REPORT

South Tralee Subdivision Stage 1 Traffic Study

PREPARED FOR CANBERRA ESTATES CONSORTIUM NO. 4 PTY LTD

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1 Introduction

Calibre have been commissioned by Canberra Estates Consortium No.4 Pty Ltd to undertake the Development Application (DA) submission for Stage 1 of the South Tralee subdivision. As part of this engagement, Calibre have been requested to complete a traffic assessment and report to support the DA. The traffic assessment covers South Tralee stage 1 and the ultimate South Jerrabomberra Development and focuses on the three main intersections along Road 1, which connects to the proposed Northern Entry Road and Tompsitt Drive to the North.

1.1 Report Structure

The report is divided into six sections as listed below:

- Section 1: Introduction – outlines the structure of the report.
- Section 2: South Tralee Estate – introduces the location and development yield of Stage 1 and the ultimate development.
- Section 3: Street Hierarchy and Future Traffic Volumes on Stage 1 Roads – shows the proposed street hierarchy and summarises the anticipated traffic volumes on roads within the neighbourhood.
- Section 4: Intersection analysis – summarises the SIDRA analysis of the three major intersections in South Tralee Stage 1 and ultimate development.
- Section 5: Public Transport – outlines the proposed bus routes within Stage 1.
- Section 6: Conclusion – summarises the findings of the report.

2 South Tralee Estate

2.1 Location

South Tralee forms part of the South Jerrabomberra master plan, which has been planned to supply land for the next 25 years for urban development.

Figure 2.1 Location of South Jerrabomberra

shows the location of South Jerrabomberra, which is situated approximately 13.6km south of Canberra and 7.2km south of Queanbeyan. The development is located adjacent to Hume and approximately 6.3km west of Googong.

Figure 2.1 Location of South Jerrabomberra

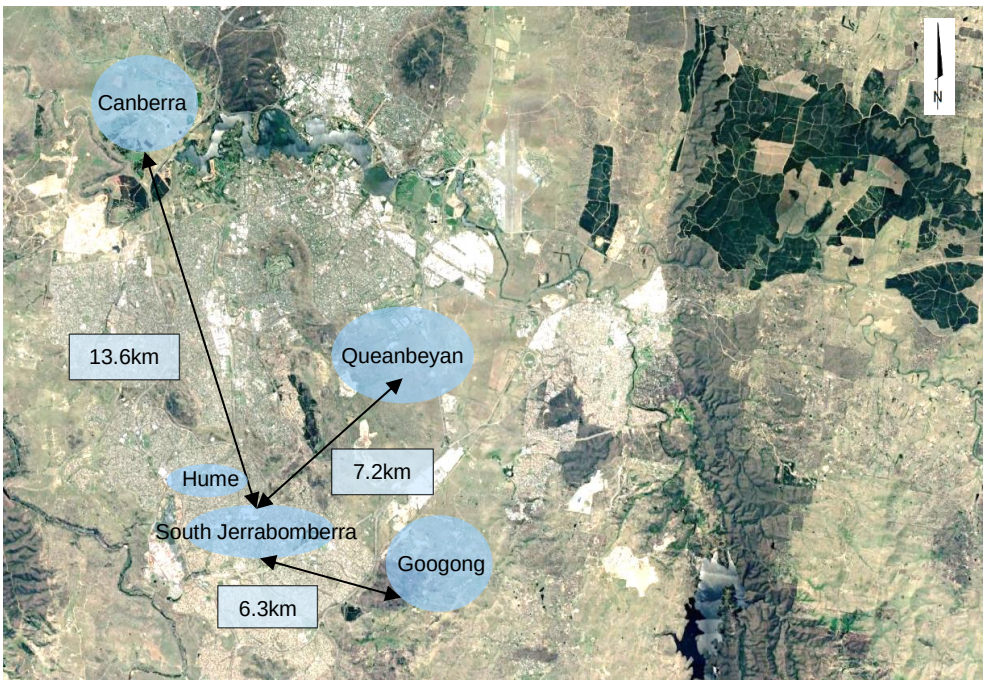


Figure 2.2 Location of South Tralee within the South Jerrabomberra master plan

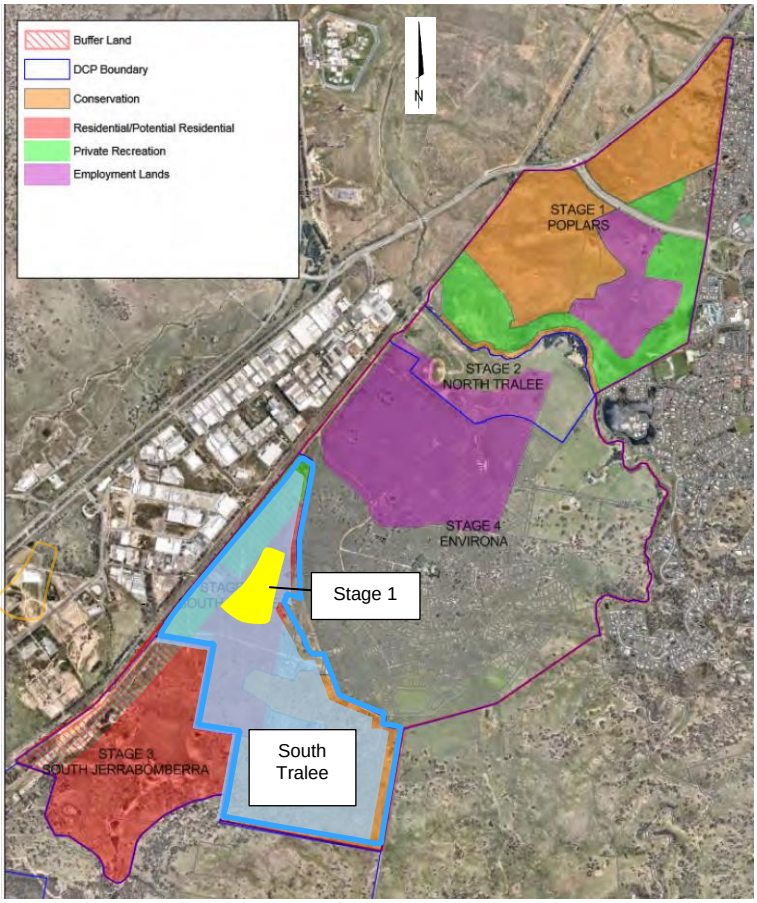


Figure 2.2 shows the location of South Tralee within the South Jerrabomberra master plan as well as the location of Stage 1 of the South Tralee neighbourhood.

2.2 Stage 1

Stage 1 of South Tralee will consist of mainly residential dwellings. 343 single dwellings will be provided with nine super lots, which are proposed to house medium density dwellings. Table 2.1 provides the estimated proposed development yield for Stage 1 used for the traffic (SIDRA) modelling within this report.

Table 2.1 Residential Yield for Stage 1

Land Use	Yield
Single Dwellings	343
Medium Density Dwellings	312
Total	**655**

2.3 Ultimate Development

The full release area yield for South Jerrabomberra will consist of another 845 Single Dwellings (a total of 1,500 dwellings) and a Local Centre. Table 2.2 provides the estimated proposed development yield for the ultimate development used for the traffic (SIDRA) modelling within this report.

Table 2.2 Residential Yield for Ultimate Development

Land Use	Yield
Single Dwellings	1,188
Medium Density Dwellings	312
Total	**1,500**

3 Street Hierarchy and Future Traffic Volumes

Stage 1 and the ultimate development of South Jerrabomberra will be accessed via a connection of the Northern Entry Road (Road 1) which connects to Tompsitt Drive. From Tompsitt Drive, one can access the Jerrabomberra neighbourhood to the east, or Lanyon Drive to the west, which lead to Queanbeyan and Canberra respectively.

Generation rates utilised for the hierarchy analysis are from the DCP and the RTA Guide to Traffic Generating Development and can be summarised as follows:

- Detached Lots (Single Dwelling Residential): 10 trips per day
- Townhouses and Terrace Lots (Medium Density Dwelling Residential): 6 trips per day
- Local Centre (GFA: 750m^2): peak hour trip rate of 12.5 vehicles per 100m^2 GFA

The proposed hierarchy is devised based on future traffic volumes calculated using the development yield indicated in Table 2.1 above.

Table 3.1 below shows the calculated traffic volumes and proposed road hierarchy for Stage 1 of the South Tralee Development. It also shows that the proposed road hierarchy and associated road cross sections proposed for the South Tralee Stage 1 development are adequate for the estimated future traffic volumes.

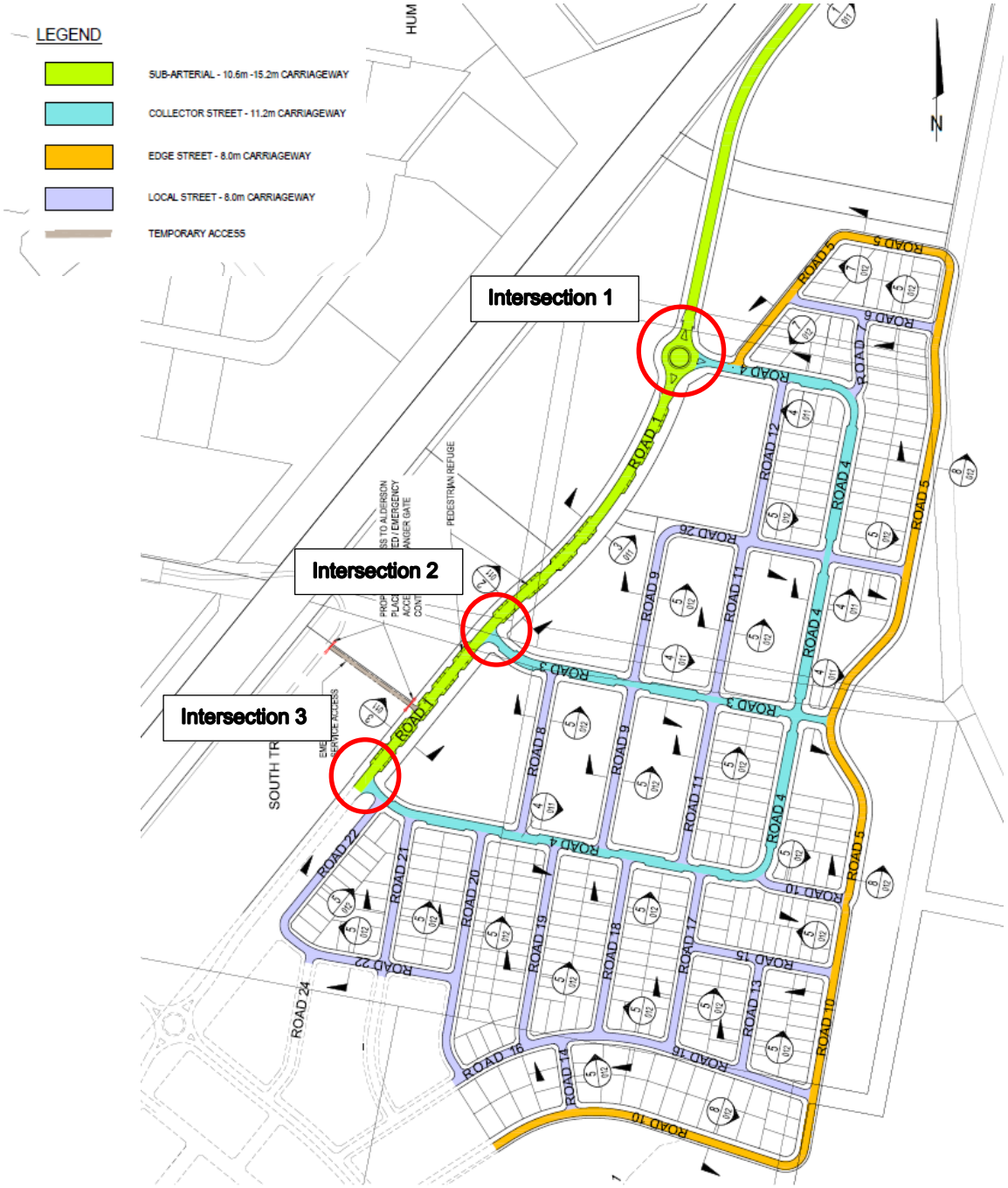
Table 3.1 Traffic Volumes and Proposed Road Hierarchy

Road Name	Estimated Future Average Daily Traffic (ADT)	Proposed Road Hierarchy	Road Hierarchy ADT Range	Posted Speed Limit	Design Speed
Road 1	Approximately 13,500 vpd	Sub-Arterial – 10.6-15.2m Carriageway	Up to 15,000 vpd	60km/hr	60 km/hr
Road 3	1,190 vpd	Collector Street – 11.2m Carriageway	Up to 3,000 vpd	50km/hr	50km/hr
Road 4	1,640 – 2,090 vpd	Collector Street – 11.2m Carriageway	Up to 3,000 vpd	50km/hr	50km/hr
Road 5	310 vpd	Edge Street – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 6	180 vpd	Local Street 4 – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 7	60 vpd	Local Street 4 – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 8	480 vpd	Local Street 4 – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 9	500 vpd	Local Street 4 – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 10	180 vpd	Local Street 4 – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 11	400 vpd	Edge Street – 8.0m Carriageway	Up tp 1000 vpd	50km/hr	25 km/hr
Road 12	470 vpd	Edge Street – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr

Road Name	Estimated Future Average Daily Traffic (ADT)	Proposed Road Hierarchy	Road Hierarchy ADT Range	Posted Speed Limit	Design Speed
Road 13	130 vpd	Edge Street – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 14	200 vpd	Edge Street – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 15	190 vpd	Local Street – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 16	730 vpd	Local Street 4 – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 17	690 vpd	Local Street 4 – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 18	240 vpd	Local Street 4 – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 19	730 vpd	Local Street 4 – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 20	260 vpd	Local Street 4 – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 21	170 vpd	Local Street 4 – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 22	720 vpd	Local Street 4 – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr
Road 26	580 vpd	Local Street 4 – 8.0m Carriageway	Up to 1,000 vpd	50km/hr	40 km/hr

Figure 3.1 shows the proposed road hierarchy plan for Stage 1 of South Tralee, with the intersections being considered in this report circled in red.

Figure 3.1 Road hierarchy plan



The estimated future traffic volumes were calculated using the assumption of ten vehicles per day for each single dwelling as stated in the DCP. It is indicated in the DCP that a lower traffic generation rate can be applied to medium density dwellings based on rates provided in the RTA Guide to Traffic Generating Development. RTA Guide to Traffic Generating Development proposes daily vehicle trips of 5.0 to 6.5 per dwelling for larger units and town houses with three or more bedrooms. It is understood that the townhouses and terrace lots proposed for the nine super lots will be of larger size and hence a daily rate of six vehicles per day was adopted.

4 Intersection Analysis

As part of the South Tralee Stage 1 Traffic Study, intersection analysis of the three main intersections along Road 1 indicated on Figure 3.1 was undertaken using SIDRA. The daily traffic volumes were multiplied by 10% to obtain peak hour traffic volumes. Due to the residential nature of the development, it is expected that approximately 80% of the traffic generated will exit South Tralee during the AM peak hour, and 20% enter. The reverse will occur during PM peak hour.

It is also assumed that 95% of the traffic coming out of South Tralee will travel north and 5% will travel south for the northernmost intersections. For the remaining two intersections a split of 98% vehicles will head north and 2% of vehicles will head south. These assumptions are because there is a proposed Local Centre to the west of Road 1 between Intersections 2 and 3. Therefore, it is assumed there will be a higher percentage of cars travelling south from Intersection 1 than Intersections 2 and 3.

This report consists of three scenarios for South Tralee. These scenarios include; Stage 1 and the ultimate development with and without the Local Centre. The first scenario is based on Stage 1 exclusively, which will include a total of 655 dwellings as noted above in Table 2.1. The second scenario is based on the Ultimate Development which includes 1,500 dwellings as noted above in Table 2.2. The third scenario is based on the ultimate development with the inclusion of the Local Centre.

Once the Local Centre is built, Intersection 2 will become a four-way intersection. The proposed concept design for this intersection (as a part of this DA) is a three way 'T' intersection with adequate allowance for a future option of a four-way intersection with adequate space for either a four-way un-signalised or signalised intersection.

According to the "*RTA Standards – Traffic signal design, Section 2 – Warrants*", this intersection will not be required to be upgraded to a signalised intersection based on the current traffic volumes within the ultimate development of South Jerrabomberra. Notwithstanding this, the safety considerations for traffic accessing and leaving the local centre could warrant the need for a signalised intersection. Intersection 2 may be upgraded to a signalised intersection to improve the safety for both vehicles and pedestrians around this intersection. Un-signalised four-way intersections are proven to be dangerous intersections for vehicles turning right and pedestrians crossing a major intersection. Therefore, installing traffic signals could reduce the risk of car accidents/crashes. The point at which this intersection may need to be signalised is therefore not based on any traffic numbers (or development yield) but on safety considerations when the local centre is developed. This intersection should be further reviewed with any subsequent DA application for the Local Centre, as part of stage 1 of South Tralee the only requirement should be to ensure adequate space is provided for any future signalisation.

In relation to Intersection 3, according to the RTA Guide to Traffic Generating there is no requirement to upgrade this intersection to include a left in slip lane or dividing barriers. The results below show it is at a safe level of service in peak hour demand.

4.1 Intersection 1 – Road 1 / Road 4 (north)

Stage 1:

For Stage 1 of South Tralee, the Road 1 / Road 4 (north) intersection will be a three-legged roundabout intersection and is the northern most intersection along Road 1. The results of the intersection are summarised in Table 4.2. With Stage 1 of the development fully occupied, this intersection will operate at an acceptable level of service.

Table 4.1 Road 1 / Road 4 (north), Stage 1

Intersection	AM Peak Hour			PM Peak Hour		
	Average Delay (s)	Worst LOS	95% Queue Distance (m)	Average Delay (s)	Worst LOS	95% Queue Distance (m)
Road 1 / Road 4 (north)	5.8	A	13.3	4.8	A	15.7

Ultimate (without Local Centre):

For the ultimate scenario without the local centre, Road 1 / Road 4 (north) intersection will remain as a three-legged roundabout intersection and is the northern most intersection along Road 1. The results of the intersection are summarised in Table 4.2. With the ultimate scenario (without the Local Centre) of the development fully occupied, this intersection will operate at an acceptable level of service.

Table 4.2 Road 1 / Road 4 (north), Ultimate (without Local Centre)

Intersection	AM Peak Hour			PM Peak Hour		
	Average Delay (s)	Worst LOS	95% Queue Distance (m)	Average Delay (s)	Worst LOS	95% Queue Distance (m)
Road 1 / Road 4 (north)	7.3	A	83.1	4.9	B	63.1

Ultimate (with Local Centre):

For the ultimate scenario with the Local Centre, Road 1 / Road 4 (north) intersection will remain as a three-legged roundabout intersection. The results of the intersection are summarised in Table 4.3. With the ultimate scenario (with the Local Centre) of the development fully occupied, this intersection will operate at an acceptable level of service.

Table 4.3 Road 1 / Road 4 (north), Ultimate (with Local Centre)

Intersection	AM Peak Hour			PM Peak Hour		
	Average Delay (s)	Worst LOS	95% Queue Distance (m)	Average Delay (s)	Worst LOS	95% Queue Distance (m)
Road 1 / Road 4 (north)	7.5	A	89.6	4.9	A	59.0

4.2 Intersection 2 – Road 1 / Road 3

Stage 1:

For Stage 1 of South Tralee, the Road 1 / Road 3 intersection will be an un-signalised three-way Give Way intersection and is located south of the Road 1 /Road 4 (north) intersection. The results of the intersection are summarised in Table 4.4. With Stage 1 of the development fully occupied, this intersection will operate at an acceptable level of service.

Table 4.4 Road 1 / Road 4 (north), Stage 1

Intersection	AM Peak Hour			PM Peak Hour		
	Average Delay (s)	Worst LOS	95% Queue Distance (m)	Average Delay (s)	Worst LOS	95% Queue Distance (m)
Road 1 / Road 4 (north)	1.8	A	2.6	1.8	A	0.6

Ultimate (without Local Centre):

For the ultimate scenario without the local centre, the Road 1 / Road 3 intersection will remain as un-signalised three-way Give Way intersection. The results of the intersection are summarised in Table 4.5. With the ultimate development (without the Local Centre) fully occupied, this intersection will operate at an acceptable level of service.

Table 4.5 Road 1 / Road 3, Ultimate (without Local Centre)

Intersection	AM Peak Hour			PM Peak Hour		
	Average Delay (s)	Worst LOS	95% Queue Distance (m)	Average Delay (s)	Worst LOS	95% Queue Distance (m)
Road 1 / Road 3	1.5	B	7.6	0.9	B	1.7

Ultimate (with Local Centre and without signalisation):

For the ultimate scenario with the local centre, the Road 1 / Road 3 intersection may be an un-signalised four-way Give Way intersection. The results of the intersection are summarised in Table 4.6. With the ultimate scenario with the Local Centre and the development fully occupied, this intersection will operate at an acceptable level of service.

Table 4.6 Road 1 / Road 3, Ultimate (with Local Centre)

Intersection	AM Peak Hour			PM Peak Hour		
	Average Delay (s)	Worst LOS	95% Queue Distance (m)	Average Delay (s)	Worst LOS	95% Queue Distance (m)
Road 1 / Road 3	2.9	B	11.5	1.8	B	3.8

Ultimate (with Local Centre and signalisation):

For the ultimate scenario with the local centre and with signalisation at the intersection, the Road 1 / Road 3 intersection may be a signalised four-way Give Way intersection. The results of the intersection are summarised in Table 4.8. With the ultimate scenario with the Local Centre and the development fully occupied, this intersection will operate at an acceptable level of service. Note the signalisation increases the delays and LOS from B to C/D i.e. the only reason to install the signals is to improve the safety of the intersection for both vehicles and pedestrians.

Table 4.7 Road 1 / Road 3, Ultimate (with Local Centre)

Intersection	AM Peak Hour			PM Peak Hour		
	Average Delay (s)	Worst LOS	95% Queue Distance (m)	Average Delay (s)	Worst LOS	95% Queue Distance (m)
Road 1 / Road 3	36.8	C	106.6	29.0	D	158.7

4.3 Intersection 3 – Road 1 / Road 4 (south)

Stage 1:

For Stage 1 of the development, the Road 1 / Road 4 (south) intersection is an un-signalised two-way Give Way intersection and is the southernmost intersection along Road 1 within Stage 1 of South Tralee. The results of the intersection are summarised in Table 4.8Table 4.4. With Stage 1 of the development fully occupied, this intersection will operate at an acceptable level of service.

Table 4.8 Road 1 / Road 4 (north), Stage 1

Intersection	AM Peak Hour			PM Peak Hour		
	Average Delay (s)	Worst LOS	95% Queue Distance (m)	Average Delay (s)	Worst LOS	95% Queue Distance (m)
Road 1 / Road 4 (north)	3.0	A	5.0	4.9	A	1.2

Ultimate (without Local Centre):

For the ultimate scenario without the Local Centre, the Road 1 / Road 4 (south) intersection will remain as an un-signalised Give Way intersection. The results of the intersection are summarised in Table 4.9. With the ultimate development (without the Local Centre) of the development fully occupied, this intersection will operate at an acceptable level of service.

Table 4.9 Road 1 / Road 4 (south), Ultimate (without Local Centre)

Intersection	AM Peak Hour			PM Peak Hour		
	Average Delay (s)	Worst LOS	95% Queue Distance (m)	Average Delay (s)	Worst LOS	95% Queue Distance (m)
Road 1 / Road 4 (south)	2.5	A	14.5	1.8	A	2.9

Ultimate (with Local Centre):

For the ultimate scenario with the Local Centre, the Road 1 / Road 4 (south) intersection will remain as an un-signalised Give Way intersection. The results of the intersection are summarised in Table 4.10. With the ultimate scenario (with the Local Centre) and the development fully occupied, this intersection will operate at an acceptable level of service.

Table 4.10 Road 1 / Road 4 (south), Ultimate (with Local Centre)

Intersection	AM Peak Hour			PM Peak Hour		
	Average Delay (s)	Worst LOS	95% Queue Distance (m)	Average Delay (s)	Worst LOS	95% Queue Distance (m)
Road 1 / Road 4 (south)	0.4	A	0.1	1.3	A	0.0

5 Public Transport

There is a proposed bus route through Stage 1 of South Tralee, this route will follow roads 1 and 4. There are also two proposed designated bus stops along Road 1. These routes are outlined in the bus route network plan (drawing 17-001472.1#DA35+) included in the DA.

6 Conclusion

The traffic assessment undertaken for South Tralee Stage 1 and the ultimate development revealed no traffic congestion, delays or level of service issues. The design of the estate was developed in conjunction with the traffic analysis and as such, is suitable for the needs of the proposed South Tralee Stage 1 and ultimate South Jerrabomberra development.

The proposed roundabout at intersection 1 operates at an adequate level of services for both South Tralee Stage 1 and the ultimate development.

The proposed three way intersection at intersection 2 operates at an adequate level of services for both South Tralee Stage 1 and the ultimate residential development. To address potential safety issues when this intersection is upgraded to a 4 way intersection to provide access to the local centre, consideration should be given to signalisation. A signalised intersection at this location will operate at an adequate level of service under the ultimate development scenario.

The proposed three way intersection at intersection 3 will operate at an adequate level of service for both South Tralee Stage 1 and the ultimate development.

SOUTH TRALEE SUBDIVISION STAGE 1 TRAFFIC STUDY

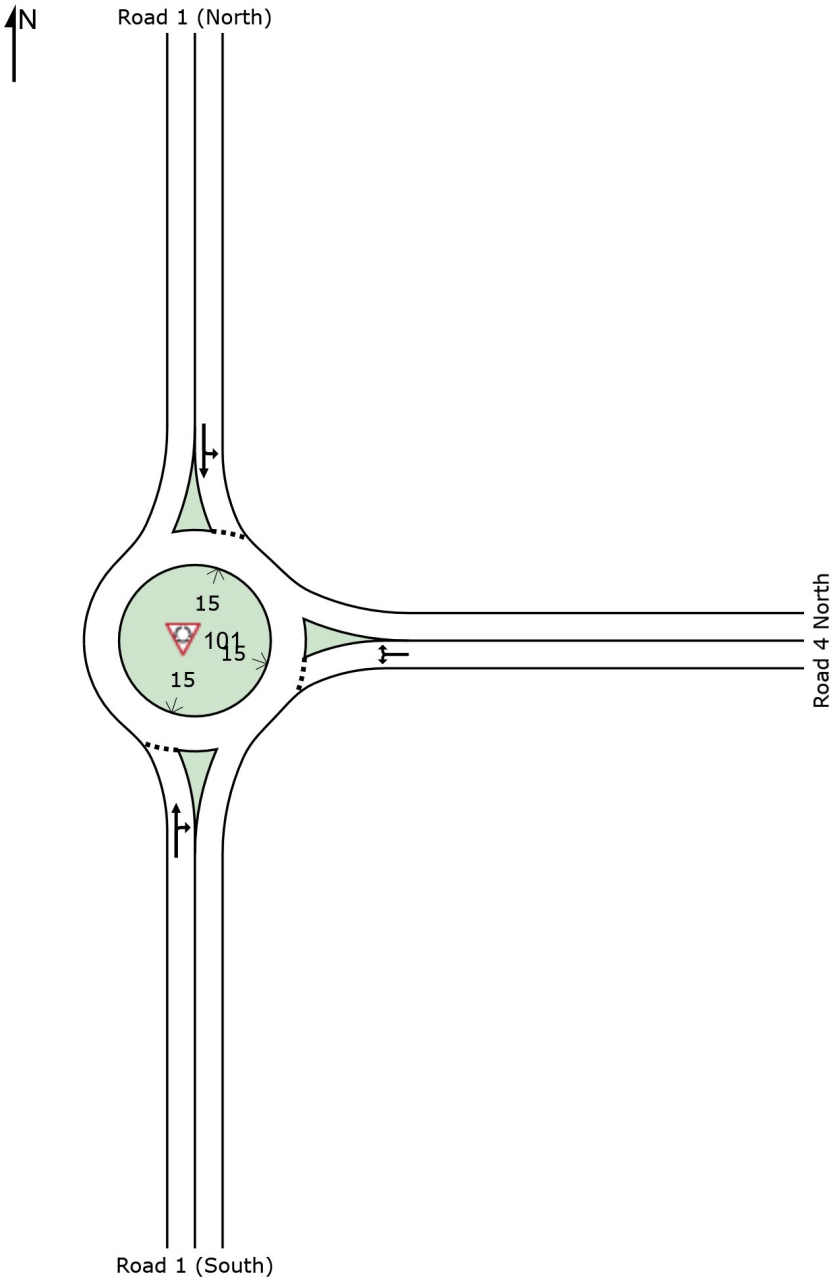
Appendix A SIDRA Outputs

CANBERRA ESTATES CONSORTIUM NO. 4 PTY LTD

SITE LAYOUT

Site: 101 [Intersection 1 - AM Stage 1]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [Intersection 1 - AM Stage 1]

New Site
Roundabout

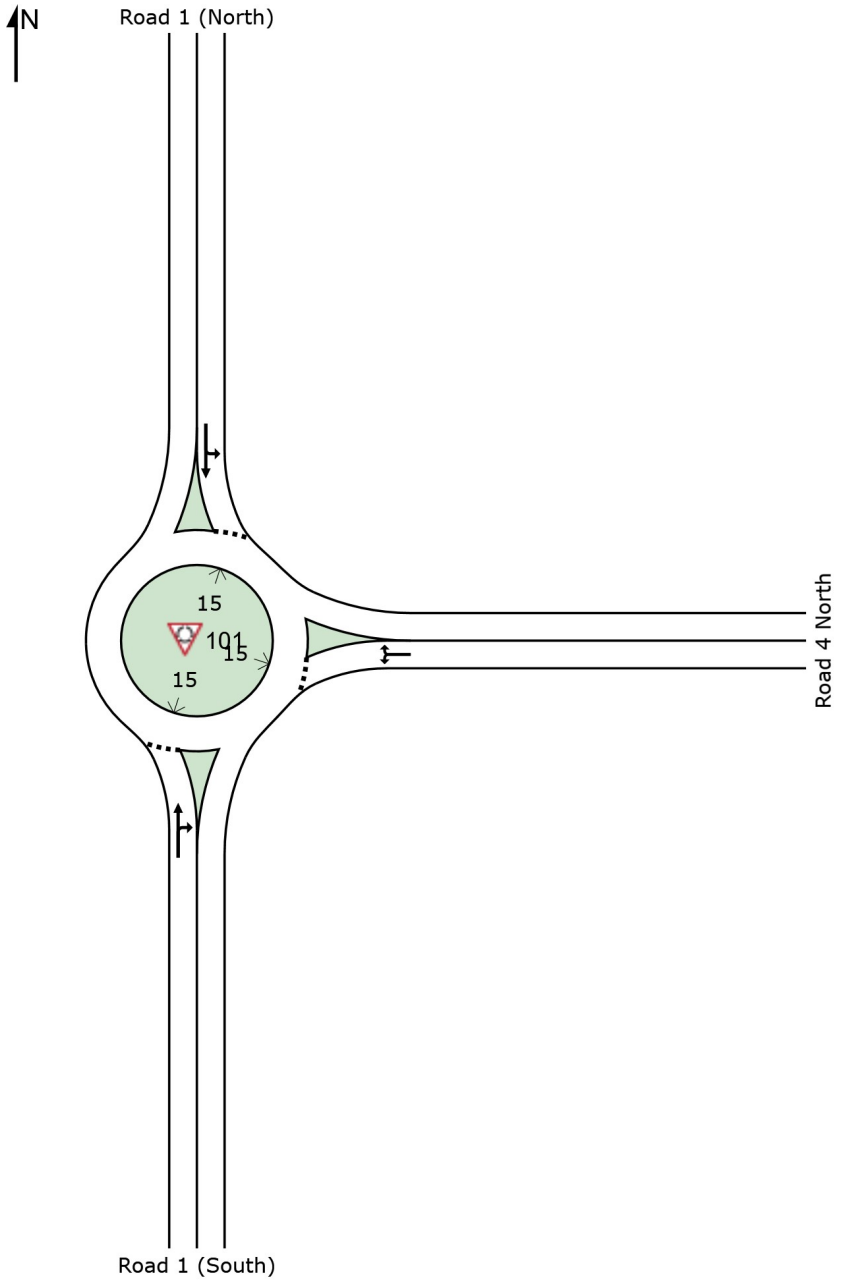
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	319	3.0	0.284	5.7	LOS A	1.8	13.3	0.45	0.52	58.3
3	R2	2	3.0	0.284	9.7	LOS A	1.8	13.3	0.45	0.52	43.4
Approach		321	3.0	0.284	5.7	LOS A	1.8	13.3	0.45	0.52	58.2
East: Road 4 North											
4	L2	9	3.0	0.144	3.0	LOS A	0.8	5.8	0.23	0.61	43.8
6	R2	177	3.0	0.144	7.2	LOS A	0.8	5.8	0.23	0.61	57.9
Approach		186	3.0	0.144	7.0	LOS A	0.8	5.8	0.23	0.61	57.8
North: Road 1 (North)											
7	L2	44	3.0	0.070	4.1	LOS A	0.4	3.0	0.03	0.46	55.0
8	T1	69	3.0	0.070	4.4	LOS A	0.4	3.0	0.03	0.46	58.7
Approach		114	3.0	0.070	4.3	LOS A	0.4	3.0	0.03	0.46	57.3
All Vehicles		621	3.0	0.284	5.8	LOS A	1.8	13.3	0.31	0.54	57.9

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.

SITE LAYOUT

Site: 101 [Intersection 1 - PM Stage 1]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [Intersection 1 - PM Stage 1]

New Site
Roundabout

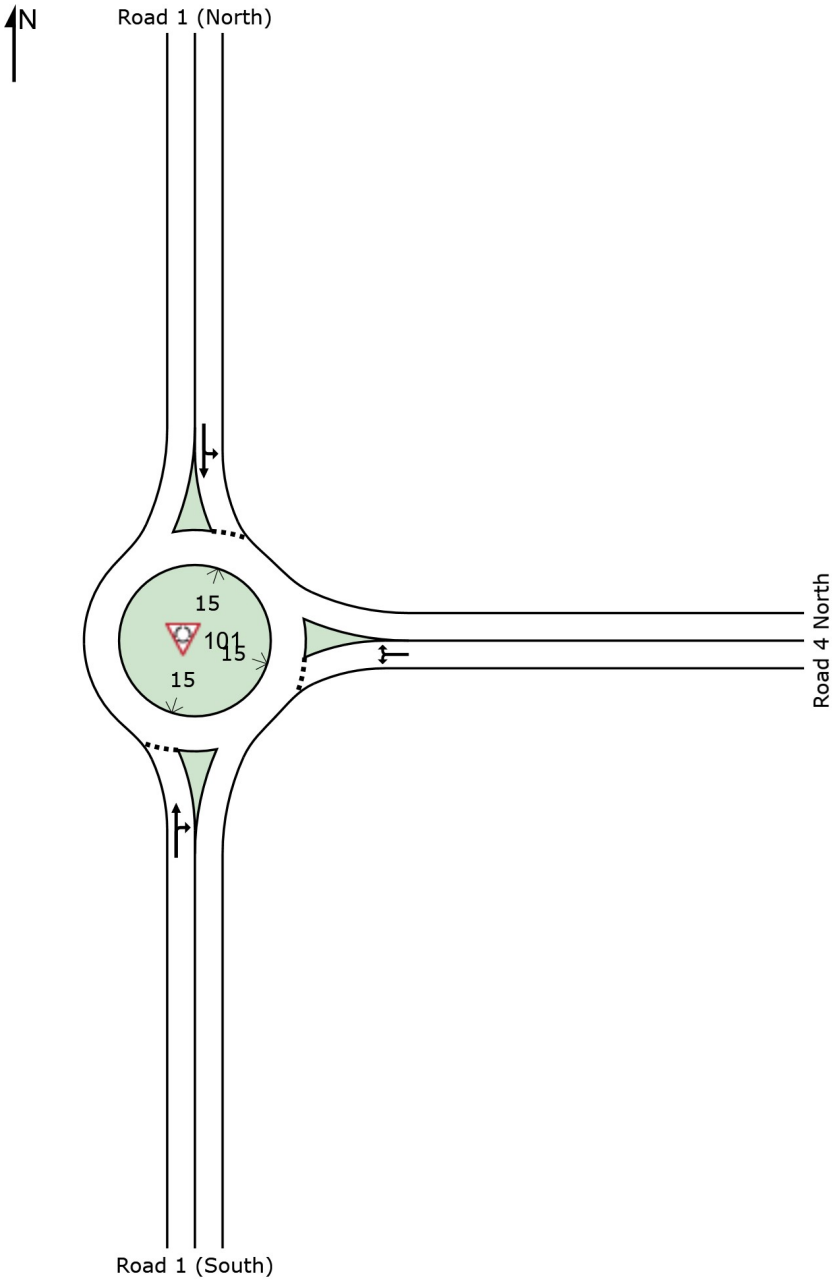
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	71	3.0	0.062	4.7	LOS A	0.4	2.6	0.19	0.45	58.5
3	R2	9	3.0	0.062	8.7	LOS A	0.4	2.6	0.19	0.45	44.8
Approach		80	3.0	0.062	5.1	LOS A	0.4	2.6	0.19	0.45	58.3
East: Road 4 North											
4	L2	2	3.0	0.047	4.5	LOS A	0.2	1.8	0.48	0.65	42.4
6	R2	44	3.0	0.047	8.6	LOS A	0.2	1.8	0.48	0.65	57.6
Approach		46	3.0	0.047	8.4	LOS A	0.2	1.8	0.48	0.65	57.5
North: Road 1 (North)											
7	L2	177	3.0	0.308	4.2	LOS A	2.2	15.7	0.08	0.45	54.9
8	T1	320	3.0	0.308	4.5	LOS A	2.2	15.7	0.08	0.45	58.7
Approach		497	3.0	0.308	4.4	LOS A	2.2	15.7	0.08	0.45	57.4
All Vehicles		623	3.0	0.308	4.8	LOS A	2.2	15.7	0.13	0.46	57.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

SITE LAYOUT

Site: 101 [Intersection 1 - AM Interim]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [Intersection 1 - AM Interim]

New Site
Roundabout

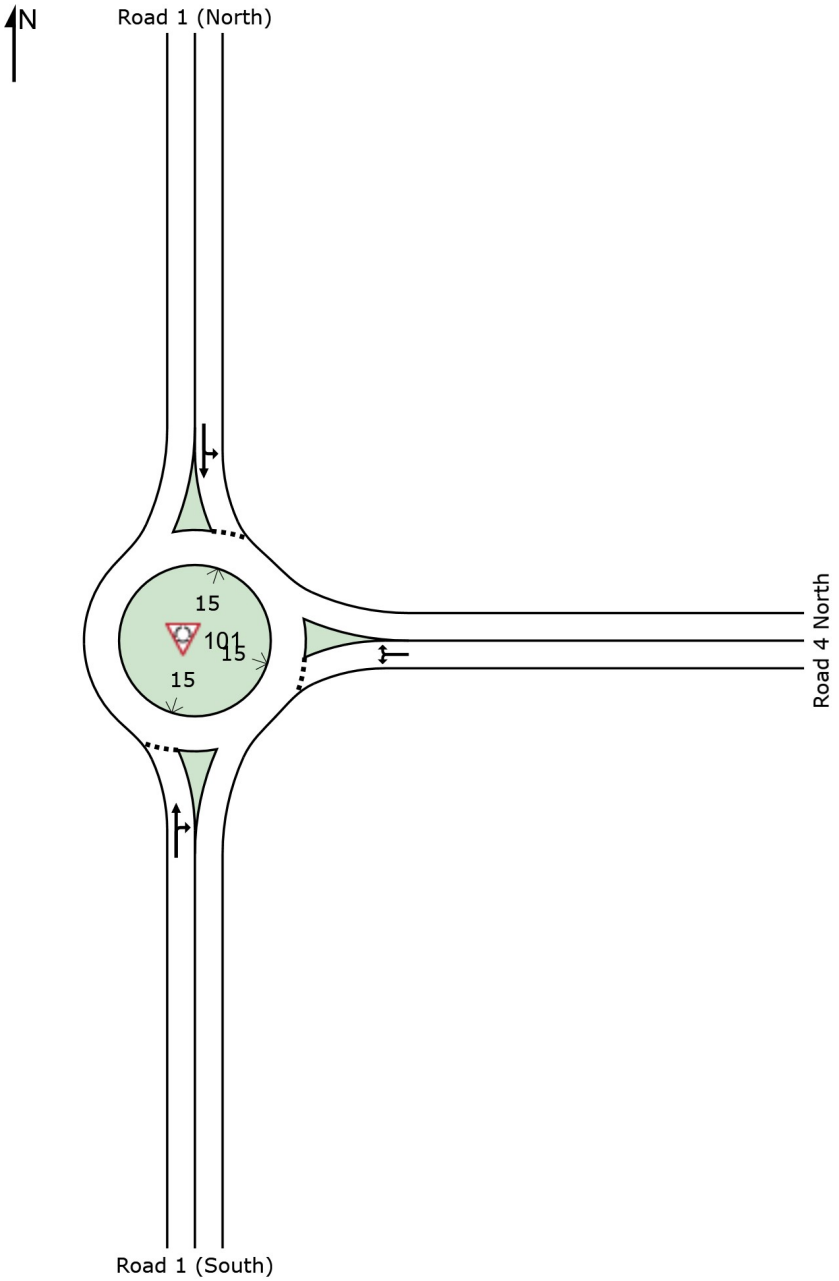
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	928	3.0	0.780	7.9	LOS A	11.6	83.1	0.85	0.67	57.7
3	R2	2	3.0	0.780	11.9	LOS A	11.6	83.1	0.85	0.67	40.7
Approach		931	3.0	0.780	7.9	LOS A	11.6	83.1	0.85	0.67	57.7
East: Road 4 North											
4	L2	9	3.0	0.175	4.1	LOS A	1.0	7.1	0.44	0.66	42.9
6	R2	177	3.0	0.175	8.2	LOS A	1.0	7.1	0.44	0.66	57.7
Approach		186	3.0	0.175	8.0	LOS A	1.0	7.1	0.44	0.66	57.6
North: Road 1 (North)											
7	L2	44	3.0	0.160	4.1	LOS A	1.2	8.6	0.04	0.44	55.0
8	T1	222	3.0	0.160	4.4	LOS A	1.2	8.6	0.04	0.44	58.7
Approach		266	3.0	0.160	4.4	LOS A	1.2	8.6	0.04	0.44	58.1
All Vehicles		1383	3.0	0.780	7.3	LOS A	11.6	83.1	0.64	0.62	57.8

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.

SITE LAYOUT

Site: 101 [Intersection 1 - PM Interim]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [Intersection 1 - PM Interim]

New Site
Roundabout

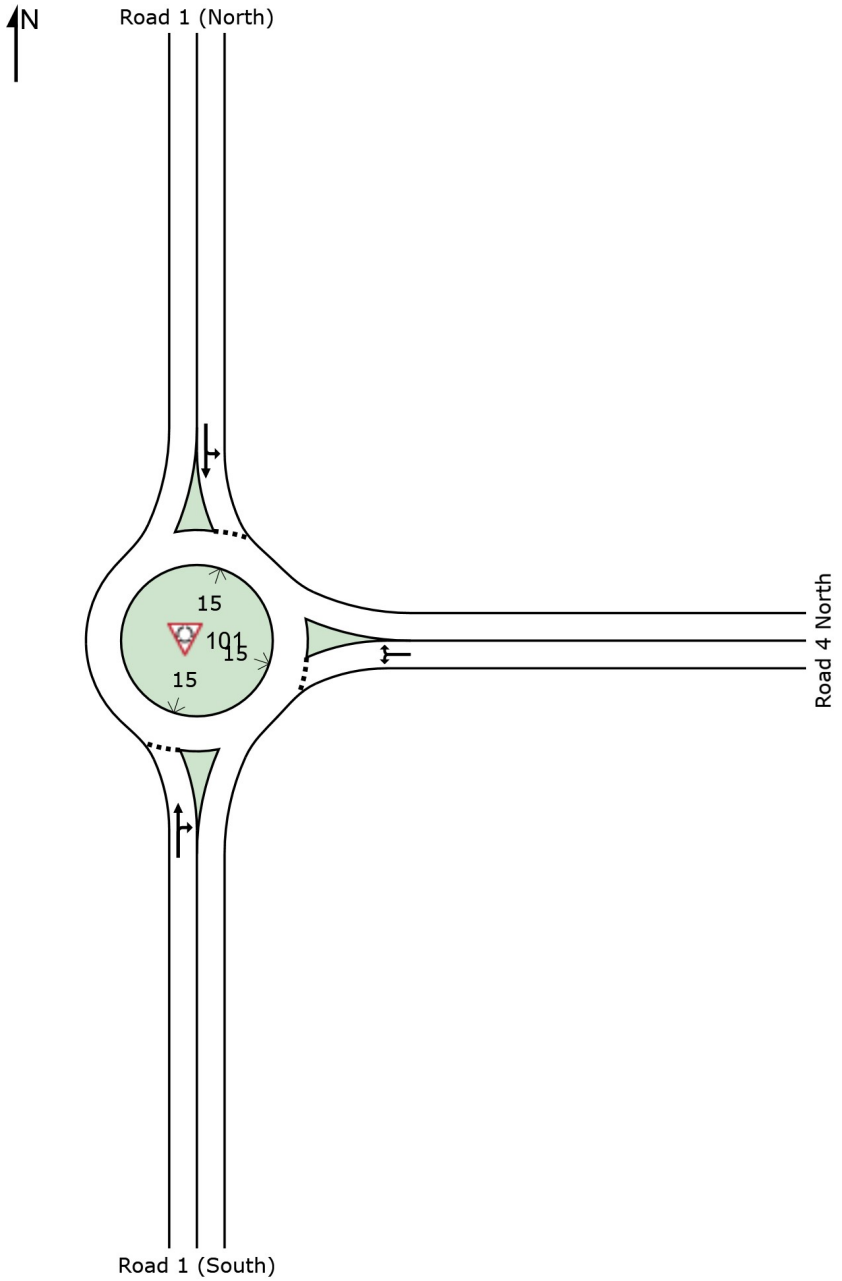
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	222	3.0	0.170	4.7	LOS A	1.2	8.6	0.22	0.43	58.5
3	R2	9	3.0	0.170	8.7	LOS A	1.2	8.6	0.22	0.43	44.9
Approach		232	3.0	0.170	4.8	LOS A	1.2	8.6	0.22	0.43	58.4
East: Road 4 North											
4	L2	2	3.0	0.083	10.6	LOS A	0.5	3.6	0.80	0.81	36.1
6	R2	44	3.0	0.083	14.8	LOS B	0.5	3.6	0.80	0.81	56.1
Approach		46	3.0	0.083	14.6	LOS B	0.5	3.6	0.80	0.81	55.9
North: Road 1 (North)											
7	L2	178	3.0	0.670	4.2	LOS A	8.8	63.1	0.15	0.42	54.8
8	T1	929	3.0	0.670	4.5	LOS A	8.8	63.1	0.15	0.42	58.6
Approach		1107	3.0	0.670	4.5	LOS A	8.8	63.1	0.15	0.42	58.0
All Vehicles		1385	3.0	0.670	4.9	LOS A	8.8	63.1	0.18	0.43	58.0

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.

SITE LAYOUT

Site: 101 [Intersection 1 - AM Interim]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [Intersection 1 - AM Ultimate]

New Site
Roundabout

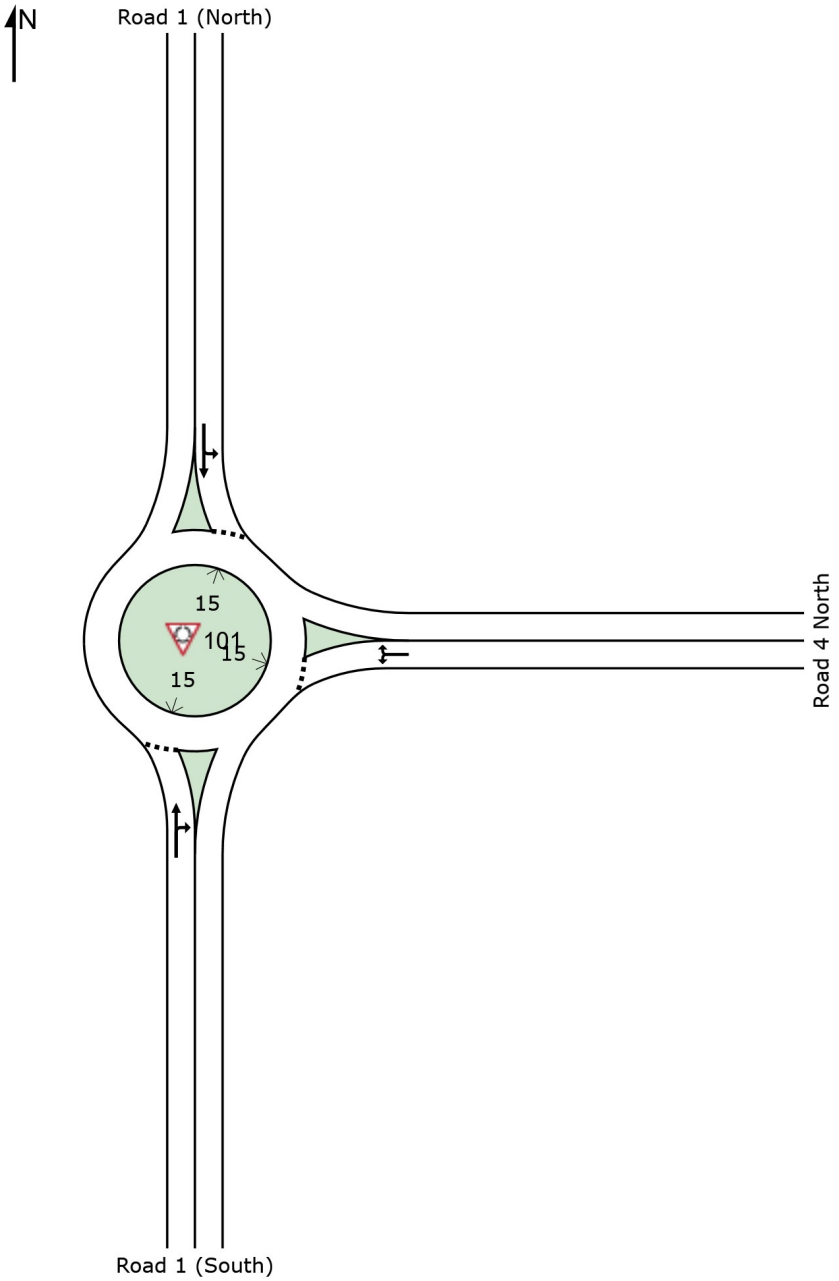
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	946	3.0	0.794	8.3	LOS A	12.5	89.6	0.87	0.68	57.7
3	R2	2	3.0	0.794	12.2	LOS A	12.5	89.6	0.87	0.68	40.5
Approach		948	3.0	0.794	8.3	LOS A	12.5	89.6	0.87	0.68	57.7
East: Road 4 North											
4	L2	9	3.0	0.178	4.2	LOS A	1.0	7.2	0.46	0.67	42.7
6	R2	177	3.0	0.178	8.4	LOS A	1.0	7.2	0.46	0.67	57.7
Approach		186	3.0	0.178	8.2	LOS A	1.0	7.2	0.46	0.67	57.6
North: Road 1 (North)											
7	L2	44	3.0	0.171	4.1	LOS A	1.3	9.4	0.04	0.44	55.0
8	T1	241	3.0	0.171	4.4	LOS A	1.3	9.4	0.04	0.44	58.7
Approach		285	3.0	0.171	4.4	LOS A	1.3	9.4	0.04	0.44	58.1
All Vehicles		1420	3.0	0.794	7.5	LOS A	12.5	89.6	0.65	0.63	57.8

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.

SITE LAYOUT

Site: 101 [Intersection 1 - PM Ultimate]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [Intersection 1 - PM Ultimate]

New Site
Roundabout

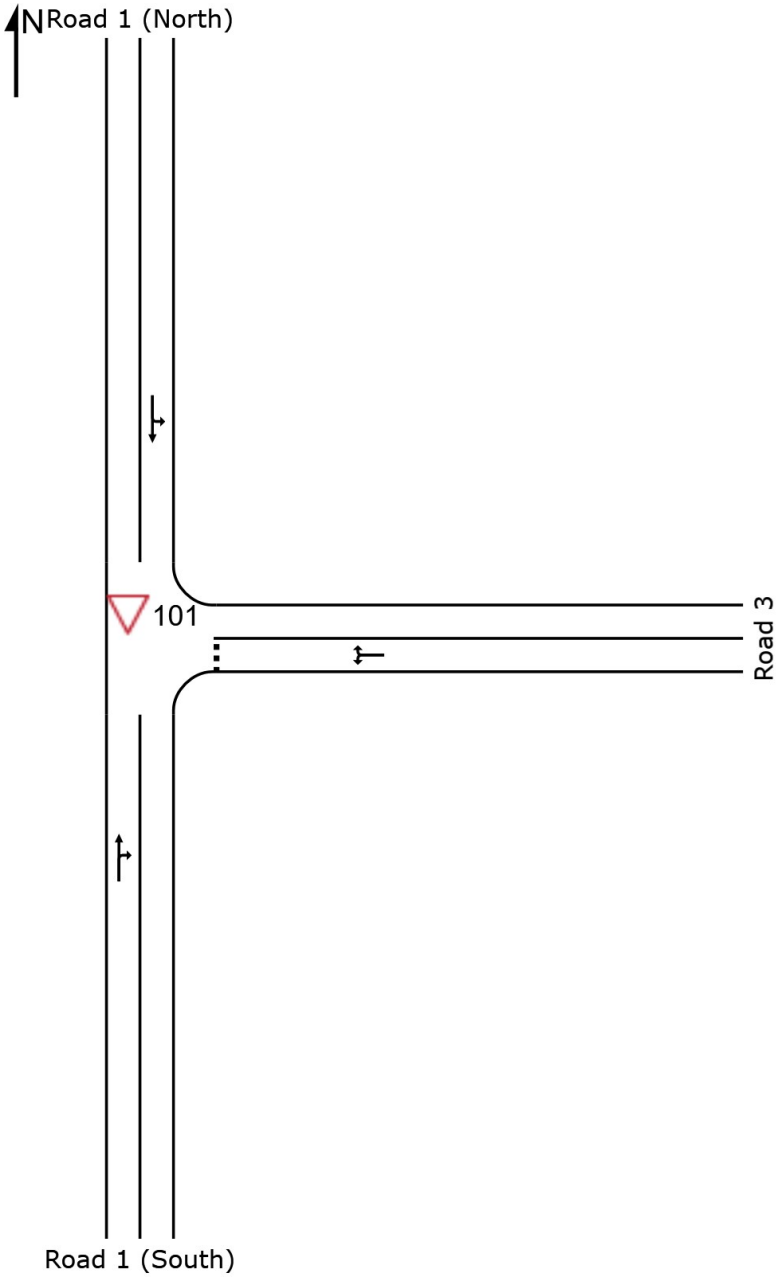
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	194	3.0	0.150	4.7	LOS A	1.0	7.4	0.22	0.43	58.5
3	R2	9	3.0	0.150	8.7	LOS A	1.0	7.4	0.22	0.43	44.9
Approach		203	3.0	0.150	4.8	LOS A	1.0	7.4	0.22	0.43	58.4
East: Road 4 North											
4	L2	2	3.0	0.080	10.2	LOS A	0.5	3.5	0.79	0.81	36.5
6	R2	44	3.0	0.080	14.3	LOS A	0.5	3.5	0.79	0.81	56.2
Approach		46	3.0	0.080	14.1	LOS A	0.5	3.5	0.79	0.81	56.0
North: Road 1 (North)											
7	L2	177	3.0	0.653	4.2	LOS A	8.2	59.0	0.14	0.42	54.8
8	T1	902	3.0	0.653	4.5	LOS A	8.2	59.0	0.14	0.42	58.6
Approach		1079	3.0	0.653	4.5	LOS A	8.2	59.0	0.14	0.42	58.0
All Vehicles		1328	3.0	0.653	4.9	LOS A	8.2	59.0	0.18	0.44	58.0

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.

SITE LAYOUT

Site: 101 [Intersection 2 - AM Stage 1]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Intersection 2 - AM Stage 1]

New Site
Giveway / Yield (Two-Way)

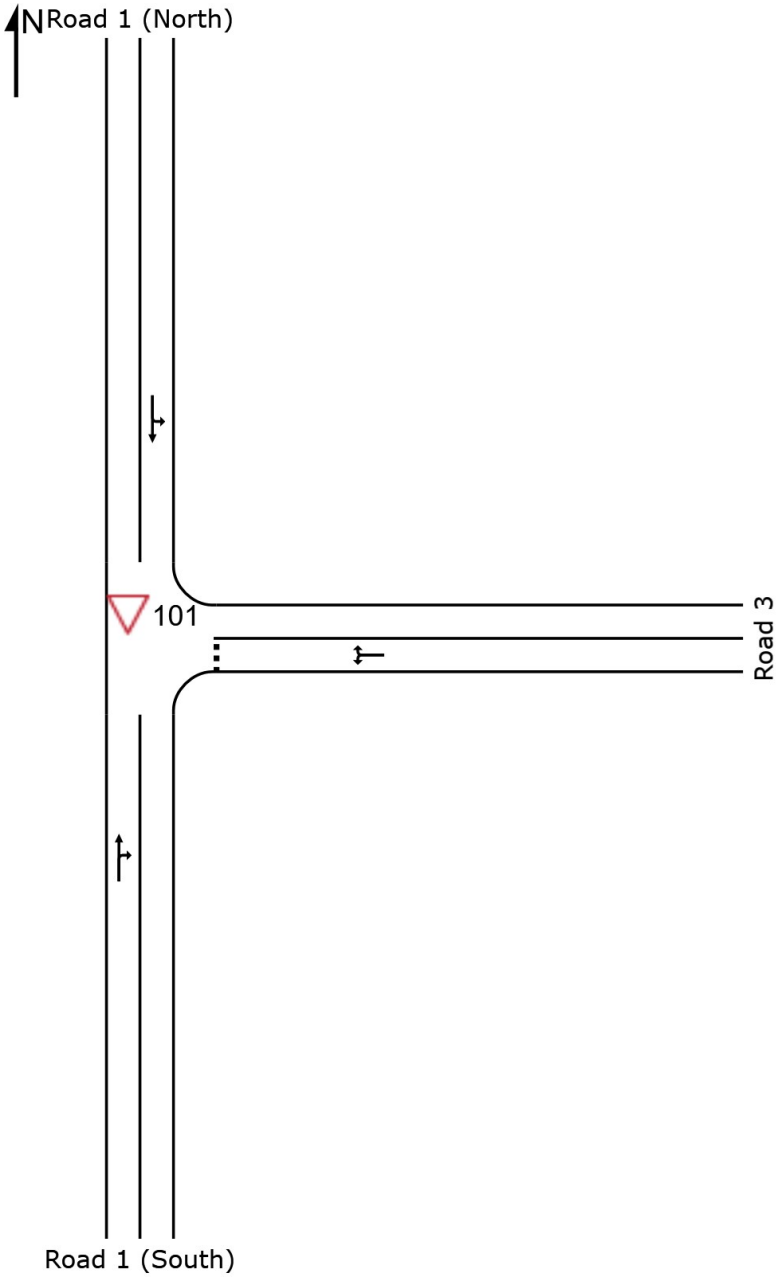
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	223	3.0	0.117	0.0	LOS A	0.0	0.1	0.00	0.01	59.9
3	R2	2	3.0	0.117	5.8	LOS A	0.0	0.1	0.00	0.01	50.3
Approach		225	3.0	0.117	0.1	NA	0.0	0.1	0.00	0.01	59.8
East: Road 3											
4	L2	2	3.0	0.103	4.8	LOS A	0.4	2.6	0.33	0.63	40.0
6	R2	98	3.0	0.103	5.8	LOS A	0.4	2.6	0.33	0.63	44.1
Approach		100	3.0	0.103	5.8	LOS A	0.4	2.6	0.33	0.63	44.0
North: Road 1 (North)											
7	L2	24	3.0	0.042	5.6	LOS A	0.0	0.0	0.00	0.18	36.8
8	T1	56	3.0	0.042	0.0	LOS A	0.0	0.0	0.00	0.18	56.9
Approach		80	3.0	0.042	1.7	NA	0.0	0.0	0.00	0.18	50.0
All Vehicles		405	3.0	0.117	1.8	NA	0.4	2.6	0.08	0.19	53.8

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.
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.

SITE LAYOUT

Site: 101 [Intersection 2 - PM Stage 1]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Intersection 2 - PM Stage 1]

New Site
Giveway / Yield (Two-Way)

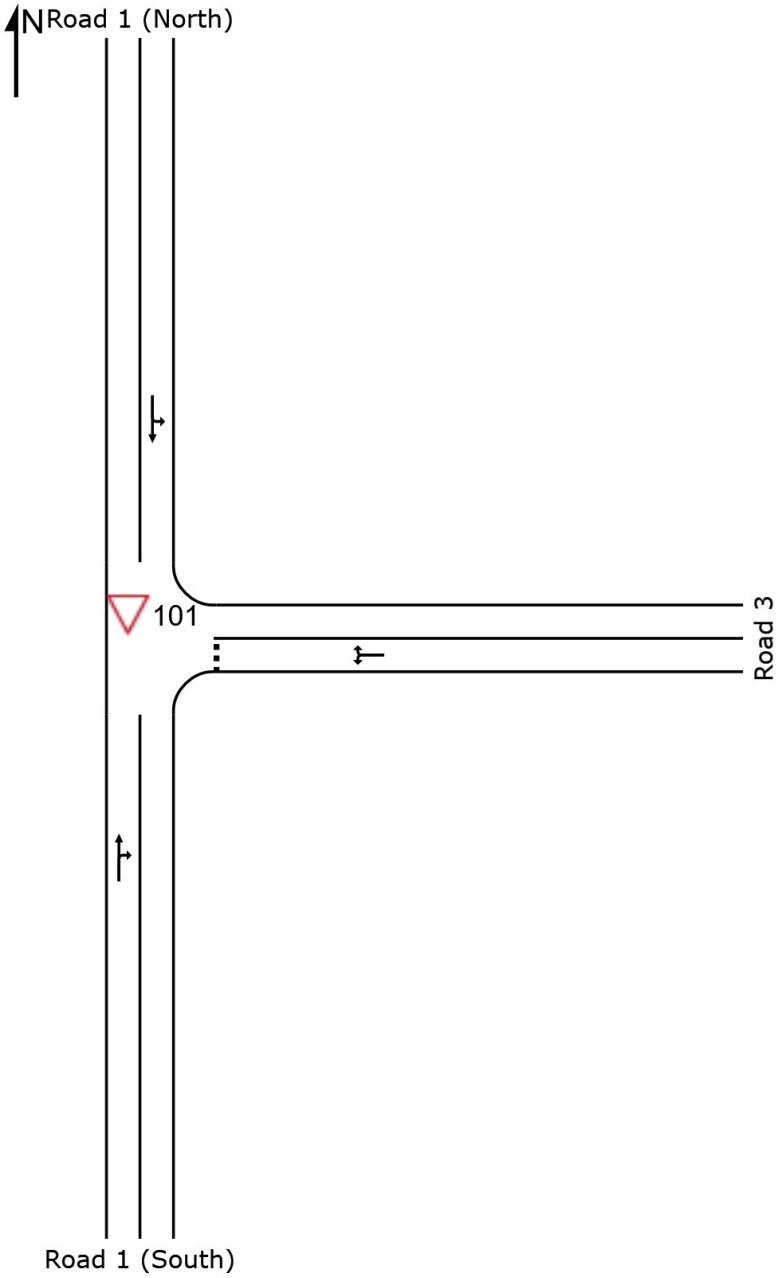
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	56	3.0	0.031	0.1	LOS A	0.0	0.1	0.04	0.02	59.3
3	R2	2	3.0	0.031	6.6	LOS A	0.0	0.1	0.04	0.02	49.5
Approach		58	3.0	0.031	0.3	NA	0.0	0.1	0.04	0.02	59.1
East: Road 3											
4	L2	1	3.0	0.027	5.4	LOS A	0.1	0.6	0.36	0.61	39.8
6	R2	24	3.0	0.027	5.9	LOS A	0.1	0.6	0.36	0.61	44.0
Approach		25	3.0	0.027	5.9	LOS A	0.1	0.6	0.36	0.61	43.9
North: Road 1 (North)											
7	L2	98	3.0	0.170	5.6	LOS A	0.0	0.0	0.00	0.18	36.8
8	T1	224	3.0	0.170	0.0	LOS A	0.0	0.0	0.00	0.18	56.9
Approach		322	3.0	0.170	1.7	NA	0.0	0.0	0.00	0.18	50.0
All Vehicles		405	3.0	0.170	1.8	NA	0.1	0.6	0.03	0.18	50.8

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.
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.

SITE LAYOUT

Site: 101 [Intersection 2 - AM Interim]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Intersection 2 - AM Interim]

New Site
Giveway / Yield (Two-Way)

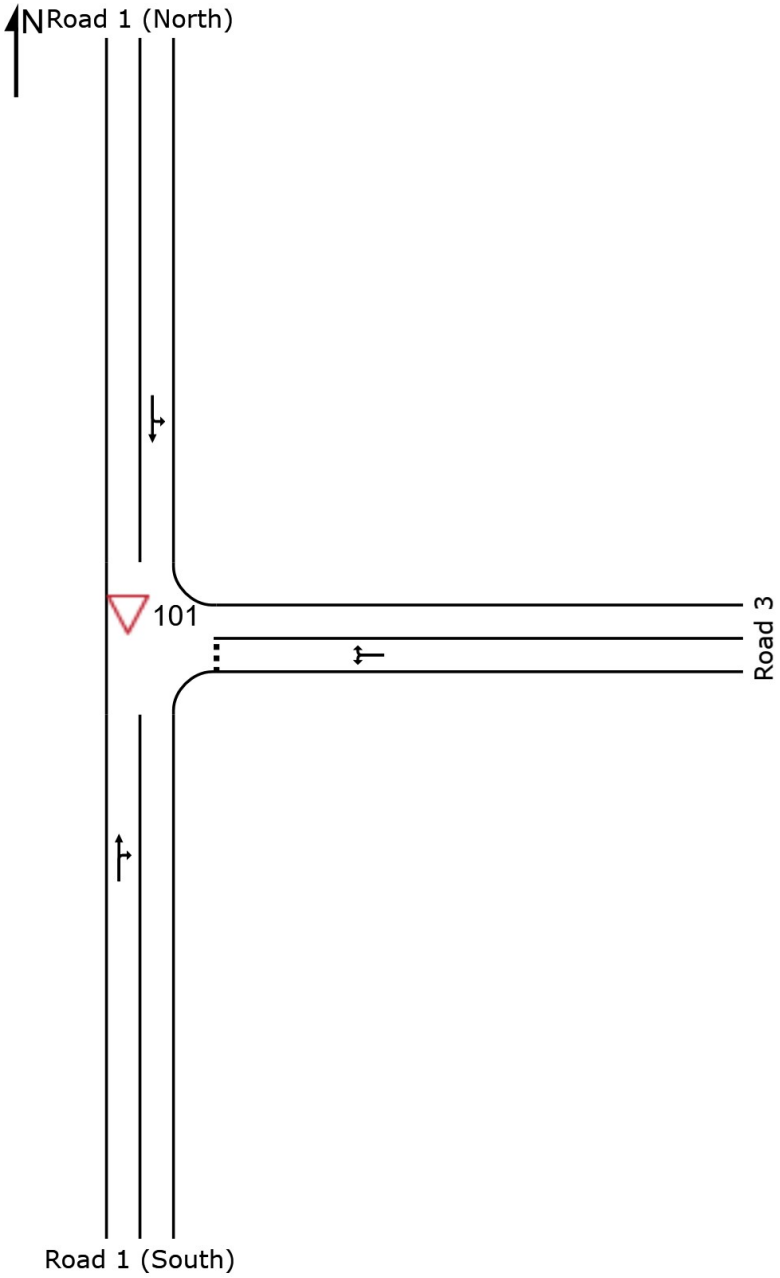
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	833	3.0	0.435	0.0	LOS A	0.0	0.2	0.00	0.00	59.9
3	R2	2	3.0	0.435	6.9	LOS A	0.0	0.2	0.00	0.00	50.4
Approach		835	3.0	0.435	0.0	NA	0.0	0.2	0.00	0.00	59.9
East: Road 3											
4	L2	2	3.0	0.304	6.5	LOS A	1.1	7.6	0.79	0.95	28.1
6	R2	98	3.0	0.304	16.0	LOS B	1.1	7.6	0.79	0.95	33.9
Approach		100	3.0	0.304	15.8	LOS B	1.1	7.6	0.79	0.95	33.8
North: Road 1 (North)											
7	L2	24	3.0	0.121	5.6	LOS A	0.0	0.0	0.00	0.06	37.8
8	T1	207	3.0	0.121	0.0	LOS A	0.0	0.0	0.00	0.06	58.9
Approach		232	3.0	0.121	0.6	NA	0.0	0.0	0.00	0.06	56.3
All Vehicles		1166	3.0	0.435	1.5	NA	1.1	7.6	0.07	0.09	56.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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.

SITE LAYOUT

Site: 101 [Intersection 2 - PM Interim]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Intersection 2 - PM Interim]

New Site
Giveway / Yield (Two-Way)

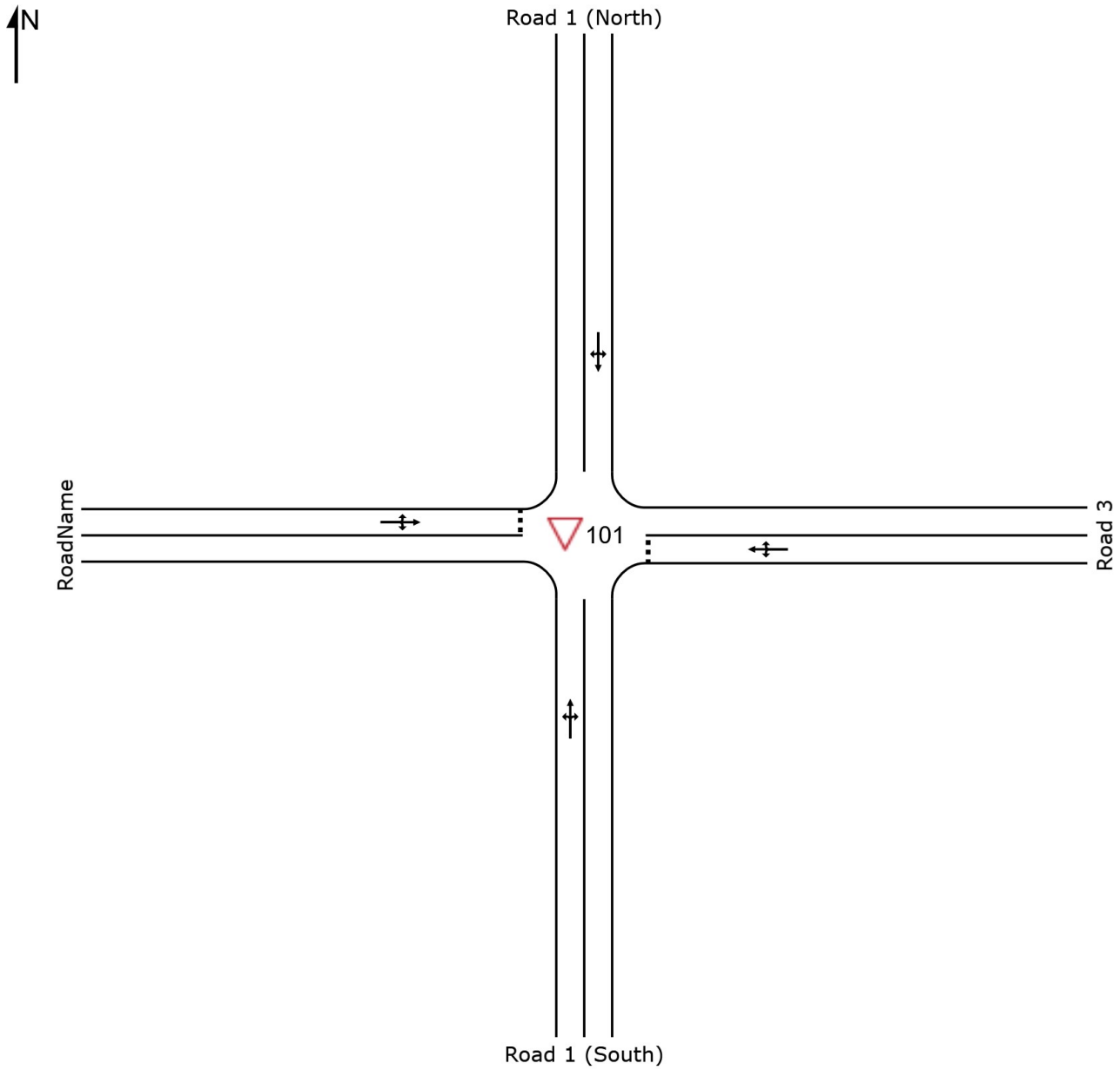
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	206	3.0	0.111	0.2	LOS A	0.1	0.4	0.03	0.01	59.4
3	R2	2	3.0	0.111	12.8	LOS A	0.1	0.4	0.03	0.01	49.6
Approach		208	3.0	0.111	0.3	NA	0.1	0.4	0.03	0.01	59.3
East: Road 3											
4	L2	1	3.0	0.083	9.9	LOS A	0.2	1.8	0.78	0.91	29.1
6	R2	24	3.0	0.083	14.8	LOS B	0.2	1.8	0.78	0.91	34.8
Approach		25	3.0	0.083	14.6	LOS B	0.2	1.8	0.78	0.91	34.6
North: Road 1 (North)											
7	L2	98	3.0	0.487	5.6	LOS A	0.0	0.0	0.00	0.06	37.7
8	T1	834	3.0	0.487	0.1	LOS A	0.0	0.0	0.00	0.06	58.8
Approach		932	3.0	0.487	0.6	NA	0.0	0.0	0.00	0.06	56.1
All Vehicles		1165	3.0	0.487	0.9	NA	0.2	1.8	0.02	0.07	56.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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.

SITE LAYOUT

Site: 101 [Intersection 2 - AM Interim (without signalisation)]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Intersection 2 - AM Interim (without signalisation)]

New Site
Giveway / Yield (Two-Way)

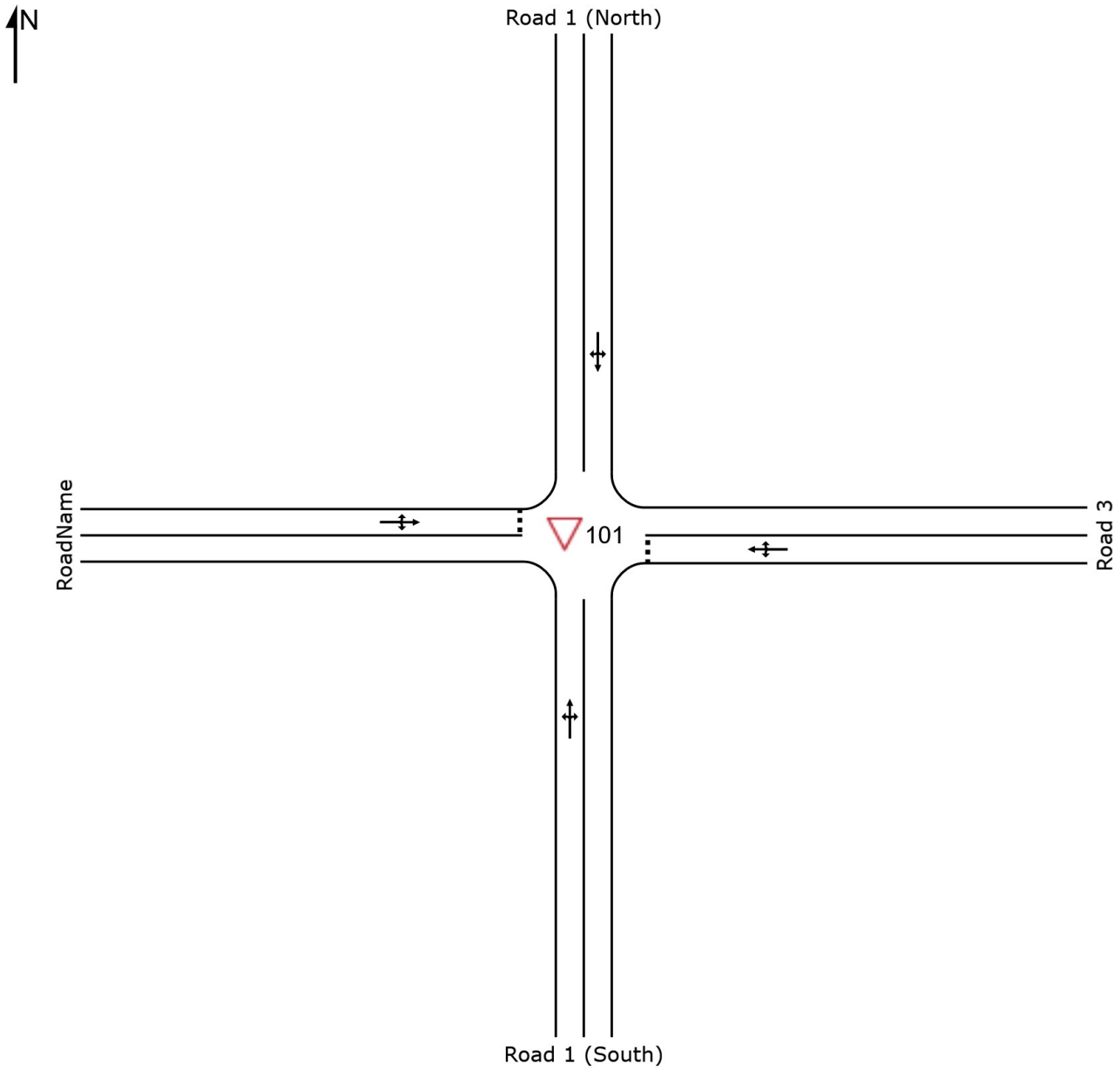
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
1	L2	20	0.0	0.435	5.7	LOS A	0.0	0.3	0.00	0.02	24.6
2	T1	814	3.0	0.435	0.0	LOS A	0.0	0.3	0.00	0.02	59.7
3	R2	2	3.0	0.435	6.9	LOS A	0.0	0.3	0.00	0.02	50.0
Approach		836	2.9	0.435	0.2	NA	0.0	0.3	0.00	0.02	58.7
East: Road 3											
4	L2	2	3.0	0.428	8.8	LOS A	1.6	11.5	0.86	1.01	22.9
5	T1	9	0.0	0.428	18.6	LOS B	1.6	11.5	0.86	1.01	10.9
6	R2	88	3.0	0.428	24.2	LOS B	1.6	11.5	0.86	1.01	28.8
Approach		100	2.7	0.428	23.3	LOS B	1.6	11.5	0.86	1.01	27.1
North: Road 1 (North)											
7	L2	24	3.0	0.152	9.5	LOS A	0.5	3.6	0.23	0.10	35.8
8	T1	206	3.0	0.152	1.1	LOS A	0.5	3.6	0.23	0.10	55.2
9	R2	20	0.0	0.152	11.1	LOS A	0.5	3.6	0.23	0.10	35.6
Approach		251	2.8	0.152	2.7	NA	0.5	3.6	0.23	0.10	51.2
West: RoadName											
10	L2	47	0.0	0.084	9.1	LOS A	0.3	2.0	0.65	0.85	41.3
11	T1	1	0.0	0.084	13.3	LOS A	0.3	2.0	0.65	0.85	21.1
12	R2	1	0.0	0.084	17.0	LOS B	0.3	2.0	0.65	0.85	34.5
Approach		49	0.0	0.084	9.4	LOS A	0.3	2.0	0.65	0.85	40.8
All Vehicles		1236	2.8	0.435	2.9	NA	1.6	11.5	0.14	0.15	52.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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.

SITE LAYOUT

Site: 101 [Intersection 2 - PM Interim (without signalisation)]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Intersection 2 - PM Interim (without signalisation)]

New Site
Giveway / Yield (Two-Way)

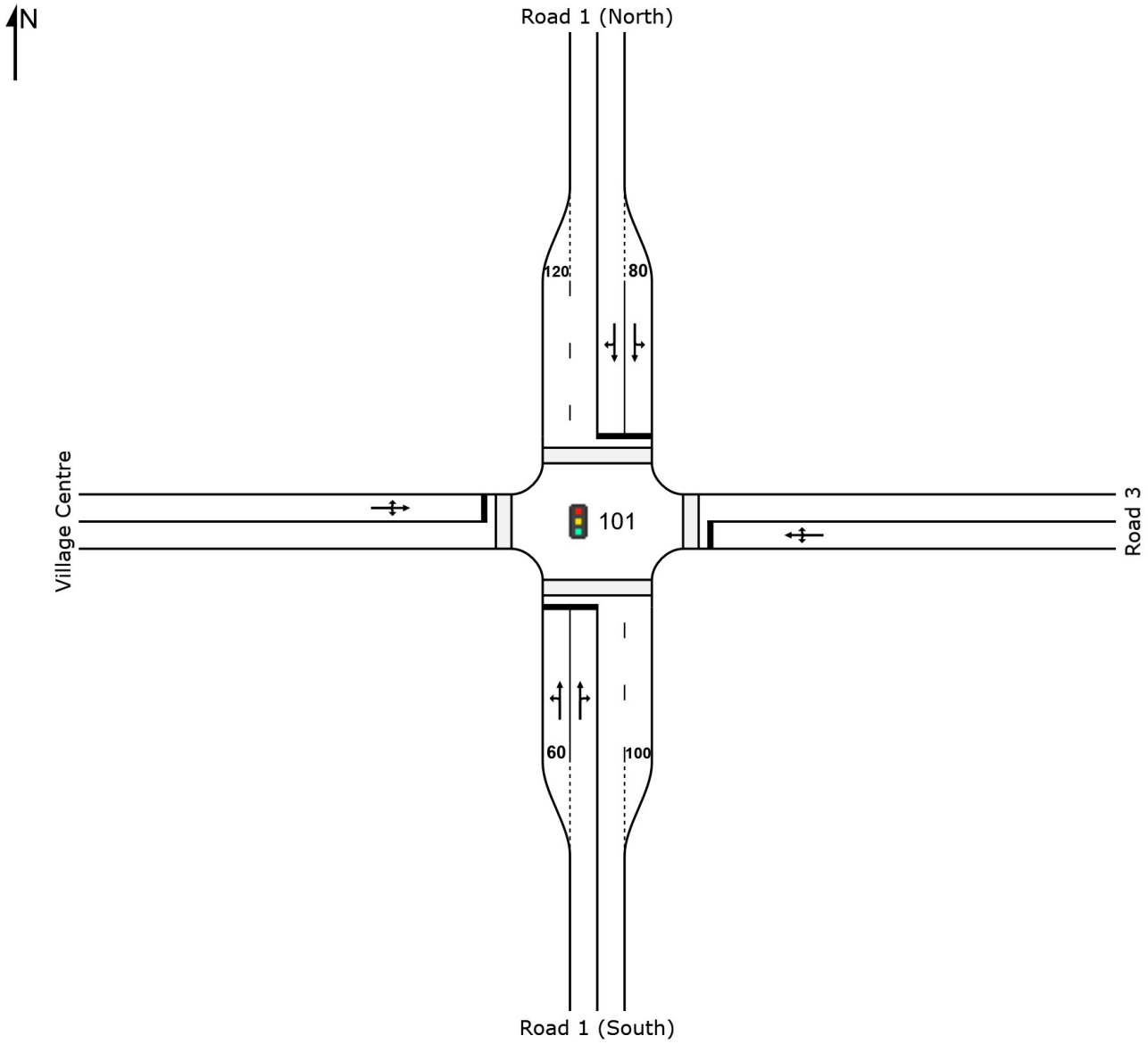
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
1	L2	20	0.0	0.112	6.8	LOS A	0.1	0.6	0.04	0.06	24.2
2	T1	187	3.0	0.112	0.2	LOS A	0.1	0.6	0.04	0.06	58.2
3	R2	2	3.0	0.112	12.0	LOS A	0.1	0.6	0.04	0.06	48.1
Approach		209	2.7	0.112	0.9	NA	0.1	0.6	0.04	0.06	54.3
East: Road 3											
4	L2	1	3.0	0.095	9.3	LOS A	0.3	2.1	0.79	0.91	27.8
5	T1	9	0.0	0.095	13.8	LOS A	0.3	2.1	0.79	0.91	12.8
6	R2	15	3.0	0.095	18.1	LOS B	0.3	2.1	0.79	0.91	33.6
Approach		25	1.9	0.095	16.1	LOS B	0.3	2.1	0.79	0.91	25.9
North: Road 1 (North)											
7	L2	98	3.0	0.476	5.8	LOS A	0.3	2.4	0.03	0.08	37.5
8	T1	786	3.0	0.476	0.1	LOS A	0.3	2.4	0.03	0.08	58.4
9	R2	20	0.0	0.476	6.7	LOS A	0.3	2.4	0.03	0.08	37.3
Approach		904	2.9	0.476	0.8	NA	0.3	2.4	0.03	0.08	55.2
West: RoadName											
10	L2	1	0.0	0.175	5.2	LOS A	0.5	3.8	0.77	0.90	34.7
11	T1	1	0.0	0.175	14.7	LOS B	0.5	3.8	0.77	0.90	16.4
12	R2	47	0.0	0.175	16.2	LOS B	0.5	3.8	0.77	0.90	27.6
Approach		49	0.0	0.175	15.9	LOS B	0.5	3.8	0.77	0.90	27.6
All Vehicles		1188	2.8	0.476	1.8	NA	0.5	3.8	0.08	0.13	53.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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.

SITE LAYOUT

Site: 101 [Intersection 2 - AM Ultimate (with signalisation)]

New Site
Signals - Fixed Time Isolated



MOVEMENT SUMMARY

Site: 101 [Intersection 2 - AM Ultimate (with signalisation)]

New Site
Signals - Fixed Time Isolated Cycle Time = 75 seconds (Optimum Cycle Time - Minimum Delay)

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: Road 1 (South)											
1	L2	20	3.0	0.511	32.9	LOS C	7.6	54.4	0.92	0.76	15.6
2	T1	588	3.0	0.819	32.0	LOS C	14.8	106.6	0.97	0.90	29.5
3	R2	2	3.0	0.819	40.1	LOS C	14.8	106.6	1.00	0.98	17.7
Approach		611	3.0	0.819	32.0	LOS C	14.8	106.6	0.97	0.90	29.0
East: Road 3											
4	L2	2	3.0	0.834	41.8	LOS C	13.2	94.7	1.00	0.96	16.0
5	T1	9	3.0	0.834	37.2	LOS C	13.2	94.7	1.00	0.96	12.4
6	R2	314	3.0	0.834	41.8	LOS C	13.2	94.7	1.00	0.96	21.3
Approach		325	3.0	0.834	41.7	LOS C	13.2	94.7	1.00	0.96	21.1
North: Road 1 (North)											
7	L2	24	3.0	0.436	41.6	LOS C	3.0	21.4	0.98	0.76	19.3
8	T1	206	3.0	0.829	40.4	LOS C	7.0	50.1	0.99	0.90	25.8
9	R2	20	3.0	0.829	47.6	LOS D	7.0	50.1	1.00	0.96	19.0
Approach		251	3.0	0.829	41.1	LOS C	7.0	50.1	0.99	0.89	24.5
West: Village Centre											
10	L2	47	3.0	0.285	41.0	LOS C	1.8	12.8	0.96	0.74	22.8
11	T1	1	3.0	0.285	35.4	LOS C	1.8	12.8	0.96	0.74	12.7
12	R2	1	3.0	0.285	41.0	LOS C	1.8	12.8	0.96	0.74	17.6
Approach		49	3.0	0.285	40.9	LOS C	1.8	12.8	0.96	0.74	22.6
All Vehicles		1236	3.0	0.834	36.8	LOS C	14.8	106.6	0.98	0.91	25.6

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.

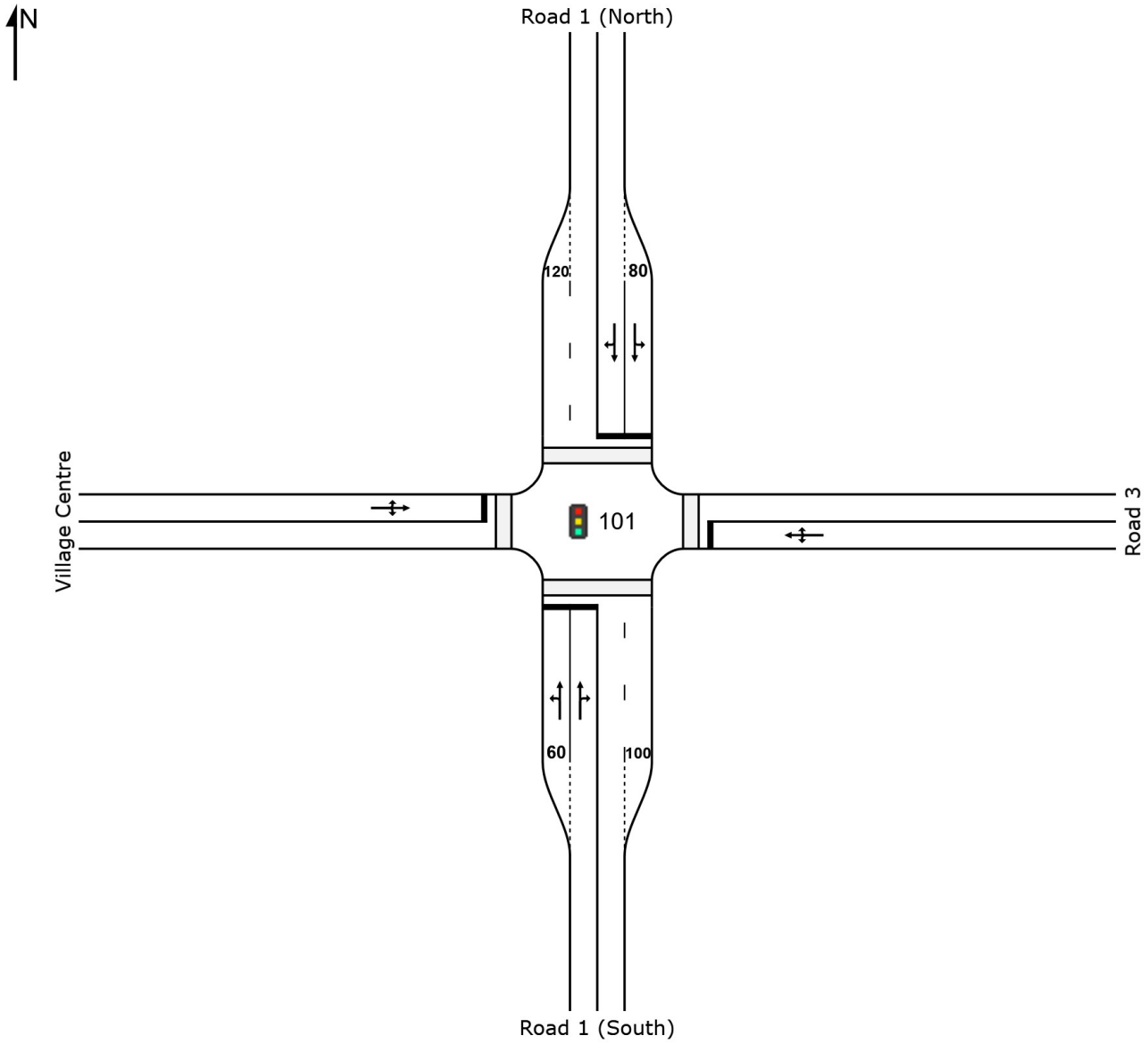
Movement Performance - Pedestrians							
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	31.8	LOS D	0.1	0.1	0.92	0.92
P2	East Full Crossing	53	31.8	LOS D	0.1	0.1	0.92	0.92
P3	North Full Crossing	53	31.8	LOS D	0.1	0.1	0.92	0.92
P4	West Full Crossing	53	25.7	LOS C	0.1	0.1	0.83	0.83
All Pedestrians		211	30.3	LOS D			0.90	0.90

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.

SITE LAYOUT

Site: 101 [Intersection 2 - PM Ultimate (with signalisation)]

New Site
Signals - Fixed Time Isolated



MOVEMENT SUMMARY

Site: 101 [Intersection 2 - PM Ultimate (with signalisation)]

New Site
Signals - Fixed Time Isolated Cycle Time = 85 seconds (Optimum Cycle Time - Minimum Delay)

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: Road 1 (South)											
1	L2	20	3.0	0.470	50.0	LOS D	2.4	17.2	1.00	0.75	12.3
2	T1	131	3.0	0.752	46.4	LOS D	4.6	33.2	1.00	0.84	23.9
3	R2	6	3.0	0.752	52.6	LOS D	4.6	33.2	1.00	0.87	14.3
Approach		157	3.0	0.752	47.1	LOS D	4.6	33.2	1.00	0.83	21.9
East: Road 3											
4	L2	1	3.0	0.376	43.7	LOS D	3.3	23.4	0.96	0.76	15.6
5	T1	9	3.0	0.376	39.1	LOS C	3.3	23.4	0.96	0.76	12.1
6	R2	71	3.0	0.376	43.7	LOS D	3.3	23.4	0.96	0.76	20.9
Approach		81	3.0	0.376	43.2	LOS D	3.3	23.4	0.96	0.76	20.0
North: Road 1 (North)											
7	L2	98	3.0	0.410	24.7	LOS B	9.2	66.2	0.75	0.69	24.8
8	T1	786	3.0	0.780	23.5	LOS B	22.1	158.7	0.87	0.81	33.8
9	R2	20	3.0	0.780	30.8	LOS C	22.1	158.7	0.91	0.86	24.0
Approach		904	3.0	0.780	23.8	LOS B	22.1	158.7	0.86	0.80	32.5
West: Village Centre											
10	L2	1	3.0	0.230	43.8	LOS D	1.9	13.9	0.94	0.74	21.9
11	T1	1	3.0	0.230	38.2	LOS C	1.9	13.9	0.94	0.74	12.0
12	R2	47	3.0	0.230	43.7	LOS D	1.9	13.9	0.94	0.74	16.8
Approach		49	3.0	0.230	43.6	LOS D	1.9	13.9	0.94	0.74	16.8
All Vehicles		1192	3.0	0.780	29.0	LOS C	22.1	158.7	0.89	0.80	29.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

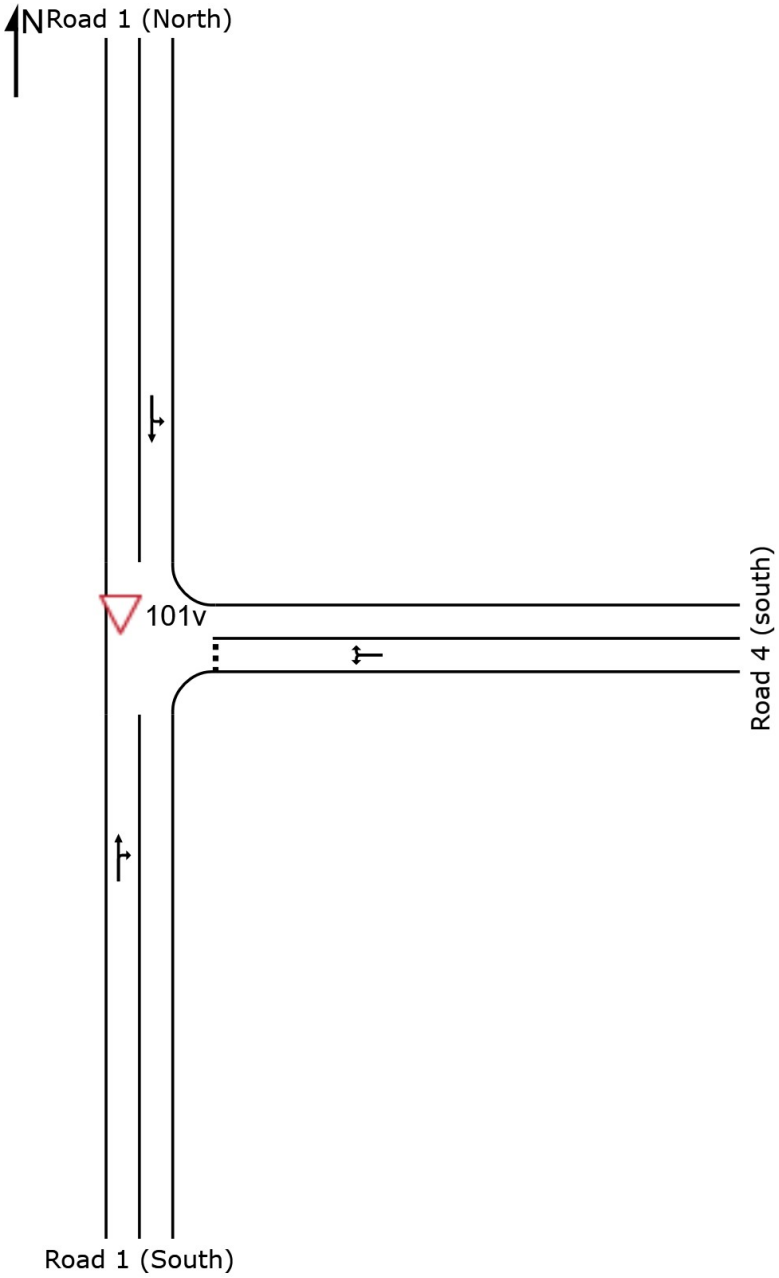
Movement Performance - Pedestrians							
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	36.8	LOS D	0.1	0.1	0.93	0.93
P2	East Full Crossing	53	17.8	LOS B	0.1	0.1	0.65	0.65
P3	North Full Crossing	53	36.8	LOS D	0.1	0.1	0.93	0.93
P4	West Full Crossing	53	36.8	LOS D	0.1	0.1	0.93	0.93
All Pedestrians		211	32.1	LOS D			0.86	0.86

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.

SITE LAYOUT

Site: 101v [Intersection 3 - AM Stage 1]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101v [Intersection 3 - AM Stage 1]

New Site
Giveway / Yield (Two-Way)

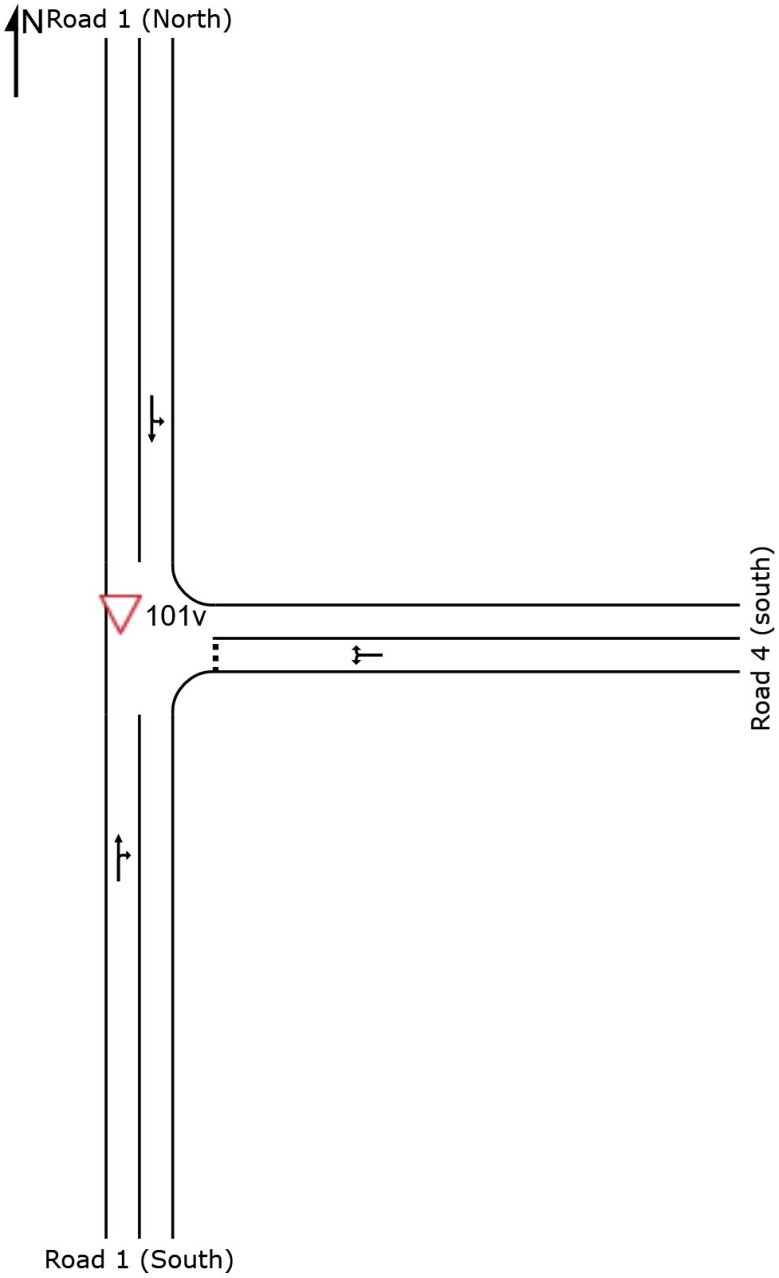
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	1	3.0	0.001	0.1	LOS A	0.0	0.0	0.12	0.28	52.0
3	R2	1	3.0	0.001	5.6	LOS A	0.0	0.0	0.12	0.28	42.1
Approach		2	3.0	0.001	2.9	NA	0.0	0.0	0.12	0.28	48.1
East: Road 4 (south)											
4	L2	1	3.0	0.183	2.5	LOS A	0.7	5.0	0.09	0.49	42.7
6	R2	225	3.0	0.183	2.4	LOS A	0.7	5.0	0.09	0.49	42.6
Approach		226	3.0	0.183	2.4	LOS A	0.7	5.0	0.09	0.49	42.6
North: Road 1 (North)											
7	L2	56	3.0	0.033	5.6	LOS A	0.0	0.0	0.00	0.57	26.7
8	T1	1	3.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.57	47.8
Approach		57	3.0	0.033	5.5	NA	0.0	0.0	0.00	0.57	27.0
All Vehicles		285	3.0	0.183	3.0	NA	0.7	5.0	0.07	0.50	38.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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.

SITE LAYOUT

Site: 101v [Intersection 3 - PM Stage 1]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101v [Intersection 3 - PM Stage 1]

New Site
Giveway / Yield (Two-Way)

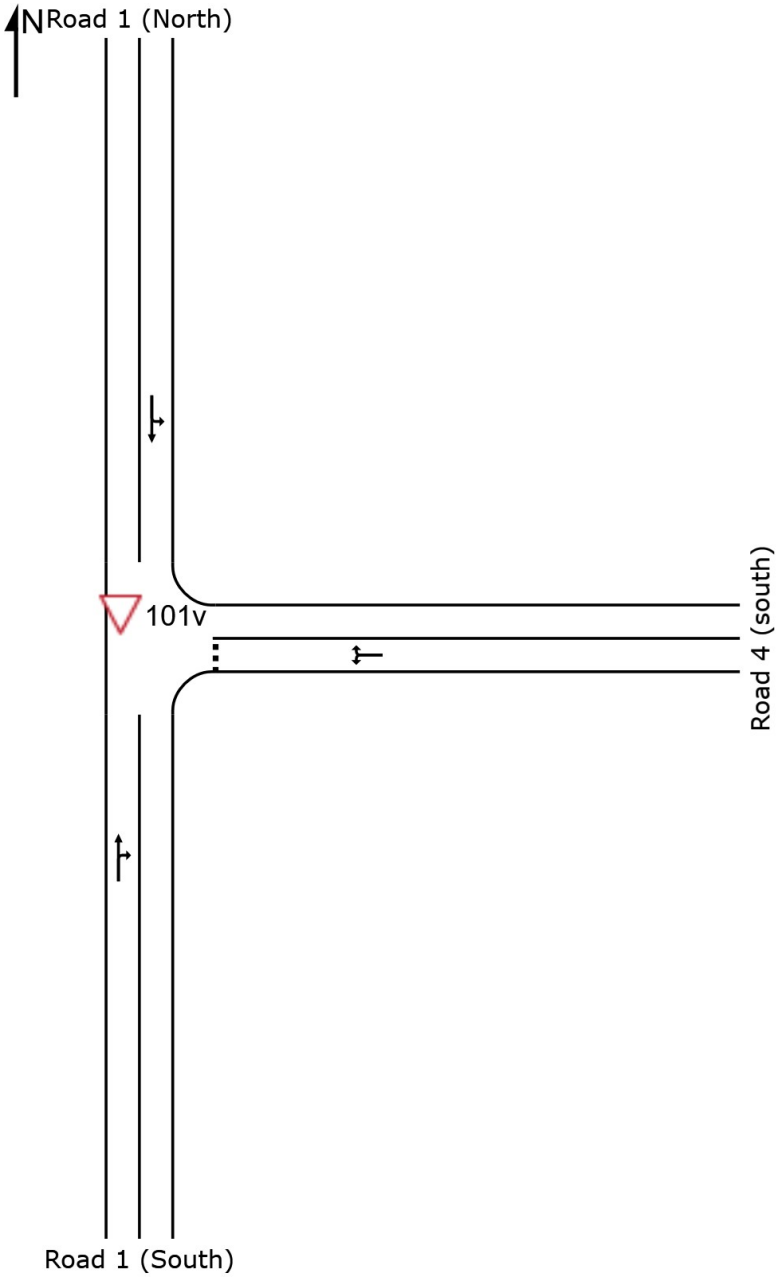
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	1	3.0	0.001	0.5	LOS A	0.0	0.0	0.28	0.27	50.7
3	R2	1	3.0	0.001	6.2	LOS A	0.0	0.0	0.28	0.27	40.4
Approach		2	3.0	0.001	3.3	NA	0.0	0.0	0.28	0.27	46.6
East: Road 4 (south)											
4	L2	1	3.0	0.051	2.5	LOS A	0.2	1.2	0.07	0.50	42.1
6	R2	58	3.0	0.051	2.7	LOS A	0.2	1.2	0.07	0.50	42.1
Approach		59	3.0	0.051	2.7	LOS A	0.2	1.2	0.07	0.50	42.1
North: Road 1 (North)											
7	L2	225	3.0	0.130	5.6	LOS A	0.0	0.0	0.00	0.57	26.6
8	T1	1	3.0	0.130	0.0	LOS A	0.0	0.0	0.00	0.57	47.6
Approach		226	3.0	0.130	5.5	NA	0.0	0.0	0.00	0.57	26.7
All Vehicles		287	3.0	0.130	4.9	NA	0.2	1.2	0.02	0.56	28.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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.

SITE LAYOUT

Site: 101v [Intersection 3 - AM Interim]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101v [Intersection 3 - AM Interim]

New Site
Giveway / Yield (Two-Way)

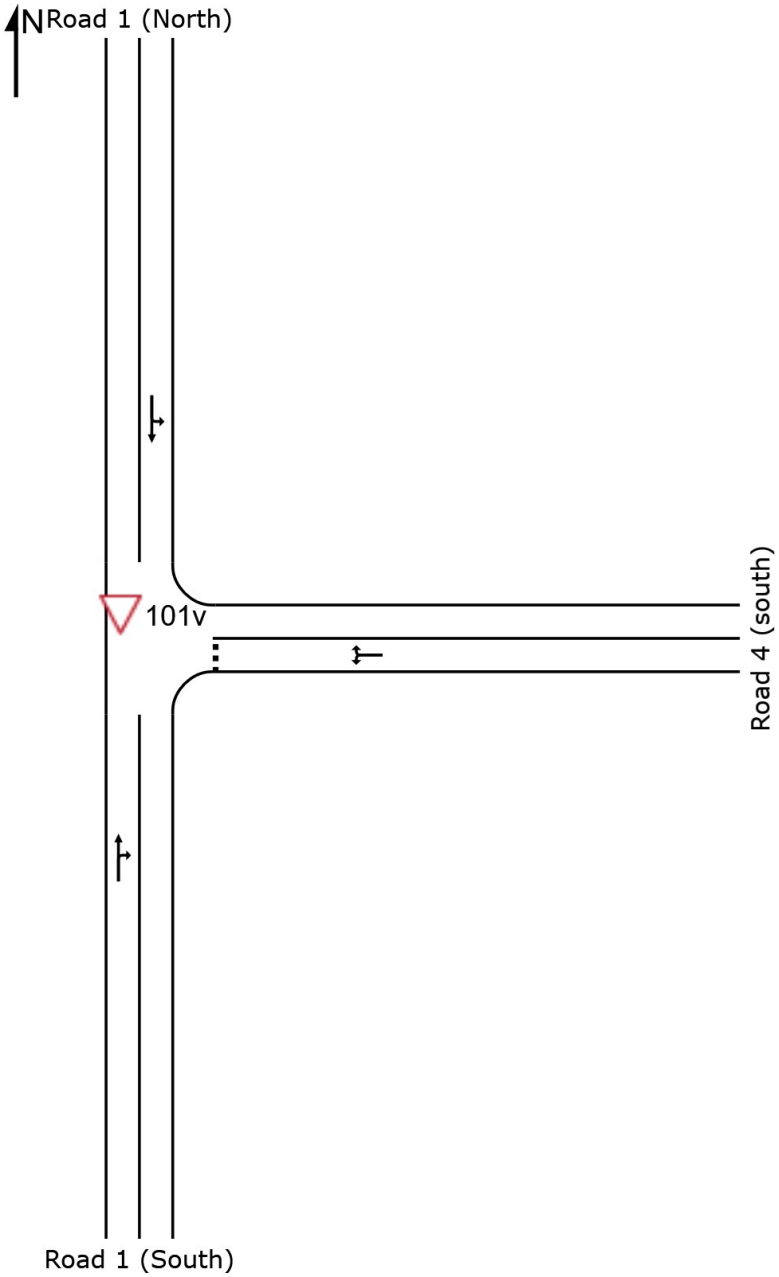
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	608	3.0	0.334	0.0	LOS A	0.0	0.1	0.00	0.00	60.0
3	R2	1	3.0	0.334	6.5	LOS A	0.0	0.1	0.00	0.00	53.0
Approach		609	3.0	0.334	0.0	NA	0.0	0.1	0.00	0.00	59.9
East: Road 4 (south)											
4	L2	4	3.0	0.443	4.5	LOS A	2.0	14.5	0.70	0.94	28.7
6	R2	225	3.0	0.443	10.0	LOS A	2.0	14.5	0.70	0.94	30.0
Approach		229	3.0	0.443	9.9	LOS A	2.0	14.5	0.70	0.94	30.0
North: Road 1 (North)											
7	L2	56	3.0	0.116	5.6	LOS A	0.0	0.0	0.00	0.16	30.6
8	T1	153	3.0	0.116	0.0	LOS A	0.0	0.0	0.00	0.16	56.0
Approach		208	3.0	0.116	1.5	NA	0.0	0.0	0.00	0.16	48.8
All Vehicles		1047	3.0	0.443	2.5	NA	2.0	14.5	0.16	0.24	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.
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.

SITE LAYOUT

Site: 101v [Intersection 3 - PM Interim]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101v [Intersection 3 - PM Interim]

New Site
Giveway / Yield (Two-Way)

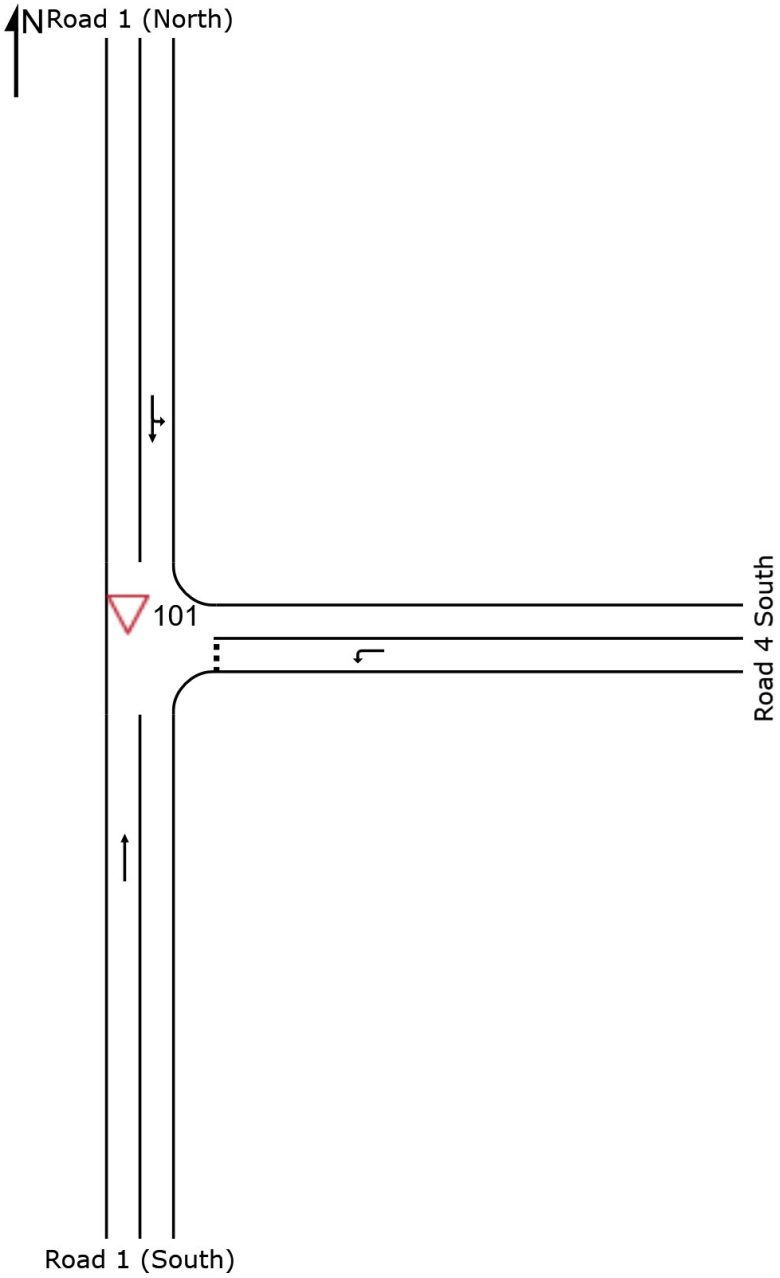
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	153	3.0	0.091	0.3	LOS A	0.1	0.6	0.06	0.02	58.3
3	R2	4	3.0	0.091	11.0	LOS A	0.1	0.6	0.06	0.02	50.5
Approach		157	3.0	0.091	0.6	NA	0.1	0.6	0.06	0.02	58.1
East: Road 4 (south)											
4	L2	1	3.0	0.128	5.5	LOS A	0.4	2.9	0.68	0.84	30.3
6	R2	56	3.0	0.128	8.8	LOS A	0.4	2.9	0.68	0.84	31.4
Approach		57	3.0	0.128	8.7	LOS A	0.4	2.9	0.68	0.84	31.4
North: Road 1 (North)											
7	L2	225	3.0	0.464	5.6	LOS A	0.0	0.0	0.00	0.16	30.5
8	T1	609	3.0	0.464	0.0	LOS A	0.0	0.0	0.00	0.16	55.9
Approach		835	3.0	0.464	1.5	NA	0.0	0.0	0.00	0.16	48.6
All Vehicles		1048	3.0	0.464	1.8	NA	0.4	2.9	0.05	0.18	49.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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.

SITE LAYOUT

Site: 101 [Intersection 3 - AM Ultimate]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Intersection 3 - AM Ultimate]

New Site
Giveway / Yield (Two-Way)

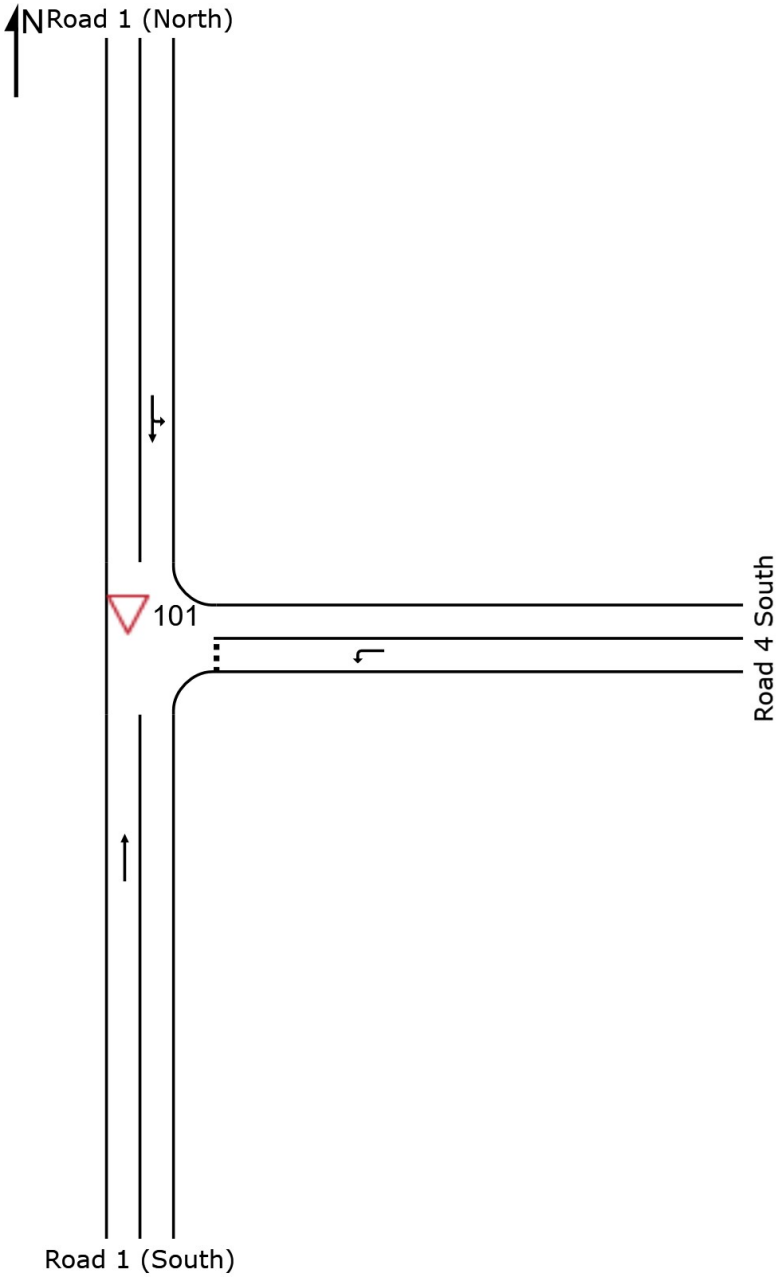
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	609	3.0	0.334	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		609	3.0	0.334	0.0	NA	0.0	0.0	0.00	0.00	59.9
East: Road 4 South											
4	L2	4	3.0	0.003	2.9	LOS A	0.0	0.1	0.25	0.47	41.3
Approach		4	3.0	0.003	2.9	LOS A	0.0	0.1	0.25	0.47	41.3
North: Road 1 (North)											
7	L2	56	3.0	0.116	5.6	LOS A	0.0	0.0	0.00	0.16	30.6
8	T1	153	3.0	0.116	0.0	LOS A	0.0	0.0	0.00	0.16	56.0
Approach		208	3.0	0.116	1.5	NA	0.0	0.0	0.00	0.16	48.8
All Vehicles		822	3.0	0.334	0.4	NA	0.0	0.1	0.00	0.04	56.8

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.
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.

SITE LAYOUT

Site: 101 [Intersection 3 - PM Ultimate]

New Site
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Intersection 3 - PM Ultimate]

New Site
Giveway / Yield (Two-Way)

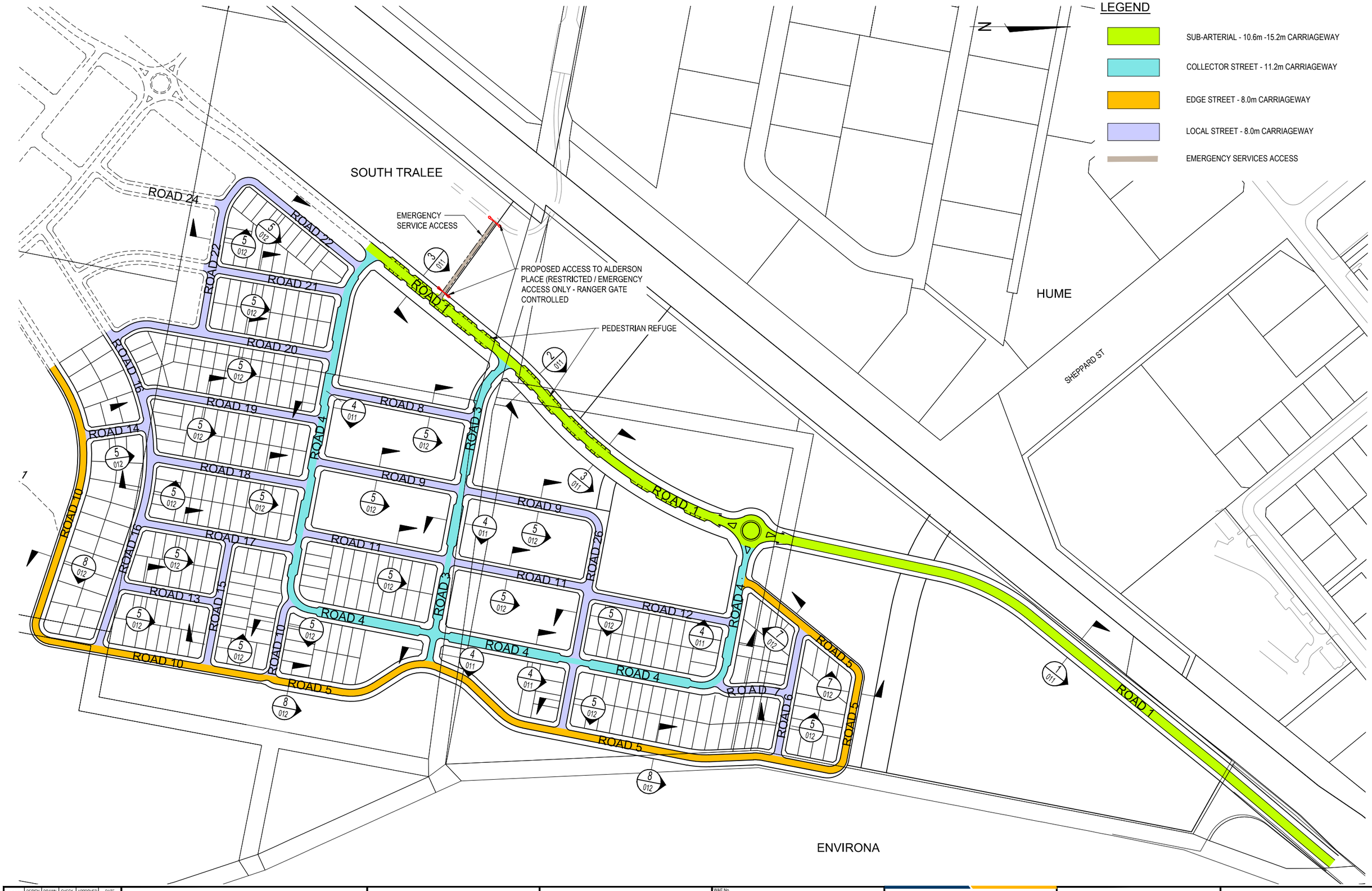
Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road 1 (South)											
2	T1	157	3.0	0.086	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		157	3.0	0.086	0.0	NA	0.0	0.0	0.00	0.00	60.0
East: Road 4 South											
4	L2	1	3.0	0.001	5.2	LOS A	0.0	0.0	0.53	0.55	36.7
Approach		1	3.0	0.001	5.2	LOS A	0.0	0.0	0.53	0.55	36.7
North: Road 1 (North)											
7	L2	225	3.0	0.464	5.6	LOS A	0.0	0.0	0.00	0.16	30.5
8	T1	609	3.0	0.464	0.0	LOS A	0.0	0.0	0.00	0.16	55.9
Approach		835	3.0	0.464	1.5	NA	0.0	0.0	0.00	0.16	48.6
All Vehicles		993	3.0	0.464	1.3	NA	0.0	0.0	0.00	0.14	50.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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.

SOUTH TRALEE SUBDIVISION STAGE 1 TRAFFIC STUDY

Appendix B Road Hierarchy Plan

CANBERRA ESTATES CONSORTIUM NO. 4 PTY LTD



FIRST ISSUE	DESIGN	DRAWN	CHECK	APPROVED	DATE
	WC	BM			20/10/2017

AMENDMENTS

AMENDMENT DETAILS

DA SUBMISSION

Authorised for Issue:
BY:
SIGN: DATE:

1:4000 20 10 0 20 40 60 80 100 1:2000

WAE No. .

Village Building Co

calibre calibregroup.com
Tract Landscape Architects Urban Designers Town Planners

SOUTH TRALEE - STAGE 1

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE. NOT FOR CONSTRUCTION UNLESS STAMPED BY CERTIFYING AUTHORITY

STREET HIERARCHY & TYPICAL CROSS SECTION LOCATIONS .

17001472.1 DA010 .