in Table 3.1 and the number of dwellings that use the southern half of Opperman Way to access the wider road network. While the development is expected to increase traffic on Richardson Street and Opperman Way, the total traffic volumes on Opperman Way would still be well below the environmental capacity of 500 vph for a residential collector street, which is how the southern half of Opperman Way functions, and the traffic volumes on Richardson Street would still be below the environmental capacity of 300 vph for a residential access street. The values for environmental capacity are taken from Table 4.6 of the *Transport for NSW Guide to Traffic Generating Developments (2002)*, reproduced below.

Table 3.11: Environmental Capacity Performance Standards on Residential Streets

Road Class	Road Type	Maximum Speed (km/hr)	Maximum Peak Hour Volume (veh/hr)
Local	Access way	25	100
	Street	40	200 environmental goal
			300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

Note: Maximum speed relates to the appropriate design maximum speeds in new residential developments. In existing areas maximum speed relates to 85th percentile speed.

Source: Transport for NSW Guide to Traffic Generating Developments (2002) Table 4.6

In comparison, the AM and PM peak hour trips generated onto Colville Street, a very short section of Governors Parade, and Suttor Street west of Bradwardine Road will be much lower. Considering Suttor Street already functions as a collector road given it is the primary access route in and out of Windradyne and given Suttor Street's existing traffic conditions, the development will have negligible impacts on congestion.

It should be noted that all above assumptions are based on a worst-case scenario, whereby all trips occur within the one peak hour periods, though it is more likely that the trips will be spread out.

In addition, the SIDRA analysis concludes that key intersections with access to the wider road network can adequately cater for development traffic, which in turn would have negligible impacts on the local network without direct access to the Mitchell Highway.

4. CONCLUSIONS

The key findings from this Traffic Impact Assessment for the proposed Windradyne Estate Subdivision, Bathurst, are summarised as follows:

- the proposed development is projected to generate a significant number of trips, with 178 AM and 195 PM peak hour trips;
- the vast majority of trips are likely to occur to and from Bathurst Town Centre and surrounding key attractors. Furthermore, it is most likely that private vehicle trips will be preferred by residents as a desirable transport mode to and from the proposed development, given:
  - the site's distant proximity to local facilities;
  - very limited local bus services; and
  - lack of local cycling infrastructure connecting with the wider network;
- the additional local walking/cycling routes proposed under the Bathurst Regional Development Control Plan 2014 Map No. 5 may increase cycling trips in the future;
- given tube counts were used for the SIDRA intersection analysis, only an approximation of intersection impacts can be determined;
- the SIDRA analysis of the Mitchell Highway/Bradwardine Road, Bradwardine Road/Larkin Street and Bradwardine Road/Suttor Street intersections concludes that they all perform well within acceptable Level of Service and Degree of Saturation in both the AM and PM peaks in all scenarios;
- the proposed development is expected to generate over 130 trips in both the AM and PM peaks onto Richardson Street, Opperman Way, Larkin Street, and Suttor Street east of Bradwardine Road. However, the impact on these local roads will be negligible given Richardson Street and Opperman Way are both internal roads and traffic will not travel on a significant portion of the local road network. These roads will still operate within the environmental capacity for their function within the road hierarchy;
- in comparison, only up to 50 trips in both the AM and PM peaks will be generated onto Colville Street, a very short section of Governors Parade, and Suttor Street west of Bradwardine Road, considering that Suttor Street already functions as a collector road given it is the primary access route in and out of Windradyne and experiences very little congestion; and
- Richardson Street and Governors Street can adequately cater for development traffic without direct access to the Mitchell Highway. Also, as Suttor Street provides the shortest route from the proposed development to Bathurst Town Centre, local trips are taken off the Mitchell Highway, maintaining safety and efficiency.

APPENDIX A

SIDRA OUTPUTS

MOVEMENT SUMMARY

Site: 101 [Mitchell Highway / Bradwardine Road - AM Peak 2018 Base]

0745 - 0845
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Bradwardine Road												
9	L2	12	8.3	0.017	6.9	LOS A	0.1	0.7	0.63	0.56	0.63	48.5
8	T1	42	2.4	0.104	5.3	LOS A	0.7	5.2	0.61	0.62	0.61	48.9
7	R2	77	3.9	0.104	9.5	LOS A	0.7	5.2	0.61	0.62	0.61	48.7
Approach		131	3.8	0.104	7.9	LOS A	0.7	5.2	0.61	0.62	0.61	48.7
East: Mitchell Highway												
6	L2	180	5.0	0.162	5.6	LOS A	1.0	7.4	0.44	0.54	0.44	49.8
5	T1	281	13.9	0.245	5.6	LOS A	1.7	13.2	0.44	0.53	0.44	53.8
4	R2	47	4.3	0.245	9.6	LOS A	1.7	13.2	0.44	0.53	0.44	53.8
Approach		508	9.8	0.245	5.9	LOS A	1.7	13.2	0.44	0.53	0.44	52.3
North: Bradwardine Road												
3	L2	137	0.0	0.298	6.5	LOS A	1.9	13.6	0.62	0.69	0.62	52.5
2	T1	98	3.1	0.298	6.9	LOS A	1.9	13.6	0.62	0.69	0.62	50.1
1	R2	60	10.0	0.298	11.4	LOS A	1.9	13.6	0.62	0.69	0.62	53.2
Approach		295	3.1	0.298	7.6	LOS A	1.9	13.6	0.62	0.69	0.62	51.8
West: Mitchell Highway												
12	L2	20	10.0	0.022	5.7	LOS A	0.1	0.9	0.42	0.50	0.42	53.4
11	T1	296	10.5	0.234	5.4	LOS A	1.7	12.7	0.43	0.50	0.43	54.2
10	R2	26	3.8	0.234	9.6	LOS A	1.7	12.7	0.43	0.50	0.43	50.8
Approach		342	9.9	0.234	5.7	LOS A	1.7	12.7	0.43	0.50	0.43	53.9
All Vehicles		1276	7.7	0.298	6.5	LOS A	1.9	13.6	0.50	0.57	0.50	52.2

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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 102 [Bradwardine Road / Larkin Street - AM Peak 2018 Base]

Network: N101 [102 & 103 - AM Peak 2018 Base]

0745 - 0845
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
NorthEast: Bradwardine Road														
5	T1	256	3.5	256	3.5	0.180	0.1	LOS A	0.4	3.0	0.10	0.12	0.10	57.8
4	R2	62	0.0	62	0.0	0.180	5.9	LOS A	0.4	3.0	0.10	0.12	0.10	48.2
Approach		318	2.8	318	2.8	0.180	1.2	NA	0.4	3.0	0.10	0.12	0.10	56.9
NorthWest: Larkin Street														
1	L2	65	0.0	65	0.0	0.087	4.8	LOS A	0.3	2.3	0.17	0.54	0.17	27.3
3	R2	39	0.0	39	0.0	0.087	6.4	LOS A	0.3	2.3	0.17	0.54	0.17	48.1
Approach		104	0.0	104	0.0	0.087	5.4	LOS A	0.3	2.3	0.17	0.54	0.17	41.6
SouthWest: Bradwardine Road														
12	L2	31	0.0	31	0.0	0.061	5.5	LOS A	0.0	0.0	0.00	0.17	0.00	42.8
11	T1	78	6.4	78	6.4	0.061	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	56.9
Approach		109	4.6	109	4.6	0.061	1.6	NA	0.0	0.0	0.00	0.17	0.00	51.6
All Vehicles		531	2.6	531	2.6	0.180	2.1	NA	0.4	3.0	0.10	0.21	0.10	53.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
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 SUMMARY

Site: 103 [Bradwardine Road / Suttor Street - AM Peak 2018 Base]

Network: N101 [102 & 103 - AM Peak 2018 Base]

0745 - 0845
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
SouthEast: Suttor Street														
9	L2	103	1.0	103	1.0	0.098	6.2	LOS A	0.6	4.2	0.49	0.58	0.49	49.6
8	T1	86	2.3	86	2.3	0.107	6.0	LOS A	0.7	4.8	0.48	0.58	0.48	53.0
7	R2	43	2.3	43	2.3	0.107	9.7	LOS A	0.7	4.8	0.48	0.58	0.48	52.7
Approach		232	1.7	232	1.7	0.107	6.8	LOS A	0.7	4.8	0.49	0.58	0.49	51.9
NorthEast: Bradwardine Road														
6	L2	78	1.3	78	1.3	0.042	3.8	LOS A	0.0	0.0	0.00	0.49	0.00	55.5
5	T1	111	2.7	111	2.7	0.140	6.2	LOS A	0.8	6.0	0.51	0.59	0.51	47.8
4	R2	47	2.1	47	2.1	0.140	9.8	LOS A	0.8	6.0	0.51	0.59	0.51	52.7
Approach		236	2.1	236	2.1	0.140	6.1	LOS A	0.8	6.0	0.34	0.56	0.34	52.1
NorthWest: Suttor Street														
3	L2	58	6.9	58	6.9	0.071	6.4	LOS A	0.4	3.2	0.46	0.55	0.46	52.9
2	T1	124	7.3	124	7.3	0.177	5.7	LOS A	1.2	9.1	0.42	0.57	0.42	52.8
1	R2	104	4.8	104	4.8	0.177	9.4	LOS A	1.2	9.1	0.42	0.57	0.42	47.8
Approach		286	6.3	286	6.3	0.177	7.2	LOS A	1.2	9.1	0.43	0.56	0.43	51.6
SouthWest: Bradwardine Road														
12	L2	29	3.4	29	3.4	0.021	4.7	LOS A	0.1	0.7	0.27	0.50	0.27	51.3
11	T1	51	5.9	51	5.9	0.085	5.3	LOS A	0.4	3.1	0.33	0.58	0.33	50.1
10	R2	63	1.6	63	1.6	0.085	8.9	LOS A	0.4	3.1	0.33	0.58	0.33	49.9
Approach		143	3.5	143	3.5	0.085	6.8	LOS A	0.4	3.1	0.31	0.56	0.31	50.2
All Vehicles		897	3.6	897	3.6	0.177	6.7	LOS A	1.2	9.1	0.40	0.57	0.40	51.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 101 [Mitchell Highway / Bradwardine Road - PM Peak 2018 Base]

1615 - 1715
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Bradwardine Road												
9	L2	64	3.1	0.090	8.2	LOS A	0.6	4.3	0.76	0.70	0.76	47.9
8	T1	53	0.0	0.082	6.8	LOS A	0.6	4.3	0.75	0.66	0.75	48.9
7	R2	22	13.6	0.082	11.4	LOS A	0.6	4.3	0.75	0.66	0.75	48.3
Approach		139	3.6	0.090	8.2	LOS A	0.6	4.3	0.76	0.68	0.76	48.3
East: Mitchell Highway												
6	L2	109	2.8	0.136	7.1	LOS A	0.8	5.8	0.60	0.65	0.60	49.3
5	T1	271	10.3	0.349	6.6	LOS A	2.7	19.7	0.65	0.66	0.65	52.6
4	R2	140	0.0	0.349	10.6	LOS A	2.7	19.7	0.65	0.66	0.65	52.7
Approach		520	6.0	0.349	7.8	LOS A	2.7	19.7	0.64	0.66	0.64	51.9
North: Bradwardine Road												
3	L2	25	0.0	0.367	6.3	LOS A	2.5	17.6	0.62	0.71	0.62	51.4
2	T1	131	0.0	0.367	6.6	LOS A	2.5	17.6	0.62	0.71	0.62	49.2
1	R2	226	0.4	0.367	10.9	LOS A	2.5	17.6	0.62	0.71	0.62	52.4
Approach		382	0.3	0.367	9.1	LOS A	2.5	17.6	0.62	0.71	0.62	51.2
West: Mitchell Highway												
12	L2	42	0.0	0.046	5.9	LOS A	0.3	1.8	0.46	0.53	0.46	53.6
11	T1	307	11.7	0.244	5.7	LOS A	1.7	13.2	0.48	0.52	0.48	54.0
10	R2	10	0.0	0.244	9.8	LOS A	1.7	13.2	0.48	0.52	0.48	50.8
Approach		359	10.0	0.244	5.8	LOS A	1.7	13.2	0.48	0.52	0.48	53.9
All Vehicles		1400	5.2	0.367	7.7	LOS A	2.7	19.7	0.60	0.64	0.60	51.8

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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 102 [Bradwardine Road / Larkin Street - PM Peak 2018 Base]

Network: N101 [102 & 103 - PM Peak 2018 Base]

1615 - 1715
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
NorthEast: Bradwardine Road														
5	T1	326	0.3	326	0.3	0.241	0.3	LOS A	0.7	5.1	0.19	0.14	0.19	57.1
4	R2	92	0.0	92	0.0	0.241	6.4	LOS A	0.7	5.1	0.19	0.14	0.19	47.0
Approach		418	0.2	418	0.2	0.241	1.7	NA	0.7	5.1	0.19	0.14	0.19	56.0
NorthWest: Larkin Street														
1	L2	111	0.0	111	0.0	0.157	5.1	LOS A	0.6	4.2	0.28	0.58	0.28	26.0
3	R2	56	0.0	56	0.0	0.157	7.8	LOS A	0.6	4.2	0.28	0.58	0.28	47.4
Approach		167	0.0	167	0.0	0.157	6.0	LOS A	0.6	4.2	0.28	0.58	0.28	39.8
SouthWest: Bradwardine Road														
12	L2	82	0.0	82	0.0	0.128	5.6	LOS A	0.0	0.0	0.00	0.21	0.00	42.5
11	T1	153	0.0	153	0.0	0.128	0.0	LOS A	0.0	0.0	0.00	0.21	0.00	56.4
Approach		235	0.0	235	0.0	0.128	1.9	NA	0.0	0.0	0.00	0.21	0.00	50.2
All Vehicles		820	0.1	820	0.1	0.241	2.6	NA	0.7	5.1	0.15	0.25	0.15	52.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
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 SUMMARY

Site: 103 [Bradwardine Road / Suttor Street - PM Peak 2018 Base]

Network: N101 [102 & 103 - PM Peak 2018 Base]

1615 - 1715
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
SouthEast: Suttor Street														
9	L2	102	0.0	102	0.0	0.118	7.3	LOS A	0.7	5.1	0.60	0.65	0.60	48.5
8	T1	122	3.3	122	3.3	0.182	6.8	LOS A	1.2	8.9	0.60	0.65	0.60	52.4
7	R2	76	3.9	76	3.9	0.182	10.5	LOS A	1.2	8.9	0.60	0.65	0.60	52.0
Approach		300	2.3	300	2.3	0.182	7.9	LOS A	1.2	8.9	0.60	0.65	0.60	51.4
NorthEast: Bradwardine Road														
6	L2	74	1.4	74	1.4	0.040	3.8	LOS A	0.0	0.0	0.00	0.49	0.00	55.5
5	T1	261	0.4	261	0.4	0.287	6.1	LOS A	1.8	12.4	0.52	0.59	0.52	48.1
4	R2	56	1.8	56	1.8	0.287	9.8	LOS A	1.8	12.4	0.52	0.59	0.52	52.9
Approach		391	0.8	391	0.8	0.287	6.2	LOS A	1.8	12.4	0.42	0.57	0.42	51.0
NorthWest: Suttor Street														
3	L2	52	11.5	52	11.5	0.067	7.4	LOS A	0.4	3.1	0.57	0.61	0.57	52.0
2	T1	88	6.8	88	6.8	0.125	6.5	LOS A	0.8	6.1	0.54	0.60	0.54	52.5
1	R2	55	0.0	55	0.0	0.125	10.0	LOS A	0.8	6.1	0.54	0.60	0.54	47.3
Approach		195	6.2	195	6.2	0.125	7.7	LOS A	0.8	6.1	0.55	0.60	0.55	51.4
SouthWest: Bradwardine Road														
12	L2	53	0.0	53	0.0	0.039	4.9	LOS A	0.2	1.4	0.32	0.51	0.32	51.2
11	T1	92	0.0	92	0.0	0.172	5.6	LOS A	0.9	6.5	0.43	0.61	0.43	49.9
10	R2	119	0.0	119	0.0	0.172	9.3	LOS A	0.9	6.5	0.43	0.61	0.43	49.5
Approach		264	0.0	264	0.0	0.172	7.1	LOS A	0.9	6.5	0.41	0.59	0.41	50.0
All Vehicles		1150	1.9	1150	1.9	0.287	7.1	LOS A	1.8	12.4	0.49	0.60	0.49	51.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 101 [Mitchell Highway / Bradwardine Road - AM Peak 2028 Base]

0745 - 0845
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Bradwardine Road												
9	L2	14	7.1	0.021	7.6	LOS A	0.1	0.9	0.68	0.59	0.68	48.1
8	T1	51	3.9	0.136	5.9	LOS A	1.0	7.0	0.68	0.67	0.68	48.5
7	R2	92	4.3	0.136	10.1	LOS A	1.0	7.0	0.68	0.67	0.68	48.3
Approach		157	4.5	0.136	8.5	LOS A	1.0	7.0	0.68	0.66	0.68	48.4
East: Mitchell Highway												
6	L2	215	5.1	0.202	5.9	LOS A	1.3	9.6	0.50	0.57	0.50	49.6
5	T1	336	14.0	0.303	5.8	LOS A	2.2	17.4	0.51	0.56	0.51	53.5
4	R2	56	3.6	0.303	9.8	LOS A	2.2	17.4	0.51	0.56	0.51	53.5
Approach		607	9.9	0.303	6.2	LOS A	2.2	17.4	0.51	0.57	0.51	52.1
North: Bradwardine Road												
3	L2	164	0.0	0.384	7.3	LOS A	2.6	19.0	0.71	0.75	0.71	52.0
2	T1	118	3.4	0.384	7.7	LOS A	2.6	19.0	0.71	0.75	0.71	49.7
1	R2	72	9.7	0.384	12.3	LOS A	2.6	19.0	0.71	0.75	0.71	52.7
Approach		354	3.1	0.384	8.4	LOS A	2.6	19.0	0.71	0.75	0.71	51.4
West: Mitchell Highway												
12	L2	24	8.3	0.027	6.0	LOS A	0.2	1.2	0.46	0.52	0.46	53.4
11	T1	354	10.5	0.289	5.6	LOS A	2.2	16.5	0.49	0.53	0.49	53.9
10	R2	31	3.2	0.289	9.8	LOS A	2.2	16.5	0.49	0.53	0.49	50.6
Approach		409	9.8	0.289	6.0	LOS A	2.2	16.5	0.49	0.53	0.49	53.6
All Vehicles		1527	7.7	0.384	6.9	LOS A	2.6	19.0	0.57	0.61	0.57	51.9

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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 102 [Bradwardine Road / Larkin Street - AM Peak 2028 Base]

Network: N101 [102 & 103 - AM Peak 2028 Base]

0745 - 0845
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
NorthEast: Bradwardine Road														
5	T1	306	3.6	306	3.6	0.216	0.1	LOS A	0.5	3.8	0.12	0.12	0.12	57.7
4	R2	74	0.0	74	0.0	0.216	6.0	LOS A	0.5	3.8	0.12	0.12	0.12	48.1
Approach		380	2.9	380	2.9	0.216	1.3	NA	0.5	3.8	0.12	0.12	0.12	56.8
NorthWest: Larkin Street														
1	L2	78	0.0	78	0.0	0.112	4.9	LOS A	0.4	2.9	0.20	0.55	0.20	26.7
3	R2	48	0.0	48	0.0	0.112	6.9	LOS A	0.4	2.9	0.20	0.55	0.20	47.8
Approach		126	0.0	126	0.0	0.112	5.7	LOS A	0.4	2.9	0.20	0.55	0.20	41.3
SouthWest: Bradwardine Road														
12	L2	37	0.0	37	0.0	0.073	5.5	LOS A	0.0	0.0	0.00	0.17	0.00	42.8
11	T1	94	6.4	94	6.4	0.073	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	57.0
Approach		131	4.6	131	4.6	0.073	1.6	NA	0.0	0.0	0.00	0.17	0.00	51.6
All Vehicles		637	2.7	637	2.7	0.216	2.2	NA	0.5	3.8	0.11	0.21	0.11	53.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
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 SUMMARY

Site: 103 [Bradwardine Road / Suttor Street - AM Peak 2028 Base]

Network: N101 [102 & 103 - AM Peak 2028 Base]

0745 - 0845
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
SouthEast: Suttor Street														
9	L2	123	0.8	123	0.8	0.123	6.6	LOS A	0.8	5.4	0.55	0.61	0.55	49.3
8	T1	102	2.0	102	2.0	0.132	6.4	LOS A	0.8	6.0	0.53	0.61	0.53	52.8
7	R2	51	2.0	51	2.0	0.132	10.0	LOS A	0.8	6.0	0.53	0.61	0.53	52.5
Approach		276	1.4	276	1.4	0.132	7.1	LOS A	0.8	6.0	0.54	0.61	0.54	51.7
NorthEast: Bradwardine Road														
6	L2	93	1.1	93	1.1	0.050	3.8	LOS A	0.0	0.0	0.00	0.49	0.00	55.5
5	T1	133	3.0	133	3.0	0.191	6.6	LOS A	1.1	7.8	0.57	0.63	0.57	47.4
4	R2	56	1.8	56	1.8	0.191	10.2	LOS A	1.1	7.8	0.57	0.63	0.57	52.4
Approach		282	2.1	282	2.1	0.191	6.4	LOS A	1.1	7.8	0.38	0.58	0.38	51.9
NorthWest: Suttor Street														
3	L2	69	7.2	69	7.2	0.089	6.8	LOS A	0.5	4.0	0.50	0.58	0.50	52.5
2	T1	148	7.4	148	7.4	0.218	6.0	LOS A	1.6	11.6	0.48	0.59	0.48	52.6
1	R2	124	4.8	124	4.8	0.218	9.6	LOS A	1.6	11.6	0.48	0.59	0.48	47.5
Approach		341	6.5	341	6.5	0.218	7.5	LOS A	1.6	11.6	0.48	0.58	0.48	51.3
SouthWest: Bradwardine Road														
12	L2	34	2.9	34	2.9	0.025	4.8	LOS A	0.1	0.9	0.29	0.50	0.29	51.2
11	T1	63	6.3	63	6.3	0.105	5.4	LOS A	0.6	4.0	0.37	0.59	0.37	49.9
10	R2	75	1.3	75	1.3	0.105	9.1	LOS A	0.6	4.0	0.37	0.59	0.37	49.7
Approach		172	3.5	172	3.5	0.105	6.9	LOS A	0.6	4.0	0.35	0.57	0.35	50.1
All Vehicles		1071	3.5	1071	3.5	0.218	7.0	LOS A	1.6	11.6	0.45	0.59	0.45	51.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 101 [Mitchell Highway / Bradwardine Road - PM Peak 2028 Base]

1615 - 1715
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Bradwardine Road												
9	L2	76	2.6	0.127	9.8	LOS A	0.9	6.3	0.84	0.77	0.84	46.9
8	T1	63	0.0	0.114	8.0	LOS A	0.9	6.4	0.84	0.73	0.84	48.4
7	R2	27	14.8	0.114	12.8	LOS A	0.9	6.4	0.84	0.73	0.84	47.8
Approach		166	3.6	0.127	9.6	LOS A	0.9	6.4	0.84	0.75	0.84	47.6
East: Mitchell Highway												
6	L2	131	3.1	0.176	7.7	LOS A	1.1	7.9	0.67	0.70	0.67	48.9
5	T1	323	10.2	0.447	7.3	LOS A	3.7	27.6	0.76	0.72	0.76	52.2
4	R2	167	0.0	0.447	11.2	LOS A	3.7	27.6	0.76	0.72	0.76	52.2
Approach		621	6.0	0.447	8.4	LOS A	3.7	27.6	0.74	0.72	0.74	51.5
North: Bradwardine Road												
3	L2	30	0.0	0.469	7.0	LOS A	3.5	24.5	0.73	0.77	0.73	50.9
2	T1	157	0.0	0.469	7.4	LOS A	3.5	24.5	0.73	0.77	0.73	48.7
1	R2	270	0.4	0.469	11.6	LOS A	3.5	24.5	0.73	0.77	0.73	51.9
Approach		457	0.2	0.469	9.9	LOS A	3.5	24.5	0.73	0.77	0.73	50.7
West: Mitchell Highway												
12	L2	50	0.0	0.058	6.3	LOS A	0.3	2.3	0.51	0.56	0.51	53.5
11	T1	367	11.7	0.304	6.0	LOS A	2.3	17.5	0.56	0.56	0.56	53.7
10	R2	12	0.0	0.304	10.1	LOS A	2.3	17.5	0.56	0.56	0.56	50.5
Approach		429	10.0	0.304	6.2	LOS A	2.3	17.5	0.55	0.56	0.55	53.6
All Vehicles		1673	5.2	0.469	8.4	LOS A	3.7	27.6	0.70	0.69	0.70	51.4

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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 102 [Bradwardine Road / Larkin Street - PM Peak 2028 Base]

Network: N101 [102 & 103 - PM Peak 2028 Base]

1615 - 1715
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
NorthEast: Bradwardine Road														
5	T1	390	0.3	390	0.3	0.292	0.4	LOS A	1.0	6.8	0.22	0.14	0.22	57.0
4	R2	110	0.0	110	0.0	0.292	6.8	LOS A	1.0	6.8	0.22	0.14	0.22	46.7
Approach		500	0.2	500	0.2	0.292	1.8	NA	1.0	6.8	0.22	0.14	0.22	55.8
NorthWest: Larkin Street														
1	L2	133	0.0	133	0.0	0.206	5.2	LOS A	0.8	5.6	0.33	0.60	0.33	25.0
3	R2	67	0.0	67	0.0	0.206	9.1	LOS A	0.8	5.6	0.33	0.60	0.33	46.9
Approach		200	0.0	200	0.0	0.206	6.5	LOS A	0.8	5.6	0.33	0.60	0.33	38.9
SouthWest: Bradwardine Road														
12	L2	98	0.0	98	0.0	0.153	5.6	LOS A	0.0	0.0	0.00	0.21	0.00	42.5
11	T1	183	0.0	183	0.0	0.153	0.0	LOS A	0.0	0.0	0.00	0.21	0.00	56.4
Approach		281	0.0	281	0.0	0.153	1.9	NA	0.0	0.0	0.00	0.21	0.00	50.2
All Vehicles		981	0.1	981	0.1	0.292	2.8	NA	1.0	6.8	0.18	0.25	0.18	51.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
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 SUMMARY

Site: 103 [Bradwardine Road / Suttor Street - PM Peak 2028 Base]

Network: N101 [102 & 103 - PM Peak 2028 Base]

1615 - 1715
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
SouthEast: Suttor Street														
9	L2	122	0.0	122	0.0	0.152	7.9	LOS A	1.0	6.8	0.67	0.70	0.67	47.7
8	T1	145	2.8	145	2.8	0.233	7.4	LOS A	1.7	12.1	0.68	0.70	0.68	52.0
7	R2	92	5.4	92	5.4	0.233	11.1	LOS A	1.7	12.1	0.68	0.70	0.68	51.6
Approach		359	2.5	359	2.5	0.233	8.5	LOS A	1.7	12.1	0.67	0.70	0.67	50.9
NorthEast: Bradwardine Road														
6	L2	88	1.1	88	1.1	0.047	3.8	LOS A	0.0	0.0	0.00	0.49	0.00	55.5
5	T1	312	0.3	312	0.3	0.363	6.5	LOS A	2.3	16.2	0.59	0.63	0.59	47.6
4	R2	66	1.5	66	1.5	0.363	10.3	LOS A	2.3	16.2	0.59	0.63	0.59	52.6
Approach		466	0.6	466	0.6	0.363	6.5	LOS A	2.3	16.2	0.48	0.60	0.48	50.6
NorthWest: Suttor Street														
3	L2	62	11.3	62	11.3	0.086	8.1	LOS A	0.5	4.0	0.62	0.65	0.62	51.5
2	T1	105	6.7	105	6.7	0.158	6.9	LOS A	1.1	8.0	0.60	0.64	0.60	52.2
1	R2	66	0.0	66	0.0	0.158	10.4	LOS A	1.1	8.0	0.60	0.64	0.60	46.9
Approach		233	6.0	233	6.0	0.158	8.2	LOS A	1.1	8.0	0.61	0.64	0.61	51.0
SouthWest: Bradwardine Road														
12	L2	63	0.0	63	0.0	0.047	5.0	LOS A	0.2	1.7	0.36	0.52	0.36	51.1
11	T1	111	0.0	111	0.0	0.223	5.8	LOS A	1.2	8.6	0.49	0.64	0.49	49.6
10	R2	142	0.0	142	0.0	0.223	9.5	LOS A	1.2	8.6	0.49	0.64	0.49	49.3
Approach		316	0.0	316	0.0	0.223	7.3	LOS A	1.2	8.6	0.46	0.62	0.46	49.8
All Vehicles		1374	1.9	1374	1.9	0.363	7.5	LOS A	2.3	16.2	0.55	0.64	0.55	50.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 101 [Mitchell Highway / Bradwardine Road - AM Peak 2028 With Development]

0745 - 0845
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Bradwardine Road												
9	L2	14	7.1	0.022	7.8	LOS A	0.1	1.0	0.69	0.60	0.69	48.0
8	T1	51	3.9	0.138	6.0	LOS A	1.0	7.2	0.69	0.67	0.69	48.4
7	R2	92	4.3	0.138	10.2	LOS A	1.0	7.2	0.69	0.67	0.69	48.2
Approach		157	4.5	0.138	8.6	LOS A	1.0	7.2	0.69	0.67	0.69	48.3
East: Mitchell Highway												
6	L2	215	5.1	0.205	6.0	LOS A	1.3	9.8	0.51	0.58	0.51	49.6
5	T1	336	14.0	0.311	5.9	LOS A	2.3	17.9	0.53	0.57	0.53	53.4
4	R2	61	3.3	0.311	9.9	LOS A	2.3	17.9	0.53	0.57	0.53	53.4
Approach		612	9.8	0.311	6.3	LOS A	2.3	17.9	0.53	0.58	0.53	52.0
North: Bradwardine Road												
3	L2	171	0.0	0.407	7.3	LOS A	2.8	20.4	0.72	0.76	0.72	51.9
2	T1	118	3.4	0.407	7.8	LOS A	2.8	20.4	0.72	0.76	0.72	49.6
1	R2	86	8.1	0.407	12.3	LOS A	2.8	20.4	0.72	0.76	0.72	52.6
Approach		375	2.9	0.407	8.6	LOS A	2.8	20.4	0.72	0.76	0.72	51.3
West: Mitchell Highway												
12	L2	28	7.1	0.032	6.0	LOS A	0.2	1.3	0.46	0.53	0.46	53.4
11	T1	354	10.5	0.291	5.7	LOS A	2.2	16.5	0.50	0.53	0.50	53.9
10	R2	31	3.2	0.291	9.8	LOS A	2.2	16.5	0.50	0.53	0.50	50.6
Approach		413	9.7	0.291	6.0	LOS A	2.2	16.5	0.50	0.53	0.50	53.6
All Vehicles		1557	7.6	0.407	7.0	LOS A	2.8	20.4	0.58	0.62	0.58	51.8

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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 102 [Bradwardine Road / Larkin Street - AM Peak 2028 With Development]

Network: N101 [102 & 103 - AM Peak 2028 With Development]

0745 - 0845
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
NorthEast: Bradwardine Road														
5	T1	311	3.5	311	3.5	0.231	0.2	LOS A	0.7	4.8	0.15	0.14	0.15	57.3
4	R2	94	0.0	94	0.0	0.231	6.0	LOS A	0.7	4.8	0.15	0.14	0.15	47.3
Approach		405	2.7	405	2.7	0.231	1.5	NA	0.7	4.8	0.15	0.14	0.15	56.1
NorthWest: Larkin Street														
1	L2	169	0.0	169	0.0	0.196	4.9	LOS A	0.8	5.6	0.21	0.55	0.21	26.9
3	R2	64	0.0	64	0.0	0.196	7.4	LOS A	0.8	5.6	0.21	0.55	0.21	47.9
Approach		233	0.0	233	0.0	0.196	5.6	LOS A	0.8	5.6	0.21	0.55	0.21	39.1
SouthWest: Bradwardine Road														
12	L2	44	0.0	44	0.0	0.078	5.5	LOS A	0.0	0.0	0.00	0.19	0.00	42.6
11	T1	96	6.3	96	6.3	0.078	0.0	LOS A	0.0	0.0	0.00	0.19	0.00	56.6
Approach		140	4.3	140	4.3	0.078	1.7	NA	0.0	0.0	0.00	0.19	0.00	50.9
All Vehicles		778	2.2	778	2.2	0.231	2.8	NA	0.8	5.6	0.14	0.27	0.14	51.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
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 SUMMARY

Site: 103 [Bradwardine Road / Suttor Street - AM Peak 2028 With Development]

Network: N101 [102 & 103 - AM Peak 2028 With Development]

0745 - 0845
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
SouthEast: Suttor Street														
9	L2	143	0.7	143	0.7	0.142	6.6	LOS A	0.9	6.3	0.56	0.62	0.56	49.2
8	T1	109	1.8	109	1.8	0.139	6.4	LOS A	0.9	6.5	0.54	0.61	0.54	52.8
7	R2	51	2.0	51	2.0	0.139	10.1	LOS A	0.9	6.5	0.54	0.61	0.54	52.5
Approach		303	1.3	303	1.3	0.142	7.1	LOS A	0.9	6.5	0.55	0.62	0.55	51.6
NorthEast: Bradwardine Road														
6	L2	93	1.1	93	1.1	0.050	3.8	LOS A	0.0	0.0	0.00	0.49	0.00	55.5
5	T1	133	3.0	133	3.0	0.221	7.4	LOS A	1.3	9.0	0.66	0.68	0.66	46.7
4	R2	56	1.8	56	1.8	0.221	11.0	LOS A	1.3	9.0	0.66	0.68	0.66	52.0
Approach		282	2.1	282	2.1	0.221	6.9	LOS A	1.3	9.0	0.44	0.62	0.44	51.5
NorthWest: Suttor Street														
3	L2	69	7.2	69	7.2	0.100	8.0	LOS A	0.6	4.5	0.59	0.64	0.59	51.7
2	T1	178	6.2	178	6.2	0.270	6.7	LOS A	2.0	14.8	0.59	0.64	0.59	52.3
1	R2	129	4.7	129	4.7	0.270	10.4	LOS A	2.0	14.8	0.59	0.64	0.59	46.9
Approach		376	5.9	376	5.9	0.270	8.2	LOS A	2.0	14.8	0.59	0.64	0.59	50.9
SouthWest: Bradwardine Road														
12	L2	36	2.8	36	2.8	0.026	4.8	LOS A	0.1	0.9	0.30	0.50	0.30	51.2
11	T1	63	6.3	63	6.3	0.181	5.5	LOS A	1.0	7.0	0.39	0.62	0.39	49.3
10	R2	166	0.6	166	0.6	0.181	9.1	LOS A	1.0	7.0	0.39	0.62	0.39	49.1
Approach		265	2.3	265	2.3	0.181	7.7	LOS A	1.0	7.0	0.38	0.61	0.38	49.4
All Vehicles		1226	3.1	1226	3.1	0.270	7.5	LOS A	2.0	14.8	0.50	0.62	0.50	50.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 101 [Mitchell Highway / Bradwardine Road - PM Peak 2028 With Development]

1615 - 1715
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Bradwardine Road												
9	L2	76	2.6	0.133	10.3	LOS A	0.9	6.7	0.86	0.79	0.86	46.6
8	T1	63	0.0	0.119	8.4	LOS A	0.9	6.8	0.87	0.74	0.87	48.2
7	R2	27	14.8	0.119	13.2	LOS A	0.9	6.8	0.87	0.74	0.87	47.6
Approach		166	3.6	0.133	10.0	LOS A	0.9	6.8	0.86	0.77	0.86	47.3
East: Mitchell Highway												
6	L2	131	3.1	0.181	7.9	LOS A	1.1	8.1	0.68	0.71	0.68	48.8
5	T1	323	10.2	0.471	7.4	LOS A	4.0	29.6	0.78	0.73	0.78	52.0
4	R2	187	0.0	0.471	11.3	LOS A	4.0	29.6	0.78	0.73	0.78	52.1
Approach		641	5.8	0.471	8.7	LOS A	4.0	29.6	0.76	0.73	0.76	51.4
North: Bradwardine Road												
3	L2	34	0.0	0.489	7.2	LOS A	3.8	26.5	0.74	0.78	0.75	50.8
2	T1	157	0.0	0.489	7.5	LOS A	3.8	26.5	0.74	0.78	0.75	48.7
1	R2	284	0.4	0.489	11.8	LOS A	3.8	26.5	0.74	0.78	0.75	51.8
Approach		475	0.2	0.489	10.1	LOS A	3.8	26.5	0.74	0.78	0.75	50.6
West: Mitchell Highway												
12	L2	66	0.0	0.078	6.5	LOS A	0.5	3.2	0.53	0.58	0.53	53.4
11	T1	367	11.7	0.311	6.2	LOS A	2.3	18.0	0.58	0.58	0.58	53.6
10	R2	12	0.0	0.311	10.2	LOS A	2.3	18.0	0.58	0.58	0.58	50.4
Approach		445	9.7	0.311	6.3	LOS A	2.3	18.0	0.57	0.58	0.57	53.5
All Vehicles		1727	5.0	0.489	8.6	LOS A	4.0	29.6	0.72	0.71	0.72	51.3

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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 102 [Bradwardine Road / Larkin Street - PM Peak 2028 With Development]

Network: N101 [102 & 103 - PM Peak 2028 With Development]

1615 - 1715
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
NorthEast: Bradwardine Road														
5	T1	391	0.3	391	0.3	0.362	0.9	LOS A	1.8	12.6	0.36	0.22	0.36	55.4
4	R2	198	0.0	198	0.0	0.362	7.1	LOS A	1.8	12.6	0.36	0.22	0.36	44.0
Approach		589	0.2	589	0.2	0.362	3.0	NA	1.8	12.6	0.36	0.22	0.36	53.2
NorthWest: Larkin Street														
1	L2	155	0.0	155	0.0	0.254	5.2	LOS A	1.0	6.9	0.35	0.61	0.35	24.1
3	R2	74	0.0	74	0.0	0.254	10.5	LOS A	1.0	6.9	0.35	0.61	0.35	46.4
Approach		229	0.0	229	0.0	0.254	6.9	LOS A	1.0	6.9	0.35	0.61	0.35	37.9
SouthWest: Bradwardine Road														
12	L2	128	0.0	128	0.0	0.173	5.6	LOS A	0.0	0.0	0.00	0.24	0.00	42.3
11	T1	189	0.0	189	0.0	0.173	0.0	LOS A	0.0	0.0	0.00	0.24	0.00	55.9
Approach		317	0.0	317	0.0	0.173	2.3	NA	0.0	0.0	0.00	0.24	0.00	49.0
All Vehicles		1135	0.1	1135	0.1	0.362	3.6	NA	1.8	12.6	0.26	0.31	0.26	49.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
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 SUMMARY

Site: 103 [Bradwardine Road / Suttor Street - PM Peak 2028 With Development]

Network: N101 [102 & 103 - PM Peak 2028 With Development]

1615 - 1715
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
SouthEast: Suttor Street														
9	L2	210	0.0	210	0.0	0.243	7.9	LOS A	1.7	11.7	0.70	0.72	0.70	47.8
8	T1	178	2.2	178	2.2	0.267	7.4	LOS A	2.0	14.1	0.69	0.70	0.69	52.1
7	R2	92	5.4	92	5.4	0.267	11.2	LOS A	2.0	14.1	0.69	0.70	0.69	51.6
Approach		480	1.9	480	1.9	0.267	8.3	LOS A	2.0	14.1	0.70	0.71	0.70	50.7
NorthEast: Bradwardine Road														
6	L2	88	1.1	88	1.1	0.047	3.8	LOS A	0.0	0.0	0.00	0.49	0.00	55.5
5	T1	312	0.3	312	0.3	0.374	6.8	LOS A	2.4	16.7	0.62	0.65	0.62	47.5
4	R2	66	1.5	66	1.5	0.374	10.5	LOS A	2.4	16.7	0.62	0.65	0.62	52.5
Approach		466	0.6	466	0.6	0.374	6.7	LOS A	2.4	16.7	0.50	0.62	0.50	50.5
NorthWest: Suttor Street														
3	L2	62	11.3	62	11.3	0.090	8.4	LOS A	0.6	4.2	0.64	0.66	0.64	51.2
2	T1	113	6.2	113	6.2	0.170	7.1	LOS A	1.2	8.7	0.62	0.65	0.62	52.2
1	R2	67	0.0	67	0.0	0.170	10.6	LOS A	1.2	8.7	0.62	0.65	0.62	46.7
Approach		242	5.8	242	5.8	0.170	8.4	LOS A	1.2	8.7	0.63	0.65	0.63	50.9
SouthWest: Bradwardine Road														
12	L2	69	0.0	69	0.0	0.053	5.1	LOS A	0.3	2.0	0.39	0.53	0.39	51.0
11	T1	111	0.0	111	0.0	0.255	6.0	LOS A	1.4	9.9	0.52	0.66	0.52	49.4
10	R2	164	0.0	164	0.0	0.255	9.7	LOS A	1.4	9.9	0.52	0.66	0.52	49.0
Approach		344	0.0	344	0.0	0.255	7.6	LOS A	1.4	9.9	0.50	0.63	0.50	49.5
All Vehicles		1532	1.7	1532	1.7	0.374	7.7	LOS A	2.4	16.7	0.58	0.66	0.58	50.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 101 [Mitchell Highway / Bradwardine Road - AM Peak 2028 With Both Developments]

0745 - 0845
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Bradwardine Road												
9	L2	48	2.1	0.073	7.8	LOS A	0.5	3.3	0.71	0.67	0.71	48.1
8	T1	59	3.4	0.270	6.3	LOS A	2.1	15.2	0.76	0.73	0.76	48.0
7	R2	219	1.8	0.270	10.4	LOS A	2.1	15.2	0.76	0.73	0.76	47.9
Approach		326	2.1	0.270	9.3	LOS A	2.1	15.2	0.75	0.72	0.75	47.9
East: Mitchell Highway												
6	L2	462	2.4	0.367	6.1	LOS A	2.9	20.5	0.62	0.63	0.62	49.3
5	T1	336	14.0	0.402	7.1	LOS A	3.0	23.4	0.67	0.67	0.67	52.8
4	R2	61	3.3	0.402	11.0	LOS A	3.0	23.4	0.67	0.67	0.67	52.8
Approach		859	7.0	0.402	6.9	LOS A	3.0	23.4	0.64	0.65	0.64	50.9
North: Bradwardine Road												
3	L2	171	0.0	0.511	10.6	LOS A	4.4	31.7	0.87	0.95	1.01	49.8
2	T1	134	3.0	0.511	11.1	LOS A	4.4	31.7	0.87	0.95	1.01	47.7
1	R2	86	8.1	0.511	15.6	LOS B	4.4	31.7	0.87	0.95	1.01	50.5
Approach		391	2.8	0.511	11.9	LOS A	4.4	31.7	0.87	0.95	1.01	49.2
West: Mitchell Highway												
12	L2	28	7.1	0.037	7.1	LOS A	0.2	1.6	0.58	0.59	0.58	52.8
11	T1	354	10.5	0.386	6.7	LOS A	3.1	23.6	0.68	0.66	0.68	52.8
10	R2	97	1.0	0.386	10.7	LOS A	3.1	23.6	0.68	0.66	0.68	49.7
Approach		479	8.4	0.386	7.5	LOS A	3.1	23.6	0.67	0.65	0.67	52.2
All Vehicles		2055	5.7	0.511	8.4	LOS A	4.4	31.7	0.71	0.72	0.74	50.3

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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 102 [Bradwardine Road / Larkin Street - AM Peak 2028 With Both Developments]

Network: N101 [102 & 103 - AM Peak 2028 With Both Developments]

0745 - 0845
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
NorthEast: Bradwardine Road														
5	T1	311	3.5	311	3.5	0.232	0.2	LOS A	0.7	4.9	0.15	0.14	0.15	57.2
4	R2	94	0.0	94	0.0	0.232	6.1	LOS A	0.7	4.9	0.15	0.14	0.15	47.2
Approach		405	2.7	405	2.7	0.232	1.6	NA	0.7	4.9	0.15	0.14	0.15	56.0
NorthWest: Larkin Street														
1	L2	169	0.0	169	0.0	0.217	4.9	LOS A	0.9	6.2	0.22	0.56	0.22	26.5
3	R2	80	0.0	80	0.0	0.217	7.5	LOS A	0.9	6.2	0.22	0.56	0.22	47.7
Approach		249	0.0	249	0.0	0.217	5.7	LOS A	0.9	6.2	0.22	0.56	0.22	39.9
SouthWest: Bradwardine Road														
12	L2	52	0.0	52	0.0	0.083	5.5	LOS A	0.0	0.0	0.00	0.21	0.00	42.5
11	T1	96	6.3	96	6.3	0.083	0.0	LOS A	0.0	0.0	0.00	0.21	0.00	56.3
Approach		148	4.1	148	4.1	0.083	2.0	NA	0.0	0.0	0.00	0.21	0.00	50.0
All Vehicles		802	2.1	802	2.1	0.232	2.9	NA	0.9	6.2	0.14	0.28	0.14	51.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
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 SUMMARY

Site: 103 [Bradwardine Road / Suttor Street - AM Peak 2028 With Both Developments]

Network: N101 [102 & 103 - AM Peak 2028 With Both Developments]

0745 - 0845
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
SouthEast: Suttor Street														
9	L2	143	0.7	143	0.7	0.142	6.6	LOS A	0.9	6.3	0.56	0.62	0.56	49.2
8	T1	109	1.8	109	1.8	0.139	6.4	LOS A	0.9	6.5	0.54	0.61	0.54	52.8
7	R2	51	2.0	51	2.0	0.139	10.1	LOS A	0.9	6.5	0.54	0.61	0.54	52.5
Approach		303	1.3	303	1.3	0.142	7.1	LOS A	0.9	6.5	0.55	0.62	0.55	51.6
NorthEast: Bradwardine Road														
6	L2	93	1.1	93	1.1	0.050	3.8	LOS A	0.0	0.0	0.00	0.49	0.00	55.5
5	T1	133	3.0	133	3.0	0.221	7.4	LOS A	1.3	9.0	0.66	0.68	0.66	46.7
4	R2	56	1.8	56	1.8	0.221	11.0	LOS A	1.3	9.0	0.66	0.68	0.66	52.0
Approach		282	2.1	282	2.1	0.221	6.9	LOS A	1.3	9.0	0.44	0.62	0.44	51.5
NorthWest: Suttor Street														
3	L2	69	7.2	69	7.2	0.100	8.0	LOS A	0.6	4.5	0.59	0.64	0.59	51.7
2	T1	178	6.2	178	6.2	0.270	6.7	LOS A	2.0	14.8	0.59	0.64	0.59	52.3
1	R2	129	4.7	129	4.7	0.270	10.4	LOS A	2.0	14.8	0.59	0.64	0.59	46.9
Approach		376	5.9	376	5.9	0.270	8.2	LOS A	2.0	14.8	0.59	0.64	0.59	50.9
SouthWest: Bradwardine Road														
12	L2	36	2.8	36	2.8	0.026	4.8	LOS A	0.1	0.9	0.30	0.50	0.30	51.2
11	T1	63	6.3	63	6.3	0.181	5.5	LOS A	1.0	7.0	0.39	0.62	0.39	49.3
10	R2	166	0.6	166	0.6	0.181	9.1	LOS A	1.0	7.0	0.39	0.62	0.39	49.1
Approach		265	2.3	265	2.3	0.181	7.7	LOS A	1.0	7.0	0.38	0.61	0.38	49.4
All Vehicles		1226	3.1	1226	3.1	0.270	7.5	LOS A	2.0	14.8	0.50	0.62	0.50	50.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 101 [Mitchell Highway / Bradwardine Road - PM Peak 2028 With Both Developments]

1615 - 1715
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Bradwardine Road												
9	L2	142	1.4	0.267	11.2	LOS A	1.9	13.8	0.90	0.88	0.90	46.1
8	T1	79	0.0	0.462	10.2	LOS A	4.4	31.1	0.99	0.93	1.05	45.9
7	R2	274	1.5	0.462	14.5	LOS A	4.4	31.1	0.99	0.93	1.05	45.8
Approach		495	1.2	0.462	12.9	LOS A	4.4	31.1	0.96	0.91	1.01	45.9
East: Mitchell Highway												
6	L2	260	1.5	0.325	7.9	LOS A	2.4	16.8	0.77	0.77	0.77	48.8
5	T1	323	10.2	0.500	7.9	LOS A	4.5	33.4	0.85	0.78	0.86	51.7
4	R2	187	0.0	0.500	11.8	LOS A	4.5	33.4	0.85	0.78	0.86	51.8
Approach		770	4.8	0.500	8.9	LOS A	4.5	33.4	0.82	0.77	0.83	50.7
North: Bradwardine Road												
3	L2	34	0.0	0.644	13.8	LOS A	7.1	49.7	0.95	1.08	1.29	46.9
2	T1	166	0.0	0.644	14.2	LOS A	7.1	49.7	0.95	1.08	1.29	45.1
1	R2	284	0.4	0.644	18.4	LOS B	7.1	49.7	0.95	1.08	1.29	47.7
Approach		484	0.2	0.644	16.6	LOS B	7.1	49.7	0.95	1.08	1.29	46.7
West: Mitchell Highway												
12	L2	66	0.0	0.100	8.6	LOS A	0.6	4.3	0.72	0.71	0.72	51.9
11	T1	367	11.7	0.430	8.2	LOS A	3.6	27.4	0.83	0.77	0.83	52.3
10	R2	46	0.0	0.430	12.1	LOS A	3.6	27.4	0.83	0.77	0.83	49.2
Approach		479	9.0	0.430	8.6	LOS A	3.6	27.4	0.82	0.77	0.82	51.9
All Vehicles		2228	3.9	0.644	11.4	LOS A	7.1	49.7	0.88	0.87	0.97	48.9

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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 102 [Bradwardine Road / Larkin Street - PM Peak 2028 With Both Developments]

Network: N101 [102 & 103 - PM Peak 2028 With Both Developments]

1615 - 1715
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
NorthEast: Bradwardine Road														
5	T1	391	0.3	391	0.3	0.365	1.0	LOS A	1.9	13.3	0.37	0.23	0.38	55.4
4	R2	198	0.0	198	0.0	0.365	7.2	LOS A	1.9	13.3	0.37	0.23	0.38	43.9
Approach		589	0.2	589	0.2	0.365	3.1	NA	1.9	13.3	0.37	0.23	0.38	53.2
NorthWest: Larkin Street														
1	L2	155	0.0	155	0.0	0.273	5.2	LOS A	1.1	7.4	0.36	0.61	0.36	23.8
3	R2	83	0.0	83	0.0	0.273	10.7	LOS A	1.1	7.4	0.36	0.61	0.36	46.2
Approach		238	0.0	238	0.0	0.273	7.1	LOS A	1.1	7.4	0.36	0.61	0.36	38.2
SouthWest: Bradwardine Road														
12	L2	144	0.0	144	0.0	0.182	5.6	LOS A	0.0	0.0	0.00	0.26	0.00	42.1
11	T1	189	0.0	189	0.0	0.182	0.0	LOS A	0.0	0.0	0.00	0.26	0.00	55.6
Approach		333	0.0	333	0.0	0.182	2.4	NA	0.0	0.0	0.00	0.26	0.00	48.4
All Vehicles		1160	0.1	1160	0.1	0.365	3.7	NA	1.9	13.3	0.26	0.31	0.27	49.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
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 SUMMARY

Site: 103 [Bradwardine Road / Suttor Street - PM Peak 2028 With Both Developments]

Network: N101 [102 & 103 - PM Peak 2028 With Both Developments]

1615 - 1715
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
SouthEast: Suttor Street														
9	L2	210	0.0	210	0.0	0.243	7.9	LOS A	1.7	11.7	0.70	0.72	0.70	47.8
8	T1	178	2.2	178	2.2	0.267	7.4	LOS A	2.0	14.1	0.69	0.70	0.69	52.1
7	R2	92	5.4	92	5.4	0.267	11.2	LOS A	2.0	14.1	0.69	0.70	0.69	51.6
Approach		480	1.9	480	1.9	0.267	8.3	LOS A	2.0	14.1	0.70	0.71	0.70	50.7
NorthEast: Bradwardine Road														
6	L2	88	1.1	88	1.1	0.047	3.8	LOS A	0.0	0.0	0.00	0.49	0.00	55.5
5	T1	312	0.3	312	0.3	0.374	6.8	LOS A	2.4	16.7	0.62	0.65	0.62	47.5
4	R2	66	1.5	66	1.5	0.374	10.5	LOS A	2.4	16.7	0.62	0.65	0.62	52.5
Approach		466	0.6	466	0.6	0.374	6.7	LOS A	2.4	16.7	0.50	0.62	0.50	50.5
NorthWest: Suttor Street														
3	L2	62	11.3	62	11.3	0.090	8.4	LOS A	0.6	4.2	0.64	0.66	0.64	51.2
2	T1	113	6.2	113	6.2	0.170	7.1	LOS A	1.2	8.7	0.62	0.65	0.62	52.2
1	R2	67	0.0	67	0.0	0.170	10.6	LOS A	1.2	8.7	0.62	0.65	0.62	46.7
Approach		242	5.8	242	5.8	0.170	8.4	LOS A	1.2	8.7	0.63	0.65	0.63	50.9
SouthWest: Bradwardine Road														
12	L2	69	0.0	69	0.0	0.053	5.1	LOS A	0.3	2.0	0.39	0.53	0.39	51.0
11	T1	111	0.0	111	0.0	0.255	6.0	LOS A	1.4	9.9	0.52	0.66	0.52	49.4
10	R2	164	0.0	164	0.0	0.255	9.7	LOS A	1.4	9.9	0.52	0.66	0.52	49.0
Approach		344	0.0	344	0.0	0.255	7.6	LOS A	1.4	9.9	0.50	0.63	0.50	49.5
All Vehicles		1532	1.7	1532	1.7	0.374	7.7	LOS A	2.4	16.7	0.58	0.66	0.58	50.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Roundabout Capacity Model: SIDRA Standard.
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.