NORTHROP

CIVIL ENGINEERING REPORT:
TRAFFIC IMPACT ASSESSMENT

Casey Apartments

Block 9 Section 132, Casey

PREPARED FOR
Jega
LG08/17 The Causeway
Kingston ACT 2604

Ref: CR220895_EC01
Rev: 2.2
Date: 02.05.2024

Traffic Impact Assessment Report

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
14.09.2022	1.0	Development Application	N.Grinter	M.Pike
07.10.2022	1.1	Development Application V1	N.Grinter	M.Pike
21.12.2022	1.2	Development Application V2	N.Grinter	M.Pike
23.01.2023	1.3	Development Application V2	N.Grinter	M.Pike
11.08.2023	2.0	Development Application V3	N.Grinter	M.Pike
22.04.2024	2.1	Report Amendment for ACAT	M.Pike	J.Wiltshire
02.05.2024	2.2	Report Amendment for ACAT	M.Pike	J.Wiltshire

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1. Introduction

1.1 Purpose of Report

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Jega to prepare a Traffic Impact Assessment (TIA) for the proposed development on Block 9 Section 132, Casey (referred to as to the subject site in this report).

This TIA investigates the impact which the additional traffic to the area will have on the current surrounding vicinity.

1.2 Study Objectives

This TIA is in line with the intent of the ACT Government Transport Canberra and City Services Directorate (TCCS) Guidelines for Transport Impact Assessment (Version 3.1, April 2020) as well as the Austroads Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments (2020).

This TIA addresses the comments from TCCS relating to traffic from the Notice of Decision (NOD) for DA No. 202241107 dated 01/05/2023 (pages 12 and 13 of the NOD). Comments have been addressed through the report and Appendix A.

The Development Application went through an ACAT process and several changes were made to the design. The changes which impact on this traffic report include a reduction in the number of units in the development. This is outlined further in Section 4 of this report.

This TIA will detail the below:

- An introduction to the report and summary of the proposed development;
- A summary of the development site and nearby conditions;
- An investigation in the existing conditions of the site and key roads including:
  - Traffic Volumes and conditions at key intersections;
  - Public transport within the vicinity of the site;
  - Active travel within the vicinity of the site.
- A summary of the projected traffic and parking conditions from the proposed development and surrounding key roads and intersections including:
  - The trip generation, trip distribution, modal split and trip assignment for the site generated traffic;
  - The increase of traffic at the key intersections;
  - The car park generation on site against the amount of car parking required; and
  - Car park compliance commentary.
- A transportation analysis including:
  - Commentary on proposed site access locations;
  - Commentary on the SIDRA Intersections models completed by Northrop for the key intersections for the base case, development conditions and future conditions for the site; and
  - Commentary on the current accident data for the key roads near the site supplied from the TCCS.
- A summary of the findings regarding:
  - Site accessibility;
  - Transportation impacts; and
  - Parking impacts.

The key intersections for this TIA are:

- Kingsland Parade and Bentley Place;
- Kingsland Parade and Clarrie Hermes Drive; and
- Horse Park Drive and Overall Avenue.

The key roads for this TIA are:

- Kingsland Parade between Clarrie Hermes Drive and Dalkin Crescent North; and
- Bentley Place.

1.3 References

In preparation of this report, reference has been made to the following:

- Inspections of the site and its surroundings;
- ACT Government TCCS Guidelines for Transport Impact Assessment (Version 3.1, April 2020);
- Austroads Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments (2020)
- Traffic surveys as undertaken by Matrix Traffic and Transport Data as referenced in the context of this report;
- AS2890.1:2004 Parking facilities Part 1: Off-street car parking;
- AS2890.2:2018 Parking facilities Part 2: Off-street commercial vehicle facilities;
- ACT Planning and Land Authority Parking and Vehicular Access General Code (June, 2022);
- NSW Transport Roads & Maritime Services Guide to Traffic Generating Developments Updated Traffic Surveys (August, 2013);
- NSW Transport Roads & Maritime Services (RTA) Guide to Traffic Generating Developments – V2.2 (October, 2002); and
- Other documents as referenced by this report.

2. Proposed Development

2.1 Surrounding Area

The proposed development is located within the suburb of Casey in Canberra. In the vicinity of the subject site, the surrounding land use is generally residential in nature. Nearby points of interests include the following:

- The Casey Market Town Shops at Block 3, Section 131 Casey;
- The car park available to the public located at Block 10, Section 132 Casey; and
- The 7 Eleven Petrol Station located at Block 6, Section 132 Casey.

The nearby points of interest and their location in relation to the site are shown in Figure 1.

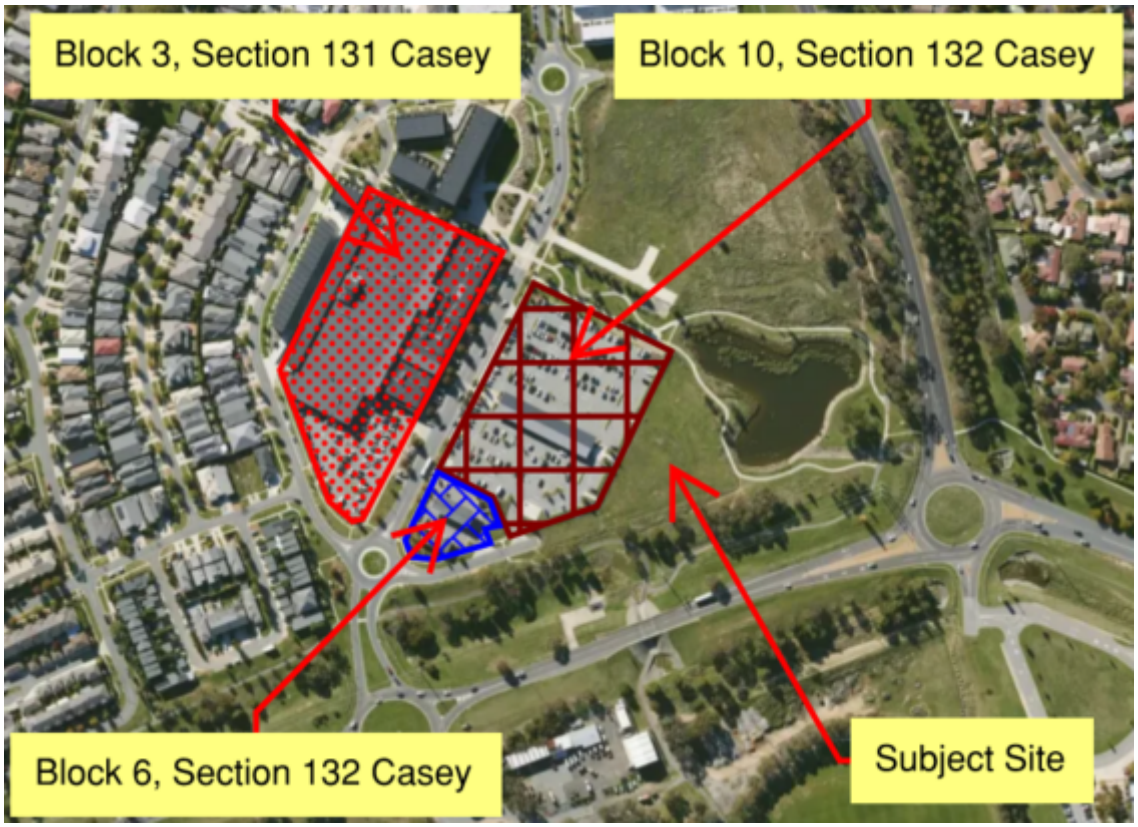


Figure 1 Nearby Points of Interest to the Site

2.2 Development Description and Locality

The proposed development will include a new multi-storey mixed-use building comprising of 143 residential units, 13 commercial units plus retail space, bicycle parking and basement parking. An extract of drawing DA-20-04 Revision 5 by Cox Architecture (dated 05/03/2024) is shown in Figure 2. The proposed development is anticipated to have a gross floor area (GFA) of approximately 20,131m2 in accordance with drawing DA-01-02 Revision 5 by Cox Architecture (dated 05/03/2024).

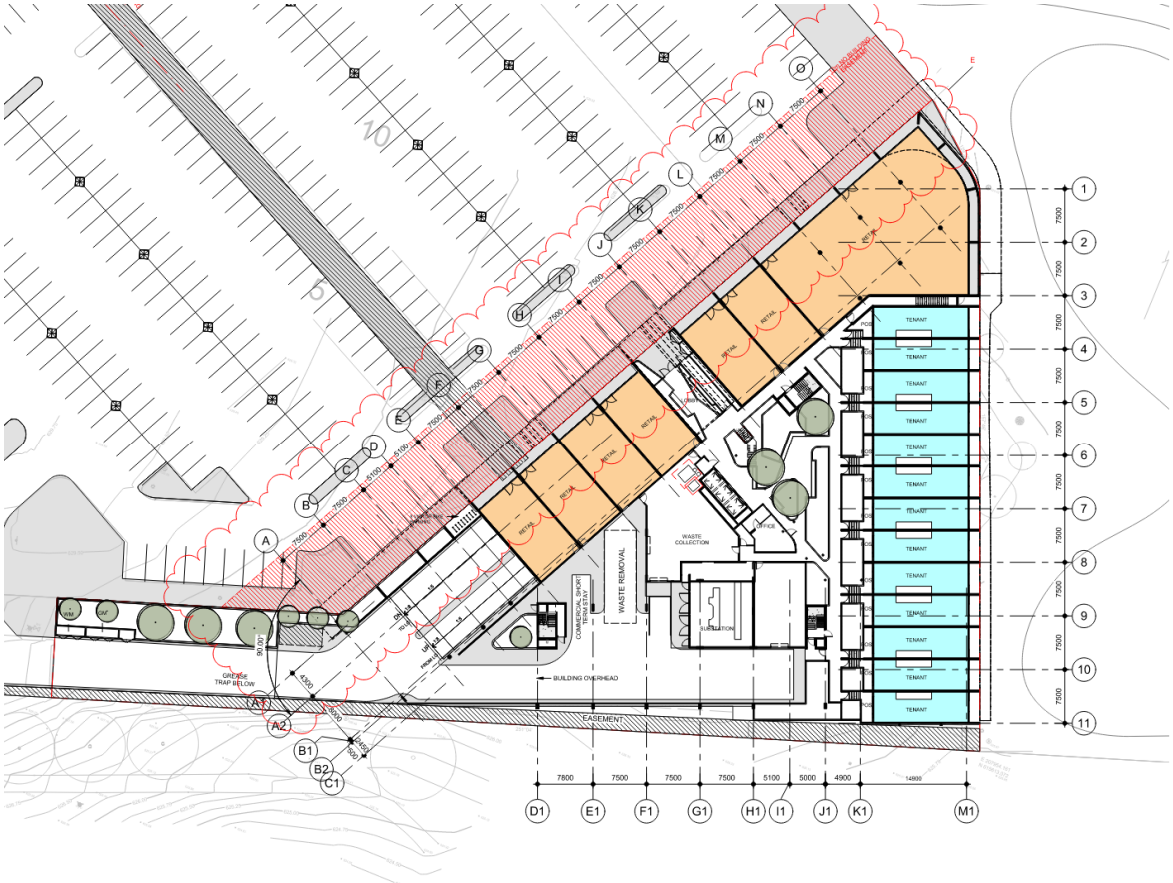


Figure 2 Proposed Development Upper Ground Plan

The subject site is located on Block 9, Section 132 Casey which is off Bentley Place. Figure 3 shows the general site within the Casey area and Figure 4 shows the site-specific location.

Figure 3 Site Locality within Casey

Figure 4 Site Specific Location

Figure 5 illustrates the locality of the subject site in relation to the key roads and intersections outlined in Section 1.2 of this report. Figure 5 also shows the extent of Overall Avenue to assist in addressing the TCCS traffic comments from the NOD. The key intersections have a red circle on them for identification purposes in Figure 5.

Figure 5 Key Roads and Intersections in relation to the Subject Site

3. Existing Conditions

3.1 Study Area

3.1.1 Area of Influence

For the purpose of this TIA Report, the key roads and intersections of interest are as follows:

Key Roads:

- Kingsland Parade between Clarrie Hermes Drive and Dalkin Crescent; and
- Bentley Place.

Key Intersections:

- Kingsland Parade and Bentley Place;
- Kingsland Parade and Clarrie Hermes Drive; and
- Horse Park Drive and Overall Avenue.

As part of this TIA, observations have been undertaken at the intersection of Clarrie Hermes Drive and Overall Avenue to assist addressing TCCS traffic comments from the NOD.

3.2 Study Area Land Use

3.2.1 Existing Land Use

At the time of this TIA, the subject site is a vacant block of land.

3.2.2 Existing Zoning

The subject site is zoned in the ACT Government Territory Plan as CZ1: Core Zone. Northrop understand that the land is within the Casey Group Centre.

3.3 Site Accessibility

3.3.1 Area Roadway System

3.3.1.1 Existing Roads Hierarchy

The subject site can be accessed via Bentley Place from the Eastern leg of the Kingsland Parade and Bentley Place intersection. The hierarchy of these roads are defined as follows in accordance with Active Travel Infrastructure Planning Map (accessed on the 16/07/2023):

- Kingsland Parade – Minor Collector
- Bentley Place – Local Access Street (Access Street)

Kingsland Parade intersects with Overall Avenue at the North and Clarrie Hermes Drive at the South. The hierarchy of these roads are defined as follows in accordance with Active Travel Infrastructure Planning Map (accessed on the 16/07/2023):

- Overall Avenue – Major Collector
- Clarrie Hermes Drive – Arterial Road

TCCS Municipal Infrastructure Standards (MIS) 01 Street Planning and Design Edition 1 Revision 1 described a Minor Collector and an Access Road as follows:

- **Minor Collector:** Minor collector roads distribute traffic from Access Streets to Major Collector or Arterial Roads.
- **Access Streets:** Access Streets are used where the residential environment is dominant, traffic is subservient, speed and volumes are low and pedestrian and cycle movements are facilitated.
- **Major Collector:** Major collector roads are part of urban neighbourhoods. These roads collect and distribute traffic between the primary (arterial and sub-arterial) road network and the user destinations.
- **Arterial Road:** Arterial Roads are strategically significant roads that cater for high vehicle volumes travelling over large distances. They do not interact with the places that the road passes through.

3.3.1.2 Existing Traffic Infrastructure and Traffic Controls for the Key Roads

3.3.1.2.1 Kingsland Parade

Between Clarrie Hermes Drive and Dalkin Crescent (North), Kingsland Parade is aligned in a North/South direction. It is a two lane – two way road with a carriageway of an approximate width of 10m. Kingsland Parade between Clarrie Hermes Drive and Dalkin Crescent (North) has a posted speed limit of 40 km/h.

There are indented parking bays (90 degree and parallel bays) as well as two bus laybys along this section of Kingsland Parade.

3.3.1.2.2 Bentley Place

Bentley place is aligned in an East/West direction. It is a two lane - two way road with a carriageway of an approximate width of 7m. Bentley Place between Kingsland Parade and the subject site has a posted speed of 40km/h.

3.4 Traffic Volumes and Conditions

3.4.1 Current Traffic Volumes

Matrix Traffic and Transport Data (Matrix) were engaged by Northrop to undertake a traffic survey for the key intersections over a Thursday between 6am to 10am and 2:30pm to 6:30pm and a Saturday between 7am to 3pm.

3.4.1.1 Current Traffic Volumes at the Intersection of Kingsland Parade, Dalkin Crescent and Bentley Place

The traffic survey outlining the traffic volumes at the roundabout intersection of Kingsland Parade, Dalkin Crescent and Bentley Place for the 27/10/2022 (Thursday) and the 29/10/2022 (Saturday) are summarised in Table 1 and Table 2 respectively.

Table 1: Traffic Volumes on Thursday 27/10/2022

Road	Location	Direction	AM Volume (as surveyed)	PM Volume (as surveyed)	AM Peak Volume (veh/hr)	PM Peak Volume (veh/hr)
Kingsland Parade	Northern Leg	Northbound	737	1,529	226	438
		Southbound	559	877	221	240
Bentley Place	Eastern Leg	Eastbound	41	139	12	46
		Westbound	425	702	122	217
Kingsland Parade	Southern Leg	Northbound	703	1,566	217	447
		Southbound	1,003	1,416	354	388
Dalkin Crescent	Western Leg	Eastbound	214	192	83	57
		Westbound	120	253	51	89

Note:

1. *The AM and PM Peak Periods have been identified to be between 8:15am to 9:15am and 5:30pm to 6:30pm respectively.*
2. *The entry to Bentley Place has a low vehicular usage compared with the remainder of the legs of the intersection.*

Table 2: Traffic Volumes on Saturday 29/10/2022 2022

Road	Location	Direction	8-hour Volume (as surveyed)	AM Peak Volume (veh/h)	PM Peak Volume (veh/hr)
Kingsland Parade	Northern Leg	Northbound	2,198	308	357
		Southbound	1,477	227	217
Bentley Place	Eastern Leg	Eastbound	215	38	38
		Westbound	1,167	178	219
Kingsland Parade	Southern Leg	Northbound	2,249	331	388
		Southbound	2,517	394	400
Dalkin Crescent	Western Leg	Eastbound	400	65	40
		Westbound	363	61	69

Note:

1. *The AM and PM Peak Periods have been identified to be between 11:00am to 12:00pm and 12:15pm to 1:15pm respectively.*
2. *The entry to Bentley Place has a low vehicular usage compared with the remainder of the legs of the intersection.*

3.4.1.2 *Current Traffic Volumes at the Intersection of Kingsland Parade and Clarrie Hermes Drive*

The traffic survey outlining the traffic volumes at the roundabout intersection of Kingsland Parade and Clarrie Hermes Drive for the 10/11/2022 (Thursday) and the 12/11/2022 (Saturday) are summarised in Table 3 and Table 4 respectively.

Table 3: Traffic Volumes on Thursday 10/11/2022

Road	Location	Direction	AM Volume (as surveyed)	PM Volume (as surveyed)	AM Peak Volume (veh/hr)	PM Peak Volume (veh/hr)
Kingsland Parade	Northern Leg	Northbound	636	1,571	189	405
		Southbound	979	1,404	299	353
Clarrie Hermes Drive	Eastern Leg	Eastbound	2,021	3,002	718	782
		Westbound	2,313	3,257	737	950
Playing Field Access	Southern Leg	Northbound	63	129	33	64
		Southbound	66	184	38	45
Clarrie Hermes Drive	Western Leg	Eastbound	1,823	3,261	630	859
		Westbound	2,455	3,294	754	994

Note:

1. *The AM and PM Peak Periods have been identified to be between 8:00am to 9:00am and 3:15pm to 4:15pm respectively.*
2. *Insignificant traffic utilised the Southern let of the intersection during the surveyed periods.*
3. *Clarrie Hermes Drive has the largest number of vehicles travelling along it at this intersection.*

Table 4: Traffic Volumes on Saturday 12/11/2022 2022

Road	Location	Direction	8-hour Volume (as surveyed)	AM Peak Volume (veh/h)	PM Peak Volume (veh/hr)
Kingsland Parade	Northern Leg	Northbound	2,289	368	380
		Southbound	2,584	397	428
Clarrie Hermes Drive	Eastern Leg	Eastbound	4,695	688	737
		Westbound	5,002	754	824
Playing Field Access	Southern Leg	Northbound	213	17	75
		Southbound	222	23	28
Clarrie Hermes Drive	Western Leg	Eastbound	4,658	704	708
		Westbound	5,251	797	888

Note:

1. *The AM and PM Peak Periods have been identified to be between 11:00am to 12:00pm and 12:00pm to 1:00pm respectively.*
2. *Insignificant traffic utilised the Southern let of the intersection during the surveyed periods.*
3. *Clarrie Hermes Drive has the largest number of vehicles travelling along it at this intersection.*

3.4.1.3 Current Traffic Volumes at the Intersection of Horse Park Drive and Overall Avenue

The traffic survey outlining the traffic volumes at the roundabout intersection of Horse Park Drive and Overall Avenue for the 27/10/2022 (Thursday) and the 29/10/2022 (Saturday) are summarised in Table 5 and Table 6 respectively.

Table 5: Traffic Volumes on Thursday 27/10/2022

Road	Location	Direction	AM Volume (as surveyed)	PM Volume (as surveyed)	AM Peak Volume (veh/hr)	PM Peak Volume (veh/hr)
Horse Park Drive	Northern Leg	Northbound	1,578	2.860	532	900
		Southbound	2,476	2,306	967	615
Newlop Street	Eastern Leg	Eastbound	195	517	79	166
		Westbound	451	455	178	145
Horse Park Drive	Southern Leg	Northbound	1,398	2,923	498	913
		Southbound	2,560	2,079	951	533
Overall Avenue	Western Leg	Eastbound	886	1,141	340	345
		Westbound	878	1,369	421	419

Note:

1. *The AM and PM Peak Periods have been identified to be between 8:00am to 9:00am and 5:15pm to 6:15pm respectively.*
2. *The majority of traffic flows along Horse Park Drive.*
3. *Vehicles appear to be rat running through Overall Avenue to avoid the arterial road network. The project team notes that this is not part of the scope of this TIA and recommends Road ACT consider further investigation of the traffic volumes and speeds along Overall Avenue separate to this study.*

Table 6: Traffic Volumes on Saturday 29/10/2022 2022

Road	Location	Direction	8-hour Volume (as surveyed)	AM Peak Volume (veh/h)	PM Peak Volume (veh/hr)
Horse Park Drive	Northern Leg	Northbound	3,272	490	523
		Southbound	4,139	665	563
Newlop Street	Eastern Leg	Eastbound	695	131	119
		Westbound	812	111	119
Horse Park Drive	Southern Leg	Northbound	3,199	503	543
		Southbound	4,028	628	550
Overall Avenue	Western Leg	Eastbound	1,755	280	260
		Westbound	1,910	310	293

Note:

1. *The AM and PM Peak Periods have been identified to be between 11:00am to 12:00pm and 12:00pm to 1:00pm respectively.*
2. *The majority of traffic flows along Horse Park Drive.*

3.4.2 Current Condition of Key Intersections

The key intersections have been modelled using SIDRA Intersection 9.1. The Thursday results have been modelled due to the higher traffic volumes across the three sites being experienced on the Thursday.

For consistency, the peak hours for intersection modelling have been assumed to be 8:00am – 9:00am and 5:15pm – 6:15pm which align to the general travel times for the average working day.

The intersections of Kingsland Parade and Bentley Place, and Kingsland Parade and Clarrie Hermes Drive have been modelled as a network due to their close proximity with results provided for the individual intersections only. The intersection of Overall Avenue and Horse Park Drive was not modelled in a network with the other intersections due to its proximity to the other intersections in this report.

A summary of the SIDRA Intersection 9.1 results are in the following sections. The results listed in this TIA include the level of service (LOS), degree of saturation (DOS), average queue length and average delay. These results provide a quantitative measure of the performance of the intersection for the period modelled.

The LOS is a rating from A (best operating conditions) to F (worst operating conditions) as described by Austroads. In accordance with the RTA Guide to Traffic Generating Developments (Version 2.2, 2022), a LOS A represents good operation of a roundabout while LOS F represents a roundabout which is at capacity. The LOS provided in the summary of results is based on the delay method for New South Wales. The LOS has been provided to allow authority analysis of the intersection in relation to intent of the ACT Government Transport Canberra and City Services Guidelines for Transport Impact Assessment (3.1 Version, April 2020). A description of the LOS for roundabouts is provided in Table 7.

Table 7 LOS Summary for Roundabouts

LOS	Average Delay per Vehicle (seconds per vehicle)	Roundabout Services Description
A	< 14	Good operation
B	15 to 28	Good with acceptable delays and space capacity
C	29 to 42	Satisfactory
D	43 to 56	Operating near capacity
E	57 to 70	At capacity
F	> 70	Over capacity

The DOS is the ratio of arrival flow of vehicles to the capacity of the leg of the intersection. The DOS has been provided to assist indicate the available capacity of the intersection/leg of the intersection.

The average queue length represents a line of vehicles waiting to proceed through an intersection including slow moving vehicles at the back of the queue. The average queue length has been provided to indicate potential effects on the surrounding road network.

The average delay, for the purpose of this TIA, is the control delay which accounts for the time lost during the negotiation of an intersection including all stop-start and slow down delays and stopping times. The average delay will be in line with the LOS provided. The average delay has been provided as a metric to show an increase in waiting times anticipated based on the results of the SIDRA Intersection 9.1 model.

Assumptions and adjustments for the SIDRA models in the following sections are as follows:

- Grading for the legs of the intersection have been left at 0% as no survey has been provided.
- Lane geometry accuracy has limitation due to the options available in the program. These have been modelled to reflect the conditions as reasonably practical.
- Initial queue demand has been set as 0.0 veh.
- No pedestrians have been modelled at the intersections to reflect observations made by Northrop on 15/12/2022. Northrop understand that pedestrians cross midblock at locations along Clarrie Hermes Drive and Kingsland Parade which is beyond the parameters of the modelling.
- Cyclists have not been modelled to reflect observations made by Northrop on 15/12/2022.

3.4.2.1 *Current Traffic Conditions at the Intersection of Kingsland Parade, Dalkin Crescent and Bentley Place*

For the purpose of this TIA, the intersection of Kingsland Parade, Dalkin Crescent and Bentley Place has been modelled within a network arrangement with the intersection of Kingsland Parade and Clarrie Hermes Drive.

Table 8 contains the summary of results from the SIDRA Intersection 9.1 model for the current conditions of the intersection of Kingsland Parade, Dalkin Crescent and Bentley Place.

Table 8 Summary SIDRA Intersection Results

Road	Leg	Period	LOS	DOS	Average Queue Length (m)	Average Delay (s)
Kingsland Parade	North	AM	A	0.17	3	1.8
		PM	A	0.18	3	2.1
Bentley Place	East	AM	A	0.12	1	3.4
		PM	A	0.19	3	3.5
Kingsland Parade	South	AM	A	0.15	2	1.7
		PM	A	0.35	6	2.1
Dalkin Crescent	West	AM	A	0.08	1	5.6
		PM	A	0.08	1	6.2

In line with the summary of the results from the current conditions:

- The intersection has good operation;
- The results for the intersection reflect the video imagery for the intersection for the day modelled.

3.4.2.2 *Current Traffic Conditions at the Intersection of Kingsland Parade and Clarrie Hermes Drive*

Northrop undertook site inspections to verify the model results compared with the traffic observed on 20/06/2023 between 8:30am and 9:05am and 28/06/2023 between 8:30am and 9:00am.

3.4.2.2.1 20/06/2023

The observations on 20/06/2023 identified:

- There were no unexpected delays at the intersection of Clarrie Hermes Drive and Barton Highway for the Clarrie Hermes Drive leg of the intersection at approximately 8:30am;
- There were no unexpected delays on Clarrie Hermes Drive between Barton Highway and Overall Avenue at approximately 8:30am;
- Queuing along Overall Avenue was observed up to John Crawford Crescent (approximately 370m from Overall Avenue);
- Delay times along Overall Avenue demonstrated a behaviour likening to the LOS of F as described in the RTA Guide to Traffic Generating Developments Version 2.2 (October, 2022) section 4.2 (i.e. significant queuing observed);
- Delays at the intersection of Clarrie Hermes Drive and Overall Avenue were typically observed for the legs of Clarrie Hermes Drive East and Overall Avenue;
- Due to the roundabout arrangement for the intersection, the Westbound traffic along Clarrie Hermes Drive is required to give way to the queued up Overall Avenue traffic causing delays along Clarrie Hermes Drive;
- Delays along Clarrie Hermes for Westbound traffic queued beyond the intersection of Kingsland Parade and Clarrie Hermes Drive.

Figure 6 Intersection of Overall Avenue and Clarrie Hermes Drive Looking East

Figure 7 Overall Avenue between Powley Street and Carmody Street Looking South

Figure 8 Queuing Observed at the Intersection of Boyer Street and Overall Avenue

Figure 9 Queuing Observed at the Intersection of Kingsland Parade and Clarrie Hermes Drive Looking East

3.4.2.2.2 28/06/2023

The observations on 28/06/2023 identified:

- There were no unexpected delays at the intersection of Clarrie Hermes Drive and Barton Highway for the Clarrie Hermes Drive leg of the intersection at approximately 8:30am;
- There were no unexpected delays on Clarrie Hermes Drive between Barton Highway and Overall Avenue at approximately 8:30am;
- Queuing was observed to the East, through and to the West of the intersection of Kinsland Parade and Clarrie Hermes Drive;
- The signalised pedestrian crossing on Clarrie Hermes Drive between Overall Avenue and Kingsland Parade contributed to delays along Clarrie Hernes Drive Westbound;
- Delays for vehicles traversing the intersection of Kingsland Parade and Clarrie Hermes Drive from Clarries Hermes Drive East were approximately 60 seconds;
- No unexpected delays were observed for vehicles entering the intersection from Kingsland Parade;

Figure 10 Intersection of Kingsland Parade and Clarrie Hermes Drive Looking West

Figure 11 Intersection of Kingsland Parade and Clarrie Hermes Drive Looking East

Figure 12 Intersection of Kingsland Parade and Clarrie Hermes Drive Looking South

Figure 13 Red Light Midblock on Clarrie Hermes Drive between Kingsland Parade and Overall Avenue Resulting in Delays

3.4.2.2.3 Modelling of the Intersection of Kingsland Parade and Clarrie Hermes Drive

Based on the observations undertaken, Northrop have calibrated the SIDRA Intersection 9.1 Kingsland Parade and Clarrie Hermes AM model to reflect delays occurring from the queuing observed.

Calibration included:

- Changing the environment factor for Clarrie Hermes East traffic to 2.00;
- Changing the environment factor for Clarrie Kingsland Parade traffic to 1.25;
- Changing the capacity adjustment to -11.0%.

Table 9 contains the summary of results from the SIDRA Intersection 9.1 model for the current conditions of the intersection of Kingsland Parade and Clarrie Hermes Drive.

Table 9 Summary SIDRA Intersection Results

Road	Leg	Period	LOS	DOS	Average Queue Length (m)	Average Delay (s)
Kingsland Parade	North	AM	A	0.42	8	6.8
		PM	A	0.43	9	6.1
Clarrie Hermes Drive	East	AM	E	1.03	137	57.3
		PM	A	0.58	14	7.5
Playing Field Access	South	AM	A	0.05	1	9.0
		PM	A	0.03	1	8.0
Clarrie Hermes Drive	West	AM	A	0.41	9	5.4
		PM	A	0.63	16	6.0

In line with the summary of the results from the current conditions:

- The intersection has good operation in the PM;
- The AM peak period results reflect the observations undertaken by Northrop in June, 2023;
- The PM peak period results reflect the video imagery for the intersection;
- The leg of Clarrie Hermes Drive East has a DOS of 1.03 and an average delay of 57.3 seconds indicating the leg is close to failure.

This TIA addresses the scope of a TIA as outlined in the ACT Government TCCS Guidelines for Transport Impact Assessment (Version 3.1, April 2020) as it provides commentary on the impact of the development on the surrounding intersections including the intersection of Kingsland Parade and Clarrie Hermes Drive (refer to Section 4 of this report).

Northrop acknowledges that there are external factors affecting this intersection as described by the observations undertaken by Northrop which are separate to the Casey Group Centre.

Northrop recommends that Roads ACT complete a study on the intersection to review the wider network issues in relation to the intersection of Kingsland Parade and Clarrie Hermes Drive separate to this TIA and implement appropriate outcomes as identified by their study.

3.4.2.3 Current Traffic Conditions at the Intersection of Horse Park Drive and Overall Avenue

Table 10 contains the summary of results from the SIDRA Intersection 9.1 model for the current conditions of the intersection of Horse Park Drive and Overall Avenue.

Table 10 Summary SIDRA Intersection Results

Road	Leg	Period	LOS	DOS	Average Queue Length (m)	Average Delay (s)
Horse Park Drive	North	AM	A	0.87	48	14.4
		PM	A	0.55	13	9.2
Newlop Street	East	AM	B	0.28	7	15.1
		PM	A	0.11	2	6.5
Horse Park Drive	South	AM	A	0.56	14	9.8
		PM	B	0.88	49	15.5
Overall Avenue	West	AM	A	0.35	6	7.2
		PM	A	0.57	15	11.1

In line with the summary of the results from the current conditions:

- The intersection has good operation;
- The results for the intersection reflect the video imagery for the intersection for the day modelled.

3.5 Carparking

There are approximately 412 publicly available car parking spaces along Kingsland Parade and within the on-grade parking on Block 10 Section 132, Casey. The breakdown of these car parking spaces is summarised in Sections 3.5.1 to 3.5.2 of this report.

3.5.1 Kingsland Parade

The number of carparking spaces on Kingsland Parade are as follows:

- 2 x Disabled Parking Spaces;
- 31 x 90 Degree Indented Parking Bays (1P); and
- 3 x 3 Parallel Indented Parking Bays (Unrestricted).

3.5.2 On-grade Parking on Block 10 Section 132, Casey

The number of carparking spaces on Block 10 Section 132, Casey are as follows:

- 12 x Disabled Parking Spaces;
- 366 x Car Parking Bays (a combination of all day parking, 3-hour parking, 1 hour parking and 30-minute parking); and
- 21 x Motorcycle Bays.

3.5.3 Car Parking Survey

A car and motorcycle parking survey was undertaken during the period from 24/11/2022 through to 26/11/2022. Various times were captured over the 3 days.

General observations from the photos taken from the survey include:

- No motorcycles were observed to be parked in the designated motorcycle parking on Block 10, Section 132 Casey across the 3 days during the survey periods;
- Parking along Kingsland Parade was almost at capacity during the survey during the survey periods and has not been further considered; and
- Parking on Block 3, Section 131 Casey was almost at capacity during the survey during the survey periods and has not been further considered.

It is noted that parking along Kingsland Parade and parking on Block 3, Section 131 Casey are within close proximity to Casey Market Town shops.

Table 11 provides a summary of the car park capacity on Block 10, Section 132 Casey during the survey period.

Table 11 Car Parking Survey Summary

Day	Time	No. Cars Parked	No. Available Car Parking Spaces	Percent Available Car Parking Spaces
Thursday 24/11/2022	10:45am	137	241	63%
	11:45am	151	227	60%
	12:35pm	176	202	53%
	1:30pm	169	209	55%
Friday 25/11/2022	2:00pm	171	207	54%
	3:00pm	127	251	66%
	4:00pm	161	217	57%
	5:00pm	185	193	51%
	6:00pm	187	191	50%
Saturday 26/11/2022	10:00am	180	198	47%
	11:00am	186	192	50%
	12:00 Midday	202	176	46%
	1:00pm	215	163	43%
	2:00pm	189	189	50%
	3:00pm	182	196	51%
	4:00pm	149	229	60%

In line with the car and motorcycle parking survey undertaken:

- The Saturday was the busiest day at the car park;
- The least amount of car parking available during the surveyed times was 163 car parking spaces;
- The most amount of car parking available during the surveyed times was 251 on a Friday.

Figure 14 and Figure 15 showing the car park at its busiest time and quietest time surveyed respectively.

Figure 14 Car Parking Available Saturday 26/11/2022 1:00pm

Figure 15 Car Parking Available Friday 25/11/2022 3:00pm

3.6 Public Transport

At the time of this report, there are two bus stops situated on Kingsland Parade (Stop ID 6109 and Stop ID 6110) as shown location E in Figure 16 and Location A in Figure 17. These bus stops serve Bus Routes 25, 26, 27 and 28.

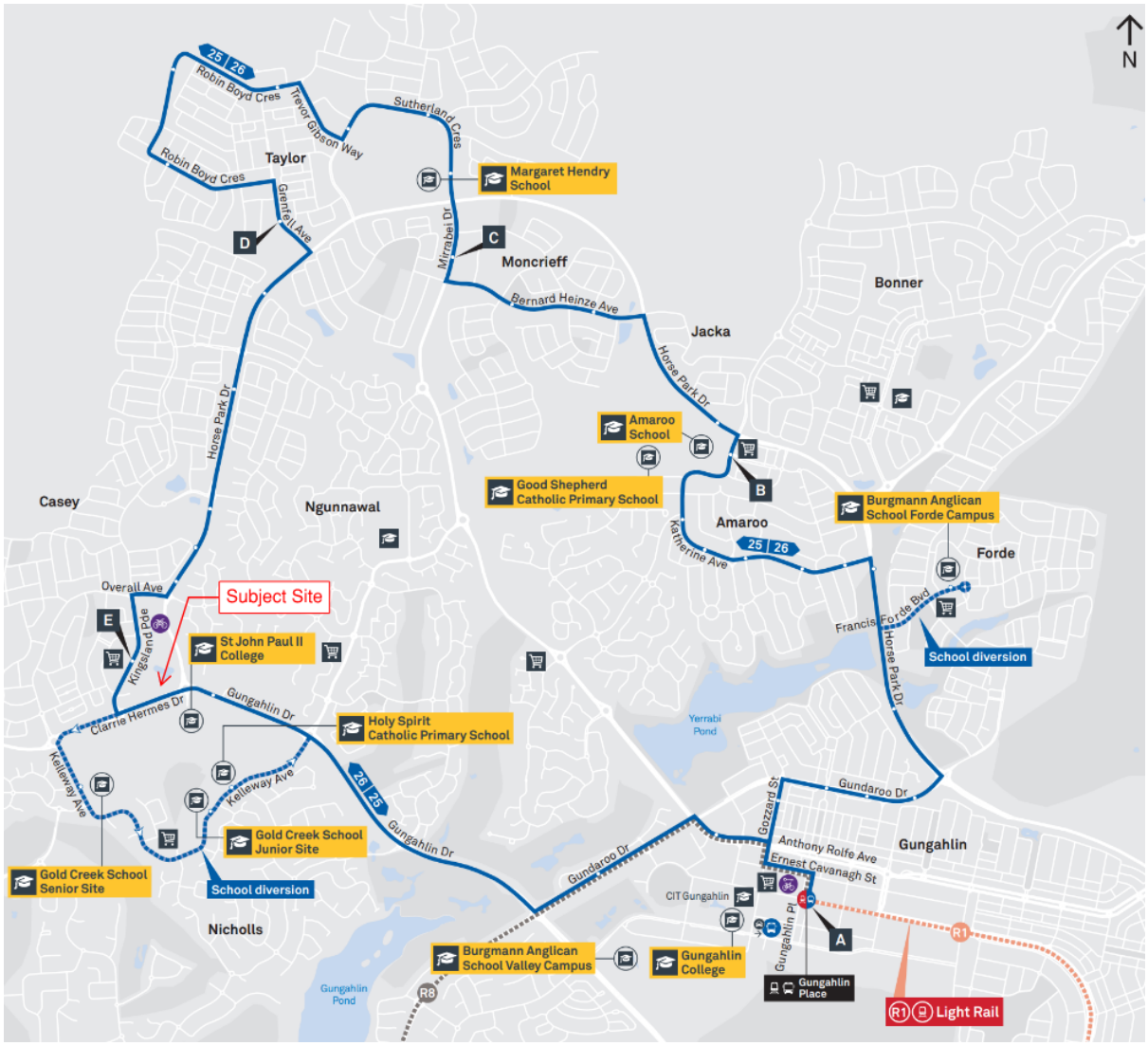


Figure 16 Route 25 and 26

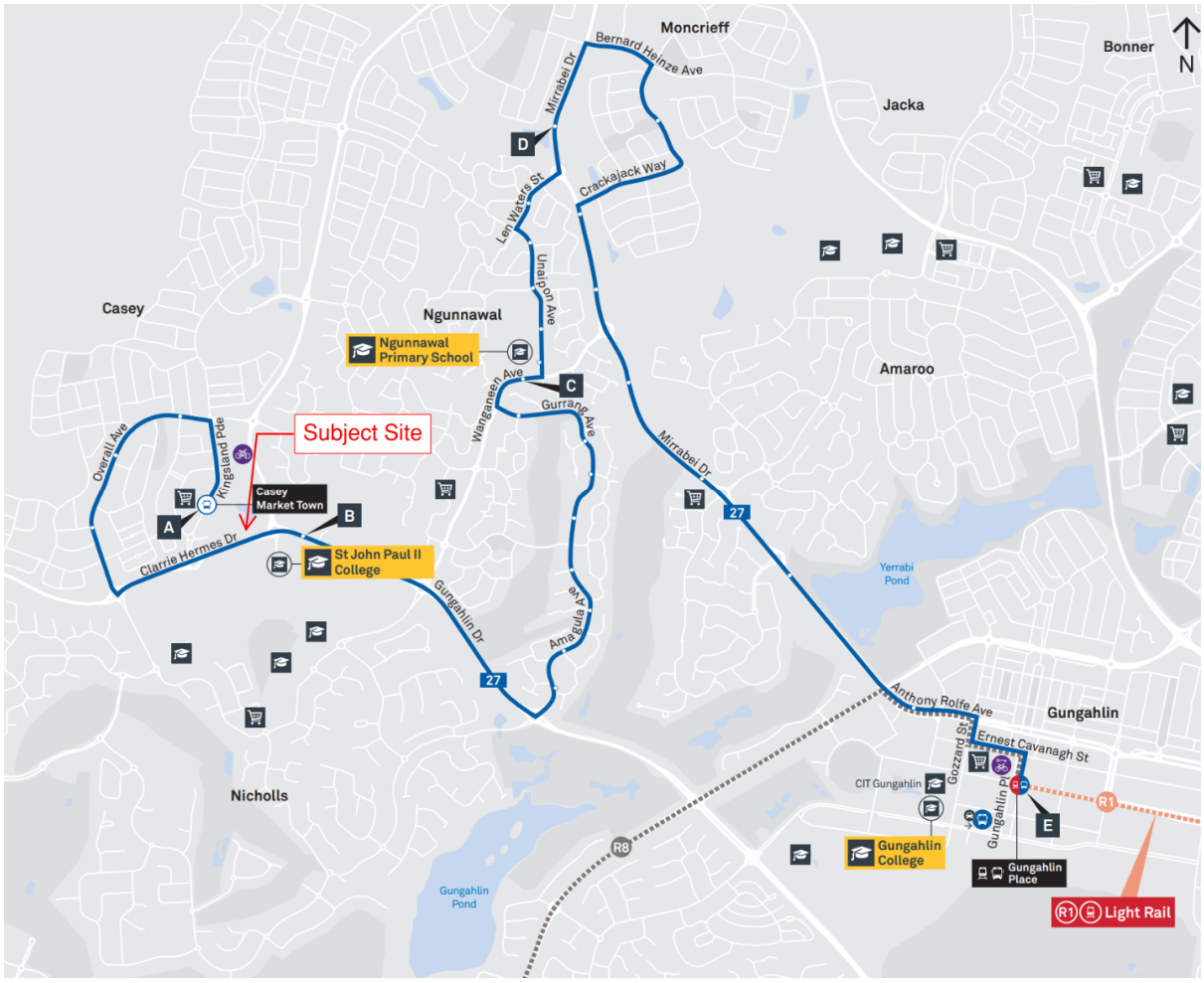


Figure 17 Route 27 and 28

Routes 25 and 26 stop at Kingsland Parade in line with the current weekday and weekend timetable. The buses depart approximately every 30 minutes during weekdays and approximately every hour on weekends in the morning and every 2 hours on for the rest of the weekend's timetable. It is noted that Routes 27 and 28 link with the Gungahlin Interchange.

Routes 27 and 28 stops at Kingsland Parade in line with the current weekday and weekend timetable. The buses depart approximately every 30 minutes during weekdays and approximately every hour on weekends in the morning and every 2 hours on for the rest of the weekend's timetable. It is noted that Routes 27 and 28 link with the Gungahlin Interchange.

Gungahlin Interchange provides connectivity to City Interchange and Belconnen through Transport Canberra's Rapid Routes as well as providing connection to other bus routes.

3.7 Active Travel

Public footpaths follow the verges of the streets surrounding the subject site providing access for both pedestrians and cyclists. Figure 18 is a marked-up extract from the Active Travel Practitioner Tool which indicates the existing pedestrian facilities in the vicinity of the subject site.

The public footpaths shown in Figure 18 link to the greater pedestrian footpath and active travel facilities for the greater Canberra region.

Underpasses linking Casey to Ngunnawal and Nichols are identified in Figure 18 by the red circles. The underpasses provide an alternate route for pedestrians, cyclists and users of other active travel types to miss negotiating Horse Park Drive and Clarrie Hermes Drive.

A signalised pedestrian crossing linking Casey to Nichols has been identified in Figure 18 by the orange circle. The signalised crossing enable pedestrian to cross Clarrie Hermes Drive in a controlled manner.

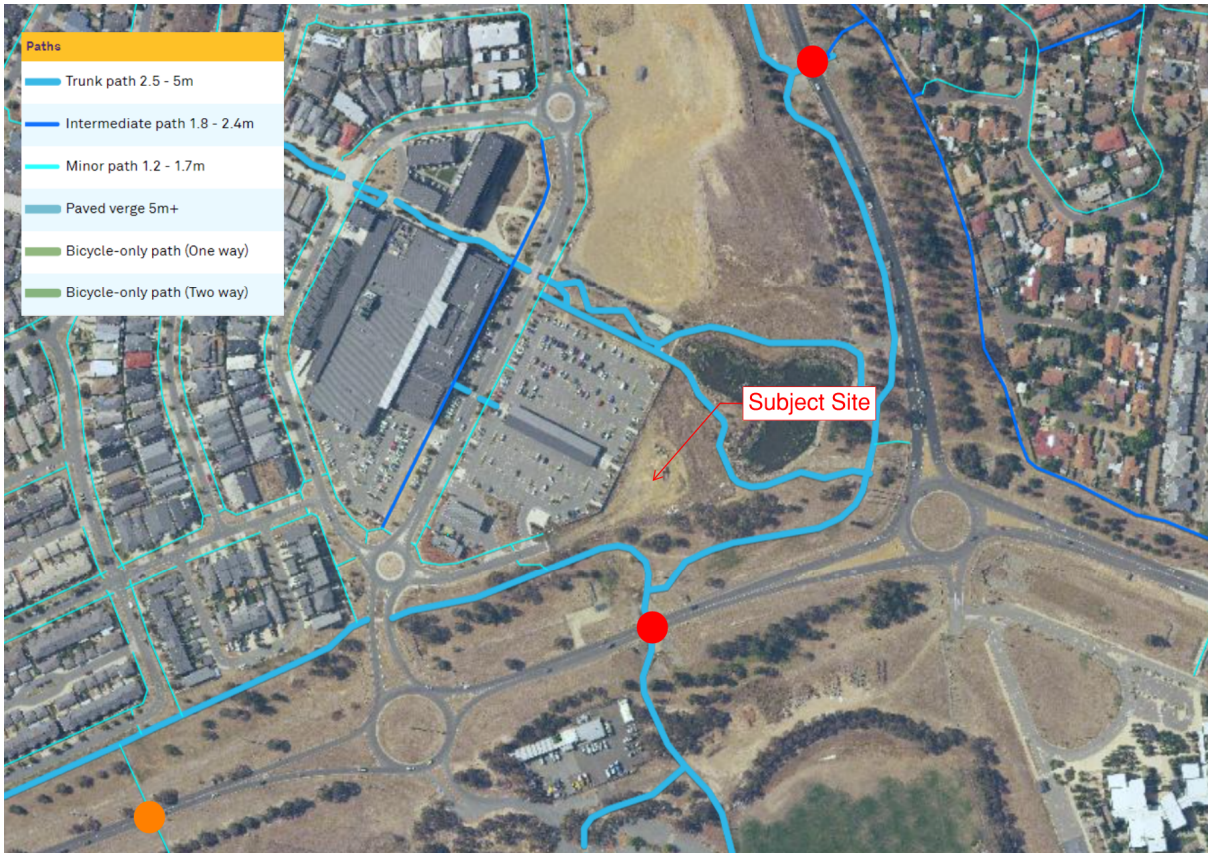


Figure 18 Pedestrian Footpath Infrastructure in the Vicinity of the Subject Site

3.8 Accident Data

Accident data has been obtained from TCCS for the period of 1/01/2016 to 31/12/2020 for the following locations:

- Bentley Place between Kingsland Parade and the Subject Site
- Kingsland Parade between Clarrie Hermes Drive and Dalkin Crescent (North)

The data collected provides a typical 5-year behaviour for accidents within the abovementioned locations and is summarised in Table 12.

Table 12 Accident Data Along Clarrie Hermes Drive, Bentley Place, Kingsland Parade & Dalkin Crescent

Location	Type of Accident	Number of Accidents
Intersection of Clarrie Hermes Drive and Kingsland Parade	Injury	0
	Property Damage	24
Midblock of Kingsland Parade between Bentley Place and Dalkin Crescent	Injury	0
	Property Damage	12

Note:

1. *No accidents have been recorded in the mid-block of Bentley Place.*
2. *No accidents have been recorded at the midblock of Kingsland Parade between Clarrie Hermes Drive and Bentley Place.*
3. *No accidents have been recorded at the intersection of Bentley Place, Kingsland Parade and Dalkin Crescent.*
4. *No accidents have been recorded at the intersection of Dalkin Crescent and Kingsland Parade.*

It is noted that of the accidents recorded at the intersection of Clarrie Hermes Drive and Kingsland Parade, 58% were recorded to be rear end related (the most common crash type). Information as provided by the ACT Government does not allow a root cause for these accidents to be identified nor potential improvements to the area to be recommended. This would need to be completed as a separate study to this TIA.

It is noted that of the accidents recorded at the midblock of Kingsland Parade between Bentley Place and Dalkin Crescent, 42% were recorded to be related to leaving parking spaces (the most common crash type). Information as provided by the ACT Government does not allow a root cause for these accidents to be identified nor potential improvements to the area to be recommended. This would need to be completed as a separate study to this TIA.

Under the Federal Government's Black Spot Program, for an area to be defined as a Black Spot Road (midblock or intersection) requiring modification, the road in question is required to meet the following condition:

"For individual sites such as intersections, mid-block or short road sections, there should be a history of at least three casualty crashes over a five-year period. For lengths of road, there should be an average of 0.2 casualty crashes per kilometre per annum over the length in question over five years."

In line with the data presented in Table 12, there are no black spots along Clarrie Hermes Drive, Bentley Place, Kingsland Parade and Dalkin Crescent.

4. Proposed Development

4.1 Development Description

4.1.1 ACT Amendments to Development

The following yield calaculations show the original development proposal compared to the revised proposal that came out of the ACAT process.

YIELD CALCULATION		
UNIT TYPE	NO. UNITS	% OF UNITS
1BED	12	7.1%
2BED	91	53.5%
2BED ST	31	18.2%
3BED	13	7.6%
3BED ST	6	3.5%
COMMERCIAL	13	7.6%
STUDIO	4	2.4%
TOTAL NO. OF UNITS: 170	170	100.0%

YIELD CALCULATION		
UNIT TYPE	NO. UNITS	% OF UNITS
1BED	12	7.7%
2BED	83	53.2%
2BED ST	27	17.3%
3BED	11	7.1%
3BED ST	6	3.8%
COMMERCIAL	13	8.3%
STUDIO	4	2.6%
TOTAL NO. OF UNITS: 156	156	100.0%

4.1.2 Proposed Development

In line with Cox Architecture drawing DA-01-02 Revision 5 dated 05/03/2024, the development is a mixed-use building which contains the following:

- 4 x studio apartments;
- 12 x 1 bedroom apartments;
- 83 x 2 bedroom apartments;
- 27 x 2 bedroom apartments with a study;
- 11 x 3 bedroom apartments;
- 6 x 3 bedroom apartments with a study;
- 13 adaptive commercial apartments (for the purpose of this study, they have been taken for office space); and
- 1,087m2 of retail space.

Northrop understand that the retail will be a split of approximately 487m2 shop style tenancies, 400m2 office style tenancies and 200m2 café/restaurant style tenancies.

The GFA of the adaptive commercial units is 1,359m2. Northrop understand that the adaptive commercial will be office space.

4.2 Access

4.2.1 Driveway

Driveway access to the proposed development is off Bentley Place.

With the arrangement of the site in line with Cox Architecture drawings DA-20-04 Rev 4 (05/03/2024) and DA-20-03 Rev 5 (05/03/2024), there is approximate 70m between the block boundary and the basement parking control point. This exceeds the requirements of AS2890.1 for minimum queue lengths at a car park with a control point at the entrance.

4.3 Compliance to Relevant Standards

Sellick Consultants have provided a carpark compliance check mark up which can be found in Appendix D.

The car park compliance review has been completed against AS2890.1.

Sellick Consultants have assumed all spaces are User class 1 or 1A noting that all spaces have been nominated to be 2.4m wide.

In addition, the carpark compliance check mark up, Northrop note that there is currently sufficient head clearance for vehicle. The design team is to ensure this is maintained through the design process after the development application.

4.4 Traffic Generation

The peak traffic generation has been based on the:

- ACT Government Environment and Sustainable Development Estate Development Code (28 August, 2020);
- RTA Guide to Traffic Generating Developments Version 2.2 (October, 2022); and
- NSW Government Transport Roads and Maritime Services Guide to Traffic Generating Developments Updated Traffic Surveys TDT 2013/04a (August, 2013).

The ACT Government Environment and Sustainable Development Estate Development Code (26 August, 2020) advises multiunit dwellings generate 6 vehicle movements per day per dwelling. As the code is silent on peak hour traffic generation and other type of peak vehicle generation, we have referred to the RTA Guide to Traffic Generating Developments Version 2.2 (October, 2022) and the NSW Government Transport Roads and Maritime Services Guide to Traffic Generating Developments Updated Traffic Surveys TDT 2013/04a (August, 2013).

The RTA Guide to Traffic Generating Developments Version 2.2 (October, 2022) provides traffic generation rates for restaurants (which also reflect a similar behaviour to cafes).

The NSW Government Transport Roads and Maritime Services Guide to Traffic Generating Developments Updated Traffic Surveys TDT 2013/04a (August, 2013) provides traffic generation rates for high density residential flat dwellings, office blocks and retail (assumed shopping centre in nature due to shops in vicinity of the development).

It is noted that for the purpose of this TIA and the traffic generation, the commercial adaptive units will be classified as office space.

The traffic generation from the development is summarized in Table 13.

Table 13 Development Traffic Generation

Usage	No. of	Peak Generation Rate[3]	Peak Traffic	Daily Traffic Generation[3]	Daily Traffic
Residential	143	0.67 vehicle trips/unit[1]	96	6 vehicle trips/unit[3]	858
Restaurant/ Café	200m2	5 vehicle trips /100m2 GFA[2]	10	60 vehicle trips/100m2 GFA[2]	120
Office	1,759m2	1.57 vehicle trips/100m2 GFA[1]	28	18.17 vehicle trips/100m2 GFA[1]	247
Shop	487m2	6.99 vehicle trips/100m2 GFA	34	60.67 vehicle trips/100m2 GFA[1]	296

1. As per NSW Government Transport Roads and Maritime Services Guide to Traffic Generating Developments Updated Traffic Surveys TDT 2013/04a (August, 2013) using the most conservative regional value.
2. As per RTA Guide to Traffic Generating Developments Version 2.2 (October, 2022).
3. As per the ACT Government Environment and Sustainable Development Estate Development Code (26 August, 2020).

4.5 Traffic Distribution

As per section 3.4.1 of this report, the weekday peak hour periods for the intersection of Kingsland Parade and Bentley Place are:

- 8:00am – 9:00am; and
- 5:15pm – 6:15pm.

During the am peak period, it would be assumed the development would have 20% incoming traffic and 80% outgoing traffic.

During the pm peak period, it would be assumed the development would have 80% incoming traffic and 20% outgoing traffic.

With the acknowledgement of likely origins and destinations for vehicles in close proximity to the proposed development site, the following traffic distribution has been modelled as per Figure 19, Figure 20 and Figure 21. The traffic distribution shown in Figure 19 has taken into consideration the following sites which represent a local shopping hub, major public transport hub, education and the typical work locations in Canberra. It has been assumed that most drivers will travel East along Clarrie Hermes Drive to travel towards City/Belconnen/Woden/Fyshwick/Tuggernong:

- Gungahlin to the East;
- Gold Creek Highschool to the South;
- St John Paul II College to the South;
- Ngunnawal Primary School to the North East;

- City/Belconnen/Woden/Fyshwick/Tuggernong to the South.

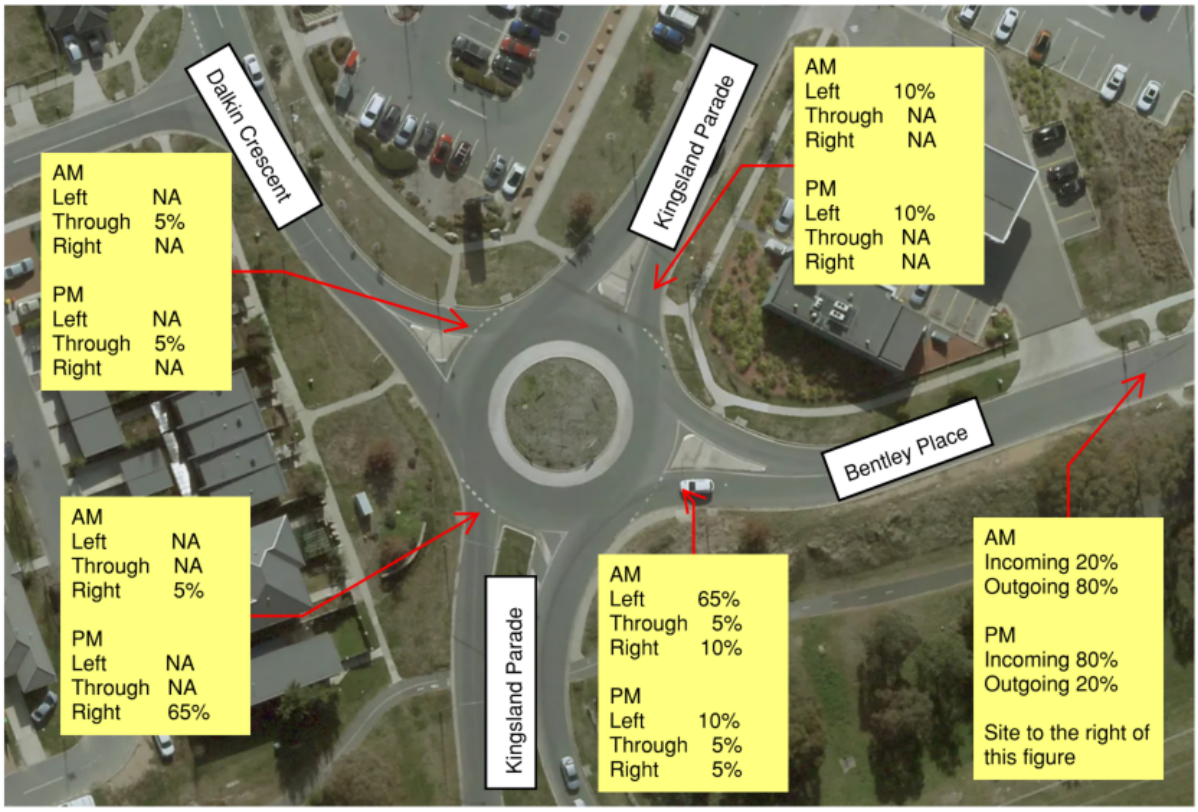


Figure 19 Proposed Development Traffic Distribution – Intersection of Kingsland Parade and Bentley Place

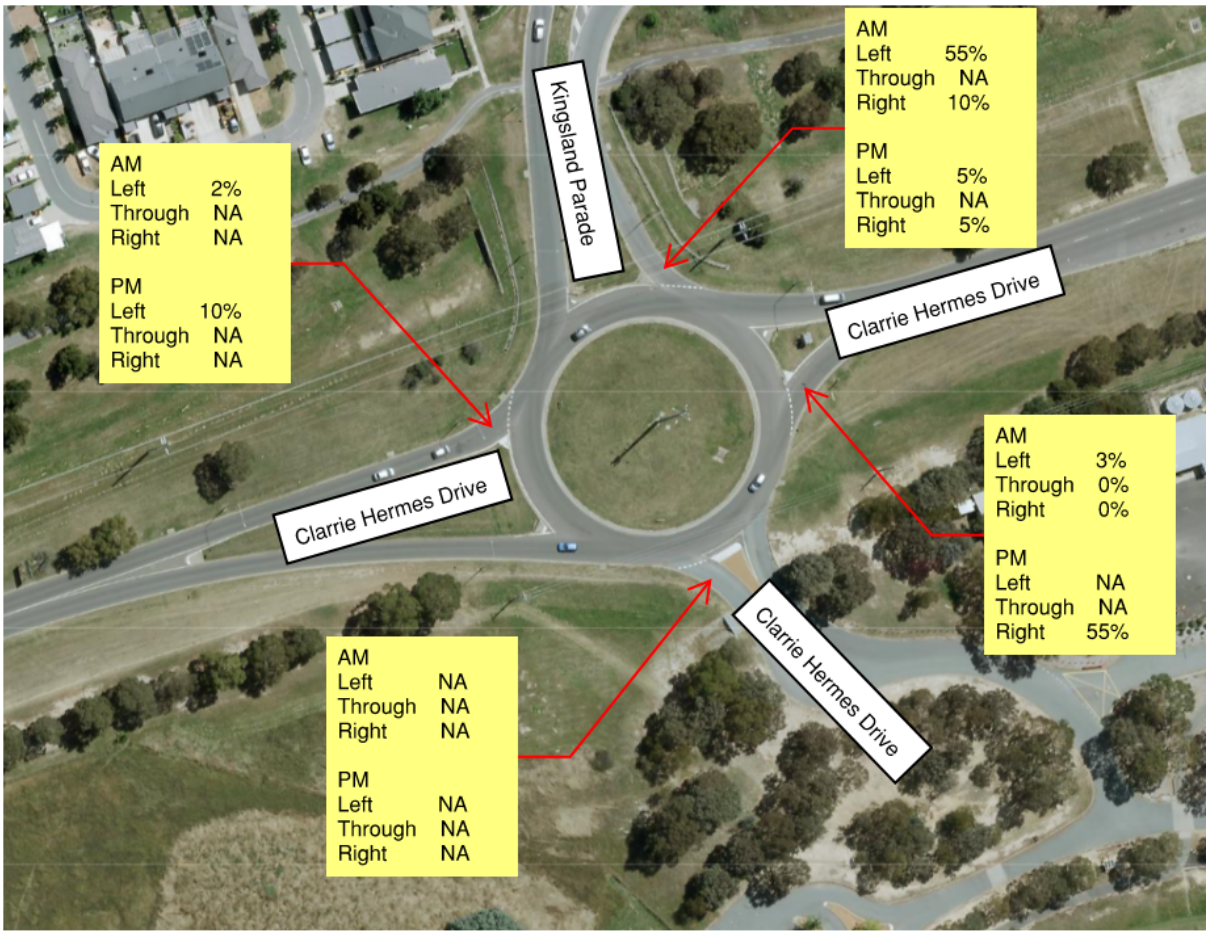


Figure 20 Proposed Development Traffic Distribution - Intersection of Clarrie Hermes Drive and Kingsland Parade

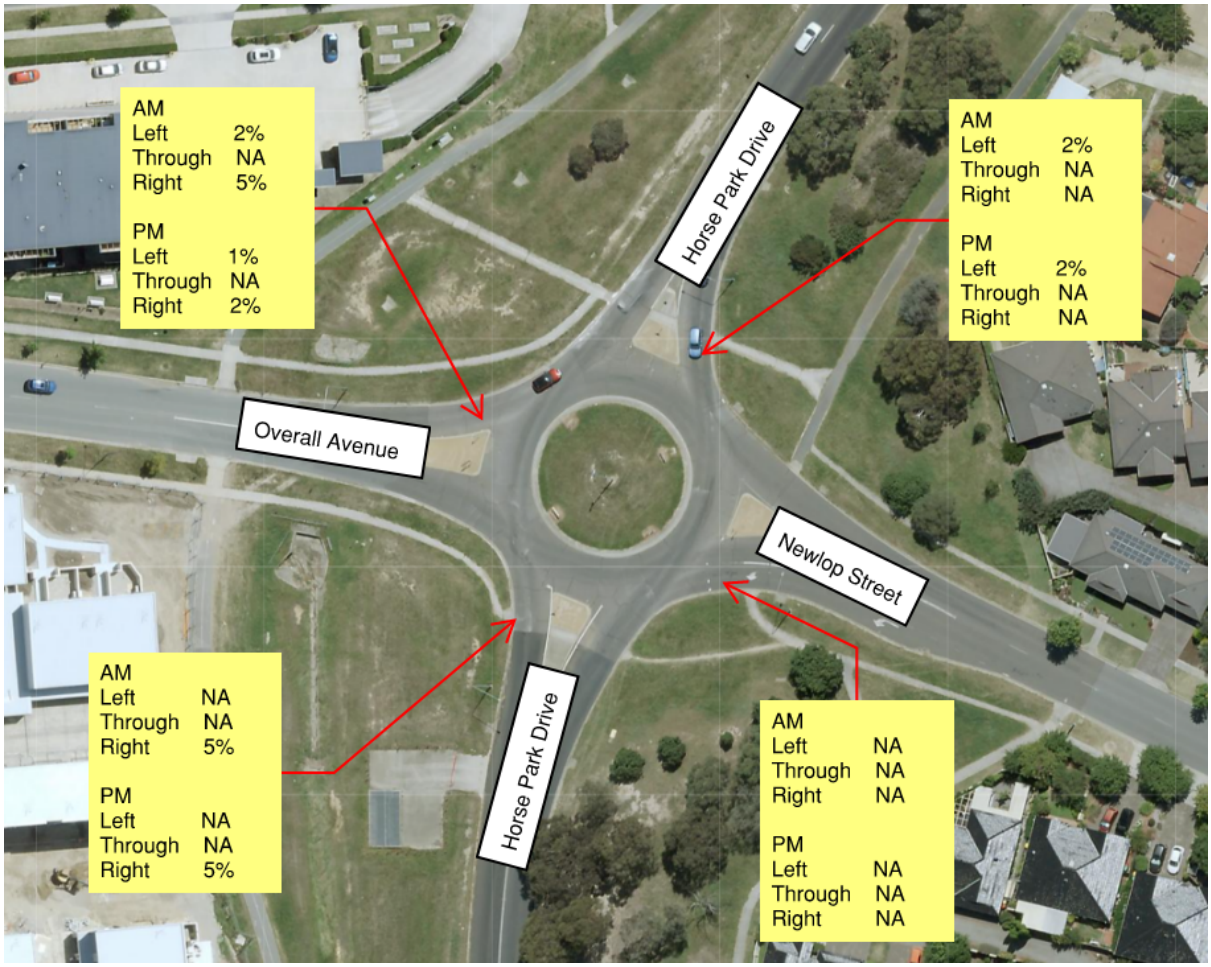


Figure 21 Proposed Development Traffic Distribution - Intersection of Horse Park Drive and Overall Avenue

4.6 Traffic Modal Split

The proposed development generally will generate passenger vehicle trips based on its residential component.

It is acknowledged there will be heavy vehicle trips which service both the residential and commercial aspects of the development, however due to the anticipated small number of trips for heavy vehicles, these have not further been considered for modelling purposes.

4.7 Traffic Impact

The performance of the key intersections have been reviewed for the development conditions and the future conditions.

For the purpose of this TIA, it has been assumed that the development year will be 2024 and the future conditions will be modelled in 2034.

The increase in traffic on the roads will increase by 2% per year as per the ACT Government TCCS Guidelines for Transport Impact Assessment (Version 3.1, April 2020).

4.7.1 Development Conditions

4.7.1.1 Development Traffic Conditions at the Intersection of Kingsland Parade, Dalkin Crescent and Bentley Place

The intersection of Kingsland Parade and Bentley Place has been modelled using SIDRA Intersection 9.1 for the development conditions (2024).

A summary of the results is available in Table 14.

Table 14 SIDRA Intersection Results for the Development Case

Road	Leg	Period	LOS	DOS	Average Queue Length (m)	Average Delay (s)
Kingsland Parade	North	AM	A	0.19	3	2.1
		PM	A	0.23	4	2.8
Bentley Place	East	AM	A	0.24	3	3.5
		PM	A	0.23	3	3.6
Kingsland Parade	South	AM	A	0.17	3	2.0
		PM	A	0.44	9	3.0
Dalkin Crescent	West	AM	A	0.09	1	5.7
		PM	A	0.10	2	7.0

From the results in Table 14, it can be seen that the intersection has good operation. The results in Table 14 indicate the development has an impact on the operation of the roundabout (refer to the results in Table 8), however the roundabout is in line with the ACT Government TCCS Guidelines for Transport Impact Assessment (Version 3.1, April 2020).

The ACAT changes had a minor impact decreasing the degree of saturation on all approaches, very minor impact on reducing queue lengths on two legs in the morning peak and a minor impact on reducing delays on the East, South and West legs.

4.7.1.2 *Development Traffic Conditions at the Intersection of Kingsland Parade and Clarrie Hermes Drive*

The intersection of Kingsland Parade and Clarrie Hermes Drive has been modelled using SIDRA Intersection 9.1 for the development conditions (2024).

A summary of the results is available in Table 15.

Table 15 SIDRA Intersection Results for the Development Case

Road	Leg	Period	LOS	DOS	Average Queue Length (m)	Average Delay (s)
Kingsland Parade	North	AM	A	0.57	13	8.5
		PM	A	0.47	11	6.6
Clarrie Hermes Drive	East	AM	F	1.09	181	98.1
		PM	A	0.65	17	8.3
Clarrie Hermes Drive	South	AM	A	0.05	1	8.4
		PM	A	0.03	1	9.5
Clarrie Hermes Drive	West	AM	A	0.42	9	5.2
		PM	A	0.69	21	7.3

From the results in Table 15, it can be seen that the intersection's performance has reduced from the current conditions. This is most notable for the Eastern leg of the intersection in the AM peak.

It is noted that the traffic not associated with the development has increased at the intersection for the period modelled in comparison with the current condition modelled in section 3.4.2.2.3 of this report.

The ACAT changes had a minor impact decreasing the degree of saturation on almost all approaches, decreasing the queue lengths on almost all approaches both in the morning and afternoon peaks. Similarly the average delays were decreased on almost all legs in the morning and afternoon peak.

As the roundabout is already over capacity as per the current condition modelled, small increases of traffic to the roundabout can disproportionately increase the delay experienced at the intersection (refer section 4.2.2 of the RTA Guide to Traffic Generating Developments Version 2.2 (October, 2022)).

Northrop recommends that Roads ACT complete a study on the intersection to review the wider network issues in relation to the intersection of Kingsland Parade and Clarrie Hermes Drive separate to this TIA and implement appropriate outcomes as identified by their study.

4.7.1.3 *Development Traffic Conditions at the Intersection of Horse Park Drive and Overall Avenue*

The intersection of Horse Park Drive and Overall Avenue has been modelled using SIDRA Intersection 9.1 for the development conditions (2024).

A summary of the results is available in Table 16.

Table 16 SIDRA Intersection Results for the Development Case

Road	Leg	Period	LOS	DOS	Average Queue Length (m)	Average Delay (s)
Horse Park Drive	North	AM	B	0.89	56	16.5
		PM	A	0.56	13	9.3
Newlop Street	East	AM	B	0.30	8	15.8
		PM	A	0.11	2	6.6
Horse Park Drive	South	AM	A	0.58	15	10.1
		PM	B	0.89	54	16.5
Overall Avenue	West	AM	A	0.38	7	7.4
		PM	A	0.59	17	11.9

From the results in Table 16, it can be seen that the intersection is operating good with acceptable delays and spare capacity. The results in Table 16 indicate the development has an impact on the operation of the roundabout (refer to Table 10), however the roundabout is in line with the ACT Government TCCS Guidelines for Transport Impact Assessment (Version 3.1, April 2020).

The ACAT changes had a minor impact decreasing the degree of saturation on all approaches, decreasing the queue lengths on all approaches both in the morning and afternoon peaks. Similarly, the average delays were decreased on all legs in the morning and afternoon peak.

4.7.2 Future Conditions

4.7.2.1 Future Traffic Conditions at the Intersection of Kingsland Parade, Dalkin Crescent and Bentley Place

The intersection of Kingsland Parade and Bentley Place has been modelled using SIDRA Intersection 9.1 for the future conditions (2034).

For the purpose of the future conditions, the development traffic generation has remained the same as the 2024 model with the external traffic being increased by the 2% growth factor only.

A summary of the results is available in Table 17.

Table 17 SIDRA Intersection Results for the Future Case

Road	Leg	Period	LOS	DOS	Average Queue Length (m)	Average Delay (s)
Kingsland Parade	North	AM	A	0.24	4	2.2
		PM	A	0.29	5	2.9
Bentley Place	East	AM	A	0.28	4	4.0
		PM	A	0.29	5	4.0
Kingsland Parade	South	AM	A	0.21	3	2.1
		PM	A	0.55	13	3.2
Dalkin Crescent	West	AM	A	0.12	2	6.1
		PM	A	0.14	3	8.4

From the results in Table 17, it can be seen that the intersection has good operation in the future case modelled inclusive of the development traffic.

The ACAT changes had a very minor impacts on the results generally.

4.7.2.2 *Future Traffic Conditions at the Intersection of Kingsland Parade and Clarrie Hermes Drive*

The intersection of Kingsland Parade and Clarrie Hermes Drive has been modelled using SIDRA Intersection 9.1 for the future conditions (2034).

For the purpose of the future conditions, the development traffic generation has remained the same as the 2024 model with the external traffic being increased by the 2% growth factor only.

A summary of the results is available in Table 18.

Table 18 SIDRA Intersection Results for the Future Case

Road	Leg	Period	LOS	DOS	Average Queue Length (m)	Average Delay (s)
Kingsland Parade	North	AM	B	0.82	33	21.3
		PM	B	0.86	44	26.9
Clarrie Hermes Drive	East	AM	F	1.32	476	302.4
		PM	A	0.88	49	12.9
Clarrie Hermes Drive	South	AM	A	0.07	1	9.1
		PM	B	0.09	2	18.8
Clarrie Hermes Drive	West	AM	A	0.54	13	5.3
		PM	B	0.96	92	21.2

From the results in Table 18 , it can be seen that the intersection modelled is over capacity in the AM period in the future case modelled inclusive of the development traffic. The PM period in the future period shows the that the intersection modelled has good operation with acceptable delays and spare capacity.

The ACAT changes had a very minor impacts on the results generally.

4.7.2.3 *Development Traffic Conditions at the Intersection of Horse Park Drive and Overall Avenue*

The intersection of Horse Park Drive and Overall Avenue has been modelled using SIDRA Intersection 9.1 for the future conditions (2034).

For the purpose of the future conditions, the development traffic generation has remained the same as the 2023 model with the external traffic being increased by the 2% growth factor only.

A summary of the results is available in Table 19.

Table 19 SIDRA Intersection Results for the Future Case

Road	Leg	Period	LOS	DOS	Average Queue Length (m)	Average Delay (s)
Horse Park Drive	North	AM	F	1.25	529	239.1
		PM	A	0.76	29	12.3
Newlop Street	East	AM	B	0.45	13	23.4
		PM	A	0.20	5	9.0
Horse Park Drive	South	AM	A	0.78	31	14.5
		PM	F	1.26	508	247.7
Overall Avenue	West	AM	A	0.57	15	10.0
		PM	B	0.80	31	20.2

From the results in Table 19, it can be seen that the intersection is over capacity due to the increased delays along Horse Park Drive. Due to the limited and consistent traffic generated from the proposed development, the saturation of the intersections would be from traffic generation from other origins and destinations.

The ACAT changes had a very minor impacts on the results generally.

4.8 Parking

4.8.1 Car Parking

Car parking generation has been reviewed for both the residential and commercial aspects for the building.

4.8.1.1 Residential Car Parking Required

The ACT Planning & Land Authority Parking and Vehicular Access General Code (17 June, 2022) was reviewed to determine the number of car parking spaces required for the residential parking. As the block is located with a CZ1: Core Zone, the following car parking generation rates apply:

- One (1) parking space per single bedroom dwelling; and
- A minimum average provision of 1.5 spaces per two bedroom dwelling, provided that each two bedroom dwelling is allocated a minimum of one (1) parking space and each two (2) bedroom dwelling is allocated no more than two (2) parking spaces; or
- Two (2) parking spaces per two bedroom dwelling; and
- Two (2) parking spaces for each dwelling with three or more bedrooms; plus
- One (1) visitor space per four (4) dwellings or part thereof where a complex comprises four (4) or more dwellings.

Based upon the ACAT adjusted development the required number of parking spaces for the residential component of the development is:

> *16 x 1space (one bedroom / studios) + 110 x 1.5spaces (2 bedroom units) + 30 x 2spaces (3 bedroom and commercial units) = 16 + 165 + 60 = 241 spaces*

This results in 241 car parking spaces being required for the residents of the proposed development.

A total of 39 visitor car parking spaces are required for the development.

4.8.1.2 Commercial Car Parking Required

Northrop understand that the retail will be a split of approximately 478m2 shop style tenancies, 400m2 office style tenancies and 200m2 café/restaurant style tenancies.

The GFA of the adaptive commercial units is 641m2. Northrop understand that the adaptive commercial will be office space.

The ACT Planning & Land Authority Parking and Vehicular Access General Code (17 June, 2022) describes the car parking generation rates for these uses are as follows:

- Restaurant: 10 car parking spaces per 100m2 GFA;
- Office: 2.5 car parking spaces per 100m2 GFA; and
- Shop: 5 car parking spaces per 100m2 GFA.

Based on the areas for each use, 70 car parking spaces would be required for the commercial area of the development.

4.8.2 Car Parking Provided for the Development and Alternate Parking Locations

The proposed development contains 364 car parking spaces in line with drawing DA-01-02 revision 5 dated 05/03/2024 by Cox Architecture.

The total number of car parking spaces required for the development is 350 spaces.

For the purpose of this development, the residential visitor parking has been detailed as User class 1A.

Northrop note that visitors to the commercial tenancies for the development will not obtain access to the basement car park. Noting the ACT Planning & Land Authority Parking and Vehicular Access General Code (17 June, 2022) does not provide parking rates for visitors and operators for the above users, Northrop have assumed 50% of spaces provided will be for visitors (35 car parking spaces).

In line with Section 3.5 of this report, Block 10, Section 132 Casey will be able to accommodate the commercial visitor parking.

4.8.3 Motorcycle Parking

The ACT Planning & Land Authority Parking and Vehicular Access General Code (17 June, 2022) nominates that 3 dedicated motorcycle/motor scooter parking spaces are required per 100 car parking spaces.

Based on 364 car parking spaces within the development, it would be anticipated that 11 dedicated motorcycle/motor scooter parking spaces are provided.

The proposed development contains 11 motorcycle parking spaces in line with drawing DA-01-02 revision 5 dated 05/03/2024 by Cox Architecture.

4.8.4 Bicycle Parking

The ACT Planning & Land Authority Bicycle Parking General Code (October, 2013) was reviewed for the purpose of the proposed development. Based on this code, the following bicycle parking facilities are required:

- Residential – 1 per apartment (assumed in the storage cage of sufficient size or apartment);
- Residential visitor – 14 x class 3 spaces required;

We note that the individual commercial tenancies are unlikely to require class 1 bicycle parking, showers or lockers due to their individual sizes. If end of trip facilities are required for the commercial tenancies, the tenant is to allow for this in the fitout.

It is noted that the latest plans detail 8 bicycle parking spaces for visitors to the development, storage cages for the residents and 18 bicycle parking spaces within the basement which has a similar nature to class 2 bicycle parking (assuming these would be unavailable to the general public but will be available to residential visitors and employees).

5. Conclusion

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Jega to prepare a Traffic Impact Assessment (TIA) for the proposed development on Block 9 Section 132, Casey (referred to as to the subject site in this report).

This Traffic Impact Assessment Report has detailed the below:

- An introduction to the report and summary of the proposed development;
- A summary of the development site and nearby conditions;
- An investigation in the existing conditions of the site and key roads including:
  - Traffic Volumes and conditions at key intersections;
  - Public transport within the vicinity of the site;
  - Active travel within the vicinity of the site.
- A summary of the projected traffic and parking conditions from the proposed development and surrounding key roads and intersections including:
  - The trip generation, trip distribution, modal split and trip assignment for the site generated traffic;
  - The increase of traffic at the key intersections;
  - The car park generation on site against the amount of car parking required; and
  - Car park compliance commentary.
- A transportation analysis including:
  - Commentary on proposed site access locations;
  - Commentary on the SIDRA Intersections models completed by Northrop for the key intersections for the base case, development conditions and future conditions for the site; and
  - Commentary on the current accident data for the key roads near the site supplied from the Transport Canberra and City Services Directorate (TCCS).
- A summary of the findings regarding:
  - Site accessibility;
  - Transportation impacts; and
  - Parking impacts.

This conclusion details:

- A summary of the findings regarding:
  - Site accessibility;
  - Transportation impacts; and
  - Parking impacts.

The report has identified:

- The site access is off Bentley Place for both passenger vehicles and service vehicles;
- The site connects with active travel infrastructure which links the development with the greater Canberra region;
- There are 2 bus stops which are within close vicinity of the proposed development which provide connectivity to the area and Gungahlin Interchange. Gungahlin Interchange provides connectivity to City Interchange and Belconnen through Transport Canberra's Rapid Routes as well as providing connection to other bus routes;

- There are no black spots in close vicinity to the development;
- There is existing available car parking located on Block 10, Section 132 Casey and along Kingsland Parade which provides 418 car parking spaces and 21 motorcycle parking spaces to the area;
- The car park capacity survey undertaken for this report indicated there was at least 160 car parking spaces available in Block 10, Section 132 Casey during the busiest time surveyed;
- The intersection of Kingsland Parade and Bentley Place is at good operation at the base conditions, development conditions (2024) and future conditions (2034);
- The intersection of Clarrie Hermes Drive and Kingsland Parade operates good with acceptable delays and spare capacity in the AM peak period and has good operation in the PM peak period for the base conditions. For the development scenario (2024), the intersection is at capacity in the AM peak period and has good operation for the PM peak period. For the future scenario (2034), the intersection is over capacity in the AM peak period and operates good with acceptable delays and spare capacity in the PM peak period. Northrop recommends that Roads ACT complete a study on the conditions of the intersection of Kingsland Parade and Clarrie Hermes Drive separate to this TIA and implement appropriate outcomes as identified by their study;
- The intersection of Horse Park Drive and Overall Avenue is at good operation at the base conditions and development conditions (2024), however is at capacity for the future conditions (2034) due to the growth in traffic generation from origins and destinations other than the proposed development;
- The basement car park has capacity for 364 car parking spaces (which accounts for the parking generation for the development);
- Dedicated motorcycle/motor scooter parking spaces have been nominated on the architectural plans;
- Bicycle parking has been nominated for the proposed development for the residential component;
- If end of trip facilities are required for the commercial tenancies, the tenant is to allow for this in the fitout.

Appendix A Response to NOD

SAP House Level 6 224 Bunda Street (PO Box 213)
Canberra ACT 2608
02 6285 1822
canberra@northrop.com.au
ABN 81 094 433 100

CR220895_BC02

07 August, 2023

William Boughton
Jega
william@jega.com.au

Dear William,

Re: Block 9, Section 132 Casey Apartments
Response to the Notice of Decision

Northrop Consulting Engineers (Northrop) have prepared this letter to address the Transport Canberra and City Services (TCCS) Traffic Engineering related comments with the Notice of Decision (NOD) for DA Number: 202241107 dated 01/05/2023.

Northrop note items addressed in this letter have been reflected in report CR220895_EC02V2.0 as relevant.

This letter has listed the TCCS Traffic Engineering related comment in Bold Red text and Northrop's response in normal text.

Number referenced in this letter refer to the numbers from the NOD's Traffic Engineering related comments.

36. **Section 3.4.2, (pg. 15-19) – From the SIDRA outputs in the attachments, it appears that the intersections were modelled as individual sites and not as a network. Given that the intersections of Bentley Place/Kingsland Parade/Dalkin Crescent and Kingsland Parade/Clarrie Hermes Drive are within close proximity to each other, these intersections should be modelled as a network to better model traffic flow-on effects.**

    The intersections of Bentley Place/Kingsland Parade/Dalkin Crescent and Kingsland Parade/Clarrie Hermes Drive have been modelled as a network with results provided for individual intersections only. Refer to sections 3.4.2 and 4.7 of report CR220895_EC02V2.0.

37. **Section 3.4.2, (pg. 15-19) – It is not clear how well the SIDRA models developed to assess the base year conditions have been calibrated. For example, Table 9 shows that the intersection of Kingsland Parade and Clarrie Hermes Drive is operating at LOS A in both the AM and PM peak. However, the commentary outlines delays were observed based on site observations which is not apparent in the SIDRA results. Hence, the proponent is to outline if the base model has been calibrated and validated to reflect observed queue lengths and delays during the AM and PM peak periods.**

    The SIDRA models for the intersections and periods modelled of:

    - Kingsland Parade and Bentley Place AM;
    - Kingsland Parade and Bentley Place PM;
    - Kingsland Parade and Clarrie Hermes Drive PM;
    - Horse Park Drive and Overall Avenue AM;
    - Horse Park Drive and Overall Avenue PM;

    Have produced results reflective of the video footage of when the traffic survey was completed.

    Northrop undertook site observations to review the site conditions external to the intersection of Kingsland Parade and Clarrie Hermes Drive on 20/06/2023 and 28/06/2023 during the AM peak period.

Northrop have calibrated the model to the observations undertaken with details of the observations and calibration of the SIDRA Intersection model for the AM period provided in section 3.4.2.2.1 and 3.4.2.2.2 report CR220895_EC02V2.0.

38. Section 3.4.2, (pg. 15-19) – Why wasn't the Clarrie Hermes Drive/Overall Avenue/Kelleway Avenue intersection and the Gungahlin Drive/Clarrie Hermes Drive/Horse Park Drive intersection included in the analysis?

Northrop have outlined the condition of the intersection of Clarrie Hermes Drive and Overall Avenue within section 3.4.2.2 of the report. It is noted there was significant queuing along Overall Avenue displaying behaviour likening to the LOS of F as described in the RTA Guide to Traffic Generating Developments Version 2.2 (October, 2022) section 4.2 (i.e. significant queuing observed).

Northrop's observations note the roundabout is over capacity. As the roundabout is already over capacity, small increases of traffic to the roundabout can disproportionately increase the delay (refer section 4.2.2 of the RTA Guide to Traffic Generating Developments Version 2.2 (October, 2022)).

Modelling of the roundabout noting its current condition would provide an unreasonable outcome in terms of the impact of the development to the greater area.

Northrop recommends that Roads ACT complete a separate study to determine improvements to flow along Overall Avenue and Clarrie Hermes Drive and implement appropriate outcomes as identified.

The intersection of Gungahlin Drive, Clarrie Hermes Drive and Horse Park Drive is the intersection of 3 arterial roads (refer to the Active Travel Infrastructure Practitioner Tool accessed 19/07/2023). The project team assumes the arterial roads and intersection would have been designed to accommodate the predicted traffic loading of the area inclusive of new developments.

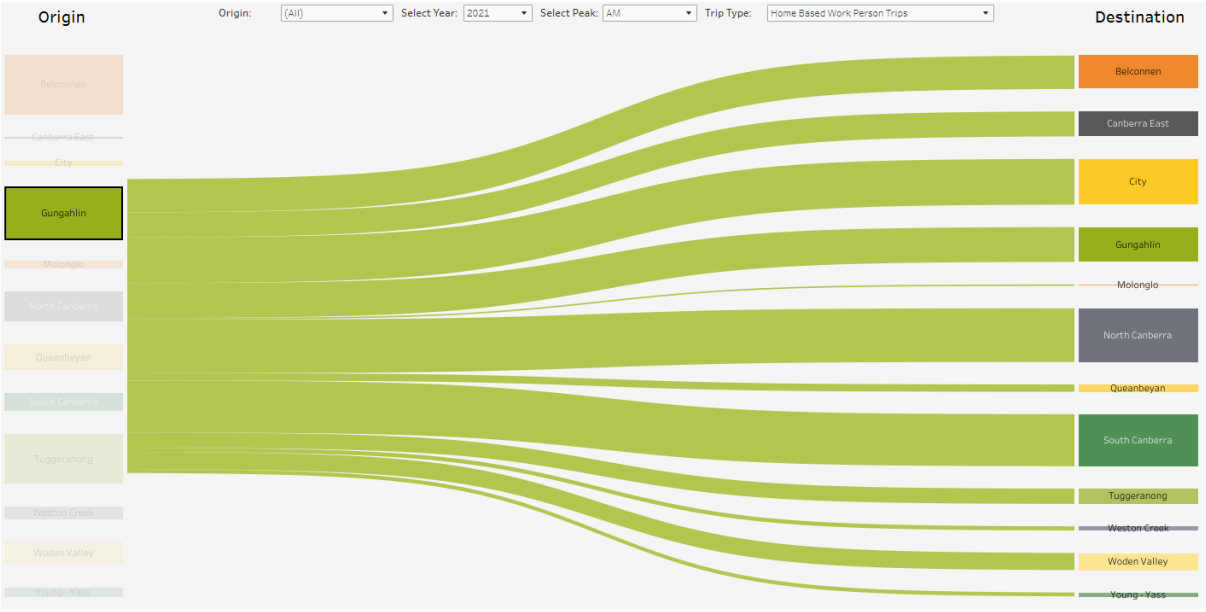
39. Section 4.3, pg. 27 – The proponent must undertake a carpark layout compliance check as per the requirements in AS2890.1. This includes a review of ramp grades, aisles widths, carpark dimensions and blind aisles.

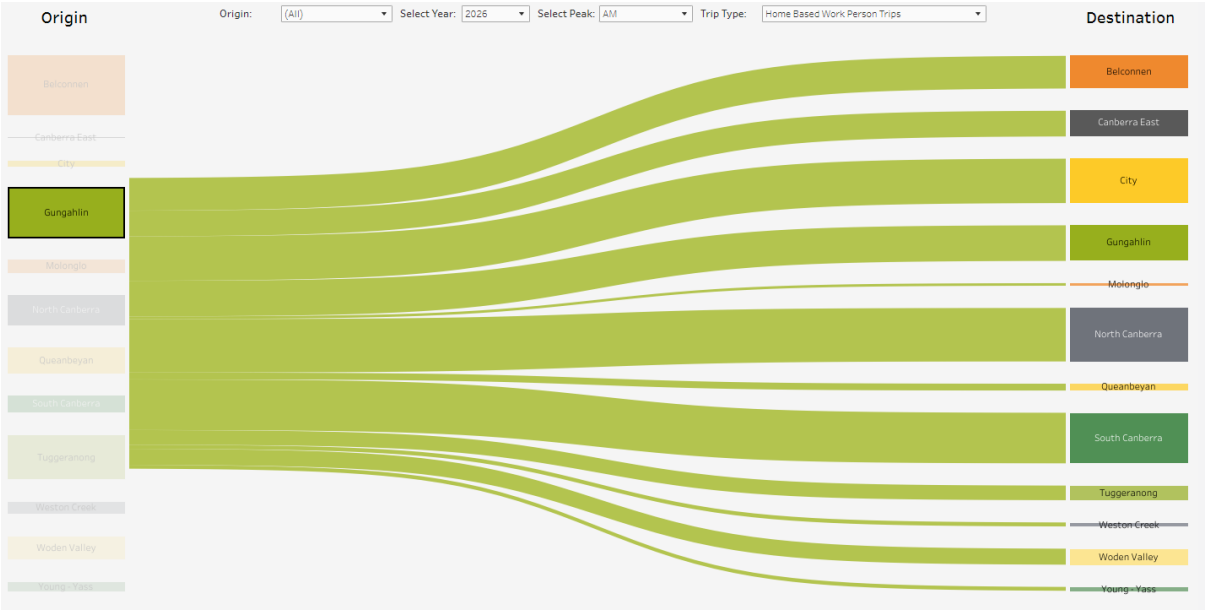
A carpark layout compliance review has been undertaken by the civil engineer for the works.

40. Section 4.5, (pg.28-31) – What were the traffic distribution assumptions and percentages based on? For example, was ABS Journey to Work data used to derive traffic distribution percentages?

Traffic information was generally based on major local hubs, major transport infrastructure and typical major work locations within the Territory.

For intersuburb travel, the traffic distributions generally align with the intent of the Canberra Strategic Transport Model (as viewed online at tableau public).

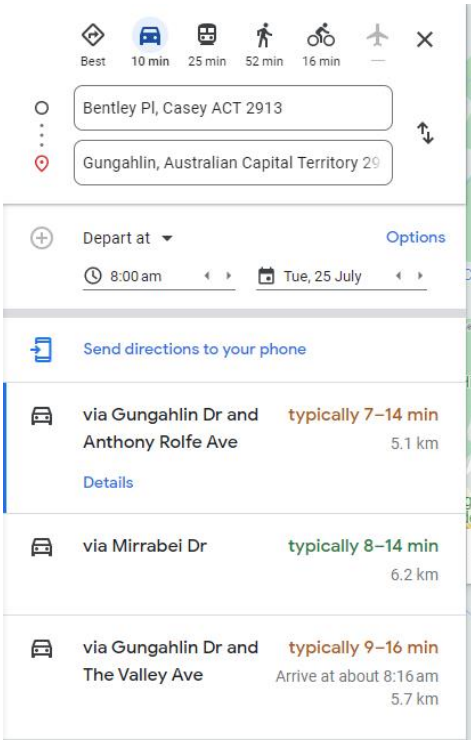


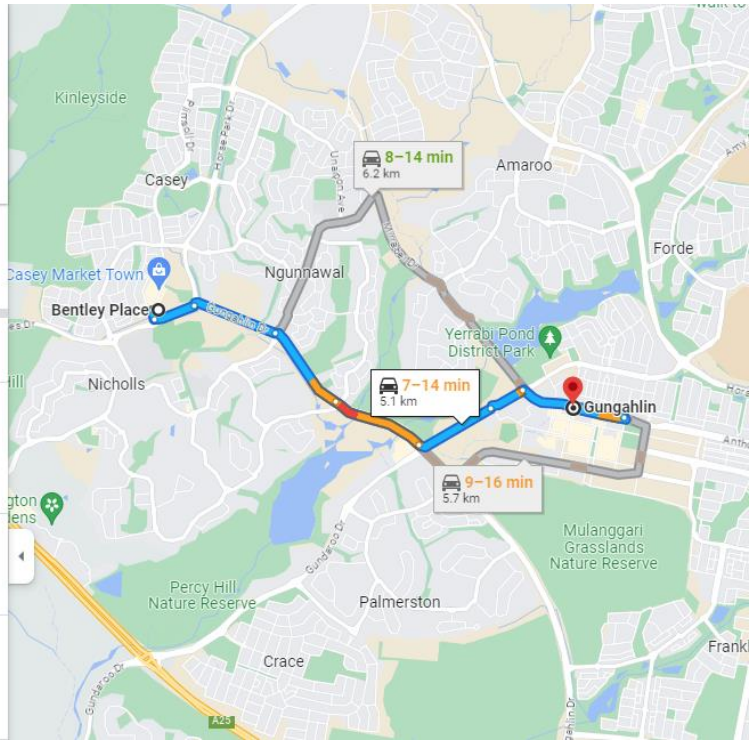


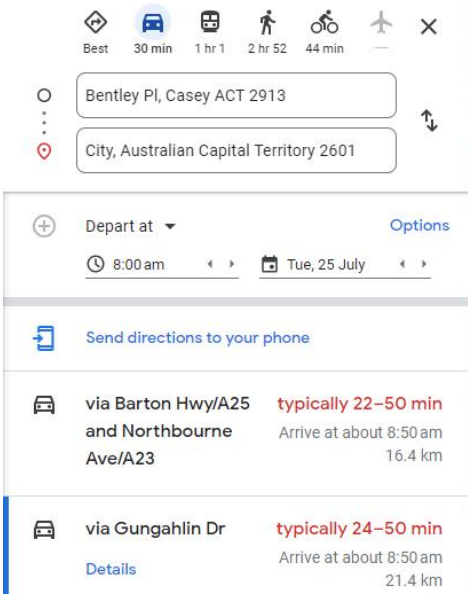
It has been assumed that most drivers would turn left when leaving the development due to the number of likely destinations North and West of the development.

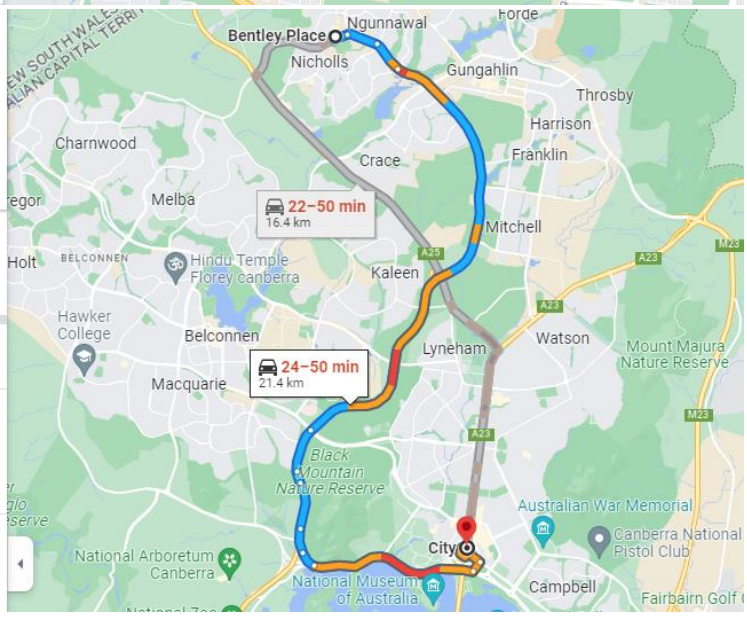
Site observations showed that there was major traffic congestion along Clarrie Hermes Drive between Kingsland Parade and Overall Avenue which would deter drivers from using this route (i.e. turning right at the intersection of Kingsland Parade and Clarrie Hermes Drive. This would deter most drivers from using this route.

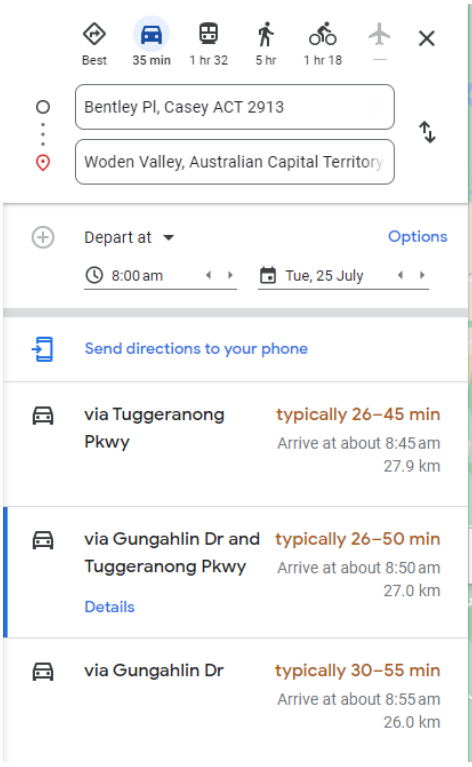
A review of Google Maps demonstrates there is limited difference to time for drivers with destinations within Gungahlin, City, Woden, Fyshwick, Tuggeranong, Belconnen and North Canberra (Dickson).

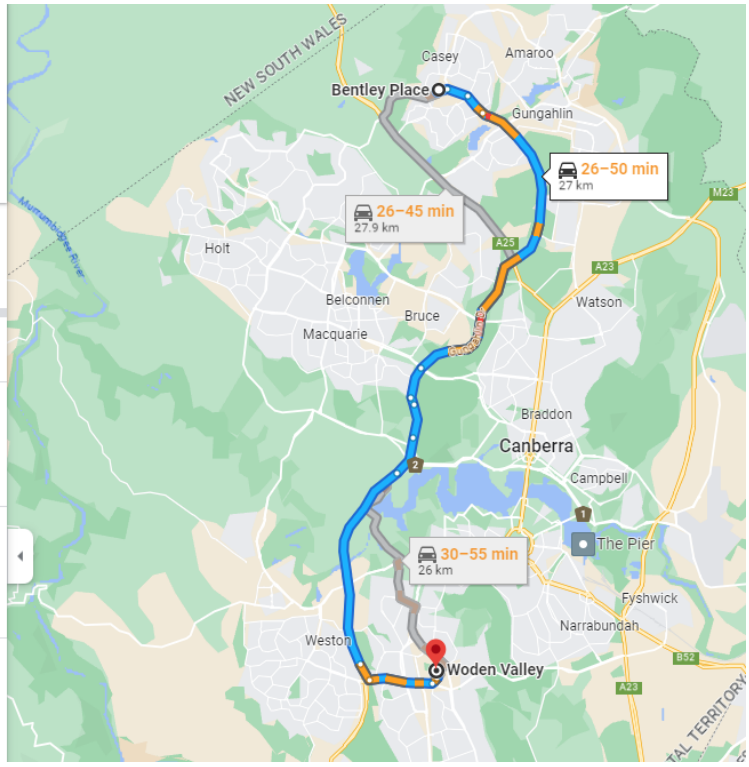

Best
10 min
25 min
52 min
16 min
Bentley Pl, Casey ACT 2913
Gungahlin, Australian Capital Territory 29
Depart at
Options
8:00 am
Tue, 25 July
Send directions to your phone
via Gungahlin Dr and Anthony Rolfe Ave
typically 7–14 min
5.1 km
Details
via Mirrabei Dr
typically 8–14 min
6.2 km
via Gungahlin Dr and The Valley Ave
typically 9–16 min
Arrive at about 8:16 am
5.7 km

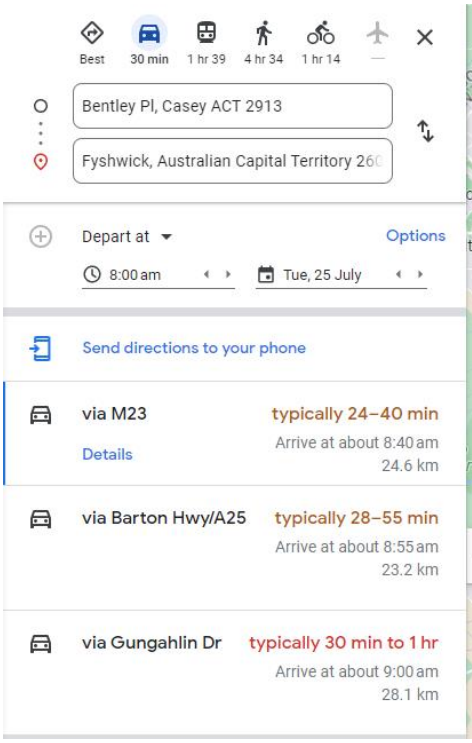

Kinleyside
Casey
8–14 min
6.2 km
Amaroo
Forde
Casey Market Town
Ngunnawal
Bentley Place
Yerrabi Pond District Park
Nicholls
7–14 min
5.1 km
Gungahlin
9–16 min
5.7 km
Mulanggari Grasslands Nature Reserve
Percy Hill Nature Reserve
Palmerston
Crace

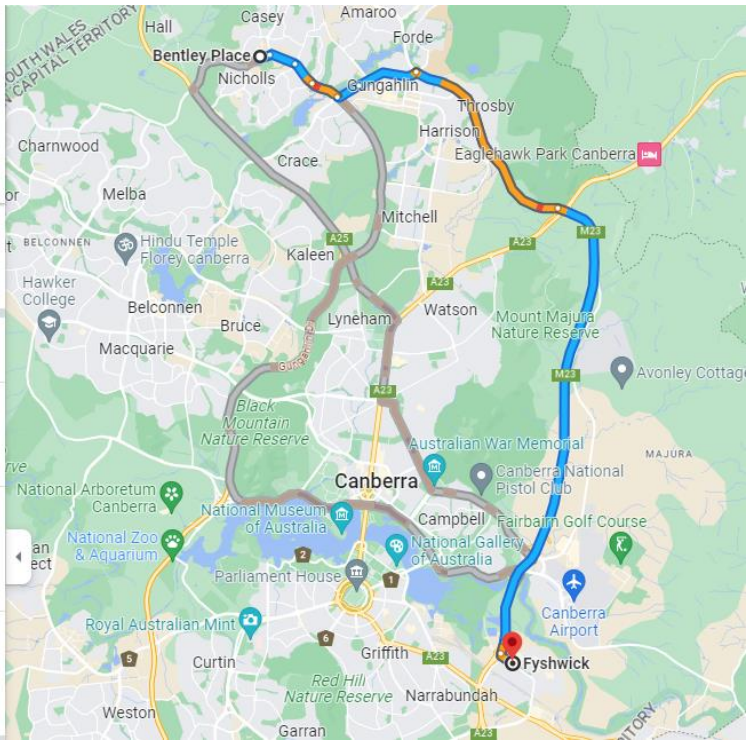

Best
30 min
1 hr 1
2 hr 52
44 min
Bentley Pl, Casey ACT 2913
City, Australian Capital Territory 2601
Depart at
Options
8:00 am
Tue, 25 July
Send directions to your phone
via Barton Hwy/A25 and Northbourne Ave/A23
typically 22–50 min
Arrive at about 8:50 am
16.4 km
via Gungahlin Dr
typically 24–50 min
Arrive at about 8:50 am
21.4 km
Details

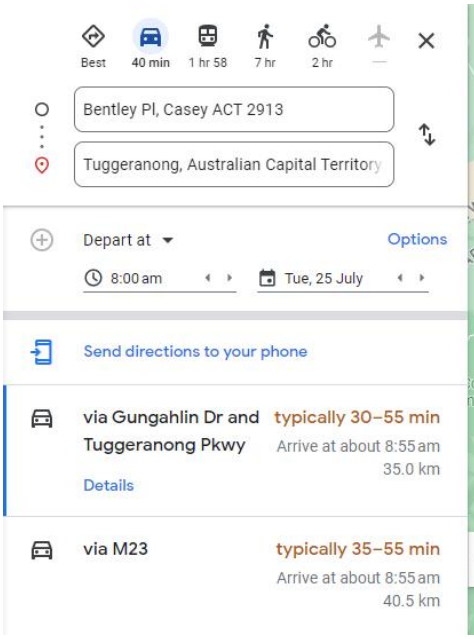

Bentley Place
Ngunnawal
Forde
Nicholls
Gungahlin
Throsby
Harrison
Charnwood
Franklin
Crace
Melba
22–50 min
16.4 km
Mitchell
Holt
Hindu Temple Florey canberra
Kaleen
Hawker College
Belconnen
Lyneham
Watson
Mount Majura Nature Reserve
Macquarie
24–50 min
21.4 km
Black Mountain Nature Reserve
Australian War Memorial
Canberra National Pistol Club
City
National Arboretum Canberra
National Museum of Australia
Campbell

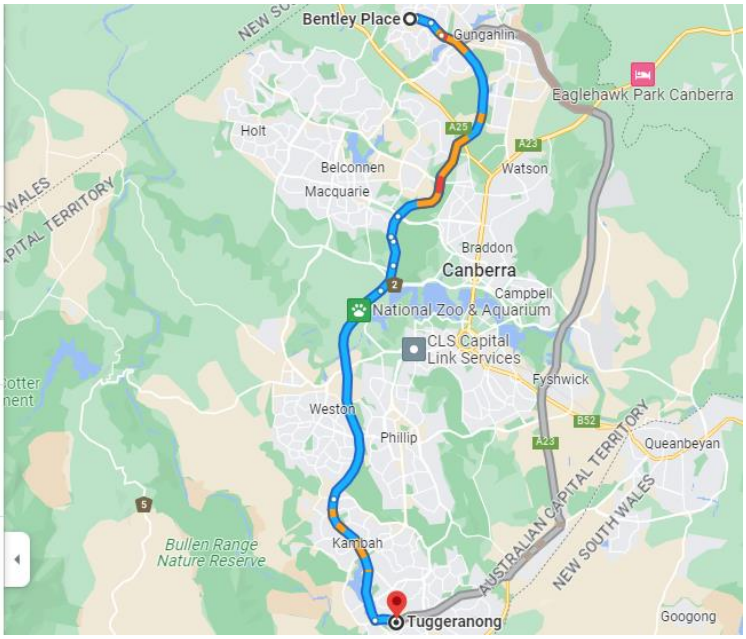

Best
35 min
1 hr 32
5 hr
1 hr 18
Bentley Pl, Casey ACT 2913
Woden Valley, Australian Capital Territory
Depart at
Options
8:00 am
Tue, 25 July
Send directions to your phone
via Tuggeranong Pkwy
typically 26–45 min
Arrive at about 8:45 am
27.9 km
via Gungahlin Dr and Tuggeranong Pkwy
typically 26–50 min
Arrive at about 8:50 am
27.0 km
Details
via Gungahlin Dr
typically 30–55 min
Arrive at about 8:55 am
26.0 km

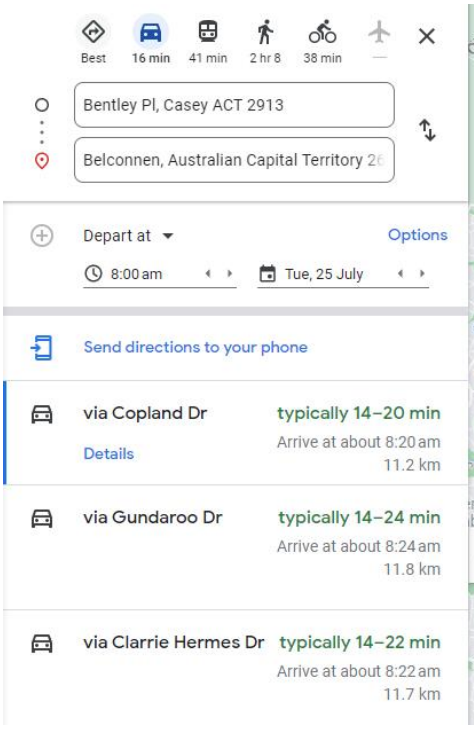

NEW SOUTH WALES
Casey
Amaroo
Bentley Place
Gungahlin
26–50 min
27 km
26–45 min
27.9 km
Holt
Belconnen
Bruce
Macquarie
Watson
Braddon
Canberra
Campbell
The Pier
30–55 min
26 km
Fyshwick
Narrabundah
Weston
Woden Valley

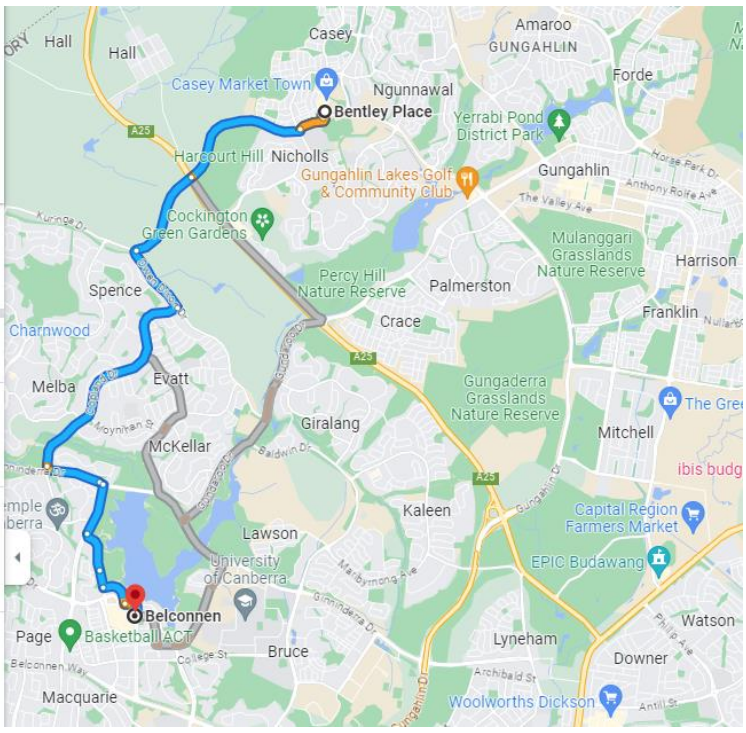

Best
30 min
1 hr 39
4 hr 34
1 hr 14
Bentley Pl, Casey ACT 2913
Fyshwick, Australian Capital Territory 26
Depart at
Options
8:00 am
Tue, 25 July
Send directions to your phone
via M23
typically 24–40 min
Arrive at about 8:40 am
24.6 km
Details
via Barton Hwy/A25
typically 28–55 min
Arrive at about 8:55 am
23.2 km
via Gungahlin Dr
typically 30 min to 1 hr
Arrive at about 9:00 am
28.1 km

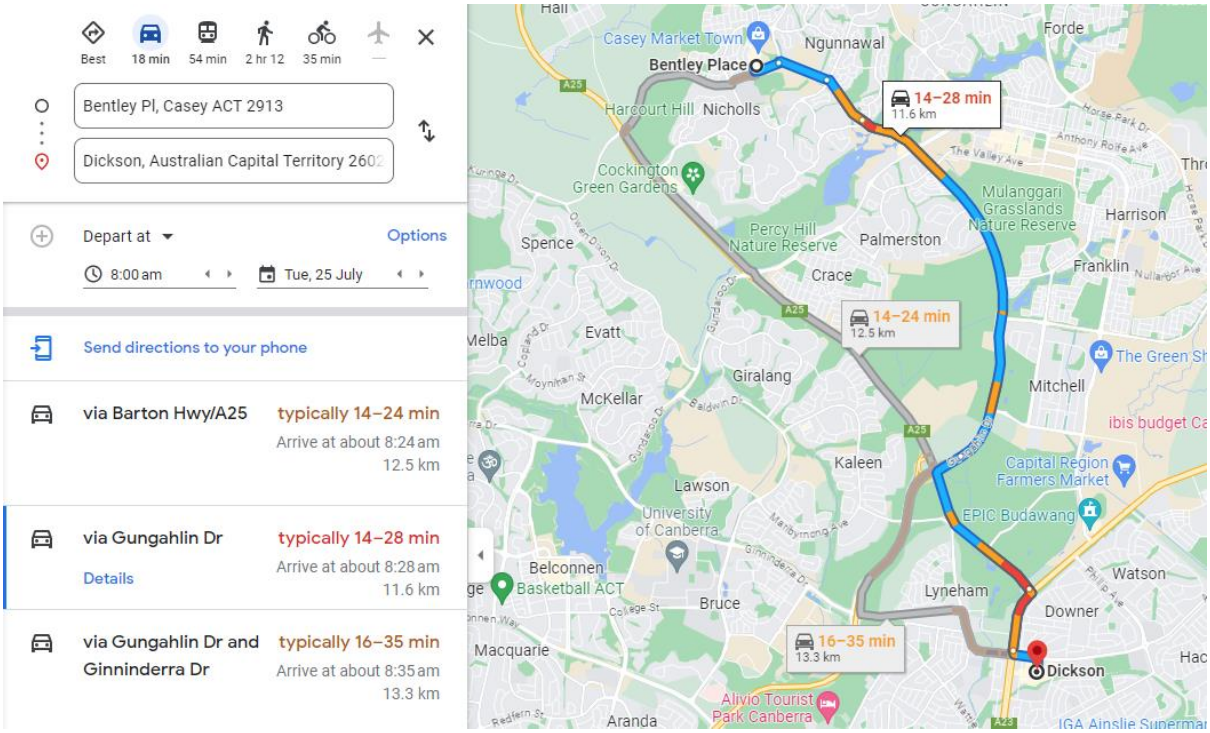

Hall
Casey
Amaroo
Forde
Bentley Place
Nicholls
Gungahlin
Throsby
Harrison
Charnwood
Crace
Eaglehawk Park Canberra
Melba
Mitchell
Hindu Temple Florey canberra
Kaleen
Hawker College
Belconnen
Bruce
Lyneham
Watson
Mount Majura Nature Reserve
Macquarie
Black Mountain Nature Reserve
Australian War Memorial
Canberra
Canberra National Pistol Club
National Arboretum Canberra
National Museum of Australia
Campbell
Fairbairn Golf Course
National Zoo & Aquarium
National Gallery of Australia
Parliament House
Canberra Airport
Royal Australian Mint
Curtin
Griffith
Fyshwick
Red Hill Nature Reserve
Narrabundah
Weston
Garran


Best
40 min
1 hr 58
7 hr
2 hr
Bentley Pl, Casey ACT 2913
Tuggeranong, Australian Capital Territory
Depart at
Options
8:00 am
Tue, 25 July
Send directions to your phone
via Gungahlin Dr and Tuggeranong Pkwy
typically 30–55 min
Arrive at about 8:55 am
35.0 km
Details
via M23
typically 35–55 min
Arrive at about 8:55 am
40.5 km

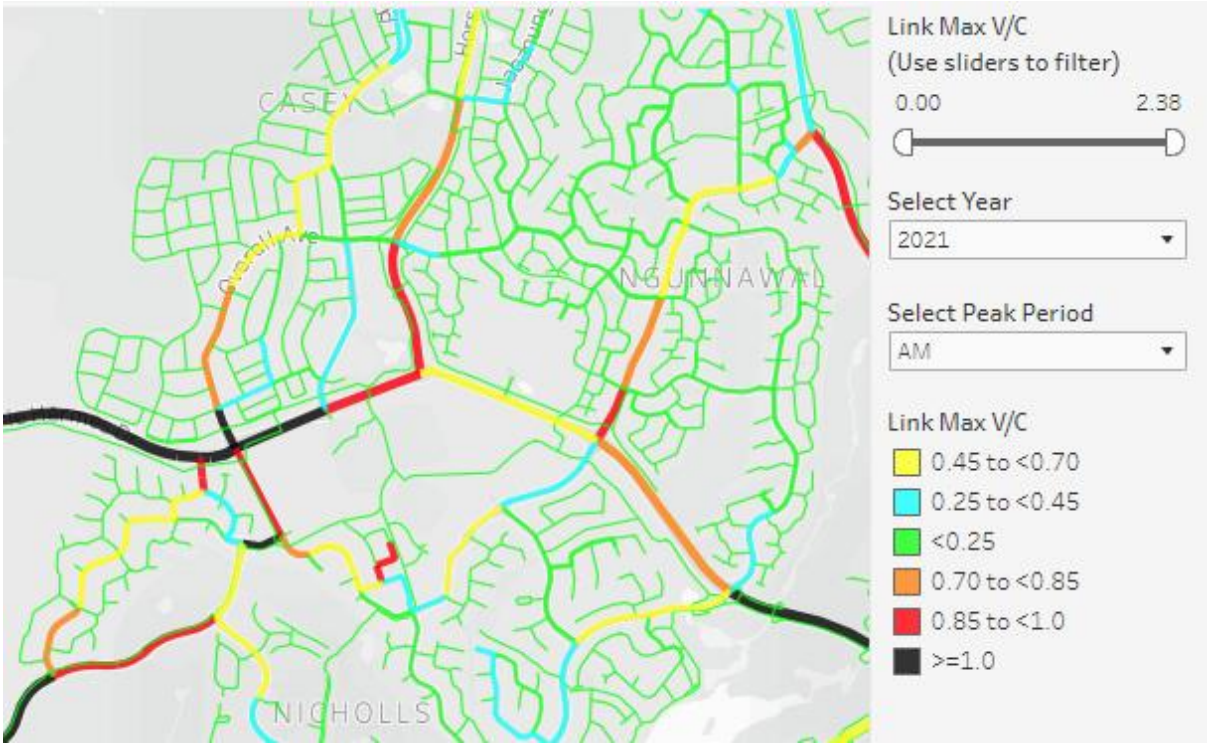

Bentley Place
Gungahlin
Eaglehawk Park Canberra
Holt
Belconnen
Macquarie
Watson
Braddon
Canberra
Campbell
National Zoo & Aquarium
CLS Capital Link Services
Fyshwick
Weston
Phillip
Queanbeyan
Bullen Range Nature Reserve
Kambah
Tuggeranong
Googong
AUSTRALIAN CAPITAL TERRITORY
NEW SOUTH WALES

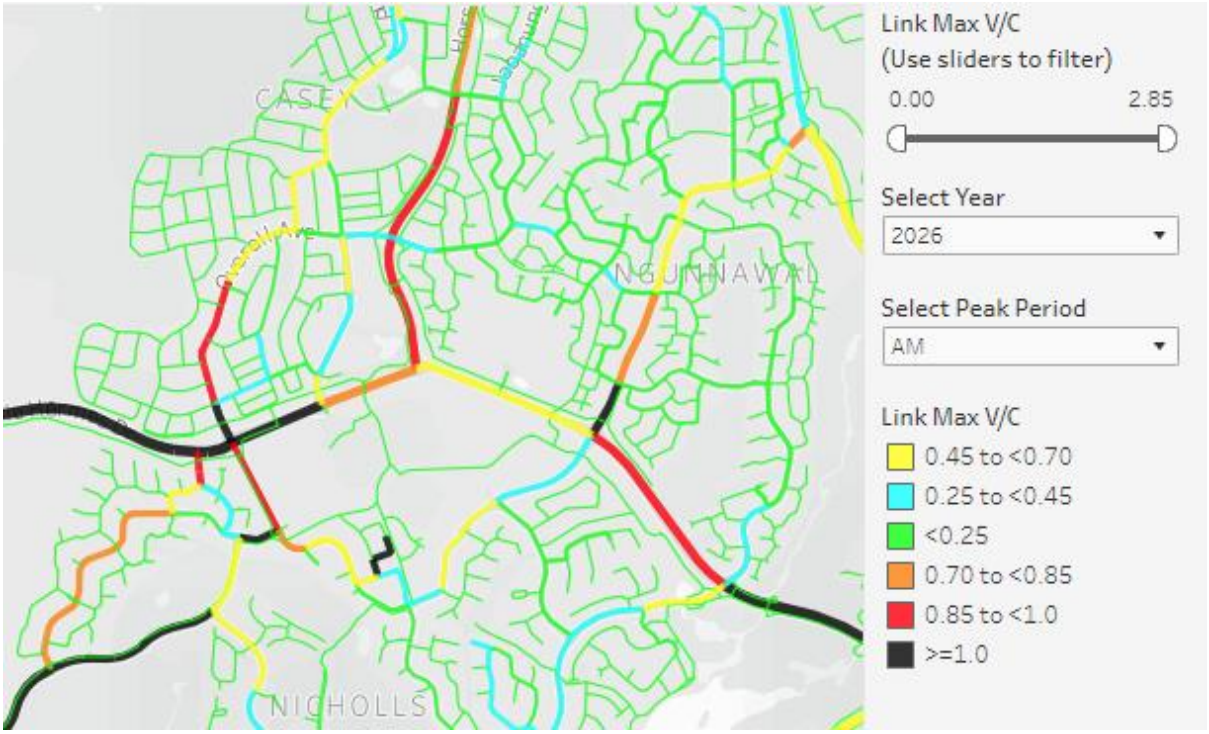

Best
16 min
41 min
2 hr 8
38 min
Bentley Pl, Casey ACT 2913
Belconnen, Australian Capital Territory
Depart at
Options
8:00 am
Tue, 25 July
Send directions to your phone
via Copland Dr
typically 14–20 min
Arrive at about 8:20 am
11.2 km
Details
via Gundaroo Dr
typically 14–24 min
Arrive at about 8:24 am
11.8 km
via Clarrie Hermes Dr
typically 14–22 min
Arrive at about 8:22 am
11.7 km


Hall
Casey
Amaroo
GUNGAHLIN
Forde
Casey Market Town
Ngunnawal
Bentley Place
Yerrabi Pond District Park
Harcourt Hill
Nicholls
Gungahlin Lakes Golf & Community Club
Gungahlin
Cockington Green Gardens
Mulanggari Grasslands Nature Reserve
Harrison
Spence
Percy Hill Nature Reserve
Palmerston
Franklin
Charnwood
Crace
Melba
Evatt
Gungaderra Grasslands Nature Reserve
Giralang
Mitchell
McKellar
Kaleen
Capital Region Farmers Market
Lawson
EPIC Budawang
University of Canberra
Belconnen
Page
Basketball ACT
Bruce
Lyneham
Watson
Downer
Macquarie
Woolworths Dickson



The Canberra Strategic Transport Model (as viewed online at tableau public) shows the 2021 model illustration that access to the West of the site along Clarrie Hermes Drive being over capacity for private vehicles. This is consistent with the 2026 model.





Based on the Google Maps review and the Canberra Strategic Transport Model (as viewed online at tableau public), there is not a major time difference between leaving the development and travelling East along Clarrie Hermes Drive rather than West and the predicted traffic along Clarrie Hermes Drive becomes worse to the West of the site in the midterm. Hence, the traffic distribution is reasonable for the purpose of the traffic impact assessment.

41. **Section 4.7.1-Section 4.7.2 (pg.32-37) – To determine if the development and future year model outputs are realistic, the accuracy of the base year models must first be determined. See point above regarding base year model calibration and validation.**

    Noted. See response to 37.

42. **Section 4.8.2, (pg.38) – TCCS appreciates the parking surveys undertaken as outlined in Section 3.5.3. Although the surveys show that currently, there is capacity to accommodate overflow parking, the reliance of 86 carparks at Block 10, Section 132 is significant. The Gungahlin region has been undergoing rapid expansion with the population expected to increase further. For example, the adjacent Blocks 12 and 13, Section 132 Casey are due for land release and those sites may also require a need for off-site public parking. Hence, the reliance on 86 spaces off-site spaces cannot be supported.**

    The development has been reduced in size and scale with the basement parking remaining the same quantum. This has allowed for all commercial long stay parking and residential parking to be catered for within the development.

    The project team has assumed short stay commercial parking will be catered for within Block 10, Section 132 Casey.

    As per the car parking survey undertaken and detailed in section 3.5.3 of the report, at the time of the survey there was 163 car parking spaces available. The required number of car parking for short term commercial parking is less than this (and less than the previously proposed 86 car parking spaces).

Prepared by,

Nicholas Grinter
Civil Engineer
MIEAust

Reviewed by:

Joey Wiltshire
Senior Civil Engineer
MIEAust

Appendix B SIDRA Results

USER REPORT FOR SITE

Project: 2023 ACAT Revision 1.3 Casey Apartments (02May24)

Template: Northrop Standard

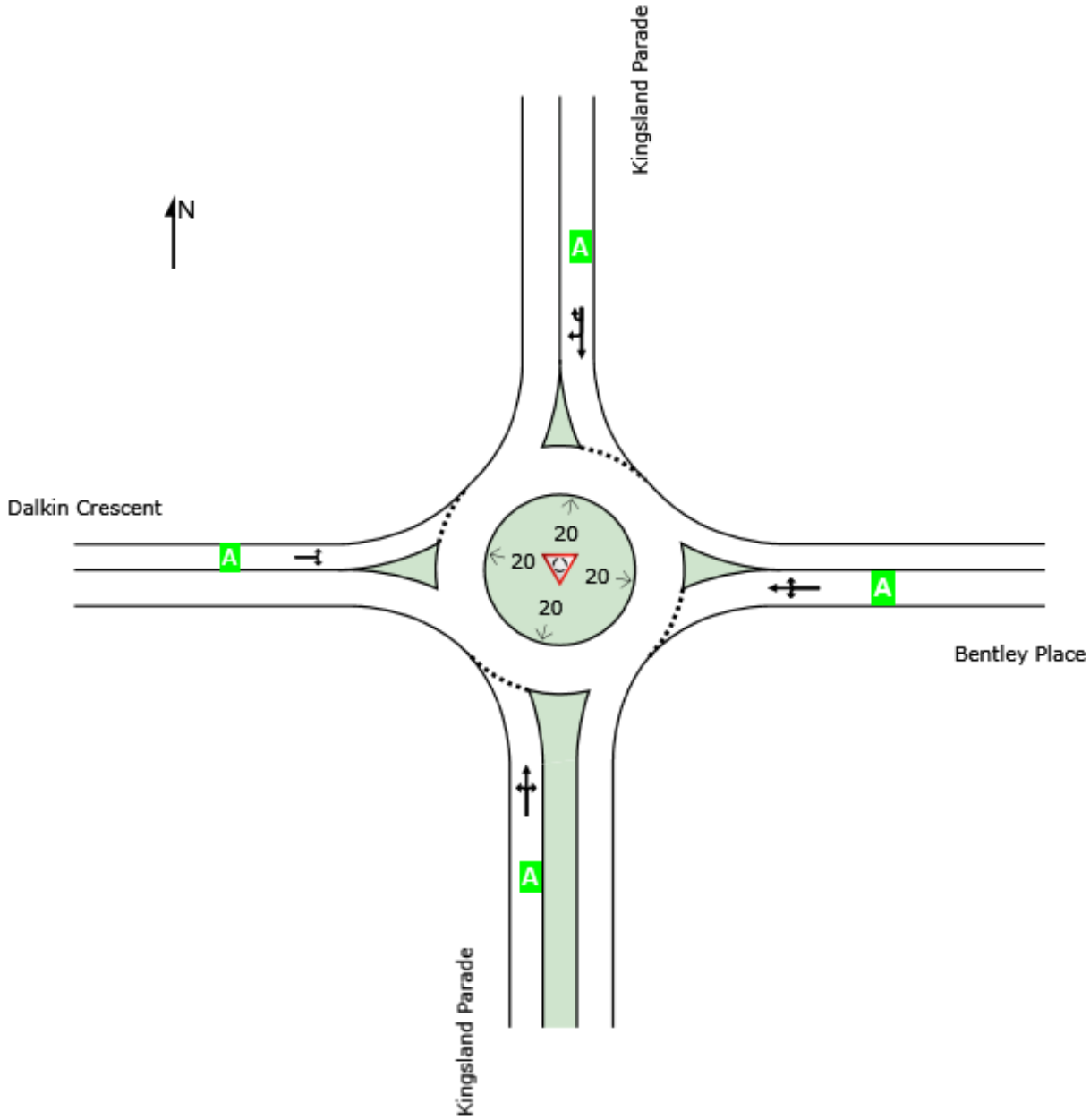
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Site: 101A [AM Base 2022 Kingsland Parade and Bentley Place Weekday Peak 8:00am - 9:00am (Site Folder: Base)]

New Site
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Kingsland Parade															
1	L2	All MCs	32	13.3	32	13.3	0.153	2.0	LOS A	0.8	5.6	0.17	0.24	0.17	37.7
2	T1	All MCs	165	5.1	165	5.1	0.153	1.4	LOS A	0.8	5.6	0.17	0.24	0.17	37.4
3	R2	All MCs	12	0.0	12	0.0	0.153	5.7	LOS A	0.8	5.6	0.17	0.24	0.17	33.6
Approach			208	6.1	208	6.1	0.153	1.7	LOS A	0.8	5.6	0.17	0.24	0.17	37.3
East: Bentley Place															
4	L2	All MCs	97	2.2	97	2.2	0.117	2.9	LOS A	0.5	3.7	0.38	0.45	0.38	31.7
5	T1	All MCs	13	0.0	13	0.0	0.117	2.3	LOS A	0.5	3.7	0.38	0.45	0.38	37.0
6	R2	All MCs	20	5.3	20	5.3	0.117	6.7	LOS A	0.5	3.7	0.38	0.45	0.38	35.5
Approach			129	2.4	129	2.4	0.117	3.4	LOS A	0.5	3.7	0.38	0.45	0.38	33.6
North: Kingsland Parade															
8	T1	All MCs	209	4.5	209	4.5	0.172	1.5	LOS A	0.9	6.4	0.22	0.24	0.22	37.1
9	R2	All MCs	11	0.0	11	0.0	0.172	5.8	LOS A	0.9	6.4	0.22	0.24	0.22	38.0
9u	U	All MCs	4	100.0	4	100.0	0.172	8.1	LOS A	0.9	6.4	0.22	0.24	0.22	37.2
Approach			224	6.1	224	6.1	0.172	1.8	LOS A	0.9	6.4	0.22	0.24	0.22	37.1
West: Dalkin Crescent															
10	L2	All MCs	25	0.0	25	0.0	0.080	2.8	LOS A	0.4	3.1	0.40	0.52	0.40	36.6
12	R2	All MCs	63	0.0	63	0.0	0.080	6.7	LOS A	0.4	3.1	0.40	0.52	0.40	35.1
Approach			88	0.0	88	0.0	0.080	5.6	LOS A	0.4	3.1	0.40	0.52	0.40	35.7
All Vehicles			651	4.5	651	4.5	0.172	2.6	LOS A	0.9	6.4	0.26	0.32	0.26	36.4

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Kingsland Parade															
Lane 1[d]	208	6.1	208	6.1	1359	0.153	100	1.7	LOS A	0.8	5.6	Full	70	0.0	0.0
Approach	208	6.1	208	6.1		0.153		1.7	LOS A	0.8	5.6				
East: Bentley Place															
Lane 1[d]	129	2.4	129	2.4	1106	0.117	100	3.4	LOS A	0.5	3.7	Full	95	0.0	0.0
Approach	129	2.4	129	2.4		0.117		3.4	LOS A	0.5	3.7				
North: Kingsland Parade															
Lane 1[d]	224	6.1	224	6.1	1307	0.172	100	1.8	LOS A	0.9	6.4	Full	300	0.0	0.0
Approach	224	6.1	224	6.1		0.172		1.8	LOS A	0.9	6.4				
West: Dalkin Crescent															
Lane 1[d]	88	0.0	88	0.0	1107	0.080	100	5.6	LOS A	0.4	3.1	Full	420	0.0	0.0
Approach	88	0.0	88	0.0		0.080		5.6	LOS A	0.4	3.1				

All Vehicles	651	4.5	651	4.5	0.172	2.6	LOS A	0.9	6.4

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

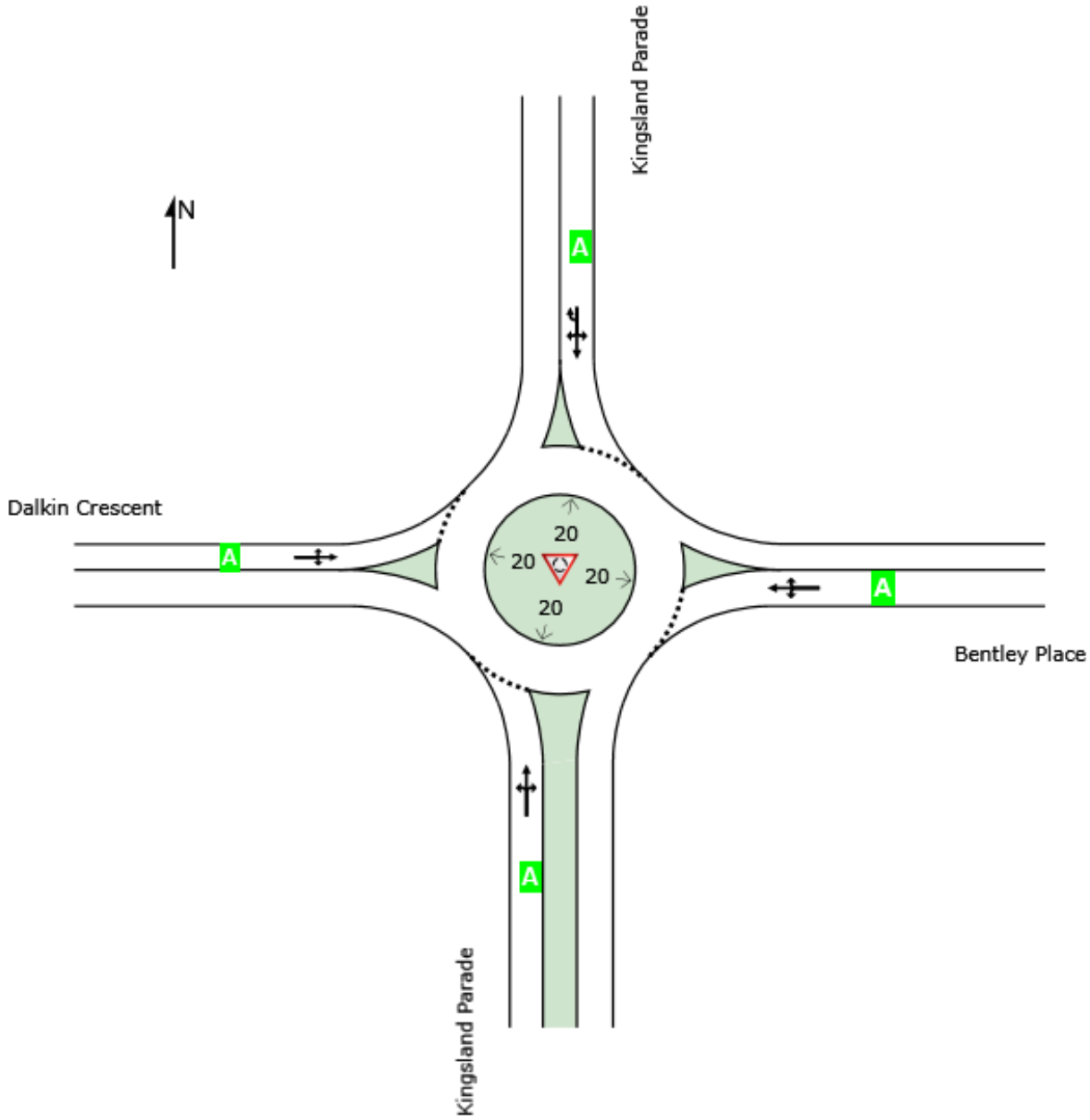
d Dominant lane on roundabout approach

Site: 101B [PM Base 2022 Kingsland Parade and Bentley Place Weekday Peak 5:15pm - 6:15pm (Site Folder: Base)]

New Site
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Kingsland Parade															
1	L2	All MCs	55	0.0	55	0.0	0.353	2.2	LOS A	2.2	15.5	0.29	0.29	0.29	37.2
2	T1	All MCs	382	1.7	382	1.7	0.353	1.7	LOS A	2.2	15.5	0.29	0.29	0.29	36.7
3	R2	All MCs	40	2.6	40	2.6	0.353	6.0	LOS A	2.2	15.5	0.29	0.29	0.29	32.3
Approach			477	1.5	477	1.5	0.353	2.1	LOS A	2.2	15.5	0.29	0.29	0.29	36.5
East: Bentley Place															
4	L2	All MCs	152	0.7	152	0.7	0.190	2.9	LOS A	0.9	6.3	0.39	0.45	0.39	31.6
5	T1	All MCs	23	0.0	23	0.0	0.190	2.3	LOS A	0.9	6.3	0.39	0.45	0.39	36.9
6	R2	All MCs	39	2.7	39	2.7	0.190	6.7	LOS A	0.9	6.3	0.39	0.45	0.39	35.4
Approach			214	1.0	214	1.0	0.190	3.5	LOS A	0.9	6.3	0.39	0.45	0.39	33.7
North: Kingsland Parade															
7	L2	All MCs	2	0.0	2	0.0	0.183	2.0	LOS A	0.9	6.7	0.21	0.27	0.21	36.9
8	T1	All MCs	209	3.0	209	3.0	0.183	1.5	LOS A	0.9	6.7	0.21	0.27	0.21	37.0
9	R2	All MCs	23	0.0	23	0.0	0.183	5.8	LOS A	0.9	6.7	0.21	0.27	0.21	37.9
9u	U	All MCs	8	50.0	8	50.0	0.183	7.7	LOS A	0.9	6.7	0.21	0.27	0.21	37.3
Approach			243	4.3	243	4.3	0.183	2.1	LOS A	0.9	6.7	0.21	0.27	0.21	37.1
West: Dalkin Crescent															
10	L2	All MCs	36	0.0	36	0.0	0.076	4.5	LOS A	0.4	3.1	0.60	0.59	0.60	36.4
11	T1	All MCs	2	0.0	2	0.0	0.076	4.1	LOS A	0.4	3.1	0.60	0.59	0.60	35.4
12	R2	All MCs	28	0.0	28	0.0	0.076	8.4	LOS A	0.4	3.1	0.60	0.59	0.60	34.9
Approach			66	0.0	66	0.0	0.076	6.2	LOS A	0.4	3.1	0.60	0.59	0.60	35.9
All Vehicles			1000	2.0	1000	2.0	0.353	2.7	LOS A	2.2	15.5	0.31	0.34	0.31	36.2

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Kingsland Parade															
Lane 1[d]	477	1.5	477	1.5	1350	0.353	100	2.1	LOS A	2.2	15.5	Full	70	0.0	0.0
Approach	477	1.5	477	1.5		0.353		2.1	LOS A	2.2	15.5				
East: Bentley Place															
Lane 1[d]	214	1.0	214	1.0	1126	0.190	100	3.5	LOS A	0.9	6.3	Full	95	0.0	0.0
Approach	214	1.0	214	1.0		0.190		3.5	LOS A	0.9	6.3				
North: Kingsland Parade															
Lane 1[d]	243	4.3	243	4.3	1331	0.183	100	2.1	LOS A	0.9	6.7	Full	300	0.0	0.0
Approach	243	4.3	243	4.3		0.183		2.1	LOS A	0.9	6.7				
West: Dalkin Crescent															
Lane 1[d]	66	0.0	66	0.0	873	0.076	100	6.2	LOS A	0.4	3.1	Full	420	0.0	0.0

Approach	66	0.0	66	0.0	0.076	6.2	LOS A	0.4	3.1
All Vehicles	1000	2.0	1000	2.0	0.353	2.7	LOS A	2.2	15.5

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

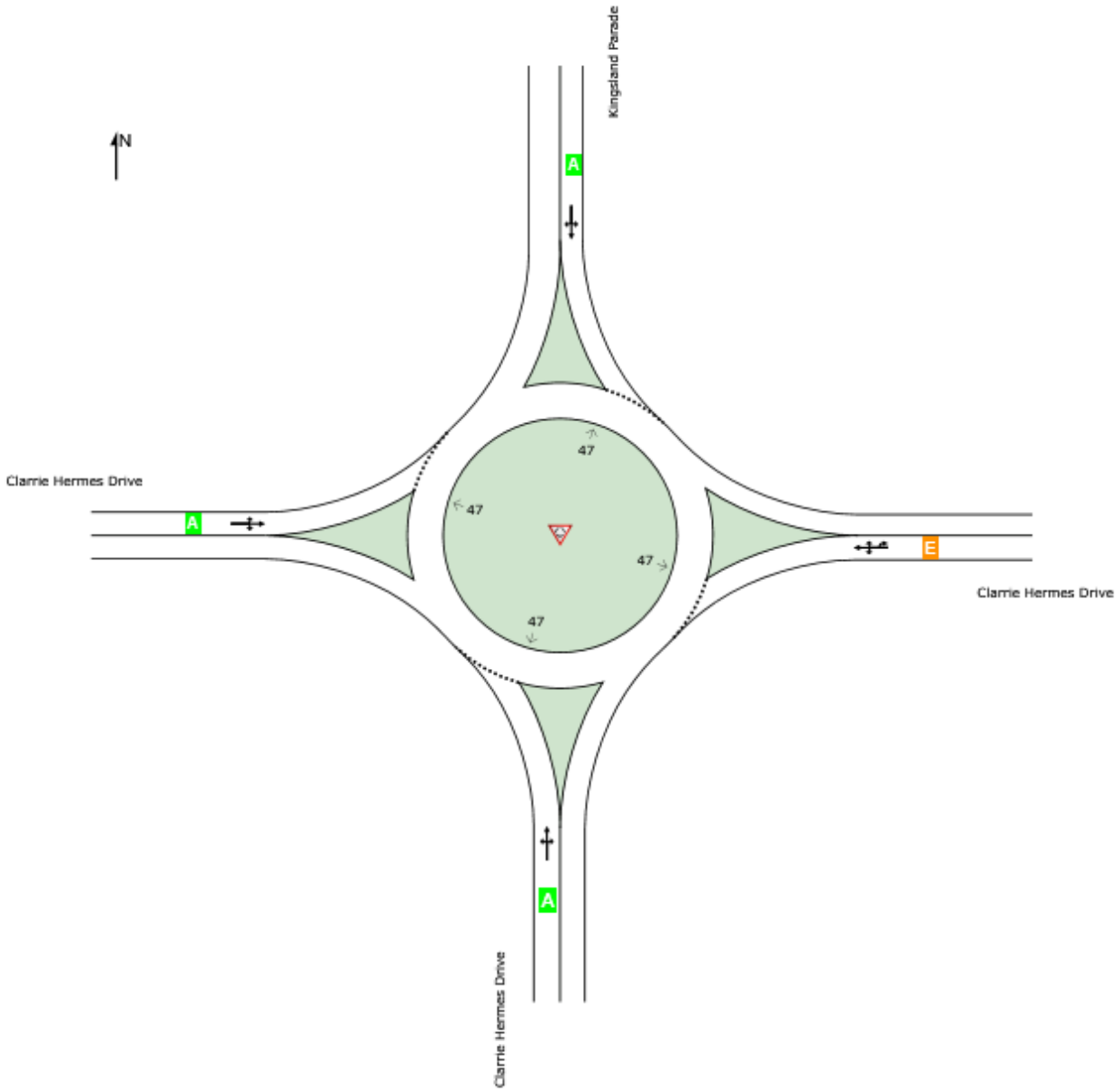
d Dominant lane on roundabout approach

Site: 101C [AM Base 2022 Kingsland Parade and Clarrie Hermes Drive Weekday Peak 8:00am - 9:00am (Site Folder: Base)]

NA
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	A	E	A	A	B



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Clarrie Hermes Drive															
1	L2	All MCs	6	0.0	6	0.0	0.045	4.7	LOS A	0.3	2.1	0.78	0.67	0.78	39.7
2	T1	All MCs	4	0.0	4	0.0	0.045	3.5	LOS A	0.3	2.1	0.78	0.67	0.78	33.9
3	R2	All MCs	24	0.0	24	0.0	0.045	10.5	LOS A	0.3	2.1	0.78	0.67	0.78	39.4
Approach			35	0.0	35	0.0	0.045	8.6	LOS A	0.3	2.1	0.78	0.67	0.78	39.1
East: Clarrie Hermes Drive															
4	L2	All MCs	28	0.0	28	0.0	1.034	56.5	LOS E	46.2	339.3	1.00	1.61	2.38	22.0
5	T1	All MCs	655	5.5	655	5.5	1.034	56.8	LOS E	46.2	339.3	1.00	1.61	2.38	27.6
6	R2	All MCs	35	18.2	35	18.2	1.034	65.4	LOS E	46.2	339.3	1.00	1.61	2.38	18.5
6u	U	All MCs	6	0.0	6	0.0	1.034	67.5	LOS E	46.2	339.3	1.00	1.61	2.38	27.7
Approach			724	5.8	724	5.8	1.034	57.3	LOS E	46.2	339.3	1.00	1.61	2.38	27.0
North: Kingsland Parade															
7	L2	All MCs	179	5.9	179	5.9	0.418	4.9	LOS A	2.6	19.0	0.72	0.66	0.75	34.3
8	T1	All MCs	3	0.0	3	0.0	0.418	4.5	LOS A	2.6	19.0	0.72	0.66	0.75	30.4
9	R2	All MCs	133	3.2	133	3.2	0.418	9.2	LOS A	2.6	19.0	0.72	0.66	0.75	33.8
Approach			315	4.7	315	4.7	0.418	6.7	LOS A	2.6	19.0	0.72	0.66	0.75	34.1
West: Clarrie Hermes Drive															
10	L2	All MCs	108	2.9	108	2.9	0.413	5.1	LOS A	3.0	21.8	0.26	0.41	0.26	42.2
11	T1	All MCs	546	6.4	546	6.4	0.413	5.1	LOS A	3.0	21.8	0.26	0.41	0.26	62.2
12	R2	All MCs	8	0.0	8	0.0	0.413	12.9	LOS A	3.0	21.8	0.26	0.41	0.26	55.2
Approach			663	5.7	663	5.7	0.413	5.2	LOS A	3.0	21.8	0.26	0.41	0.26	59.0
All Vehicles			1737	5.5	1737	5.5	1.034	27.2	LOS B	46.2	339.3	0.66	0.96	1.25	35.9

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Clarrie Hermes Drive															
Lane 1[d]	35	0.0	35	0.0	772	0.045	100	8.6	LOS A	0.3	2.1	Full	115	0.0	0.0
Approach	35	0.0	35	0.0		0.045		8.6	LOS A	0.3	2.1				
East: Clarrie Hermes Drive															
Lane 1[d]	724	5.8	724	5.8	700	1.034	100	57.3	LOS E	46.2	339.3	Full	325	-11.0	6.3
Approach	724	5.8	724	5.8		1.034		57.3	LOS E	46.2	339.3				
North: Kingsland Parade															
Lane 1[d]	315	4.7	315	4.7	752	0.418	100	6.7	LOS A	2.6	19.0	Full	65	0.0	0.0
Approach	315	4.7	315	4.7		0.418		6.7	LOS A	2.6	19.0				
West: Clarrie Hermes Drive															
Lane 1[d]	663	5.7	663	5.7	1605	0.413	100	5.2	LOS A	3.0	21.8	Full	310	0.0	0.0

Approach	663	5.7	663	5.7	0.413	5.2	LOS A	3.0	21.8
All Vehicles	1737	5.5	1737	5.5	1.034	27.2	LOS B	46.2	339.3

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

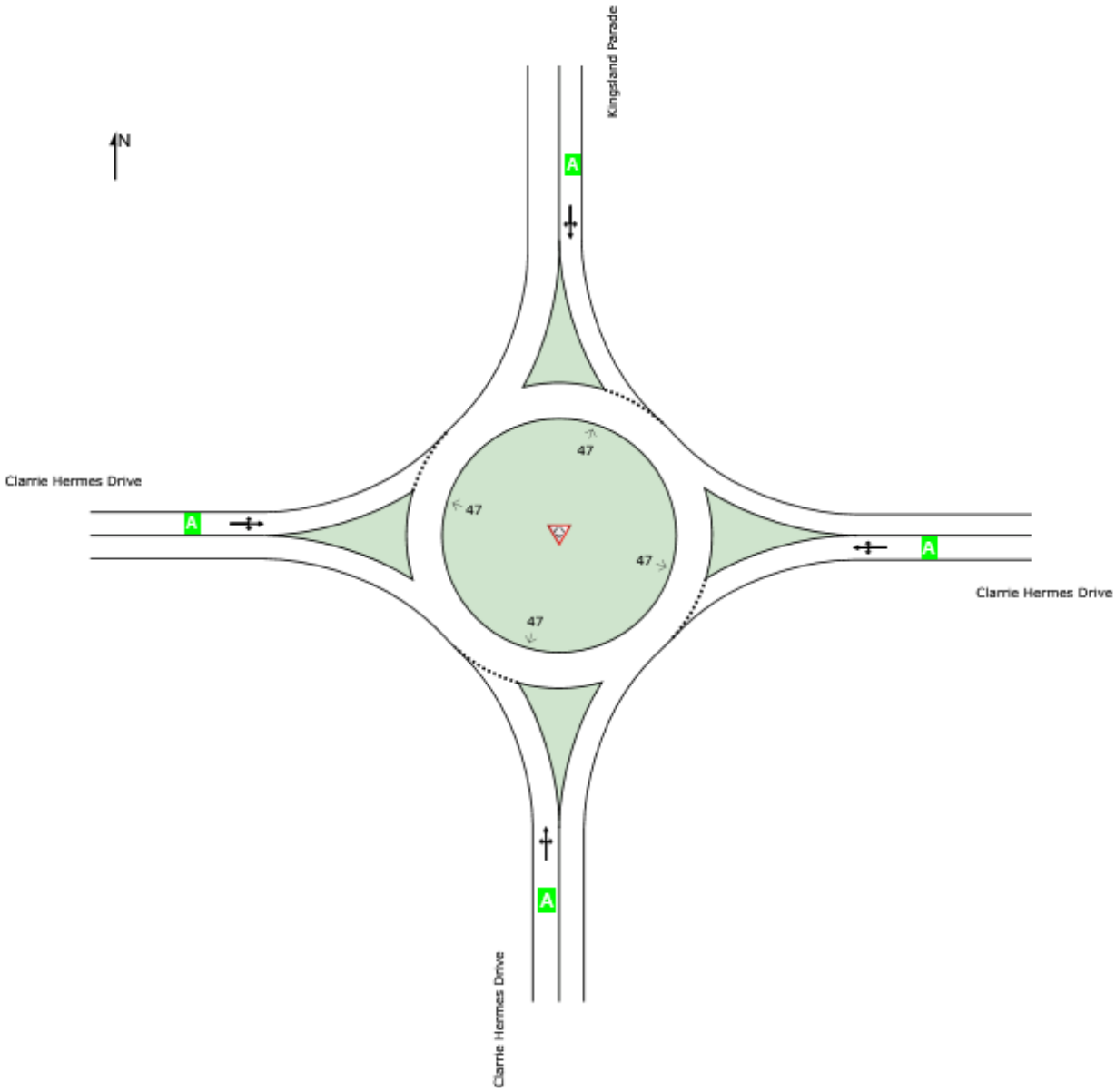
d Dominant lane on roundabout approach

Site: 101D [PM Base 2022 Kingsland Parade and Clarrie Hermes Drive Weekday Peak 5:15pm - 6:15pm (Site Folder: Base)]

NA
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Clarrie Hermes Drive															
1	L2	All MCs	1	0.0	1	0.0	0.028	6.4	LOS A	0.2	1.3	0.79	0.64	0.79	40.2
2	T1	All MCs	12	0.0	12	0.0	0.028	5.2	LOS A	0.2	1.3	0.79	0.64	0.79	34.4
3	R2	All MCs	8	0.0	8	0.0	0.028	12.2	LOS A	0.2	1.3	0.79	0.64	0.79	39.8
Approach			21	0.0	21	0.0	0.028	8.0	LOS A	0.2	1.3	0.79	0.64	0.79	37.6
East: Clarrie Hermes Drive															
4	L2	All MCs	41	0.0	41	0.0	0.580	5.9	LOS A	4.9	34.4	0.57	0.55	0.57	52.6
5	T1	All MCs	616	0.7	616	0.7	0.580	5.9	LOS A	4.9	34.4	0.57	0.55	0.57	59.0
6	R2	All MCs	177	1.8	177	1.8	0.580	13.7	LOS A	4.9	34.4	0.57	0.55	0.57	50.1
Approach			834	0.9	834	0.9	0.580	7.5	LOS A	4.9	34.4	0.57	0.55	0.57	57.1
North: Kingsland Parade															
7	L2	All MCs	187	0.0	187	0.0	0.429	3.8	LOS A	3.2	22.9	0.81	0.66	0.81	34.7
8	T1	All MCs	6	0.0	6	0.0	0.429	3.6	LOS A	3.2	22.9	0.81	0.66	0.81	31.1
9	R2	All MCs	206	4.6	206	4.6	0.429	8.4	LOS A	3.2	22.9	0.81	0.66	0.81	34.3
Approach			400	2.4	400	2.4	0.429	6.1	LOS A	3.2	22.9	0.81	0.66	0.81	34.4
West: Clarrie Hermes Drive															
10	L2	All MCs	261	0.8	261	0.8	0.629	5.9	LOS A	5.6	39.6	0.55	0.52	0.55	40.1
11	T1	All MCs	651	2.3	651	2.3	0.629	5.9	LOS A	5.6	39.6	0.55	0.52	0.55	60.2
12	R2	All MCs	18	0.0	18	0.0	0.629	13.7	LOS A	5.6	39.6	0.55	0.52	0.55	52.0
Approach			929	1.8	929	1.8	0.629	6.0	LOS A	5.6	39.6	0.55	0.52	0.55	54.6
All Vehicles			2184	1.5	2184	1.5	0.629	6.6	LOS A	5.6	39.6	0.61	0.56	0.61	51.3

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Clarrie Hermes Drive															
Lane 1[d]	21	0.0	21	0.0	749	0.028	100	8.0	LOS A	0.2	1.3	Full	115	0.0	0.0
Approach	21	0.0	21	0.0		0.028		8.0	LOS A	0.2	1.3				
East: Clarrie Hermes Drive															
Lane 1[d]	834	0.9	834	0.9	1438	0.580	100	7.5	LOS A	4.9	34.4	Full	325	0.0	0.0
Approach	834	0.9	834	0.9		0.580		7.5	LOS A	4.9	34.4				
North: Kingsland Parade															
Lane 1[d]	400	2.4	400	2.4	932	0.429	100	6.1	LOS A	3.2	22.9	Full	65	0.0	0.0
Approach	400	2.4	400	2.4		0.429		6.1	LOS A	3.2	22.9				
West: Clarrie Hermes Drive															
Lane 1[d]	929	1.8	929	1.8	1477	0.629	100	6.0	LOS A	5.6	39.6	Full	310	0.0	0.0
Approach	929	1.8	929	1.8		0.629		6.0	LOS A	5.6	39.6				

All Vehicles	2184	1.5	2184	1.5	0.629	6.6	LOS A	5.6	39.6

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

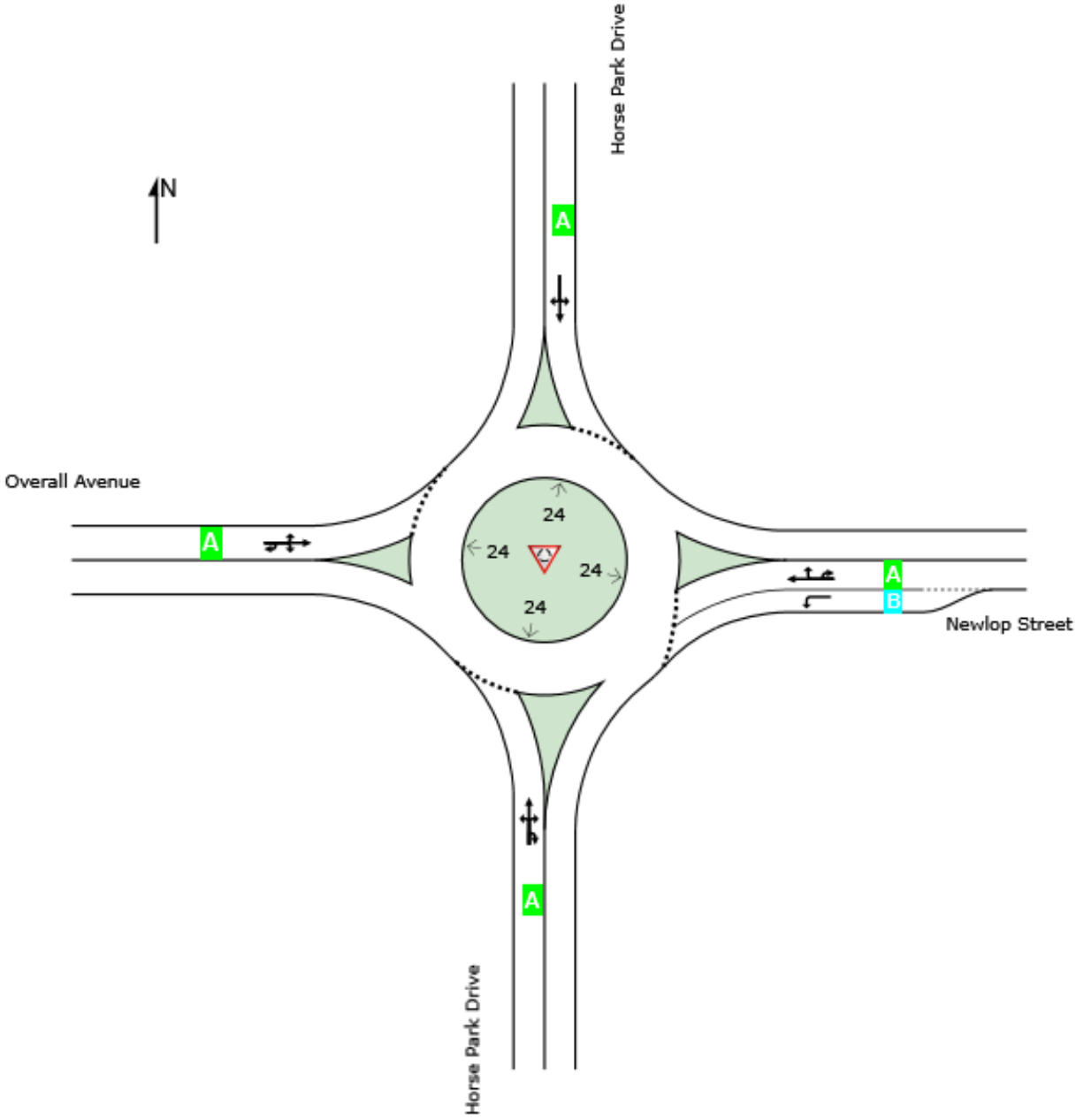
d Dominant lane on roundabout approach

Site: 101E [AM Base 2022 Horse Park Drive and Overall Avenue Weekday Peak 8:00am - 9:00am (Site Folder: Base)]

New Site
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	A	B	A	A	A



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Horse Park Drive															
1	L2	All MCs	69	1.5	69	1.5	0.563	8.9	LOS A	4.7	33.9	0.74	0.69	0.80	37.8
2	T1	All MCs	422	4.7	422	4.7	0.563	9.5	LOS A	4.7	33.9	0.74	0.69	0.80	60.6
3	R2	All MCs	32	0.0	32	0.0	0.563	14.4	LOS A	4.7	33.9	0.74	0.69	0.80	41.3
3u	U	All MCs	1	0.0	1	0.0	0.563	17.0	LOS B	4.7	33.9	0.74	0.69	0.80	59.7
Approach			524	4.0	524	4.0	0.563	9.8	LOS A	4.7	33.9	0.74	0.69	0.80	56.6
East: Newlop Street															
4	L2	All MCs	72	2.9	72	2.9	0.247	16.7	LOS B	1.9	13.5	1.00	0.86	1.00	36.0
5	T1	All MCs	104	1.0	104	1.0	0.281	13.6	LOS A	2.6	18.3	1.00	0.85	1.00	30.2
6	R2	All MCs	12	0.0	12	0.0	0.281	18.5	LOS B	2.6	18.3	1.00	0.85	1.00	38.3
6u	U	All MCs	1	0.0	1	0.0	0.281	22.2	LOS B	2.6	18.3	1.00	0.85	1.00	32.8
Approach			188	1.7	188	1.7	0.281	15.1	LOS B	2.6	18.3	1.00	0.86	1.00	33.8
North: Horse Park Drive															
7	L2	All MCs	6	0.0	6	0.0	0.869	12.5	LOS A	16.6	119.1	0.98	0.81	1.24	51.8
8	T1	All MCs	743	3.3	743	3.3	0.869	13.1	LOS A	16.6	119.1	0.98	0.81	1.24	57.4
9	R2	All MCs	268	3.1	268	3.1	0.869	18.2	LOS B	16.6	119.1	0.98	0.81	1.24	48.3
Approach			1018	3.2	1018	3.2	0.869	14.4	LOS A	16.6	119.1	0.98	0.81	1.24	55.4
West: Overall Avenue															
10	L2	All MCs	126	4.2	126	4.2	0.355	4.8	LOS A	2.2	16.1	0.64	0.64	0.64	42.0
11	T1	All MCs	45	7.0	45	7.0	0.355	4.7	LOS A	2.2	16.1	0.64	0.64	0.64	36.4
12	R2	All MCs	185	1.1	185	1.1	0.355	9.4	LOS A	2.2	16.1	0.64	0.64	0.64	41.0
12u	U	All MCs	1	0.0	1	0.0	0.355	11.3	LOS A	2.2	16.1	0.64	0.64	0.64	16.1
Approach			358	2.9	358	2.9	0.355	7.2	LOS A	2.2	16.1	0.64	0.64	0.64	41.0
All Vehicles			2088	3.2	2088	3.2	0.869	12.1	LOS A	16.6	119.1	0.86	0.76	1.01	51.8

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Horse Park Drive															
Lane 1[d]	524	4.0	524	4.0	932	0.563	100	9.8	LOS A	4.7	33.9	Full	450	0.0	0.0
Approach	524	4.0	524	4.0		0.563		9.8	LOS A	4.7	33.9				
East: Newlop Street															
Lane 1	72	2.9	72	2.9	289	0.247	100	16.7	LOS B	1.9	13.5	Short	36	0.0	NA
Lane 2[d]	117	0.9	117	0.9	416	0.281	100	14.1	LOS A	2.6	18.3	Full	170	0.0	0.0
Approach	188	1.7	188	1.7		0.281		15.1	LOS B	2.6	18.3				
North: Horse Park Drive															
Lane 1[d]	1018	3.2	1018	3.2	1172	0.869	100	14.4	LOS A	16.6	119.1	Full	500	0.0	0.0

Approach	1018	3.2	1018	3.2		0.869		14.4	LOS A	16.6	119.1				
West: Overall Avenue															
Lane 1[d]	358	2.9	358	2.9	1008	0.355	100	7.2	LOS A	2.2	16.1	Full	100	0.0	0.0
Approach	358	2.9	358	2.9		0.355		7.2	LOS A	2.2	16.1				
All Vehicles	2088	3.2	2088	3.2		0.869		12.1	LOS A	16.6	119.1				

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

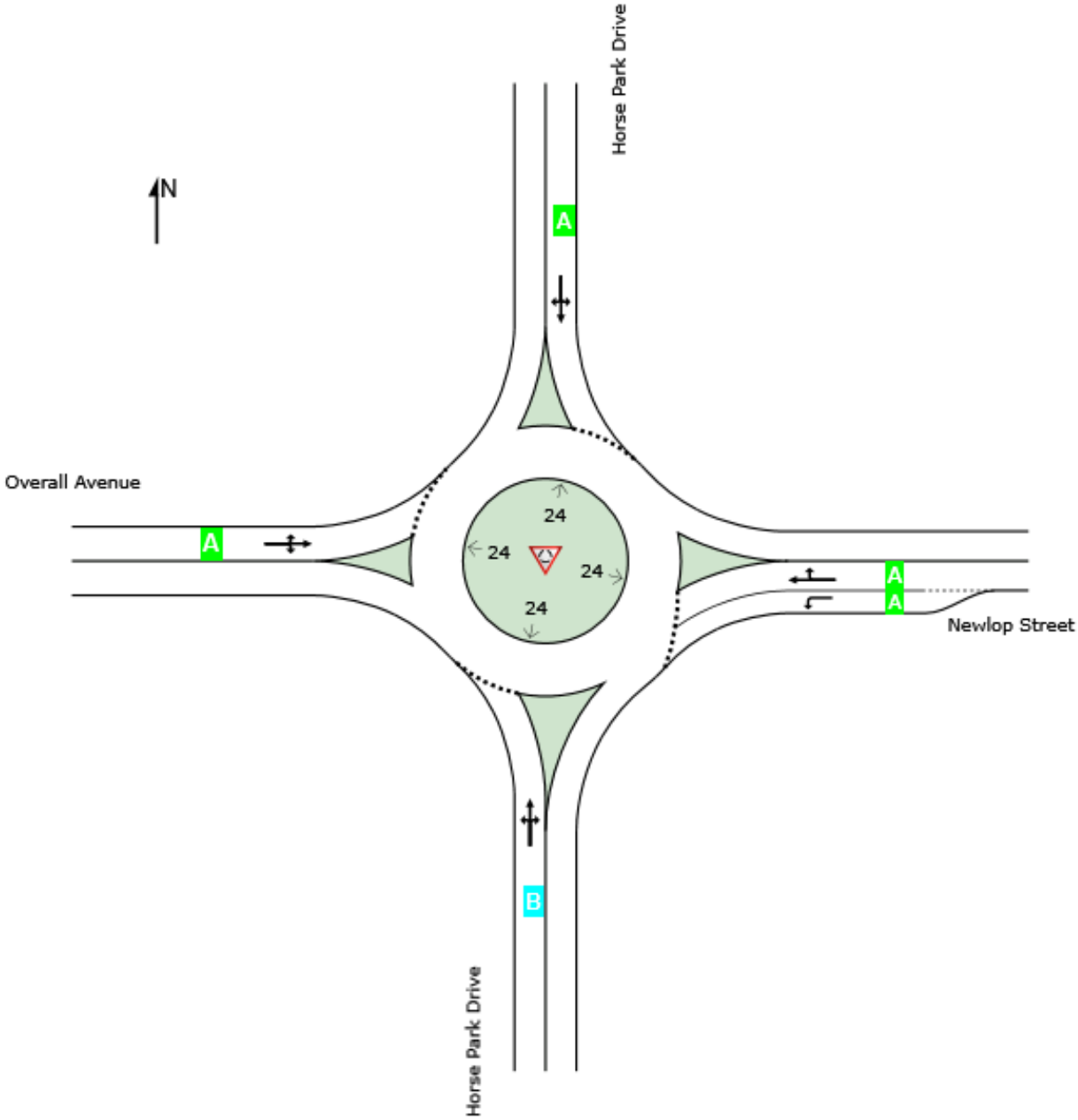
d Dominant lane on roundabout approach

Site: 101E [PM Base 2022 Horse Park Drive and Overall Avenue Weekday Peak 5:15pm - 6:15pm (Site Folder: Base)]

New Site
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	B	A	A	A	A



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Horse Park Drive															
1	L2	All MCs	142	0.7	142	0.7	0.879	14.7	LOS B	17.3	122.3	1.00	0.89	1.39	34.7
2	T1	All MCs	748	1.3	748	1.3	0.879	15.2	LOS B	17.3	122.3	1.00	0.89	1.39	56.7
3	R2	All MCs	71	1.5	71	1.5	0.879	20.3	LOS B	17.3	122.3	1.00	0.89	1.39	48.3
Approach			961	1.2	961	1.2	0.879	15.5	LOS B	17.3	122.3	1.00	0.89	1.39	53.0
East: Newlop Street															
4	L2	All MCs	52	0.0	52	0.0	0.074	7.2	LOS A	0.5	3.2	0.74	0.67	0.74	42.4
5	T1	All MCs	93	0.0	93	0.0	0.108	5.7	LOS A	0.8	5.4	0.76	0.62	0.76	37.1
6	R2	All MCs	8	0.0	8	0.0	0.108	10.7	LOS A	0.8	5.4	0.76	0.62	0.76	42.7
Approach			153	0.0	153	0.0	0.108	6.5	LOS A	0.8	5.4	0.75	0.64	0.75	40.0
North: Horse Park Drive															
7	L2	All MCs	15	0.0	15	0.0	0.551	7.0	LOS A	4.4	31.5	0.61	0.61	0.61	56.0
8	T1	All MCs	426	1.2	426	1.2	0.551	7.5	LOS A	4.4	31.5	0.61	0.61	0.61	61.6
9	R2	All MCs	206	2.0	206	2.0	0.551	12.7	LOS A	4.4	31.5	0.61	0.61	0.61	52.4
Approach			647	1.5	647	1.5	0.551	9.2	LOS A	4.4	31.5	0.61	0.61	0.61	59.0
West: Overall Avenue															
10	L2	All MCs	191	2.2	191	2.2	0.567	10.1	LOS A	5.4	38.2	0.98	0.88	1.17	39.5
11	T1	All MCs	89	1.2	89	1.2	0.567	9.8	LOS A	5.4	38.2	0.98	0.88	1.17	32.6
12	R2	All MCs	83	0.0	83	0.0	0.567	14.7	LOS B	5.4	38.2	0.98	0.88	1.17	38.4
Approach			363	1.4	363	1.4	0.567	11.1	LOS A	5.4	38.2	0.98	0.88	1.17	38.1
All Vehicles			2124	1.2	2124	1.2	0.879	12.2	LOS A	17.3	122.3	0.86	0.79	1.07	51.8

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Horse Park Drive															
Lane 1[d]	961	1.2	961	1.2	1094	0.879	100	15.5	LOS B	17.3	122.3	Full	450	0.0	0.0
Approach	961	1.2	961	1.2		0.879		15.5	LOS B	17.3	122.3				
East: Newlop Street															
Lane 1	52	0.0	52	0.0	696	0.074	100	7.2	LOS A	0.5	3.2	Short	36	0.0	NA
Lane 2[d]	101	0.0	101	0.0	937	0.108	100	6.2	LOS A	0.8	5.4	Full	170	0.0	0.0
Approach	153	0.0	153	0.0		0.108		6.5	LOS A	0.8	5.4				
North: Horse Park Drive															
Lane 1[d]	647	1.5	647	1.5	1175	0.551	100	9.2	LOS A	4.4	31.5	Full	500	0.0	0.0
Approach	647	1.5	647	1.5		0.551		9.2	LOS A	4.4	31.5				
West: Overall Avenue															
Lane 1[d]	363	1.4	363	1.4	641	0.567	100	11.1	LOS A	5.4	38.2	Full	100	0.0	0.0

Approach	363	1.4	363	1.4	0.567	11.1	LOS A	5.4	38.2
All Vehicles	2124	1.2	2124	1.2	0.879	12.2	LOS A	17.3	122.3

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

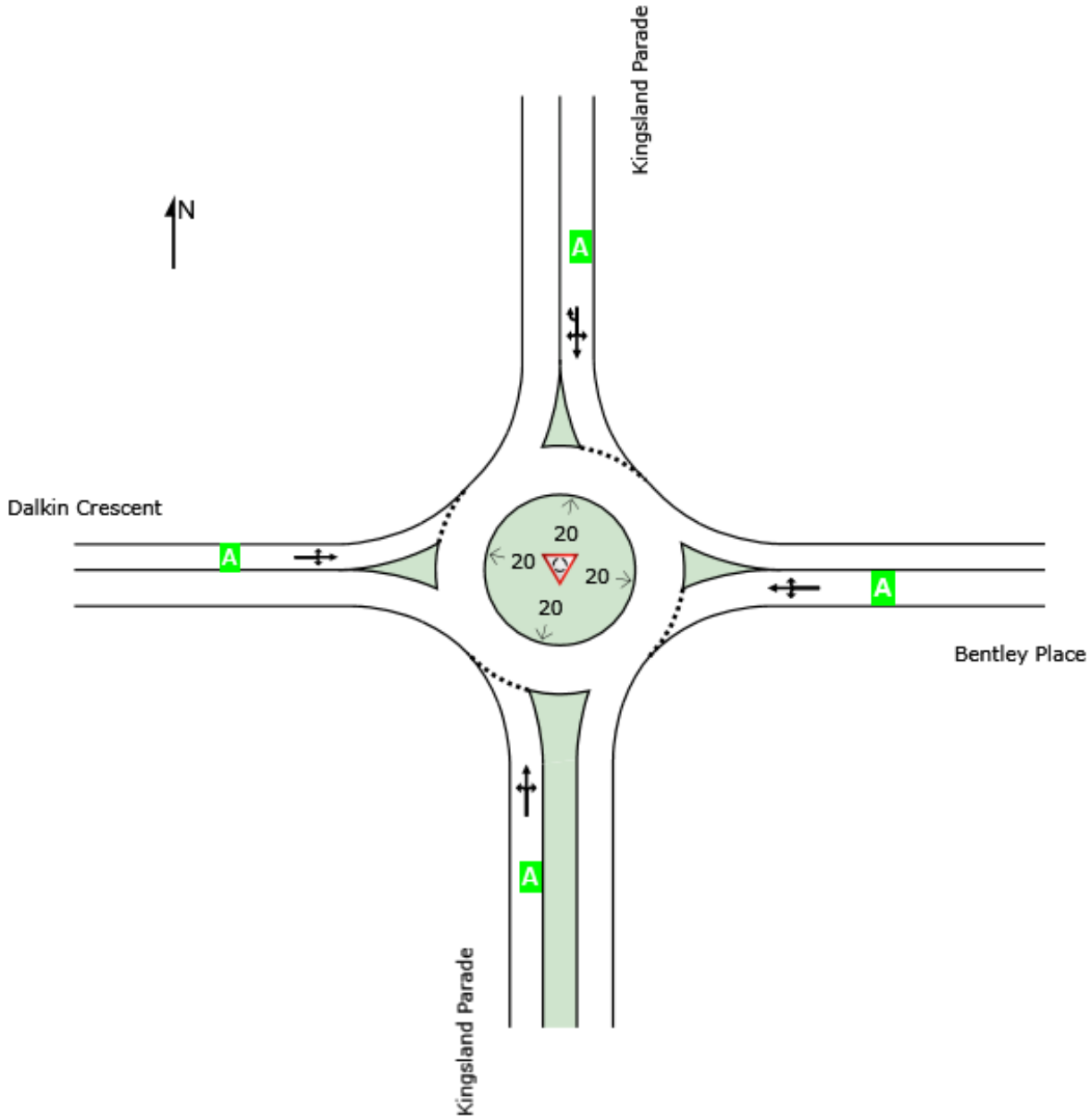
d Dominant lane on roundabout approach

Site: 101A [AM Development 2024 Kingsland Parade and Bentley Place Weekday Peak 8:00am - 9:00am (Site Folder: Development)]

New Site
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Kingsland Parade															
1	L2	All MCs	32	13.3	32	13.3	0.168	2.1	LOS A	0.9	6.4	0.22	0.27	0.22	37.4
2	T1	All MCs	165	5.1	165	5.1	0.168	1.5	LOS A	0.9	6.4	0.22	0.27	0.22	36.9
3	R2	All MCs	21	0.0	21	0.0	0.168	5.8	LOS A	0.9	6.4	0.22	0.27	0.22	33.0
Approach			218	5.8	218	5.8	0.168	2.0	LOS A	0.9	6.4	0.22	0.27	0.22	36.8
East: Bentley Place															
4	L2	All MCs	209	1.0	209	1.0	0.242	3.0	LOS A	1.2	8.5	0.42	0.46	0.42	31.5
5	T1	All MCs	22	0.0	22	0.0	0.242	2.5	LOS A	1.2	8.5	0.42	0.46	0.42	36.9
6	R2	All MCs	38	2.8	38	2.8	0.242	6.8	LOS A	1.2	8.5	0.42	0.46	0.42	35.4
Approach			269	1.2	269	1.2	0.242	3.5	LOS A	1.2	8.5	0.42	0.46	0.42	33.3
North: Kingsland Parade															
7	L2	All MCs	18	0.0	18	0.0	0.189	4.3	LOS A	1.0	7.2	0.25	0.27	0.25	38.7
8	T1	All MCs	209	4.5	209	4.5	0.189	1.6	LOS A	1.0	7.2	0.25	0.27	0.25	37.4
9	R2	All MCs	11	0.0	11	0.0	0.189	5.9	LOS A	1.0	7.2	0.25	0.27	0.25	38.2
9u	U	All MCs	4	100.0	4	100.0	0.189	8.3	LOS A	1.0	7.2	0.25	0.27	0.25	37.4
Approach			242	5.7	242	5.7	0.189	2.1	LOS A	1.0	7.2	0.25	0.27	0.25	37.6
West: Dalkin Crescent															
10	L2	All MCs	25	0.0	25	0.0	0.091	3.0	LOS A	0.5	3.5	0.43	0.54	0.43	37.2
11	T1	All MCs	9	0.0	9	0.0	0.091	5.4	LOS A	0.5	3.5	0.43	0.54	0.43	37.6
12	R2	All MCs	63	0.0	63	0.0	0.091	6.9	LOS A	0.5	3.5	0.43	0.54	0.43	35.9
Approach			98	0.0	98	0.0	0.091	5.7	LOS A	0.5	3.5	0.43	0.54	0.43	36.5
All Vehicles			827	3.6	827	3.6	0.242	3.0	LOS A	1.2	8.5	0.32	0.37	0.32	36.2

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Kingsland Parade															
Lane 1[d]	218	5.8	218	5.8	1300	0.168	100	2.0	LOS A	0.9	6.4	Full	70	0.0	0.0
Approach	218	5.8	218	5.8		0.168		2.0	LOS A	0.9	6.4				
East: Bentley Place															
Lane 1[d]	269	1.2	269	1.2	1114	0.242	100	3.5	LOS A	1.2	8.5	Full	95	0.0	0.0
Approach	269	1.2	269	1.2		0.242		3.5	LOS A	1.2	8.5				
North: Kingsland Parade															
Lane 1[d]	242	5.7	242	5.7	1279	0.189	100	2.1	LOS A	1.0	7.2	Full	300	0.0	0.0
Approach	242	5.7	242	5.7		0.189		2.1	LOS A	1.0	7.2				
West: Dalkin Crescent															
Lane 1[d]	98	0.0	98	0.0	1080	0.091	100	5.7	LOS A	0.5	3.5	Full	420	0.0	0.0

Approach	98	0.0	98	0.0	0.091	5.7	LOS A	0.5	3.5
All Vehicles	827	3.6	827	3.6	0.242	3.0	LOS A	1.2	8.5

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

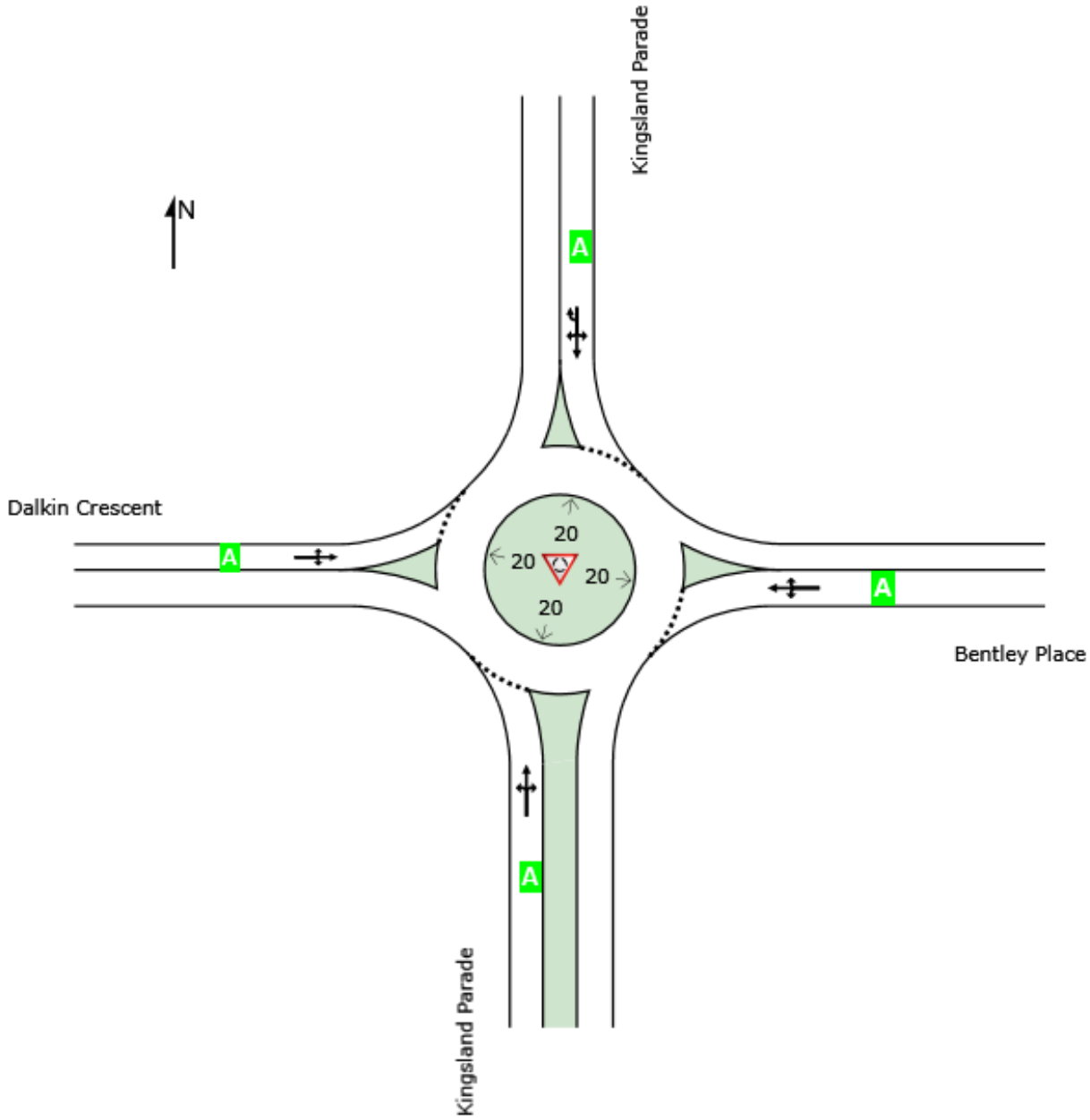
d Dominant lane on roundabout approach

Site: 101B [PM Development 2024 Kingsland Parade and Bentley Place Weekday Peak 5:15pm - 6:15pm (Site Folder: Development)]

New Site
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Kingsland Parade															
1	L2	All MCs	55	0.0	55	0.0	0.447	2.4	LOS A	3.1	22.1	0.37	0.37	0.37	36.5
2	T1	All MCs	383	1.9	383	1.9	0.447	1.9	LOS A	3.1	22.1	0.37	0.37	0.37	35.8
3	R2	All MCs	154	1.4	154	1.4	0.447	6.2	LOS A	3.1	22.1	0.37	0.37	0.37	31.1
Approach			592	1.6	592	1.6	0.447	3.1	LOS A	3.1	22.1	0.37	0.37	0.37	35.2
East: Bentley Place															
4	L2	All MCs	171	1.2	171	1.2	0.228	2.9	LOS A	1.2	8.2	0.43	0.46	0.43	31.3
5	T1	All MCs	33	0.0	33	0.0	0.228	2.4	LOS A	1.2	8.2	0.43	0.46	0.43	36.8
6	R2	All MCs	49	4.3	49	4.3	0.228	6.8	LOS A	1.2	8.2	0.43	0.46	0.43	35.3
Approach			253	1.7	253	1.7	0.228	3.6	LOS A	1.2	8.2	0.43	0.46	0.43	33.7
North: Kingsland Parade															
7	L2	All MCs	20	0.0	20	0.0	0.231	2.6	LOS A	1.2	8.8	0.38	0.36	0.38	36.1
8	T1	All MCs	211	3.5	211	3.5	0.231	2.1	LOS A	1.2	8.8	0.38	0.36	0.38	36.1
9	R2	All MCs	23	0.0	23	0.0	0.231	6.4	LOS A	1.2	8.8	0.38	0.36	0.38	37.5
9u	U	All MCs	9	55.6	9	55.6	0.231	8.7	LOS A	1.2	8.8	0.38	0.36	0.38	36.8
Approach			263	4.8	263	4.8	0.231	2.8	LOS A	1.2	8.8	0.38	0.36	0.38	36.4
West: Dalkin Crescent															
10	L2	All MCs	36	0.0	36	0.0	0.099	5.6	LOS A	0.6	4.2	0.69	0.64	0.69	36.0
11	T1	All MCs	12	0.0	12	0.0	0.099	5.2	LOS A	0.6	4.2	0.69	0.64	0.69	34.9
12	R2	All MCs	28	0.0	28	0.0	0.099	9.5	LOS A	0.6	4.2	0.69	0.64	0.69	34.4
Approach			76	0.0	76	0.0	0.099	7.0	LOS A	0.6	4.2	0.69	0.64	0.69	35.4
All Vehicles			1183	2.2	1183	2.2	0.447	3.4	LOS A	3.1	22.1	0.40	0.40	0.40	35.2

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Kingsland Parade															
Lane 1[d]	592	1.6	592	1.6	1324	0.447	100	3.1	LOS A	3.1	22.1	Full	70	0.0	0.0
Approach	592	1.6	592	1.6		0.447		3.1	LOS A	3.1	22.1				
East: Bentley Place															
Lane 1[d]	253	1.7	253	1.7	1106	0.228	100	3.6	LOS A	1.2	8.2	Full	95	0.0	0.0
Approach	253	1.7	253	1.7		0.228		3.6	LOS A	1.2	8.2				
North: Kingsland Parade															
Lane 1[d]	263	4.8	263	4.8	1140	0.231	100	2.8	LOS A	1.2	8.8	Full	300	0.0	0.0
Approach	263	4.8	263	4.8		0.231		2.8	LOS A	1.2	8.8				
West: Dalkin Crescent															
Lane 1[d]	76	0.0	76	0.0	769	0.099	100	7.0	LOS A	0.6	4.2	Full	420	0.0	0.0

Approach	76	0.0	76	0.0	0.099	7.0	LOS A	0.6	4.2
All Vehicles	1183	2.2	1183	2.2	0.447	3.4	LOS A	3.1	22.1

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

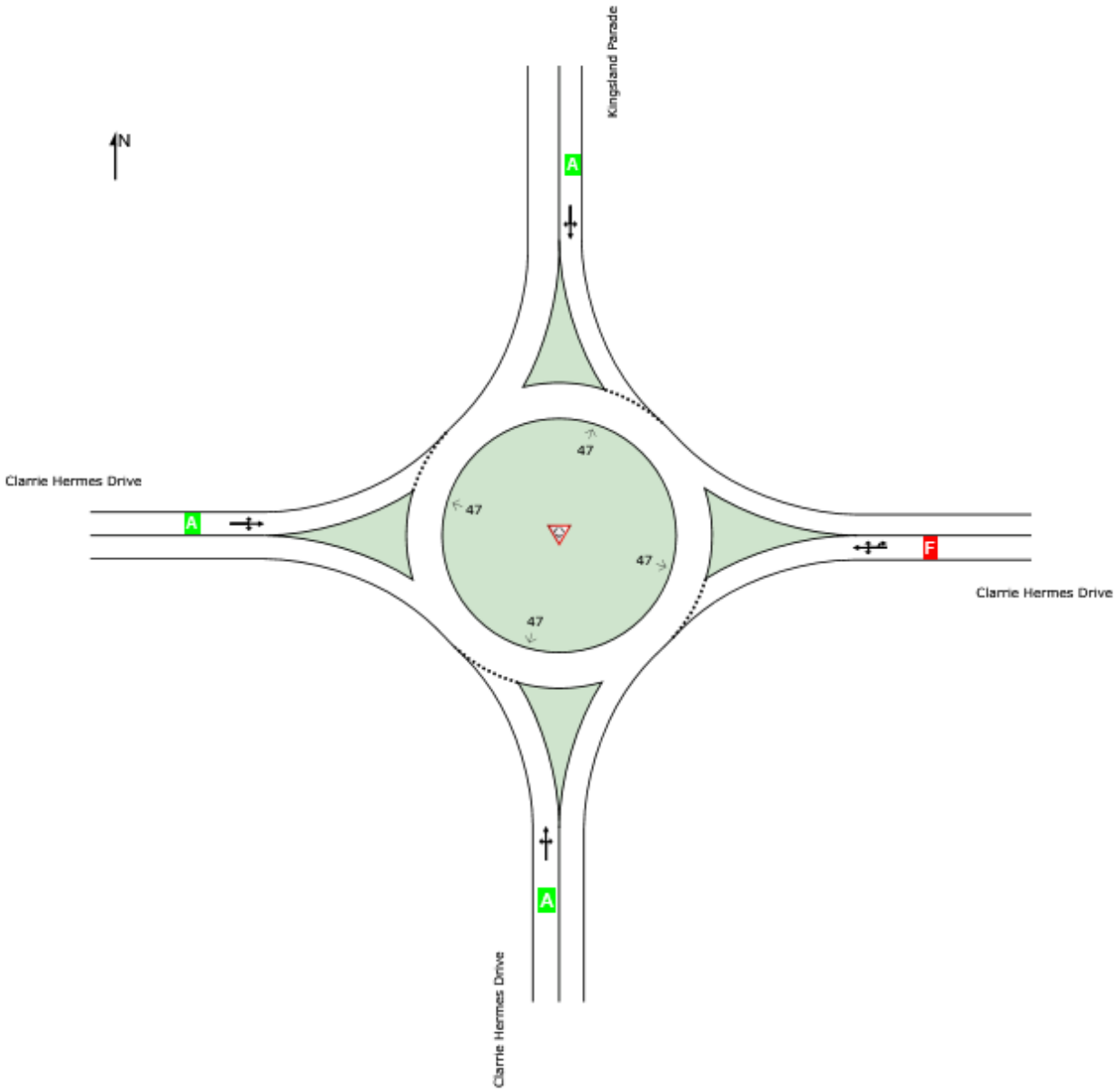
d Dominant lane on roundabout approach

Site: 101C [AM Development 2024 Kingsland Parade and Clarrie Hermes Drive Weekday Peak 8:00am - 9:00am (Site Folder: Development)]

NA
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	A	F	A	A	D



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Clarrie Hermes Drive															
1	L2	All MCs	7	0.0	7	0.0	0.045	4.6	LOS A	0.3	2.1	0.76	0.66	0.76	39.9
2	T1	All MCs	4	0.0	4	0.0	0.045	3.5	LOS A	0.3	2.1	0.76	0.66	0.76	34.1
3	R2	All MCs	24	0.0	24	0.0	0.045	10.4	LOS A	0.3	2.1	0.76	0.66	0.76	39.6
Approach			36	0.0	36	0.0	0.045	8.4	LOS A	0.3	2.1	0.76	0.66	0.76	39.2
East: Clarrie Hermes Drive															
4	L2	All MCs	34	0.0	34	0.0	1.089	99.3	LOS F	61.8	455.7	1.00	2.09	3.59	14.4
5	T1	All MCs	657	5.8	657	5.8	1.089	99.5	LOS F	61.8	455.7	1.00	2.09	3.59	18.8
6	R2	All MCs	36	20.6	36	20.6	1.089	108.3	LOS F	61.8	455.7	1.00	2.09	3.59	12.5
6u	U	All MCs	6	0.0	6	0.0	1.089	110.3	LOS F	61.8	455.7	1.00	2.09	3.59	18.9
Approach			733	6.2	733	6.2	1.089	100.0	LOS F	61.8	455.7	1.00	2.09	3.59	18.3
North: Kingsland Parade															
7	L2	All MCs	278	4.2	278	4.2	0.572	7.0	LOS A	4.7	34.1	0.80	0.80	0.99	32.9
8	T1	All MCs	3	0.0	3	0.0	0.572	6.7	LOS A	4.7	34.1	0.80	0.80	0.99	28.3
9	R2	All MCs	152	3.5	152	3.5	0.572	11.5	LOS A	4.7	34.1	0.80	0.80	0.99	32.4
Approach			433	3.9	433	3.9	0.572	8.6	LOS A	4.7	34.1	0.80	0.80	0.99	32.7
West: Clarrie Hermes Drive															
10	L2	All MCs	113	3.7	113	3.7	0.417	5.2	LOS A	3.0	22.1	0.26	0.41	0.26	42.2
11	T1	All MCs	547	6.5	547	6.5	0.417	5.1	LOS A	3.0	22.1	0.26	0.41	0.26	62.2
12	R2	All MCs	8	0.0	8	0.0	0.417	12.9	LOS A	3.0	22.1	0.26	0.41	0.26	55.2
Approach			668	6.0	668	6.0	0.417	5.2	LOS A	3.0	22.1	0.26	0.41	0.26	58.9
All Vehicles			1869	5.5	1869	5.5	1.089	43.2	LOS D	61.8	455.7	0.69	1.16	1.74	27.9

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Clarrie Hermes Drive															
Lane 1[d]	36	0.0	36	0.0	789	0.045	100	8.4	LOS A	0.3	2.1	Full	115	0.0	0.0
Approach	36	0.0	36	0.0		0.045		8.4	LOS A	0.3	2.1				
East: Clarrie Hermes Drive															
Lane 1[d]	733	6.2	733	6.2	673	1.089	100	100.0	LOS F	61.8	455.7	Full	325	-11.0	16.1
Approach	733	6.2	733	6.2		1.089		100.0	LOS F	61.8	455.7				
North: Kingsland Parade															
Lane 1[d]	433	3.9	433	3.9	756	0.572	100	8.6	LOS A	4.7	34.1	Full	65	0.0	0.0
Approach	433	3.9	433	3.9		0.572		8.6	LOS A	4.7	34.1				
West: Clarrie Hermes Drive															
Lane 1[d]	668	6.0	668	6.0	1605	0.417	100	5.2	LOS A	3.0	22.1	Full	310	0.0	0.0

Approach	668	6.0	668	6.0	0.417	5.2	LOS A	3.0	22.1
All Vehicles	1869	5.5	1869	5.5	1.089	43.2	LOS D	61.8	455.7

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

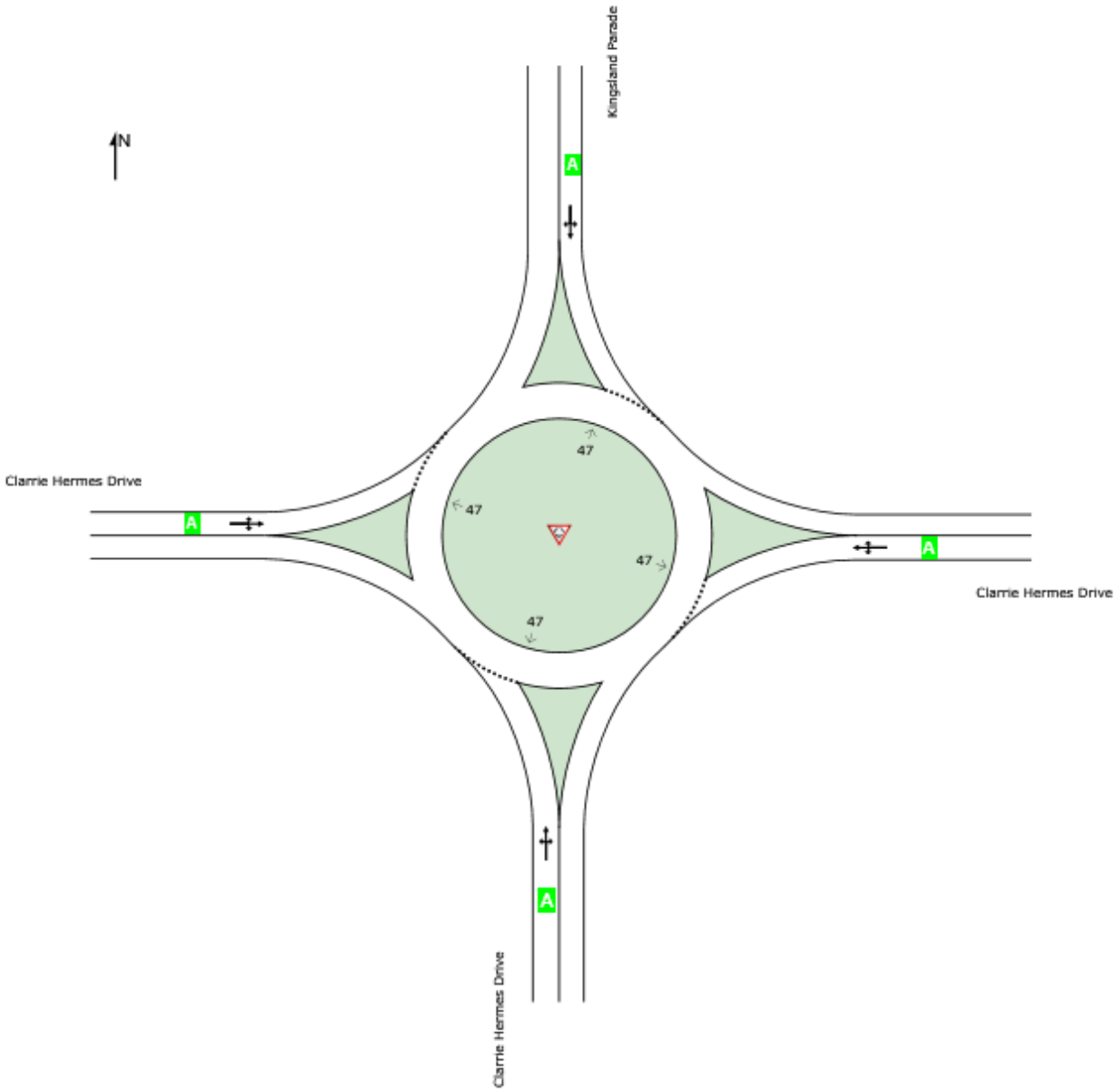
d Dominant lane on roundabout approach

Site: 101D [PM Development 2024 Kingsland Parade and Clarrie Hermes Drive Weekday Peak 5:15pm - 6:15pm (Site Folder: Development)]

NA
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Clarrie Hermes Drive															
1	L2	All MCs	1	0.0	1	0.0	0.033	7.9	LOS A	0.2	1.7	0.87	0.69	0.87	39.2
2	T1	All MCs	12	0.0	12	0.0	0.033	6.8	LOS A	0.2	1.7	0.87	0.69	0.87	33.0
3	R2	All MCs	8	0.0	8	0.0	0.033	13.8	LOS A	0.2	1.7	0.87	0.69	0.87	38.9
Approach			21	0.0	21	0.0	0.033	9.6	LOS A	0.2	1.7	0.87	0.69	0.87	36.4
East: Clarrie Hermes Drive															
4	L2	All MCs	41	0.0	41	0.0	0.655	6.1	LOS A	6.1	43.3	0.64	0.57	0.64	51.4
5	T1	All MCs	617	0.9	617	0.9	0.655	6.0	LOS A	6.1	43.3	0.64	0.57	0.64	57.8
6	R2	All MCs	276	1.5	276	1.5	0.655	13.9	LOS A	6.1	43.3	0.64	0.57	0.64	49.0
Approach			934	1.0	934	1.0	0.655	8.4	LOS A	6.1	43.3	0.64	0.57	0.64	55.4
North: Kingsland Parade															
7	L2	All MCs	197	0.0	197	0.0	0.470	4.3	LOS A	3.9	27.7	0.86	0.72	0.90	34.4
8	T1	All MCs	6	0.0	6	0.0	0.470	4.1	LOS A	3.9	27.7	0.86	0.72	0.90	30.7
9	R2	All MCs	216	4.4	216	4.4	0.470	8.8	LOS A	3.9	27.7	0.86	0.72	0.90	34.0
Approach			419	2.3	419	2.3	0.470	6.6	LOS A	3.9	27.7	0.86	0.72	0.90	34.2
West: Clarrie Hermes Drive															
10	L2	All MCs	280	1.1	280	1.1	0.698	7.2	LOS A	7.5	53.3	0.72	0.63	0.77	39.0
11	T1	All MCs	652	2.4	652	2.4	0.698	7.2	LOS A	7.5	53.3	0.72	0.63	0.77	58.6
12	R2	All MCs	18	0.0	18	0.0	0.698	15.0	LOS B	7.5	53.3	0.72	0.63	0.77	50.4
Approach			949	2.0	949	2.0	0.698	7.4	LOS A	7.5	53.3	0.72	0.63	0.77	52.9
All Vehicles			2323	1.6	2323	1.6	0.698	7.7	LOS A	7.5	53.3	0.71	0.62	0.74	50.0

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Clarrie Hermes Drive															
Lane 1[d]	21	0.0	21	0.0	629	0.033	100	9.6	LOS A	0.2	1.7	Full	115	0.0	0.0
Approach	21	0.0	21	0.0		0.033		9.6	LOS A	0.2	1.7				
East: Clarrie Hermes Drive															
Lane 1[d]	934	1.0	934	1.0	1425	0.655	100	8.4	LOS A	6.1	43.3	Full	325	0.0	0.0
Approach	934	1.0	934	1.0		0.655		8.4	LOS A	6.1	43.3				
North: Kingsland Parade															
Lane 1[d]	419	2.3	419	2.3	891	0.470	100	6.6	LOS A	3.9	27.7	Full	65	0.0	0.0
Approach	419	2.3	419	2.3		0.470		6.6	LOS A	3.9	27.7				
West: Clarrie Hermes Drive															
Lane 1[d]	949	2.0	949	2.0	1360	0.698	100	7.4	LOS A	7.5	53.3	Full	310	0.0	0.0
Approach	949	2.0	949	2.0		0.698		7.4	LOS A	7.5	53.3				

All Vehicles	2323	1.6	2323	1.6	0.698	7.7	LOS A	7.5	53.3

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

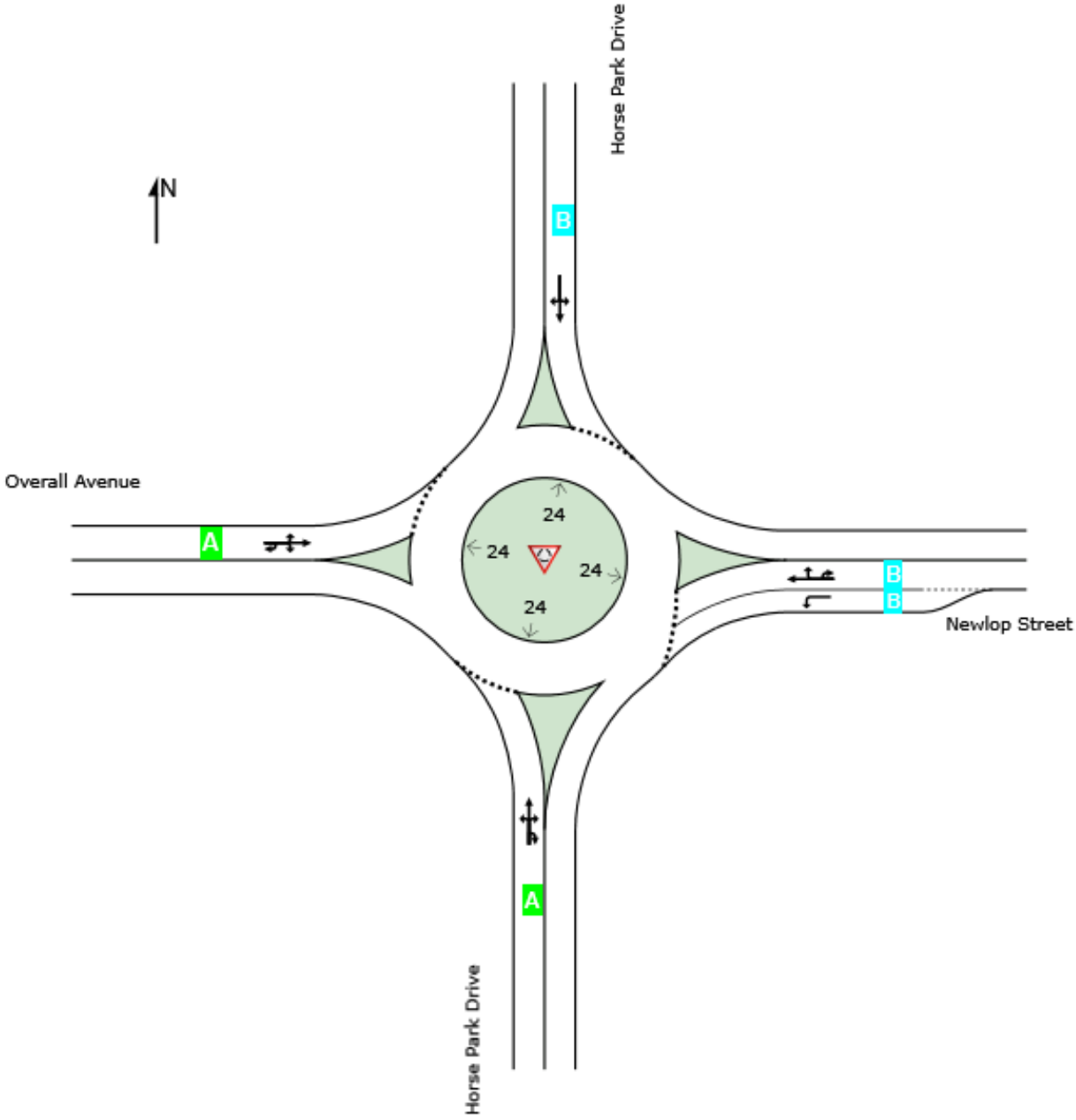
d Dominant lane on roundabout approach

Site: 101E [AM Development 2024 Overall Avenue and Horse Park Drive Weekday Peak 8:00am - 9:00am (Site Folder: Development)]

New Site
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	A	B	B	A	A



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Horse Park Drive															
1	L2	All MCs	71	3.0	71	3.0	0.580	9.2	LOS A	5.0	36.4	0.76	0.71	0.83	37.6
2	T1	All MCs	423	5.0	423	5.0	0.580	9.8	LOS A	5.0	36.4	0.76	0.71	0.83	60.4
3	R2	All MCs	41	0.0	41	0.0	0.580	14.7	LOS B	5.0	36.4	0.76	0.71	0.83	41.2
3u	U	All MCs	2	0.0	2	0.0	0.580	17.2	LOS B	5.0	36.4	0.76	0.71	0.83	59.5
Approach			537	4.3	537	4.3	0.580	10.1	LOS A	5.0	36.4	0.76	0.71	0.83	56.0
East: Newlop Street															
4	L2	All MCs	73	4.3	73	4.3	0.266	17.6	LOS B	2.0	14.6	1.00	0.87	1.00	35.6
5	T1	All MCs	105	2.0	105	2.0	0.298	14.2	LOS A	2.7	19.5	1.00	0.86	1.00	29.6
6	R2	All MCs	12	0.0	12	0.0	0.298	19.1	LOS B	2.7	19.5	1.00	0.86	1.00	37.9
6u	U	All MCs	1	0.0	1	0.0	0.298	22.8	LOS B	2.7	19.5	1.00	0.86	1.00	32.3
Approach			191	2.8	191	2.8	0.298	15.8	LOS B	2.7	19.5	1.00	0.87	1.00	33.3
North: Horse Park Drive															
7	L2	All MCs	9	0.0	9	0.0	0.896	14.7	LOS B	19.4	139.8	1.00	0.92	1.39	49.5
8	T1	All MCs	745	3.5	745	3.5	0.896	15.4	LOS B	19.4	139.8	1.00	0.92	1.39	55.3
9	R2	All MCs	269	3.5	269	3.5	0.896	20.5	LOS B	19.4	139.8	1.00	0.92	1.39	46.1
Approach			1024	3.5	1024	3.5	0.896	16.7	LOS B	19.4	139.8	1.00	0.92	1.39	53.3
West: Overall Avenue															
10	L2	All MCs	131	4.8	131	4.8	0.378	5.0	LOS A	2.4	17.6	0.66	0.65	0.66	41.9
11	T1	All MCs	46	9.1	46	9.1	0.378	4.8	LOS A	2.4	17.6	0.66	0.65	0.66	36.3
12	R2	All MCs	196	1.6	196	1.6	0.378	9.6	LOS A	2.4	17.6	0.66	0.65	0.66	40.9
12u	U	All MCs	2	0.0	2	0.0	0.378	11.4	LOS A	2.4	17.6	0.66	0.65	0.66	16.1
Approach			375	3.7	375	3.7	0.378	7.4	LOS A	2.4	17.6	0.66	0.65	0.66	40.8
All Vehicles			2126	3.7	2126	3.7	0.896	13.3	LOS A	19.4	139.8	0.88	0.81	1.09	50.5

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

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total veh/h	HV] %	[Total veh/h	HV] %	veh/h	v/c	%	sec		[Veh	Dist] m		m	%	%
South: Horse Park Drive															
Lane 1[d]	537	4.3	537	4.3	926	0.580	100	10.1	LOS A	5.0	36.4	Full	450	0.0	0.0
Approach	537	4.3	537	4.3		0.580		10.1	LOS A	5.0	36.4				
East: Newlop Street															
Lane 1	73	4.3	73	4.3	273	0.266	100	17.6	LOS B	2.0	14.6	Short	36	0.0	NA
Lane 2[d]	118	1.8	118	1.8	396	0.298	100	14.8	LOS B	2.7	19.5	Full	170	0.0	0.0
Approach	191	2.8	191	2.8		0.298		15.8	LOS B	2.7	19.5				
North: Horse Park Drive															
Lane 1[d]	1024	3.5	1024	3.5	1143	0.896	100	16.7	LOS B	19.4	139.8	Full	500	0.0	0.0

Approach	1024	3.5	1024	3.5		0.896		16.7	LOS B	19.4	139.8				
West: Overall Avenue															
Lane 1[d]	375	3.7	375	3.7	991	0.378	100	7.4	LOS A	2.4	17.6	Full	100	0.0	0.0
Approach	375	3.7	375	3.7		0.378		7.4	LOS A	2.4	17.6				
All Vehicles	2126	3.7	2126	3.7		0.896		13.3	LOS A	19.4	139.8				

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

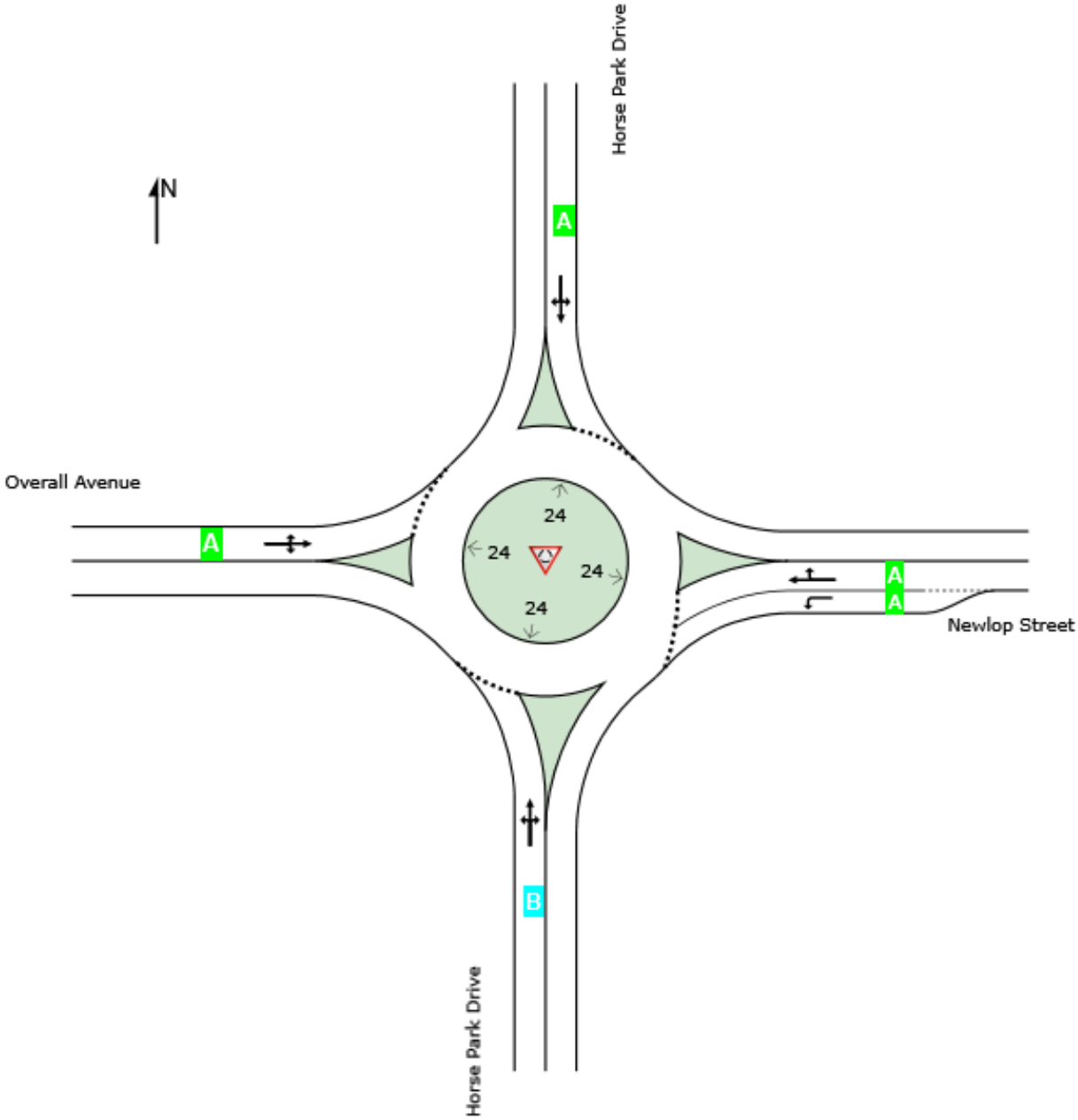
d Dominant lane on roundabout approach

Site: 101E [PM Development 2024 Overall Avenue and Horse Park Drive Weekday Peak 5:15pm - 6:15pm (Site Folder: Development)]

New Site
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	B	A	A	A	A



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Horse Park Drive															
1	L2	All MCs	143	1.5	143	1.5	0.894	15.8	LOS B	18.9	134.1	1.00	0.94	1.45	34.1
2	T1	All MCs	749	1.4	749	1.4	0.894	16.3	LOS B	18.9	134.1	1.00	0.94	1.45	55.6
3	R2	All MCs	81	2.6	81	2.6	0.894	21.4	LOS B	18.9	134.1	1.00	0.94	1.45	47.1
Approach			974	1.5	974	1.5	0.894	16.6	LOS B	18.9	134.1	1.00	0.94	1.45	51.9
East: Newlop Street															
4	L2	All MCs	52	0.0	52	0.0	0.075	7.2	LOS A	0.5	3.3	0.75	0.68	0.75	42.4
5	T1	All MCs	93	0.0	93	0.0	0.109	5.8	LOS A	0.8	5.5	0.76	0.62	0.76	37.0
6	R2	All MCs	8	0.0	8	0.0	0.109	10.8	LOS A	0.8	5.5	0.76	0.62	0.76	42.6
Approach			153	0.0	153	0.0	0.109	6.6	LOS A	0.8	5.5	0.76	0.64	0.76	40.0
North: Horse Park Drive															
7	L2	All MCs	18	0.0	18	0.0	0.564	7.2	LOS A	4.6	32.6	0.63	0.62	0.63	55.9
8	T1	All MCs	427	1.5	427	1.5	0.564	7.7	LOS A	4.6	32.6	0.63	0.62	0.63	61.4
9	R2	All MCs	207	2.5	207	2.5	0.564	12.9	LOS A	4.6	32.6	0.63	0.62	0.63	52.3
Approach			653	1.8	653	1.8	0.564	9.3	LOS A	4.6	32.6	0.63	0.62	0.63	58.9
West: Overall Avenue															
10	L2	All MCs	194	2.7	194	2.7	0.592	10.9	LOS A	5.8	41.4	1.00	0.91	1.22	39.0
11	T1	All MCs	91	2.3	91	2.3	0.592	10.7	LOS A	5.8	41.4	1.00	0.91	1.22	31.8
12	R2	All MCs	86	0.0	86	0.0	0.592	15.5	LOS B	5.8	41.4	1.00	0.91	1.22	37.8
Approach			371	2.0	371	2.0	0.592	11.9	LOS A	5.8	41.4	1.00	0.91	1.22	37.5
All Vehicles			2149	1.6	2149	1.6	0.894	12.9	LOS A	18.9	134.1	0.87	0.82	1.11	51.0

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Horse Park Drive															
Lane 1[d]	974	1.5	974	1.5	1089	0.894	100	16.6	LOS B	18.9	134.1	Full	450	0.0	0.0
Approach	974	1.5	974	1.5		0.894		16.6	LOS B	18.9	134.1				
East: Newlop Street															
Lane 1	52	0.0	52	0.0	688	0.075	100	7.2	LOS A	0.5	3.3	Short	36	0.0	NA
Lane 2[d]	101	0.0	101	0.0	926	0.109	100	6.2	LOS A	0.8	5.5	Full	170	0.0	0.0
Approach	153	0.0	153	0.0		0.109		6.6	LOS A	0.8	5.5				
North: Horse Park Drive															
Lane 1[d]	653	1.8	653	1.8	1156	0.564	100	9.3	LOS A	4.6	32.6	Full	500	0.0	0.0
Approach	653	1.8	653	1.8		0.564		9.3	LOS A	4.6	32.6				
West: Overall Avenue															
Lane 1[d]	371	2.0	371	2.0	626	0.592	100	11.9	LOS A	5.8	41.4	Full	100	0.0	0.0

Approach	371	2.0	371	2.0	0.592	11.9	LOS A	5.8	41.4
All Vehicles	2149	1.6	2149	1.6	0.894	12.9	LOS A	18.9	134.1

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

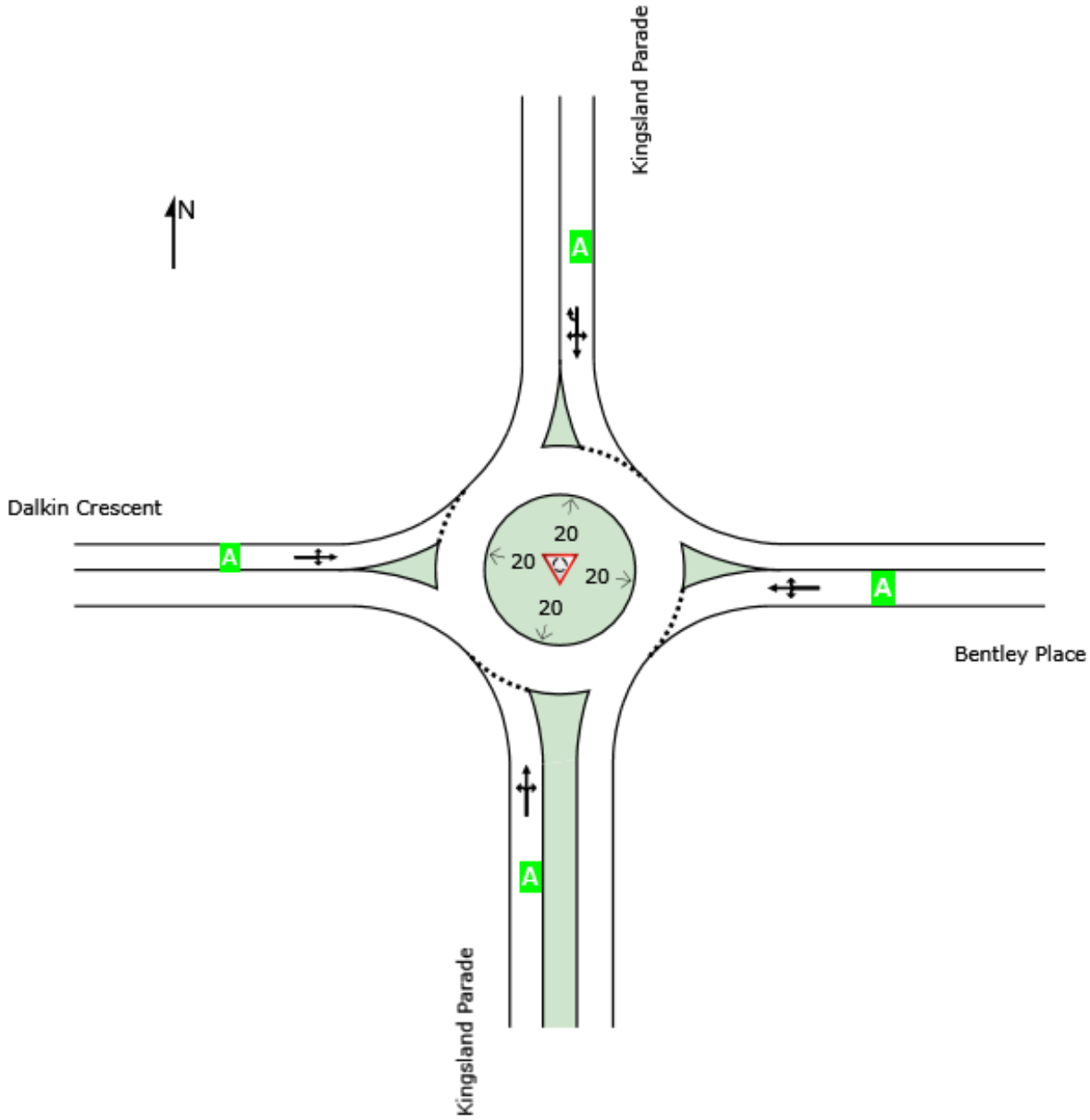
d Dominant lane on roundabout approach

Site: 101A [AM Future 2034 Weekday Peak 8:00am - 9:00am (Site Folder: Future)]

New Site
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Kingsland Parade															
1	L2	All MCs	40	13.2	40	13.2	0.212	2.2	LOS A	1.2	8.5	0.26	0.28	0.26	37.3
2	T1	All MCs	209	5.0	209	5.0	0.212	1.6	LOS A	1.2	8.5	0.26	0.28	0.26	36.8
3	R2	All MCs	24	0.0	24	0.0	0.212	5.9	LOS A	1.2	8.5	0.26	0.28	0.26	32.7
Approach			274	5.8	274	5.8	0.212	2.1	LOS A	1.2	8.5	0.26	0.28	0.26	36.7
East: Bentley Place															
4	L2	All MCs	236	1.3	236	1.3	0.288	3.5	LOS A	1.5	10.7	0.50	0.51	0.50	31.0
5	T1	All MCs	25	0.0	25	0.0	0.288	2.9	LOS A	1.5	10.7	0.50	0.51	0.50	36.7
6	R2	All MCs	43	2.4	43	2.4	0.288	7.3	LOS A	1.5	10.7	0.50	0.51	0.50	35.1
Approach			304	1.4	304	1.4	0.288	4.0	LOS A	1.5	10.7	0.50	0.51	0.50	32.9
North: Kingsland Parade															
7	L2	All MCs	18	0.0	18	0.0	0.242	4.4	LOS A	1.3	9.8	0.30	0.29	0.30	38.4
8	T1	All MCs	266	4.7	266	4.7	0.242	1.7	LOS A	1.3	9.8	0.30	0.29	0.30	37.1
9	R2	All MCs	14	0.0	14	0.0	0.242	6.0	LOS A	1.3	9.8	0.30	0.29	0.30	38.0
9u	U	All MCs	6	100.0	6	100.0	0.242	8.6	LOS A	1.3	9.8	0.30	0.29	0.30	37.2
Approach			304	6.2	304	6.2	0.242	2.2	LOS A	1.3	9.8	0.30	0.29	0.30	37.2
West: Dalkin Crescent															
10	L2	All MCs	33	0.0	33	0.0	0.119	3.4	LOS A	0.7	4.8	0.49	0.56	0.49	37.0
11	T1	All MCs	9	0.0	9	0.0	0.119	5.8	LOS A	0.7	4.8	0.49	0.56	0.49	37.3
12	R2	All MCs	80	0.0	80	0.0	0.119	7.3	LOS A	0.7	4.8	0.49	0.56	0.49	35.6
Approach			122	0.0	122	0.0	0.119	6.1	LOS A	0.7	4.8	0.49	0.56	0.49	36.2
All Vehicles			1004	3.9	1004	3.9	0.288	3.2	LOS A	1.5	10.7	0.37	0.39	0.37	36.0

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Kingsland Parade															
Lane 1[d]	274	5.8	274	5.8	1288	0.212	100	2.1	LOS A	1.2	8.5	Full	70	0.0	0.0
Approach	274	5.8	274	5.8		0.212		2.1	LOS A	1.2	8.5				
East: Bentley Place															
Lane 1[d]	304	1.4	304	1.4	1056	0.288	100	4.0	LOS A	1.5	10.7	Full	95	0.0	0.0
Approach	304	1.4	304	1.4		0.288		4.0	LOS A	1.5	10.7				
North: Kingsland Parade															
Lane 1[d]	304	6.2	304	6.2	1257	0.242	100	2.2	LOS A	1.3	9.8	Full	300	0.0	0.0
Approach	304	6.2	304	6.2		0.242		2.2	LOS A	1.3	9.8				
West: Dalkin Crescent															
Lane 1[d]	122	0.0	122	0.0	1027	0.119	100	6.1	LOS A	0.7	4.8	Full	420	0.0	0.0

Approach	122	0.0	122	0.0	0.119	6.1	LOS A	0.7	4.8
All Vehicles	1004	3.9	1004	3.9	0.288	3.2	LOS A	1.5	10.7

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

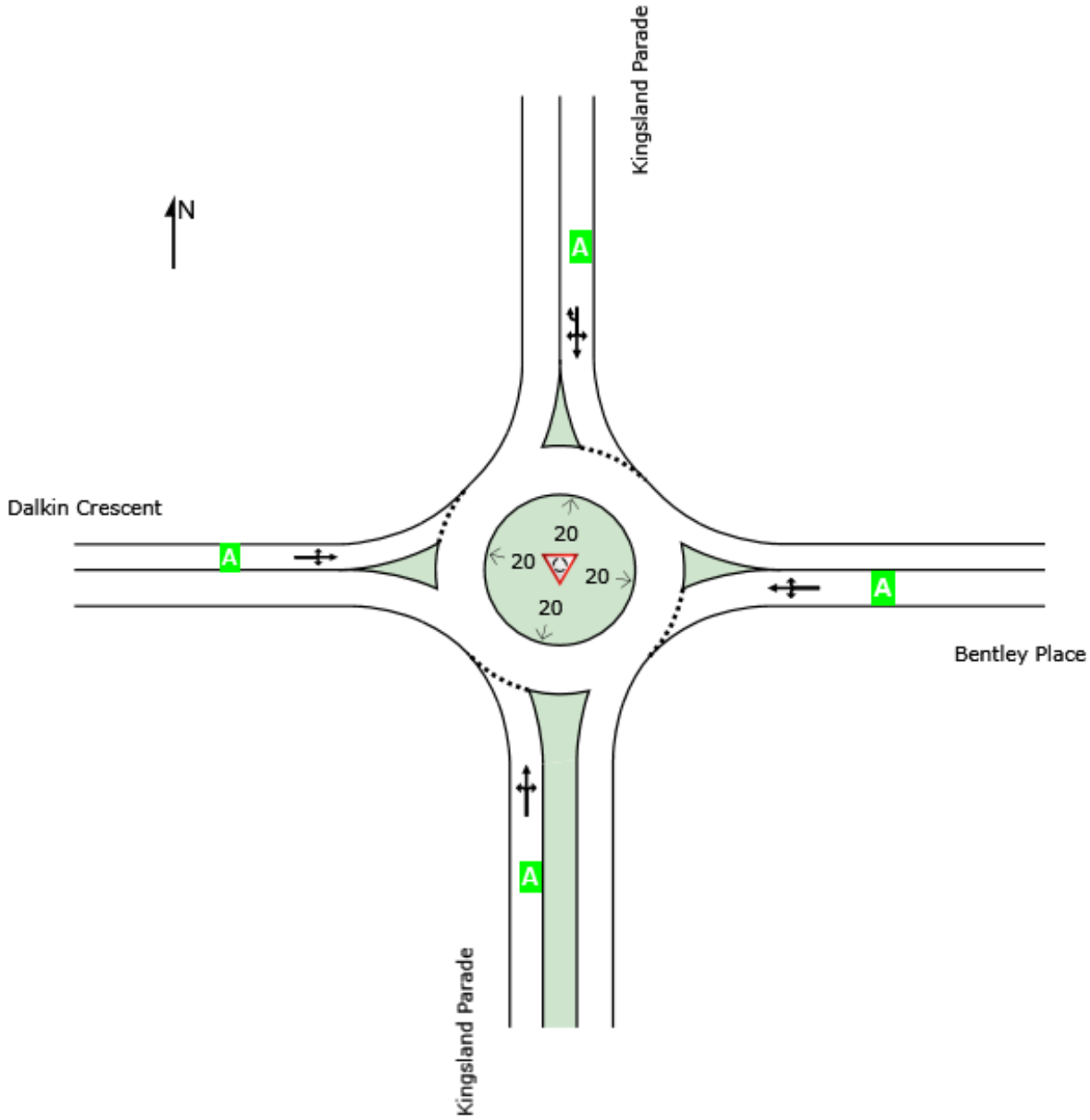
d Dominant lane on roundabout approach

Site: 101B [PM Future 2034 Weekday Peak 5:15pm - 6:15pm (Site Folder: Future)]

New Site
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Kingsland Parade															
1	L2	All MCs	69	0.0	69	0.0	0.555	2.7	LOS A	4.5	31.8	0.47	0.39	0.47	36.2
2	T1	All MCs	485	1.7	485	1.7	0.555	2.2	LOS A	4.5	31.8	0.47	0.39	0.47	35.5
3	R2	All MCs	164	1.3	164	1.3	0.555	6.5	LOS A	4.5	31.8	0.47	0.39	0.47	30.6
Approach			719	1.5	719	1.5	0.555	3.2	LOS A	4.5	31.8	0.47	0.39	0.47	34.9
East: Bentley Place															
4	L2	All MCs	212	1.0	212	1.0	0.296	3.4	LOS A	1.6	11.4	0.51	0.51	0.51	30.8
5	T1	All MCs	39	0.0	39	0.0	0.296	2.8	LOS A	1.6	11.4	0.51	0.51	0.51	36.6
6	R2	All MCs	60	3.5	60	3.5	0.296	7.2	LOS A	1.6	11.4	0.51	0.51	0.51	35.0
Approach			311	1.4	311	1.4	0.296	4.1	LOS A	1.6	11.4	0.51	0.51	0.51	33.3
North: Kingsland Parade															
7	L2	All MCs	21	0.0	21	0.0	0.290	2.8	LOS A	1.6	11.8	0.42	0.38	0.42	35.9
8	T1	All MCs	266	3.2	266	3.2	0.290	2.3	LOS A	1.6	11.8	0.42	0.38	0.42	35.9
9	R2	All MCs	29	0.0	29	0.0	0.290	6.6	LOS A	1.6	11.8	0.42	0.38	0.42	37.3
9u	U	All MCs	11	50.0	11	50.0	0.290	8.9	LOS A	1.6	11.8	0.42	0.38	0.42	36.7
Approach			327	4.2	327	4.2	0.290	2.9	LOS A	1.6	11.8	0.42	0.38	0.42	36.2
West: Dalkin Crescent															
10	L2	All MCs	46	0.0	46	0.0	0.144	7.0	LOS A	0.9	6.5	0.78	0.69	0.78	35.4
11	T1	All MCs	13	0.0	13	0.0	0.144	6.5	LOS A	0.9	6.5	0.78	0.69	0.78	34.1
12	R2	All MCs	37	0.0	37	0.0	0.144	10.8	LOS A	0.9	6.5	0.78	0.69	0.78	33.5
Approach			96	0.0	96	0.0	0.144	8.4	LOS A	0.9	6.5	0.78	0.69	0.78	34.6
All Vehicles			1453	2.0	1453	2.0	0.555	3.7	LOS A	4.5	31.8	0.49	0.43	0.49	34.9

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Kingsland Parade															
Lane 1[d]	719	1.5	719	1.5	1296	0.555	100	3.2	LOS A	4.5	31.8	Full	70	0.0	0.0
Approach	719	1.5	719	1.5		0.555		3.2	LOS A	4.5	31.8				
East: Bentley Place															
Lane 1[d]	311	1.4	311	1.4	1050	0.296	100	4.1	LOS A	1.6	11.4	Full	95	0.0	0.0
Approach	311	1.4	311	1.4		0.296		4.1	LOS A	1.6	11.4				
North: Kingsland Parade															
Lane 1[d]	327	4.2	327	4.2	1129	0.290	100	2.9	LOS A	1.6	11.8	Full	300	0.0	0.0
Approach	327	4.2	327	4.2		0.290		2.9	LOS A	1.6	11.8				
West: Dalkin Crescent															
Lane 1[d]	96	0.0	96	0.0	664	0.144	100	8.4	LOS A	0.9	6.5	Full	420	0.0	0.0

Approach	96	0.0	96	0.0	0.144	8.4	LOS A	0.9	6.5
All Vehicles	1453	2.0	1453	2.0	0.555	3.7	LOS A	4.5	31.8

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

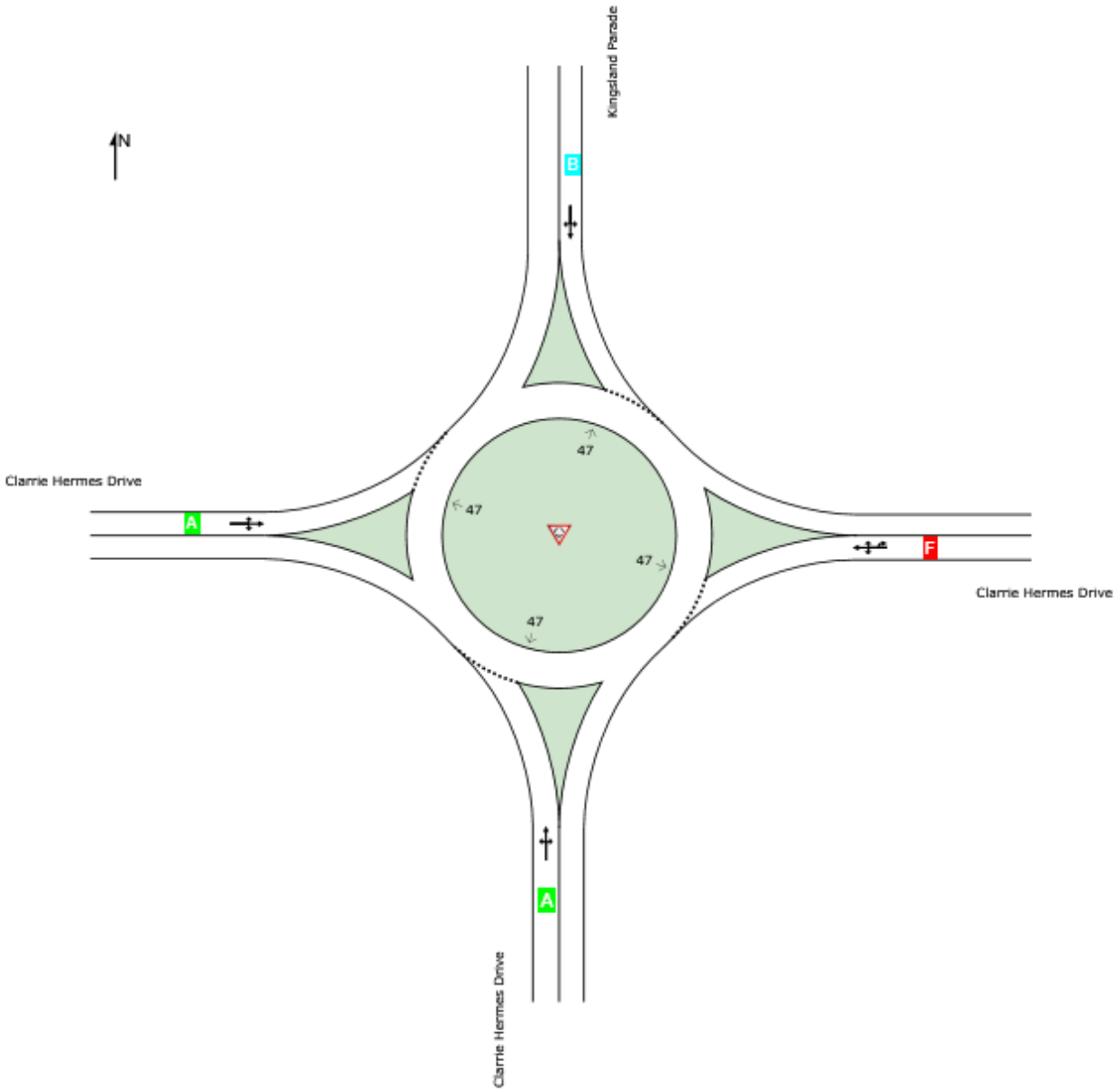
d Dominant lane on roundabout approach

Site: 101C [AM Future 2034 Weekday Peak 8:00am - 9:00am (Site Folder: Future)]

NA
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	A	F	B	A	F



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Clarrie Hermes Drive															
1	L2	All MCs	8	0.0	8	0.0	0.072	5.3	LOS A	0.4	3.1	0.82	0.70	0.82	39.5
2	T1	All MCs	6	0.0	6	0.0	0.072	4.1	LOS A	0.4	3.1	0.82	0.70	0.82	33.5
3	R2	All MCs	32	0.0	32	0.0	0.072	11.1	LOS A	0.4	3.1	0.82	0.70	0.82	39.2
Approach			46	0.0	46	0.0	0.072	9.1	LOS A	0.4	3.1	0.82	0.70	0.82	38.7
East: Clarrie Hermes Drive															
4	L2	All MCs	42	0.0	42	0.0	1.323	303.9	LOS F	161.9	1189.8	1.00	4.02	8.73	5.5
5	T1	All MCs	847	5.5	847	5.5	1.323	304.2	LOS F	161.9	1189.8	1.00	4.02	8.73	7.4
6	R2	All MCs	45	18.6	45	18.6	1.323	312.9	LOS F	161.9	1189.8	1.00	4.02	8.73	4.9
6u	U	All MCs	8	0.0	8	0.0	1.323	314.9	LOS F	161.9	1189.8	1.00	4.02	8.73	7.5
Approach			943	5.8	943	5.8	1.323	304.7	LOS F	161.9	1189.8	1.00	4.02	8.73	7.2
North: Kingsland Parade															
7	L2	All MCs	329	4.2	329	4.2	0.824	20.3	LOS B	11.9	85.6	1.00	1.35	1.91	25.8
8	T1	All MCs	4	0.0	4	0.0	0.824	19.9	LOS B	11.9	85.6	1.00	1.35	1.91	19.5
9	R2	All MCs	189	2.8	189	2.8	0.824	24.7	LOS B	11.9	85.6	1.00	1.35	1.91	25.3
Approach			523	3.6	523	3.6	0.824	21.9	LOS B	11.9	85.6	1.00	1.35	1.91	25.6
West: Clarrie Hermes Drive															
10	L2	All MCs	144	2.9	144	2.9	0.539	5.3	LOS A	4.5	33.0	0.33	0.42	0.33	41.7
11	T1	All MCs	707	6.4	707	6.4	0.539	5.2	LOS A	4.5	33.0	0.33	0.42	0.33	61.6
12	R2	All MCs	12	0.0	12	0.0	0.539	13.0	LOS A	4.5	33.0	0.33	0.42	0.33	54.4
Approach			863	5.7	863	5.7	0.539	5.3	LOS A	4.5	33.0	0.33	0.42	0.33	58.3
All Vehicles			2376	5.2	2376	5.2	1.323	127.9	LOS F	161.9	1189.8	0.75	2.06	4.02	13.4

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Clarrie Hermes Drive															
Lane 1[d]	46	0.0	46	0.0	645	0.072	100	9.1	LOS A	0.4	3.1	Full	115	-11.0	0.0
Approach	46	0.0	46	0.0		0.072		9.1	LOS A	0.4	3.1				
East: Clarrie Hermes Drive															
Lane 1[d]	943	5.8	943	5.8	713	1.323	100	304.7	LOS F	161.9	1189.8	Full	325	0.0	100.0
Approach	943	5.8	943	5.8		1.323		304.7	LOS F	161.9	1189.8				
North: Kingsland Parade															
Lane 1[d]	523	3.6	523	3.6	635	0.824	100	21.9	LOS B	11.9	85.6	Full	65	0.0	13.8
Approach	523	3.6	523	3.6		0.824		21.9	LOS B	11.9	85.6				
West: Clarrie Hermes Drive															
Lane 1[d]	863	5.7	863	5.7	1601	0.539	100	5.3	LOS A	4.5	33.0	Full	310	0.0	0.0

Approach	863	5.7	863	5.7	0.539	5.3	LOS A	4.5	33.0
All Vehicles	2376	5.2	2376	5.2	1.323	127.9	LOS F	161.9	1189.8

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

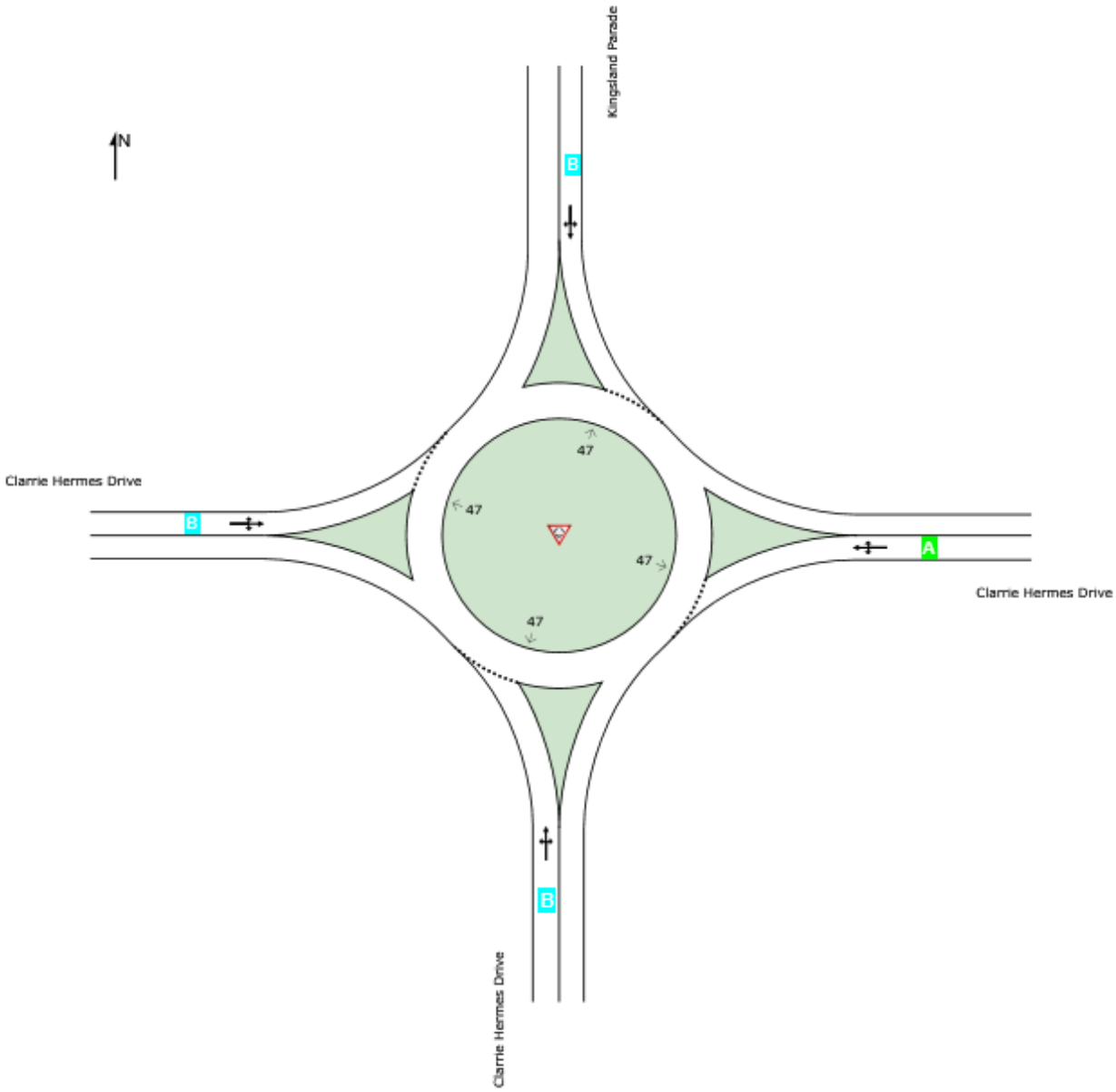
d Dominant lane on roundabout approach

Site: 101D [PM Future 2034 Weekday Peak 5:15pm - 6:15pm (Site Folder: Future)]

NA
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	B	A	B	B	B



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Clarrie Hermes Drive															
1	L2	All MCs	2	0.0	2	0.0	0.093	17.4	LOS B	0.8	5.5	1.00	0.86	1.00	32.5
2	T1	All MCs	15	0.0	15	0.0	0.093	16.2	LOS B	0.8	5.5	1.00	0.86	1.00	24.7
3	R2	All MCs	12	0.0	12	0.0	0.093	23.2	LOS B	0.8	5.5	1.00	0.86	1.00	32.4
Approach			28	0.0	28	0.0	0.093	19.1	LOS B	0.8	5.5	1.00	0.86	1.00	29.2
East: Clarrie Hermes Drive															
4	L2	All MCs	59	0.0	59	0.0	0.884	10.9	LOS A	17.6	124.0	0.98	0.86	1.25	47.5
5	T1	All MCs	798	0.8	798	0.8	0.884	10.9	LOS A	17.6	124.0	0.98	0.86	1.25	54.2
6	R2	All MCs	327	1.3	327	1.3	0.884	18.7	LOS B	17.6	124.0	0.98	0.86	1.25	45.0
Approach			1184	0.9	1184	0.9	0.884	13.1	LOS A	17.6	124.0	0.98	0.86	1.25	51.8
North: Kingsland Parade															
7	L2	All MCs	252	0.0	252	0.0	0.863	25.0	LOS B	15.4	110.2	1.00	1.48	1.96	24.0
8	T1	All MCs	8	0.0	8	0.0	0.863	24.8	LOS B	15.4	110.2	1.00	1.48	1.96	17.8
9	R2	All MCs	277	4.6	277	4.6	0.863	29.6	LOS C	15.4	110.2	1.00	1.48	1.96	23.5
Approach			537	2.4	537	2.4	0.863	27.4	LOS B	15.4	110.2	1.00	1.48	1.96	23.7
West: Clarrie Hermes Drive															
10	L2	All MCs	367	0.9	367	0.9	0.970	22.4	LOS B	33.6	239.1	1.00	1.31	1.94	29.3
11	T1	All MCs	842	2.3	842	2.3	0.970	22.4	LOS B	33.6	239.1	1.00	1.31	1.94	44.7
12	R2	All MCs	23	0.0	23	0.0	0.970	30.1	LOS C	33.6	239.1	1.00	1.31	1.94	36.3
Approach			1233	1.8	1233	1.8	0.970	22.5	LOS B	33.6	239.1	1.00	1.31	1.94	40.1
All Vehicles			2982	1.5	2982	1.5	0.970	19.6	LOS B	33.6	239.1	0.99	1.16	1.66	40.1

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Clarrie Hermes Drive															
Lane 1[d]	28	0.0	28	0.0	306	0.093	100	19.1	LOS B	0.8	5.5	Full	115	0.0	0.0
Approach	28	0.0	28	0.0		0.093		19.1	LOS B	0.8	5.5				
East: Clarrie Hermes Drive															
Lane 1[d]	1184	0.9	1184	0.9	1340	0.884	100	13.1	LOS A	17.6	124.0	Full	325	0.0	0.0
Approach	1184	0.9	1184	0.9		0.884		13.1	LOS A	17.6	124.0				
North: Kingsland Parade															
Lane 1[d]	537	2.4	537	2.4	622	0.863	100	27.4	LOS B	15.4	110.2	Full	65	0.0	23.8
Approach	537	2.4	537	2.4		0.863		27.4	LOS B	15.4	110.2				
West: Clarrie Hermes Drive															
Lane 1[d]	1233	1.8	1233	1.8	1271	0.970	100	22.5	LOS B	33.6	239.1	Full	310	0.0	0.0
Approach	1233	1.8	1233	1.8		0.970		22.5	LOS B	33.6	239.1				

All Vehicles	2982	1.5	2982	1.5	0.970	19.6	LOS B	33.6	239.1

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

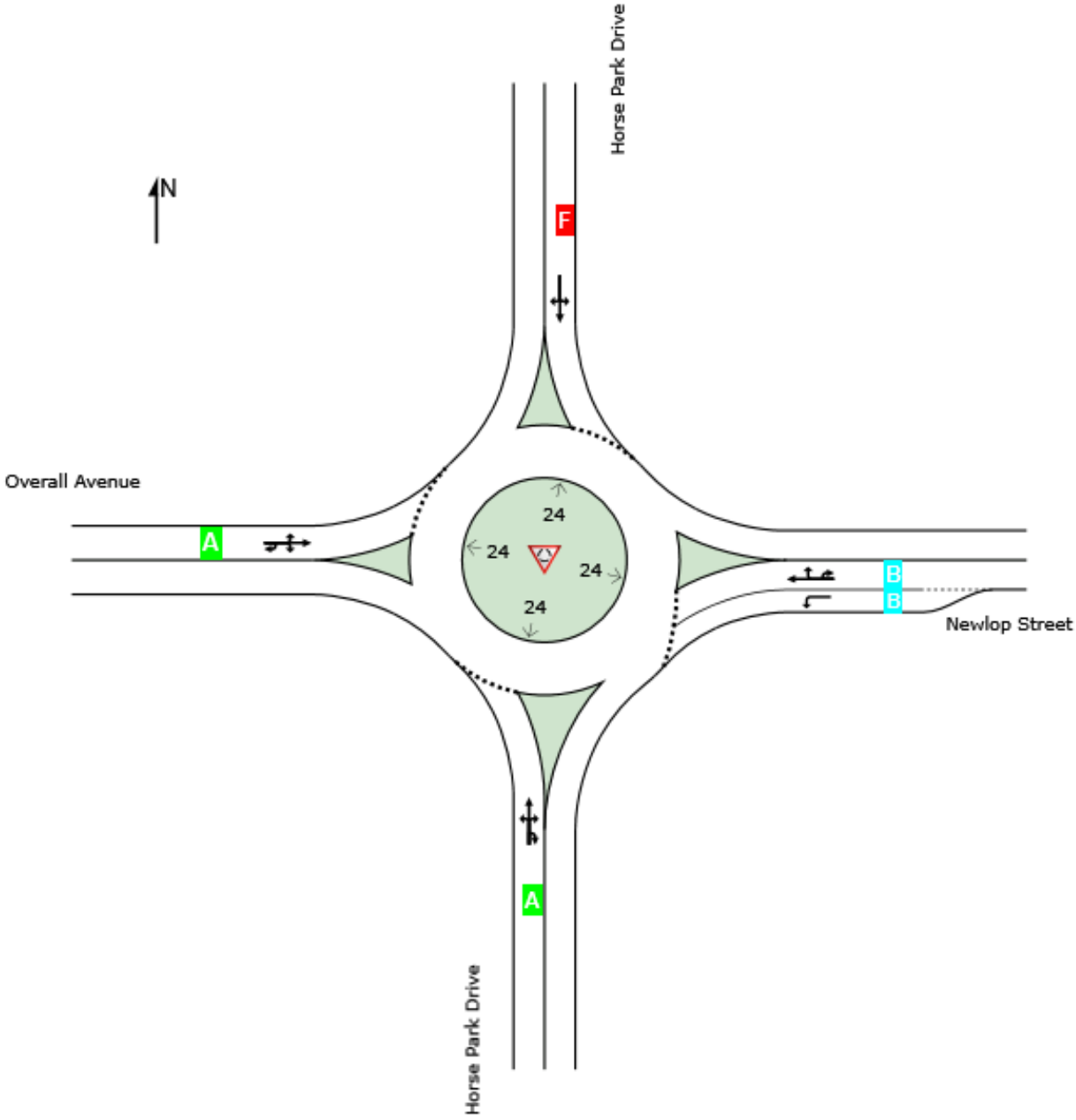
d Dominant lane on roundabout approach

Site: 101E [AM Future 2034 Weekday Peak 8:00am - 9:00am (Site Folder: Future)]

New Site
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	A	B	F	A	F



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Horse Park Drive															
1	L2	All MCs	99	2.1	99	2.1	0.780	13.6	LOS A	10.5	76.4	0.94	0.87	1.27	35.3
2	T1	All MCs	554	4.8	554	4.8	0.780	14.2	LOS A	10.5	76.4	0.94	0.87	1.27	56.8
3	R2	All MCs	51	0.0	51	0.0	0.780	19.1	LOS B	10.5	76.4	0.94	0.87	1.27	38.7
3u	U	All MCs	2	0.0	2	0.0	0.780	21.6	LOS B	10.5	76.4	0.94	0.87	1.27	55.8
Approach			705	4.0	705	4.0	0.780	14.5	LOS A	10.5	76.4	0.94	0.87	1.27	52.6
East: Newlop Street															
4	L2	All MCs	92	3.4	92	3.4	0.391	24.9	LOS B	3.1	22.5	1.00	0.95	1.10	31.9
5	T1	All MCs	136	1.6	136	1.6	0.447	21.6	LOS B	4.5	31.7	1.00	0.97	1.13	24.7
6	R2	All MCs	15	0.0	15	0.0	0.447	26.5	LOS B	4.5	31.7	1.00	0.97	1.13	34.2
6u	U	All MCs	2	0.0	2	0.0	0.447	30.2	LOS C	4.5	31.7	1.00	0.97	1.13	27.5
Approach			244	2.2	244	2.2	0.447	23.2	LOS B	4.5	31.7	1.00	0.96	1.12	28.9
North: Horse Park Drive															
7	L2	All MCs	12	0.0	12	0.0	1.251	239.4	LOS F	184.1	1324.6	1.00	4.71	10.58	9.3
8	T1	All MCs	962	3.3	962	3.3	1.251	240.1	LOS F	184.1	1324.6	1.00	4.71	10.58	12.3
9	R2	All MCs	348	3.3	348	3.3	1.251	245.2	LOS F	184.1	1324.6	1.00	4.71	10.58	8.4
Approach			1322	3.3	1322	3.3	1.251	241.4	LOS F	184.1	1324.6	1.00	4.71	10.58	11.3
West: Overall Avenue															
10	L2	All MCs	167	4.4	167	4.4	0.574	7.7	LOS A	5.2	37.5	0.88	0.81	1.01	40.3
11	T1	All MCs	59	7.1	59	7.1	0.574	7.5	LOS A	5.2	37.5	0.88	0.81	1.01	33.8
12	R2	All MCs	249	1.3	249	1.3	0.574	12.2	LOS A	5.2	37.5	0.88	0.81	1.01	39.2
12u	U	All MCs	2	0.0	2	0.0	0.574	14.1	LOS A	5.2	37.5	0.88	0.81	1.01	15.5
Approach			478	3.1	478	3.1	0.574	10.1	LOS A	5.2	37.5	0.88	0.81	1.01	39.1
All Vehicles			2749	3.3	2749	3.3	1.251	123.6	LOS F	184.1	1324.6	0.96	2.71	5.69	17.3

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Horse Park Drive															
Lane 1[d]	705	4.0	705	4.0	904	0.780	100	14.5	LOS A	10.5	76.4	Full	450	0.0	0.0
Approach	705	4.0	705	4.0		0.780		14.5	LOS A	10.5	76.4				
East: Newlop Street															
Lane 1	92	3.4	92	3.4	234	0.391	100	24.9	LOS B	3.1	22.5	Short	36	0.0	NA
Lane 2[d]	153	1.4	153	1.4	341	0.447	100	22.2	LOS B	4.5	31.7	Full	170	0.0	0.0
Approach	244	2.2	244	2.2		0.447		23.2	LOS B	4.5	31.7				
North: Horse Park Drive															
Lane 1[d]	1322	3.3	1322	3.3	1057	1.251	100	241.4	LOS F	184.1	1324.6	Full	500	0.0	59.0

Approach	1322	3.3	1322	3.3		1.251		241.4	LOS F	184.1	1324.6				
West: Overall Avenue															
Lane 1[d]	478	3.1	478	3.1	832	0.574	100	10.1	LOS A	5.2	37.5	Full	100	0.0	0.0
Approach	478	3.1	478	3.1		0.574		10.1	LOS A	5.2	37.5				
All Vehicles	2749	3.3	2749	3.3		1.251		123.6	LOS F	184.1	1324.6				

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

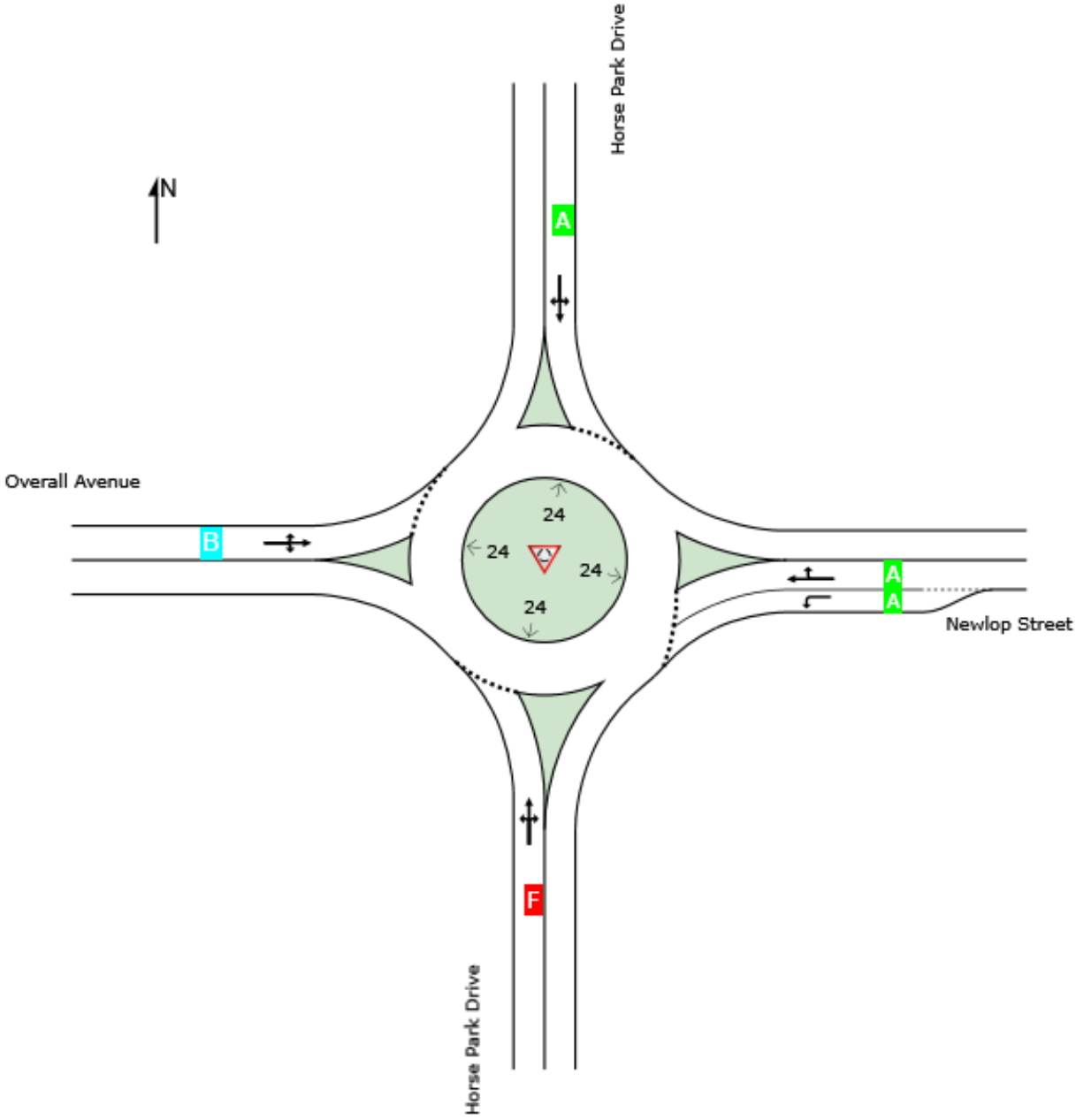
d Dominant lane on roundabout approach

Site: 101E [PM Future 2034 Weekday Peak 5:15pm - 6:15pm (Site Folder: Future)]

New Site
Site Category: (None)
Roundabout

LOS Summary

	Approaches				Intersection
	South	East	North	West	
LOS	F	A	A	B	F



Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV]	Arrival Flows [Total HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh. Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed

			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Horse Park Drive															
1	L2	All MCs	185	1.1	185	1.1	1.259	247.7	LOS F	178.9	1266.7	1.00	4.76	11.20	7.2
2	T1	All MCs	968	1.3	968	1.3	1.259	248.3	LOS F	178.9	1266.7	1.00	4.76	11.20	12.0
3	R2	All MCs	102	2.1	102	2.1	1.259	253.4	LOS F	178.9	1266.7	1.00	4.76	11.20	8.4
Approach			1256	1.3	1256	1.3	1.259	248.6	LOS F	178.9	1266.7	1.00	4.76	11.20	11.0
East: Newlop Street															
4	L2	All MCs	67	0.0	67	0.0	0.138	9.9	LOS A	1.0	6.9	0.91	0.77	0.91	40.4
5	T1	All MCs	120	0.0	120	0.0	0.196	8.1	LOS A	1.6	11.5	0.95	0.73	0.95	35.5
6	R2	All MCs	12	0.0	12	0.0	0.196	13.1	LOS A	1.6	11.5	0.95	0.73	0.95	41.7
Approach			199	0.0	199	0.0	0.196	9.0	LOS A	1.6	11.5	0.94	0.74	0.94	38.3
North: Horse Park Drive															
7	L2	All MCs	22	0.0	22	0.0	0.760	10.1	LOS A	10.1	71.6	0.86	0.75	1.01	53.7
8	T1	All MCs	553	1.3	553	1.3	0.760	10.6	LOS A	10.1	71.6	0.86	0.75	1.01	59.5
9	R2	All MCs	268	2.4	268	2.4	0.760	15.8	LOS B	10.1	71.6	0.86	0.75	1.01	50.2
Approach			843	1.6	843	1.6	0.760	12.3	LOS A	10.1	71.6	0.86	0.75	1.01	56.9
West: Overall Avenue															
10	L2	All MCs	249	2.5	249	2.5	0.798	19.3	LOS B	10.8	76.8	1.00	1.18	1.62	34.1
11	T1	All MCs	117	1.8	117	1.8	0.798	19.0	LOS B	10.8	76.8	1.00	1.18	1.62	25.5
12	R2	All MCs	111	0.0	111	0.0	0.798	23.8	LOS B	10.8	76.8	1.00	1.18	1.62	32.9
Approach			477	1.8	477	1.8	0.798	20.3	LOS B	10.8	76.8	1.00	1.18	1.62	32.3
All Vehicles			2775	1.4	2775	1.4	1.259	120.4	LOS F	178.9	1266.7	0.95	2.64	5.72	17.6

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Horse Park Drive															
Lane 1[d]	1256	1.3	1256	1.3	997	1.259	100	248.6	LOS F	178.9	1266.7	Full	450	0.0	73.6
Approach	1256	1.3	1256	1.3		1.259		248.6	LOS F	178.9	1266.7				
East: Newlop Street															
Lane 1	67	0.0	67	0.0	488	0.138	100	9.9	LOS A	1.0	6.9	Short	36	0.0	NA
Lane 2[d]	132	0.0	132	0.0	671	0.196	100	8.5	LOS A	1.6	11.5	Full	170	0.0	0.0
Approach	199	0.0	199	0.0		0.196		9.0	LOS A	1.6	11.5				
North: Horse Park Drive															
Lane 1[d]	843	1.6	843	1.6	1109	0.760	100	12.3	LOS A	10.1	71.6	Full	500	0.0	0.0
Approach	843	1.6	843	1.6		0.760		12.3	LOS A	10.1	71.6				
West: Overall Avenue															
Lane 1[d]	477	1.8	477	1.8	597	0.798	100	20.3	LOS B	10.8	76.8	Full	100	0.0	0.0

Approach	477	1.8	477	1.8	0.798	20.3	LOS B	10.8	76.8
All Vehicles	2775	1.4	2775	1.4	1.259	120.4	LOS F	178.9	1266.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout Capacity Model: SIDRA Standard.

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

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

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

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

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

d Dominant lane on roundabout approach

Appendix C Drawings

DEVELOPMENT STATISTICS

YIELD CALCULATION

UNIT TYPE	NO. UNITS	% OF UNITS
1BED	12	7.7%
2BED	83	53.2%
2BED ST	27	17.3%
3BED	11	7.1%
3BED ST	6	3.8%
COMMERCIAL	13	8.3%
STUDIO	4	2.6%
TOTAL NO. OF UNITS: 156	156	100.0%

CAR PARKING SCHEDULE

TYPE	DIMENSIONS LENGTH	DIMENSIONS WIDTH	NUMBER OF SPACES
BASEMENT 2			
Residential	5400	2400	142
Residential - Tandem	5400	2400	6
			148
BASEMENT 1			
Residential	5400	2400	106
Retail	5400	2400	16
Residential - Tandem	5400	2400	6
Residential Adaptable	5400	2400	11
			139
LOWER GROUND			
Residential	5400	2400	65
Residential Adaptable	5400	2400	11
			76
UPPER GROUND			
EVO Dedicated Carpark	5400	3000	1
			1
TOTAL NO. OF CARS			364

MOTOCYCLE SCHEDULE

TYPE	DIMENSIONS LENGTH	DIMENSIONS WIDTH	NUMBER OF SPACES
LOWER GROUND			
MOTORCYCLE PARKING			11
TOTAL NO. OF CARS			11

STORAGE	232

ADAPTABLE UNIT SCHEDULE

TYPE		UNITS
1 BED		3
2 BED		13
3 BED		6
TOTAL		**22**

COMMUNAL OPEN SPACE

Level	Area
UPPER GROUND	437 m²
LEVEL 1	251 m²
LEVEL 1	187 m²
LEVEL 2	291 m²
Grand total	1166 m²

LANDSCAPE AREA

LEVEL	AREA
LOWER GROUND	14 m²
UPPER GROUND	960 m²
LEVEL 1	164 m²
LEVEL 2	302 m²
LEVEL 3	13 m²
LEVEL 4	13 m²
LEVEL 5	37 m²
LEVEL 6	47 m²
TOTAL GFA	1550 m²

AREA SCHEDULE - NSA

NAME	AREA
LOWER GROUND	
COMMERCIAL	641 m²
	641 m²
UPPER GROUND	
COMMERCIAL	718 m²
RETAIL	1087 m²
	1806 m²
LEVEL 1	
2BED	610 m²
3BED	112 m²
	722 m²
LEVEL 2	
1BED	181 m²
2BED	1825 m²
3BED	347 m²
STUDIO	45 m²
	2398 m²
LEVEL 3	
1BED	181 m²
2BED	1825 m²
3BED	348 m²
STUDIO	45 m²
	2399 m²
LEVEL 4	
1BED	181 m²
2BED	1825 m²
3BED	348 m²
STUDIO	45 m²
	2399 m²
LEVEL 5	
1BED	181 m²
2BED	1128 m²
2BED ST	258 m²
3BED	110 m²
3BED ST	362 m²
STUDIO	45 m²
	2085 m²
LEVEL 6	
2BED ST	1385 m²
3BED ST	377 m²
	1762 m²
LEVEL 7	
2BED ST	1034 m²
	1034 m²
TOTAL NLA	15244 m²

GFA EXCLUDES: CARPARK, LANDSCAPE, AND BALCONIES

AREA SCHEDULE - GFA

NAME	AREA
BASEMENT 2	
SERVICES	22 m²
	22 m²
BASEMENT 1	
SERVICES	22 m²
	22 m²
LOWER GROUND	
COMMERCIAL	641 m²
POS	180 m²
SERVICES	322 m²
	1143 m²
UPPER GROUND	
AMENITY	49 m²
COMMERCIAL	718 m²
LIFT / STAIR	100 m²
POS	122 m²
RETAIL	1087 m²
SERVICES	163 m²
WASTE	218 m²
	2458 m²
LEVEL 1	
2BED	610 m²
3BED	112 m²
AMENITY	273 m²
CORRIDOR	264 m²
POS	33 m²
SERVICES	151 m²
	1443 m²
LEVEL 2	
1BED	181 m²
2BED	1825 m²
3BED	347 m²
CORRIDOR	513 m²
POS	110 m²
SERVICES	44 m²
STUDIO	45 m²
	3065 m²
LEVEL 3	
1BED	181 m²
2BED	1825 m²
3BED	348 m²
CORRIDOR	505 m²
POS	110 m²
SERVICES	43 m²
STUDIO	45 m²
	3057 m²
LEVEL 4	
1BED	181 m²
2BED	1825 m²
3BED	348 m²
CORRIDOR	510 m²
POS	110 m²
SERVICES	43 m²

AREA SCHEDULE - GFA

NAME	AREA
STUDIO	45 m²
	3062 m²
LEVEL 5	
1BED	181 m²
2BED	1128 m²
2BED ST	258 m²
3BED	110 m²
3BED ST	362 m²
CORRIDOR	493 m²
POS	77 m²
SERVICES	43 m²
STUDIO	45 m²
	2698 m²
LEVEL 6	
2BED ST	1385 m²
3BED ST	377 m²
CORRIDOR	323 m²
SERVICES	42 m²
	2126 m²
LEVEL 7	
2BED ST	1034 m²
	1034 m²
TOTAL GFA	20131 m²

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Project
Worth Street - Mixed Use

BLOCK 09 SECTION 132
CASEY ACT 2913

Drawing Title
DEVELOPMENT STATISTICS

Scale: @ A1

Date: 05.03.2024

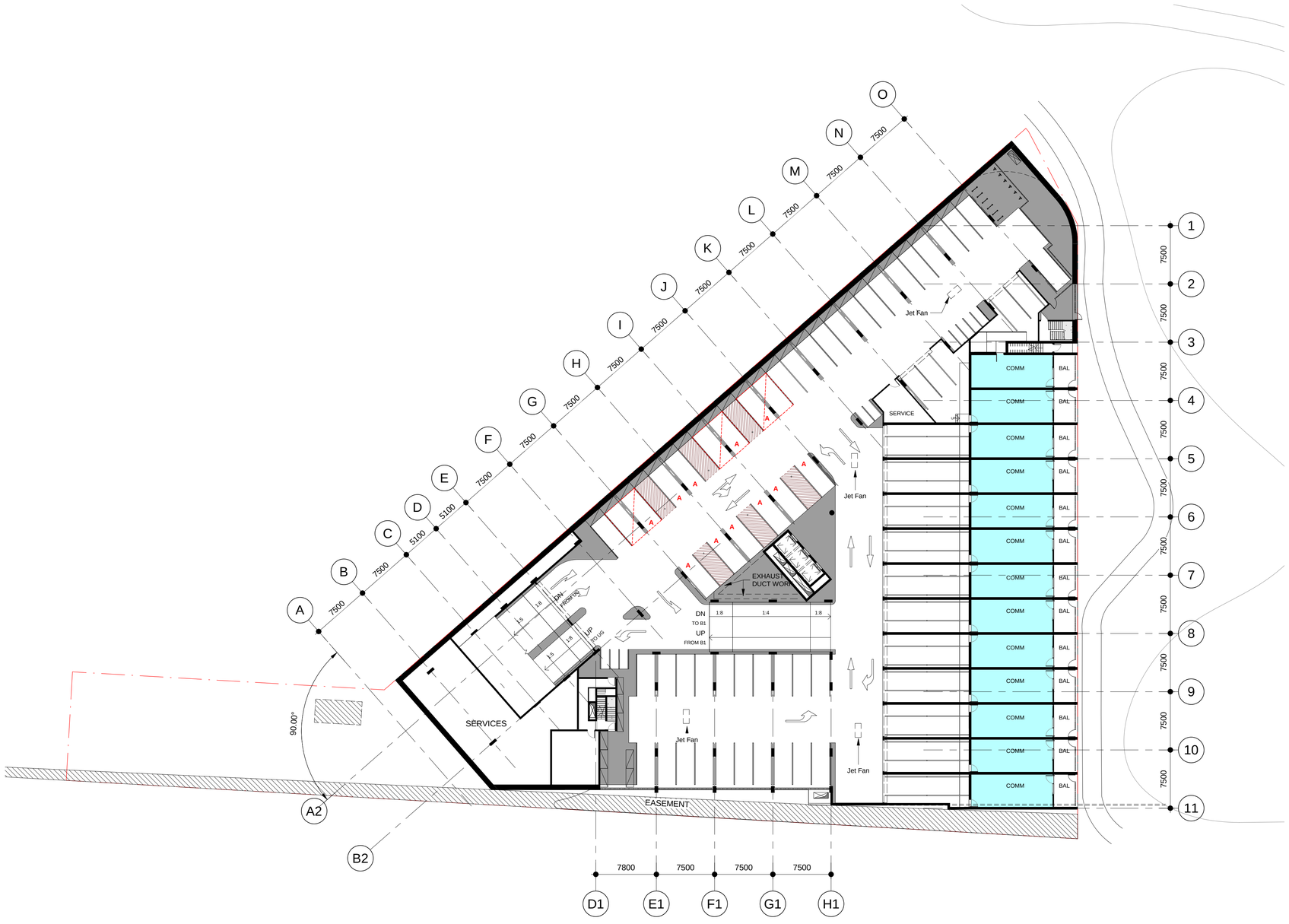
Revision: 5
ACAT MEDIATION

Drawing Number: DA-01-02

PLOT STAMP DATE: 4/3/2024 7:53:27 PM

AREA TYPE

COMMERCIAL



LEGEND: PLANS

FFL X.XXX	PROPOSED FINISHED FLOOR LEVEL (METRES) ABOVE DATUM.
FSL X.XXX	PROPOSED FINISHED SLAB LEVEL (METRES) ABOVE DATUM.
RL X.XXX	PROPOSED REDUCED SPOT LEVEL (METRES) ABOVE DATUM.
ROOM NAME 1-001	ROOM TAG WITH NAME & NUMBER
5000	GENERAL DIMENSIONS (DIAGONAL)
GR 5000 GR	DIMENSIONS TO GRID (DOT)
	SITE BOUNDARY
	ACCESSIBLE PARKING
A	ADAPTABLE UNIT PARKING
	STORAGE CAGES
	DRYING AREA
	AIR CONDITIONING
	COMMUNAL OPEN SPACE

SERVICES LEGEND:

WM	WATER METER
FBBV	FIRE BRIGADE BOOSTER VALVE
SVR	SPRINKLER VALVE ROOM
FIP	FIRE INDICATIVE PANEL
EXH	EXHAUST
LB	LETTERBOX

GENERAL NOTES:

- THIS DRAWING IS TO BE READ IN CONJUCTION WITH LANDSCAPE AND OTHER SERVICES DRAWINGS.
- RLS SHOWN ON DRAWINGS ARE INDICATIVE AND SUBJECT TO DETAIL DESIGN AND FINAL CIVIL LEVELS.
- HEAD HEIGHT OVER ACCESSIBLE CAR PARKING SPACES TO BE IN ACCORDANCE WITH **AS 2890.6**.
- PASSENGER LIFTS TO **AS 1735.12** AND **BCA E3.6**.
- RESIDENTS PARKING WILL HAVE ACCESS CONTROL VIA OPERABLE GATES.
- ACCESSIBLE PATH OF TRAVEL PROVIDED TO ALL SOLE OCCUPANCY UNITS SERVED BY A LIFT.
- ENTRANCES TO THE BUILDING AND ALL APARTMENTS ALONG THE ACCESSIBLE PATH OF TRAVEL TO COMPLY WITH **AS 1428.1**.
- ALL TACTILE INDICATORS TO **AS 1428.4**.
- ALL FLOOR SURFACES TO BE SLIP RESISTANT BROOM FINISHED.
- HANDRAILS TO **AS 1428.1**.
- STORAGE CAGES TO BE SECURED WITH MIN. AREA OF 1.5m².

UNIT LEGEND:

B	BEDROOM
L	LIVING
D	DINING
K	KITCHEN
BTH	BATHROOM
ENS	ENSUITE
L'DRY	LAUNDRY
ST	STUDY
PR	POWDER ROOM
WIR	WALK-IN ROBE
COMM	COMMERCIAL / OFFICE SPACE
MR	MEDIA ROOM

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Scale 1:300

0 3m 6m 15m 30m

Project
Worth Street - Mixed Use

BLOCK 09 SECTION 132
CASEY ACT 2913

Drawing Title
PN - LOWER GROUND LEVEL

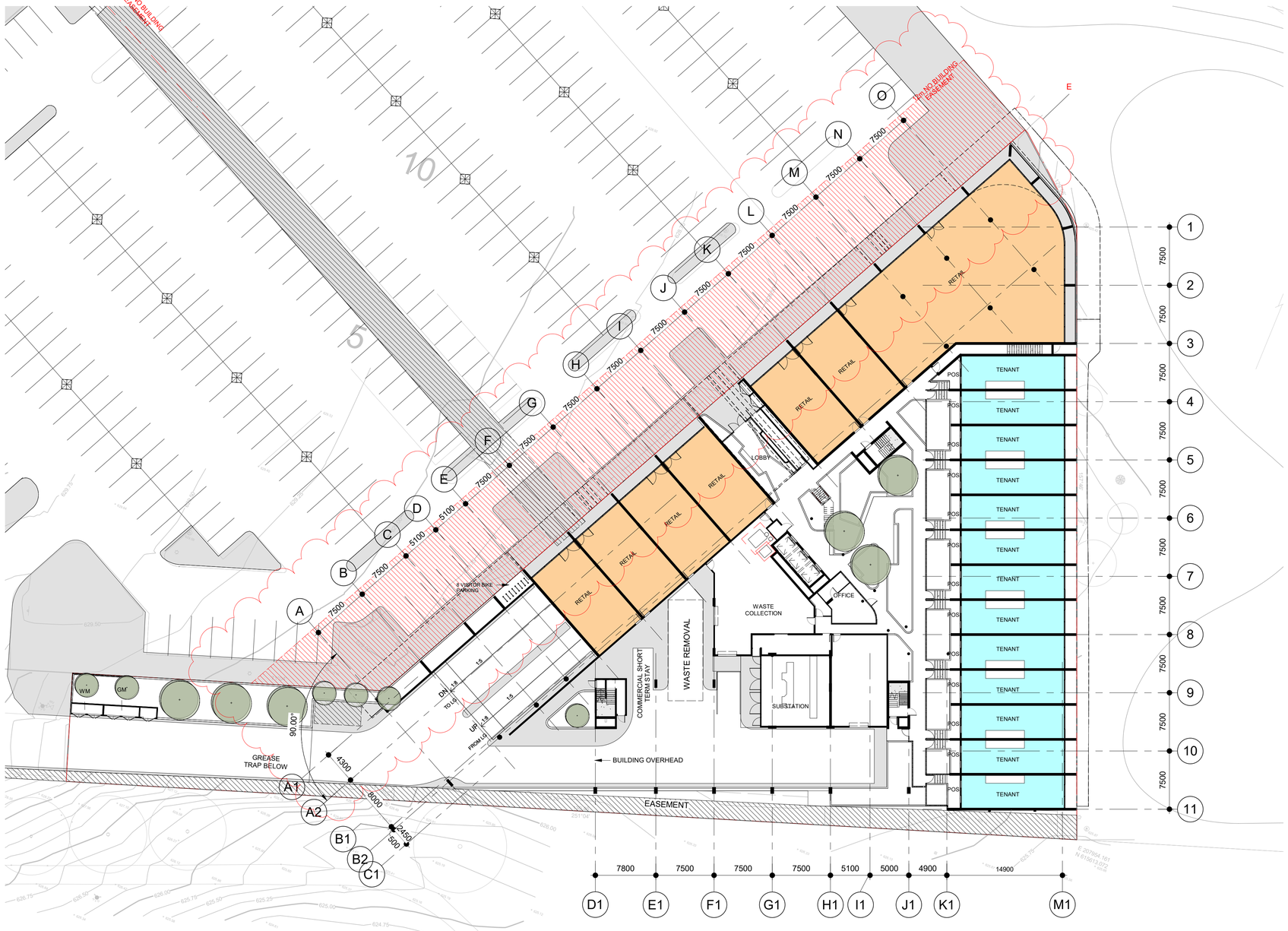
Scale: 1 : 300 @ A1

Date: 08.08.2023

Revision: 5
Update Accessibility

Drawing Number: DA-20-03

PLOT STAMP DATE: 14/08/2023 9:35:43 PM



AREA TYPE

- COMMERCIAL
- RETAIL

LEGEND: PLANS

FFL X.XXX	PROPOSED FINISHED FLOOR LEVEL (METRES) ABOVE DATUM.
FSL X.XXX	PROPOSED FINISHED SLAB LEVEL (METRES) ABOVE DATUM.
RL X.XXX	PROPOSED REDUCED SPOT LEVEL (METRES) ABOVE DATUM.
ROOM NAME 1-001	ROOM TAG WITH NAME & NUMBER
5000	GENERAL DIMENSIONS (DIAGONAL)
GR 5000 GR	DIMENSIONS TO GRID (DOT)
	SITE BOUNDARY
	ACCESSIBLE PARKING
A	ADAPTABLE UNIT PARKING
	STORAGE CAGES
	DRYING AREA
	AIR CONDITIONING
	COMMUNAL OPEN SPACE

SERVICES LEGEND:

WM	WATER METER
FBBV	FIRE BRIGADE BOOSTER VALVE
SVR	SPRINKLER VALVE ROOM
FIP	FIRE INDICATIVE PANEL
EXH	EXHAUST
LB	LETTERBOX

GENERAL NOTES:

- THIS DRAWING IS TO BE READ IN CONJUCTION WITH LANDSCAPE AND OTHER SERVICES DRAWINGS.
- RLS SHOWN ON DRAWINGS ARE INDICATIVE AND SUBJECT TO DETAIL DESIGN AND FINAL CIVIL LEVELS.
- HEAD HEIGHT OVER ACCESSIBLE CAR PARKING SPACES TO BE IN ACCORDANCE WITH **AS 2890.6**.
- PASSENGER LIFTS TO **AS 1735.12** AND **BCA E3.6**.
- RESIDENTS PARKING WILL HAVE ACCESS CONTROL VIA OPERABLE GATES.
- ACCESSIBLE PATH OF TRAVEL PROVIDED TO ALL SOLE OCCUPANCY UNITS SERVED BY A LIFT.
- ENTRANCES TO THE BUILDING AND ALL APARTMENTS ALONG THE ACCESSIBLE PATH OF TRAVEL TO COMPLY WITH **AS 1428.1**.
- ALL TACTILE INDICATORS TO **AS 1428.4**.
- ALL FLOOR SURFACES TO BE SLIP RESISTANT BROOM FINISHED.
- HANDRAILS TO **AS 1428.1**.
- STORAGE CAGES TO BE SECURED WITH MIN. AREA OF 1.5m².

UNIT LEGEND:

B	BEDROOM
L	LIVING
D	DINING
K	KITCHEN
BTH	BATHROOM
ENS	ENSUITE
L'DRY	LAUNDRY
ST	STUDY
PR	POWDER ROOM
WIR	WALK-IN ROBE
COMM	COMMERCIAL / OFFICE SPACE
MR	MEDIA ROOM

A. REMOVE LEVEL
B. FURTHER ARTICULATE FACADE
C. REMOVE LOFT UNITS
D. RETAIL AWNING ARTICULATED
E. EASEMENT AND DEEP ROOT PLANTING

1 PN_UPPER GROUND
SCALE 1 : 300

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Scale 1:300
0 3m 6m 15m 30m

Project
Worth Street - Mixed Use

BLOCK 09 SECTION 132
CASEY ACT 2913

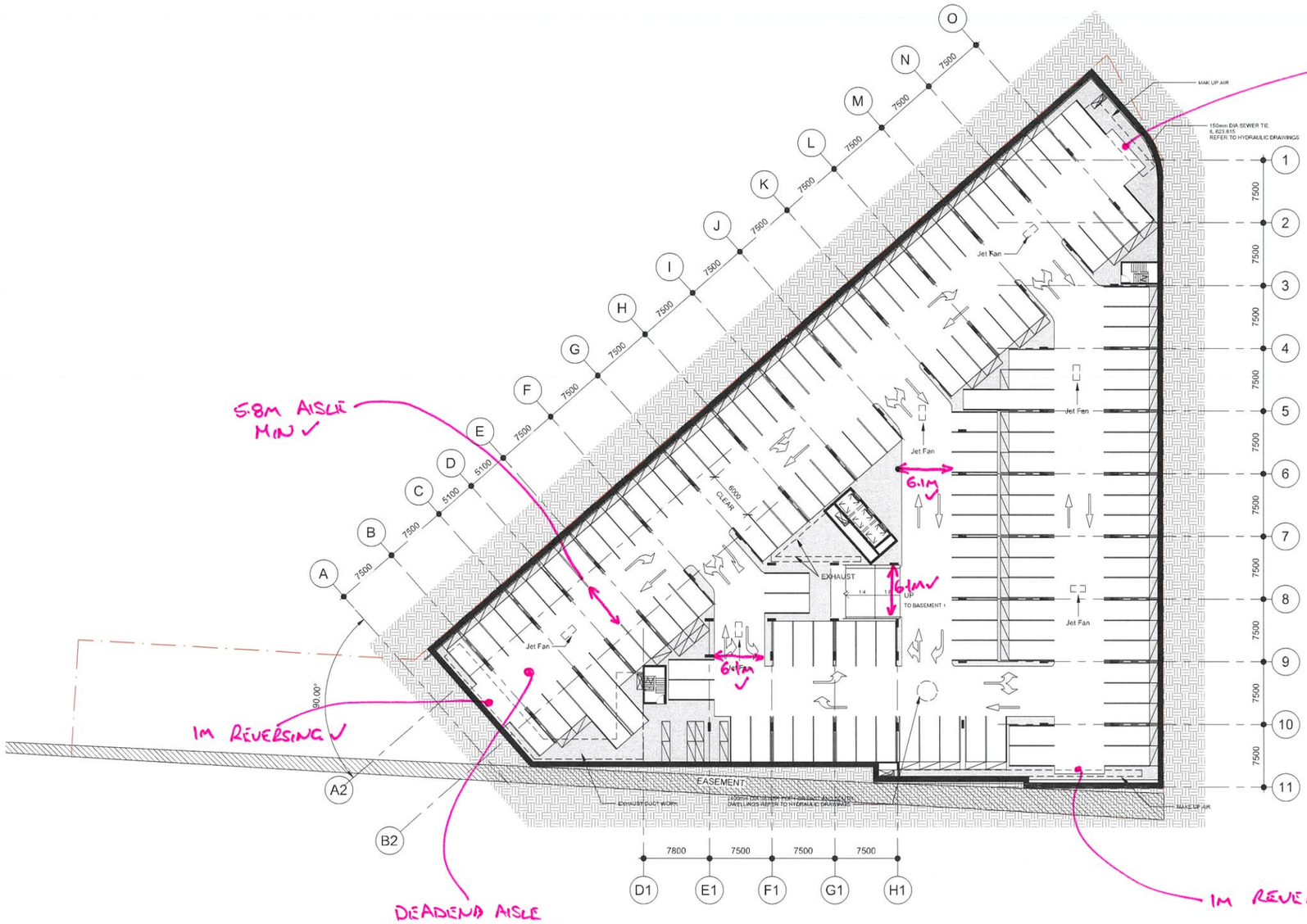
Drawing Title
PN - UPPER GROUND LEVEL

Scale: As indicated @ A1
Date: 05.03.2024
Revision: 5
ACAT MEDIATION
Drawing Number: DA-20-04

PLOT STAMP DATE: 5/03/2024 8:16:21 AM

Appendix D Carpark Compliance Check

- VERTICAL CLEARANCES HAVE NOT BEEN ASSESSED
- NO VISITOR SPACES SHOWN?



LEGEND: PLANS

FFL X.XXX	PROPOSED FINISHED FLOOR LEVEL (METRES) ABOVE DATUM.
FSL X.XXX	PROPOSED FINISHED SLAB LEVEL (METRES) ABOVE DATUM.
+ RL X.XXX	PROPOSED REDUCED SPOT LEVEL (METRES) ABOVE DATUM.
ROOM NAME 1-001	ROOM TAG WITH NAME & NUMBER
5000	GENERAL DIMENSIONS (DIAGONAL)
GR 5000 GR	DIMENSIONS TO GRID (DOT)
	SITE BOUNDARY
	ACCESSIBLE PARKING
A	ADAPTABLE UNIT PARKING
	STORAGE CAGES
	DRYING AREA
	AIR CONDITIONING
	COMMUNAL OPEN SPACE

SERVICES LEGEND:

WM	WATER METER
FBBV	FIRE BRIGADE BOOSTER VALVE
SVR	SPRINKLER VALVE ROOM
FIP	FIRE INDICATIVE PANEL
EXH	EXHAUST
LB	LETTERBOX

GENERAL NOTES:

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- RLS SHOWN ON DRAWINGS ARE INDICATIVE AND SUBJECT TO DETAIL DESIGN AND FINAL CIVIL LEVELS.
- HEAD HEIGHT OVER ACCESSIBLE CAR PARKING SPACES TO BE IN ACCORDANCE WITH **AS 2890.6.**
- PASSENGER LIFTS TO **AS 1735.12** AND **BCA E3.6.**
- RESIDENTS PARKING WILL HAVE ACCESS CONTROL VIA OPERABLE GATES.
- ACCESSIBLE PATH OF TRAVEL PROVIDED TO ALL SOLE OCCUPANCY UNITS SERVED BY A LIFT.
- ENTRANCES TO THE BUILDING AND ALL APARTMENTS ALONG THE ACCESSIBLE PATH OF TRAVEL TO COMPLY WITH **AS 1428.1.**
- ALL TACTILE INDICATORS TO **AS 1428.4.**
- ALL FLOOR SURFACES TO BE SLIP RESISTANT BROOM FINISHED.
- HANDRAILS TO **AS 1428.1.**
- STORAGE CAGES TO BE SECURED WITH MIN. AREA OF 1.5m².

UNIT LEGEND:

B	BEDROOM
L	LIVING
D	DINING
K	KITCHEN
BTH	BATHROOM
ENS	ENSUITE
L'DRY	LAUNDRY
ST	STUDY
PR	POWDER ROOM
WIR	WALK-IN ROBE
COMM	COMMERCIAL / OFFICE SPACE
MR	MEDIA ROOM

2890.1 PARKING COMPLIANCE REVIEW

28.07.2023

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Scale 1:300

0 3m 6m 15m 30m

Project: Worth Street - Mixed Use

BLOCK 09 SECTION 132
CASEY ACT 2913

Drawing Title: PN - BASEMENT 2

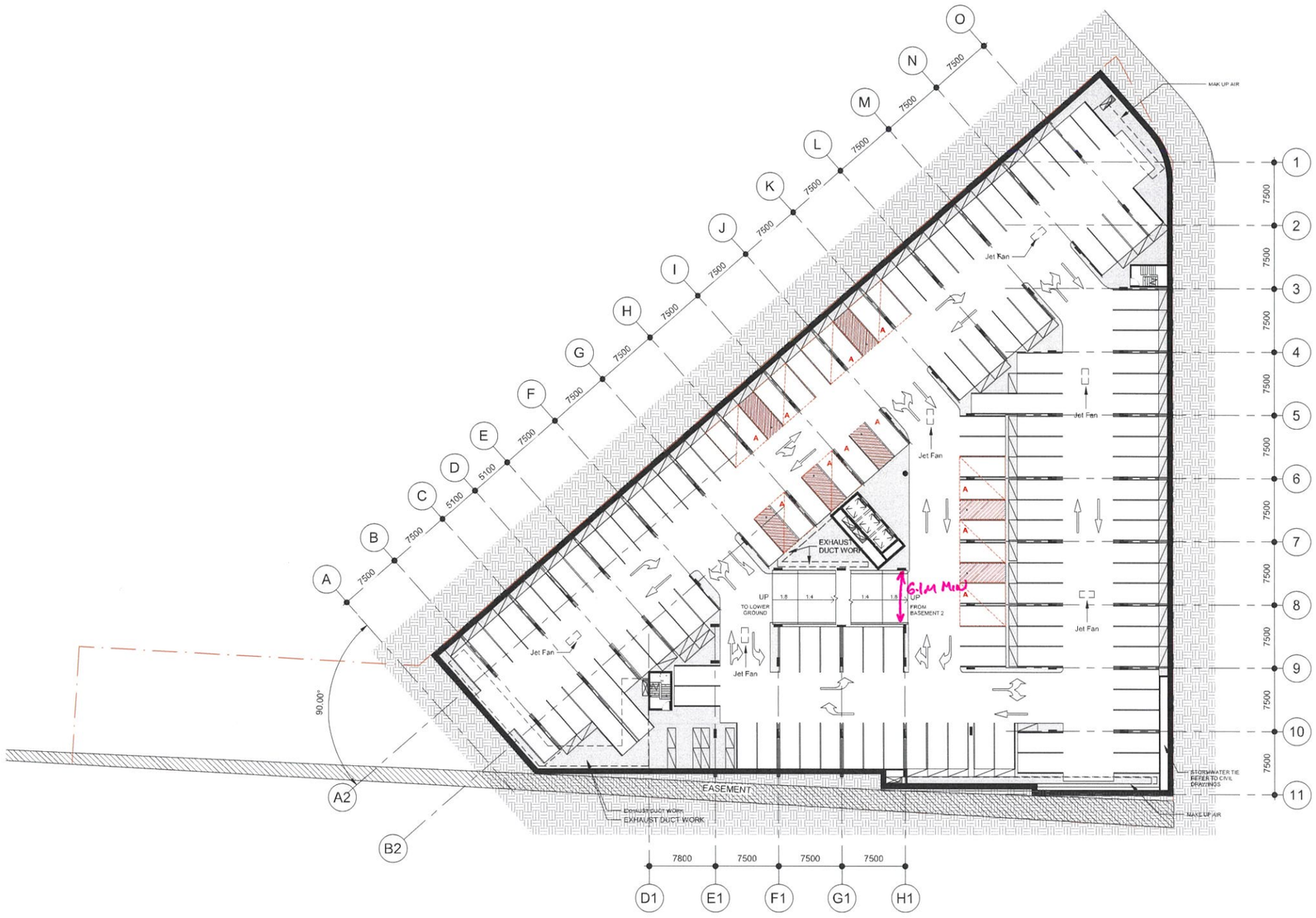
Scale: 1 : 300 @ A1

Date: 21.07.2023

Revision: 4
DRAFT DA FOR REVIEW

Drawing Number: DA-20-01

– MIRROR OF BASEMENT 2



LEGEND: PLANS

FFL X.XXX	PROPOSED FINISHED FLOOR LEVEL (METRES) ABOVE DATUM.
FSL X.XXX	PROPOSED FINISHED SLAB LEVEL (METRES) ABOVE DATUM.
RL X.XXX	PROPOSED REDUCED SPOT LEVEL (METRES) ABOVE DATUM.
ROOM NAME 1-001	ROOM TAG WITH NAME & NUMBER
5000	GENERAL DIMENSIONS (DIAGONAL)
GR 5000 GR	DIMENSIONS TO GRID (DOT)
	SITE BOUNDARY
	ACCESSIBLE PARKING
A	ADAPTABLE UNIT PARKING
	STORAGE CAGES
	DRYING AREA
	AIR CONDITIONING
	COMMUNAL OPEN SPACE

SERVICES LEGEND:

WM	WATER METER
FBBV	FIRE BRIGADE BOOSTER VALVE
SVR	SPRINKLER VALVE ROOM
FIP	FIRE INDICATIVE PANEL
EXH	EXHAUST
LB	LETTERBOX

GENERAL NOTES:

- THIS DRAWING IS TO BE READ IN CONJUCTION WITH LANDSCAPE AND OTHER SERVICES DRAWINGS.
- RLS SHOWN ON DRAWINGS ARE INDICATIVE AND SUBJECT TO DETAIL DESIGN AND FINAL CIVIL LEVELS.
- HEAD HEIGHT OVER ACCESSIBLE CAR PARKING SPACES TO BE IN ACCORDANCE WITH **AS 2890.6**.
- PASSENGER LIFTS TO **AS 1735.12** AND **BCA E3.6**.
- RESIDENTS PARKING WILL HAVE ACCESS CONTROL VIA OPERABLE GATES.
- ACCESSIBLE PATH OF TRAVEL PROVIDED TO ALL SOLE OCCUPANCY UNITS SERVED BY A LIFT.
- ENTRANCES TO THE BUILDING AND ALL APARTMENTS ALONG THE ACCESSIBLE PATH OF TRAVEL TO COMPLY WITH **AS 1428.1**.
- ALL TACTILE INDICATORS TO **AS 1428.4**
- ALL FLOOR SURFACES TO BE SLIP RESISTANT BROOM FINISHED.
- HANDRAILS TO **AS 1428.1**.
- STORAGE CAGES TO BE SECURED WITH MIN. AREA OF 1.5m²

UNIT LEGEND:

B	BEDROOM
L	LIVING
D	DINING
K	KITCHEN
BTH	BATHROOM
ENS	ENSUITE
L'DRY	LAUNDRY
ST	STUDY
PR	POWDER ROOM
WIR	WALK-IN ROBE
COMM	COMMERCIAL / OFFICE SPACE
MR	MEDIA ROOM

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Scale 1:300
0 3m 6m 15m 30m

Project
Worth Street - Mixed Use

BLOCK 09 SECTION 132
CASEY ACT 2913

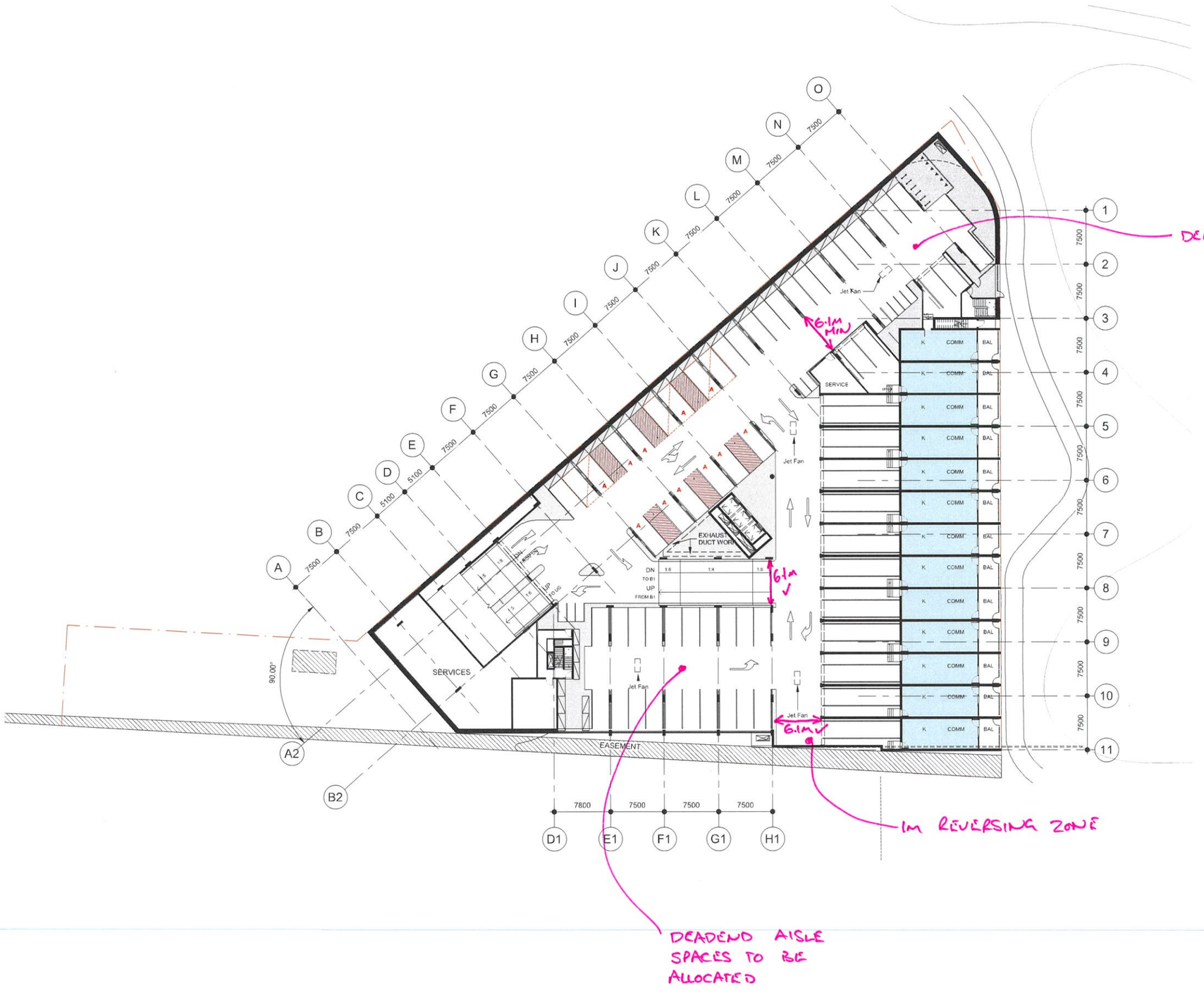
Drawing Title
PN - BASEMENT 1

Scale: 1 : 300 @ A1
Date: 21.07.2023
Revision: 4
DRAFT DA FOR REVIEW
Drawing Number: DA-20-02

AREA TYPE

ADAPTIVE COMMERCIAL

- VERTICAL CLEARANCES HAVE NOT BEEN ASSESSED
- NO VISITOR SPACES SHOWN ALL SPACES 2.4m
- ACCESS ARRANGEMENTS BY NORTHROP



LEGEND: PLANS

FFL X.XXX	PROPOSED FINISHED FLOOR LEVEL (METRES) ABOVE DATUM.
FSL X.XXX	PROPOSED FINISHED SLAB LEVEL (METRES) ABOVE DATUM.
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- HANDRAILS TO **AS 1428.1**.
- STORAGE CAGES TO BE SECURED WITH MIN. AREA OF 1.5m².

UNIT LEGEND:

B	BEDROOM
L	LIVING
D	DINING
K	KITCHEN
BTH	BATHROOM
ENS	ENSUITE
L'DRY	LAUNDRY
ST	STUDY
PR	POWDER ROOM
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COMM	COMMERCIAL / OFFICE SPACE
MR	MEDIA ROOM

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Scale 1:300

0 3m 6m 15m 30m

Project: Worth Street - Mixed Use

BLOCK 09 SECTION 132
CASEY ACT 2913

Drawing Title: PN - LOWER GROUND LEVEL

Scale: 1 : 300 @ A1

Date: 21.07.2023

Revision: 4
DRAFT DA FOR REVIEW

Drawing Number: DA-20-03