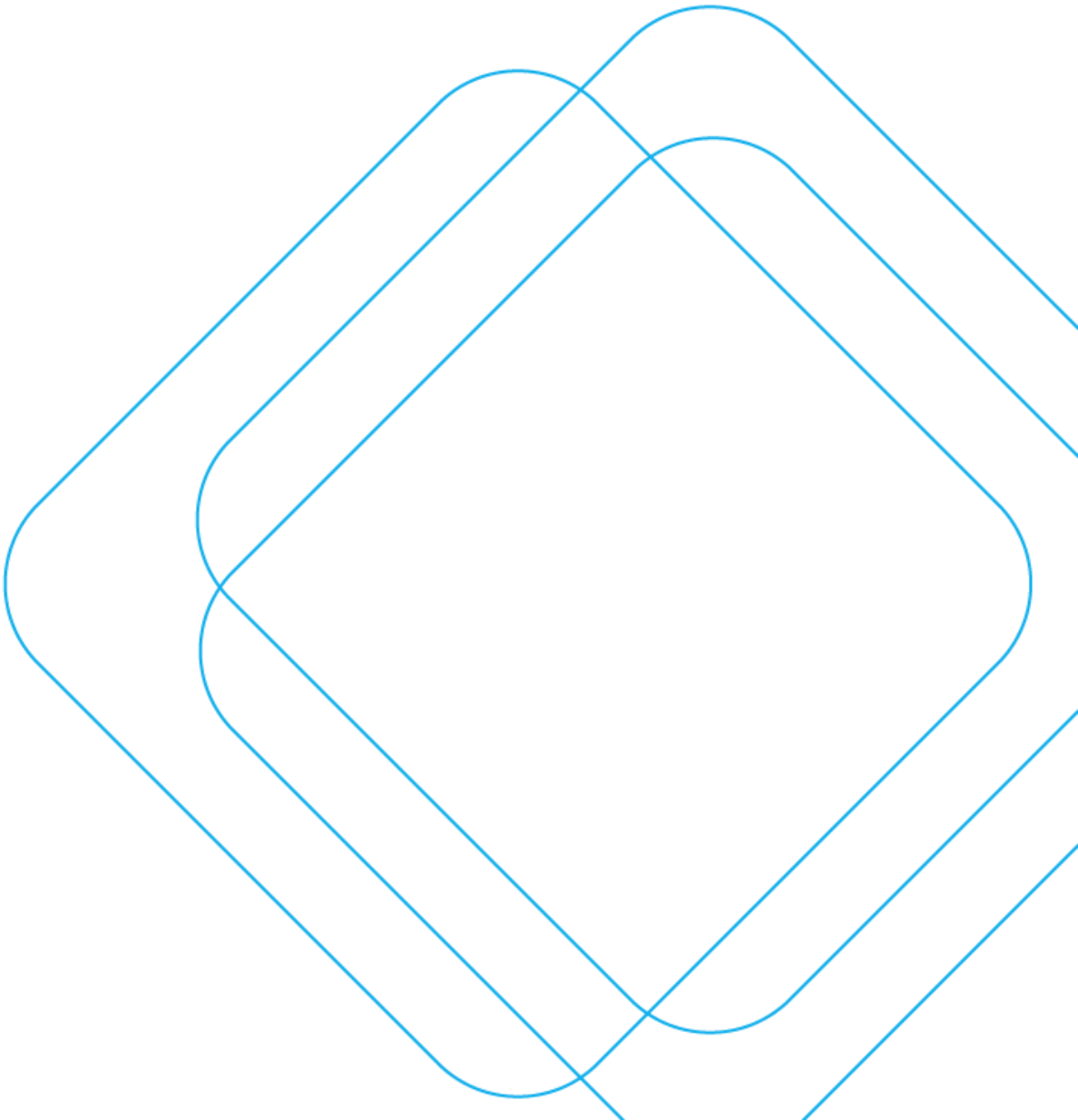
SCT Consulting

BRADFIELD CITY CENTRE STAGE 2A ROADWORKS

REF Traffic Impact Study

23 APRIL 2024

SCT Consulting acknowledges the traditional owners of the lands on which we work.
We pay our respects to Elders past, present and emerging.



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Contents

1.0 Introduction 1
1.1 Project background / context 1
1.1.1 Vision for Western Parkland City 1
1.1.2 Bradfield City Centre 2
1.1.3 Bradfield City Centre Stage 2a Review of Environmental Factors Scope of Works 2
1.2 Purpose of report 3
1.3 Assessment methodology 4
1.4 Report structure 4

2.0 Existing conditions 5
2.1 Land use 5
2.2 Road network 5
2.3 Public transport network 6
2.4 Active transport network 7

3.0 Future conditions 8
3.1 Introduction 8
3.2 Forecast network assumptions 9
3.3 Forecast traffic volumes 14

4.0 Traffic impact assessment 16
4.1 Scope of assessment 16
4.2 Centre Loop West Road / Innovation North Road (Intersection 3) 17
4.2.1 Proposed intersection layout 17
4.2.2 Forecast traffic volumes 17
4.2.3 Forecast intersection performance 18
4.3 Centre Loop West Road / Innovation South Road (Intersection 5) 19
4.3.1 Proposed intersection layout 19
4.3.2 Forecast traffic volumes 19
4.3.3 Forecast intersection performance 20
4.4 Centre Loop West Road / Centre Loop South Road (Intersection 6) 21
4.4.1 Proposed intersection layout 21
4.4.2 Forecast traffic volumes 22
4.4.3 Forecast intersection performance – 'Give-way' 22
4.4.4 Signalised option intersection layout 23
4.4.5 Forecast intersection performance – signalised 24
4.5 Centre Loop South Road / Innovation West Road (Intersection 7) 25
4.5.1 Proposed intersection layout – 'Give-way' 25
4.5.2 Forecast traffic volumes 25
4.5.3 Forecast intersection performance – 'Give-way' 26
4.6 Innovation East Road / Centre Loop South Road (Intersection 8) 27
4.6.1 Proposed intersection layout 27
4.6.2 Forecast traffic volumes 27
4.6.3 Forecast intersection performance 28
4.7 Public transport 29
4.8 Walking and cycling 29
4.9 Parking 29

5.0 Preliminary construction traffic and pedestrian management plan 30

6.0 Conclusions 31

Appendices

Appendix A Assumptions note of the Bradfield WSAGA AIMSUN model and traffic volumes

Appendix B SIDRA modelling outputs

1.0 Introduction

1.1 Project background / context

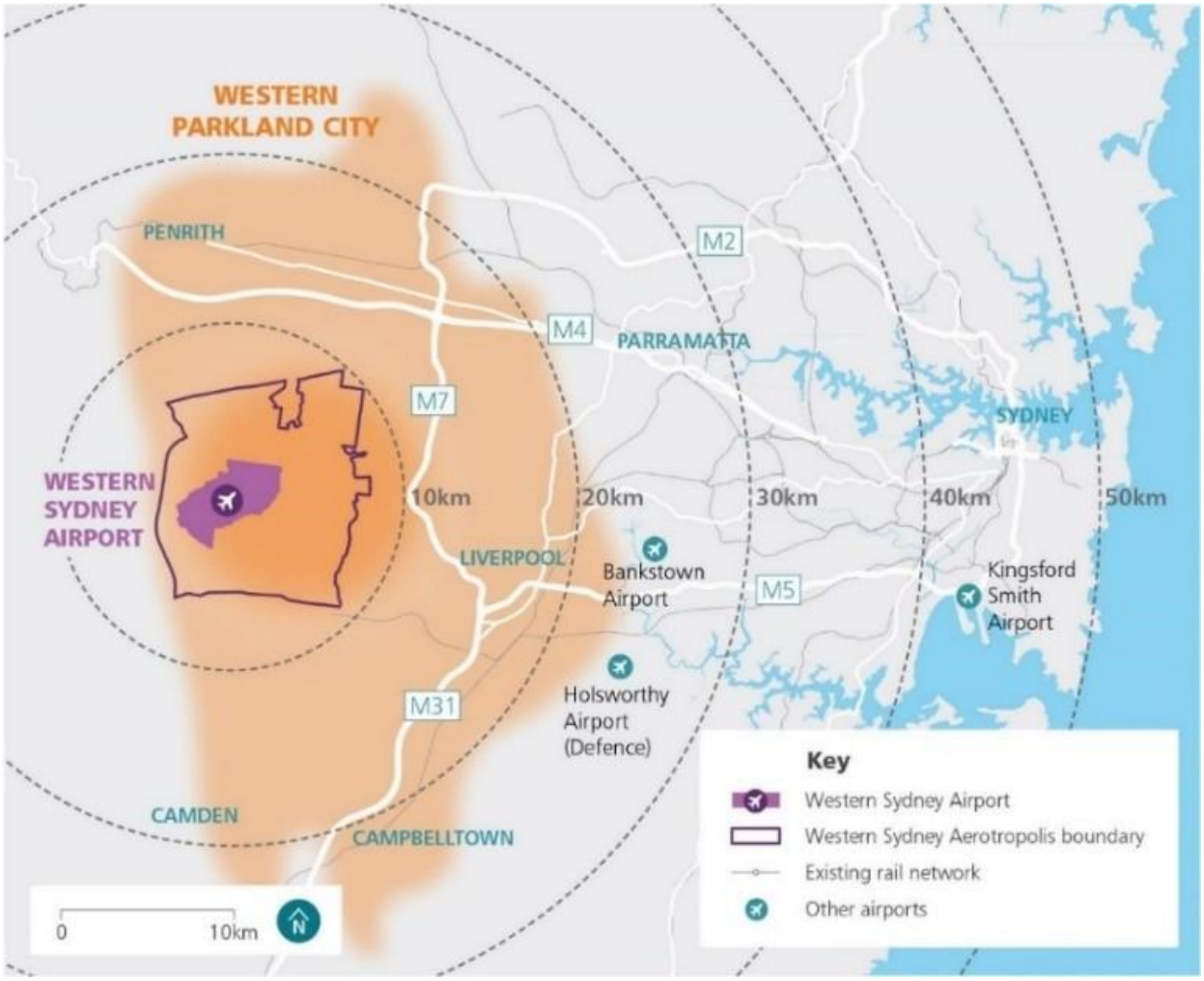
1.1.1 Vision for Western Parkland City

The NSW State Government's vision for the Western Parkland City is detailed in the Western City District Plan prepared by the Greater Sydney Commission (2018).

The vision articulates that a City be established on the strength of the Western Sydney International Airport (Airport) and the Western Sydney Aerotropolis. A polycentric City capitalising on the established centres of Liverpool, Penrith and Campbelltown; new city shaping transport making the City the most connected in Australia; a Western Economic Corridor attracting globally significant industries and contributing to a strong trade, logistics, education and science economy; creating knowledge intensive jobs; and delivering housing diversity around centres and transit nodes.

The 11,200-hectare Western Sydney Aerotropolis surrounds the future Airport in Badgerys Creek, within the Penrith and Liverpool local government areas, as shown in **Figure 1-1**.

Figure 1-1 Western Parkland City and Western Sydney Aerotropolis



1.1.2 Bradfield City Centre

Bradfield City Centre is located to the south-east of the new Western Sydney International (Nancy-Bird Walton) Airport at the intersection of Badgerys Creek Road and The Northern Road.

The Sydney Metro - Western Sydney Airport line runs through the site, providing connections from the key centre of St Marys through to stations at Orchard Hills, Luddenham, Airport Business Park, Airport Terminal and the Aerotropolis which is located within the site.

The site is surrounded by several key roads and infrastructure corridors including Bringelly Road, Badgerys Creek Road, Elizabeth Drive, M12 and The Northern Road.

Set on natural waterways, Bradfield City Centre presents a rare opportunity to showcase the best urban design and to create a thriving, blue and green connected city in which Australians will want to live, learn and work. Bradfield City Centre will be a beautiful and sustainable 22nd Century City. It will foster the innovation, industry and technology needed to sustain the broader Aerotropolis and fast track economic prosperity across the Western Parkland City. The nation's newest city centre – a 24-hour global metropolis with facilities for research, innovation and advanced manufacturing, education and housing.

The street address for Bradfield City Centre Is 215 Badgerys Creek Road, Bradfield (the Site) within the Liverpool Council Local Government Area (LGA). The site is legally described as Lot 10 DP 1235662 and has an area of 114.9 hectares, with road access to Badgerys Creek Road located at the north-western corner. The site includes land that is located within the Aerotropolis Core and Wianamatta-South Creek Precinct, of the Western Sydney Aerotropolis.

1.1.3 Bradfield City Centre Stage 2a Review of Environmental Factors Scope of Works

The proposed activity under this Review of Environmental Factors (REF) relates to the Stage 2a Enabling Works for the Bradfield City Centre.

In summary, the proposed activity relates to site clearing, construction of new roads, the provision of service authority utilities, street landscaping, and drainage and stormwater infrastructure.

Specifically, the scope of works for the Bradfield City Centre Stage 2a REF will include the following:

– Construction of new roads, and associated stormwater, earthworks and civil works.

– Provision of wastewater, potable water, recycle water infrastructure.

– Provision of electrical services network and reticulation infrastructure.

– Provision of data and telecommunications network infrastructure.

– Streetscape landscape works.

In addition, the Bradfield City Centre Stage 2a REF will also involve several activities which are ancillary to the construction of roads, including:

– Site clearance (including removal of vegetation).

– Provision of service authority utilities within the road corridors.

– Street landscaping.

– Drainage and stormwater infrastructure (including temporary stormwater basins. Stockpiling of excess soil.

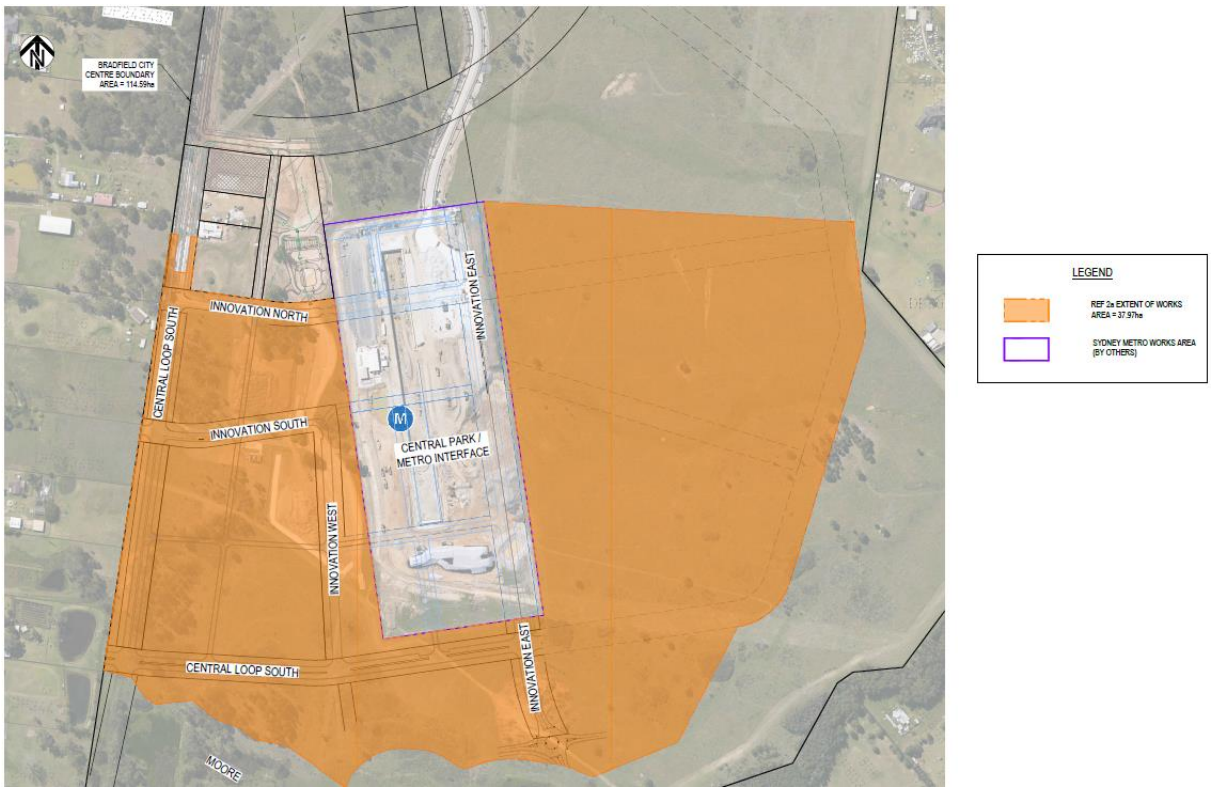
– Construction of temporary haul roads during construction, (together with the construction of the new roads).

– Road works.

The REF is accompanied by concept plans and a range of supporting technical studies which have been prepared to inform the proposed design.

The proposed road alignments and civil infrastructure for the Stage 2 Enabling Works are generally in accordance with the Western Sydney Aerotropolis Precinct Plan and Western Sydney Aerotropolis DCP and is consistent with the Bradfield City Centre Master Plan.

Figure 1-2 Stage 2a Works



Source: SMEC, November 2023

1.2 Purpose of report

The purpose of this traffic impact study is to support the Part 5 Review of Environmental Factors application that relates to the Stage 2a Enabling Works for the Bradfield City Centre. The traffic impact study has considered the following:

– Existing traffic conditions and infrastructure projects surrounding the site.

– Considerations relating to construction vehicles accessing the site.

– Impacts to pedestrian and cyclist accessibility during construction.

– Suitability of the proposed access and internal road network arrangements for the site.

– Transport impact of the development proposal on the surrounding road network.

The subject of this traffic impact study includes the following road network and intersections that are shown within the Stage 2a works area:

– Road 01 (Innovation East)

– Road 03 (Innovation North)

– Road 04 (Innovation West)

– Road 05 (Central Loop South)

– Road 09 and Road 10

– Centre Loop West Road / Innovation North Road (Intersection 3)

– Centre Loop West Road / Innovation South Road (Intersection 5)

– Centre Loop West Road / Centre Loop South Road (Intersection 6)

– Centre Loop South Road / Innovation West Road (Intersection 7)

– Innovation East Road / Centre Loop South Road (Intersection 8)

1.3 Assessment methodology

A number of reference documents and reports have been referenced and used to assess the subject intersections to confirm the suitability of the road design:

– Final Bradfield City Centre TMAP Report, AECOM (August 2023)

– Final Bradfield City Masterplan, Hatch | Roberts Day (August 2023)

– Draft concept road design, SMEC (September 2023)

– AIMSUN modelling outputs for 2026, 2036 and 2056 AM and PM peak hours, AECOM (June 2023)

The main source of inputs to the SIDRA modelling was from the AIMSUN modelling undertaken to support the Bradfield City Centre TMAP to be consistent with the land use and network assumptions discussed and agreed upon in consultation with TfNSW and other relevant stakeholders.

The intersection layouts and forecast traffic movements for each of the assessed locations for 2026, 2036 and 2056 AM and PM peak hours, extracted from the AIMSUN modelling, are discussed in Section 4.

However, the modelling has been revised based on design advice by SMEC (WPCA's head civil design consultant) and the design team that all roads within the design area except Metro Link Boulevard will be designed as one travel lane and one parking lane in each direction (SMEC, email dated 21 July 2023). Hence the SIDRA intersection modelling was undertaken with single lane approach in each direction to understand the performance of all subject intersections under the minimal lane arrangement.

1.4 Report structure

This report is divided into the following sections:

– **Section 2 Existing Conditions:** describes the current transport characteristics, including road network performance, crash history, public transport infrastructure and walking and cycling infrastructure.

– **Section 3 Future Conditions:** discusses how the network assumptions to respond to expected forecast population and employment growth by 2056.

– **Section 4 Traffic impact assessment:** discusses how the network performs in 2026, 2036 and 2056.

– **Section 5 Preliminary construction traffic and pedestrian management plan:** discusses how construction impacts be mitigated.

– **Section 6 Conclusion:** summaries the key outcomes of the analysis undertaken.

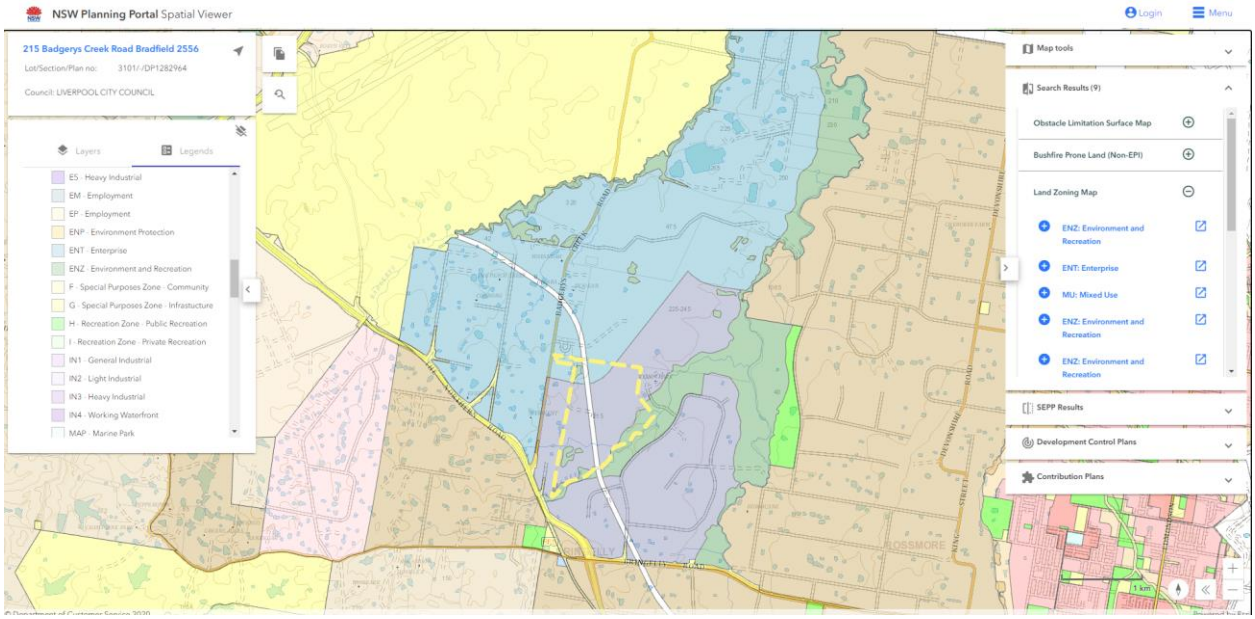
2.0 Existing conditions

This section describes the existing transport and land use conditions in the study area.

2.1 Land use

Land use zoning around Bradfield City Centre is shown in **Figure 2-1**. The City Centre is predominantly zoned Mixed Use under the Western Parkland City SEPP, with a small portion of Enterprise zoned land located on the north-western corner of the site. The site includes Environment and Recreation zoned land mostly along Thompson Creek.

Figure 2-1 Land use zoning around Bradfield City Centre



Source: NSW Department of Planning and Environment, © OpenStreetMap contributors, SCT Consulting, 2023

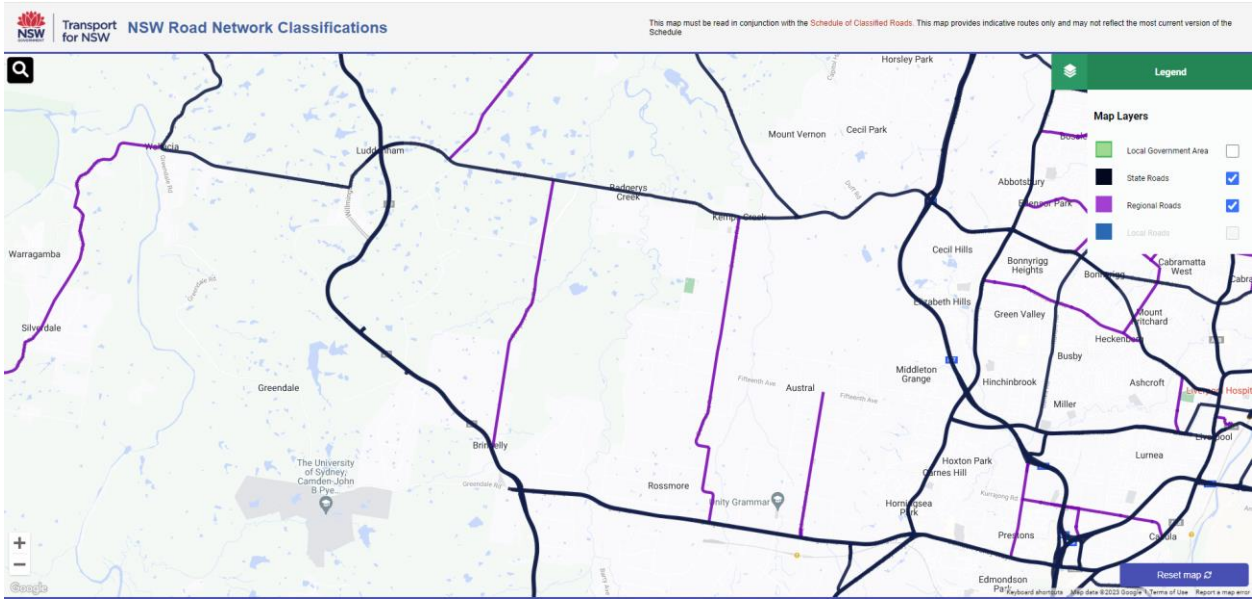
The site includes land that is located within the Aerotropolis Core and Wianamatta-South Creek Precincts of the Western Sydney Aerotropolis.

2.2 Road network

The City Centre has road access via Badgerys Creek Road at the north-western corner of it. Badgerys Creek Road is a two-lane two-way Regional Road that connects Elizabeth Drive to the north (via a roundabout) and The Northern Road to the south (via a set of traffic signals), as shown in **Figure 2-2**.

Badgerys Creek Road was realigned to allow for the new M12 Motorway and Sydney Metro Western Sydney Airport, and it will be an entry point to the Western Sydney Airport upon its opening in 2026. Badgerys Creek Road is approximately 7 kilometres long with an undivided carriageway and unsealed shoulders. A temporary roundabout is also constructed at 215 Badgerys Creek Road to facilitate access for the construction of the City Centre. It has a posted speed limit of 80km/hr.

Figure 2-2 Existing major road network



Source: Transport for NSW Road Network Classifications, 2023

2.3 Public transport network

There are no public transport services within 1km of the Bradfield City Centre.

The nearest train stations to the City Centre is:

– **Leppington Station** (located approximately 8 kilometres south-east of Bradfield City Centre) on the T2 Inner West and Leppington Line and T5 Cumberland Line.

– **Liverpool Station** (located approximately 18 kilometres east of Bradfield City Centre) on the T3 Bankstown Line.

The City Centre is connected to these stations, Liverpool City Centre and surrounding local suburbs via three bus routes:

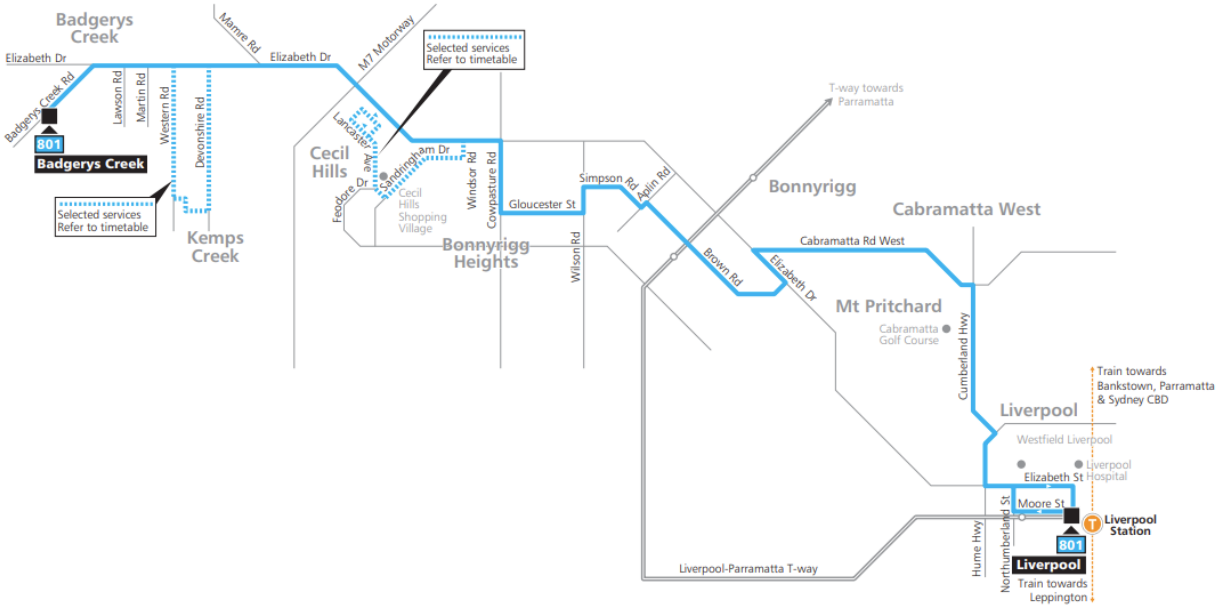
– 801 Badgerys Creek to Liverpool

– 855 Rutleigh Park to Liverpool via Austral & Leppington Station

– 856 Bringelly to Liverpool

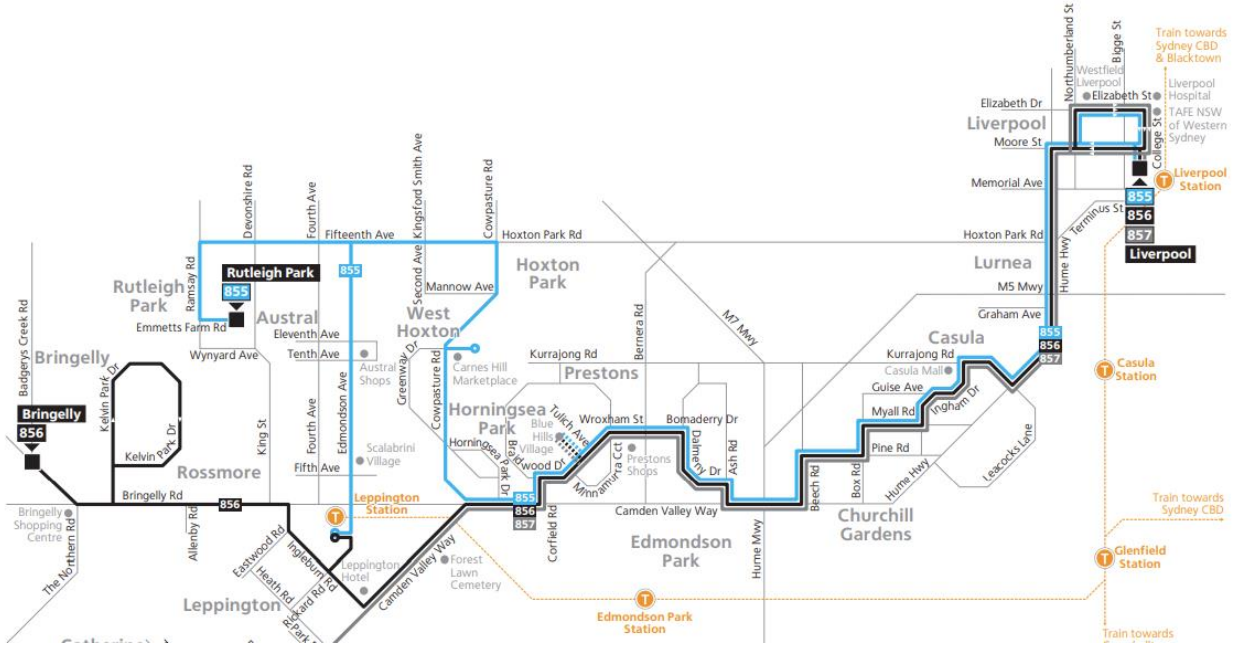
Route 801 terminates at the northern end of Badgerys Creek Road, just south of Elizabeth Drive. Route 856 terminates at Bringelly at the southern end of Badgerys Creek Road.

Figure 2-3 Bus routes 801



Source: TransportNSW.info, 2023

Figure 2-4 Bus routes 855 and 856



Source: TransportNSW.info, 2023

2.4 Active transport network

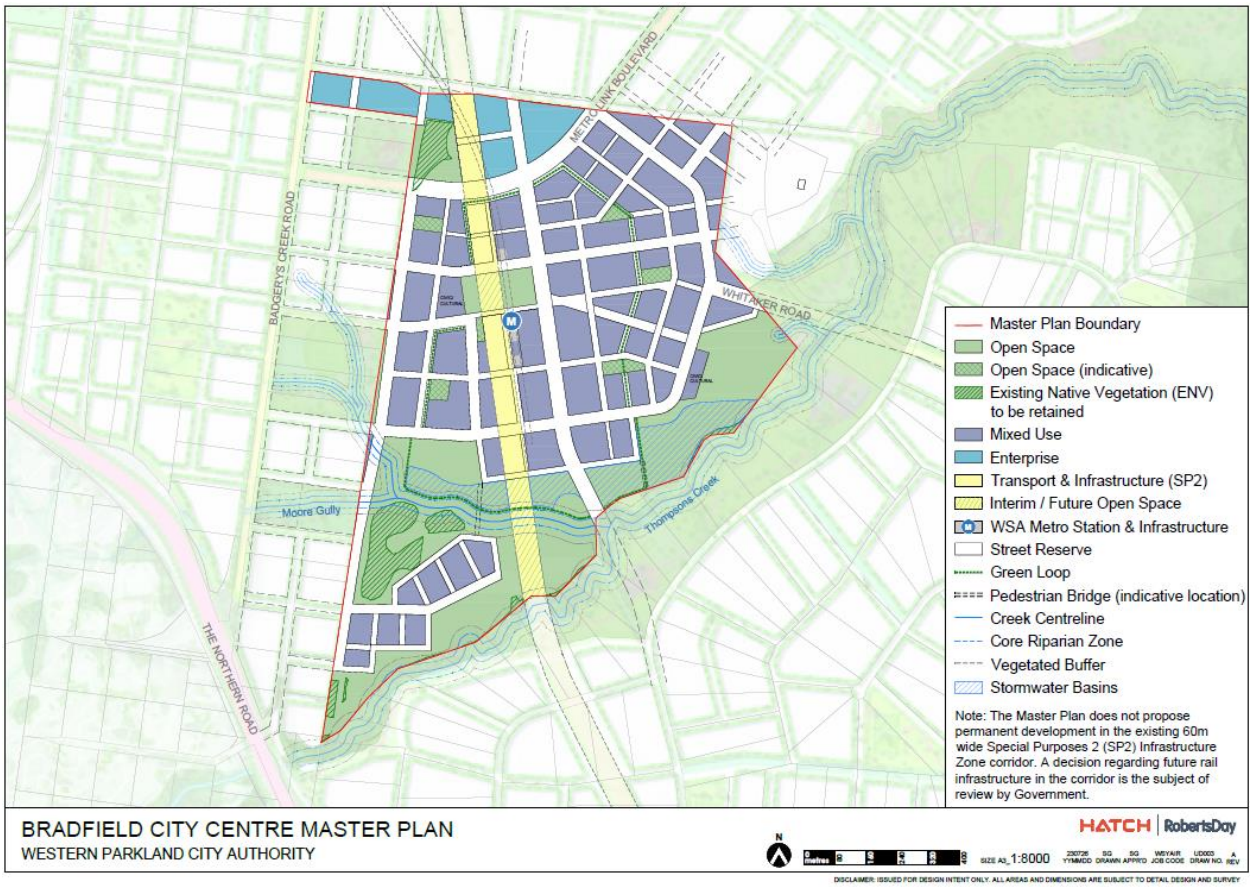
Given the rural nature and lack of urban development in the vicinity of the site, there is limited infrastructure to support pedestrian and cycling accessibility. There is no existing footpaths or shared paths around the site.

3.0 Future conditions

3.1 Introduction

The WPCA is managing the preparation of a Master Plan for the broader Bradfield City Centre. The Master Plan is sufficiently resolved to define the location of the buildings, streets and parks, as shown in **Figure 3-1**.

Figure 3-1 Bradfield City Centre Master Plan



Source: Hatch | RobertsDay, July 2023

AECOM has prepared the Bradfield City Centre Transport Management Accessibility Plan (TMAP) in accordance with the State Environmental Planning Policy (Precincts – Western Parkland City 2021 (Western Parkland City SEPP) and Master Plan Guidelines which establish the optional master planning process for land within the Western Sydney Aerotropolis.

AECOM has prepared traffic modelling (in AIMSUM) that reflects the forecast population and employment expected for the City Centre and the surrounding Aerotropolis and produces forecast traffic volumes of the masterplanned road network in the City Centre.

The Stage 2A REF assessment is consistent with the TAP endorsed, Draft Bradfield City Centre Master Plan and the endorsed TMAP. The TMAP was commenced using the TZP19 model and it was agreed through the TMAP process by all parties that this model would continue to be used for the Master Plan. Therefore, the use of TZP22 would be inconsistent with the approach adopted for Bradfield City Centre.

The forecast network assumptions and traffic volumes were provided by the AECOM AIMSUN model, as key inputs and assumptions to the SIDRA modelling prepared by SCT Consulting that assessed the performance of the subject intersections within the REF and to inform the civil design of the five subject intersections prepared by SMEC.

The AIMSUN modelling outputs were used for this project, as it was prepared to support the Bradfield City Centre TMAP to be consistent with the land use and network assumptions discussed and agreed upon in consultation with TfNSW and other relevant stakeholders.

The assumptions note of the Bradfield WSAGA AIMSUN mesoscopic traffic model and traffic volumes is included in **Appendix A**.

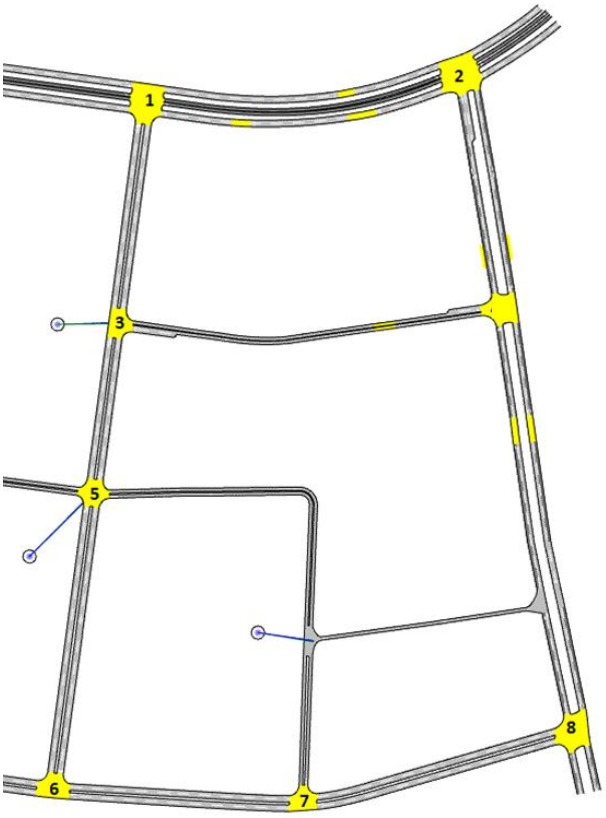
3.2 Forecast network assumptions

The network and intersection layouts for each of the five assessed locations for 2026, 2036 and 2056, extracted from the AIMSUN modelling, are summarised in **Figure 3-2** and **Table 3-1** respectively.

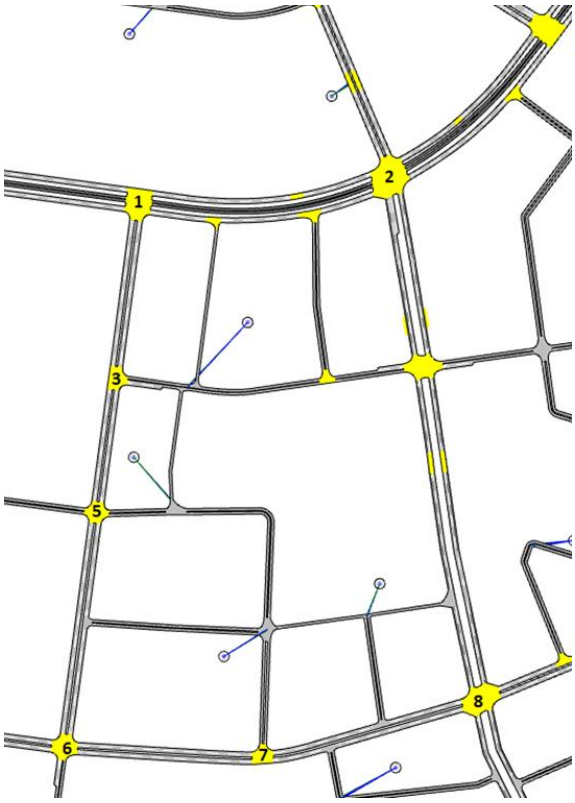
However, the modelling has been revised based on design advice by SMEC and the design team that all roads within the design area except Metro Link Boulevard will be designed as one travel lane and one parking lane in each direction (SMEC, email dated 21 July 2023). The full road reserve will enable additional traffic lanes to be implemented at all intersections if required.

Figure 3-2 Future road network assumptions

2026 Bradfield City Centre road network



2036 and 2056 Bradfield City Centre road network



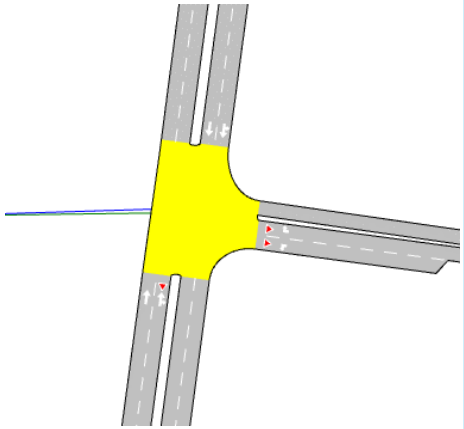
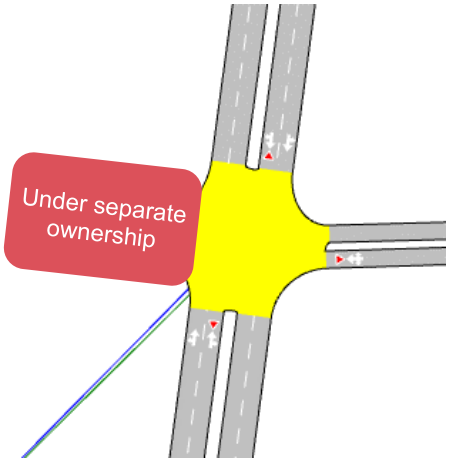
Source: AECOM, June 2023

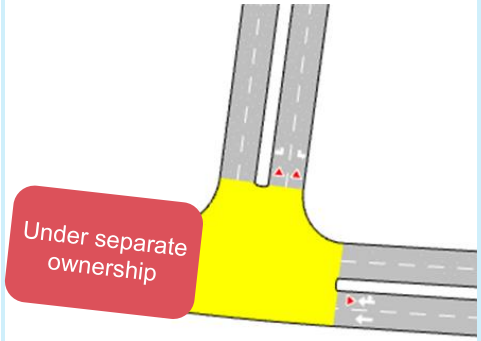
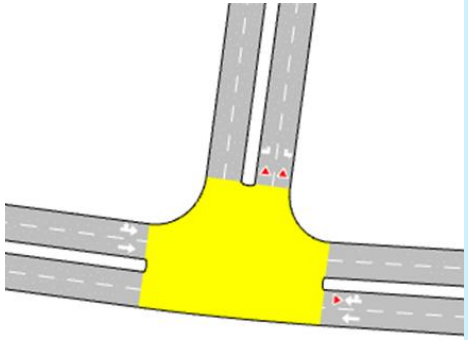
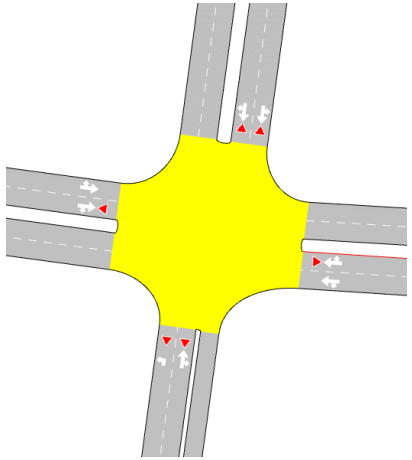
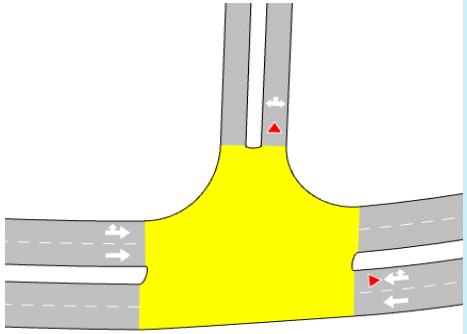
From a public transport perspective, the TMAP assumes the following measures to be delivered to improve connectivity to Bradfield City Centre from other parts of Western Parkland City and Greater Sydney:

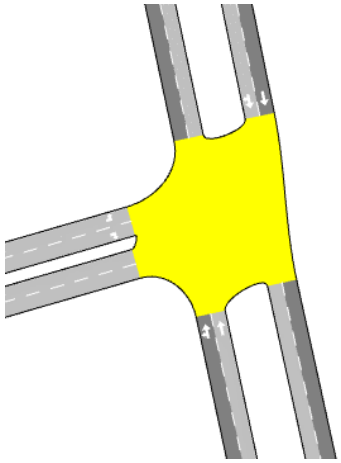
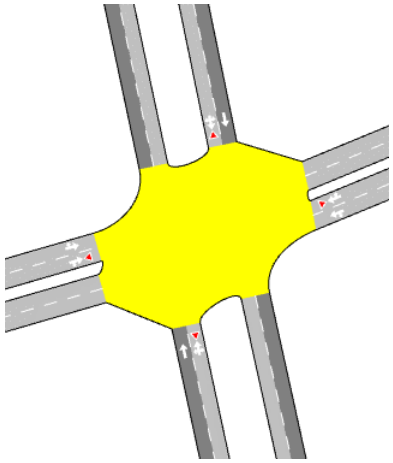
- Deliver rail extensions to Campbelltown-Macarthur and Schofields
- Deliver metro railway to Bradfield City Centre via Western Sydney Airport
- Deliver possible future rail extension from Bradfield to Glenfield
- Deliver planned increase in service frequencies for rapid, frequent, and local bus routes
- Bus priority measures along other parts of the Bradfield City Centre including the Transit Boulevard to be considered in TfNSW's Access and Servicing Plan
- Deliver a street network and associated bus infrastructure to support operation of high-quality bus services.

Traffic modelling results as presented in the TMAP show that there is a large increase in bus trips in 2036 as Bradfield and Aerotropolis Precinct land use intensifies, improved public transport provisions and bus frequencies, and with the application of the Precinct Parking Module (PPM) in PTPM. In 2056, there is a significant increase in bus trips as a result of further land use intensification and an interconnected bus network with increases to bus service frequencies to accommodate future growth and higher sustainable mode shares to public transport in the long term.

Table 3-1 Future intersection layout assumptions

Intersection	2026	2036	2056
Intersection 3 - Centre Loop West Road / Innovation North Road (priority)		Same as 2026	Same as 2026
Intersection 5 - Centre Loop West Road / Innovation South Road (priority)	 The western approach of this intersection is currently under separate land ownership, hence this intersection will be modelled as a T-intersection (without the western approach) in 2026.	Same as 2026	Same as 2026

Intersection	2026	2036	2056
Intersection 6 - Centre Loop West Road / Centre Loop South Road (priority)	 The western approach of this intersection is currently under separate land ownership, hence this intersection will be modelled as a L-intersection (without the western approach) in 2026.		
Intersection 7 - Centre Loop South Road / Innovation West Road (priority)		Same as 2026	Same as 2026

Intersection	2026	2036	2056
Intersection 8 - Innovation East Road / Centre Loop South Road (traffic signals)			Same as 2036

Source: AECOM, June 2023

3.3 Forecast traffic volumes

The forecast traffic volumes for each of five assessed locations for 2026, 2036 and 2056 AM and PM peak hours, extracted from the AIMSUN modelling, are summarised in **Table 3-2**.

Bus movements through these intersections have been taken into account based on forecast bus movements estimated in AECOM's strategic traffic forecasts supplied.

Table 3-2 Forecast peak hour traffic volumes in vehicles per hour (2026, 2036 and 2056)

Intersection	Approach	Turn	AM (8-9)			PM (5-6)		
			2026	2036	2056	2026	2036	2056
#3	North	Left	1	245	314	1	180	212
		Through	112	67	129	93	29	71
		Total vehicles	113	312	443	94	209	283
	East	Left	0	57	212	0	71	249
		Right	1	146	117	4	105	157
		Total vehicles	1	203	329	4	176	406
	South	Through	12	144	189	66	191	198
		Right	0	74	279	0	162	205
		Total vehicles	12	218	468	66	353	403
#5	North	Left	7	43	57	1	37	70
		Through	71	260	466	104	214	389
		Total vehicles	78	303	523	105	251	459
	East	Left	0	41	75	0	128	106
		Through	0	0	0	0	0	21
		Right	0	92	201	28	217	252
		Total vehicles	0	133	276	28	345	379
	South	Through	36	125	267	7	136	152
		Right	0	55	60	0	47	45
		Total vehicles	36	180	327	7	183	197
#6	North	Left	23	29	100	0	42	61
		Through	0	31	52	0	22	51
		Right	46	146	347	209	238	345
		Total vehicles	69	206	499	209	302	457
	East	Left	0	29	37	0	18	33
		Through	1	139	248	85	346	645
		Right	2	54	51	2	80	34
		Total vehicles	3	222	336	87	444	712
	South	Left	0	23	62	0	43	84
		Through	0	16	50	0	41	54
		Right	0	28	76	0	35	78

Intersection	Approach	Turn	AM (8-9)			PM (5-6)		
			2026	2036	2056	2026	2036	2056
		Total vehicles	0	67	188	0	119	216
	West	Left	101	110	225	23	62	111
		Through	96	277	350	10	89	233
		Right	0	47	102	0	16	45
		Total vehicles	197	434	677	33	167	389
#7	North	Left	0	83	199	0	100	187
		Right	3	128	179	83	300	352
		Total vehicles	3	211	378	83	400	539
	East	Through	0	94	155	5	139	358
		Right	0	96	206	0	56	142
		Total vehicles	0	190	361	5	195	500
	West	Left	117	273	267	4	74	163
		Through	7	61	258	6	90	210
		Total vehicles	124	334	525	10	164	373
#8	North	Left	0	0	6	0	0	13
		Through	0	131	153	0	143	281
		Right	0	19	27	5	12	18
		Total vehicles	0	150	186	5	155	312
	East	Left	0	0	42	0	0	2
		Through	0	124	310	0	127	391
		Right	0	23	62	0	9	89
		Total vehicles	0	147	414	0	136	482
	South	Left	0	69	50	0	53	73
		Through	0	197	245	0	90	167
		Right	0	7	109	0	10	70
		Total vehicles	0	273	404	0	153	310
	West	Left	7	20	55	6	48	47
		Through	0	20	236	0	39	265
		Right	0	102	187	0	109	102
		Total vehicles	7	142	478	6	196	414

Source: AECOM, June 2023

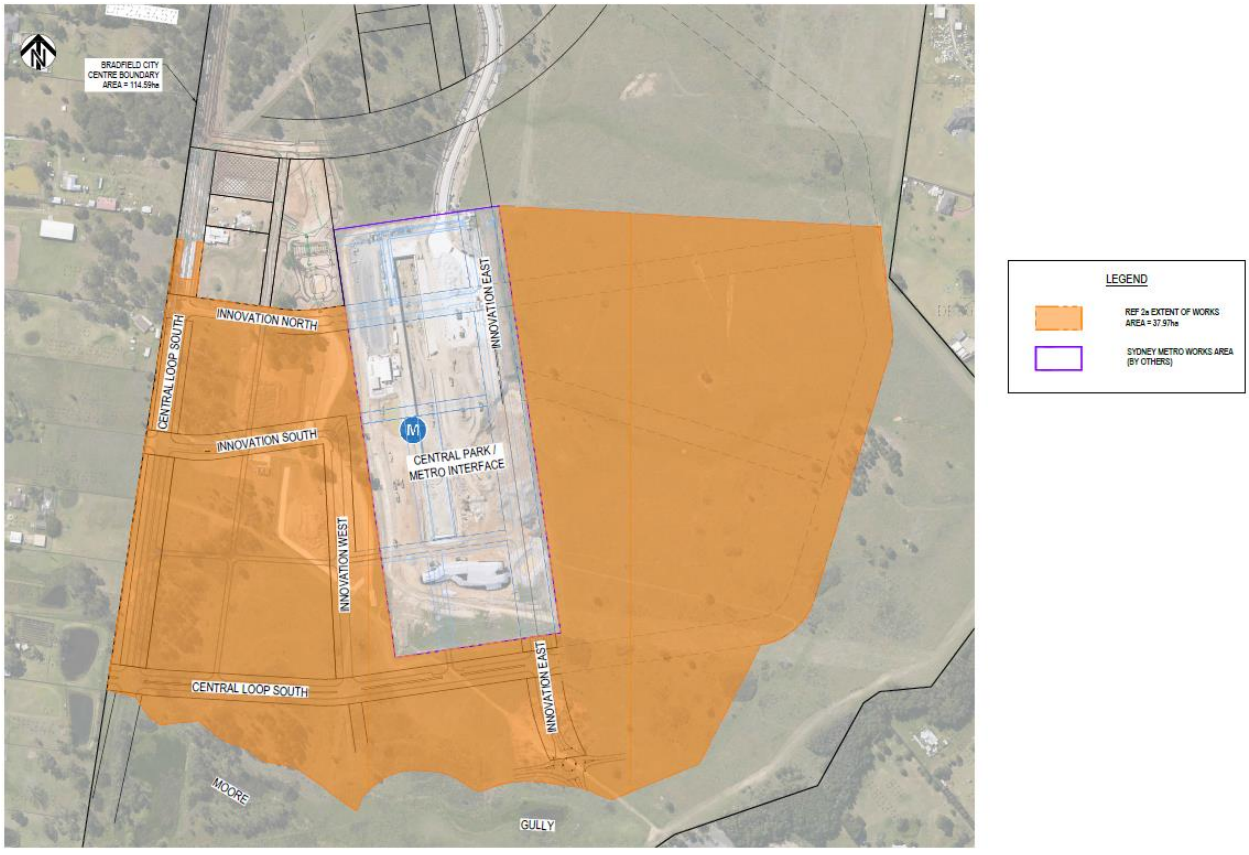
4.0 Traffic impact assessment

4.1 Scope of assessment

The subject of this traffic impact study includes the following road network and intersections that are shown within the Stage 2a works area (see **Figure 4-1**):

– Road 01 (Innovation East)
– Road 03 (Innovation North)
– Road 04 (Innovation West)
– Road 05 (Central Loop South)
– Road 09 and Road 10
– Centre Loop West Road / Innovation North Road (Intersection 3)
– Centre Loop West Road / Innovation South Road (Intersection 5)
– Centre Loop West Road / Centre Loop South Road (Intersection 6)
– Centre Loop South Road / Innovation West Road (Intersection 7)
– Innovation East Road / Centre Loop South Road (Intersection 8)

Figure 4-1 Stage 2a Works



Source: SMEC, November 2023

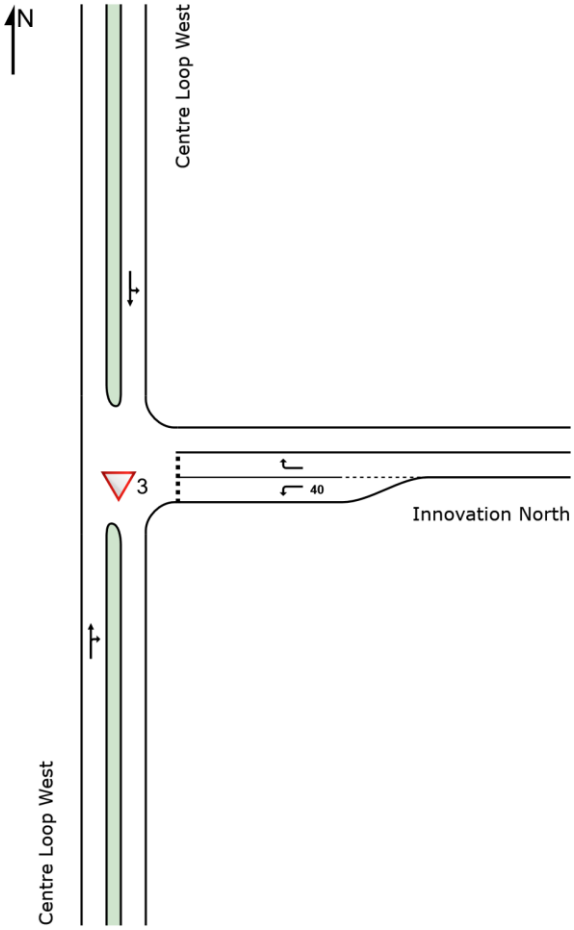
SIDRA modelling has been undertaken to understand the performance of the five subject intersections within the REF study area and to inform the civil design of the five subject intersections prepared by SMEC. The SIDRA model assumptions and outputs are summarised in the following sections of the report and the detailed SIDRA model performance summary are provided in **Appendix B**.

4.2 Centre Loop West Road / Innovation North Road (Intersection 3)

4.2.1 Proposed intersection layout

The Centre Loop West Road / Innovation North Road is planned to be a priority-controlled intersection as shown in **Figure 4-2**. This layout is assumed to remain unchanged for all the years assessed.

Figure 4-2 Centre Loop West Road / Innovation North Road



4.2.2 Forecast traffic volumes

The traffic volumes forecast at this intersection are shown in **Table 4-1** and **Table 4-2**.

Table 4-1 Centre Loop West Road / Innovation North Road AM peak flows

Approach	Movement	2026 AM	2036 AM	2056 AM
Centre Loop West (northern approach)	Left	1	245	314
	Through	112	67	129
Innovation North (eastern approach)	Left	0	57	212
	Right	1	146	117
Centre Loop West (southern approach)	Through	12	144	189
	Right	0	74	279
Total		**126**	**733**	**1,240**

Table 4-2 Centre Loop West Road / Innovation North Road PM peak flows

Approach	Movement	2026 PM	2036 PM	2056 PM
Centre Loop West (northern approach)	Left	1	180	212
	Through	93	29	71
Innovation North (eastern approach)	Left	0	71	249
	Right	4	105	157
Centre Loop West (southern approach)	Through	66	191	198
	Right	0	162	205
Total		**126**	**164**	**738**

4.2.3 Forecast intersection performance

The intersection performance of Centre Loop West Road / Innovation North Road under a 'Give-way' control for the forecast AM and PM peak hours are summarised in **Table 4-3** and **Table 4-4**.

Under the 'Give-way' priority control, the intersection is forecast to operate with spare capacity during both the AM and PM peak hours throughout the forecast years. This is evidenced by the maximum Degree of Saturation not exceeding 0.4 and Level of Service A.

Table 4-3 Centre Loop West Road / Innovation North Road AM performance

Approach	Degree of Saturation			Delay (seconds)			Level of Service			95th percentile queue (metres)		
	2026	2036	2056	2026	2036	2056	2026	2036	2056	2026	2036	2056
South	0.01	0.14	0.37	5.8	6.8	8.1	A	A	A	0	4	17
East	0.00	0.18	0.22	5.9	7.5	10.4	A	A	A	0	5	6
North	0.06	0.17	0.25	5.5	5.6	5.6	A	A	A	0	0	0
Overall	**0.06**	**0.18**	**0.37**	**5.8**	**7.5**	**10.4**	**A**	**A**	**A**	**0**	**5**	**17**

Table 4-4 Centre Loop West Road / Innovation North Road PM performance

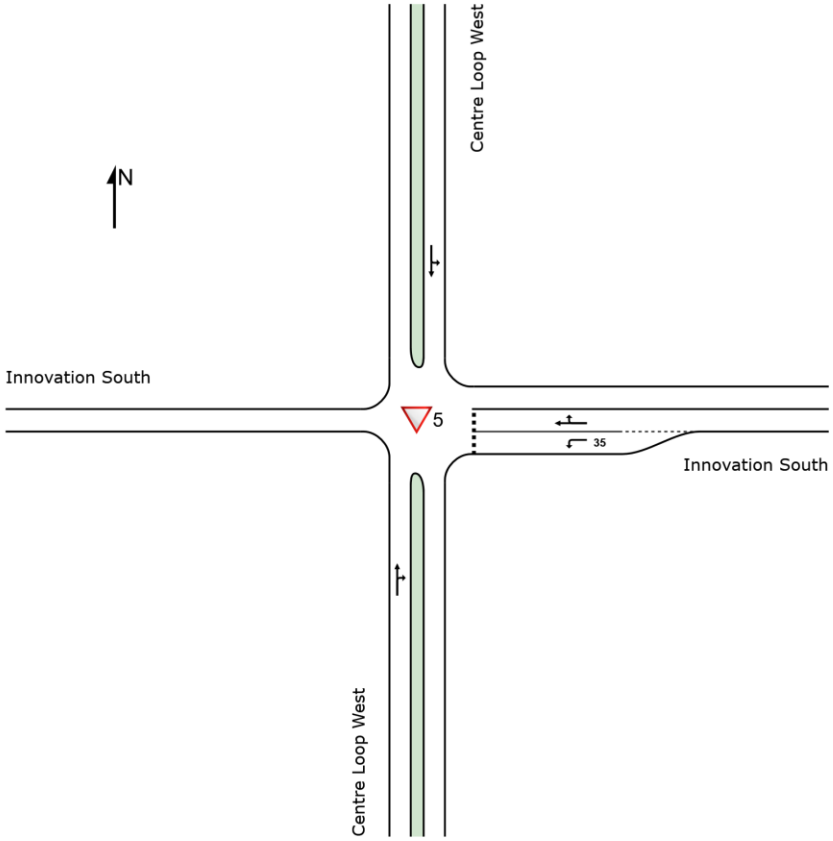
Approach	Degree of Saturation			Delay (seconds)			Level of Service			95th percentile queue (metres)		
	2026	2036	2056	2026	2036	2056	2026	2036	2056	2026	2036	2056
South	0.04	0.22	0.27	5.6	6.4	6.8	A	A	A	0	8	10
East	0.00	0.14	0.24	6.0	7.8	8.9	A	A	A	0	4	6
North	0.05	0.12	0.16	5.5	5.6	5.6	A	A	A	0	0	0
Overall	**0.05**	**0.22**	**0.27**	**6.0**	**7.8**	**8.9**	**A**	**A**	**A**	**0**	**8**	**10**

4.3 Centre Loop West Road / Innovation South Road (Intersection 5)

4.3.1 Proposed intersection layout

The Centre Loop West Road / Innovation South Road is planned to be a priority-controlled intersection as shown in **Figure 4-3**. This layout is assumed to remain unchanged for all the years assessed.

Figure 4-3 Centre Loop West Road / Innovation North Road



4.3.2 Forecast traffic volumes

The traffic volumes forecast at this intersection are shown in **Table 4-5** and **Table 4-6**.

Table 4-5 Centre Loop West Road / Innovation North Road AM peak flows

Approach	Movement	2026 AM	2036 AM	2056 AM
Centre Loop West (northern approach)	Left	7	43	57
	Through	71	260	466
Innovation South (eastern approach)	Left	0	41	75
	Through	0	0	0
	Right	0	92	201
Centre Loop West (southern approach)	Through	36	125	267
	Right	0	55	60
Total		**114**	**616**	**1,126**

Table 4-6 Centre Loop West Road / Innovation North Road PM peak flows

Approach	Movement	2026 PM	2036 PM	2056 PM
Centre Loop West (northern approach)	Left	1	37	70
	Through	104	214	389
Innovation South (eastern approach)	Left	0	128	106
	Through	0	0	21
	Right	28	217	252
Centre Loop West (southern approach)	Through	7	136	152
	Right	0	47	45
Total		**114**	**779**	**1,035**

4.3.3 Forecast intersection performance

The intersection performance of Centre Loop West Road / Innovation South Road under a 'Give-way' control for the forecast AM and PM peak hours are summarised in **Table 4-7** and **Table 4-8**.

Under the 'Give-way' priority control, the intersection is forecast to operate with spare capacity during both the AM and PM peak hours for all the forecast years, with the maximum Degree of Saturation not exceeding 0.6 and Level of Service B by 2056.

Table 4-7 Centre Loop West Road / Innovation North Road AM performance

Approach	Degree of Saturation			Delay (seconds)			Level of Service			95th percentile queue (metres)		
	2026	2036	2056	2026	2036	2056	2026	2036	2056	2026	2036	2056
South	0.02	0.11	0.21	5.6	6.7	8.1	A	A	A	0	3	5
East	0.00	0.15	0.56	5.8	8.6	18.1	A	A	B	0	4	19
North	0.04	0.17	0.28	5.5	5.6	5.6	A	A	A	0	0	0
Overall	**0.04**	**0.17**	**0.56**	**5.8**	**8.6**	**18.1**	**A**	**A**	**B**	**0**	**4**	**19**

Table 4-8 Centre Loop West Road / Innovation North Road PM performance

Approach	Degree of Saturation			Delay (seconds)			Level of Service			95th percentile queue (metres)		
	2026	2036	2056	2026	2036	2056	2026	2036	2056	2026	2036	2056
South	0.00	0.11	0.13	6.3	6.5	7.5	A	A	A	1	3	3
East	0.04	0.33	0.54	6.8	9.0	14.0	A	A	A	1	11	22
North	0.14	0.14	0.25	5.6	5.6	5.6	A	A	A	0	0	0
Overall	**0.14**	**0.33**	**0.54**	**6.8**	**9.0**	**14.0**	**A**	**A**	**A**	**1**	**11**	**22**

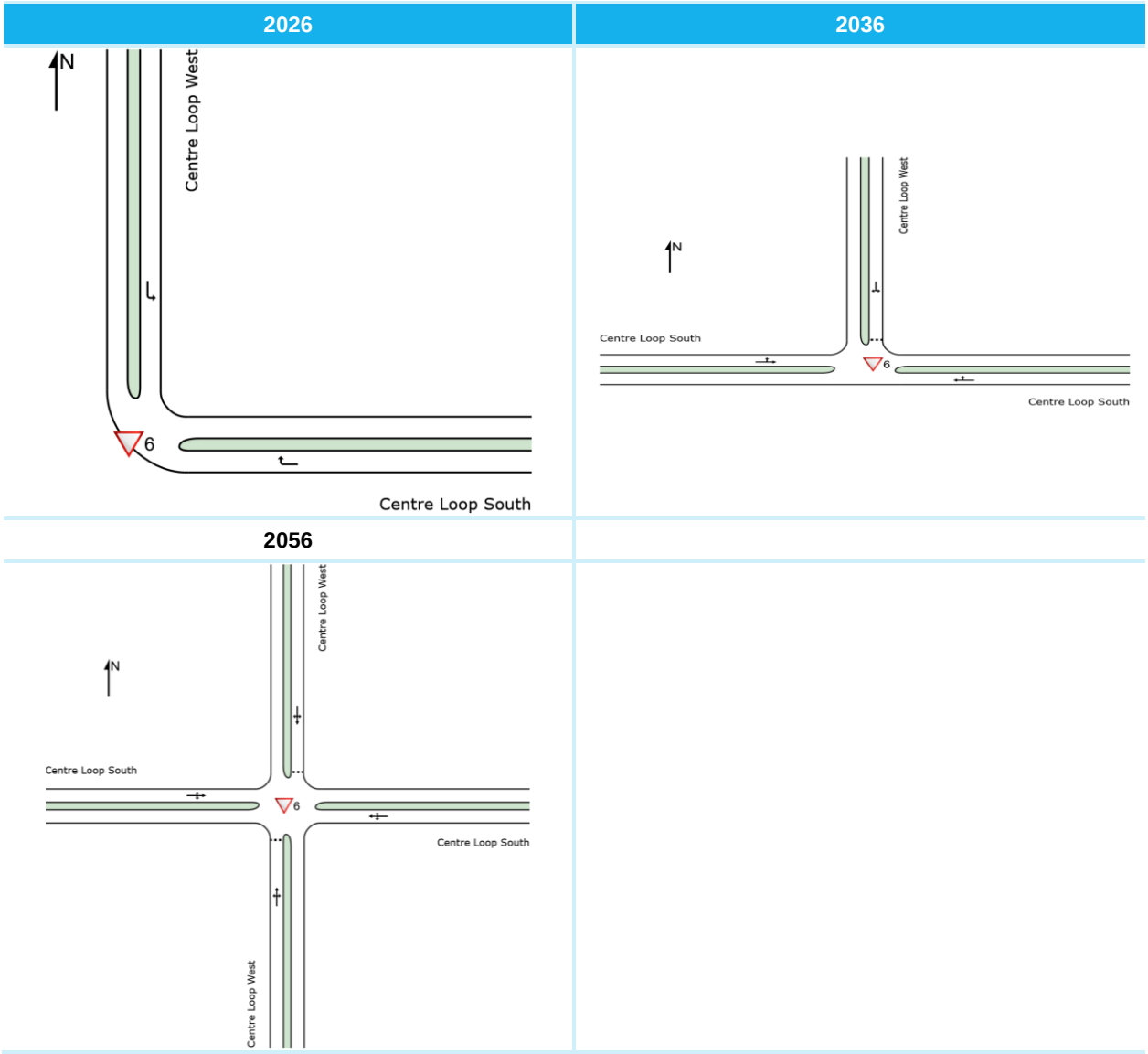
4.4 Centre Loop West Road / Centre Loop South Road (Intersection 6)

4.4.1 Proposed intersection layout

The Centre Loop West Road / Centre Loop South Road is planned to be a priority-controlled intersection as shown in **Figure 4-4**.

2026 layout shows a bend between Centre Loop West Road and Centre Loop South Road as these two roads would just be an extension of the roadway. By 2036, Centre Loop South Road would form a western arm to the intersection to form a T-junction. Ultimately by 2056, a southern arm would extend Centre Loop West to form a four-way 'Give-way' intersection.

Figure 4-4 Centre Loop West Road / Centre Loop South Road 'Give-way' layout



4.4.2 Forecast traffic volumes

The traffic volumes forecast at this intersection are shown in **Table 4-9** and **Table 4-10**.

Table 4-9 Centre Loop West Road / Centre Loop South Road AM peak flows

Approach	Movement	2026 AM	2036 AM	2056 AM
Centre Loop West (northern approach)	Left	23	29	100
	Through	0	31	52
	Right	0	146	347
Centre Loop South (eastern approach)	Left	0	29	37
	Through	0	139	248
	Right	2	54	51
Centre Loop West (southern approach)	Left	0	23	62
	Through	0	16	50
	Right	0	28	76
Centre Loop South (western approach)	Left	0	110	225
	Through	0	277	350
	Right	0	47	102
Total		**25**	**929**	**1,700**

Table 4-10 Centre Loop West Road / Centre Loop South Road PM peak flows

Approach	Movement	2026 PM	2036PM	2056 PM
Centre Loop West (northern approach)	Left	0	42	61
	Through	0	22	51
	Right	0	238	347
Centre Loop South (eastern approach)	Left	0	18	33
	Through	0	346	645
	Right	2	80	34
Centre Loop West (southern approach)	Left	0	43	84
	Through	0	41	54
	Right	0	35	78
Centre Loop South (western approach)	Left	0	62	111
	Through	0	89	233
	Right	0	16	45
Total		**2**	**1,032**	**1,776**

4.4.3 Forecast intersection performance – 'Give-way'

The intersection performance of Centre Loop West Road / Centre Loop South Road under a 'Give-way' control for the forecast AM and PM peak hours are summarised in **Table 4-11** and **Table 4-12**.

The 2026 assessment shows zero Degree of Saturation and minimal delays given that there is no intersection at this location, without the western and southern approaches.

By 2036, the T-junction is forecast to operate with spare capacity and LOS A during both the AM and PM peak hours. However, by 2056, the four-way 'Give-way' priority intersection is forecast to operate with extensive delays and queueing as well as DOS over one for the northern approach, during both the AM and PM peak hours resulting in LOS F as traffic volumes on all approaches continue to increase and traffic on northern approach struggles to find the gap to enter into the intersection under a 'Give-way' arrangement. Hence, a signalised intersection has been considered for 2056 in Section 4.4.4.

Table 4-11 Centre Loop West Road / Centre Loop South Road AM performance

Approach	Degree of Saturation			Delay (seconds)			Level of Service			95th percentile queue (metres)		
	2026	2036	2056	2026	2036	2056	2026	2036	2056	2026	2036	2056
South	-	-	0.43	-	-	18.0	-	-	B	-	-	15
East	0	0.12	0.21	5.5	9.0	14.7	A	A	B	0	4	6
North	0	0.23	1.40	5.5	8.4	+300	A	A	F	0	6	+500
West	-	0.21	0.39	-	5.6	9.9	-	A	A	-	0	10
Overall	**0**	**0.23**	**1.40**	**5.5**	**9.0**	**+300**	**A**	**A**	**F**	**0**	**6**	**+500**

Table 4-12 Centre Loop West Road / Centre Loop South Road PM performance

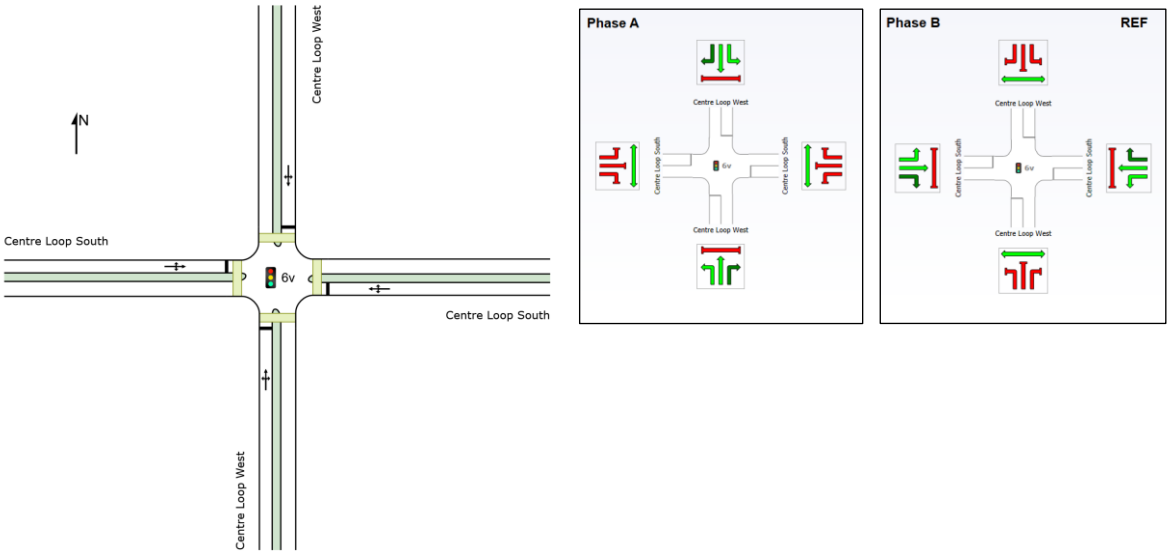
Approach	Degree of Saturation			Delay (seconds)			Level of Service			95th percentile queue (metres)		
	2026	2036	2056	2026	2036	2056	2026	2036	2056	2026	2036	2056
South	-	-	0.63	-	-	26.7	-	-	B	-	-	23
East	0	0.24	0.39	5.5	6.9	11.1	A	A	A	0	5	4
North	0	0.37	1.83	5.5	9.7	+700	A	A	F	0	14	+900
West	-	0.08	0.25	-	5.6	20.5	-	A	B	-	0	7
Overall	**0**	**0.37**	**1.83**	**5.5**	**9.7**	**+700**	**A**	**A**	**F**	**0**	**14**	**+900**

4.4.4 Signalised option intersection layout

To alleviate the forecast delays for the 2056 peak periods, a signalised intersection layout, as shown in **Figure 4-5**, was considered and assessed.

The assessment assumed a two-phase signal operation based on a 120-second cycle time for both the AM and PM peak assessments. Standard pedestrian volume assumptions were used for the modelling of this option.

Figure 4-5 Centre Loop West Road / Centre Loop South Road signalised intersection



4.4.5 Forecast intersection performance – signalised

The intersection performance of Centre Loop West Road / Centre Loop South Road under the signal control option for 2056 forecast AM and PM peak hours are summarised in **Table 4-13** and **Table 4-14**.

Under the single lane signalised option, the intersection is forecast to operate with Degree of Saturation below 1 and LOS D during both the AM and PM peak hours (which are typically acceptable performance requirements). This is an improvement from the forecast priority-controlled 'Give-way' layout, which fails to accommodate the 2056 forecast demands. However, it is noted that the approach queue distances are increased on three of the four arms. The full road reserve will enable additional turning lanes to be implemented at this intersection if required.

Table 4-13 Centre Loop West Road / Centre Loop South Road 2056 AM peak comparison - signals

Approach	Degree of Saturation		Delay (seconds)		Level of Service		95th percentile queue (metres)	
	Give-way	Signal	Give-way	Signal	Give-way	Signal	Give-way	Signal
South	0.43	0.35	18.0	34.4	B	C	15	60
East	0.21	0.73	14.7	44.3	B	D	6	134
North	1.40	0.94	+300	68.1	F	E	+500	267
West	0.39	0.92	9.9	53.8	A	D	10	333
Overall	**1.40**	**0.94**	**+300**	**54.0**	**F**	**D**	**+500**	**333**

Table 4-14 Centre Loop West Road / Centre Loop South Road 2056 PM peak comparison - signals

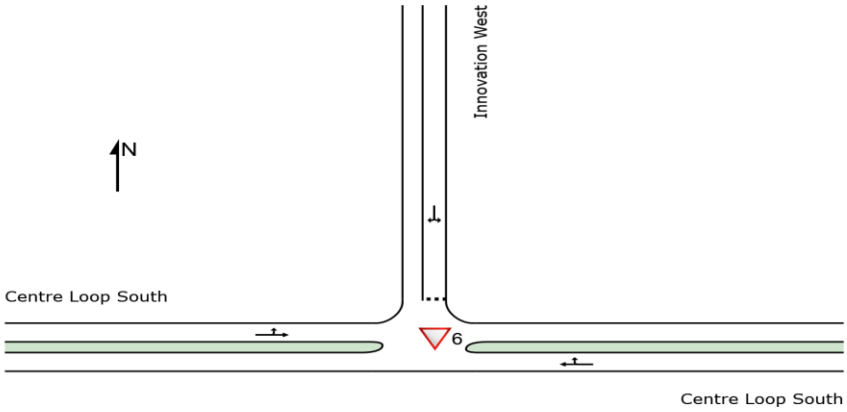
Approach	Degree of Saturation		Delay (seconds)		Level of Service		95th percentile queue (metres)	
	Give-way	Signal	Give-way	Signal	Give-way	Signal	Give-way	Signal
South	0.63	0.36	26.7	32.6	B	C	23	67
East	0.39	0.90	11.1	44.2	A	D	4	324
North	1.83	0.91	+700	60.1	F	E	+900	228
West	0.25	0.90	20.5	62.0	B	E	7	191
Overall	**1.83**	**0.91**	**+700**	**50.8**	**F**	**D**	**+900**	**228**

4.5 Centre Loop South Road / Innovation West Road (Intersection 7)

4.5.1 Proposed intersection layout – 'Give-way'

The Centre Loop South Road / Innovation West Road is planned to be a priority-controlled 'T-junction' as shown in **Figure 4-6**.

Figure 4-6 Centre Loop South Road / Innovation Road West Road 'Give-way' layout



4.5.2 Forecast traffic volumes

The traffic volumes forecast at this intersection are shown in **Table 4-15** and **Table 4-16**.

Table 4-15 Centre Loop South Road / Innovation West Road AM peak flows

Approach	Movement	2026 AM	2036 AM	2056 AM
Centre Loop South (eastern approach)	Through	0	94	155
	Right	0	96	206
Innovation West (northern approach)	Left	0	0	0
	Right	3	128	179
Centre Loop South (western approach)	Left	117	273	267
	Through	7	61	258
Total		**127**	**652**	**1,065**

Table 4-16 Centre Loop South Road / Innovation West Road PM peak flows

Approach	Movement	2026 PM	2036PM	2056 PM
Centre Loop South (eastern approach)	Through	5	139	358
	Right	0	56	142
Innovation West (northern approach)	Left	0	100	187
	Right	83	300	352
Centre Loop South (western approach)	Left	4	74	163
	Through	6	90	210
Total		**98**	**759**	**1,412**

4.5.3 Forecast intersection performance – 'Give-way'

The intersection performance of Centre Loop West Road / Centre Loop South Road under a 'Give-way' control for the forecast AM and PM peak hours are summarised in **Table 4-17** and **Table 4-18**.

The 2026 assessment shows nominal DOS and minimal delays given that there are very limited demands at this intersection. By 2036, the T-junction is forecast to operate with spare capacity and LOS A during both the AM and PM peak hours. Similarly, by 2056, the intersection is forecast to operate with minor increase of delays and DOS resulting in LOS B durign the PM peak hour.

Table 4-17 Centre Loop South Road / Innovation West Road AM performance

Approach	Degree of Saturation			Delay (seconds)			Level of Service			95th percentile queue (metres)		
	2026	2036	2056	2026	2036	2056	2026	2036	2056	2026	2036	2056
East	0	0.13	0.30	0	7.8	10.1	A	A	A	0	5	12
North	0	0.21	0.49	5.7	7.5	13.1	A	A	A	1	6	23
West	0.07	0.19	0.29	5.6	5.6	5.6	A	A	A	0	0	0
Overall	**0.07**	**0.21**	**0.49**	**5.7**	**7.8**	**13.1**	**A**	**A**	**A**	**1**	**6**	**23**

Table 4-18 Centre Loop South Road / Innovation West Road PM performance

Approach	Degree of Saturation			Delay (seconds)			Level of Service			95th percentile queue (metres)		
	2026	2036	2056	2026	2036	2056	2026	2036	2056	2026	2036	2056
East	0	0.11	0.32	5.5	6.7	9.5	A	A	A	0	3	10
North	0.07	0.40	0.84	5.6	7.6	23.8	A	A	B	2	14	88
West	0	0.09	0.20	5.5	5.6	5.6	A	A	A	0	0	0
Overall	**0.07**	**0.40**	**0.84**	**5.6**	**7.6**	**23.8**	**A**	**A**	**B**	**2**	**14**	**88**

4.6 Innovation East Road / Centre Loop South Road (Intersection 8)

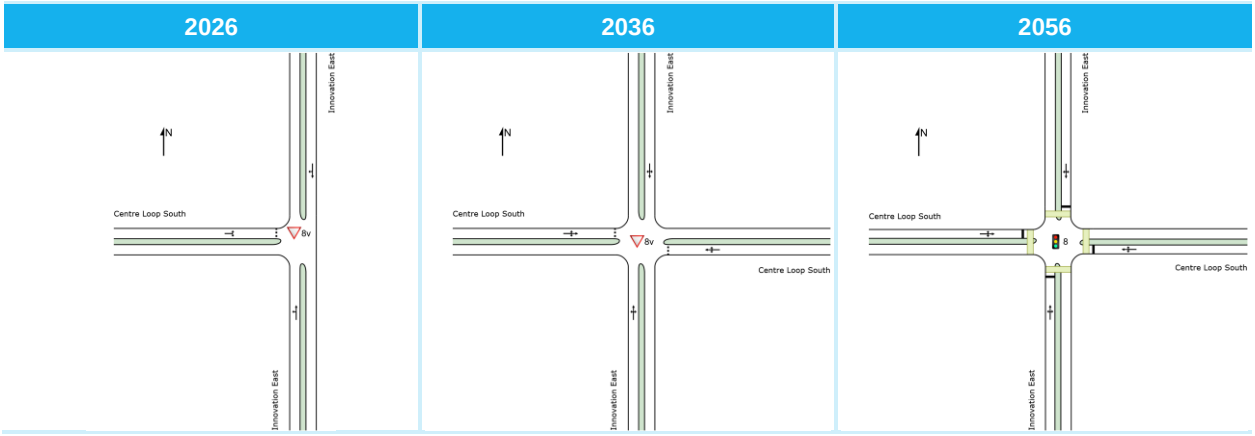
4.6.1 Proposed intersection layout

The Innovation East Road / Centre Loop South Road is planned to be a priority intersection for the 2026 and 2036 forecast years before a potential upgrade to a signalised intersection by 2056 as shown in **Figure 4-7**.

2026 layout shows a T-junction between Innovation Road and Centre Loop South. By 2036, the eastern arm of Centre Loop South is to be added to the intersection to form the fourth arm of the intersection.

The intersection is currently designed to known conditions and road users. The full road reserve will enable bus lanes and / or bus priority measures to be implemented at this intersection if required.

Figure 4-7 Innovation East Road / Centre Loop South Road layout



4.6.2 Forecast traffic volumes

The traffic volumes forecast at the Innovation East Road / Centre Loop South Road intersection are shown in **Table 4-19** and **Table 4-20**.

Table 4-19 Innovation East Road / Centre Loop South Road AM peak flows

Approach	Movement	2026 AM	2036 AM	2056 AM
Innovation East (southern approach)	Left	0	69	50
	Through	0	197	245
	Right	-	7	109
Centre Loop South (eastern approach)	Left	-	0	42
	Through	-	124	310
	Right	-	13	62
Innovation East (northern approach)	Left	-	0	6
	Through	0	131	153
	Right	0	19	27
Centre Loop South (western approach)	Left	7	20	55
	Through	-	20	236
	Right	0	102	187
Total		**7**	**712**	**1,482**

Table 4-20 Innovation East Road / Centre Loop South Road PM peak flows

Approach	Movement	2026 PM	2036 PM	2056 PM
Innovation East (southern approach)	Left	0	53	73
	Through	0	90	167
	Right	-	10	70
Centre Loop South (eastern approach)	Left	-	0	2
	Through	-	127	391
	Right	-	9	89
Innovation East (northern approach)	Left	-	0	13
	Through	0	143	281
	Right	5	12	18
Centre Loop South (western approach)	Left	6	48	47
	Through	-	39	265
	Right	0	109	102
Total		**2**	**640**	**1,518**

4.6.3 Forecast intersection performance

The intersection performance of Innovation East Road / Centre Loop South Road for the forecast AM and PM peak hours are summarised in **Table 4-21** and **Table 4-22**. The 2026 assessment shows zero Degree of Saturation and minimal delays. By 2036, the intersection is forecast to continue to operate at LOS A during both the AM and PM peak hours. By 2056, the intersection is forecast to operate at LOS C during both the AM and PM peak hours due to increased demands and induced delays generated by the signal operation.

Table 4-21 Centre Loop West Road / Centre Loop South Road AM performance

Approach	Degree of Saturation			Delay (seconds)			Level of Service			95th percentile queue (metres)		
	2026	2036	2056	2026	2036	2056	2026	2036	2056	2026	2036	2056
South	0	0.15	0.73	5.5	5.7	40.5	A	A	C	0	1	155
East	-	0.19	0.50	-	8.1	23.3	-	A	B	-	5	120
North	0	0.09	0.53	5.5	6.5	42.6	A	A	D	0	2	85
West	0.01	0.21	0.75	5.5	9.3	31.5	A	A	C	1	6	170
Overall	**0.01**	**0.21**	**0.75**	**5.5**	**9.3**	**33.3**	**A**	**A**	**C**	**1**	**6**	**170**

Table 4-22 Centre Loop West Road / Centre Loop South Road PM performance

Approach	Degree of Saturation			Delay (seconds)			Level of Service			95th percentile queue (metres)		
	2026	2036	2056	2026	2036	2056	2026	2036	2056	2026	2036	2056
South	0	0.09	0.62	5.5	6.0	40.2	A	A	C	0	1	114
East	-	0.15	0.61	-	7.6	25.8	-	A	B	-	4	152
North	0	0.09	0.48	5.5	6.0	32.5	A	A	C	1	1	104
West	0.01	0.23	0.62	5.5	8.4	30.2	A	A	C	1	7	138
Overall	**0.01**	**0.23**	**0.62**	**5.5**	**8.4**	**31.3**	**A**	**A**	**C**	**1**	**7**	**152**

4.7 Public transport

Of these roads to be delivered as part of Stage 2a works, Innovation Road East is a transit boulevard and Central Loop Road West and Central Loop Road South are collector streets. These streets are expected to be bus-capable and hence the traffic lanes are designed to be 3.5m wide to allow safe and efficient travel by buses in the City Centre.

As part of the remaining local road network, Road 04, Road 07, Road 13 and Road 14 are also bus capable 3.5m wide to allow safe and efficient travel by buses if required.

The intersections are all designed to meet standards to cater for future bus routes and bus customers.

4.8 Walking and cycling

Of these roads to be delivered as part of Stage 2a works , Innovation Road East is a transit boulevard and Central Loop Road West and Central Loop Road South are collector streets. These streets are expected to have footpaths on both sides of the streets and separated cycle paths.

Hence the streets are designed with minimum 3.0 footpaths on both sides of the streets. The transit boulevard (Innovation Road East) has been designed to have a 4.0m bi-directional bike lane and the collector streets (Central Loop Road West and Central Loop Road South) has been designed to have a 2m uni-directional bike lane on both sides of these streets.

The intersections are all designed to meet standards to cater for pedestrians and cyclists accordingly.

4.9 Parking

All collector streets to be delivered as part of Stage 2a works have been designed to have on-street parking provision on the kerbside lanes, that provide ample opportunities for street activation and parking supply for surrounding developments.

However, it should be noted that the surrounding developments will need to provide off-street parking according to the relevant standards and guidelines and the on-street parking cannot be used to offset off-street parking requirements.

5.0 Preliminary construction traffic and pedestrian management plan

The preliminary construction traffic and pedestrian management approach is outlined below. The contractor responsible for delivery will prepare a detailed construction traffic management plan (CTMP), which may need to be approved by relevant authorities before construction commences. The CTMP would usually include Temporary Traffic Management Plans (TTMPs) and a Driver's Code of Conduct.

Badgerys Creek Road is expected to be the key haulage route to and from the site, with The Northern Road and Elizabeth Drive being the primary state access road. These haulage routes are consistent with what is being proposed for Sydney Metro Western Sydney Airport.

The peak construction traffic is estimated to be 30 light vehicles during peak periods. The addition of construction traffic generated by the development is unlikely to impact the overall network performance, given the low net increase in vehicle trips. Road network impacts by worker traffic to the site will be further mitigated by the construction workers generally starting earlier and finishing earlier than the commuter peak periods and would likely not coincide with the road network peak periods.

The temporary construction access via the temporary roundabout at Badgerys Creek Road will only be used by construction vehicles, with minimal impact on general commuters. There will also be sufficient parking space on site to minimise the impact of construction vehicles on the availability of local parking availability.

Study area predominantly comprises rural lands with low-density developments, so construction activities will have minimal impact on surrounding land uses. Other mitigation measures would be adopted during the construction phase to reduce the impact of traffic movements on the community:

– Truckloads would be covered during transportation off-site
– Neighbouring properties would be notified of construction works and timing. Any comments would be recorded and taken into consideration when planning construction activities
– All activities, including the delivery of materials, are to be conducted fully within the sites and therefore would not impede traffic flow along local roads
– Materials would be delivered, and spoil removed during standard construction hours
– Avoidance of idling trucks alongside sensitive receivers
– Deliveries would be planned to ensure a consistent and minimal number of trucks arriving at the site at any one time.

To manage driver conduct the following measures are to be implemented:

– All truck movements will be scheduled
– Vehicles are to enter and exit the site in a forward direction along the travel path shown on delivery maps
– Drivers are to always give way to pedestrians and plants.

All vehicles must enter and exit the site in a forward direction. Traffic controllers will be nominated in future Road Occupancy License requests if required. The Roads Act does not give any special treatment to trucks leaving a construction site, the vehicles already on the road have the right-of-way. Vehicles entering, exiting, and driving around the site will be required to always give way to pedestrians, although it is not expected that there will be pedestrian activities near the site during the construction phase given the greenfields nature of the site.

The contractor responsible for delivery may coordinate with Sydney Metro to mitigate any impacts of concurrent construction on the local community and network. A further review of potential concurrent construction should occur as part of the construction traffic management plan to ensure traffic impact mitigations are proposed.

6.0 Conclusions

As part of the first phase of City creation, the delivery of Stage 2a works and the associated road network will be delivered in sub-stages. The subject of this traffic impact study includes the following road network and intersections that are shown within the Stage 2a works area:

– Road 01 (Innovation East)

– Road 03 (Innovation North)

– Road 04 (Innovation West)

– Road 05 (Central Loop South)

– Road 09 and Road 10

– Centre Loop West Road / Innovation North Road (Intersection 3)

– Centre Loop West Road / Innovation South Road (Intersection 5)

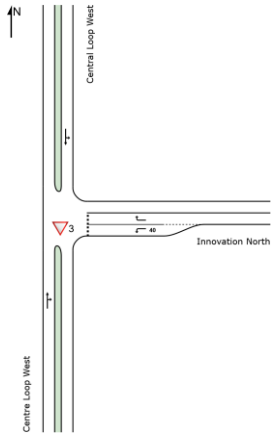
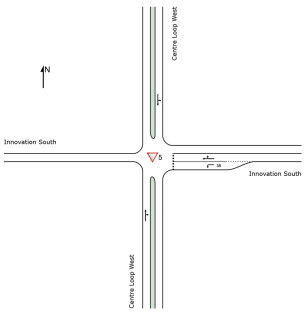
– Centre Loop West Road / Centre Loop South Road (Intersection 6)

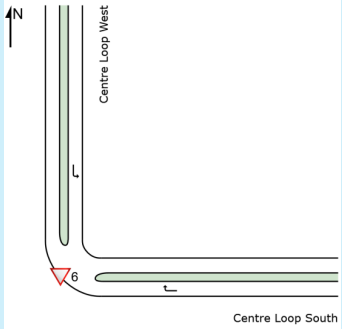
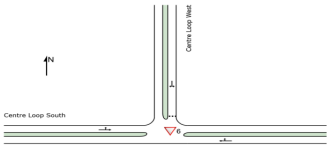
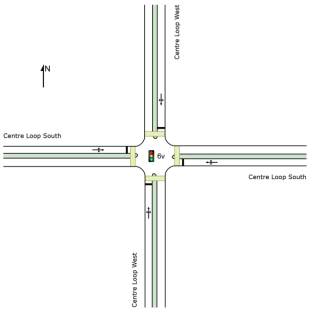
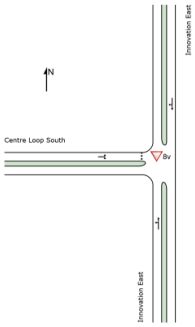
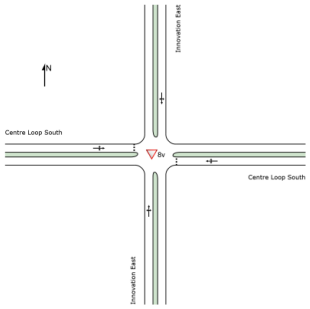
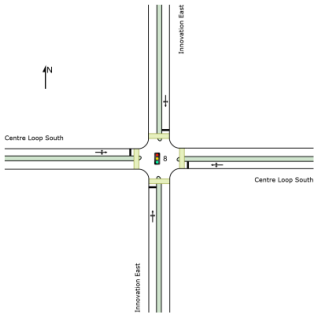
– Centre Loop South Road / Innovation West Road (Intersection 7)

– Innovation East Road / Centre Loop South Road (Intersection 8)

SIDRA modelling has been undertaken to the performance of the five subject intersections within the Stage 2a works area and to inform the civil design of the five subject intersections prepared by SMEC. The proposed intersection layout was assessed using forecast traffic volumes for 2026, 2036 and 2056 AM and PM peak hours.

The following intersection control is proposed for each of the five intersections assessed:

Intersections	2026	2036	2056
Centre Loop West Road / Innovation North Road (Intersection 3)		Same as 2026	Same as 2026
Centre Loop West Road / Innovation South Road (Intersection 5)		Same as 2026	Same as 2026

Intersections	2026	2036	2056
Centre Loop West Road / Centre Loop South Road (Intersection 6)			
Centre Loop South Road / Innovation West Road (Intersection 7)		Same as 2026	Same as 2026
Innovation East Road / Centre Loop South Road (Intersection 8)			

SIDRA modelling confirmed that all intersections (as part of the Stage 2a works area) will operate at LoS D or better.

APPENDIX A

ASSUMPTIONS NOTE OF THE BRADFIELD WSAGA AIMSUN MODEL AND TRAFFIC VOLUMES

Notes on the Bradfield WSAGA AIMSUN mesoscopic traffic model and traffic volumes – June 2023

Background on the WSAGA AIMSUN Model

The TfNSW Western Sydney Airport Growth Area (WSAGA) mesoscopic traffic model, developed in AIMSUN, forms a key component of an evidence-based methodology that the AECOM modelling team established in conjunction with the Western Parkland City Authority (WPCA) and Transport for NSW (TfNSW) to guide the overall Master Plan of Bradfield City Centre and the Transport Management Accessibility Plan (TMAP) assessment.

The WSAGA mesoscopic traffic model covers the road network in the Western Sydney Airport Growth Area between the M4 and Bringelly Road to the north and south, and the M7 and the Northern Road to the east and west (a map showing the model coverage is shown later in this note). The WSAGA model was originally developed for DPE and TfNSW AAI had subsequently refined it and used for projects including the M12 EIS.

The WSAGA mesoscopic traffic model allows for dynamic equilibrium assignment and can model delays and capacity constraints better than strategic models such as STM and PTPM. The WSAGA model adopted for the Master Plan of Bradfield City Centre, takes vehicle demand growth from PTPM (which takes STM inputs), combined with trip generation estimated from a first principles analysis for the Bradfield City Centre to estimate future road network and intersection performance.

The following caveats and assumptions should be noted with the use of the Bradfield WSAGA model:

- The TfNSW AAI team provided the WSAGA model for use to support the Master Plan of the Bradfield City Centre. This is the version used as part of the TfNSW M12 EIS study. Details of the WSAGA model, together with its functions and limitations, can be found in the M12 EIS document.
- The WSAGA model, as provided by TfNSW to AECOM in 2021, already includes a representation of the wider road network in the Western Sydney area, but it does not represent the most up-to-date road network assumptions as adopted by other TfNSW models such as the DTA and PTPM models. As advised by TfNSW and for the purpose of the Bradfield City Centre Master Plan project, the WSAGA model network was subsequently updated to be consistent with the TfNSW Dynamic Traffic Assignment (DTA) model road network for future year 2036, also provided by the TfNSW AAI team in 2021; and to be consistent with the PTPM version 5 model (which was used for the TfNSW Western Sydney Rapid Bus project) for future year 2026.
- The WSAGA model, as provided, does not include a detailed road network representation of the Bradfield City Centre area. Therefore, the Bradfield City Centre Master Plan road network, as provided by WPCA, has been coded in the WSAGA model for traffic modelling and performance assessment. The main roads as appeared in the road network plan provided have been coded in the model; however, it does not include the smaller local and access/egress roads linking with the individual buildings.
- The WSAGA model used for the M12 EIS study has a calibrated and validated 2017 model base year. It was agreed with TfNSW (and it is a standard practice) that future year demand matrices are generated by applying the absolute growth in traffic from the PTPM (future year matrix minus base year matrix) to the calibrated model base year matrix. It should be noted that the PTPM modelling adopted an adjusted version of the AAI TZP19 land use and used the Precinct Parking Module for the modelling of future years 2036 and 2056 as agreed with WPCA and TfNSW.
- To align with Bradfield City Centre target trip generation for future years, the AM peak PTPM traffic demand matrix and mode share outputs are examined for discrepancies between the PTPM output mode shares and the target mode shares for Bradfield City Centre. The trip ends for Bradfield in the PTPM traffic demand matrix are then updated to reflect the target trip generation in the future years, before feeding into WSAGA modelling.
- For modelling the PM peak in WSAGA, an established TfNSW approach that involves transposing the PTPM AM vehicle matrix, is used.
- WSAGA has been developed and run as described above to provide the traffic performance measures presented in the TMAP assessment.

Bradfield TMAP Model Scenarios

Three mesoscopic traffic modelling scenarios were developed and agreed with TfNSW and WPCA to provide the traffic modelling and assessment for the purpose to support the Bradfield City Centre Master Plan. These are shown in the table below.

Table – Mesoscopic WSAGA Traffic Modelling Scenarios

Scenario	Time Period	Demand Input	Network
Future year 2026	AM & PM	PTPM cordon traffic demand matrix for 2026, with adjustments to trip ends at Bradfield City Centre based on First Principles trip generation analysis using 2026 Master Plan development yields (GFA 48,500 sqm)	Wider road network in the WSAGA area aligns with PTPM model for 2026. Road network for Bradfield aligns with the Master Plan road network provided by WPCA.
Future year 2036	AM & PM	PTPM cordon traffic demand matrix for 2036, with adjustments to trip ends at Bradfield City Centre based on First Principles trip generation analysis using 2036 Master Plan development yields (GFA 341,000 sqm)	Wider road network in the WSAGA area aligns with the Dynameq model for 2036. Road network for Bradfield aligns with the Master Plan road network provided by WPCA.
Future year 2036 for the wider network plus 2056 development yields and internal network for the Bradfield City Centre	AM & PM	PTPM cordon traffic demand matrix for 2036, with adjustments to trip ends at Bradfield City Centre based on Frist Principles trip generation analysis using 2056 Master Plan development yields (GFA 1,258,000 sqm)	Wider road network in the WSAGA area aligns with the Dynameq model for 2036. Road network for Bradfield aligns with the Master Plan road network provided by WPCA.

Source: Developed in consultation with TfNSW and WPCA (AECOM, 2021)

STM and PTPM model scenarios and their assumptions are shown below.

Table – STM Modelling Scenarios

Scenario	WSRB model run	Land Use	Road, Bus & Rail networks
Future year 2026	#WSCD201	Project specific land use for 2026 based on TfNSW TZP19	Based on WSRB 2026, adopt project case freq. for the 5 rapid bus routes
Future year 2036	#WSCD301	Project specific land use for 2036 based on TfNSW TZP19	Based on WSRB 2036, adopt project case freq. for the 5 rapid bus routes
Future year 2056	#WSCD401	Project specific land use for 2056 based on TfNSW TZP19	Based on WSRB 2046, adopt project case freq. for the 5 rapid bus routes Additional rail schemes

Source: Developed in consultation with TfNSW and WPCA (AECOM, 2021)

Table – PTPM Modelling Scenarios

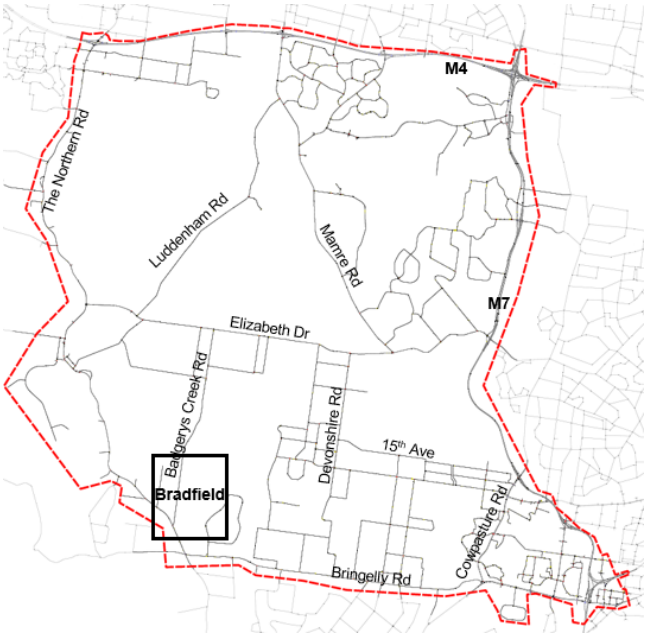
Scenario	WSRB model run	Demand Input	Road, Bus & Rail networks
Future year 2026	#WSCD204	From STM modelling (2026) described above	Based on WSRB 2026, adopt 'project case' bus network and frequencies
Future year 2036	#WSCD304	From STM modelling (2036) described above	Based on WSRB 2036, adopt 'project case' bus network and frequencies It was agreed with TfNSW and WPCA for 2036 to adopt the Precinct Parking Module with an Alternate Specific Constant (ASC) of 30 mins (after a review of the results for both ASC of 30 mins and with 60 mins)
Future year 2056	#WSCD404	From STM modelling (2056) described above	Based on WSRB 2046, adopt 'project case' bus network and frequencies Additional rail schemes It was agreed with TfNSW and WPCA for 2056 to adopt the Precinct Parking Module with an ASC of 90 mins

Source: Developed in consultation with TfNSW and WPCA (AECOM, 2021)

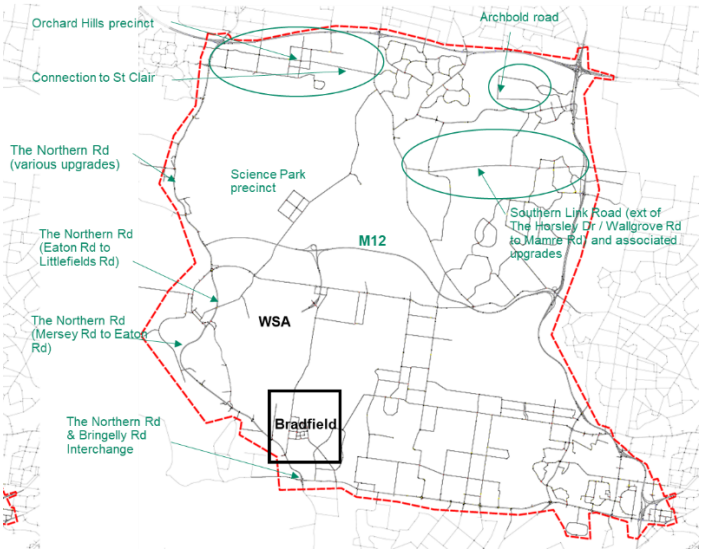
Coverage of WSAGA Model

The following maps show the coverage of the WSAGA model and its network.

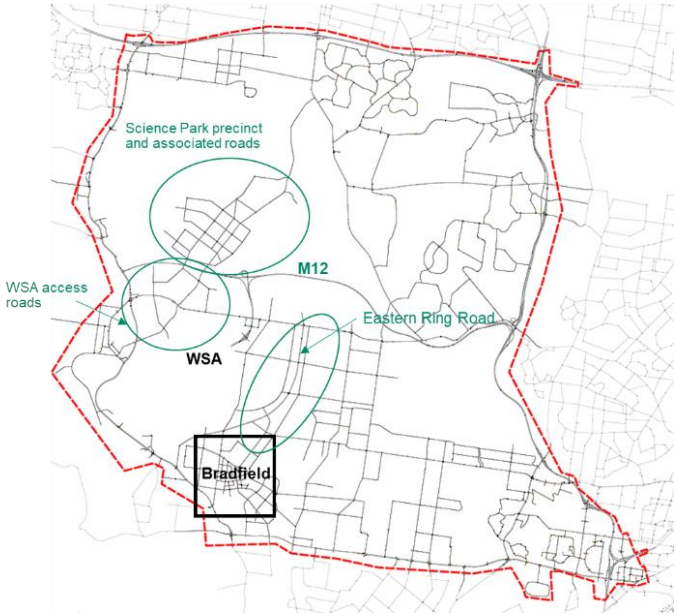
Map – WSAGA model coverage and its network (2017)



Map – WSAGA model coverage and its network (2026)

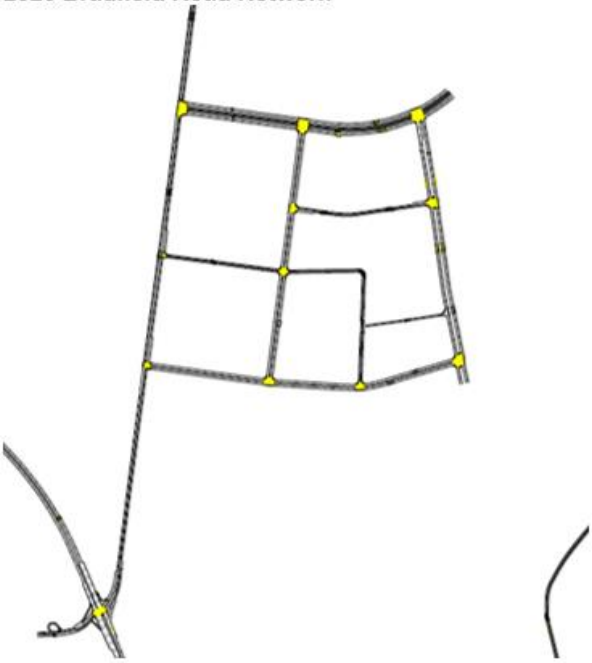


Map – WSAGA model coverage and its network (2036)



Within Bradfield City Centre, the road network has been coded in the WSAGA model to represent a simplification of the network as shown in the Bradfield City Centre Masterplan.

2026 Bradfield Road Network



2036 Bradfield Road Network

2056 Bradfield Road Network

Source: Based on the Draft Master Plan network (Road Network 220120 v2.pdf) provided by WPCA and subsequent discussions

Unreleased Traffic Demand

The WSAGA model covers a wide area and there is traffic demand not able to enter the system during the model periods. The traffic demand statistics for the wider area of the WSAGA model for the morning and evening peak periods are shown in the following table.

Table – Unreleased and total demand in WSAGA model

Period	Future Year	Traffic demand for 4-hour period		
		Unreleased demand	Total demand	% unreleased
AM 4-hour	2026	2,365	244,306	1%
	2036	14,073	313,233	4%
	2056	13,798	323,538	4%
PM 4-hour	2026	11,440	277,675	4%
	2036	53,089	361,644	15%
	2056	58,914	379,922	16%

Source: WSAGA modelling undertaken by AECOM (2022)

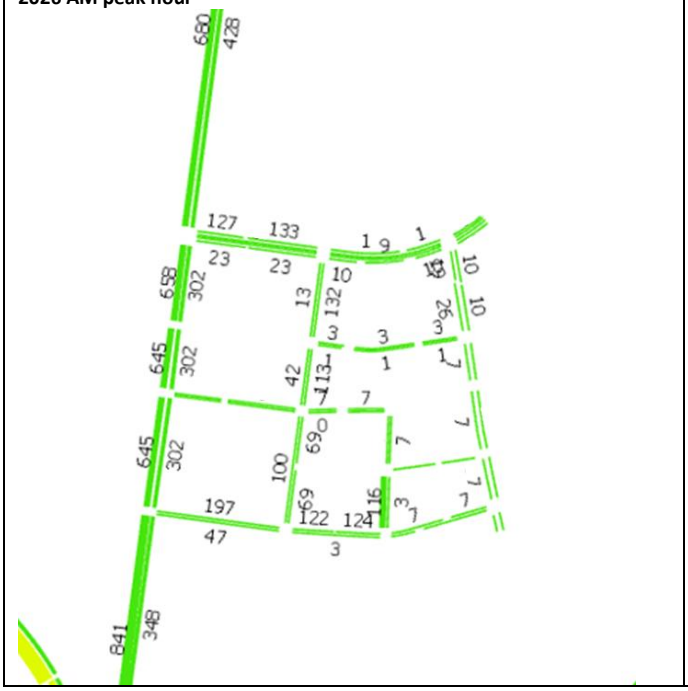
Approx. 15-16% of the forecast traffic demand over the 4-hour evening peak period is expected to be unable to enter the network in 2036 and 2056. The majority of the unreleased traffic is distributed at the south-eastern periphery of the WSAGA model area, as shown below. A high level of traffic congestion in the south-eastern periphery of the WSAGA model area also appears in the 2036 PTPM assignment. It indicates that the future road network at these locations would have insufficient capacity to carry the traffic in the wider area and this is consistent with the findings from the M12 Motorway EIS – Transport and Traffic Assessment Report (Oct 2019) which states there would be 18% of unrelease demand during the evening period in 2036.

The unreleased demand at the south-eastern periphery of the WSAGA model area is unlikely to have a material impact on the traffic generation for Bradfield as analysis of trip distribution in PTPM suggests only about 4% of traffic at Bradfield come from the congested south-eastern corner. It is also worth noting that as advised by TfNSW AAI, the wider network traffic demand input was generated from the PTPM model run which adopts the Precinct Parking Module with an ASC of 30 mins, which represents a more conversative scenario in terms of car demand (i.e. higher levels of car demand) when compared to using an ASC of 60 mins for model year 2036.

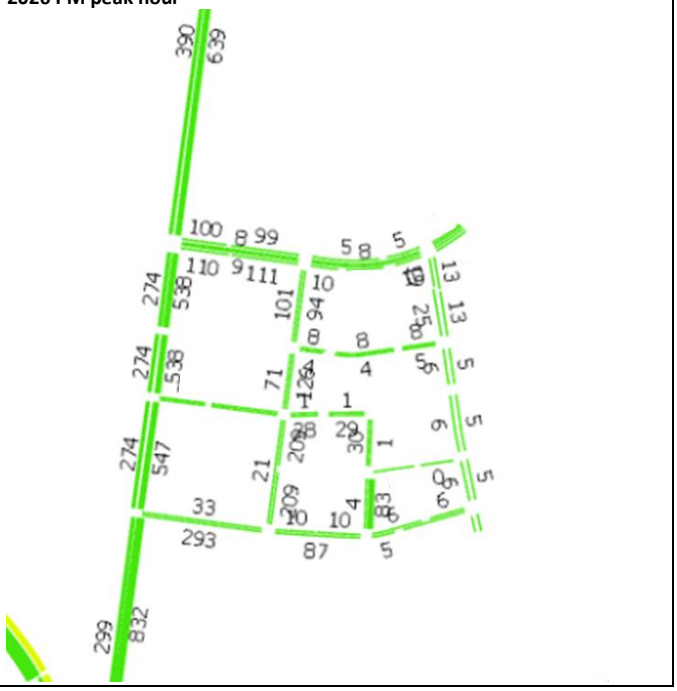
Peak Hour Traffic Flows

The assigned peak hour traffic flows are shown below.

2026 AM peak hour

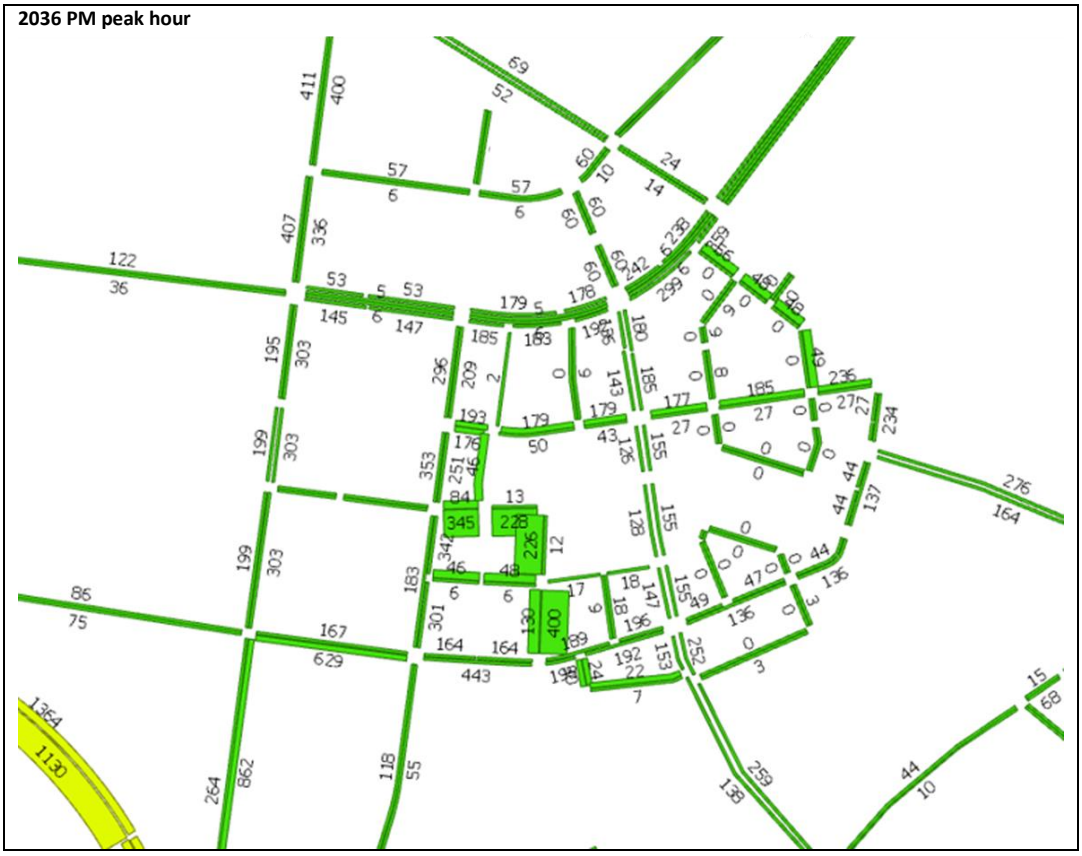


2026 PM peak hour



2036 AM peak hour

2036 PM peak hour



2056 AM peak hour

Further details and discussion on the modelling can be found in the Bradfield City Centre Transport Management Accessibility Plan, which incorporates the modelling assumptions book.

APPENDIX B

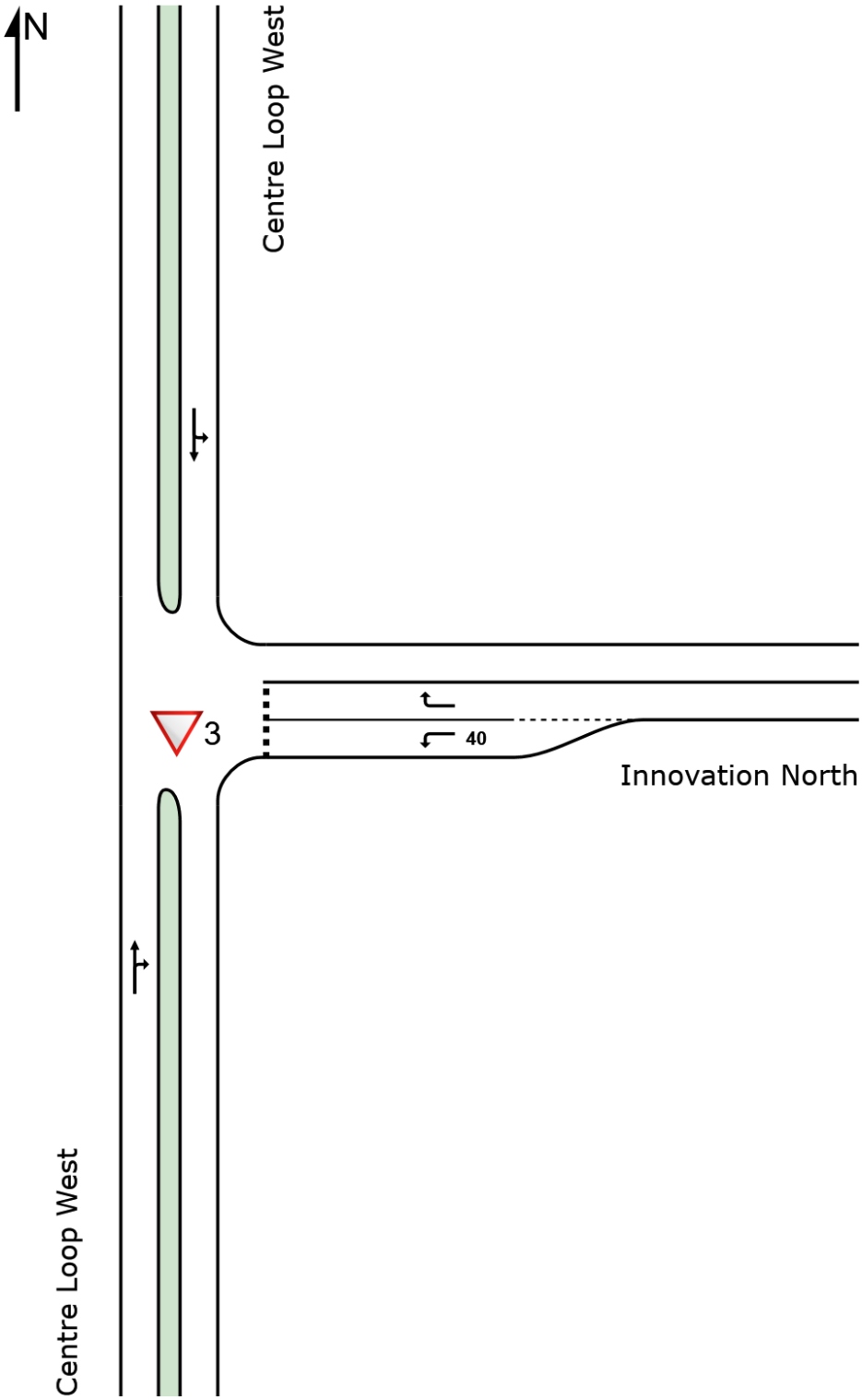
SIDRA MODELLING OUTPUTS

SITE LAYOUT

Site: 3 [3.Centre Loop West/Innovation North_AM (Site Folder: 2026)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 3 [3.Centre Loop West/Innovation North_AM (Site Folder: 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
2	T1	All MCs	13	0.0	13	0.0	0.007	0.0	LOS A	0.0	0.0	0.04	0.06	0.04	59.1
3	R2	All MCs	1	0.0	1	0.0	0.007	5.8	LOS A	0.0	0.0	0.04	0.06	0.04	56.2
Approach			14	0.0	14	0.0	0.007	0.5	NA	0.0	0.0	0.04	0.06	0.04	58.8
East: Innovation North															
4	L2	All MCs	1	0.0	1	0.0	0.001	5.8	LOS A	0.0	0.0	0.20	0.51	0.20	50.7
6	R2	All MCs	1	0.0	1	0.0	0.001	5.9	LOS A	0.0	0.0	0.20	0.54	0.20	51.0
Approach			2	0.0	2	0.0	0.001	5.8	LOS A	0.0	0.0	0.20	0.52	0.20	50.9
North: Centre Loop West															
7	L2	All MCs	1	0.0	1	0.0	0.060	5.5	LOS A	0.0	0.0	0.00	0.01	0.00	57.0
8	T1	All MCs	118	0.0	118	0.0	0.060	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach			119	0.0	119	0.0	0.060	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.9
All Vehicles			135	0.0	135	0.0	0.060	0.2	NA	0.0	0.0	0.01	0.02	0.01	59.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 3 [3.Centre Loop West/Innovation North_PM (Site Folder: 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
2	T1	All MCs	69	0.0	69	0.0	0.036	0.0	LOS A	0.0	0.0	0.01	0.01	0.01	59.8
3	R2	All MCs	1	0.0	1	0.0	0.036	5.6	LOS A	0.0	0.0	0.01	0.01	0.01	56.8
Approach			71	0.0	71	0.0	0.036	0.1	NA	0.0	0.0	0.01	0.01	0.01	59.8
East: Innovation North															
4	L2	All MCs	1	0.0	1	0.0	0.001	5.7	LOS A	0.0	0.0	0.18	0.51	0.18	50.7
6	R2	All MCs	4	0.0	4	0.0	0.004	6.0	LOS A	0.0	0.1	0.23	0.55	0.23	50.9
Approach			5	0.0	5	0.0	0.004	6.0	LOS A	0.0	0.1	0.22	0.54	0.22	50.9
North: Centre Loop West															
7	L2	All MCs	1	0.0	1	0.0	0.050	5.5	LOS A	0.0	0.0	0.00	0.01	0.00	57.0
8	T1	All MCs	98	0.0	98	0.0	0.050	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach			99	0.0	99	0.0	0.050	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles			175	0.0	175	0.0	0.050	0.3	NA	0.0	0.1	0.01	0.02	0.01	59.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

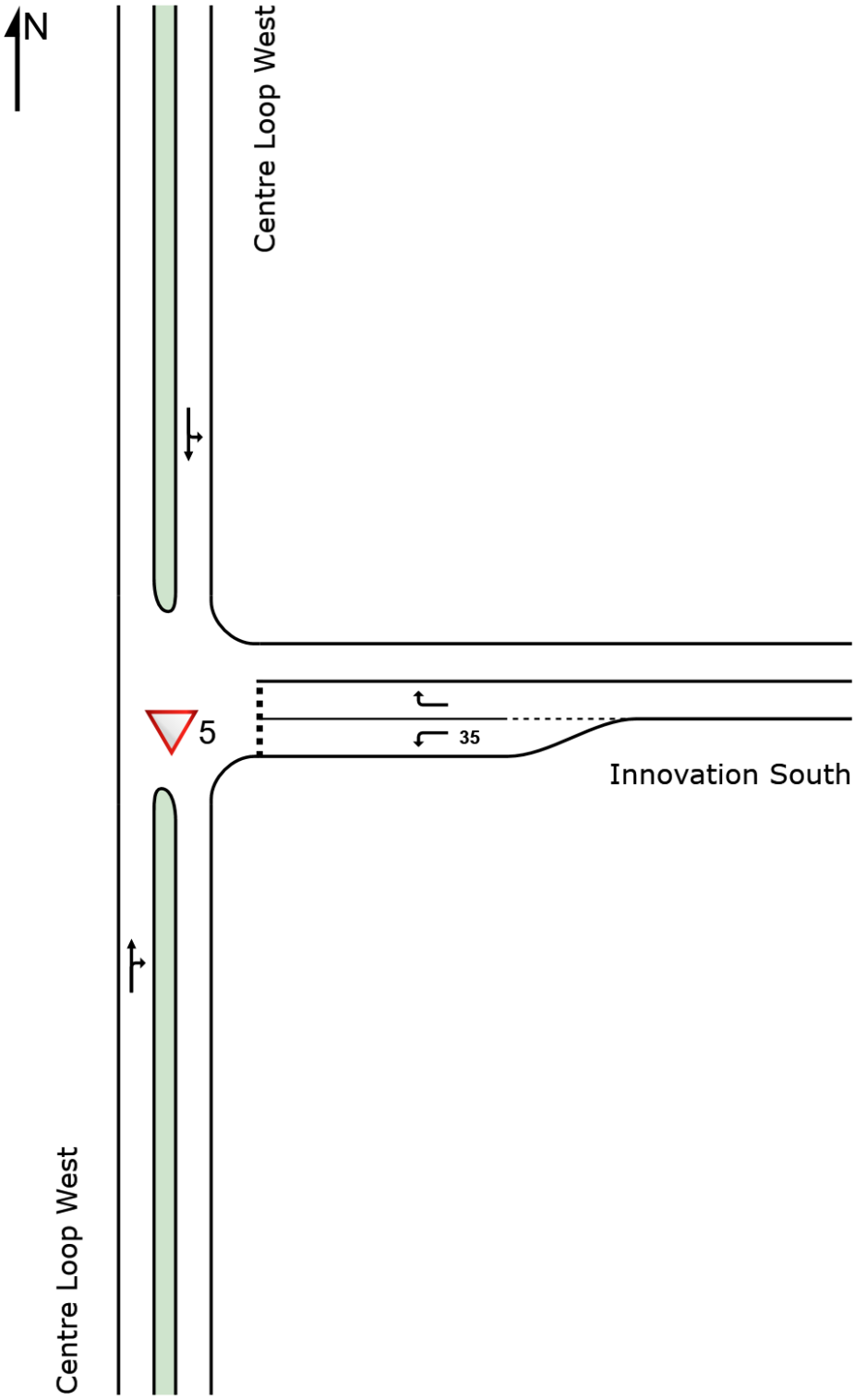
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 5 [5.Centre Loop West/Innocation South_AM (Site Folder: 2026)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 5 [5.Centre Loop West/Innocation South_AM (Site Folder: 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
2	T1	All MCs	38	0.0	38	0.0	0.020	0.0	LOS A	0.0	0.0	0.01	0.02	0.01	59.8
3	R2	All MCs	1	0.0	1	0.0	0.020	5.6	LOS A	0.0	0.0	0.01	0.02	0.01	57.3
Approach			39	0.0	39	0.0	0.020	0.2	NA	0.0	0.0	0.01	0.02	0.01	59.7
East: Innovation South															
4	L2	All MCs	1	0.0	1	0.0	0.001	5.7	LOS A	0.0	0.0	0.15	0.52	0.15	52.4
6	R2	All MCs	1	0.0	1	0.0	0.001	5.8	LOS A	0.0	0.0	0.18	0.54	0.18	50.6
Approach			2	0.0	2	0.0	0.001	5.8	LOS A	0.0	0.0	0.17	0.53	0.17	51.6
North: Centre Loop West															
7	L2	All MCs	7	0.0	7	0.0	0.042	5.5	LOS A	0.0	0.0	0.00	0.05	0.00	56.4
8	T1	All MCs	75	0.0	75	0.0	0.042	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.4
Approach			82	0.0	82	0.0	0.042	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.1
All Vehicles			123	0.0	123	0.0	0.042	0.5	NA	0.0	0.0	0.01	0.05	0.01	59.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 5 [5.Centre Loop West/Innocation South_PM (Site Folder: 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
2	T1	All MCs	7	0.0	7	0.0	0.005	0.1	LOS A	0.0	0.1	0.10	0.11	0.10	58.6
3	R2	All MCs	1	0.0	1	0.0	0.005	6.3	LOS A	0.0	0.1	0.10	0.11	0.10	56.4
Approach			8	0.0	8	0.0	0.005	0.9	NA	0.0	0.1	0.10	0.11	0.10	58.3
East: Innovation South															
4	L2	All MCs	1	0.0	1	0.0	0.001	6.2	LOS A	0.0	0.0	0.30	0.51	0.30	52.0
5	T1	All MCs	1	0.0	1	0.0	0.035	5.3	LOS A	0.1	0.8	0.33	0.61	0.33	52.4
6	R2	All MCs	29	0.0	29	0.0	0.035	6.8	LOS A	0.1	0.8	0.33	0.61	0.33	50.2
Approach			32	0.0	32	0.0	0.035	6.7	LOS A	0.1	0.8	0.33	0.60	0.33	50.3
North: Centre Loop West															
7	L2	All MCs	39	0.0	39	0.0	0.136	5.6	LOS A	0.0	0.0	0.00	0.09	0.00	56.0
8	T1	All MCs	225	0.0	225	0.0	0.136	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	59.0
Approach			264	0.0	264	0.0	0.136	0.8	NA	0.0	0.0	0.00	0.09	0.00	58.5
All Vehicles			304	0.0	304	0.0	0.136	1.4	NA	0.1	0.8	0.04	0.14	0.04	57.5

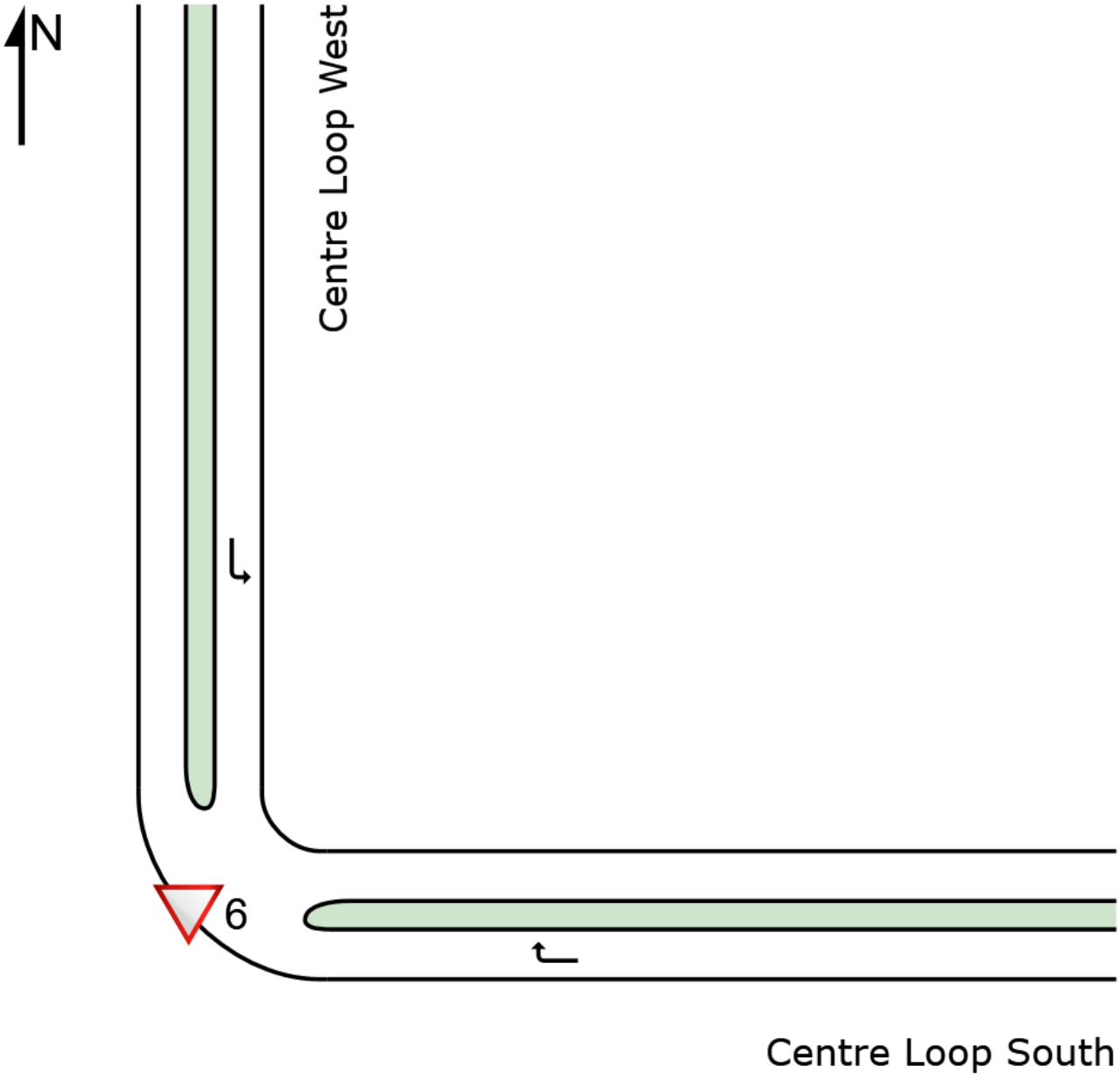
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 6 [6.Centre Loop West/Centre Loop South_AM - 1 lane (Site Folder: 2026)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 6 [6.Centre Loop West/Centre Loop South_AM - 1 lane (Site Folder: 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Centre Loop South															
6	R2	All MCs	2	0.0	2	0.0	0.001	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	52.8
Approach			2	0.0	2	0.0	0.001	5.5	NA	0.0	0.0	0.00	0.58	0.00	52.8
North: Centre Loop West															
7	L2	All MCs	24	0.0	24	0.0	0.013	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	52.9
Approach			24	0.0	24	0.0	0.013	5.5	NA	0.0	0.0	0.00	0.58	0.00	52.9
All Vehicles			26	0.0	26	0.0	0.013	5.5	NA	0.0	0.0	0.00	0.58	0.00	52.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 6 [6.Centre Loop West/Centre Loop South_PM - 1 lane (Site Folder: 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Centre Loop South															
6	R2	All MCs	2	0.0	2	0.0	0.001	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	52.8
Approach			2	0.0	2	0.0	0.001	5.5	NA	0.0	0.0	0.00	0.58	0.00	52.8
North: Centre Loop West															
7	L2	All MCs	1	0.0	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	52.9
Approach			1	0.0	1	0.0	0.001	5.5	NA	0.0	0.0	0.00	0.58	0.00	52.9
All Vehicles			3	0.0	3	0.0	0.001	5.5	NA	0.0	0.0	0.00	0.58	0.00	52.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

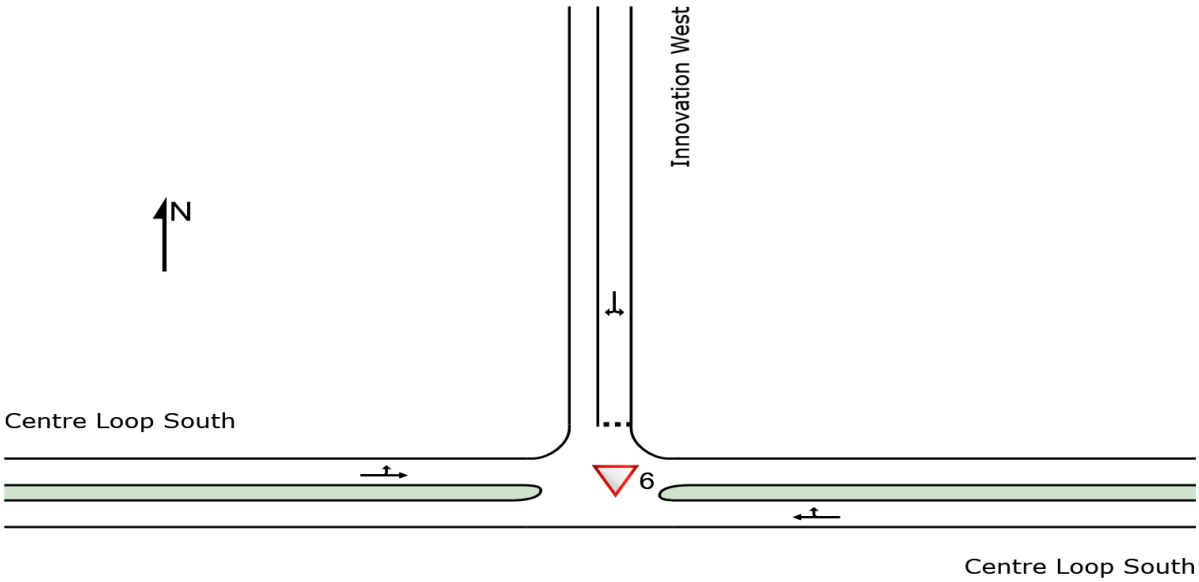
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 6 [7.Centre Loop South/Innovation West_AM - 1 lane (Site Folder: 2026)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 6 [7.Centre Loop South/Innovation West_AM - 1 lane (Site Folder: 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Centre Loop South															
5	T1	All MCs	1	0.0	1	0.0	0.001	0.0	LOS A	0.0	0.0	0.20	0.30	0.20	56.7
6	R2	All MCs	1	0.0	1	0.0	0.001	6.1	LOS A	0.0	0.0	0.20	0.30	0.20	54.3
Approach			2	0.0	2	0.0	0.001	3.0	NA	0.0	0.0	0.20	0.30	0.20	55.4
North: Innovation West															
7	L2	All MCs	1	0.0	1	0.0	0.003	5.6	LOS A	0.0	0.1	0.07	0.56	0.07	52.7
9	R2	All MCs	3	0.0	3	0.0	0.003	5.7	LOS A	0.0	0.1	0.07	0.56	0.07	52.5
Approach			4	0.0	4	0.0	0.003	5.6	LOS A	0.0	0.1	0.07	0.56	0.07	52.6
West: Centre Loop South															
10	L2	All MCs	123	0.0	123	0.0	0.069	5.6	LOS A	0.0	0.0	0.00	0.55	0.00	53.1
11	T1	All MCs	7	0.0	7	0.0	0.069	0.0	LOS A	0.0	0.0	0.00	0.55	0.00	55.2
Approach			131	0.0	131	0.0	0.069	5.2	NA	0.0	0.0	0.00	0.55	0.00	53.2
All Vehicles			137	0.0	137	0.0	0.069	5.2	NA	0.0	0.1	0.01	0.54	0.01	53.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 6 [7.Centre Loop South/Innovation West_PM - 1 lane (Site Folder: 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Centre Loop South															
5	T1	All MCs	5	0.0	5	0.0	0.003	0.0	LOS A	0.0	0.0	0.02	0.10	0.02	59.0
6	R2	All MCs	1	0.0	1	0.0	0.003	5.5	LOS A	0.0	0.0	0.02	0.10	0.02	56.4
Approach			6	0.0	6	0.0	0.003	0.9	NA	0.0	0.0	0.02	0.10	0.02	58.6
North: Innovation West															
7	L2	All MCs	1	0.0	1	0.0	0.069	5.6	LOS A	0.2	1.6	0.06	0.57	0.06	52.8
9	R2	All MCs	87	0.0	87	0.0	0.069	5.5	LOS A	0.2	1.6	0.06	0.57	0.06	52.6
Approach			88	0.0	88	0.0	0.069	5.5	LOS A	0.2	1.6	0.06	0.57	0.06	52.6
West: Centre Loop South															
10	L2	All MCs	4	0.0	4	0.0	0.005	5.5	LOS A	0.0	0.0	0.00	0.24	0.00	55.6
11	T1	All MCs	6	0.0	6	0.0	0.005	0.0	LOS A	0.0	0.0	0.00	0.24	0.00	57.9
Approach			11	0.0	11	0.0	0.005	2.2	NA	0.0	0.0	0.00	0.24	0.00	56.9
All Vehicles			105	0.0	105	0.0	0.069	4.9	NA	0.2	1.6	0.05	0.51	0.05	53.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

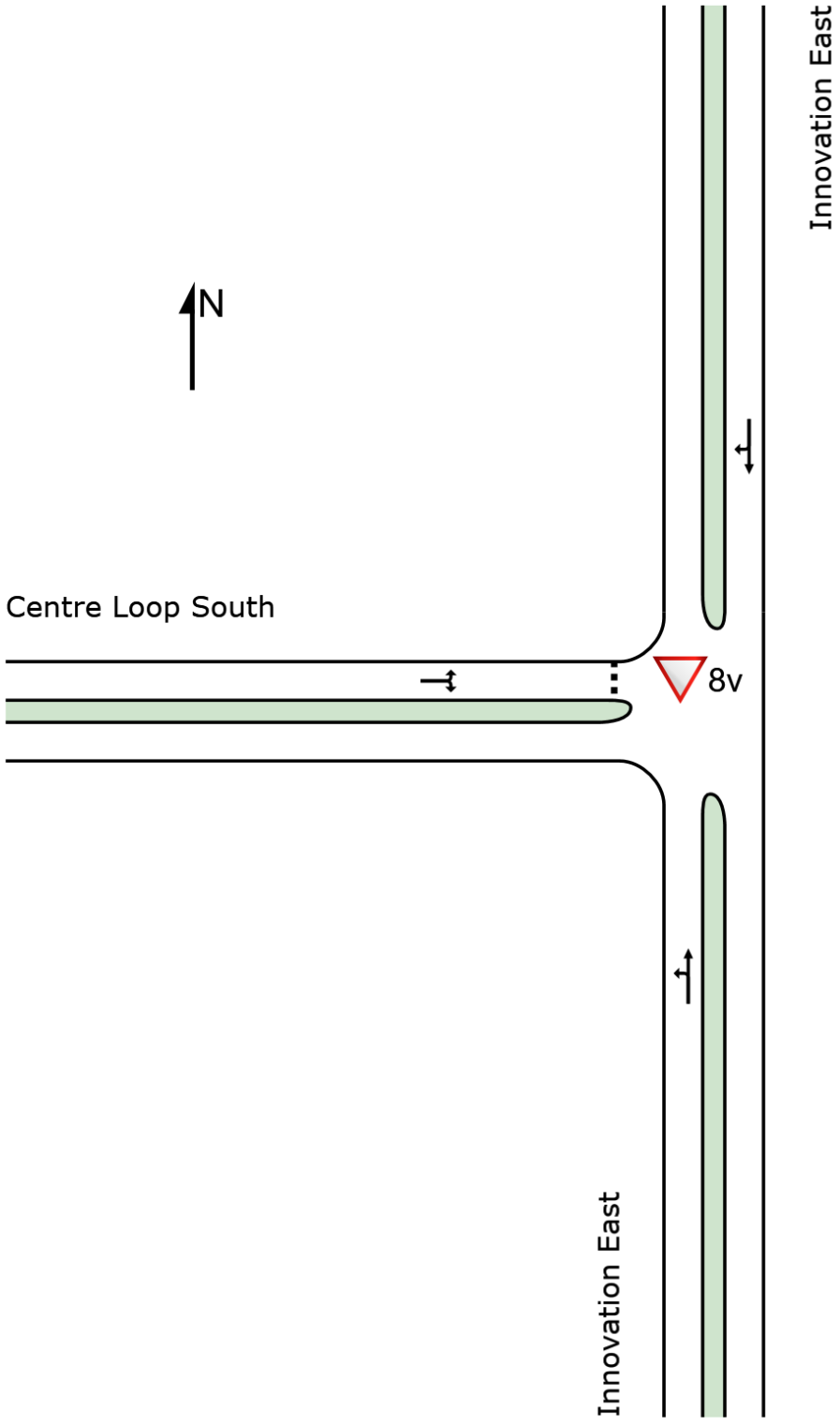
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 8v [8.Innovation East/Centre Loop South_AM - 1 lane (Site Folder: 2026)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 8v [8.Innovation East/Centre Loop South_AM - 1 lane (Site Folder: 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Innovation East															
1	L2	All MCs	1	0.0	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.00	0.30	0.00	55.1
2	T1	All MCs	1	0.0	1	0.0	0.001	0.0	LOS A	0.0	0.0	0.00	0.30	0.00	57.1
Approach			2	0.0	2	0.0	0.001	2.8	NA	0.0	0.0	0.00	0.30	0.00	56.0
North: Innovation East															
8	T1	All MCs	1	0.0	1	0.0	0.001	0.0	LOS A	0.0	0.0	0.02	0.29	0.02	57.1
9	R2	All MCs	1	0.0	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.02	0.29	0.02	54.5
Approach			2	0.0	2	0.0	0.001	2.8	NA	0.0	0.0	0.02	0.29	0.02	55.7
West: Centre Loop South															
10	L2	All MCs	7	0.0	7	0.0	0.005	5.5	LOS A	0.0	0.1	0.01	0.57	0.01	52.2
12	R2	All MCs	1	0.0	1	0.0	0.005	5.5	LOS A	0.0	0.1	0.01	0.57	0.01	52.8
Approach			8	0.0	8	0.0	0.005	5.5	LOS A	0.0	0.1	0.01	0.57	0.01	52.3
All Vehicles			13	0.0	13	0.0	0.005	4.6	NA	0.0	0.1	0.01	0.48	0.01	53.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 8v [8.Innovation East/Centre Loop South_PM - 1 lane (Site Folder: 2026)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Innovation East															
1	L2	All MCs	1	0.0	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.00	0.30	0.00	55.1
2	T1	All MCs	1	0.0	1	0.0	0.001	0.0	LOS A	0.0	0.0	0.00	0.30	0.00	57.1
Approach			2	0.0	2	0.0	0.001	2.8	NA	0.0	0.0	0.00	0.30	0.00	56.0
North: Innovation East															
8	T1	All MCs	1	0.0	1	0.0	0.003	0.0	LOS A	0.0	0.1	0.02	0.48	0.02	55.3
9	R2	All MCs	5	0.0	5	0.0	0.003	5.5	LOS A	0.0	0.1	0.02	0.48	0.02	52.9
Approach			6	0.0	6	0.0	0.003	4.6	NA	0.0	0.1	0.02	0.48	0.02	53.2
West: Centre Loop South															
10	L2	All MCs	6	0.0	6	0.0	0.005	5.5	LOS A	0.0	0.1	0.01	0.57	0.01	52.2
12	R2	All MCs	1	0.0	1	0.0	0.005	5.5	LOS A	0.0	0.1	0.01	0.57	0.01	52.8
Approach			7	0.0	7	0.0	0.005	5.5	LOS A	0.0	0.1	0.01	0.57	0.01	52.3
All Vehicles			16	0.0	16	0.0	0.005	4.8	NA	0.0	0.1	0.01	0.50	0.01	53.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

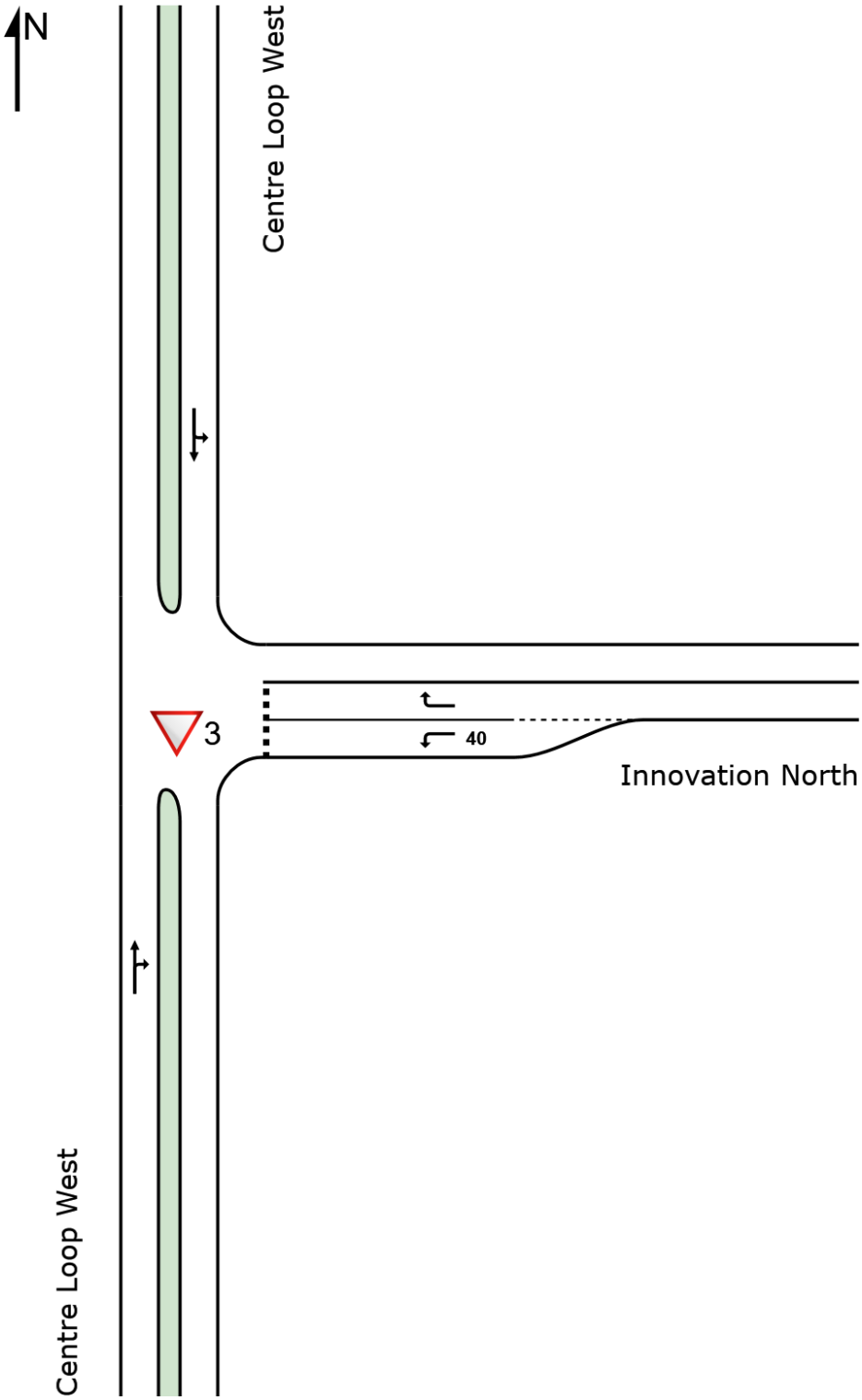
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3 [3.Centre Loop West/Innovation North_AM (Site Folder: 2036)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 3 [3.Centre Loop West/Innovation North_AM (Site Folder: 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
2	T1	All MCs	152	0.0	152	0.0	0.137	0.7	LOS A	0.6	3.9	0.30	0.33	0.30	55.5
3	R2	All MCs	78	0.0	78	0.0	0.137	6.8	LOS A	0.6	3.9	0.30	0.33	0.30	53.6
Approach			229	0.0	229	0.0	0.137	2.7	NA	0.6	3.9	0.30	0.33	0.30	54.8
East: Innovation North															
4	L2	All MCs	60	0.0	60	0.0	0.030	5.7	LOS A	0.1	1.0	0.15	0.53	0.15	50.8
6	R2	All MCs	154	0.0	154	0.0	0.177	7.5	LOS A	0.6	4.3	0.43	0.70	0.43	50.0
Approach			214	0.0	214	0.0	0.177	7.0	LOS A	0.6	4.3	0.35	0.65	0.35	50.3
North: Centre Loop West															
7	L2	All MCs	258	0.0	258	0.0	0.173	5.6	LOS A	0.0	0.0	0.00	0.46	0.00	52.8
8	T1	All MCs	71	0.0	71	0.0	0.173	0.0	LOS A	0.0	0.0	0.00	0.46	0.00	54.0
Approach			328	0.0	328	0.0	0.173	4.4	NA	0.0	0.0	0.00	0.46	0.00	53.0
All Vehicles			772	0.0	772	0.0	0.177	4.6	NA	0.6	4.3	0.19	0.48	0.19	52.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 3 [3.Centre Loop West/Innovation North_PM (Site Folder: 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
2	T1	All MCs	201	0.0	201	0.0	0.220	0.6	LOS A	1.1	7.5	0.31	0.36	0.31	54.7
3	R2	All MCs	171	0.0	171	0.0	0.220	6.4	LOS A	1.1	7.5	0.31	0.36	0.31	52.9
Approach			372	0.0	372	0.0	0.220	3.2	NA	1.1	7.5	0.31	0.36	0.31	53.8
East: Innovation North															
4	L2	All MCs	75	0.0	75	0.0	0.036	5.6	LOS A	0.2	1.2	0.09	0.54	0.09	51.1
6	R2	All MCs	111	0.0	111	0.0	0.138	7.8	LOS A	0.5	3.2	0.46	0.73	0.46	49.7
Approach			185	0.0	185	0.0	0.138	6.9	LOS A	0.5	3.2	0.31	0.66	0.31	50.2
North: Centre Loop West															
7	L2	All MCs	189	0.0	189	0.0	0.116	5.6	LOS A	0.0	0.0	0.00	0.50	0.00	52.5
8	T1	All MCs	31	0.0	31	0.0	0.116	0.0	LOS A	0.0	0.0	0.00	0.50	0.00	53.6
Approach			220	0.0	220	0.0	0.116	4.8	NA	0.0	0.0	0.00	0.50	0.00	52.6
All Vehicles			777	0.0	777	0.0	0.220	4.6	NA	1.1	7.5	0.22	0.47	0.22	52.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

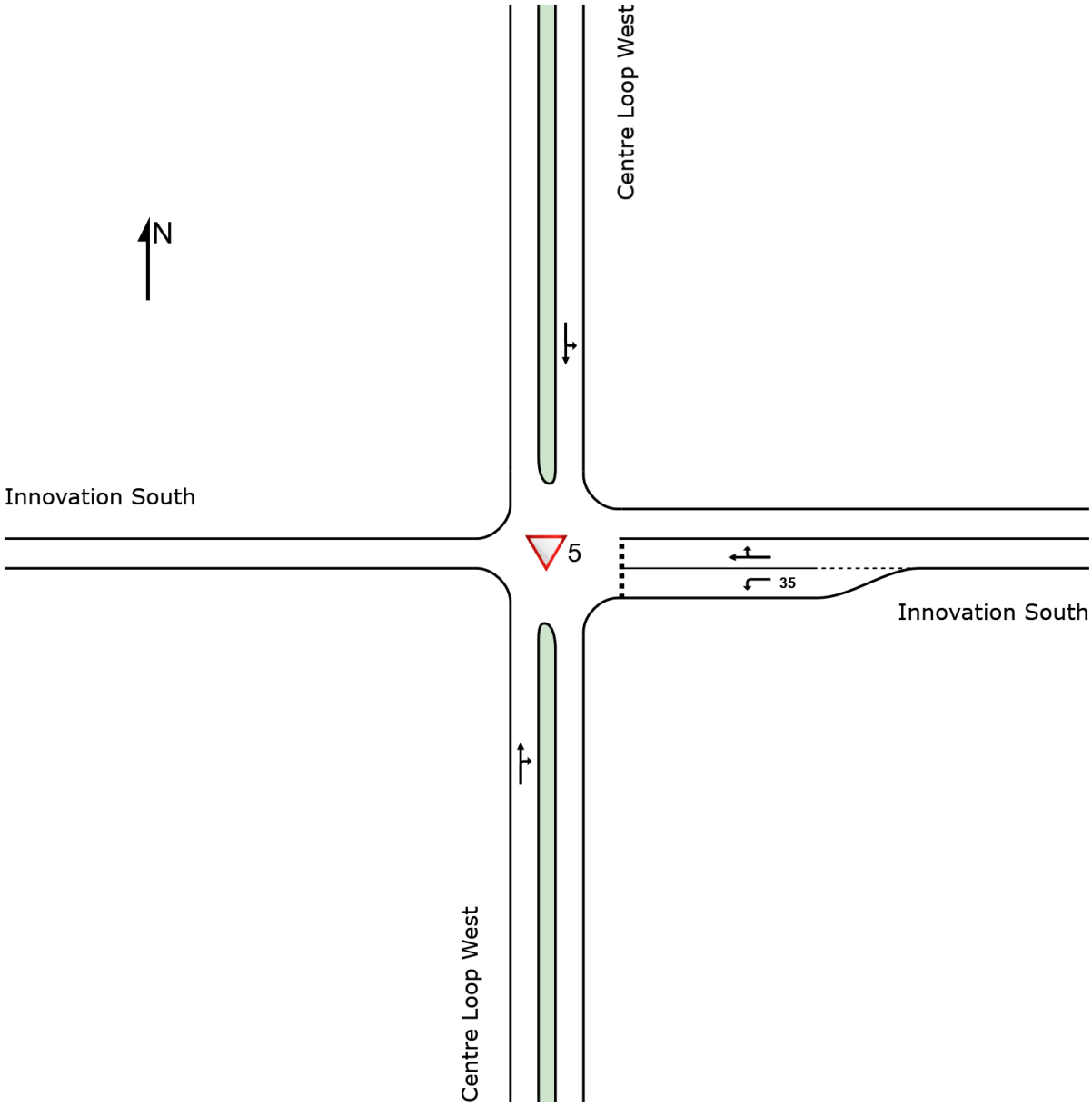
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 5 [5.Centre Loop West/Innocation South_AM (Site Folder: 2036)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 5 [5.Centre Loop West/Innocation South_AM (Site Folder: 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
2	T1	All MCs	132	0.0	132	0.0	0.112	0.6	LOS A	0.4	2.9	0.27	0.30	0.27	56.7
3	R2	All MCs	58	0.0	58	0.0	0.112	6.7	LOS A	0.4	2.9	0.27	0.30	0.27	55.0
Approach			189	0.0	189	0.0	0.112	2.4	NA	0.4	2.9	0.27	0.30	0.27	56.1
East: Innovation South															
4	L2	All MCs	43	0.0	43	0.0	0.034	6.4	LOS A	0.1	0.9	0.34	0.58	0.34	51.9
5	T1	All MCs	1	0.0	1	0.0	0.148	6.8	LOS A	0.5	3.6	0.49	0.75	0.49	51.0
6	R2	All MCs	97	0.0	97	0.0	0.148	8.6	LOS A	0.5	3.6	0.49	0.75	0.49	48.6
Approach			141	0.0	141	0.0	0.148	7.9	LOS A	0.5	3.6	0.44	0.70	0.44	49.7
North: Centre Loop West															
7	L2	All MCs	45	0.0	45	0.0	0.165	5.6	LOS A	0.0	0.0	0.00	0.08	0.00	56.0
8	T1	All MCs	274	0.0	274	0.0	0.165	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	59.0
Approach			319	0.0	319	0.0	0.165	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.5
All Vehicles			649	0.0	649	0.0	0.165	2.8	NA	0.5	3.6	0.18	0.28	0.18	55.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 5 [5.Centre Loop West/Innocation South_PM (Site Folder: 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
2	T1	All MCs	143	0.0	143	0.0	0.109	0.4	LOS A	0.3	2.4	0.21	0.24	0.21	57.2
3	R2	All MCs	49	0.0	49	0.0	0.109	6.5	LOS A	0.3	2.4	0.21	0.24	0.21	55.4
Approach			193	0.0	193	0.0	0.109	1.9	NA	0.3	2.4	0.21	0.24	0.21	56.7
East: Innovation South															
4	L2	All MCs	135	0.0	135	0.0	0.100	6.3	LOS A	0.4	2.9	0.32	0.58	0.32	51.9
5	T1	All MCs	1	0.0	1	0.0	0.327	7.1	LOS A	1.4	10.1	0.52	0.78	0.60	50.7
6	R2	All MCs	228	0.0	228	0.0	0.327	9.0	LOS A	1.4	10.1	0.52	0.78	0.60	48.3
Approach			364	0.0	364	0.0	0.327	8.0	LOS A	1.4	10.1	0.45	0.71	0.50	49.8
North: Centre Loop West															
7	L2	All MCs	39	0.0	39	0.0	0.136	5.6	LOS A	0.0	0.0	0.00	0.09	0.00	56.0
8	T1	All MCs	225	0.0	225	0.0	0.136	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	59.0
Approach			264	0.0	264	0.0	0.136	0.8	NA	0.0	0.0	0.00	0.09	0.00	58.5
All Vehicles			821	0.0	821	0.0	0.327	4.3	NA	1.4	10.1	0.25	0.40	0.27	53.8

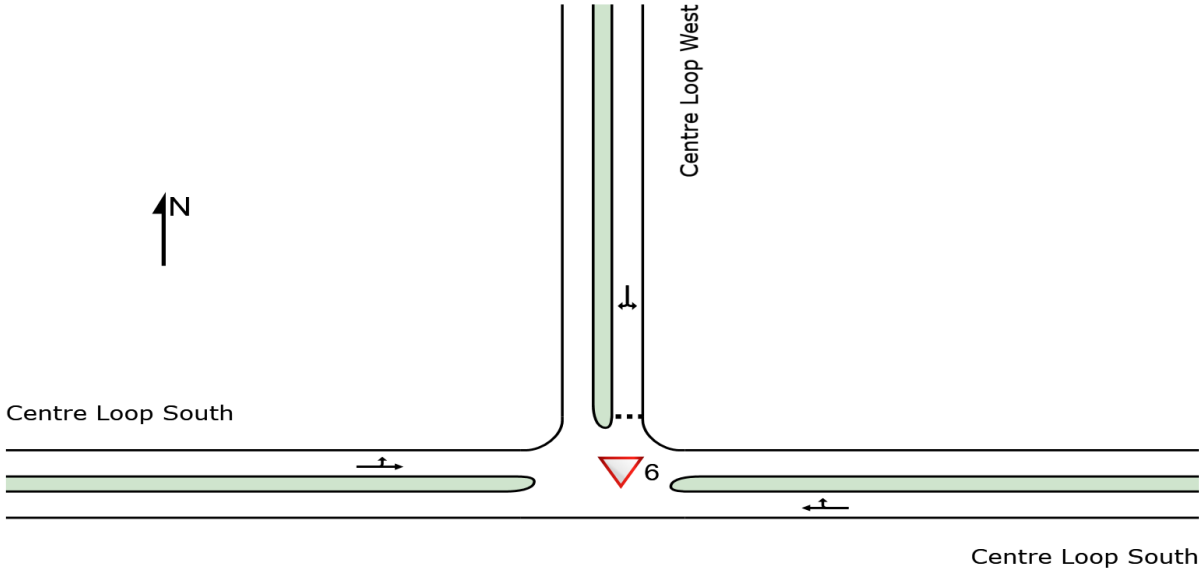
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 6 [6.Centre Loop West/Centre Loop South_AM - 1 lane (Site Folder: 2036)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 6 [6.Centre Loop West/Centre Loop South_AM - 1 lane (Site Folder: 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Centre Loop South															
5	T1	All MCs	146	0.0	146	0.0	0.122	0.0	LOS A	0.5	3.2	0.30	0.33	0.30	57.3
6	R2	All MCs	57	0.0	57	0.0	0.122	9.0	LOS A	0.5	3.2	0.30	0.33	0.30	55.0
Approach			203	0.0	203	0.0	0.122	2.5	NA	0.5	3.2	0.30	0.33	0.30	56.7
North: Centre Loop West															
7	L2	All MCs	31	0.0	31	0.0	0.227	6.7	LOS A	0.8	5.8	0.49	0.73	0.49	51.0
9	R2	All MCs	154	0.0	154	0.0	0.227	8.4	LOS A	0.8	5.8	0.49	0.73	0.49	50.9
Approach			184	0.0	184	0.0	0.227	8.1	LOS A	0.8	5.8	0.49	0.73	0.49	50.9
West: Centre Loop South															
10	L2	All MCs	116	0.0	116	0.0	0.210	5.6	LOS A	0.0	0.0	0.00	0.17	0.00	56.0
11	T1	All MCs	292	0.0	292	0.0	0.210	0.1	LOS A	0.0	0.0	0.00	0.17	0.00	58.4
Approach			407	0.0	407	0.0	0.210	1.6	NA	0.0	0.0	0.00	0.17	0.00	57.7
All Vehicles			795	0.0	795	0.0	0.227	3.4	NA	0.8	5.8	0.19	0.34	0.19	55.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 6 [6.Centre Loop West/Centre Loop South_PM - 1 lane (Site Folder: 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Centre Loop South															
5	T1	All MCs	364	0.0	364	0.0	0.240	0.0	LOS A	0.6	4.4	0.13	0.16	0.13	58.4
6	R2	All MCs	84	0.0	84	0.0	0.240	6.9	LOS A	0.6	4.4	0.13	0.16	0.13	56.0
Approach			448	0.0	448	0.0	0.240	1.3	NA	0.6	4.4	0.13	0.16	0.13	58.0
North: Centre Loop West															
7	L2	All MCs	44	0.0	44	0.0	0.373	6.4	LOS A	1.9	13.1	0.52	0.72	0.62	50.2
9	R2	All MCs	251	0.0	251	0.0	0.373	9.7	LOS A	1.9	13.1	0.52	0.72	0.62	50.1
Approach			295	0.0	295	0.0	0.373	9.2	LOS A	1.9	13.1	0.52	0.72	0.62	50.2
West: Centre Loop South															
10	L2	All MCs	65	0.0	65	0.0	0.082	5.6	LOS A	0.0	0.0	0.00	0.24	0.00	55.5
11	T1	All MCs	94	0.0	94	0.0	0.082	0.0	LOS A	0.0	0.0	0.00	0.24	0.00	57.8
Approach			159	0.0	159	0.0	0.082	2.3	NA	0.0	0.0	0.00	0.24	0.00	56.8
All Vehicles			902	0.0	902	0.0	0.373	4.1	NA	1.9	13.1	0.23	0.36	0.27	55.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

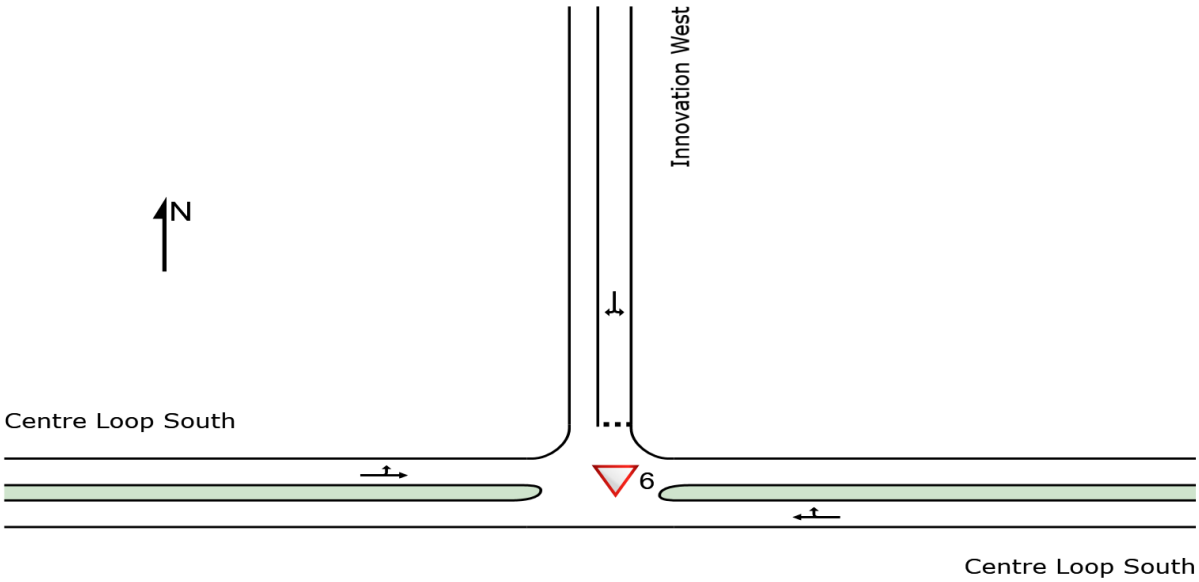
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 6 [7.Centre Loop South/Innovation West_AM - 1 lane (Site Folder: 2036)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 6 [7.Centre Loop South/Innovation West_AM - 1 lane (Site Folder: 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Centre Loop South															
5	T1	All MCs	99	0.0	99	0.0	0.130	0.0	LOS A	0.6	4.4	0.39	0.45	0.39	56.0
6	R2	All MCs	101	0.0	101	0.0	0.130	7.8	LOS A	0.6	4.4	0.39	0.45	0.39	53.6
Approach			200	0.0	200	0.0	0.130	4.0	NA	0.6	4.4	0.39	0.45	0.39	54.8
North: Innovation West															
7	L2	All MCs	87	0.0	87	0.0	0.208	5.8	LOS A	0.8	5.8	0.28	0.57	0.28	51.9
9	R2	All MCs	135	0.0	135	0.0	0.208	7.5	LOS A	0.8	5.8	0.28	0.57	0.28	51.8
Approach			222	0.0	222	0.0	0.208	6.8	LOS A	0.8	5.8	0.28	0.57	0.28	51.8
West: Centre Loop South															
10	L2	All MCs	287	0.0	287	0.0	0.186	5.6	LOS A	0.0	0.0	0.00	0.48	0.00	53.6
11	T1	All MCs	64	0.0	64	0.0	0.186	0.0	LOS A	0.0	0.0	0.00	0.48	0.00	55.8
Approach			352	0.0	352	0.0	0.186	4.6	NA	0.0	0.0	0.00	0.48	0.00	54.0
All Vehicles			774	0.0	774	0.0	0.208	5.1	NA	0.8	5.8	0.18	0.50	0.18	53.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 6 [7.Centre Loop South/Innovation West_PM - 1 lane (Site Folder: 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Centre Loop South															
5	T1	All MCs	146	0.0	146	0.0	0.114	0.0	LOS A	0.4	2.6	0.18	0.22	0.18	57.8
6	R2	All MCs	59	0.0	59	0.0	0.114	6.7	LOS A	0.4	2.6	0.18	0.22	0.18	55.3
Approach			205	0.0	205	0.0	0.114	1.9	NA	0.4	2.6	0.18	0.22	0.18	57.0
North: Innovation West															
7	L2	All MCs	105	0.0	105	0.0	0.402	6.0	LOS A	2.0	13.9	0.40	0.62	0.41	51.6
9	R2	All MCs	316	0.0	316	0.0	0.402	7.6	LOS A	2.0	13.9	0.40	0.62	0.41	51.5
Approach			421	0.0	421	0.0	0.402	7.2	LOS A	2.0	13.9	0.40	0.62	0.41	51.5
West: Centre Loop South															
10	L2	All MCs	78	0.0	78	0.0	0.090	5.6	LOS A	0.0	0.0	0.00	0.27	0.00	55.3
11	T1	All MCs	95	0.0	95	0.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	57.6
Approach			173	0.0	173	0.0	0.090	2.5	NA	0.0	0.0	0.00	0.27	0.00	56.5
All Vehicles			799	0.0	799	0.0	0.402	4.8	NA	2.0	13.9	0.26	0.44	0.26	53.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

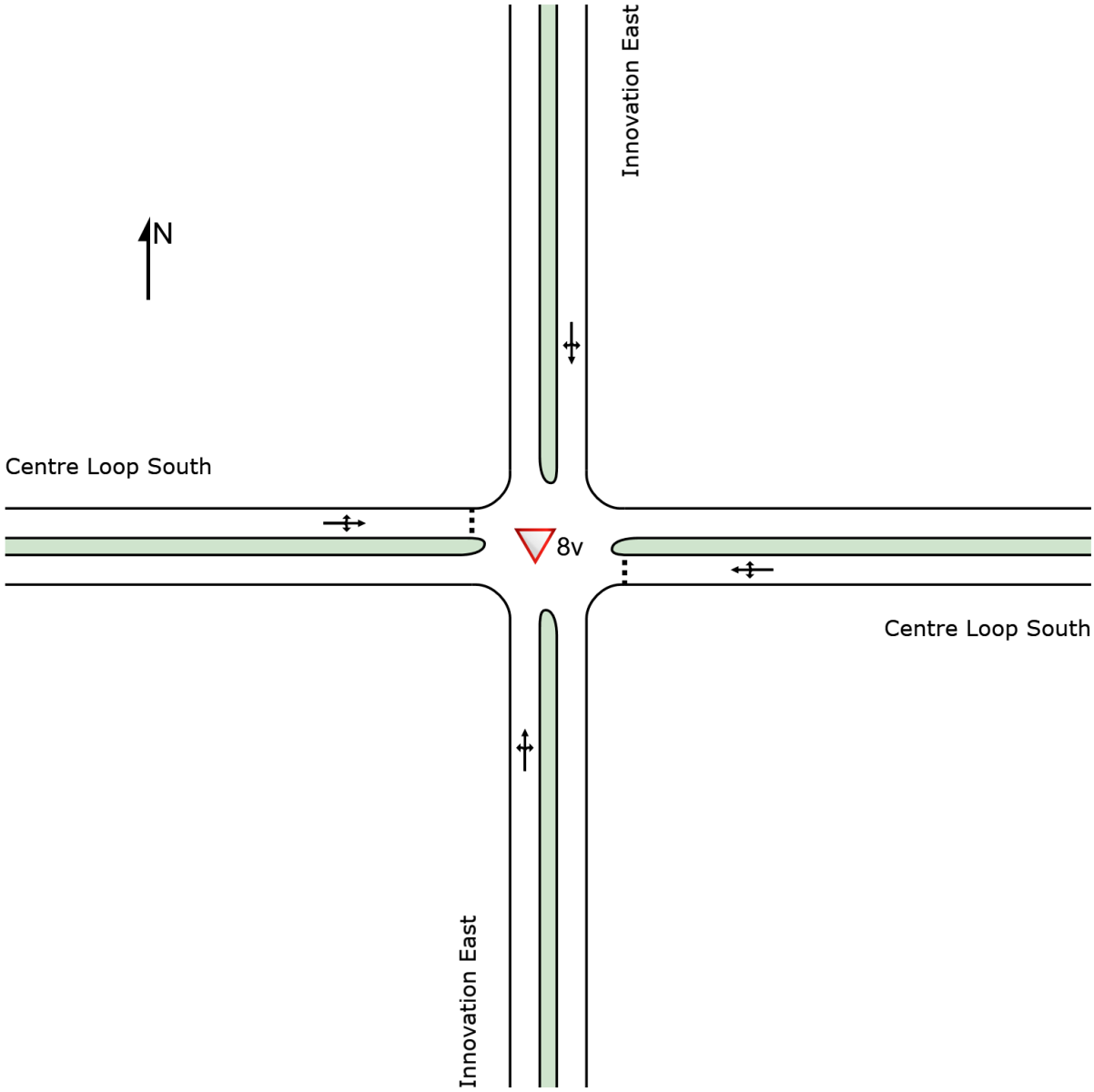
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 8v [8.Innovation East/Centre Loop South_AM - 1 lane (Site Folder: 2036)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 8v [8.Innovation East/Centre Loop South_AM - 1 lane (Site Folder: 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Innovation East															
1	L2	All MCs	73	0.0	73	0.0	0.149	5.6	LOS A	0.1	0.5	0.02	0.17	0.02	56.1
2	T1	All MCs	207	0.0	207	0.0	0.149	0.0	LOS A	0.1	0.5	0.02	0.17	0.02	58.3
3	R2	All MCs	7	0.0	7	0.0	0.149	5.7	LOS A	0.1	0.5	0.02	0.17	0.02	56.0
Approach			287	0.0	287	0.0	0.149	1.6	NA	0.1	0.5	0.02	0.17	0.02	57.6
East: Centre Loop South															
4	L2	All MCs	1	0.0	1	0.0	0.187	6.0	LOS A	0.7	4.9	0.47	0.68	0.47	51.9
5	T1	All MCs	131	0.0	131	0.0	0.187	6.7	LOS A	0.7	4.9	0.47	0.68	0.47	52.3
6	R2	All MCs	24	0.0	24	0.0	0.187	8.1	LOS A	0.7	4.9	0.47	0.68	0.47	51.0
Approach			156	0.0	156	0.0	0.187	6.9	LOS A	0.7	4.9	0.47	0.68	0.47	52.1
North: Innovation East															
7	L2	All MCs	1	0.0	1	0.0	0.085	6.5	LOS A	0.2	1.1	0.12	0.13	0.12	56.0
8	T1	All MCs	138	0.0	138	0.0	0.085	0.2	LOS A	0.2	1.1	0.12	0.13	0.12	58.7
9	R2	All MCs	20	0.0	20	0.0	0.085	6.5	LOS A	0.2	1.1	0.12	0.13	0.12	55.9
Approach			159	0.0	159	0.0	0.085	1.0	NA	0.2	1.1	0.12	0.13	0.12	58.3
West: Centre Loop South															
10	L2	All MCs	21	0.0	21	0.0	0.210	6.3	LOS A	0.8	5.4	0.50	0.72	0.50	49.9
11	T1	All MCs	21	0.0	21	0.0	0.210	6.4	LOS A	0.8	5.4	0.50	0.72	0.50	51.1
12	R2	All MCs	107	0.0	107	0.0	0.210	9.3	LOS A	0.8	5.4	0.50	0.72	0.50	50.7
Approach			149	0.0	149	0.0	0.210	8.4	LOS A	0.8	5.4	0.50	0.72	0.50	50.7
All Vehicles			752	0.0	752	0.0	0.210	3.9	NA	0.8	5.4	0.23	0.38	0.23	54.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 8v [8.Innovation East/Centre Loop South_PM - 1 lane (Site Folder: 2036)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Innovation East															
1	L2	All MCs	56	0.0	56	0.0	0.085	5.6	LOS A	0.1	0.7	0.06	0.25	0.06	55.3
2	T1	All MCs	95	0.0	95	0.0	0.085	0.1	LOS A	0.1	0.7	0.06	0.25	0.06	57.4
3	R2	All MCs	11	0.0	11	0.0	0.085	6.0	LOS A	0.1	0.7	0.06	0.25	0.06	55.2
Approach			161	0.0	161	0.0	0.085	2.4	NA	0.1	0.7	0.06	0.25	0.06	56.4
East: Centre Loop South															
4	L2	All MCs	1	0.0	1	0.0	0.150	6.0	LOS A	0.6	4.0	0.40	0.62	0.40	52.5
5	T1	All MCs	134	0.0	134	0.0	0.150	5.8	LOS A	0.6	4.0	0.40	0.62	0.40	52.9
6	R2	All MCs	9	0.0	9	0.0	0.150	7.6	LOS A	0.6	4.0	0.40	0.62	0.40	51.7
Approach			144	0.0	144	0.0	0.150	6.0	LOS A	0.6	4.0	0.40	0.62	0.40	52.9
North: Innovation East															
7	L2	All MCs	1	0.0	1	0.0	0.085	6.0	LOS A	0.1	0.6	0.05	0.07	0.05	56.6
8	T1	All MCs	151	0.0	151	0.0	0.085	0.1	LOS A	0.1	0.6	0.05	0.07	0.05	59.3
9	R2	All MCs	13	0.0	13	0.0	0.085	6.0	LOS A	0.1	0.6	0.05	0.07	0.05	56.5
Approach			164	0.0	164	0.0	0.085	0.5	NA	0.1	0.6	0.05	0.07	0.05	59.0
West: Centre Loop South															
10	L2	All MCs	51	0.0	51	0.0	0.234	5.9	LOS A	0.9	6.6	0.39	0.61	0.39	50.8
11	T1	All MCs	41	0.0	41	0.0	0.234	5.8	LOS A	0.9	6.6	0.39	0.61	0.39	52.0
12	R2	All MCs	115	0.0	115	0.0	0.234	8.4	LOS A	0.9	6.6	0.39	0.61	0.39	51.5
Approach			206	0.0	206	0.0	0.234	7.3	LOS A	0.9	6.6	0.39	0.61	0.39	51.4
All Vehicles			676	0.0	676	0.0	0.234	4.2	NA	0.9	6.6	0.23	0.39	0.23	54.5

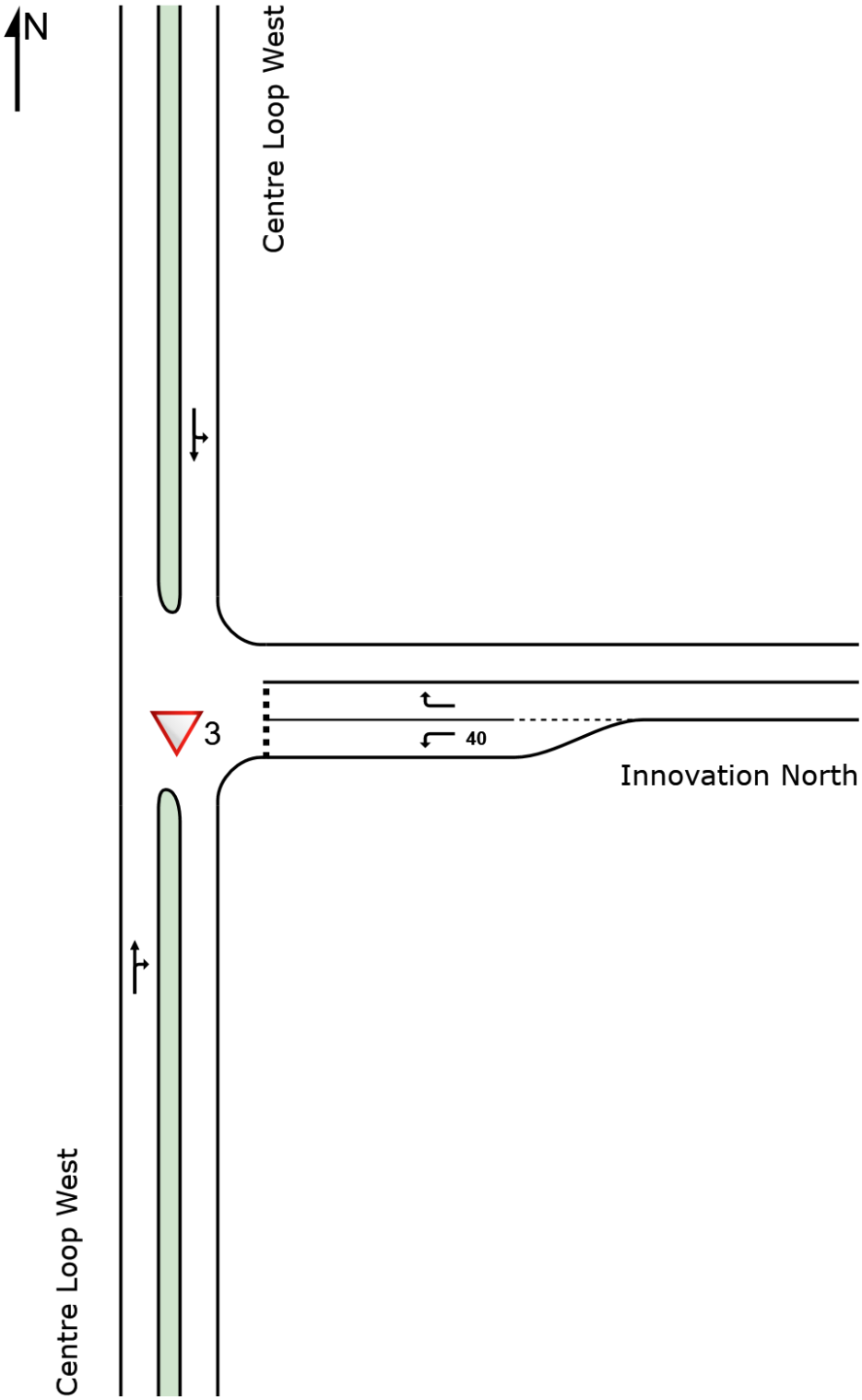
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3 [3.Centre Loop West/Innovation North_AM (Site Folder: 2056)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 3 [3.Centre Loop West/Innovation North_AM (Site Folder: 2056)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
2	T1	All MCs	199	0.0	199	0.0	0.365	2.3	LOS A	2.4	16.6	0.55	0.64	0.61	52.4
3	R2	All MCs	294	0.0	294	0.0	0.365	8.1	LOS A	2.4	16.6	0.55	0.64	0.61	51.1
Approach			493	0.0	493	0.0	0.365	5.8	NA	2.4	16.6	0.55	0.64	0.61	51.6
East: Innovation North															
4	L2	All MCs	223	0.0	223	0.0	0.117	5.9	LOS A	0.6	4.1	0.24	0.54	0.24	50.5
6	R2	All MCs	123	0.0	123	0.0	0.218	10.4	LOS A	0.7	5.2	0.62	0.85	0.65	47.8
Approach			346	0.0	346	0.0	0.218	7.5	LOS A	0.7	5.2	0.38	0.65	0.39	49.5
North: Centre Loop West															
7	L2	All MCs	331	0.0	331	0.0	0.245	5.6	LOS A	0.0	0.0	0.00	0.42	0.00	53.2
8	T1	All MCs	136	0.0	136	0.0	0.245	0.0	LOS A	0.0	0.0	0.00	0.42	0.00	54.5
Approach			466	0.0	466	0.0	0.245	4.0	NA	0.0	0.0	0.00	0.42	0.00	53.5
All Vehicles			1305	0.0	1305	0.0	0.365	5.6	NA	2.4	16.6	0.31	0.56	0.33	51.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 3 [3.Centre Loop West/Innovation North_PM (Site Folder: 2056)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
2	T1	All MCs	208	0.0	208	0.0	0.267	1.0	LOS A	1.4	9.8	0.40	0.44	0.40	53.9
3	R2	All MCs	216	0.0	216	0.0	0.267	6.8	LOS A	1.4	9.8	0.40	0.44	0.40	52.3
Approach			424	0.0	424	0.0	0.267	3.9	NA	1.4	9.8	0.40	0.44	0.40	53.0
East: Innovation North															
4	L2	All MCs	262	0.0	262	0.0	0.131	5.7	LOS A	0.7	4.7	0.17	0.54	0.17	50.8
6	R2	All MCs	165	0.0	165	0.0	0.235	8.9	LOS A	0.8	5.8	0.53	0.80	0.55	48.9
Approach			427	0.0	427	0.0	0.235	7.0	LOS A	0.8	5.8	0.31	0.64	0.32	50.0
North: Central Loop West															
7	L2	All MCs	223	0.0	223	0.0	0.157	5.6	LOS A	0.0	0.0	0.00	0.44	0.00	53.0
8	T1	All MCs	75	0.0	75	0.0	0.157	0.0	LOS A	0.0	0.0	0.00	0.44	0.00	54.3
Approach			298	0.0	298	0.0	0.157	4.2	NA	0.0	0.0	0.00	0.44	0.00	53.3
All Vehicles			1149	0.0	1149	0.0	0.267	5.1	NA	1.4	9.8	0.26	0.51	0.26	51.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

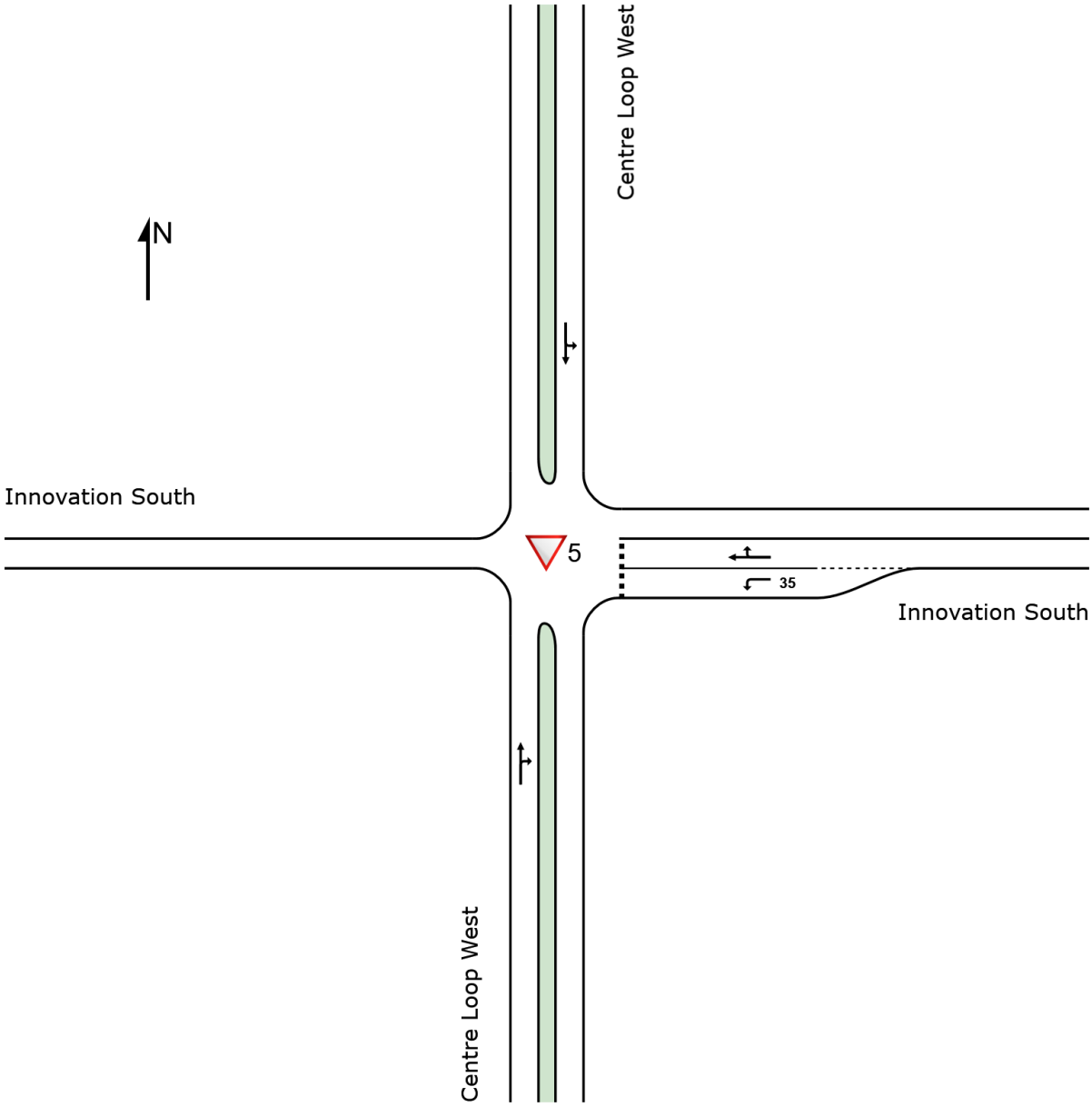
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 5 [5.Centre Loop West/Innovation South_AM (Site Folder: 2056)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 5 [5.Centre Loop West/Innovation South_AM (Site Folder: 2056)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
2	T1	All MCs	281	0.0	281	0.0	0.208	0.9	LOS A	0.7	4.7	0.26	0.31	0.26	57.4
3	R2	All MCs	63	0.0	63	0.0	0.208	8.1	LOS A	0.7	4.7	0.26	0.31	0.26	55.5
Approach			344	0.0	344	0.0	0.208	2.2	NA	0.7	4.7	0.26	0.31	0.26	57.0
East: Innovation South															
4	L2	All MCs	79	0.0	79	0.0	0.078	7.5	LOS A	0.3	2.1	0.48	0.68	0.48	51.5
5	T1	All MCs	1	0.0	1	0.0	0.558	14.6	LOS B	2.7	19.0	0.82	1.06	1.31	45.0
6	R2	All MCs	212	0.0	212	0.0	0.558	18.1	LOS B	2.7	19.0	0.82	1.06	1.31	42.0
Approach			292	0.0	292	0.0	0.558	15.2	LOS B	2.7	19.0	0.72	0.96	1.08	44.6
North: Centre Loop West															
7	L2	All MCs	60	0.0	60	0.0	0.284	5.6	LOS A	0.0	0.0	0.00	0.07	0.00	56.1
8	T1	All MCs	491	0.0	491	0.0	0.284	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	59.1
Approach			551	0.0	551	0.0	0.284	0.7	NA	0.0	0.0	0.00	0.07	0.00	58.8
All Vehicles			1186	0.0	1186	0.0	0.558	4.7	NA	2.7	19.0	0.25	0.35	0.34	53.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 5 [5.Centre Loop West/Innovation South_PM (Site Folder: 2056)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
2	T1	All MCs	160	0.0	160	0.0	0.126	0.8	LOS A	0.4	3.0	0.28	0.32	0.28	57.1
3	R2	All MCs	47	0.0	47	0.0	0.126	7.5	LOS A	0.4	3.0	0.28	0.32	0.28	55.3
Approach			207	0.0	207	0.0	0.126	2.3	NA	0.4	3.0	0.28	0.32	0.28	56.6
East: Innovation South															
4	L2	All MCs	112	0.0	112	0.0	0.101	7.1	LOS A	0.4	2.8	0.44	0.66	0.44	51.6
5	T1	All MCs	22	0.0	22	0.0	0.544	11.3	LOS A	3.0	21.2	0.72	1.02	1.15	47.6
6	R2	All MCs	265	0.0	265	0.0	0.544	14.0	LOS A	3.0	21.2	0.72	1.02	1.15	44.8
Approach			399	0.0	399	0.0	0.544	11.9	LOS A	3.0	21.2	0.64	0.92	0.95	46.9
North: Centre Loop West															
7	L2	All MCs	74	0.0	74	0.0	0.250	5.6	LOS A	0.0	0.0	0.00	0.09	0.00	55.9
8	T1	All MCs	409	0.0	409	0.0	0.250	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	58.9
Approach			483	0.0	483	0.0	0.250	0.9	NA	0.0	0.0	0.00	0.09	0.00	58.4
All Vehicles			1089	0.0	1089	0.0	0.544	5.2	NA	3.0	21.2	0.29	0.44	0.40	53.1

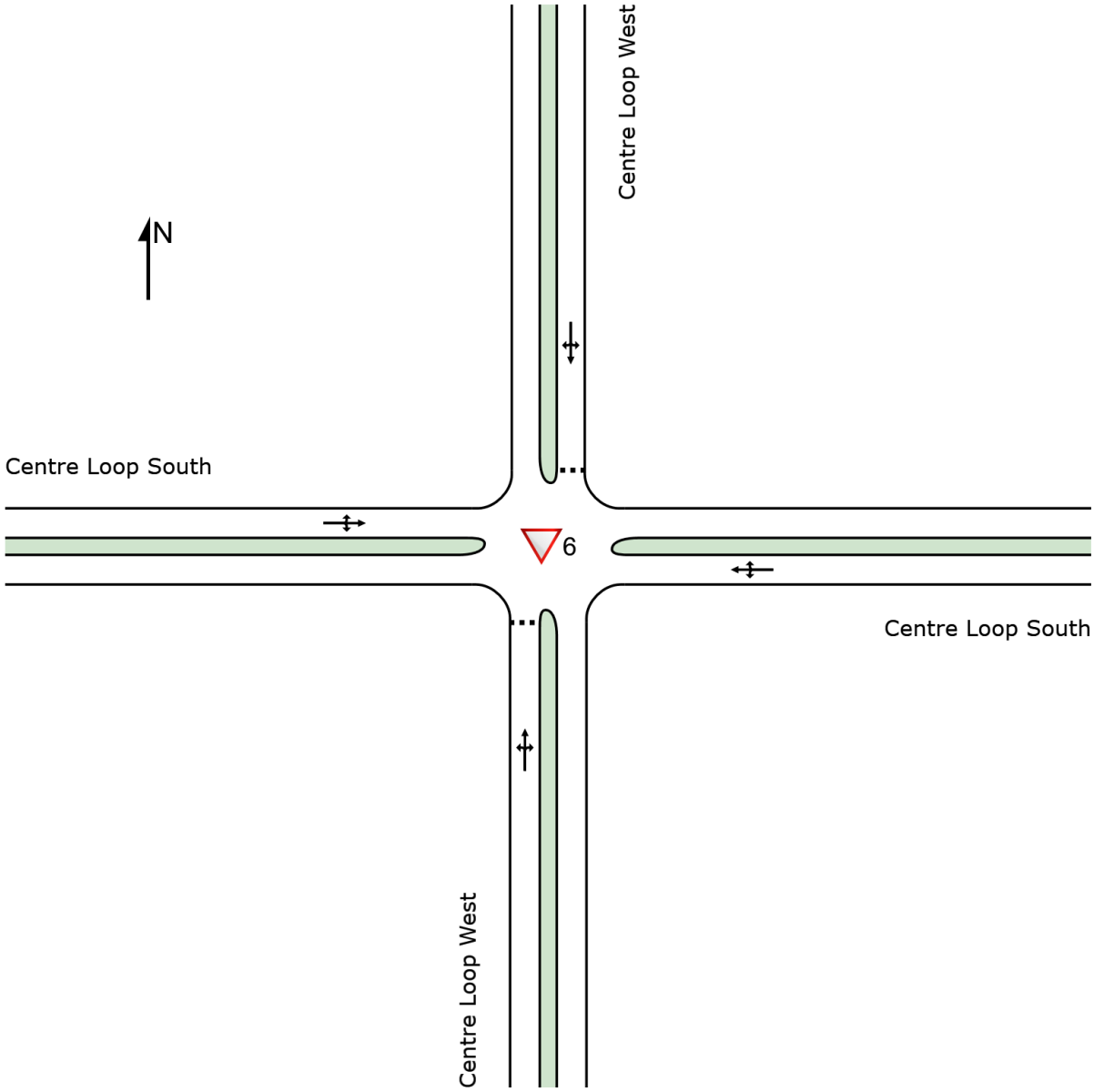
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 6 [6.Centre Loop West/Centre Loop South_AM - 1 lane (Site Folder: 2056)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 6 [6.Centre Loop West/Centre Loop South_AM - 1 lane (Site Folder: 2056)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
1	L2	All MCs	65	0.0	65	0.0	0.425	8.2	LOS A	2.1	14.9	0.72	0.91	1.02	46.8
2	T1	All MCs	53	0.0	53	0.0	0.425	17.0	LOS B	2.1	14.9	0.72	0.91	1.02	47.1
3	R2	All MCs	80	0.0	80	0.0	0.425	18.0	LOS B	2.1	14.9	0.72	0.91	1.02	46.8
Approach			198	0.0	198	0.0	0.425	14.5	LOS A	2.1	14.9	0.72	0.91	1.02	46.9
East: Centre Loop South															
4	L2	All MCs	39	0.0	39	0.0	0.211	5.5	LOS A	0.7	5.2	0.28	0.36	0.28	55.0
5	T1	All MCs	261	0.0	261	0.0	0.211	0.0	LOS A	0.7	5.2	0.28	0.36	0.28	57.3
6	R2	All MCs	54	0.0	54	0.0	0.211	14.7	LOS B	0.7	5.2	0.28	0.36	0.28	54.9
Approach			354	0.0	354	0.0	0.211	2.8	NA	0.7	5.2	0.28	0.36	0.28	56.7
North: Centre Loop West															
7	L2	All MCs	105	0.0	105	0.0	1.398	371.4	LOS F	99.9	699.5	1.00	6.12	18.49	8.2
8	T1	All MCs	55	0.0	55	0.0	1.398	379.2	LOS F	99.9	699.5	1.00	6.12	18.49	8.2
9	R2	All MCs	365	0.0	365	0.0	1.398	385.4	LOS F	99.9	699.5	1.00	6.12	18.49	8.2
Approach			525	0.0	525	0.0	1.398	381.9	LOS F	99.9	699.5	1.00	6.12	18.49	8.2
West: Centre Loop South															
10	L2	All MCs	237	0.0	237	0.0	0.394	5.5	LOS A	1.3	9.2	0.22	0.37	0.22	54.4
11	T1	All MCs	368	0.0	368	0.0	0.394	0.0	LOS A	1.3	9.2	0.22	0.37	0.22	56.7
12	R2	All MCs	107	0.0	107	0.0	0.394	9.9	LOS A	1.3	9.2	0.22	0.37	0.22	54.3
Approach			713	0.0	713	0.0	0.394	3.3	NA	1.3	9.2	0.22	0.37	0.22	55.5
All Vehicles			1789	0.0	1789	0.0	1.398	115.6	NA	99.9	699.5	0.52	2.12	5.68	20.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 6 [6.Centre Loop West/Centre Loop South_PM - 1 lane (Site Folder: 2056)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
1	L2	All MCs	88	0.0	88	0.0	0.628	14.3	LOS A	3.3	22.8	0.87	1.13	1.52	43.3
2	T1	All MCs	57	0.0	57	0.0	0.628	22.3	LOS B	3.3	22.8	0.87	1.13	1.52	43.6
3	R2	All MCs	82	0.0	82	0.0	0.628	26.7	LOS B	3.3	22.8	0.87	1.13	1.52	43.3
Approach			227	0.0	227	0.0	0.628	20.8	LOS B	3.3	22.8	0.87	1.13	1.52	43.4
East: Centre Loop South															
4	L2	All MCs	35	0.0	35	0.0	0.392	5.5	LOS A	0.5	3.2	0.08	0.11	0.08	56.7
5	T1	All MCs	679	0.0	679	0.0	0.392	0.0	LOS A	0.5	3.2	0.08	0.11	0.08	59.2
6	R2	All MCs	36	0.0	36	0.0	0.392	11.1	LOS A	0.5	3.2	0.08	0.11	0.08	56.6
Approach			749	0.0	749	0.0	0.392	0.8	NA	0.5	3.2	0.08	0.11	0.08	58.9
North: Centre Loop West															
7	L2	All MCs	64	0.0	64	0.0	1.833	759.9	LOS F	140.9	986.2	1.00	6.94	22.98	4.3
8	T1	All MCs	54	0.0	54	0.0	1.833	771.7	LOS F	140.9	986.2	1.00	6.94	22.98	4.3
9	R2	All MCs	363	0.0	363	0.0	1.833	779.8	LOS F	140.9	986.2	1.00	6.94	22.98	4.3
Approach			481	0.0	481	0.0	1.833	776.2	LOS F	140.9	986.2	1.00	6.94	22.98	4.3
West: Centre Loop South															
10	L2	All MCs	117	0.0	117	0.0	0.246	5.5	LOS A	0.9	6.3	0.28	0.44	0.28	54.1
11	T1	All MCs	245	0.0	245	0.0	0.246	0.0	LOS A	0.9	6.3	0.28	0.44	0.28	56.3
12	R2	All MCs	47	0.0	47	0.0	0.246	20.5	LOS B	0.9	6.3	0.28	0.44	0.28	54.1
Approach			409	0.0	409	0.0	0.246	3.9	NA	0.9	6.3	0.28	0.44	0.28	55.4
All Vehicles			1867	0.0	1867	0.0	1.833	203.7	NA	140.9	986.2	0.45	2.07	6.20	13.7

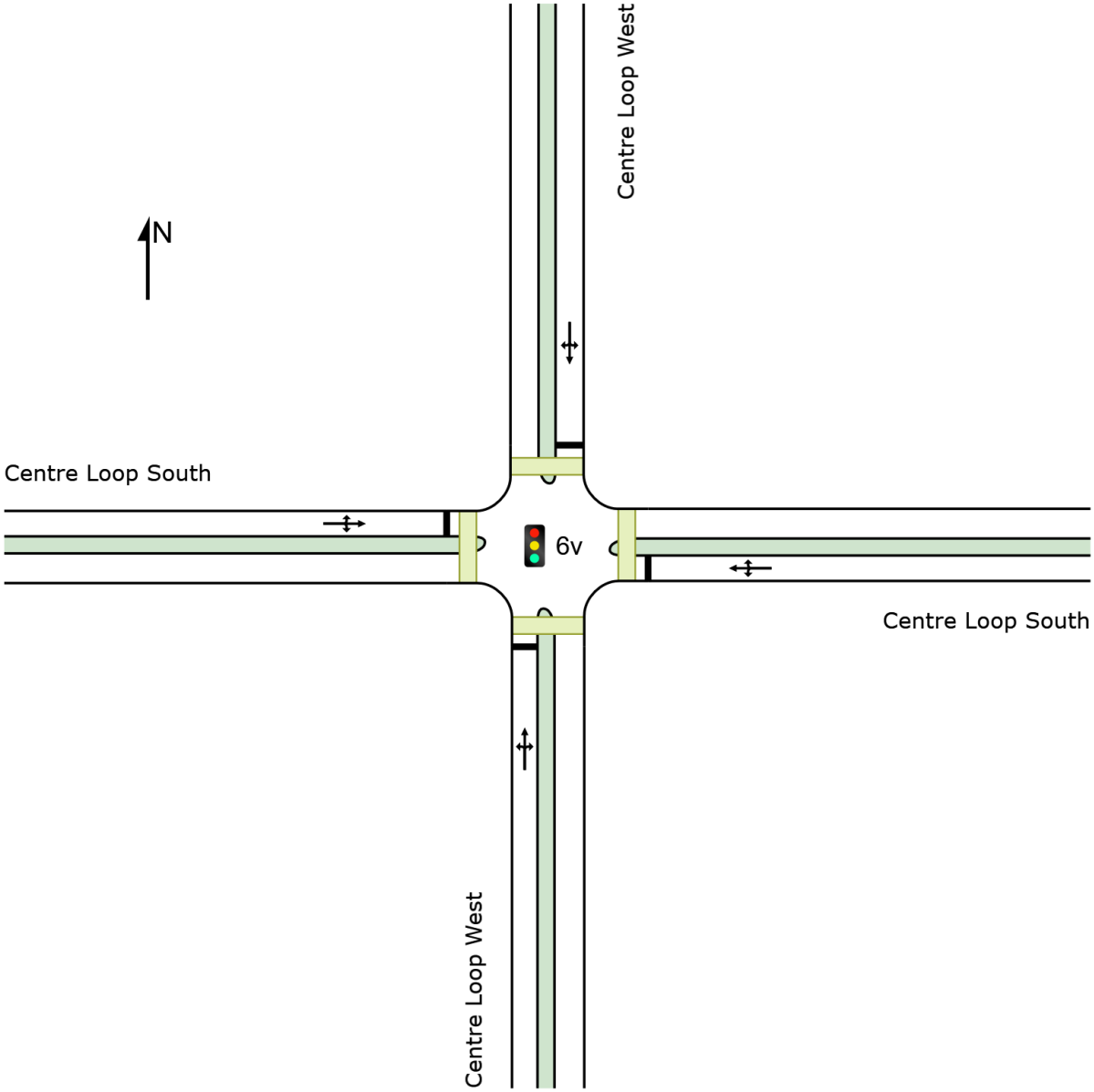
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 6v [6.Centre Loop West/Centre Loop South_signals_AM - 1 lane (Site Folder: 2056)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 6v [6.Centre Loop West/Centre Loop South_signals_AM - 1 lane (Site Folder: 2056)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
1	L2	All MCs	65	0.0	65	0.0	0.351	32.9	LOS C	8.5	59.5	0.78	0.75	0.78	37.3
2	T1	All MCs	53	0.0	53	0.0	0.351	27.4	LOS B	8.5	59.5	0.78	0.75	0.78	38.3
3	R2	All MCs	80	0.0	80	0.0	0.351	40.3	LOS C	8.5	59.5	0.78	0.75	0.78	37.2
Approach			198	0.0	198	0.0	0.351	34.4	LOS C	8.5	59.5	0.78	0.75	0.78	37.5
East: Centre Loop South															
4	L2	All MCs	39	0.0	39	0.0	0.728	40.4	LOS C	19.1	133.6	0.96	0.85	0.98	33.9
5	T1	All MCs	261	0.0	261	0.0	0.728	34.9	LOS C	19.1	133.6	0.96	0.85	0.98	34.7
6	R2	All MCs	54	0.0	54	0.0	0.728	92.7	LOS F	19.1	133.6	0.96	0.85	0.98	33.8
Approach			354	0.0	354	0.0	0.728	44.3	LOS D	19.1	133.6	0.96	0.85	0.98	34.5
North: Centre Loop West															
7	L2	All MCs	105	0.0	105	0.0	0.937	65.1	LOS E	38.0	266.2	1.00	1.06	1.29	27.7
8	T1	All MCs	55	0.0	55	0.0	* 0.937	59.6	LOS E	38.0	266.2	1.00	1.06	1.29	28.3
9	R2	All MCs	365	0.0	365	0.0	0.937	70.3	LOS E	38.0	266.2	1.00	1.06	1.29	27.7
Approach			525	0.0	525	0.0	0.937	68.1	LOS E	38.0	266.2	1.00	1.06	1.29	27.8
West: Centre Loop South															
10	L2	All MCs	237	0.0	237	0.0	0.922	53.8	LOS D	47.5	332.7	1.00	1.05	1.19	31.1
11	T1	All MCs	368	0.0	368	0.0	* 0.922	48.3	LOS D	47.5	332.7	1.00	1.05	1.19	31.8
12	R2	All MCs	107	0.0	107	0.0	0.922	72.5	LOS F	47.5	332.7	1.00	1.05	1.19	31.1
Approach			713	0.0	713	0.0	0.922	53.8	LOS D	47.5	332.7	1.00	1.05	1.19	31.5
All Vehicles			1789	0.0	1789	0.0	0.937	54.0	LOS D	47.5	332.7	0.97	0.98	1.14	31.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Centre Loop West												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
East: Centre Loop South												

P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
North: Centre Loop West												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Centre Loop South												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		0	211	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

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

MOVEMENT SUMMARY

Site: 6v [6.Centre Loop West/Centre Loop South_signals_PM - 1 lane (Site Folder: 2056)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Centre Loop West															
1	L2	All MCs	88	0.0	88	0.0	0.363	31.9	LOS C	9.5	66.5	0.76	0.75	0.76	38.0
2	T1	All MCs	57	0.0	57	0.0	0.363	26.4	LOS B	9.5	66.5	0.76	0.75	0.76	39.1
3	R2	All MCs	82	0.0	82	0.0	0.363	37.5	LOS C	9.5	66.5	0.76	0.75	0.76	38.0
Approach			227	0.0	227	0.0	0.363	32.6	LOS C	9.5	66.5	0.76	0.75	0.76	38.3
East: Centre Loop South															
4	L2	All MCs	35	0.0	35	0.0	0.897	48.0	LOS D	46.2	323.7	1.00	1.01	1.13	33.9
5	T1	All MCs	679	0.0	679	0.0	0.897	42.5	LOS C	46.2	323.7	1.00	1.01	1.13	34.7
6	R2	All MCs	36	0.0	36	0.0	0.897	73.3	LOS F	46.2	323.7	1.00	1.01	1.13	33.8
Approach			749	0.0	749	0.0	0.897	44.2	LOS D	46.2	323.7	1.00	1.01	1.13	34.6
North: Centre Loop West															
7	L2	All MCs	64	0.0	64	0.0	0.905	56.2	LOS D	32.5	227.3	1.00	1.01	1.23	29.5
8	T1	All MCs	54	0.0	54	0.0	* 0.905	50.7	LOS D	32.5	227.3	1.00	1.01	1.23	30.2
9	R2	All MCs	363	0.0	363	0.0	0.905	62.2	LOS E	32.5	227.3	1.00	1.01	1.23	29.5
Approach			481	0.0	481	0.0	0.905	60.1	LOS E	32.5	227.3	1.00	1.01	1.23	29.6
West: Centre Loop South															
10	L2	All MCs	117	0.0	117	0.0	0.898	57.4	LOS E	27.2	190.1	1.00	1.05	1.23	29.1
11	T1	All MCs	245	0.0	245	0.0	0.898	51.9	LOS D	27.2	190.1	1.00	1.05	1.23	29.7
12	R2	All MCs	47	0.0	47	0.0	* 0.898	125.8	LOS F	27.2	190.1	1.00	1.05	1.23	29.1
Approach			409	0.0	409	0.0	0.898	62.0	LOS E	27.2	190.1	1.00	1.05	1.23	29.4
All Vehicles			1867	0.0	1867	0.0	0.905	50.8	LOS D	46.2	323.7	0.97	0.99	1.13	32.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Centre Loop West												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
East: Centre Loop South												

P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
North: Centre Loop West												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Centre Loop South												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		0	211	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

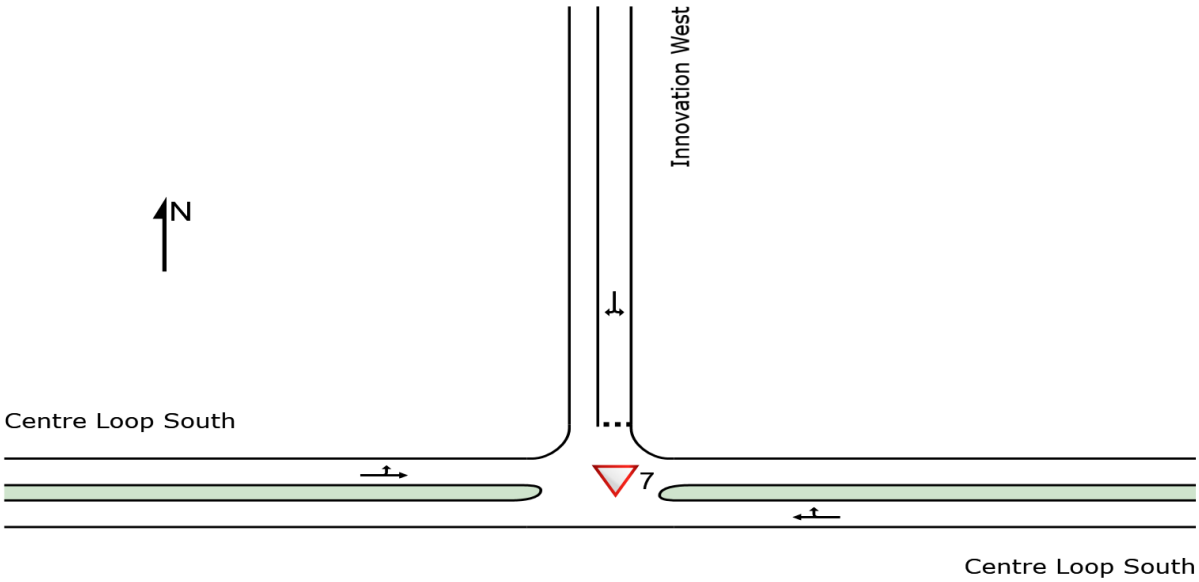
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SITE LAYOUT

Site: 7 [7.Centre Loop South/Innovation West_AM - 1 lane (Site Folder: 2056)]

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

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 7 [7.Centre Loop South/Innovation West_AM - 1 lane (Site Folder: 2056)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Centre Loop South															
5	T1	All MCs	163	0.0	163	0.0	0.300	2.5	LOS A	1.7	11.7	0.56	0.65	0.57	54.8
6	R2	All MCs	217	0.0	217	0.0	0.300	8.3	LOS A	1.7	11.7	0.56	0.65	0.57	52.5
Approach			380	0.0	380	0.0	0.300	5.8	NA	1.7	11.7	0.56	0.65	0.57	53.5
North: Innovation West															
7	L2	All MCs	209	0.0	209	0.0	0.490	8.0	LOS A	3.3	22.9	0.62	0.83	0.89	49.4
9	R2	All MCs	188	0.0	188	0.0	0.490	13.1	LOS A	3.3	22.9	0.62	0.83	0.89	49.2
Approach			398	0.0	398	0.0	0.490	10.4	LOS A	3.3	22.9	0.62	0.83	0.89	49.3
West: Centre Loop South															
10	L2	All MCs	281	0.0	281	0.0	0.288	5.6	LOS A	0.0	0.0	0.00	0.30	0.00	54.9
11	T1	All MCs	272	0.0	272	0.0	0.288	0.1	LOS A	0.0	0.0	0.00	0.30	0.00	57.2
Approach			553	0.0	553	0.0	0.288	2.9	NA	0.0	0.0	0.00	0.30	0.00	56.0
All Vehicles			1331	0.0	1331	0.0	0.490	6.0	NA	3.3	22.9	0.35	0.56	0.43	53.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 7 [7.Centre Loop South/Innovation West_PM - 1 lane (Site Folder: 2056)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Centre Loop South															
5	T1	All MCs	377	0.0	377	0.0	0.316	0.9	LOS A	1.3	9.3	0.33	0.37	0.33	57.2
6	R2	All MCs	149	0.0	149	0.0	0.316	7.3	LOS A	1.3	9.3	0.33	0.37	0.33	54.8
Approach			526	0.0	526	0.0	0.316	2.7	NA	1.3	9.3	0.33	0.37	0.33	56.5
North: Innovation West															
7	L2	All MCs	197	0.0	197	0.0	0.840	15.1	LOS B	12.5	87.2	0.90	1.38	2.51	43.3
9	R2	All MCs	371	0.0	371	0.0	0.840	23.8	LOS B	12.5	87.2	0.90	1.38	2.51	43.2
Approach			567	0.0	567	0.0	0.840	20.8	LOS B	12.5	87.2	0.90	1.38	2.51	43.2
West: Centre Loop South															
10	L2	All MCs	172	0.0	172	0.0	0.204	5.6	LOS A	0.0	0.0	0.00	0.26	0.00	55.3
11	T1	All MCs	221	0.0	221	0.0	0.204	0.1	LOS A	0.0	0.0	0.00	0.26	0.00	57.6
Approach			393	0.0	393	0.0	0.204	2.5	NA	0.0	0.0	0.00	0.26	0.00	56.6
All Vehicles			1486	0.0	1486	0.0	0.840	9.5	NA	12.5	87.2	0.46	0.72	1.07	50.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

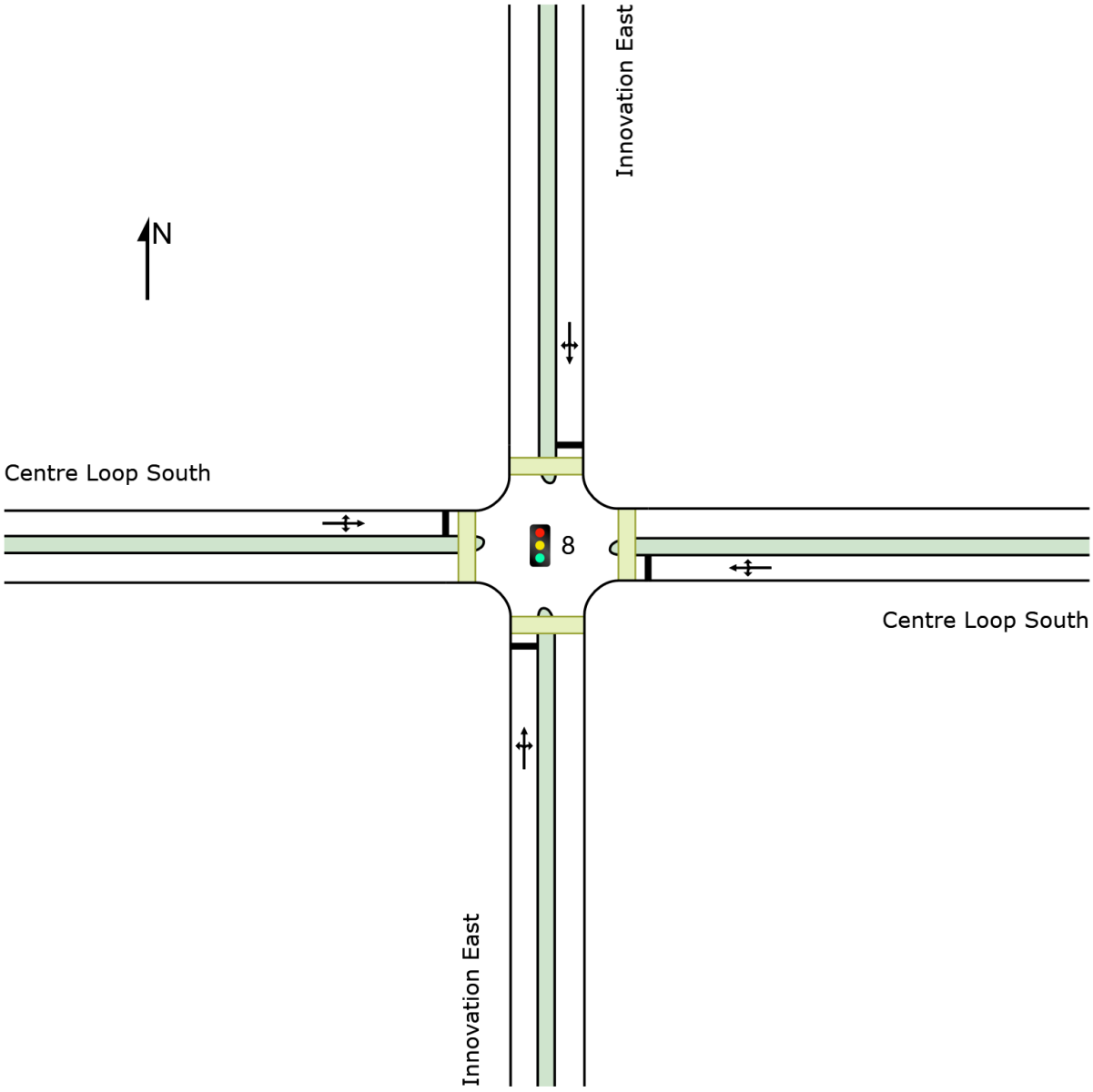
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 8 [8.Innovation East/Centre Loop South_AM - 1 lane (Site Folder: 2056)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 8 [8.Innovation East/Centre Loop South_AM - 1 lane (Site Folder: 2056)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Innovation East															
1	L2	All MCs	53	0.0	53	0.0	0.733	44.3	LOS D	22.1	155.0	0.95	0.85	0.95	35.1
2	T1	All MCs	258	0.0	258	0.0	0.733	35.9	LOS C	22.1	155.0	0.95	0.85	0.95	34.5
3	R2	All MCs	115	0.0	115	0.0	*0.733	49.2	LOS D	22.1	155.0	0.95	0.85	0.95	35.0
Approach			425	0.0	425	0.0	0.733	40.5	LOS C	22.1	155.0	0.95	0.85	0.95	34.7
East: Centre Loop South															
4	L2	All MCs	44	0.0	44	0.0	0.501	27.6	LOS B	17.0	119.1	0.72	0.68	0.72	42.1
5	T1	All MCs	326	0.0	326	0.0	0.501	19.8	LOS B	17.0	119.1	0.72	0.68	0.72	43.4
6	R2	All MCs	65	0.0	65	0.0	0.501	37.6	LOS C	17.0	119.1	0.72	0.68	0.72	40.7
Approach			436	0.0	436	0.0	0.501	23.3	LOS B	17.0	119.1	0.72	0.68	0.72	42.8
North: Innovation East															
7	L2	All MCs	6	0.0	6	0.0	0.533	44.0	LOS D	12.0	84.1	0.91	0.79	0.91	32.8
8	T1	All MCs	161	0.0	161	0.0	0.533	35.6	LOS C	12.0	84.1	0.91	0.79	0.91	33.7
9	R2	All MCs	71	0.0	71	0.0	0.533	58.5	LOS E	12.0	84.1	0.91	0.79	0.91	32.8
Approach			238	0.0	238	0.0	0.533	42.6	LOS D	12.0	84.1	0.91	0.79	0.91	33.4
West: Centre Loop South															
10	L2	All MCs	58	0.0	58	0.0	0.745	31.0	LOS C	24.2	169.5	0.89	0.83	0.89	36.9
11	T1	All MCs	248	0.0	248	0.0	0.745	22.9	LOS B	24.2	169.5	0.89	0.83	0.89	39.5
12	R2	All MCs	197	0.0	197	0.0	*0.745	42.6	LOS D	24.2	169.5	0.89	0.83	0.89	38.4
Approach			503	0.0	503	0.0	0.745	31.5	LOS C	24.2	169.5	0.89	0.83	0.89	38.8
All Vehicles			1602	0.0	1602	0.0	0.745	33.3	LOS C	24.2	169.5	0.86	0.79	0.86	37.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Innovation East												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

East: Centre Loop South												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
North: Innovation East												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Centre Loop South												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		200	211	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

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

MOVEMENT SUMMARY

Site: 8 [8.Innovation East/Centre Loop South_PM - 1 lane (Site Folder: 2056)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Innovation East															
1	L2	All MCs	77	0.0	77	0.0	0.616	42.2	LOS C	16.3	114.0	0.91	0.81	0.91	35.2
2	T1	All MCs	176	0.0	176	0.0	0.616	33.9	LOS C	16.3	114.0	0.91	0.81	0.91	34.6
3	R2	All MCs	74	0.0	74	0.0	*0.616	53.2	LOS D	16.3	114.0	0.91	0.81	0.91	35.2
Approach			326	0.0	326	0.0	0.616	40.2	LOS C	16.3	114.0	0.91	0.81	0.91	34.9
East: Centre Loop South															
4	L2	All MCs	2	0.0	2	0.0	0.605	30.2	LOS C	21.7	151.8	0.79	0.73	0.79	40.9
5	T1	All MCs	412	0.0	412	0.0	0.605	22.3	LOS B	21.7	151.8	0.79	0.73	0.79	42.1
6	R2	All MCs	94	0.0	94	0.0	0.605	41.1	LOS C	21.7	151.8	0.79	0.73	0.79	39.4
Approach			507	0.0	507	0.0	0.605	25.8	LOS B	21.7	151.8	0.79	0.73	0.79	41.6
North: Innovation East															
7	L2	All MCs	14	0.0	14	0.0	0.479	39.2	LOS C	14.8	103.6	0.83	0.72	0.83	36.6
8	T1	All MCs	296	0.0	296	0.0	0.479	31.1	LOS C	14.8	103.6	0.83	0.72	0.83	37.7
9	R2	All MCs	19	0.0	19	0.0	0.479	48.4	LOS D	14.8	103.6	0.83	0.72	0.83	36.5
Approach			328	0.0	328	0.0	0.479	32.5	LOS C	14.8	103.6	0.83	0.72	0.83	37.6
West: Centre Loop South															
10	L2	All MCs	49	0.0	49	0.0	0.620	31.8	LOS C	19.7	137.9	0.83	0.77	0.83	37.5
11	T1	All MCs	279	0.0	279	0.0	0.620	23.7	LOS B	19.7	137.9	0.83	0.77	0.83	40.1
12	R2	All MCs	107	0.0	107	0.0	*0.620	46.5	LOS D	19.7	137.9	0.83	0.77	0.83	38.9
Approach			436	0.0	436	0.0	0.620	30.2	LOS C	19.7	137.9	0.83	0.77	0.83	39.5
All Vehicles			1598	0.0	1598	0.0	0.620	31.3	LOS C	21.7	151.8	0.83	0.76	0.83	38.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Innovation East												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

East: Centre Loop South												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
North: Innovation East												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Centre Loop South												
P4	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		200	211	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

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.

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