16 March 2023

To	James Dunbar		
Copy to	Peter Mitchell		
From	Mark Lucas	**Tel**	02 9239 7141
Subject	Birling Traffic Assessment	**Project no.**	12573453

1. Context

Cameron Brae Group have lodged a Planning Proposal (Ref PP-2021-7362) with Camden Council relating to an amended road layout and density redistributions within the Birling Subdivision (the Subdivision) of the Lowes Creek Maryland Precinct (the Precinct).

GHD has been commissioned by Cameron Brae Group (Client) to prepare a Transport Assessment to assess the traffic and access implications which may arise from the adjustments as proposed by the Planning Proposal.

Furthermore, this analysis is intended to also support a Development Application for 'Stage 1' of the Birling development. The Lowes Creek Precinct will provide approximately 7,000 new dwellings, as well as retail, commercial and recreational land uses. The Subdivision will provide a total of approximately 2,100 dwellings.

The location of the Subdivision within the wider Precinct is displayed in Figure 1.

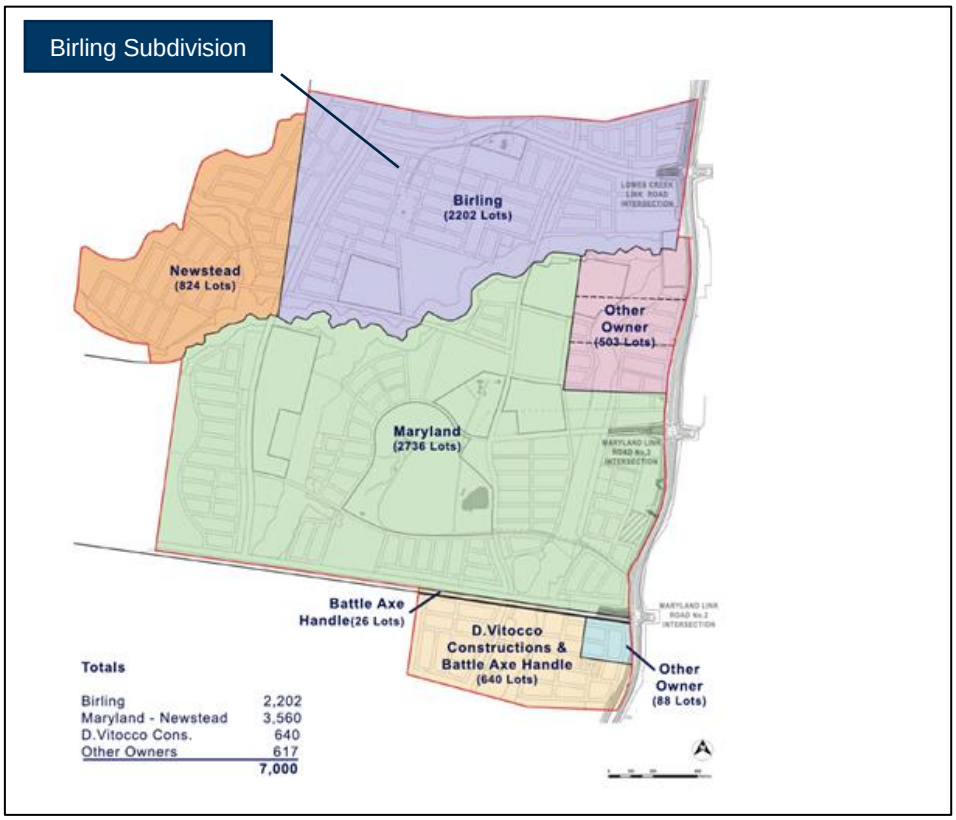


Figure 1 Birling Subdivision (note lot yields indicative only)

The purpose of this memo is to:

– Review the wider traffic and transport features of the Subdivision.
– Estimate the redistribution of the traffic internally within the development area due to the changed density redistribution and internal road network configurations, as documented within the Planning Proposal.
– Assess the capacity of the road network in accordance with the redistributed travel demand associated with the Subdivision (2031).
– Review minor amendments to the Indicative Layout Plan.

This memorandum has been developed as an addendum to *Lowes Creek Maryland Precinct Traffic, Transport and Access Assessment* (TTAA Report), which was prepared by GHD in September 2018.

It is noted that TfNSW reviewed and approved the traffic models prepared by GHD for the TTAA, and the Lowes Creek Precinct was officially rezoned by the NSW Government on 16th July 2021.

The TTAA was undertaken to support the rezoning of the Lowes Creek Precinct to ascertain the cumulative and regional traffic and transport impacts associated with the rezoning and general growth in the South West Growth Area. The TTAA supported the development of a preferred road and transport network required to serve the Precinct.

In accordance with feedback from TfNSW, a three-tiered modelling process was used in the TTAA. This process included:

– Strategic modelling using an EMME model (provided by TfNSW).
– Mesoscopic modelling to take into account the time dynamics of traffic demand (AIMSUN).
– Specific intersection analysis (SIDRA).

The analysis summarised in the TTAA Report indicated that:

– By 2031, all the intersections along The Northern Road to operate over 75 percent of the capacity, particularly in the Northbound direction during AM peak period. As such mesoscopic modelling analysis has recommended widening The Northern Road to provide three through traffic lanes in each direction.
– All the internal intersections within Lowes Creek are expected to operate with a good level of service and minimal delays through to the 2031 horizon year analysis.
– The Northern Road / Lowes Creek Road intersection operates LOS F with a degree of saturation over 100 percent.

2. Proposed Development

2.1 The Subdivision

As stated previously, the analysis in this memo is an addendum to the previous works carried out in the TTAA.

The layout of the proposed Subdivision, as documented within the Planning Proposal is displayed in Figure 2, which also shows the 11 intersections which have been subject to analysis in this memo. The indicative names of these intersections and the analysis outputs are summarised in Table 2.

The primary access to the Subdivision will be via the intersection of Lowes Creek Road and The Northern Road. Lowes Creek Road (upon construction) will be a sub-arterial road that runs in an east/west direction through the Precinct.

Figure 2 Subject site and proposed intersections for analysis

Compared to the original Indicative Layout Plan (ILP) for the Lowes Creek Precinct, the following minor changes have been applied to the Subdivision:

– An east-west local road has been introduced, as displayed in Figure 2.
– While there has been some redistribution of residential densities within the Subdivision, the overall quantum of dwellings compared to the original Lowes Creek Study has not changed.

Based on discussions with the Client, the new local road is primarily intended to provide access to local residences. Local Area Traffic Management Measures will be implemented to discourage its use as a potential “rat run”.

As a comparison, Figure 3 shows the road layouts and intersections considered in the TTAA report.

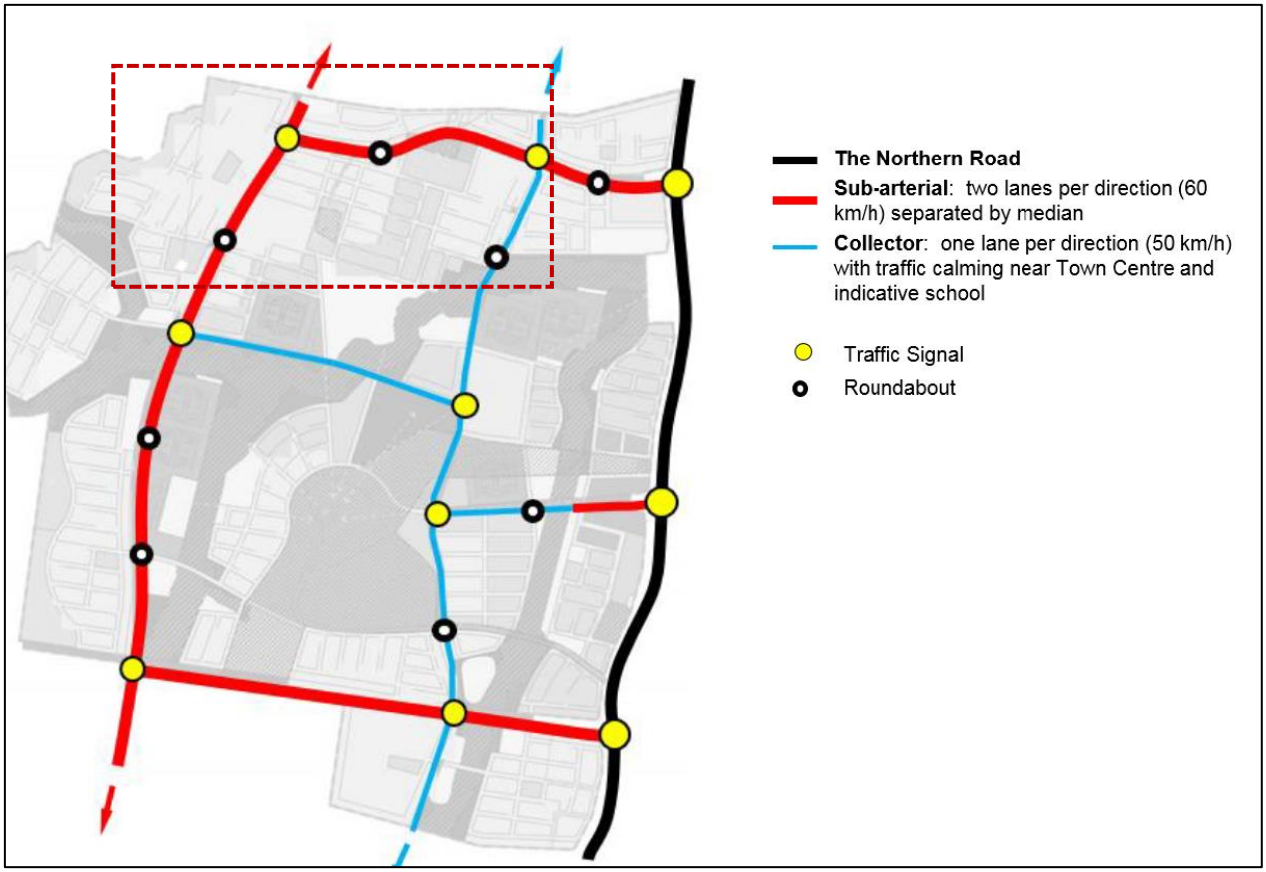


Figure 3 Intersection included in TTAA analysis

As displayed in Figure 4, the intersection of The Northern Road and Lowes Creek Road has been partially constructed. The east/west stubs will be constructed as Lowes Creek, and the wider growth areas are developed.

Figure 4 The Northern Road and Lowes Creek Road intersection

2.2 Trip generation

The trip generation assessment for the Lowes Creek Precinct was undertaken in accordance with the Guide to Traffic Generating Developments Updated traffic surveys – Technical Direction TDT2013/04a, as follows:

– AM peak periods - 0.95 trips per dwelling
– PM peak periods - 0.99 trips per dwelling

Further details regarding trip generation for the Precinct are included in the TTAA.

2.3 Trip distribution

As described in Section 3.4 of the TTAA, the trip distribution considered for this assessment has been undertaken in accordance with TfNSW's Strategic Traffic Forecasting Model. In order to replicate the anticipated internal redistribution of the traffic due to the changes to the internal road network (as displayed in Figure 2), a manual reassignment of the traffic has been undertaken. The reassignment has considered the shortest path available based on the trip origins and the destinations.

In the reassignment process, the traffic demands at the external gates to the development were retained unchanged and redistributed the internal traffic to suit based on the shortest path. When there is more than one route available with similar travel distance, the traffic has been assigned to high order road links first and only utilised the low order roads to avoid congestion at intersections.

Volume diagrams showing the redistributed demand flows used in the analysis are provided in Appendix A.

2.4 Road network

The Northern Road currently provides two travel lanes in either direction and turning lanes and bus jump of lanes at key signalised intersections. Additionally, The Northern Road has been built with wide medians to support it being widened to three lanes in either direction when required.

The proposed road hierarchy for the Precinct/Subdivision (as documented in the TTAA) includes:

– Four lane sub-arterial roads (60 km/h), with no parking provision and shared paths on both sides of the road (refer to Figure 5).
– Two lane collector roads (50 km/h) with on-street parking provision and 2.5 m shared paths in both directions (refer to Figure 6).
– Key intersections along the collector and sub-arterial road networks will be signalised, with roundabouts providing additional access and U-turn opportunities (refer to Figure 3).

Figure 5 Sub-arterial road reserve – Lowes Creek

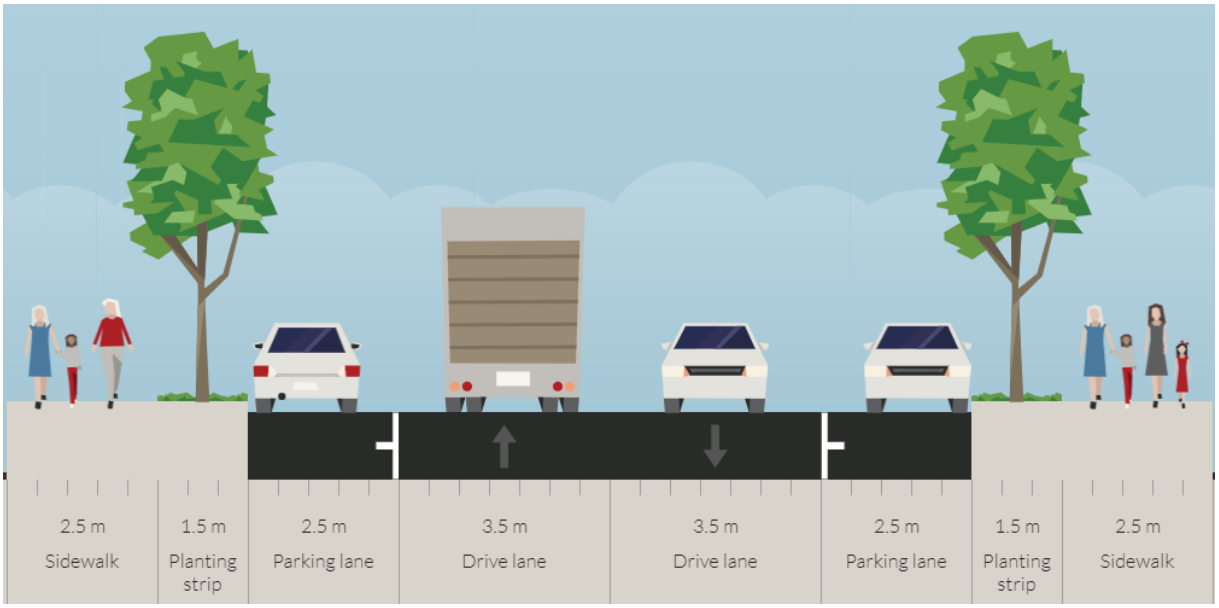


Figure 6 Collector road reserve – Lowes Creek

3. Intersection Performance Analysis

3.1 Methodology and definition of outputs

The operation of the intersections of interest has been assessed using the SIDRA Intersections version 9 Software Package.

SIDRA calculates the amount of delay to vehicles using an intersection and, amongst other performance measures, gives a Level of Service (LoS) rating, which indicates the relative performance of traffic movements within the intersection.

Table 1 presents the criteria generally applied to intersection performance. The LoS is determined from the calculated delay to traffic movements, which represents driver frustration, fuel consumption and increased travel time. There are six LoS measures ranging from A (very low delay and very good operating conditions) to F (over saturation where arrival rates exceed intersection capacity).

Table 1 Intersection Level of Service criteria

LoS	Average Delay/ Vehicle in seconds (delay)	Traffic Signals & Roundabouts
A	Less than 15	Good operation
B	15 to 28	Good with acceptable delays and spare capacity
C	28 to 42	Satisfactory
D	42 to 56	Operating near capacity
E	56 to 70	At capacity, excessive delays; roundabout requires other control mode
F	Exceeding 70	Unsatisfactory; requires additional capacity

In addition to the average delays and LoS, the degree of saturation (DOS) outputs have also been summarised for each analysis scenario.

In accordance with Austroads' *Guide to Traffic Management, Part 3: Traffic Studies and Analysis*, intersection operation is considered to reach practical saturation when the Degree of Saturation (DOS) exceeds 0.90 for signalised intersections, 0.8 for priority controlled intersections and 0.85 for roundabouts.

The analysis documented in this memorandum includes the following intersections (refer to Figure 2):

1. The Northern Road / Lowes Creek Link Road (Signals, referred to Site 3)
2. Sub-arterial Road / Lowes Creek Link Road (Signals, referred to Site 11)
3. Lowes Creek Link Road / N-S Collector Road (Signalised, Site 12)
4. Sub-arterial Road / Collector Road (Signalised, Site 13)
5. Lowes Creek Link Road / Primary Local Road type 2 (Roundabout, Site 30)
6. Lowes Creek Link Road / N-S Primary Local Street (Roundabout, Site 31)
7. Collector Road / Primary Local Street (Roundabout, Site 32)
8. Primary Local Street / Primary Local Street (Roundabout, Site 41)
9. Sub-arterial Road / Primary Local Street type 1 (Roundabout, Site 42)
10. Primary Local Street type 1 / Primary Local Street type 2 (Roundabout, Site 43)
11. Primary Local Street type 1 / Primary Local Street type 2 (Roundabout, Site 44)

The above-listed intersections have been analysed to demonstrate the anticipated operational conditions under forecast 2031 AM and PM peak period demands. Volume diagrams showing the forecast demands used in the analysis in the 2031 horizon year are provided in Appendix A.

It is noted that the site references identified above are consistent with the references included in the TTAA for the wider Precinct.

3.2 Model inputs and assumptions

The following inputs and modelling assumptions were used in the SIDRA network model:

- Cycle times used are based on network optimisation. The cycle time of 120 seconds has been used in the analysis with SIDRA optimised phase time allocations. It is noted that 120 seconds cycle time has been chosen considering the likely operational arrangement of The Northern Road intersection in the absence of any other data.
- Due to unavailable pedestrian movement data, assumed pedestrian volumes at pedestrian crossings were 20 pedestrians per hour.
- A 60 minutes peak flow period is considered at all movements as the input demands are extracted from a wider area traffic model that considers the peak flow impacts.
- The modelling has considered fully controlled right turn movements at all signalised intersections.
- It was assumed that the heavy vehicles proportion of 10 percent for the sub-arterial road and 2 percent for the local roads.
- The Northern Road / Lowes Creek Road is modelled with pedestrian actuated signals across the slip lanes. These left turns are expected to operate priority controlled when no pedestrian demands are triggered.
- In the absence of signal phasing and timing data, all the signalised intersections are analysed with 120 seconds cycle time coordinated with The Northern Road / Lowes Creek Road intersection. Further details regarding the SIDRA phasing and timing are provided in Appendix B.
- For signalised intersections, right turn filtering were not allowed. There is an opportunity to optimise the network performance further if filtered movements are acceptable for the relevant road authorities.

3.3 SIDRA model network

Figure 7 depicts the SIDRA network layout of the intersections considered in the Subdivision analysis documented in this memorandum.

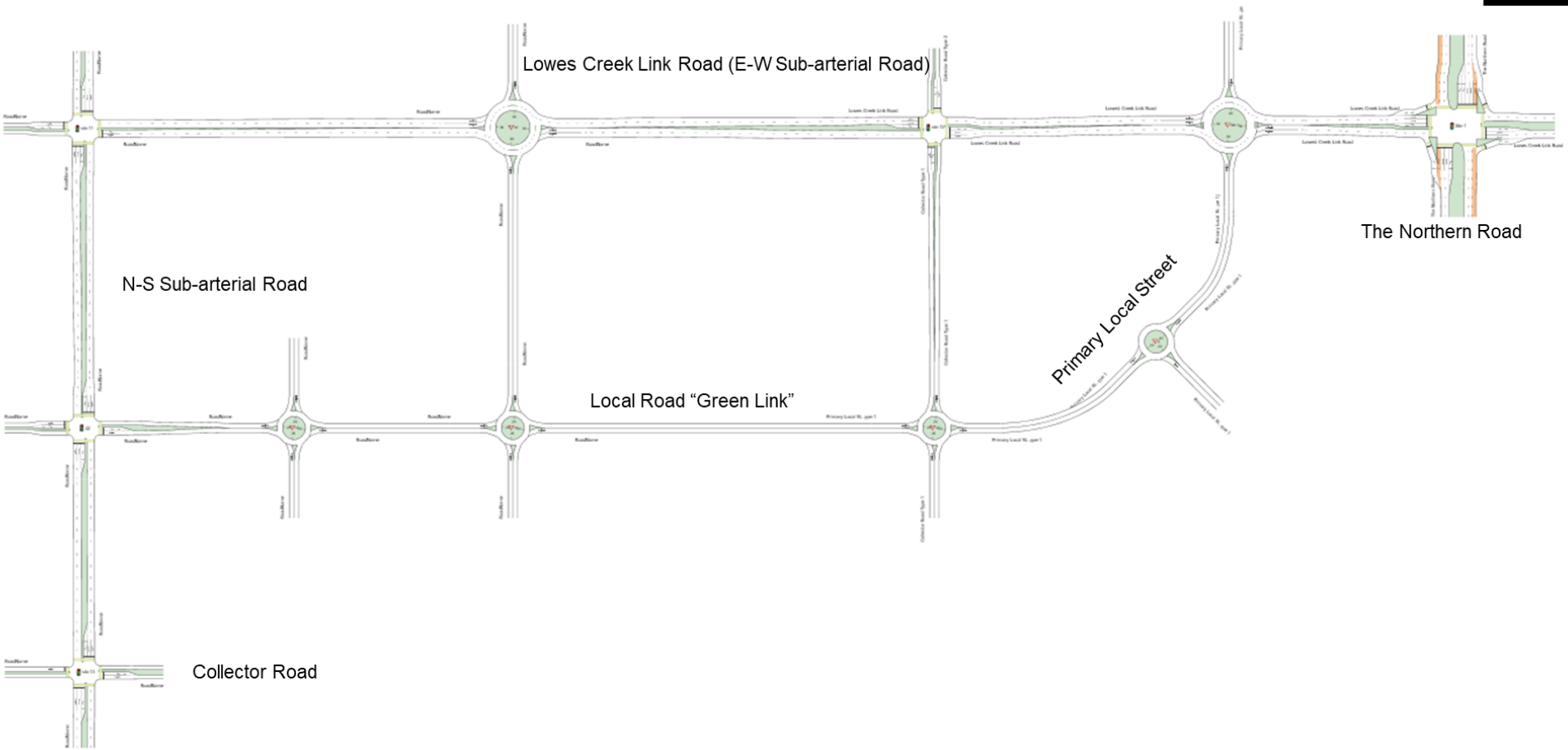


Figure 7 SIDRA network layout

The layout of The Northern Road / Lowes Creek Road intersection has been developed consistent with the latest Aerial Imaginary available (refer to Figure 4). All the other intersection layouts are as per the development context plans provided to GHD.

It must be noted that the analysis outputs documented in the proceeding section of this memo summarises the findings from the network analysis.

3.4 Analysis outputs

Table 2 summarises the outputs from the SIDRA intersection analysis. The detailed SIDRA output reports are provided in Appendix B.

Table 2 2031 Overall intersection performance summary

ID	Intersection	AM Peak 7:15 am -8:15 am			PM Peak 5:15 pm – 6:15 pm		
		DoS	Delay (sec)*	LoS*	DoS	Delay (sec)*	LoS*
3	The Northern Road / Lowes Creek Link Road	1.18	90	F	0.90	34	C
11	Sub-arterial Road / Lowes Creek Link Road	0.78	34	C	0.62	32	C
12	Lowes Creek Link Road / Collector Road	0.81	40	C	0.87	51	D
13	Sub-arterial Road / Collector Road	0.45	30	C	0.78	39	C
30	Lowes Creek Link Road / Primary Local Road type 2	0.25	12	A	0.16	11	A
31	Lowes Creek Link Road / N-S Primary Street	0.46	15	B	0.22	12	A
32	Collector Road / Primary Street	0.59	9	A	0.34	11	A
41	Primary Street / Primary Street	0.16	7	A	0.25	8	A
42	Sub-arterial Road / Primary Local Street type 1	0.67	28	B	0.57	13	A
43	Primary Local Street type 1 / Primary Local Street type 2	0.17	10	A	0.20	10	A
44	Primary Local Street type 1 / Primary Local Street type 2	0.28	11	A	0.41	11	A

****overall intersection operational outputs***

From the review of the analysis outputs, it is noted that:

– The Northern Road / Lowes Creek Link Road is shown to operate over practical intersection capacity with high delays (LoS F) during AM peak period. There are no significant operational issues identified under the forecast PM peak demands.
– These outputs are consistent with the SIDRA results for the wider Precinct identified in the TTAA. The SIDRA results indicate a maximum queue of 48 vehicles (360 m) at Lowest Creek Link Road left turn during AM peak and a queue of 43 vehicles (322 m) at Northern Road, north through movement during PM peak period.

– Lowes Creek Link Road / Collector Road and Sub-arterial Road / Collector Road intersections operate with moderate delays during AM and PM peak periods. However, overall intersection performance does not exceed LOS D.
– The roundabouts and the remaining sites considered in the analysis operate within practical capacity with no significant delays and queues at any approach.

Based on these outputs, the assessment concludes that the proposed reconfigurations to the internal intersections and associated traffic redistributions are unlikely to significantly impact the traffic performance previously reported in the TTAA.

It is noted that minor worsening of the intersection performance compared to TTAA outcomes are evident in this analysis at some intersections (i.e. Intersection 12), which are predominantly due to the following safety and gematrical refinements:

– Provision of pedestrian crossings across all approaches of the intersection
– Removal of right turn filtering from the phasing sequence
– Increased signal cycle times to improve coordination with The Northern Road intersection

Considering the improved safety and connectivity (intuitive navigation and better road hierarchy) benefits associated with the proposed reconfigurations to the intersection and amendments to the ILP are expected to deliver an improved outcome for the end-users within the Subdivision/Precinct.

4. Summary and conclusion

This memorandum summarises the findings from the analysis undertaken to demonstrate the anticipated road network performance impacts associated with proposed reconfigurations to the internal road network within the Lowes Creek Precinct as part of the Subdivision. Compared to the original Indicative Layout Plan (ILP) for the Lowes Creek Precinct introduces a new east-west local road. While there has been some redistribution of residential densities within the Subdivision, the overall quantum of dwellings compared to the original Lowes Creek Study has not changed.

This memorandum has been developed as an addendum to *Lowes Creek Maryland Precinct Traffic, Transport and Access Assessment* (TTAA Report), dated September 2018.

Based on the findings from the analysis, it has been summarised that:

– The Northern Road / Lowes Creek Link Road is expected to operate over practical intersection capacity with high delays (LoS F) during AM peak period. There are no significant operational issues identified under the forecast PM peak demands. This is consistent with the previous analysis documented in the TTAA report.
– Lowes Creek Link Road / Collector Road and Sub-arterial Road / Collector Road intersections operate with moderate delays during AM and PM peak periods. However, overall intersection performance does not exceed LOS D.
– The roundabouts and the remaining sites considered in the analysis operate within practical capacity with no significant delays and queues at any approach.

Based on these outputs, the assessment concluded that the proposed reconfigurations to the internal intersections as part of Stage 1 Subdivision are unlikely to impact the traffic performance previously reported in the TTAA significantly.

As the TTAA has been subject to approval from TfNSW, the proposed Subdivision can be supported from a traffic and transport perspective.

Regards

Mark Lucas
Technical Director – Transport Planning

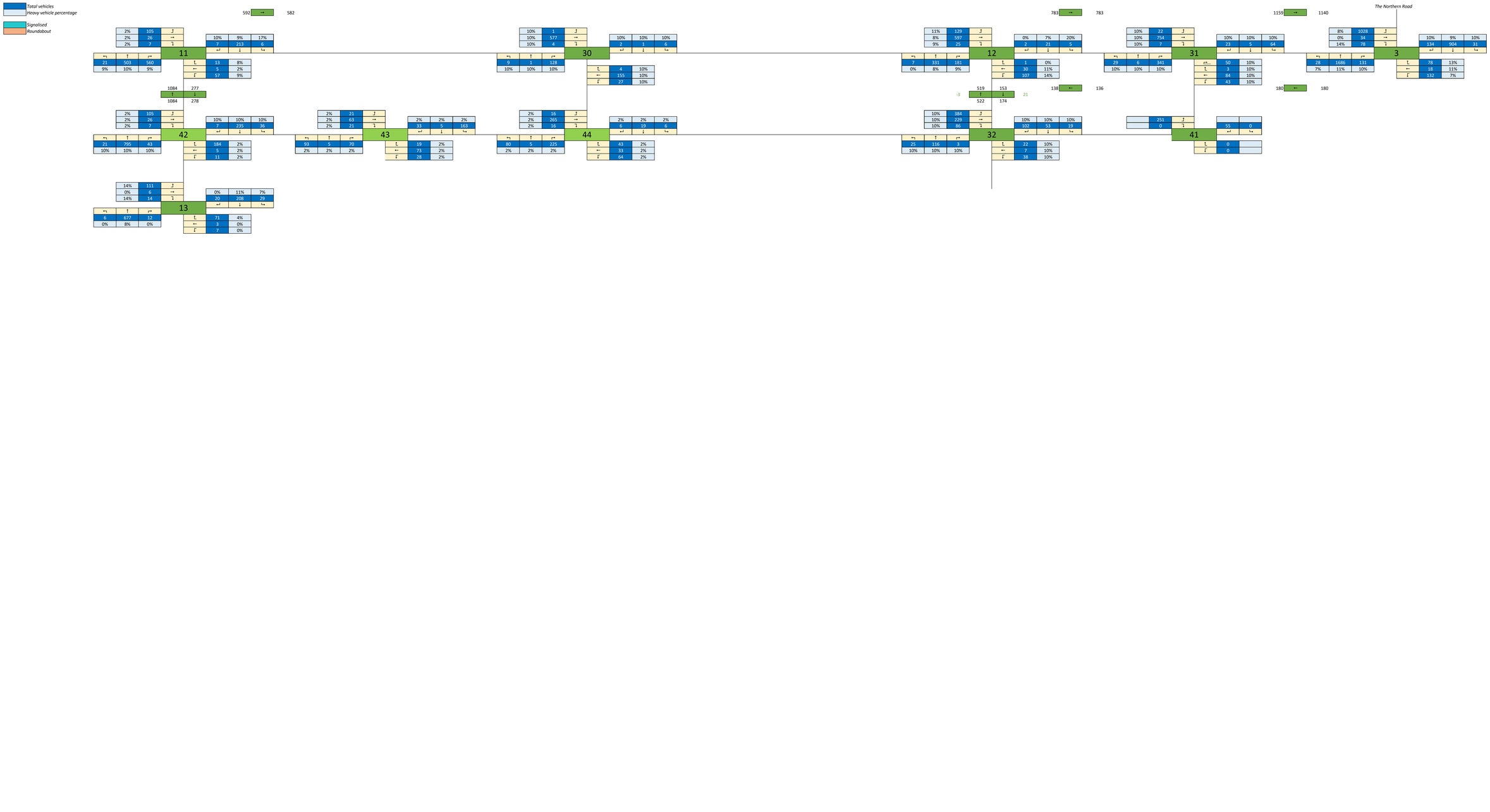
Appendix A

Traffic diagram summaries

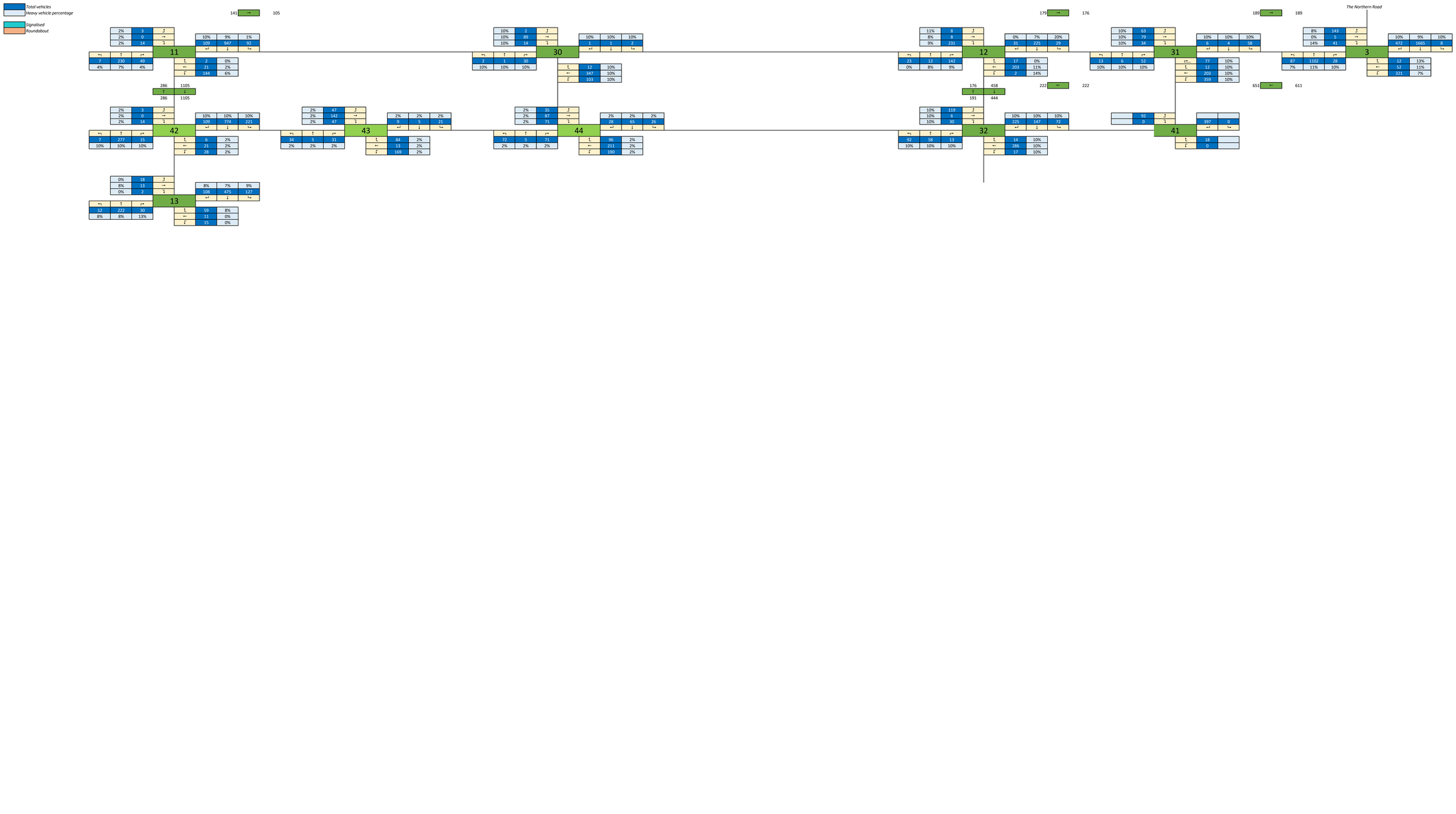
Future 2031 - AM Peak

Total vehicles
Heavy vehicle percentage

Signalised
Roundabout



Future 2031 - PM Peak



Appendix B

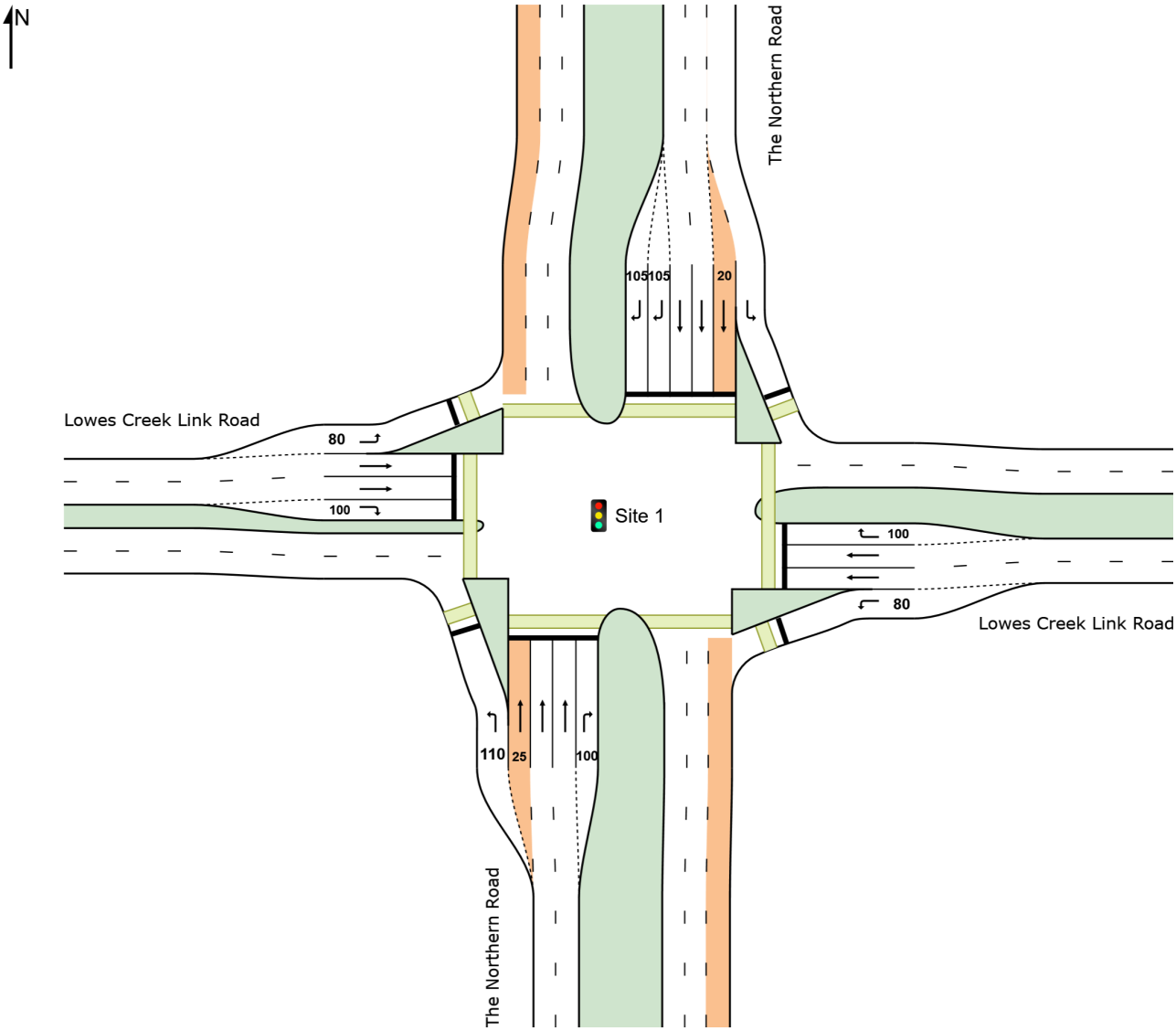
SIDRA Results

SITE LAYOUT

Site: Site 1 [2031_AM Peak_Site 3 (1) (Site Folder: Birling Future 2031_AM Peak)]

2031_AM Peak
Site Category: 2031_AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023 — **Template: Site outputs (movements)**

Site: Site 1 [2031_AM Peak_Site 3 (1) (Site Folder: Birling Future 2031_AM Peak)] — **Network: 6 [2031_AM Peak all sites (Network Folder: General)]**

2031_AM Peak
Site Category: 2031_AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Custom - As per original (phase reduction applied)
Reference Phase: Phase B
Input Phase Sequence: A, A2, B, C, D
Output Phase Sequence: A, B, C, D

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: The Northern Road														
1	L2	28	7.0	28	7.0	0.022	8.5	LOS A	0.2	1.5	0.18	0.63	0.18	58.9
2	T1	1686	11.0	1686	11.0	* 0.895	51.6	LOS D	37.5	286.9	0.99	1.02	1.19	37.8
3	R2	131	10.0	131	10.0	* 1.128	194.6	LOS F	15.2	115.6	1.00	1.26	2.38	14.4
Approach		1845	10.9	1845	10.9	1.128	61.1	LOS E	37.5	286.9	0.98	1.03	1.26	33.9
East: Lowes Creek Link Road														
4	L2	132	7.0	132	7.0	0.136	10.6	LOS A	2.2	16.3	0.36	0.65	0.36	53.2
5	T1	18	11.0	18	11.0	0.098	61.7	LOS E	0.5	4.1	0.98	0.66	0.98	20.5
6	R2	78	13.0	78	13.0	* 0.918	83.0	LOS F	5.4	42.2	1.00	1.00	1.62	25.9
Approach		228	9.4	228	9.4	0.918	39.4	LOS C	5.4	42.2	0.63	0.77	0.84	36.9
North: The Northern Road														
7	L2	31	10.0	31	10.0	0.032	12.3	LOS A	0.5	3.8	0.34	0.66	0.34	54.9
8	T1	904	9.0	904	9.0	0.609	32.1	LOS C	19.3	145.8	0.83	0.71	0.83	47.2
9	R2	134	10.0	134	10.0	0.577	70.1	LOS E	4.1	30.9	1.00	0.77	1.04	20.2
Approach		1069	9.2	1069	9.2	0.609	36.2	LOS C	19.3	145.8	0.84	0.72	0.84	43.4
West: Lowes Creek Link Road														
10	L2	1028	8.0	1028	8.0	* 1.182	213.8	LOS F	48.0	359.0	1.00	1.56	2.38	9.8
11	T1	34	0.0	34	0.0	0.027	29.1	LOS C	0.7	4.6	0.71	0.51	0.71	36.6
12	R2	78	14.0	78	14.0	0.143	36.4	LOS C	3.2	25.2	0.74	0.73	0.74	33.7
Approach		1140	8.2	1140	8.2	1.182	196.2	LOS F	48.0	359.0	0.97	1.47	2.21	10.5
All Vehicles		4282	9.6	4282	9.6	1.182	89.7	LOS F	48.0	359.0	0.92	1.06	1.39	24.0

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: The Northern Road											
P11	Stage 1	20	54.2	LOS E	0.1	0.1	0.95	0.95	81.0	34.8	0.43
P12	Stage 2	20	54.2	LOS E	0.1	0.1	0.95	0.95	78.4	31.4	0.40
P1S	Slip/ Bypass	20	54.2	LOS E	0.1	0.1	0.95	0.95	74.0	25.8	0.35
East: Lowes Creek Link Road											
P2	Full	20	37.6	LOS D	0.1	0.1	0.79	0.79	71.9	44.5	0.62
P2S	Slip/ Bypass	20	26.0	LOS C	0.0	0.0	0.66	0.66	45.6	25.5	0.56
North: The Northern Road											
P31	Stage 1	20	36.1	LOS D	0.1	0.1	0.78	0.78	65.3	37.9	0.58
P32	Stage 2	20	32.3	LOS D	0.1	0.1	0.73	0.73	56.4	31.3	0.56
P3S	Slip/ Bypass	20	28.7	LOS C	0.0	0.0	0.69	0.69	48.3	25.4	0.53
West: Lowes Creek Link Road											
P4	Full	20	35.3	LOS D	0.1	0.1	0.77	0.77	67.0	41.3	0.62
P4S	Slip/ Bypass	20	26.0	LOS C	0.0	0.0	0.66	0.66	45.6	25.5	0.56
All Pedestrians		200	38.5	LOS D	0.1	0.1	0.79	0.79	63.3	32.3	0.51

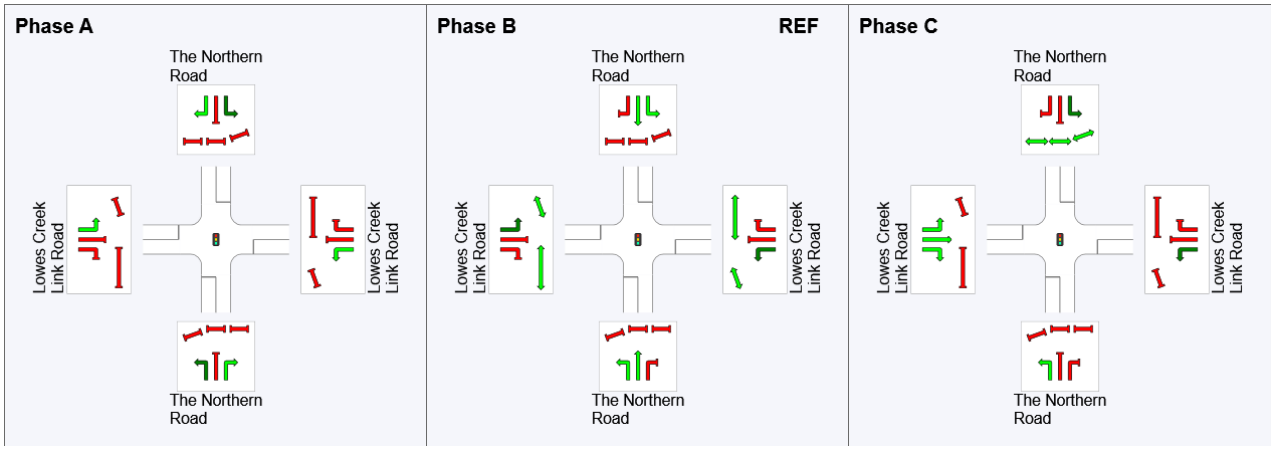
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

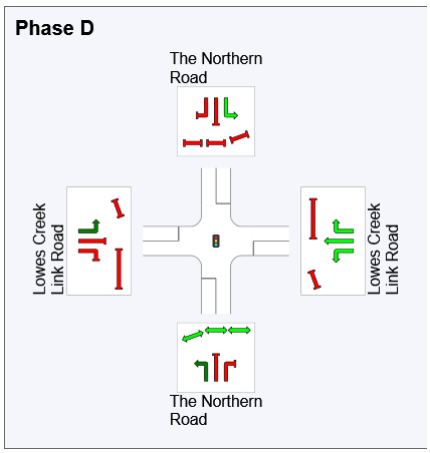
Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	106	0	49	94
Green Time (sec)	8	43	39	6
Phase Time (sec)	14	49	45	12
Phase Split	12%	41%	38%	10%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023 | **Template: Site outputs (movements)**

Site: Site 1 [2031_PM Peak_Site 3 (1) (Site Folder: Birling Future 2031_PM Peak)] | **Network: 3 [2031_PM Peak all sites (Network Folder: General)]**

2031_AM Peak
Site Category: 2031_AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Custom - As per the previous analysis
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: The Northern Road														
1	L2	87	7.0	87	7.0	0.077	9.5	LOS A	0.9	6.8	0.24	0.66	0.24	57.0
2	T1	1102	11.0	1102	11.0	0.413	19.3	LOS B	13.9	106.8	0.66	0.58	0.66	56.4
3	R2	28	10.0	28	10.0	0.055	40.1	LOS C	1.2	8.9	0.75	0.71	0.75	39.0
Approach		1217	10.7	1217	10.7	0.413	19.1	LOS B	13.9	106.8	0.63	0.59	0.63	55.9
East: Lowes Creek Link Road														
4	L2	321	7.0	321	7.0	0.472	27.5	LOS B	11.7	87.1	0.75	0.89	0.75	42.8
5	T1	52	11.0	52	11.0	0.284	63.1	LOS E	1.6	12.1	1.00	0.71	1.00	20.2
6	R2	12	13.0	12	13.0	0.151	69.4	LOS E	0.7	5.6	0.99	0.68	0.99	28.7
Approach		385	7.7	385	7.7	0.472	33.6	LOS C	11.7	87.1	0.79	0.86	0.79	38.9
North: The Northern Road														
7	L2	8	10.0	8	10.0	0.006	8.5	LOS A	0.1	0.4	0.17	0.63	0.17	58.2
8	T1	1665	9.0	1665	9.0	* 0.903	42.7	LOS D	42.7	321.9	0.78	0.85	1.01	41.6
9	R2	472	10.0	472	10.0	* 0.464	45.1	LOS D	11.4	86.3	0.87	0.81	0.87	27.6
Approach		2145	9.2	2145	9.2	0.903	43.1	LOS D	42.7	321.9	0.80	0.84	0.98	39.1
West: Lowes Creek Link Road														
10	L2	143	8.0	143	8.0	0.173	8.6	LOS A	2.0	15.0	0.30	0.64	0.30	52.8
11	T1	5	0.0	5	0.0	0.025	60.4	LOS E	0.1	1.0	0.97	0.60	0.97	25.7
12	R2	41	14.0	41	14.0	* 0.533	71.9	LOS F	2.6	20.1	1.00	0.74	1.04	23.3
Approach		189	9.1	189	9.1	0.533	23.7	LOS B	2.6	20.1	0.47	0.66	0.48	40.5
All Vehicles		3936	9.5	3936	9.5	0.903	33.8	LOS C	42.7	321.9	0.73	0.76	0.83	43.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: The Northern Road											
P11	Stage 1	20	54.2	LOS E	0.1	0.1	0.95	0.95	81.0	34.8	0.43
P12	Stage 2	20	54.2	LOS E	0.1	0.1	0.95	0.95	78.4	31.4	0.40
P1S	Slip/ Bypass	20	54.2	LOS E	0.1	0.1	0.95	0.95	74.0	25.8	0.35
East: Lowes Creek Link Road											
P2	Full	20	24.7	LOS C	0.0	0.0	0.64	0.64	59.0	44.5	0.75
P2S	Slip/ Bypass	20	15.5	LOS B	0.0	0.0	0.51	0.51	35.1	25.5	0.73
North: The Northern Road											
P31	Stage 1	20	54.2	LOS E	0.1	0.1	0.95	0.95	83.4	37.9	0.46
P32	Stage 2	20	54.2	LOS E	0.1	0.1	0.95	0.95	78.3	31.3	0.40
P3S	Slip/ Bypass	20	54.2	LOS E	0.1	0.1	0.95	0.95	73.8	25.4	0.34
West: Lowes Creek Link Road											
P4	Full	20	22.8	LOS C	0.0	0.0	0.62	0.62	54.6	41.3	0.76
P4S	Slip/ Bypass	20	15.5	LOS B	0.0	0.0	0.51	0.51	35.1	25.5	0.73
All Pedestrians		200	40.4	LOS E	0.1	0.1	0.80	0.80	65.3	32.3	0.50

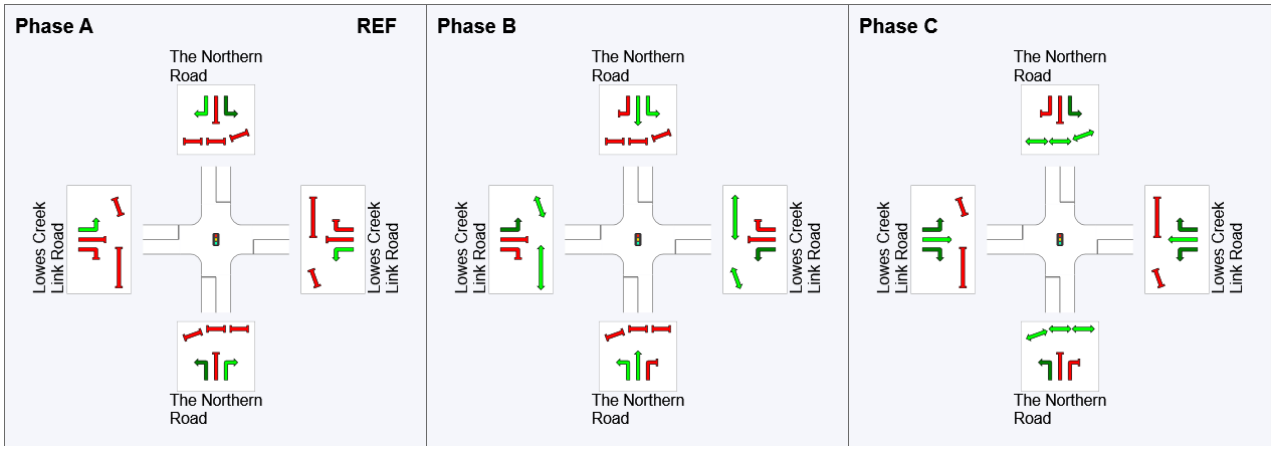
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Phase Timing Summary

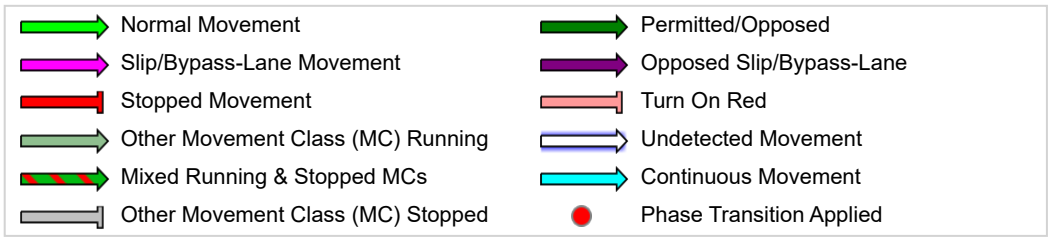
Phase	A	B	C
Phase Change Time (sec)	0	41	108
Green Time (sec)	35	61	6
Phase Time (sec)	41	67	12
Phase Split	34%	56%	10%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



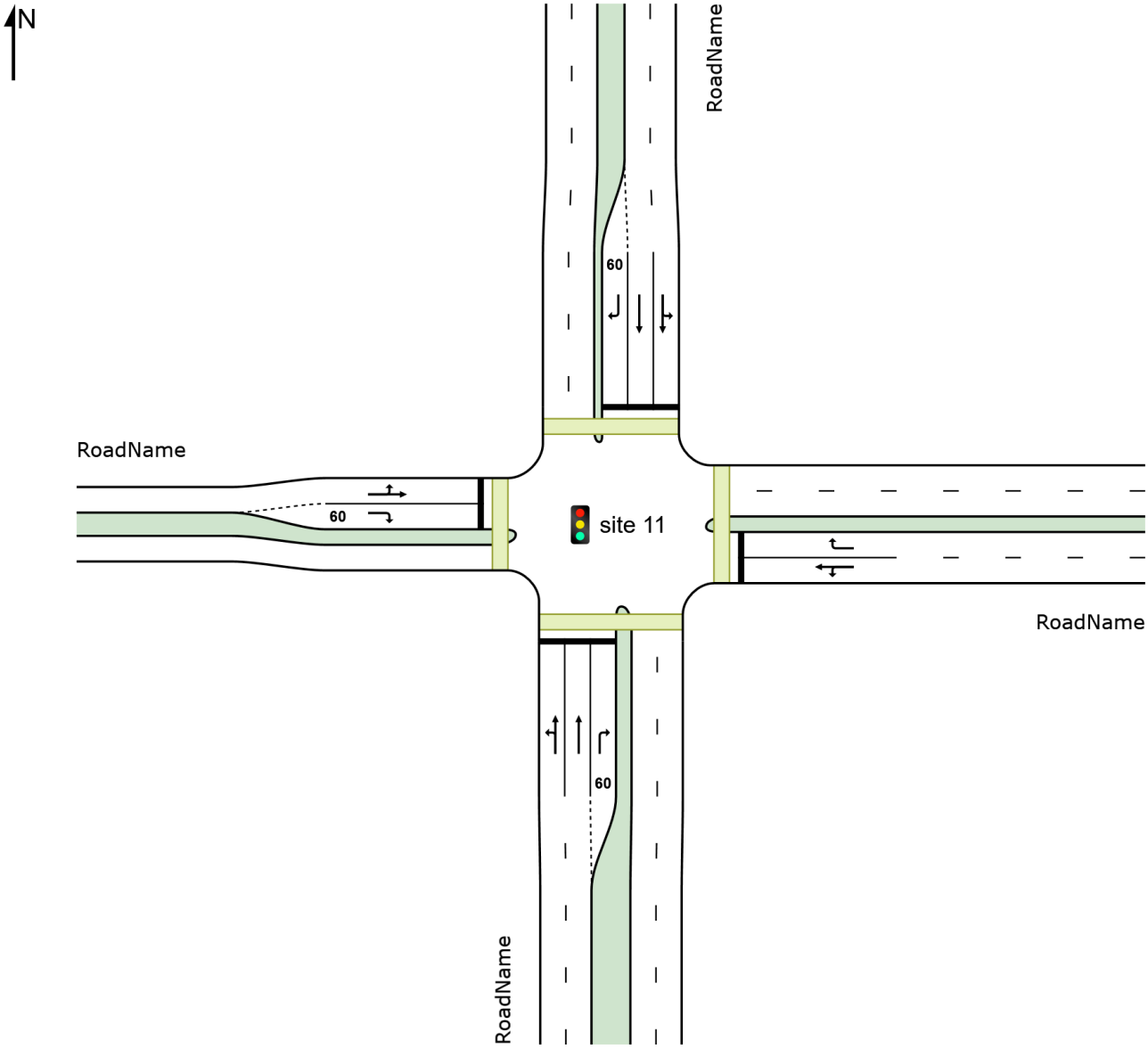
Organisation: GHD PTY LTD | Licence: NETWORK / Enterprise | Created: Monday, 13 February 2023 4:52:55 PM
Project: \\ghdnet\ghd\AU\Sydney\Projects\21\12573453\Tech\Traffic\SIDRA\SIDRA_variation Jan 2023\2031_Future_Birling SIDRA - 13 Feb 2023.sip9

SITE LAYOUT

Site: site 11 [2031_AM Peak_Site 11- updated (Site Folder: Birling Future 2031_AM Peak)]

site 11
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023 | **Template: Site outputs (movements)**

Site: site 11 [2031_AM Peak_Site 11- updated (Site Folder: Birling Future 2031_AM Peak)] | **Network: 6 [2031_AM Peak all sites (Network Folder: General)]**

site 11
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: custom
Reference Phase: Phase A
Input Phase Sequence: A, E, B, C, D
Output Phase Sequence: A, E, B, C, D

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	21	9.0	21	9.0	* 0.237	22.1	LOS B	9.2	70.1	0.68	0.61	0.68	33.9
2	T1	503	10.0	503	10.0	0.237	16.8	LOS B	10.5	79.7	0.71	0.62	0.71	43.2
3	R2	560	9.0	560	9.0	* 0.781	35.0	LOS C	27.8	209.4	0.90	0.87	0.92	16.8
Approach		1084	9.5	1084	9.5	0.781	26.3	LOS B	27.8	209.4	0.81	0.75	0.82	30.8
East: RoadName														
4	L2	57	9.0	57	9.0	0.192	49.9	LOS D	3.1	23.1	0.88	0.74	0.88	23.1
5	T1	5	0.0	5	0.0	0.192	44.3	LOS D	3.1	23.1	0.88	0.74	0.88	27.9
6	R2	13	8.0	13	8.0	0.148	68.0	LOS E	0.8	5.8	0.99	0.68	0.99	28.0
Approach		75	8.2	75	8.2	0.192	52.7	LOS D	3.1	23.1	0.90	0.73	0.90	24.7
North: RoadName														
7	L2	6	17.0	6	17.0	* 0.403	56.8	LOS E	5.7	43.3	0.95	0.77	0.95	22.6
8	T1	213	9.0	213	9.0	0.403	50.9	LOS D	6.0	45.5	0.95	0.76	0.95	22.7
9	R2	7	10.0	7	10.0	* 0.081	67.4	LOS E	0.4	3.1	0.98	0.66	0.98	22.8
Approach		226	9.2	226	9.2	0.403	51.6	LOS D	6.0	45.5	0.95	0.76	0.95	22.7
West: RoadName														
10	L2	105	2.0	105	2.0	0.505	58.2	LOS E	7.3	51.8	0.97	0.79	0.97	26.8
11	T1	26	2.0	26	2.0	0.505	52.6	LOS D	7.3	51.8	0.97	0.79	0.97	11.1
12	R2	7	2.0	7	2.0	0.042	60.1	LOS E	0.4	2.7	0.94	0.66	0.94	10.7
Approach		138	2.0	138	2.0	0.505	57.2	LOS E	7.3	51.8	0.97	0.79	0.97	23.8
All Vehicles		1523	8.7	1523	8.7	0.781	34.1	LOS C	27.8	209.4	0.85	0.75	0.86	27.9

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: RoadName											
P1	Full	10	54.2	LOS E	0.0	0.0	0.95	0.95	85.3	40.5	0.47
East: RoadName											
P2	Full	10	54.2	LOS E	0.0	0.0	0.95	0.95	82.8	37.2	0.45
North: RoadName											
P3	Full	10	54.2	LOS E	0.0	0.0	0.95	0.95	84.6	39.5	0.47
West: RoadName											
P4	Full	10	54.2	LOS E	0.0	0.0	0.95	0.95	218.7	213.9	0.98
All Pedestrians		40	54.2	LOS E	0.0	0.0	0.95	0.95	117.8	82.8	0.70

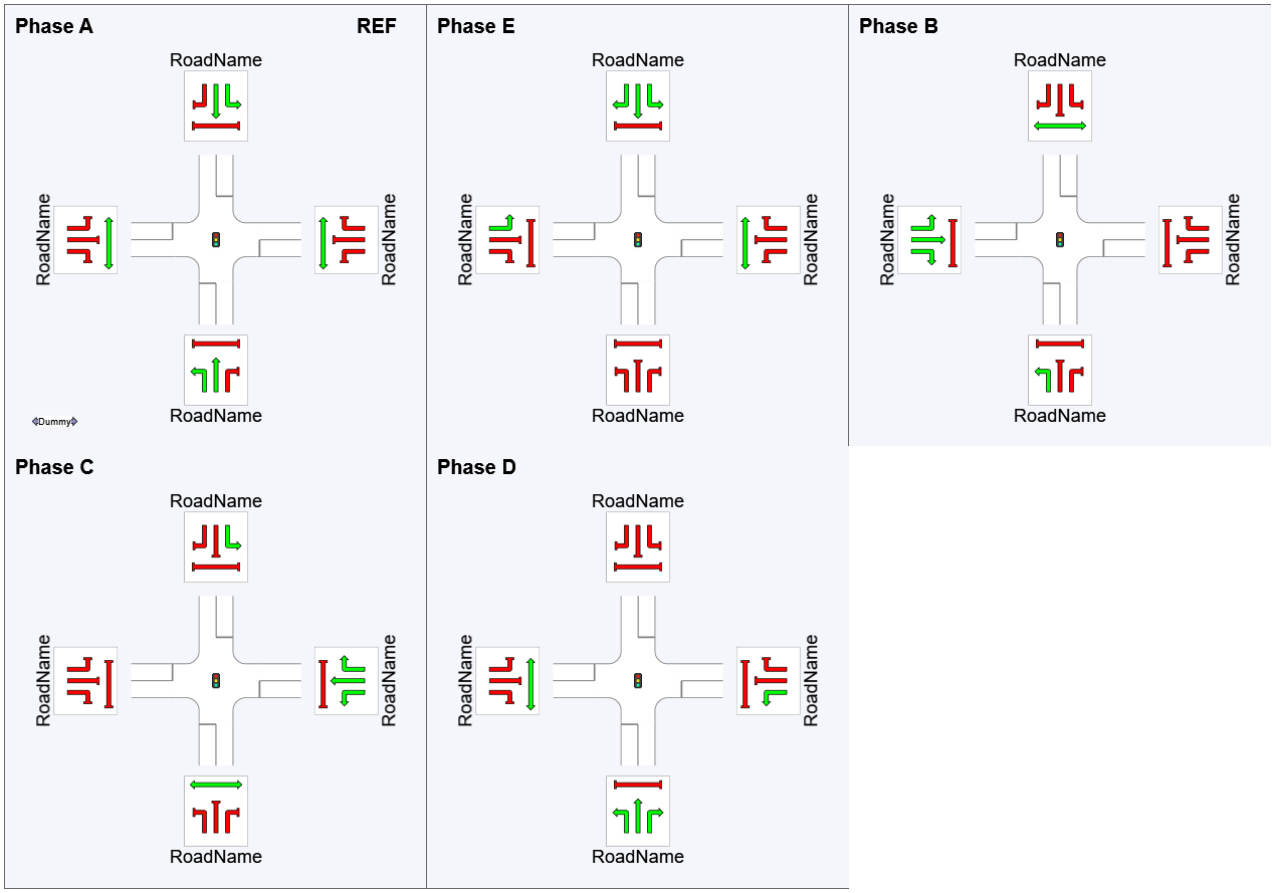
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Phase Timing Summary

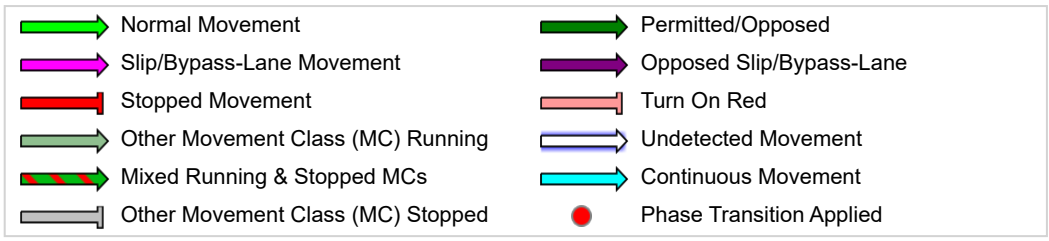
Phase	A	E	B	C	D
Phase Change Time (sec)	0	12	24	41	53
Green Time (sec)	6	6	11	6	61
Phase Time (sec)	12	12	17	12	67
Phase Split	10%	10%	14%	10%	56%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023 — **Template: Site outputs (movements)**

Site: site 11 [2031_PM Peak_Site 11- updated (Site Folder: Birling Future 2031_PM Peak)] — **Network: 3 [2031_PM Peak all sites (Network Folder: General)]**

site 11
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: custom
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D, E
Output Phase Sequence: A, B, C, D, E

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	7	4.0	7	4.0	0.486	58.2	LOS E	6.2	45.6	0.92	0.74	0.92	19.0
2	T1	230	7.0	230	7.0	0.486	47.8	LOS D	6.2	45.6	0.89	0.71	0.89	28.6
3	R2	49	4.0	49	4.0	0.142	49.2	LOS D	2.3	16.8	0.84	0.73	0.84	13.0
Approach		286	6.4	286	6.4	0.486	48.3	LOS D	6.2	45.6	0.88	0.72	0.88	26.4
East: RoadName														
4	L2	144	6.0	144	6.0	* 0.624	57.9	LOS E	9.3	68.1	0.99	0.82	0.99	21.1
5	T1	21	2.0	21	2.0	0.624	52.3	LOS D	9.3	68.1	0.99	0.82	0.99	25.8
6	R2	2	0.0	2	0.0	0.011	58.2	LOS E	0.1	0.7	0.92	0.62	0.92	30.4
Approach		167	5.4	167	5.4	0.624	57.2	LOS E	9.3	68.1	0.98	0.81	0.99	21.9
North: RoadName														
7	L2	92	1.0	92	1.0	* 0.615	30.8	LOS C	22.5	167.8	0.80	0.75	0.80	32.5
8	T1	947	9.0	947	9.0	0.615	24.3	LOS B	22.5	167.8	0.78	0.71	0.78	33.3
9	R2	109	10.0	109	10.0	0.116	19.8	LOS B	3.1	23.2	0.52	0.70	0.52	39.3
Approach		1148	8.5	1148	8.5	0.615	24.4	LOS B	22.5	167.8	0.76	0.71	0.76	33.9
West: RoadName														
10	L2	3	2.0	3	2.0	0.027	48.1	LOS D	0.2	1.4	0.94	0.62	0.94	30.0
11	T1	1	2.0	1	2.0	0.027	42.5	LOS D	0.2	1.4	0.94	0.62	0.94	13.1
12	R2	14	2.0	14	2.0	* 0.102	63.2	LOS E	0.8	5.6	0.96	0.69	0.96	10.2
Approach		18	2.0	18	2.0	0.102	59.6	LOS E	0.8	5.6	0.96	0.67	0.96	14.0
All Vehicles		1619	7.7	1619	7.7	0.624	32.4	LOS C	22.5	167.8	0.80	0.72	0.80	30.2

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov	Dem.	Aver.	Level of	AVERAGE BACK OF	Prop.	Effective	Travel	Travel	Aver.

ID	Crossing	Flow	Delay	Service	QUEUE [Ped	Dist]	Que	Stop Rate	Time	Dist.	Speed
		ped/h	sec		ped	m			sec	m	m/sec
South: RoadName											
P1	Full	10	54.2	LOS E	0.0	0.0	0.95	0.95	85.3	40.5	0.47
East: RoadName											
P2	Full	10	22.8	LOS C	0.0	0.0	0.62	0.62	51.4	37.2	0.72
North: RoadName											
P3	Full	10	54.2	LOS E	0.0	0.0	0.95	0.95	84.6	39.5	0.47
West: RoadName											
P4	Full	10	54.2	LOS E	0.0	0.0	0.95	0.95	218.7	213.9	0.98
All Pedestrians		40	46.3	LOS E	0.0	0.0	0.87	0.87	110.0	82.8	0.75

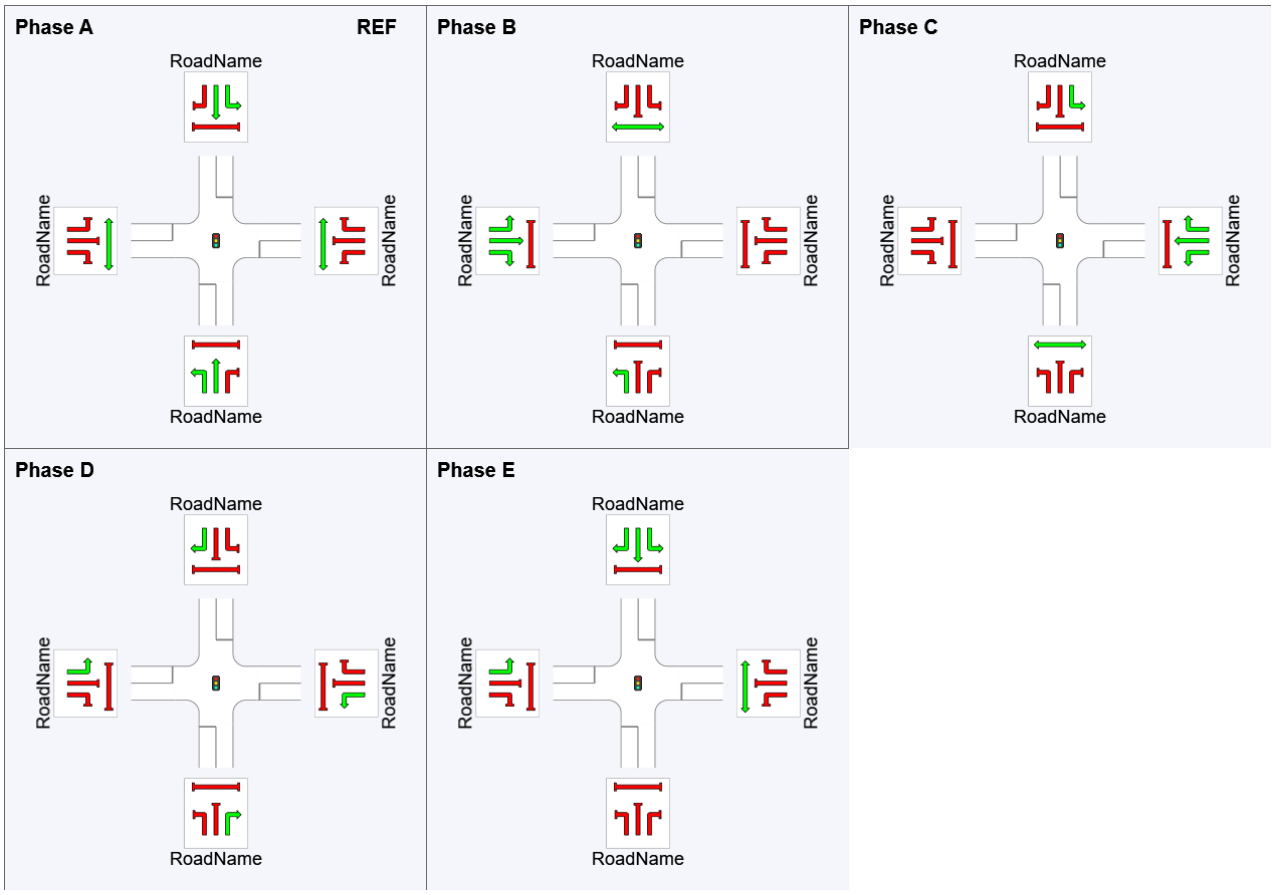
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Phase Timing Summary

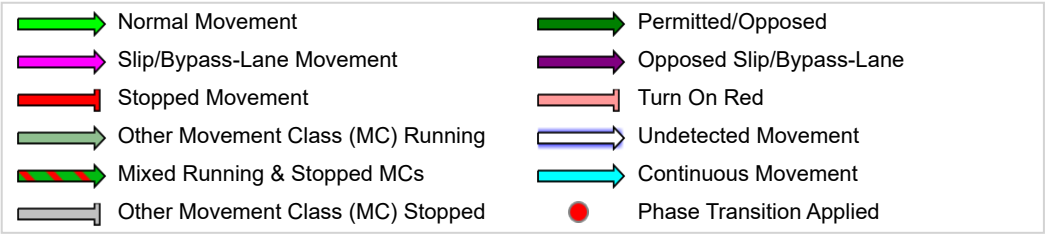
Phase	A	B	C	D	E
Phase Change Time (sec)	0	22	37	52	78
Green Time (sec)	16	9	12	23	36
Phase Time (sec)	22	12	15	29	42
Phase Split	18%	10%	13%	24%	35%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

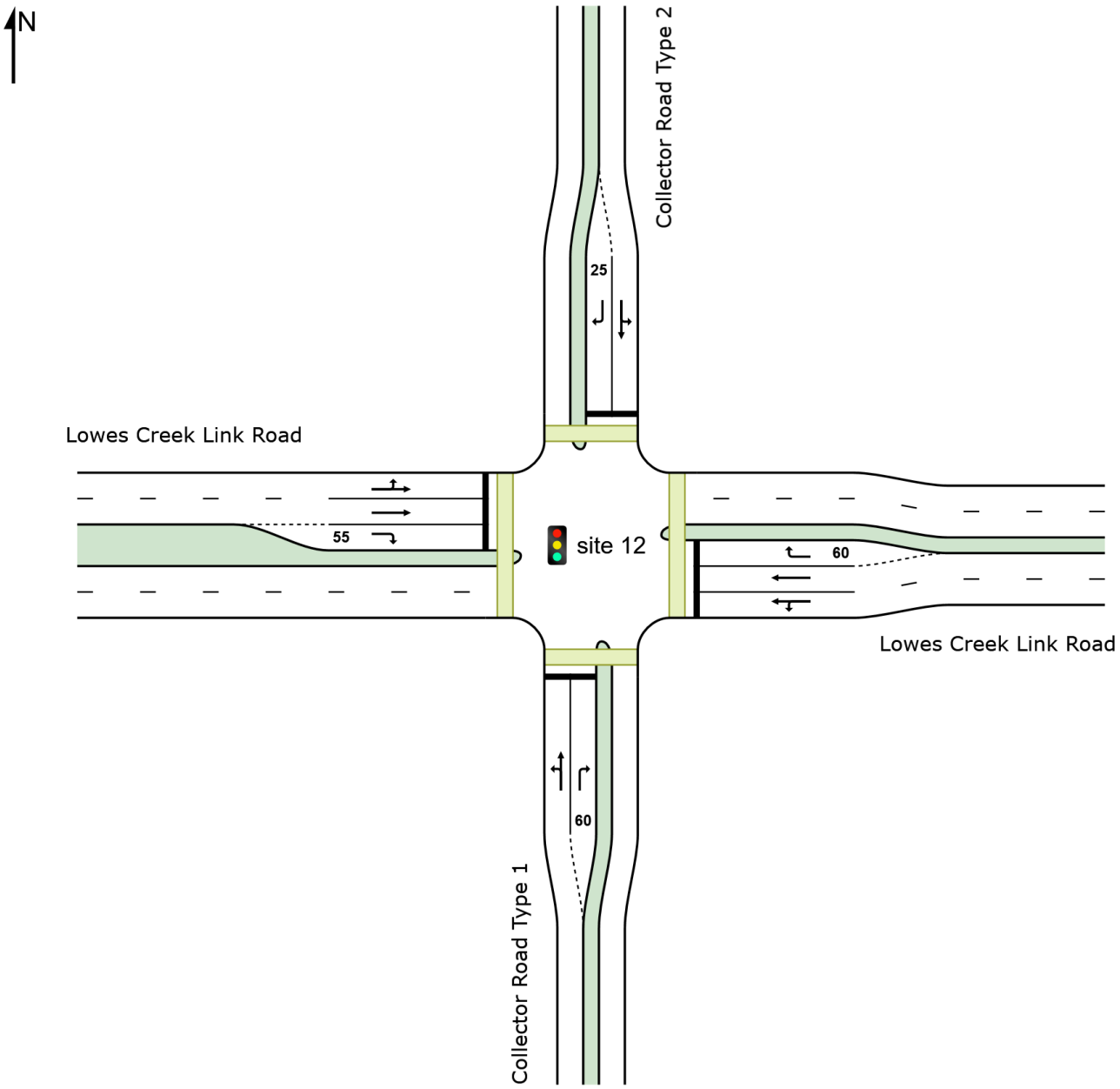


SITE LAYOUT

Site: site 12 [2031_AM Peak_Site 12 (3) (Site Folder: Birling Future 2031_AM Peak)]

site 12
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023 — **Template: Site outputs (movements)**

Site: site 12 [2031_AM Peak_Site 12 (3) (Site Folder: Birling Future 2031_AM Peak)] — **Network: 6 [2031_AM Peak all sites (Network Folder: General)]**

site 12
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: custom
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D, E
Output Phase Sequence: A, B, C, D, E

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Collector Road Type 1														
1	L2	7	0.0	7	0.0	0.587	36.7	LOS C	16.4	122.3	0.84	0.73	0.84	15.9
2	T1	348	8.0	348	8.0	* 0.587	32.2	LOS C	16.4	122.3	0.84	0.73	0.84	30.7
3	R2	191	9.0	191	9.0	0.305	34.3	LOS C	8.0	60.2	0.76	0.76	0.76	15.1
Approach		546	8.2	546	8.2	0.587	33.0	LOS C	16.4	122.3	0.82	0.74	0.82	26.8
East: Lowes Creek Link Road														
4	L2	113	14.0	113	14.0	0.157	18.3	LOS B	2.6	20.6	0.65	0.72	0.65	23.6
5	T1	32	11.0	32	11.0	0.149	52.4	LOS D	1.7	13.0	0.93	0.68	0.93	10.9
6	R2	1	0.0	1	0.0	0.011	65.6	LOS E	0.1	0.4	0.97	0.59	0.97	22.0
Approach		145	13.2	145	13.2	0.157	26.1	LOS B	2.6	20.6	0.71	0.71	0.71	18.9
North: Collector Road Type 2														
7	L2	5	20.0	5	20.0	* 0.227	55.1	LOS D	1.2	9.2	0.97	0.74	0.97	21.1
8	T1	22	7.0	22	7.0	0.227	50.4	LOS D	1.2	9.2	0.97	0.74	0.97	21.1
9	R2	2	0.0	2	0.0	0.012	58.3	LOS E	0.1	0.8	0.93	0.61	0.93	19.5
Approach		29	8.8	29	8.8	0.227	51.8	LOS D	1.2	9.2	0.97	0.73	0.97	21.0
West: Lowes Creek Link Road														
10	L2	136	11.0	136	11.0	* 0.814	55.1	LOS D	17.9	135.1	0.99	0.96	1.15	28.9
11	T1	628	8.0	628	8.0	0.814	45.0	LOS D	26.8	200.2	0.98	0.93	1.08	21.1
12	R2	26	9.0	26	9.0	0.072	32.0	LOS C	1.0	7.3	0.83	0.70	0.83	26.3
Approach		791	8.5	791	8.5	0.814	46.3	LOS D	26.8	200.2	0.97	0.93	1.08	23.2
All Vehicles		1512	8.9	1512	8.9	0.814	39.7	LOS C	26.8	200.2	0.89	0.84	0.95	24.2

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov	Dem.	Aver.	Level of	AVERAGE BACK OF	Prop.	Effective	Travel	Travel	Aver.

ID	Crossing	Flow	Delay	Service	QUEUE [Ped	Dist]	Que	Stop Rate	Time	Dist.	Speed
		ped/h	sec		ped	m			sec	m	m/sec
South: Collector Road Type 1											
P1	Full	21	54.2	LOS E	0.1	0.1	0.95	0.95	80.3	33.9	0.42
East: Lowes Creek Link Road											
P2	Full	21	54.2	LOS E	0.1	0.1	0.95	0.95	85.4	40.5	0.47
North: Collector Road Type 2											
P3	Full	21	33.8	LOS D	0.1	0.1	0.75	0.75	59.9	33.9	0.57
West: Lowes Creek Link Road											
P4	Full	21	35.3	LOS D	0.1	0.1	0.77	0.77	66.5	40.5	0.61
All Pedestrians		84	44.4	LOS E	0.1	0.1	0.85	0.85	73.0	37.2	0.51

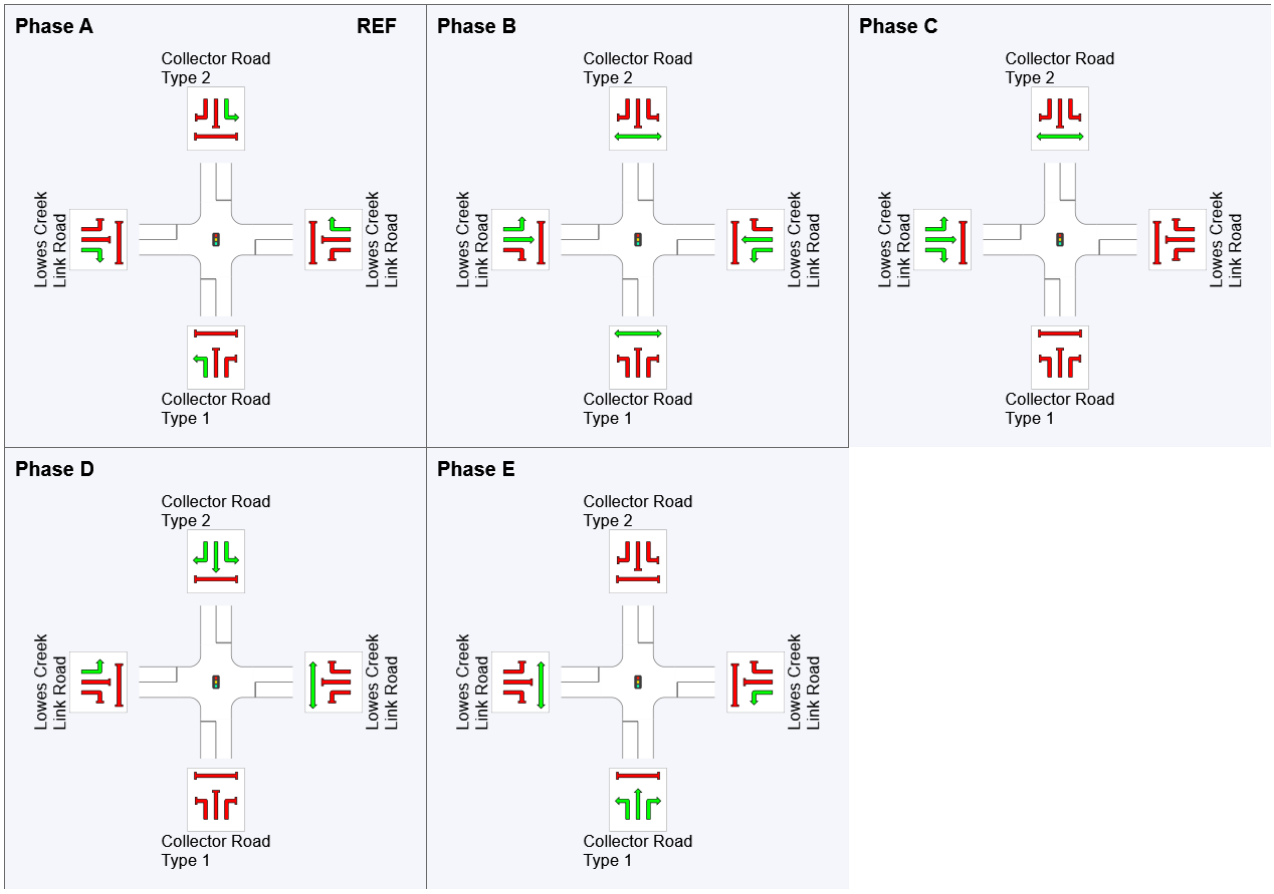
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Phase Timing Summary

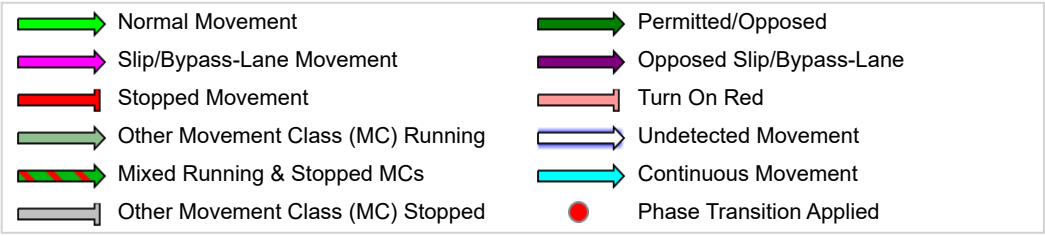
Phase	A	B	C	D	E
Phase Change Time (sec)	0	12	32	57	74
Green Time (sec)	6	14	19	11	43
Phase Time (sec)	12	20	25	14	49
Phase Split	10%	17%	21%	12%	41%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Organisation: GHD PTY LTD | Licence: NETWORK / Enterprise | Created: Monday, 13 February 2023 4:52:18 PM
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USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023

Template: Site outputs (movements)

Site: site 12 [2031_PM Peak_Site 12 (3) (Site Folder: Birling Future 2031_PM Peak)]

Network: 3 [2031_PM Peak all sites (Network Folder: General)]

site 12
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D, E
Output Phase Sequence: A, B, C, D, E

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Collector Road Type 1														
1	L2	23	0.0	23	0.0	0.071	26.1	LOS B	1.1	7.9	0.78	0.65	0.78	18.8
2	T1	12	8.0	12	8.0	0.071	21.6	LOS B	1.1	7.9	0.78	0.65	0.78	33.7
3	R2	142	9.0	142	9.0	* 0.391	29.7	LOS C	4.8	36.1	0.91	0.78	0.91	16.7
Approach		177	7.8	177	7.8	0.391	28.7	LOS C	4.8	36.1	0.88	0.75	0.88	18.8
East: Lowes Creek Link Road														
4	L2	2	14.0	2	14.0	* 0.519	67.2	LOS E	5.8	44.7	0.99	0.79	0.99	9.5
5	T1	203	11.0	203	11.0	* 0.519	59.0	LOS E	5.9	45.0	0.99	0.79	0.99	9.9
6	R2	17	0.0	17	0.0	0.034	40.1	LOS C	0.7	5.1	0.77	0.69	0.77	28.3
Approach		222	10.2	222	10.2	0.519	57.6	LOS E	5.9	45.0	0.97	0.78	0.97	11.6
North: Collector Road Type 2														
7	L2	29	20.0	29	20.0	* 0.865	70.2	LOS E	16.2	121.4	1.00	1.06	1.27	18.1
8	T1	225	7.0	225	7.0	* 0.865	65.4	LOS E	16.2	121.4	1.00	1.06	1.27	18.1
9	R2	31	0.0	31	0.0	0.105	51.5	LOS D	1.6	11.0	0.89	0.71	0.89	21.0
Approach		285	7.6	285	7.6	0.865	64.4	LOS E	16.2	121.4	0.99	1.02	1.23	18.4
West: Lowes Creek Link Road														
10	L2	8	11.0	8	11.0	0.035	30.1	LOS C	0.3	2.1	0.87	0.66	0.87	36.1
11	T1	8	8.0	8	8.0	0.035	48.4	LOS D	0.4	2.7	0.91	0.62	0.91	20.1
12	R2	231	9.0	231	9.0	0.496	45.9	LOS D	11.5	86.7	0.90	0.81	0.90	21.1
Approach		247	9.0	247	9.0	0.496	45.5	LOS D	11.5	86.7	0.90	0.80	0.90	21.7
All Vehicles		931	8.6	931	8.6	0.865	51.0	LOS D	16.2	121.4	0.94	0.85	1.01	17.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov	Dem.	Aver.	Level of	AVERAGE BACK OF	Prop.	Effective	Travel	Travel	Aver.

ID	Crossing	Flow	Delay	Service	QUEUE [Ped	Dist]	Que	Stop Rate	Time	Dist.	Speed
		ped/h	sec		ped	m			sec	m	m/sec
South: Collector Road Type 1											
P1	Full	20	54.2	LOS E	0.1	0.1	0.95	0.95	80.3	33.9	0.42
East: Lowes Creek Link Road											
P2	Full	20	54.2	LOS E	0.1	0.1	0.95	0.95	85.3	40.5	0.47
North: Collector Road Type 2											
P3	Full	20	54.2	LOS E	0.1	0.1	0.95	0.95	80.3	33.9	0.42
West: Lowes Creek Link Road											
P4	Full	20	43.4	LOS E	0.1	0.1	0.85	0.85	74.5	40.5	0.54
All Pedestrians		80	51.5	LOS E	0.1	0.1	0.93	0.93	80.1	37.2	0.46

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.

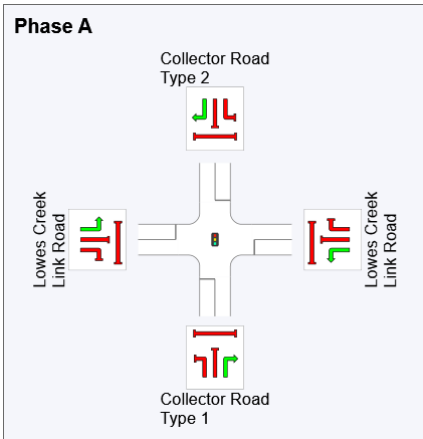
Phase Timing Summary

Phase	A	B	C	D	E
Phase Change Time (sec)	95	0	27	39	58
Green Time (sec)	19	21	6	13	32
Phase Time (sec)	25	27	12	18	38
Phase Split	21%	23%	10%	15%	32%

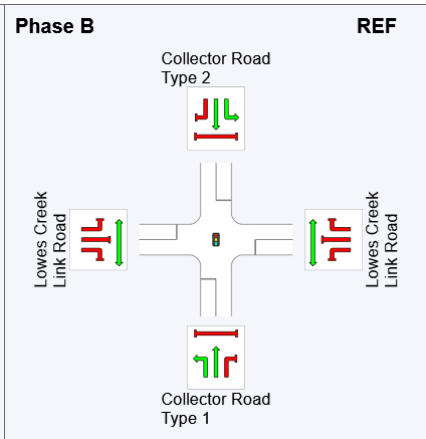
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

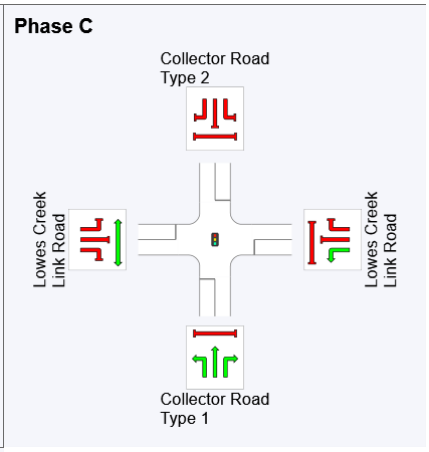
Phase A



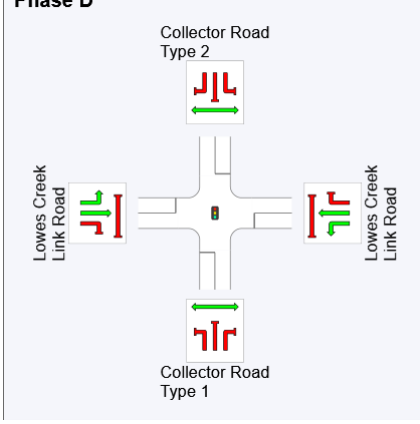
Phase B REF



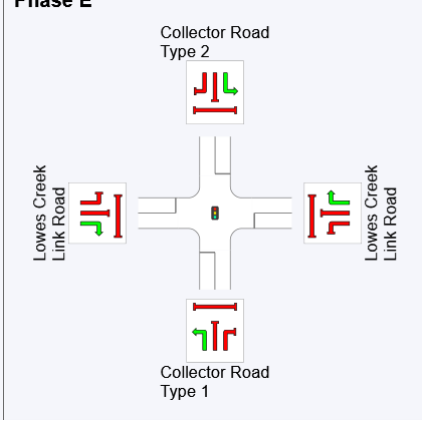
Phase C



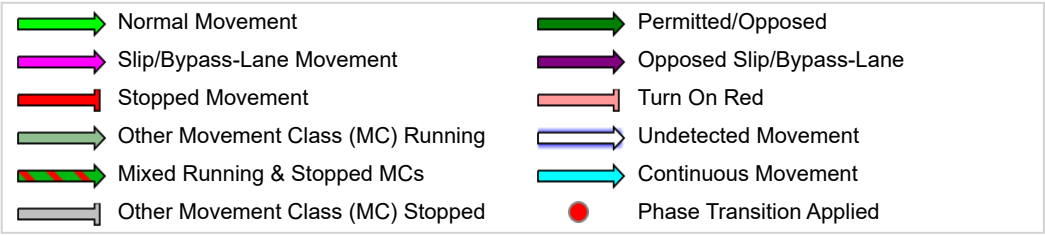
Phase D



Phase E



REF: Reference Phase
VAR: Variable Phase

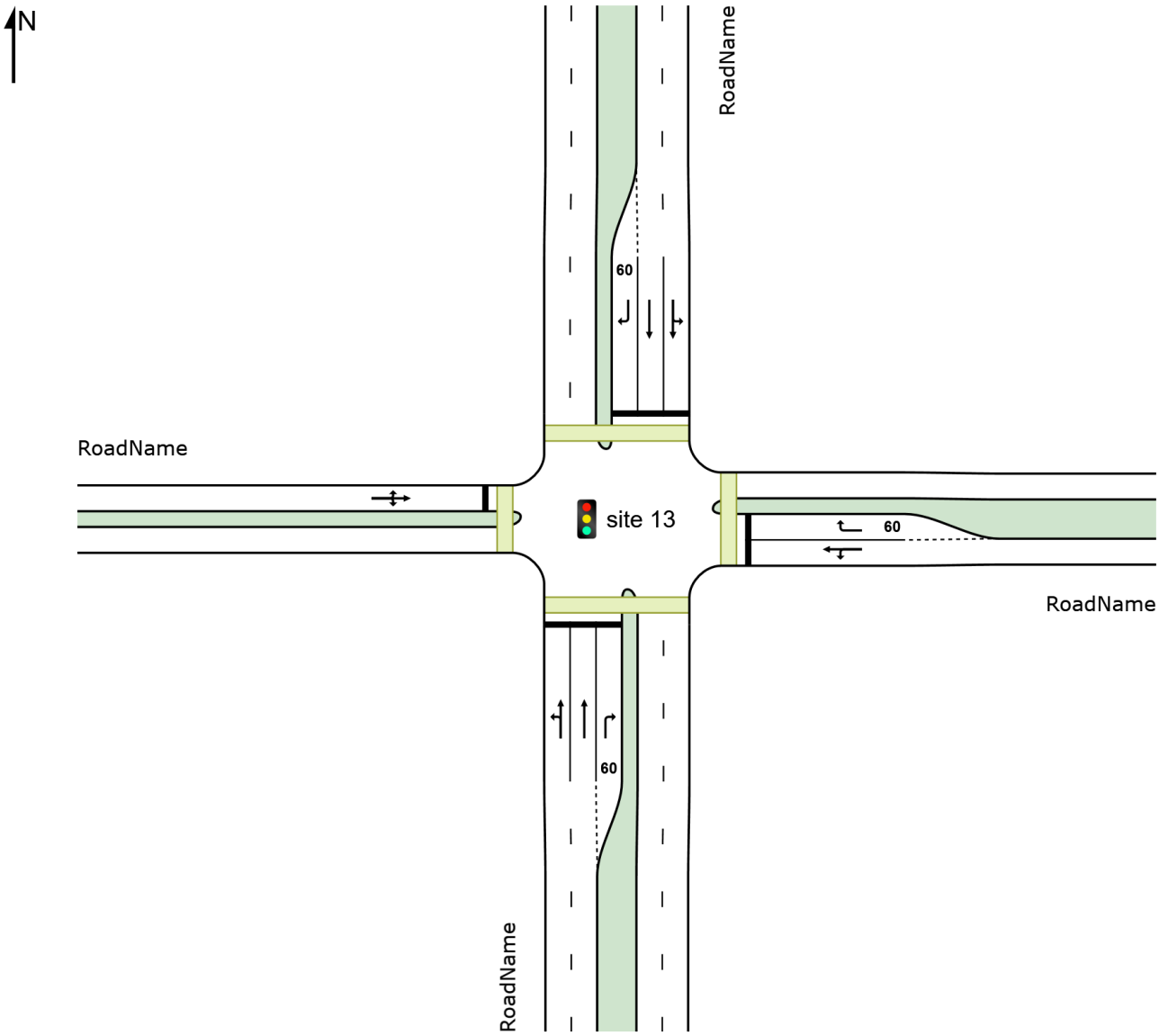


SITE LAYOUT

Site: site 13 [2031_AM Peak_Site 13 (Site Folder: Birling Future 2031_AM Peak)]

site 13
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023 — **Template: Site outputs (movements)**

Site: site 13 [2031_AM Peak_Site 13 (Site Folder: Birling Future 2031_AM Peak)] — **Network: 6 [2031_AM Peak all sites (Network Folder: General)]**

site 13
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: custom
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	6	0.0	6	0.0	* 0.448	31.7	LOS C	14.2	106.2	0.76	0.66	0.76	41.1
2	T1	677	8.0	677	8.0	0.448	26.4	LOS B	14.2	106.2	0.76	0.66	0.76	32.3
3	R2	12	0.0	12	0.0	0.129	67.5	LOS E	0.7	5.0	0.98	0.68	0.98	28.1
Approach		695	7.8	695	7.8	0.448	27.1	LOS B	14.2	106.2	0.76	0.66	0.76	32.2
East: RoadName														
4	L2	7	0.0	7	0.0	0.054	58.2	LOS E	0.5	3.7	0.92	0.66	0.92	32.3
5	T1	3	0.0	3	0.0	0.054	52.6	LOS D	0.5	3.7	0.92	0.66	0.92	31.2
6	R2	71	4.0	71	4.0	0.363	60.9	LOS E	4.0	28.9	0.97	0.76	0.97	20.2
Approach		81	3.5	81	3.5	0.363	60.3	LOS E	4.0	28.9	0.96	0.75	0.96	22.0
North: RoadName														
7	L2	29	7.0	29	7.0	* 0.160	30.0	LOS C	3.7	27.9	0.67	0.63	0.67	41.2
8	T1	208	11.0	208	11.0	0.160	23.7	LOS B	4.4	33.5	0.66	0.57	0.66	46.9
9	R2	20	0.0	20	0.0	0.215	68.2	LOS E	1.2	8.4	0.99	0.70	0.99	27.9
Approach		257	9.7	257	9.7	0.215	27.8	LOS B	4.4	33.5	0.69	0.59	0.69	43.9
West: RoadName														
10	L2	111	14.0	111	14.0	* 0.352	32.1	LOS C	4.8	37.6	0.88	0.77	0.88	29.7
11	T1	6	0.0	6	0.0	0.352	26.4	LOS B	4.8	37.6	0.88	0.77	0.88	39.5
12	R2	14	14.0	14	14.0	0.352	32.1	LOS C	4.8	37.6	0.88	0.77	0.88	38.5
Approach		131	13.4	131	13.4	0.352	31.8	LOS C	4.8	37.6	0.88	0.77	0.88	31.6
All Vehicles		1164	8.5	1164	8.5	0.448	30.1	LOS C	14.2	106.2	0.78	0.67	0.78	34.3

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: RoadName											
P1	Full	20	54.2	LOS E	0.1	0.1	0.95	0.95	85.3	40.5	0.47
East: RoadName											
P2	Full	20	26.0	LOS C	0.0	0.0	0.66	0.66	52.1	33.9	0.65
North: RoadName											
P3	Full	20	48.6	LOS E	0.1	0.1	0.90	0.90	79.8	40.5	0.51
West: RoadName											
P4	Full	20	24.1	LOS C	0.0	0.0	0.63	0.63	47.6	30.6	0.64
All Pedestrians		80	38.2	LOS D	0.1	0.1	0.79	0.79	66.2	36.4	0.55

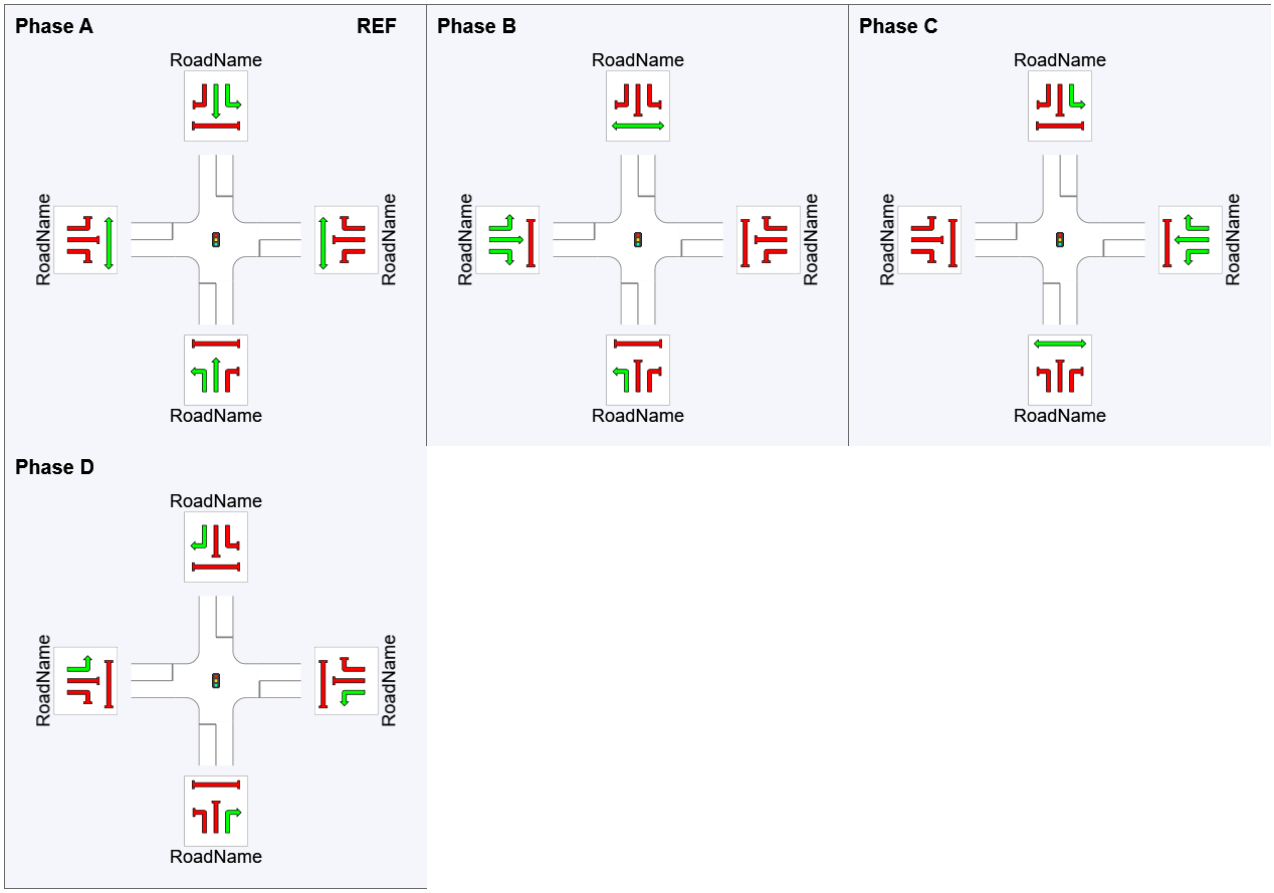
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Phase Timing Summary

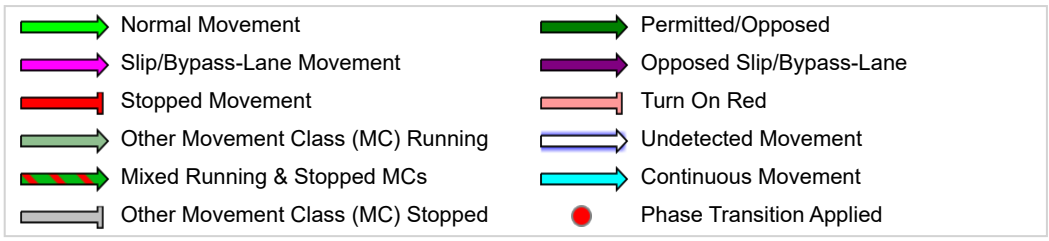
Phase	A	B	C	D
Phase Change Time (sec)	0	56	89	108
Green Time (sec)	50	27	13	6
Phase Time (sec)	56	33	19	12
Phase Split	47%	28%	16%	10%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023 — **Template: Site outputs (movements)**

Site: site 13 [2031_PM Peak_Site 13 (Site Folder: Birling Future 2031_PM Peak)] — **Network: 3 [2031_PM Peak all sites (Network Folder: General)]**

site 13
Site Category: 2031
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: custom
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	12	8.0	12	8.0	0.286	47.4	LOS D	5.6	41.8	0.87	0.71	0.87	34.7
2	T1	222	8.0	222	8.0	0.286	41.7	LOS C	5.8	43.5	0.87	0.71	0.87	25.4
3	R2	30	13.0	30	13.0	0.177	60.7	LOS E	1.7	12.9	0.95	0.72	0.95	29.5
Approach		264	8.6	264	8.6	0.286	44.1	LOS D	5.8	43.5	0.88	0.71	0.88	26.7
East: RoadName														
4	L2	15	0.0	15	0.0	0.034	28.0	LOS B	0.9	6.3	0.62	0.59	0.62	44.4
5	T1	11	0.0	11	0.0	0.034	22.4	LOS B	0.9	6.3	0.62	0.59	0.62	42.3
6	R2	59	8.0	59	8.0	0.081	28.0	LOS B	2.0	15.3	0.63	0.71	0.63	31.6
Approach		85	5.6	85	5.6	0.081	27.3	LOS B	2.0	15.3	0.63	0.67	0.63	36.2
North: RoadName														
7	L2	127	9.0	127	9.0	* 0.777	39.3	LOS C	14.0	104.8	0.92	0.84	0.96	36.8
8	T1	475	7.0	475	7.0	0.777	31.6	LOS C	14.8	110.2	0.87	0.77	0.90	42.5
9	R2	108	8.0	108	8.0	* 0.615	64.1	LOS E	6.5	48.3	1.00	0.80	1.02	28.7
Approach		710	7.5	710	7.5	0.777	37.9	LOS C	14.8	110.2	0.90	0.79	0.93	38.6
West: RoadName														
10	L2	18	0.0	18	0.0	0.448	40.4	LOS C	1.2	8.6	1.00	0.72	1.00	26.9
11	T1	13	8.0	13	8.0	* 0.448	34.8	LOS C	1.2	8.6	1.00	0.72	1.00	36.9
12	R2	2	0.0	2	0.0	0.448	40.4	LOS C	1.2	8.6	1.00	0.72	1.00	36.3
Approach		33	3.2	33	3.2	0.448	38.2	LOS C	1.2	8.6	1.00	0.72	1.00	32.3
All Vehicles		1092	7.5	1092	7.5	0.777	38.6	LOS C	14.8	110.2	0.88	0.76	0.89	35.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: RoadName											
P1	Full	20	30.1	LOS D	0.0	0.0	0.71	0.71	61.3	40.5	0.66
East: RoadName											
P2	Full	20	43.4	LOS E	0.1	0.1	0.85	0.85	69.5	33.9	0.49
North: RoadName											
P3	Full	20	54.2	LOS E	0.1	0.1	0.95	0.95	85.3	40.5	0.47
West: RoadName											
P4	Full	20	40.9	LOS E	0.1	0.1	0.83	0.83	64.4	30.6	0.48
All Pedestrians		80	42.1	LOS E	0.1	0.1	0.83	0.83	70.1	36.4	0.52

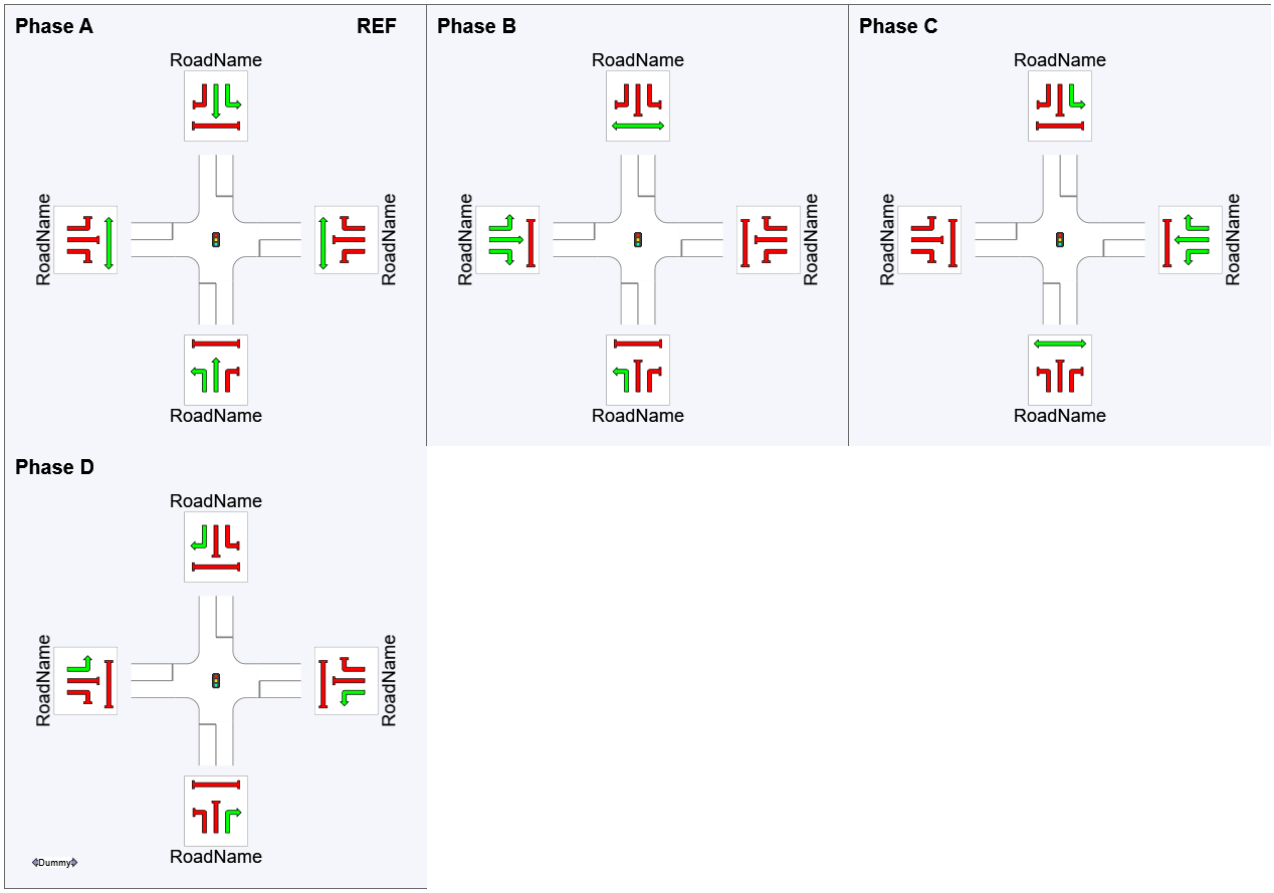
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Phase Timing Summary

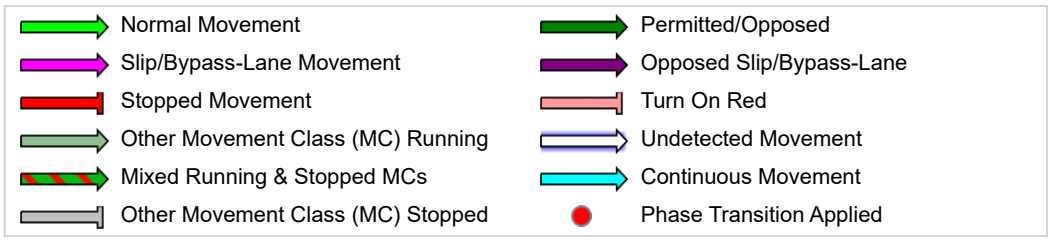
Phase	A	B	C	D
Phase Change Time (sec)	0	33	46	102
Green Time (sec)	27	7	50	12
Phase Time (sec)	33	13	56	18
Phase Split	28%	11%	47%	15%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

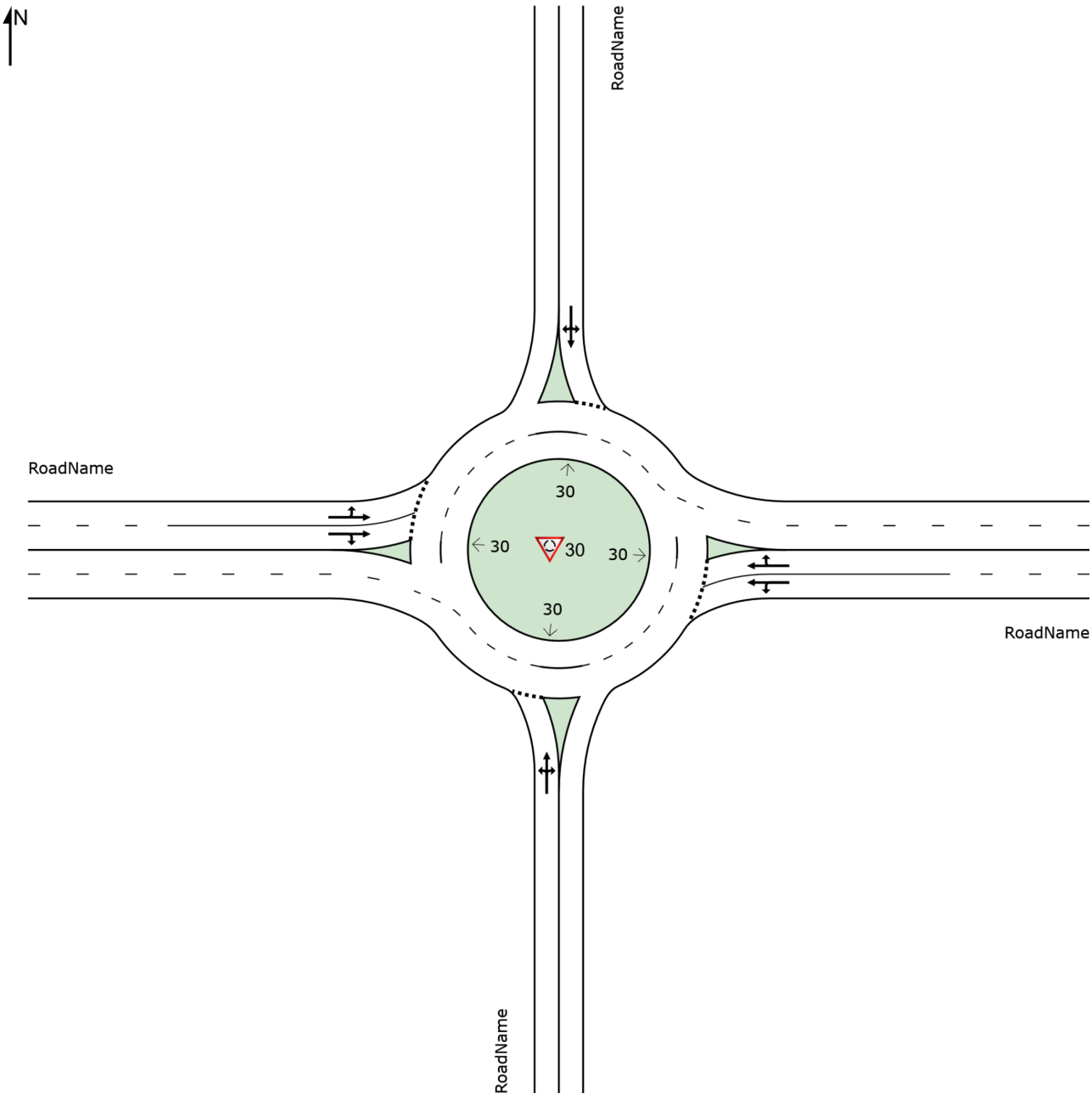


SITE LAYOUT

Site: 30 [2031_AM Peak_ Site 30 (Site Folder: Birling Future 2031_AM Peak)]

Site 30
Site Category: 2031
Roundabout

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



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023

Template: Site outputs (movements)

Site: 30 [2031_AM Peak_ Site 30 (Site Folder: Birling Future 2031_AM Peak)]

Network: 6 [2031_AM Peak all sites (Network Folder: General)]

Site 30
Site Category: 2031
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	9	10.0	9	10.0	0.131	4.2	LOS A	0.5	3.9	0.28	0.62	0.28	35.9
2	T1	1	10.0	1	10.0	0.131	4.3	LOS A	0.5	3.9	0.28	0.62	0.28	50.7
3	R2	135	10.0	135	10.0	0.131	10.0	LOS A	0.5	3.9	0.28	0.62	0.28	35.9
Approach		145	10.0	145	10.0	0.131	9.6	LOS A	0.5	3.9	0.28	0.62	0.28	36.1
East: RoadName														
4	L2	28	10.0	28	10.0	0.065	3.7	LOS A	0.3	2.1	0.04	0.36	0.04	52.4
5	T1	163	10.0	163	10.0	0.065	3.6	LOS A	0.3	2.1	0.04	0.36	0.04	52.2
6	R2	4	10.0	4	10.0	0.065	9.3	LOS A	0.3	2.1	0.04	0.36	0.04	57.9
Approach		196	10.0	196	10.0	0.065	3.8	LOS A	0.3	2.1	0.04	0.36	0.04	52.5
North: RoadName														
7	L2	6	10.0	6	10.0	0.012	5.7	LOS A	0.0	0.3	0.51	0.58	0.51	49.0
8	T1	1	10.0	1	10.0	0.012	5.8	LOS A	0.0	0.3	0.51	0.58	0.51	49.0
9	R2	2	10.0	2	10.0	0.012	11.5	LOS A	0.0	0.3	0.51	0.58	0.51	49.0
Approach		9	10.0	9	10.0	0.012	7.0	LOS A	0.0	0.3	0.51	0.58	0.51	49.0
West: RoadName														
10	L2	1	10.0	1	10.0	0.245	4.2	LOS A	1.0	7.5	0.24	0.40	0.24	55.1
11	T1	607	10.0	607	10.0	0.245	4.2	LOS A	1.0	8.0	0.24	0.40	0.24	51.9
12	R2	4	10.0	4	10.0	0.245	9.9	LOS A	1.0	8.0	0.25	0.41	0.25	51.8
Approach		613	10.0	613	10.0	0.245	4.2	LOS A	1.0	8.0	0.24	0.40	0.24	51.9
All Vehicles		963	10.0	963	10.0	0.245	5.0	LOS A	1.0	8.0	0.21	0.43	0.21	50.2

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023

Template: Site outputs (movements)

Site: Site 30 [2031_PM Peak_Site 30 (Site Folder: Birling Future 2031_PM Peak)]

Network: 3 [2031_PM Peak all sites (Network Folder: General)]

Site 30
Site Category: 2031
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	2	10.0	2	10.0	0.035	4.8	LOS A	0.1	1.0	0.38	0.64	0.38	35.4
2	T1	1	10.0	1	10.0	0.035	4.9	LOS A	0.1	1.0	0.38	0.64	0.38	50.3
3	R2	32	10.0	32	10.0	0.035	10.6	LOS A	0.1	1.0	0.38	0.64	0.38	35.4
Approach		35	10.0	35	10.0	0.035	10.0	LOS A	0.1	1.0	0.38	0.64	0.38	36.3
East: RoadName														
4	L2	108	10.0	108	10.0	0.162	3.8	LOS A	0.7	5.3	0.07	0.37	0.07	52.1
5	T1	365	10.0	365	10.0	0.162	3.7	LOS A	0.7	5.3	0.07	0.37	0.07	51.9
6	R2	13	10.0	13	10.0	0.162	9.4	LOS A	0.7	5.2	0.07	0.36	0.07	57.7
Approach		486	10.0	486	10.0	0.162	3.8	LOS A	0.7	5.3	0.07	0.37	0.07	52.2
North: RoadName														
7	L2	2	10.0	2	10.0	0.004	4.0	LOS A	0.0	0.1	0.23	0.45	0.23	50.6
8	T1	1	10.0	1	10.0	0.004	4.1	LOS A	0.0	0.1	0.23	0.45	0.23	50.6
9	R2	1	10.0	1	10.0	0.004	9.8	LOS A	0.0	0.1	0.23	0.45	0.23	50.6
Approach		4	10.0	4	10.0	0.004	5.4	LOS A	0.0	0.1	0.23	0.45	0.23	50.6
West: RoadName														
10	L2	2	10.0	2	10.0	0.041	3.8	LOS A	0.1	1.1	0.11	0.34	0.11	55.8
11	T1	94	10.0	94	10.0	0.041	3.7	LOS A	0.1	1.1	0.11	0.38	0.11	52.3
12	R2	15	10.0	15	10.0	0.041	9.5	LOS A	0.1	1.1	0.12	0.44	0.12	51.2
Approach		111	10.0	111	10.0	0.041	4.5	LOS A	0.1	1.1	0.11	0.39	0.11	52.2
All Vehicles		636	10.0	636	10.0	0.162	4.3	LOS A	0.7	5.3	0.09	0.39	0.09	51.5

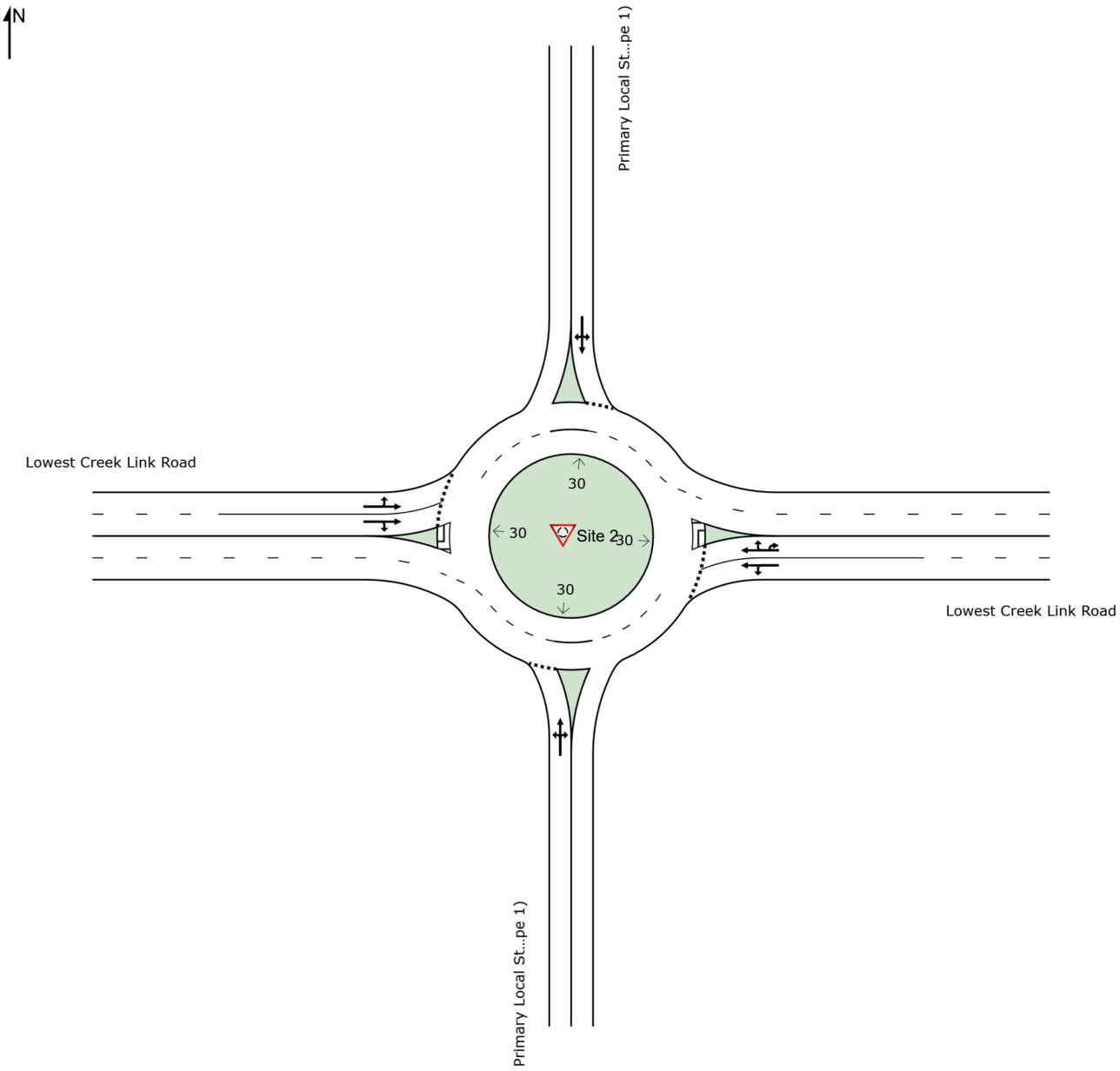
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity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

SITE LAYOUT

Site: Site 2 [2031_AM Peak_Site 31 (2) (Site Folder: Birling Future 2031_AM Peak)]

New Site
Site Category: (None)
Roundabout

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



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023

Template: Site outputs (movements)

Site: Site 2 [2031_AM Peak_Site 31 (2) (Site Folder: Birling Future 2031_AM Peak)]

Network: 6 [2031_AM Peak all sites (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Primary Local Street (Type 1)														
1	L2	31	10.0	31	10.0	0.340	3.1	LOS A	1.9	14.1	0.34	0.58	0.34	30.7
2	T1	6	10.0	6	10.0	0.340	2.9	LOS A	1.9	14.1	0.34	0.58	0.34	45.0
3	R2	359	10.0	359	10.0	0.340	8.3	LOS A	1.9	14.1	0.34	0.58	0.34	30.7
Approach		396	10.0	396	10.0	0.340	7.9	LOS A	1.9	14.1	0.34	0.58	0.34	31.3
East: Lowest Creek Link Road														
4	L2	45	10.0	45	10.0	0.062	3.8	LOS A	0.3	2.4	0.12	0.37	0.12	47.0
5	T1	88	10.0	88	10.0	0.062	3.7	LOS A	0.3	2.4	0.12	0.45	0.12	43.9
6	R2	3	10.0	3	10.0	0.062	9.4	LOS A	0.3	2.3	0.12	0.58	0.12	48.7
6u	U	53	10.0	53	10.0	0.062	11.8	LOS A	0.3	2.3	0.12	0.58	0.12	39.9
Approach		189	10.0	189	10.0	0.062	6.1	LOS A	0.3	2.4	0.12	0.47	0.12	43.4
North: Primary Local Street (Type 1)														
7	L2	67	10.0	67	10.0	0.279	9.8	LOS A	17.6	133.5	0.84	0.84	0.84	38.9
8	T1	5	10.0	5	10.0	0.279	9.5	LOS A	17.6	133.5	0.84	0.84	0.84	38.9
9	R2	24	10.0	24	10.0	0.279	15.0	LOS B	17.6	133.5	0.84	0.84	0.84	38.9
Approach		97	10.0	97	10.0	0.279	11.1	LOS A	17.6	133.5	0.84	0.84	0.84	38.9
West: Lowest Creek Link Road														
10	L2	23	10.0	23	10.0	0.464	6.3	LOS A	38.7	293.8	0.44	0.57	0.44	47.2
11	T1	794	10.0	794	10.0	0.464	6.0	LOS A	38.7	293.8	0.47	0.56	0.47	40.3
12	R2	7	10.0	7	10.0	0.464	11.6	LOS A	3.3	24.7	0.48	0.55	0.48	40.1
Approach		824	10.0	824	10.0	0.464	6.1	LOS A	38.7	293.8	0.47	0.56	0.47	40.8
All Vehicles		1506	10.0	1506	10.0	0.464	6.9	LOS A	38.7	293.8	0.41	0.57	0.41	38.5

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023

Template: Site outputs (movements)

Site: 101 [2031_PM Peak_Site 31 (2) (Site Folder: Birling Future 2031_PM Peak)]

Network: 3 [2031_PM Peak all sites (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Primary Local Street (Type 1)														
1	L2	14	10.0	14	10.0	0.075	3.9	LOS A	0.4	2.9	0.42	0.57	0.42	31.2
2	T1	6	10.0	6	10.0	0.075	3.6	LOS A	0.4	2.9	0.42	0.57	0.42	45.5
3	R2	55	10.0	55	10.0	0.075	9.1	LOS A	0.4	2.9	0.42	0.57	0.42	31.2
Approach		75	10.0	75	10.0	0.075	7.7	LOS A	0.4	2.9	0.42	0.57	0.42	33.9
East: Lowest Creek Link Road														
4	L2	378	10.0	378	10.0	0.223	3.9	LOS A	1.3	9.7	0.14	0.42	0.14	46.3
5	T1	214	10.0	214	10.0	0.216	3.8	LOS A	1.2	9.0	0.15	0.47	0.15	43.1
6	R2	13	10.0	13	10.0	0.216	9.5	LOS A	1.2	9.0	0.15	0.47	0.15	50.6
6u	U	81	10.0	81	10.0	0.216	11.9	LOS A	1.2	9.0	0.15	0.47	0.15	43.1
Approach		685	10.0	685	10.0	0.223	4.9	LOS A	1.3	9.7	0.14	0.44	0.14	45.0
North: Primary Local Street (Type 1)														
7	L2	61	10.0	61	10.0	0.068	3.3	LOS A	0.3	2.2	0.34	0.43	0.34	44.9
8	T1	4	10.0	4	10.0	0.068	3.0	LOS A	0.3	2.2	0.34	0.43	0.34	44.9
9	R2	6	10.0	6	10.0	0.068	8.5	LOS A	0.3	2.2	0.34	0.43	0.34	44.9
Approach		72	10.0	72	10.0	0.068	3.8	LOS A	0.3	2.2	0.34	0.43	0.34	44.9
West: Lowest Creek Link Road														
10	L2	66	10.0	66	10.0	0.066	4.2	LOS A	0.3	2.3	0.22	0.42	0.22	48.4
11	T1	83	10.0	83	10.0	0.066	4.2	LOS A	0.3	2.3	0.22	0.47	0.22	41.3
12	R2	36	10.0	36	10.0	0.066	10.0	LOS A	0.3	2.3	0.23	0.50	0.23	40.1
Approach		185	10.0	185	10.0	0.066	5.3	LOS A	0.3	2.3	0.22	0.46	0.22	45.4
All Vehicles		1017	10.0	1017	10.0	0.223	5.1	LOS A	1.3	9.7	0.19	0.45	0.19	44.3

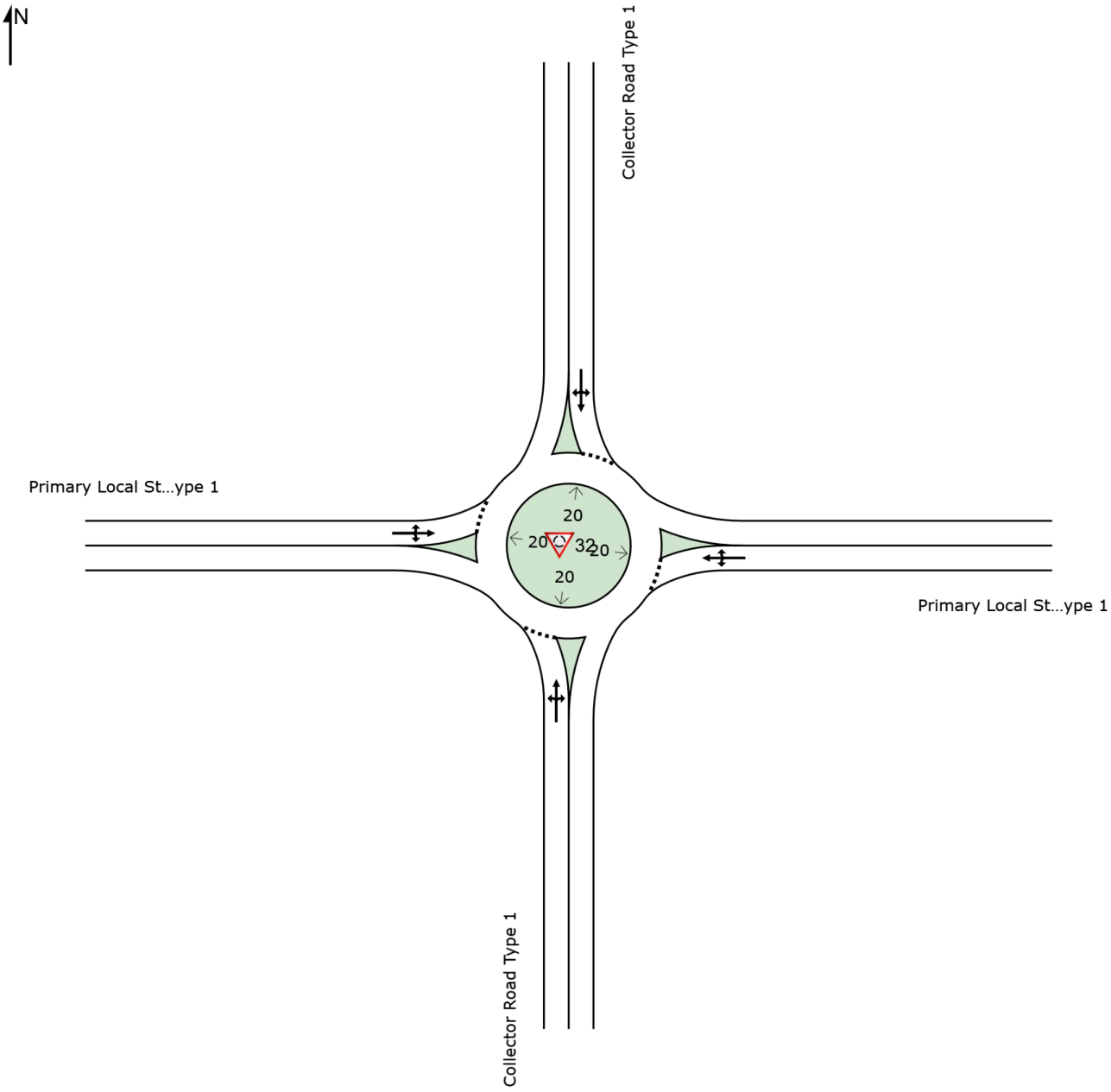
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity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

SITE LAYOUT

Site: 32 [2031_AM Peak_Site 32 (4) (Site Folder: Birling Future 2031_AM Peak)]

New Site
Site Category: -
Roundabout

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



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023

Template: Site outputs (movements)

Site: 32 [2031_AM Peak_Site 32 (4) (Site Folder: Birling Future 2031_AM Peak)]

Network: 6 [2031_AM Peak all sites (Network Folder: General)]

New Site
Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Collector Road Type 1														
1	L2	26	10.0	26	10.0	0.130	3.7	LOS A	0.7	5.6	0.34	0.40	0.34	44.5
2	T1	122	10.0	122	10.0	0.130	3.6	LOS A	0.7	5.6	0.34	0.40	0.34	44.5
3	R2	3	10.0	3	10.0	0.130	8.1	LOS A	0.7	5.6	0.34	0.40	0.34	44.5
Approach		152	10.0	152	10.0	0.130	3.7	LOS A	0.7	5.6	0.34	0.40	0.34	44.5
East: Primary Local Street Type 1														
4	L2	40	10.0	40	10.0	0.066	4.2	LOS A	0.4	2.7	0.43	0.53	0.43	44.5
5	T1	7	10.0	7	10.0	0.066	4.2	LOS A	0.4	2.7	0.43	0.53	0.43	34.6
6	R2	23	10.0	23	10.0	0.066	8.7	LOS A	0.4	2.7	0.43	0.53	0.43	34.6
Approach		71	10.0	71	10.0	0.066	5.7	LOS A	0.4	2.7	0.43	0.53	0.43	42.4
North: Collector Road Type 1														
7	L2	20	10.0	20	10.0	0.191	4.9	LOS A	0.9	7.2	0.45	0.62	0.45	34.3
8	T1	56	10.0	56	10.0	0.191	4.8	LOS A	0.9	7.2	0.45	0.62	0.45	45.0
9	R2	107	10.0	107	10.0	0.191	9.4	LOS A	0.9	7.2	0.45	0.62	0.45	34.3
Approach		183	10.0	183	10.0	0.191	7.5	LOS A	0.9	7.2	0.45	0.62	0.45	39.8
West: Primary Local Street Type 1														
10	L2	404	10.0	404	10.0	0.591	4.3	LOS A	5.2	39.9	0.54	0.53	0.54	41.6
11	T1	241	10.0	241	10.0	0.591	4.2	LOS A	5.2	39.9	0.54	0.53	0.54	41.6
12	R2	91	10.0	91	10.0	0.591	8.7	LOS A	5.2	39.9	0.54	0.53	0.54	47.1
Approach		736	10.0	736	10.0	0.591	4.8	LOS A	5.2	39.9	0.54	0.53	0.54	42.8
All Vehicles		1141	10.0	1141	10.0	0.591	5.1	LOS A	5.2	39.9	0.49	0.52	0.49	42.6

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023

Template: Site outputs (movements)

Site: 32 [2031_PM Peak_Site 32 (4) (Site Folder: Birling Future 2031_PM Peak)]

Network: 3 [2031_PM Peak all sites (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Collector Road Type 1														
1	L2	97	10.0	97	10.0	0.208	6.8	LOS A	1.5	11.2	0.71	0.67	0.71	42.0
2	T1	61	10.0	61	10.0	0.208	6.7	LOS A	1.5	11.2	0.71	0.67	0.71	42.0
3	R2	14	10.0	14	10.0	0.208	11.3	LOS A	1.5	11.2	0.71	0.67	0.71	42.0
Approach		172	10.0	172	10.0	0.208	7.1	LOS A	1.5	11.2	0.71	0.67	0.71	42.0
East: Primary Local Street Type 1														
4	L2	18	10.0	18	10.0	0.342	6.5	LOS A	2.9	22.3	0.68	0.59	0.68	43.8
5	T1	301	10.0	301	10.0	0.342	6.4	LOS A	2.9	22.3	0.68	0.59	0.68	33.3
6	R2	15	10.0	15	10.0	0.342	10.9	LOS A	2.9	22.3	0.68	0.59	0.68	33.3
Approach		334	10.0	334	10.0	0.342	6.6	LOS A	2.9	22.3	0.68	0.59	0.68	34.7
North: Collector Road Type 1														
7	L2	76	10.0	76	10.0	0.331	3.2	LOS A	1.9	14.4	0.16	0.49	0.16	37.1
8	T1	155	10.0	155	10.0	0.331	3.1	LOS A	1.9	14.4	0.16	0.49	0.16	46.4
9	R2	237	10.0	237	10.0	0.331	7.7	LOS A	1.9	14.4	0.16	0.49	0.16	37.1
Approach		467	10.0	467	10.0	0.331	5.4	LOS A	1.9	14.4	0.16	0.49	0.16	42.3
West: Primary Local Street Type 1														
10	L2	125	10.0	125	10.0	0.132	3.4	LOS A	0.8	5.8	0.28	0.46	0.28	42.8
11	T1	6	10.0	6	10.0	0.132	3.3	LOS A	0.8	5.8	0.28	0.46	0.28	42.8
12	R2	32	10.0	32	10.0	0.132	7.8	LOS A	0.8	5.8	0.28	0.46	0.28	47.8
Approach		163	10.0	163	10.0	0.132	4.2	LOS A	0.8	5.8	0.28	0.46	0.28	44.5
All Vehicles		1136	10.0	1136	10.0	0.342	5.9	LOS A	2.9	22.3	0.41	0.54	0.41	41.1

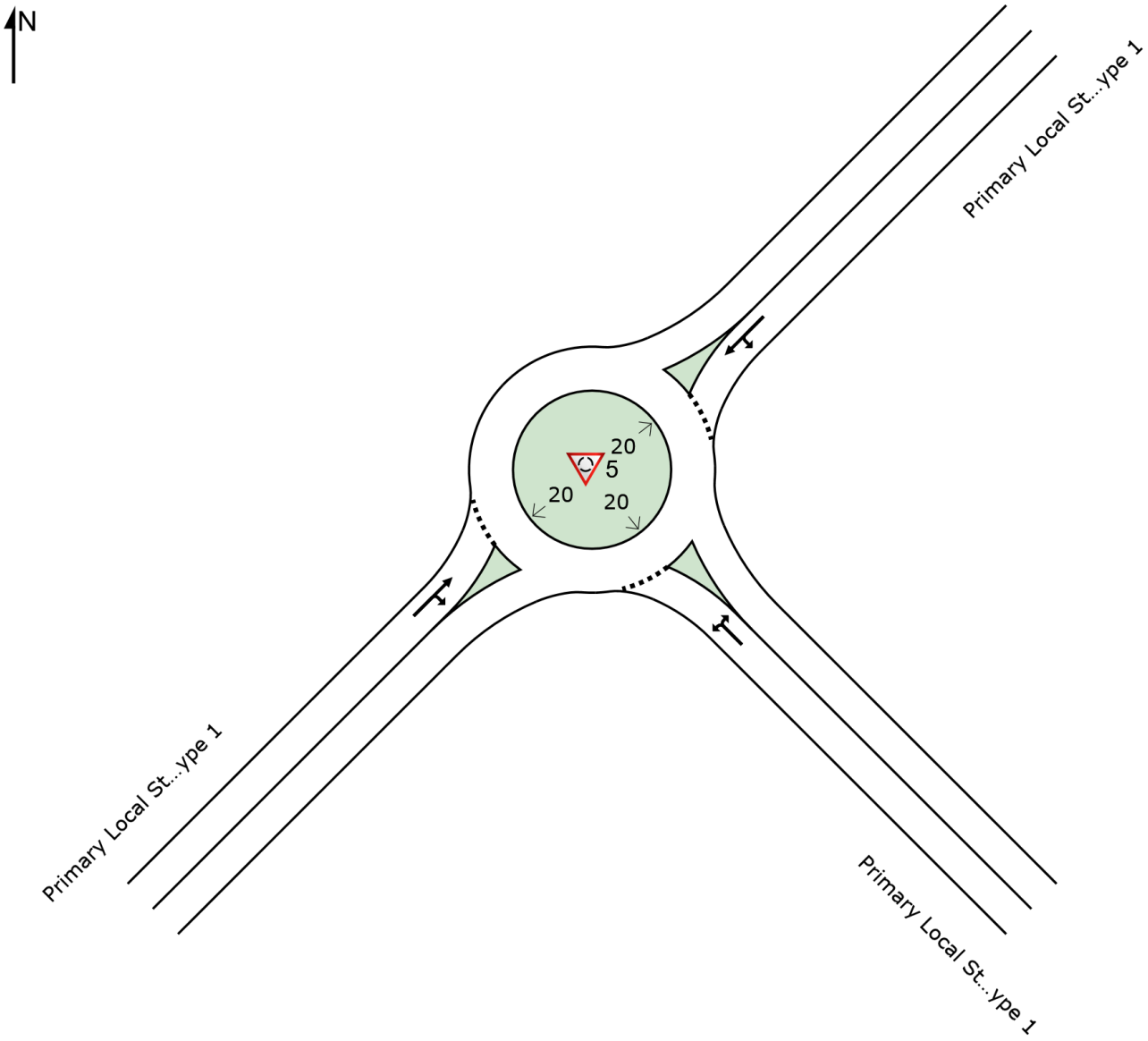
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity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

SITE LAYOUT

Site: 5 [2031_AM Peak_Site 41 (5) (Site Folder: Birling Future 2031_AM Peak)]

2031_AM Peak_Site 5
Site Category: AM Peak
Roundabout

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



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023

Template: Site outputs (movements)

Site: 5 [2031_AM Peak_Site 41 (5) (Site Folder: Birling Future 2031_AM Peak)]

Network: 6 [2031_AM Peak all sites (Network Folder: General)]

2031_AM Peak_Site 5
Site Category: AM Peak
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Primary Local St - Type 1														
21	L2	1	10.0	1	10.0	0.002	1.9	LOS A	0.0	0.0	0.15	0.49	0.15	26.1
23	R2	1	10.0	1	10.0	0.002	6.0	LOS A	0.0	0.0	0.15	0.49	0.15	26.1
Approach		2	10.0	2	10.0	0.002	3.9	LOS A	0.0	0.0	0.15	0.49	0.15	26.1
NorthEast: Primary Local Street - Type 1														
24	L2	1	10.0	1	10.0	0.037	2.9	LOS A	0.1	1.1	0.01	0.32	0.01	38.9
25	T1	58	10.0	58	10.0	0.037	2.8	LOS A	0.1	1.1	0.01	0.32	0.01	39.7
Approach		59	10.0	59	10.0	0.037	2.8	LOS A	0.1	1.1	0.01	0.32	0.01	39.7
SouthWest: Primary Local Street - Type 1														
31	T1	264	10.0	264	10.0	0.160	2.8	LOS A	0.8	5.8	0.02	0.31	0.02	41.4
32	R2	1	10.0	1	10.0	0.160	7.4	LOS A	0.8	5.8	0.02	0.31	0.02	39.5
Approach		265	10.0	265	10.0	0.160	2.9	LOS A	0.8	5.8	0.02	0.31	0.02	41.4
All Vehicles		326	10.0	326	10.0	0.160	2.9	LOS A	0.8	5.8	0.02	0.32	0.02	41.1

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023

Template: Site outputs (movements)

Site: 5 [2031_PM Peak_Site 41 (5) (Site Folder: Birling Future 2031_PM Peak)]

Network: 3 [2031_PM Peak all sites (Network Folder: General)]

2031_AM Peak_Site 5
Site Category: AM Peak
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Primary Local St - Type 1														
21	L2	1	10.0	1	10.0	0.020	3.5	LOS A	0.1	0.7	0.45	0.63	0.45	21.9
23	R2	19	10.0	19	10.0	0.020	7.6	LOS A	0.1	0.7	0.45	0.63	0.45	21.9
Approach		20	10.0	20	10.0	0.020	7.4	LOS A	0.1	0.7	0.45	0.63	0.45	21.9
NorthEast: Primary Local Street - Type 1														
24	L2	1	10.0	1	10.0	0.252	2.9	LOS A	1.3	9.8	0.02	0.31	0.02	38.8
25	T1	418	10.0	418	10.0	0.252	2.8	LOS A	1.3	9.8	0.02	0.31	0.02	39.7
Approach		419	10.0	419	10.0	0.252	2.8	LOS A	1.3	9.8	0.02	0.31	0.02	39.7
SouthWest: Primary Local Street - Type 1														
31	T1	97	10.0	97	10.0	0.069	2.9	LOS A	0.3	2.6	0.10	0.31	0.10	40.2
32	R2	1	10.0	1	10.0	0.069	7.4	LOS A	0.3	2.6	0.10	0.31	0.10	38.5
Approach		98	10.0	98	10.0	0.069	2.9	LOS A	0.3	2.6	0.10	0.31	0.10	40.2
All Vehicles		537	10.0	537	10.0	0.252	3.0	LOS A	1.3	9.8	0.05	0.32	0.05	39.2

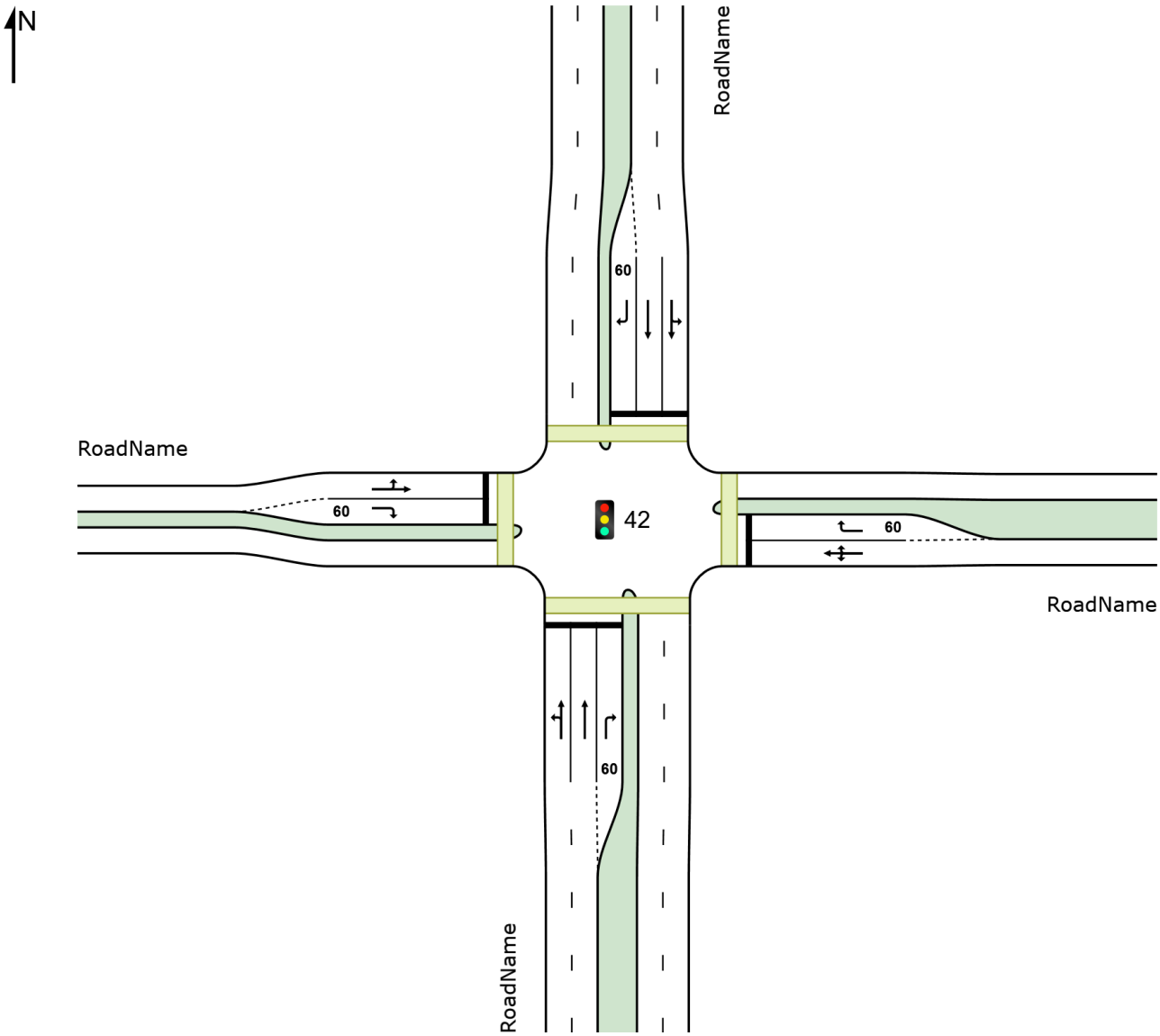
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity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

SITE LAYOUT

Site: 42 [2031_AM Peak_Site 42 - updated (Site Folder: Birling Future 2031_AM Peak)]

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023 — **Template: Site outputs (movements)**

Site: 42 [2031_AM Peak_Site 42 - updated (Site Folder: Birling Future 2031_AM Peak)] — **Network: 6 [2031_AM Peak all sites (Network Folder: General)]**

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: custom (phase reduction applied)
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D, E
Output Phase Sequence: A, B, C, D

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	21	10.0	21	10.0	0.492	27.4	LOS B	16.7	127.2	0.72	0.64	0.72	42.9
2	T1	795	10.0	795	10.0	* 0.492	21.8	LOS B	16.7	127.2	0.72	0.63	0.72	35.0
3	R2	43	10.0	43	10.0	0.496	70.2	LOS E	2.6	20.1	1.00	0.74	1.00	18.4
Approach		859	10.0	859	10.0	0.496	24.4	LOS B	16.7	127.2	0.73	0.64	0.73	33.8
East: RoadName														
4	L2	11	2.0	11	2.0	0.383	56.3	LOS D	5.4	38.4	0.95	0.78	0.95	12.9
5	T1	5	2.0	5	2.0	0.383	50.7	LOS D	5.4	38.4	0.95	0.78	0.95	26.9
6	R2	184	2.0	184	2.0	0.383	56.3	LOS D	5.4	38.6	0.95	0.78	0.95	12.9
Approach		200	2.0	200	2.0	0.383	56.1	LOS D	5.4	38.6	0.95	0.78	0.95	13.4
North: RoadName														
7	L2	36	10.0	36	10.0	* 0.157	19.2	LOS B	2.6	19.8	0.43	0.46	0.43	28.3
8	T1	235	10.0	235	10.0	0.157	7.0	LOS A	2.6	19.8	0.23	0.23	0.23	38.2
9	R2	7	10.0	7	10.0	0.081	69.3	LOS E	0.4	3.2	1.00	0.66	1.00	22.7
Approach		278	10.0	278	10.0	0.157	10.2	LOS A	2.6	19.8	0.27	0.27	0.27	34.9
West: RoadName														
10	L2	105	2.0	105	2.0	* 0.666	41.2	LOS C	5.7	40.6	1.00	0.82	1.06	26.2
11	T1	26	2.0	26	2.0	* 0.666	35.6	LOS C	5.7	40.6	1.00	0.82	1.06	26.2
12	R2	7	2.0	7	2.0	0.033	56.6	LOS E	0.4	2.6	0.91	0.66	0.91	21.2
Approach		138	2.0	138	2.0	0.666	40.9	LOS C	5.7	40.6	1.00	0.81	1.05	25.9
All Vehicles		1475	8.2	1475	8.2	0.666	27.6	LOS B	16.7	127.2	0.70	0.61	0.70	29.2

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: RoadName											
P1	Full	20	54.2	LOS E	0.1	0.1	0.95	0.95	85.3	40.5	0.47
East: RoadName											
P2	Full	20	21.0	LOS C	0.0	0.0	0.59	0.59	47.1	33.9	0.72
North: RoadName											
P3	Full	20	54.2	LOS E	0.1	0.1	0.95	0.95	85.0	40.0	0.47
West: RoadName											
P4	Full	20	54.2	LOS E	0.1	0.1	0.95	0.95	218.7	213.9	0.98
All Pedestrians		80	45.9	LOS E	0.1	0.1	0.86	0.86	109.0	82.1	0.75

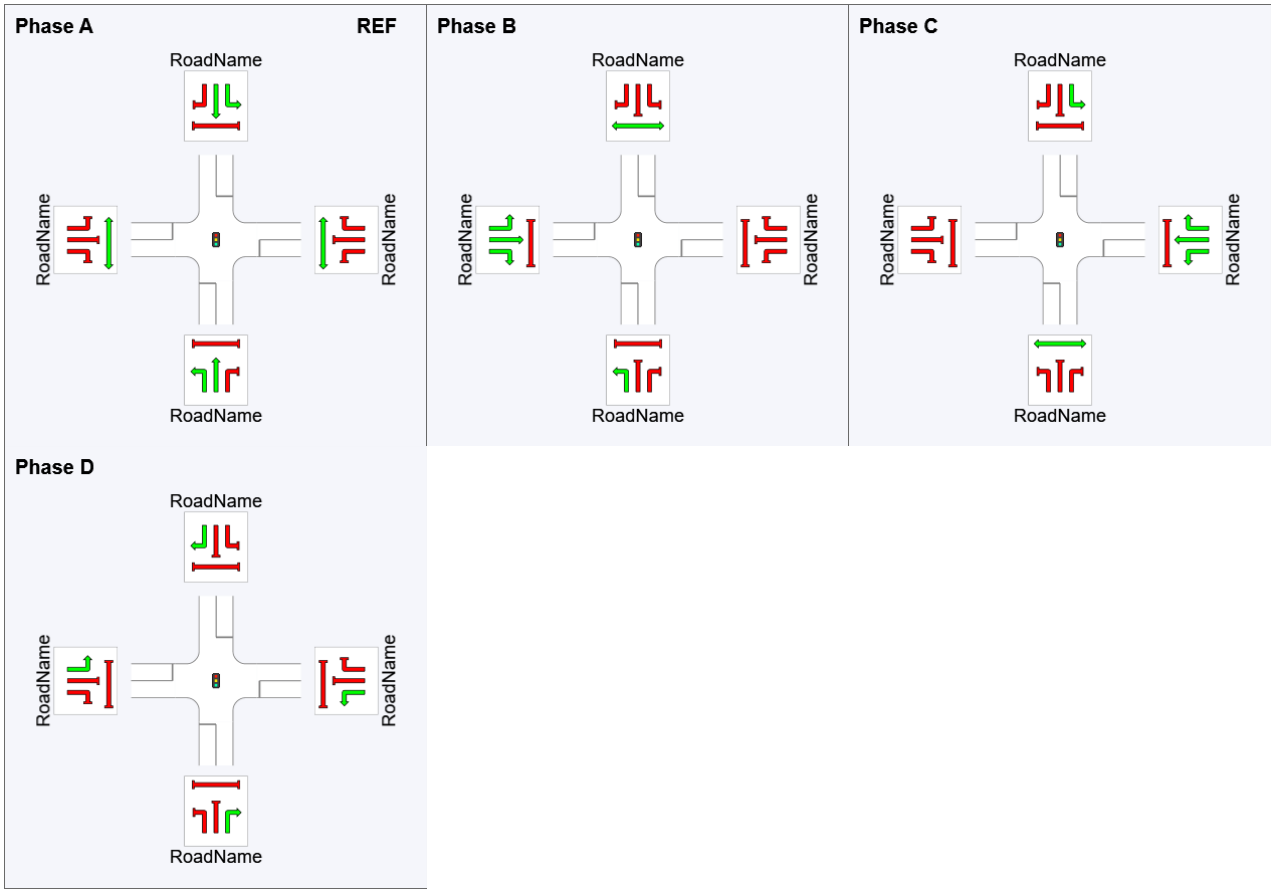
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Phase Timing Summary

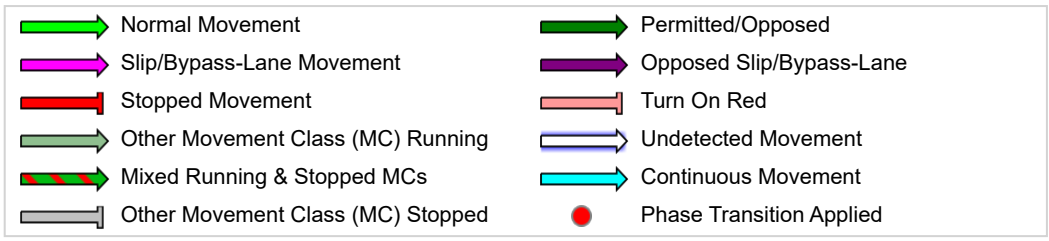
Phase	A	B	C	D
Phase Change Time (sec)	0	64	84	108
Green Time (sec)	58	14	18	6
Phase Time (sec)	64	20	24	12
Phase Split	53%	17%	20%	10%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023 | **Template: Site outputs (movements)**

Site: 42 [2031_PM Peak_Site 42 - updated (Site Folder: Birling Future 2031_PM Peak)] | **Network: 3 [2031_PM Peak all sites (Network Folder: General)]**

Site Category: -
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: custom
Reference Phase: Phase A
Input Phase Sequence: A, E, B, C, D
Output Phase Sequence: A, E, B, C, D

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	7	10.0	7	10.0	0.208	14.7	LOS B	2.1	15.6	0.27	0.24	0.27	50.4
2	T1	277	10.0	277	10.0	0.208	13.1	LOS A	3.7	28.2	0.37	0.32	0.37	42.0
3	R2	15	10.0	15	10.0	0.173	68.3	LOS E	0.9	6.9	1.00	0.69	1.00	18.7
Approach		299	10.0	299	10.0	0.208	15.9	LOS B	3.7	28.2	0.40	0.33	0.40	39.8
East: RoadName														
4	L2	28	2.0	28	2.0	* 0.565	52.3	LOS D	2.5	18.1	1.00	0.76	1.06	14.2
5	T1	21	2.0	21	2.0	* 0.565	46.7	LOS D	2.5	18.1	1.00	0.76	1.06	28.6
6	R2	6	2.0	6	2.0	0.049	63.9	LOS E	0.3	2.4	0.96	0.65	0.96	11.6
Approach		55	2.0	55	2.0	0.565	51.4	LOS D	2.5	18.1	1.00	0.75	1.05	20.6
North: RoadName														
7	L2	221	10.0	221	10.0	0.435	14.9	LOS B	10.8	82.2	0.41	0.52	0.41	32.0
8	T1	774	10.0	774	10.0	* 0.435	4.9	LOS A	10.8	82.2	0.22	0.25	0.22	42.0
9	R2	109	10.0	109	10.0	0.210	29.5	LOS C	3.5	26.8	0.58	0.71	0.58	34.8
Approach		1104	10.0	1104	10.0	0.435	9.3	LOS A	10.8	82.2	0.29	0.35	0.29	38.0
West: RoadName														
10	L2	3	2.0	3	2.0	0.035	51.3	LOS D	0.2	1.5	0.96	0.62	0.96	23.0
11	T1	1	2.0	1	2.0	* 0.035	45.7	LOS D	0.2	1.5	0.96	0.62	0.96	23.0
12	R2	14	2.0	14	2.0	0.131	66.2	LOS E	0.8	5.8	0.98	0.69	0.98	19.1
Approach		18	2.0	18	2.0	0.131	62.6	LOS E	0.8	5.8	0.97	0.67	0.97	19.9
All Vehicles		1476	9.6	1476	9.6	0.565	12.9	LOS A	10.8	82.2	0.35	0.37	0.35	36.4

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

* Critical Movement (Signal Timing)

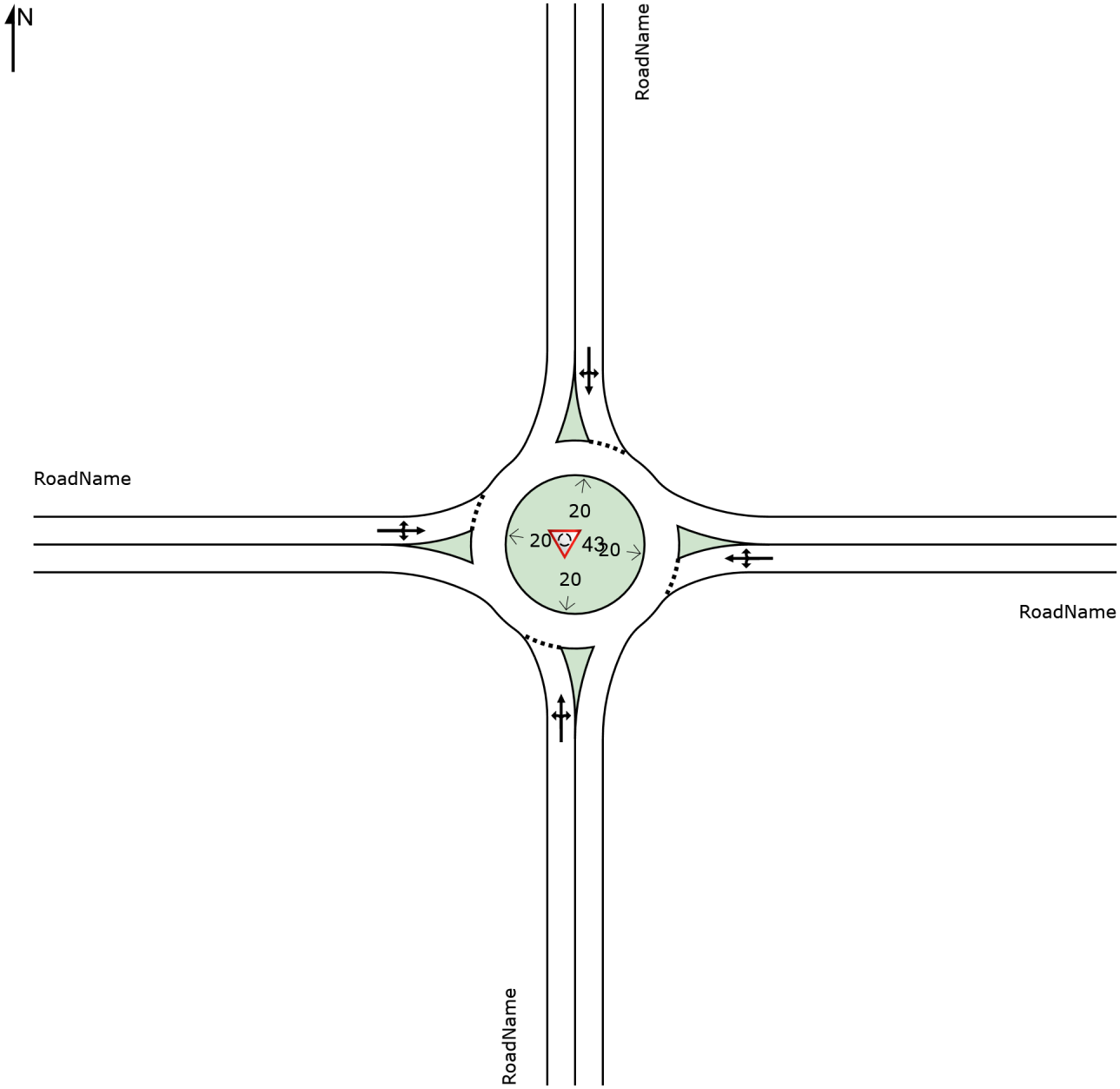
Pedestrian Movement Performance

SITE LAYOUT

Site: 43 [2031_AM Peak_ Site 43- updated (Site Folder: Birling Future 2031_AM Peak)]

Site Category: -
Roundabout

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



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023

Template: Site outputs (movements)

Site: 43 [2031_AM Peak_ Site 43- updated (Site Folder: Birling Future 2031_AM Peak)]

Network: 6 [2031_AM Peak all sites (Network Folder: General)]

Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	98	2.0	98	2.0	0.139	4.5	LOS A	0.7	5.1	0.30	0.55	0.30	49.0
2	T1	5	2.0	5	2.0	0.139	4.8	LOS A	0.7	5.1	0.30	0.55	0.30	52.5
3	R2	74	2.0	74	2.0	0.139	9.4	LOS A	0.7	5.1	0.30	0.55	0.30	49.0
Approach		177	2.0	177	2.0	0.139	6.6	LOS A	0.7	5.1	0.30	0.55	0.30	49.2
East: RoadName														
4	L2	29	2.0	29	2.0	0.092	4.2	LOS A	0.5	3.5	0.19	0.46	0.19	53.3
5	T1	77	2.0	77	2.0	0.092	4.5	LOS A	0.5	3.5	0.19	0.46	0.19	47.6
6	R2	20	2.0	20	2.0	0.092	9.1	LOS A	0.5	3.5	0.19	0.46	0.19	52.4
Approach		126	2.0	126	2.0	0.092	5.1	LOS A	0.5	3.5	0.19	0.46	0.19	50.5
North: RoadName														
7	L2	172	2.0	172	2.0	0.169	4.7	LOS A	1.0	6.9	0.34	0.52	0.34	41.9
8	T1	5	2.0	5	2.0	0.169	5.0	LOS A	1.0	6.9	0.34	0.52	0.34	53.7
9	R2	35	2.0	35	2.0	0.169	9.6	LOS A	1.0	6.9	0.34	0.52	0.34	41.9
Approach		212	2.0	212	2.0	0.169	5.5	LOS A	1.0	6.9	0.34	0.52	0.34	42.6
West: RoadName														
10	L2	22	2.0	22	2.0	0.085	4.3	LOS A	0.4	2.6	0.20	0.48	0.20	48.5
11	T1	66	2.0	66	2.0	0.085	4.6	LOS A	0.4	2.6	0.20	0.48	0.20	44.0
12	R2	22	2.0	22	2.0	0.085	9.3	LOS A	0.4	2.6	0.20	0.48	0.20	54.0
Approach		111	2.0	111	2.0	0.085	5.5	LOS A	0.4	2.6	0.20	0.48	0.20	48.4
All Vehicles		625	2.0	625	2.0	0.169	5.7	LOS A	1.0	6.9	0.27	0.51	0.27	47.9

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023

Template: Site outputs (movements)

Site: 43 [2031_PM Peak_ Site 43- updated (Site Folder: Birling Future 2031_PM Peak)]

Network: 3 [2031_PM Peak all sites (Network Folder: General)]

Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	36	2.0	36	2.0	0.057	4.4	LOS A	0.3	2.0	0.26	0.54	0.26	49.1
2	T1	5	2.0	5	2.0	0.057	4.7	LOS A	0.3	2.0	0.26	0.54	0.26	52.6
3	R2	33	2.0	33	2.0	0.057	9.3	LOS A	0.3	2.0	0.26	0.54	0.26	49.1
Approach		74	2.0	74	2.0	0.057	6.6	LOS A	0.3	2.0	0.26	0.54	0.26	49.4
East: RoadName														
4	L2	178	2.0	178	2.0	0.196	4.2	LOS A	1.1	8.2	0.21	0.51	0.21	52.8
5	T1	14	2.0	14	2.0	0.196	4.5	LOS A	1.1	8.2	0.21	0.51	0.21	46.7
6	R2	88	2.0	88	2.0	0.196	9.1	LOS A	1.1	8.2	0.21	0.51	0.21	51.7
Approach		280	2.0	280	2.0	0.196	5.8	LOS A	1.1	8.2	0.21	0.51	0.21	52.4
North: RoadName														
7	L2	22	2.0	22	2.0	0.031	4.9	LOS A	0.2	1.2	0.38	0.52	0.38	40.9
8	T1	5	2.0	5	2.0	0.031	5.2	LOS A	0.2	1.2	0.38	0.52	0.38	53.0
9	R2	9	2.0	9	2.0	0.031	9.8	LOS A	0.2	1.2	0.38	0.52	0.38	40.9
Approach		37	2.0	37	2.0	0.031	6.2	LOS A	0.2	1.2	0.38	0.52	0.38	44.3
West: RoadName														
10	L2	49	2.0	49	2.0	0.191	4.5	LOS A	1.0	6.8	0.27	0.50	0.27	48.0
11	T1	149	2.0	149	2.0	0.191	4.8	LOS A	1.0	6.8	0.27	0.50	0.27	43.2
12	R2	49	2.0	49	2.0	0.191	9.4	LOS A	1.0	6.8	0.27	0.50	0.27	53.6
Approach		248	2.0	248	2.0	0.191	5.7	LOS A	1.0	6.8	0.27	0.50	0.27	47.8
All Vehicles		639	2.0	639	2.0	0.196	5.8	LOS A	1.1	8.2	0.25	0.51	0.25	50.4

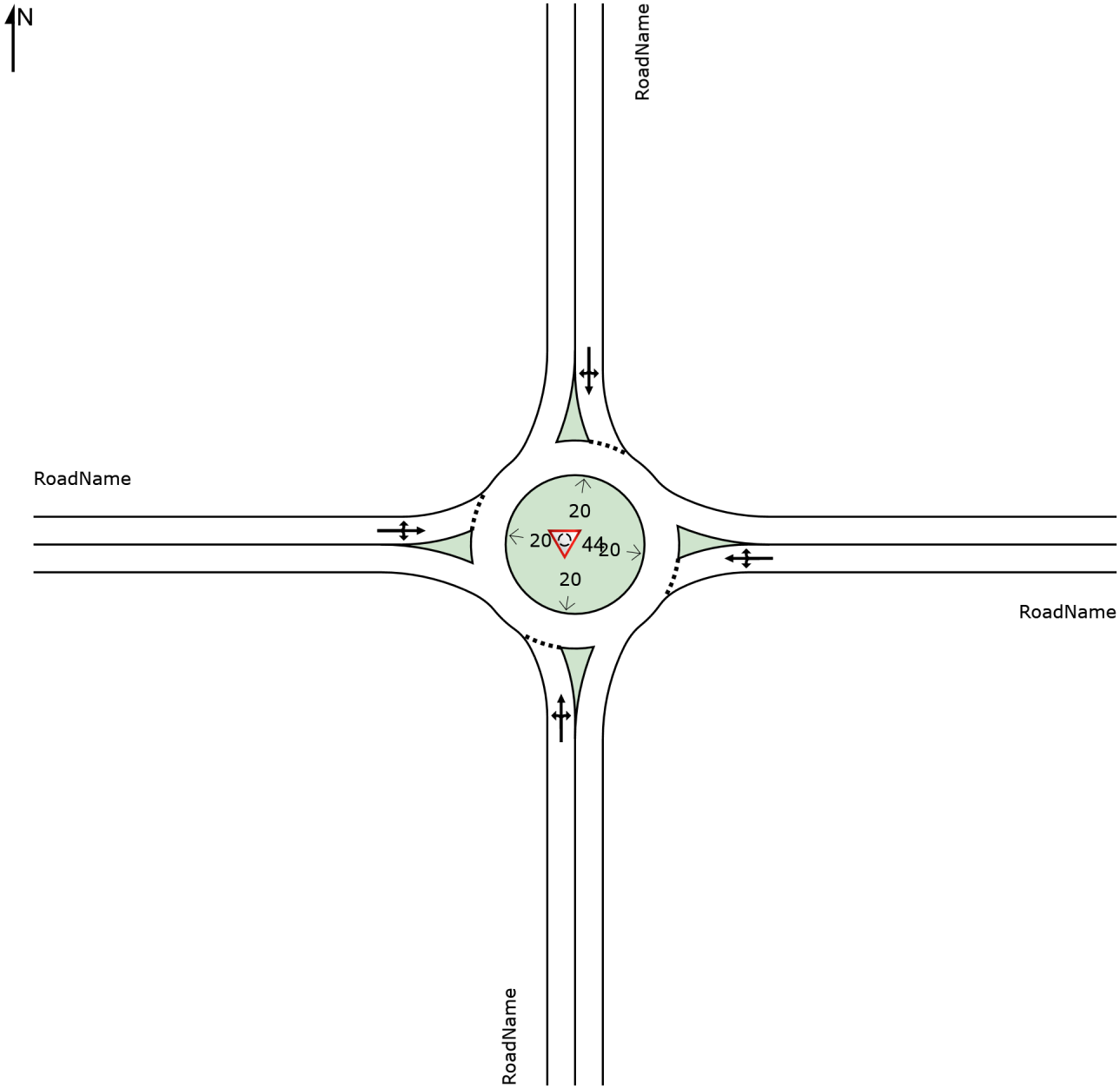
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity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

SITE LAYOUT

Site: 44 [2031_AM Peak_ Site 44 - updated (Site Folder: Birling Future 2031_AM Peak)]

2031
Site Category: 2031
Roundabout

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



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023

Template: Site outputs (movements)

Site: 44 [2031_AM Peak_ Site 44 - updated (Site Folder: Birling Future 2031_AM Peak)]

Network: 6 [2031_AM Peak all sites (Network Folder: General)]

2031
Site Category: 2031
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	84	2.0	84	2.0	0.234	4.3	LOS A	1.3	9.6	0.26	0.58	0.26	41.3
2	T1	5	2.0	5	2.0	0.234	4.6	LOS A	1.3	9.6	0.26	0.58	0.26	41.3
3	R2	237	2.0	237	2.0	0.234	9.2	LOS A	1.3	9.6	0.26	0.58	0.26	41.3
Approach		326	2.0	326	2.0	0.234	7.9	LOS A	1.3	9.6	0.26	0.58	0.26	41.3
East: RoadName														
4	L2	67	2.0	67	2.0	0.103	4.1	LOS A	0.6	3.9	0.16	0.50	0.16	51.0
5	T1	35	2.0	35	2.0	0.103	4.4	LOS A	0.6	3.9	0.16	0.50	0.16	48.0
6	R2	45	2.0	45	2.0	0.103	9.0	LOS A	0.6	3.9	0.16	0.50	0.16	48.0
Approach		147	2.0	147	2.0	0.103	5.7	LOS A	0.6	3.9	0.16	0.50	0.16	49.7
North: RoadName														
7	L2	6	2.0	6	2.0	0.035	6.4	LOS A	0.2	1.4	0.58	0.60	0.58	36.9
8	T1	20	2.0	20	2.0	0.035	6.7	LOS A	0.2	1.4	0.58	0.60	0.58	47.8
9	R2	6	2.0	6	2.0	0.035	11.4	LOS A	0.2	1.4	0.58	0.60	0.58	36.9
Approach		33	2.0	33	2.0	0.035	7.6	LOS A	0.2	1.4	0.58	0.60	0.58	44.9
West: RoadName														
10	L2	17	2.0	17	2.0	0.280	5.5	LOS A	1.7	11.9	0.50	0.57	0.50	45.4
11	T1	279	2.0	279	2.0	0.280	5.8	LOS A	1.7	11.9	0.50	0.57	0.50	45.4
12	R2	17	2.0	17	2.0	0.280	10.4	LOS A	1.7	11.9	0.50	0.57	0.50	51.2
Approach		313	2.0	313	2.0	0.280	6.0	LOS A	1.7	11.9	0.50	0.57	0.50	45.8
All Vehicles		819	2.0	819	2.0	0.280	6.8	LOS A	1.7	11.9	0.34	0.56	0.34	45.1

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

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 2031_Future_Birling SIDRA - 13 Feb 2023

Template: Site outputs (movements)

Site: 44 [2031_PM Peak_ Site 44 - updated (Site Folder: Birling Future 2031_PM Peak)]

Network: 3 [2031_PM Peak all sites (Network Folder: General)]

2031
Site Category: 2031
Roundabout

Vehicle Movement Performance

Mov ID	Turn	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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: RoadName														
1	L2	76	2.0	76	2.0	0.149	5.7	LOS A	0.8	6.0	0.52	0.65	0.52	41.2
2	T1	5	2.0	5	2.0	0.149	5.9	LOS A	0.8	6.0	0.52	0.65	0.52	41.2
3	R2	75	2.0	75	2.0	0.149	10.6	LOS A	0.8	6.0	0.52	0.65	0.52	41.2
Approach		156	2.0	156	2.0	0.149	8.0	LOS A	0.8	6.0	0.52	0.65	0.52	41.2
East: RoadName														
4	L2	200	2.0	200	2.0	0.409	5.0	LOS A	2.8	20.2	0.44	0.55	0.44	50.1
5	T1	222	2.0	222	2.0	0.409	5.3	LOS A	2.8	20.2	0.44	0.55	0.44	46.6
6	R2	101	2.0	101	2.0	0.409	9.9	LOS A	2.8	20.2	0.44	0.55	0.44	46.6
Approach		523	2.0	523	2.0	0.409	6.0	LOS A	2.8	20.2	0.44	0.55	0.44	48.3
North: RoadName														
7	L2	27	2.0	27	2.0	0.109	5.0	LOS A	0.6	4.0	0.41	0.55	0.41	38.6
8	T1	68	2.0	68	2.0	0.109	5.3	LOS A	0.6	4.0	0.41	0.55	0.41	49.1
9	R2	29	2.0	29	2.0	0.109	9.9	LOS A	0.6	4.0	0.41	0.55	0.41	38.6
Approach		125	2.0	125	2.0	0.109	6.3	LOS A	0.6	4.0	0.41	0.55	0.41	45.7
West: RoadName														
10	L2	37	2.0	37	2.0	0.168	4.8	LOS A	0.9	6.5	0.37	0.56	0.37	45.1
11	T1	92	2.0	92	2.0	0.168	5.1	LOS A	0.9	6.5	0.37	0.56	0.37	45.1
12	R2	75	2.0	75	2.0	0.168	9.7	LOS A	0.9	6.5	0.37	0.56	0.37	51.0
Approach		203	2.0	203	2.0	0.168	6.7	LOS A	0.9	6.5	0.37	0.56	0.37	47.8
All Vehicles		1007	2.0	1007	2.0	0.409	6.5	LOS A	2.8	20.2	0.44	0.57	0.44	47.1

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