
Keswick Estate Planning Proposal Stages 7-9

Transport Impact Assessment

Prepared for: Dubbo Regional Council

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Revision

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Acknowledgment of Country

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TRANSPORT IMPACT ASSESSMENT

Keswick Estate Planning Proposal Stages 7-9

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1. Introduction

1.1 Background

Stantec was commissioned by Dubbo Regional Council in July 2024 to undertake a transport impact assessment for the planning proposal for a land use change and reduction in minimum lot size for Stages 7, 8, and 9 of the Keswick Estate residential development. The initial six stages of this development have been constructed or are in construction. The proposal seeks to change the land use for the last three stages from R2 - Low Density Residential to R1 - General Residential. The proposal intends to change the minimum R2 - Low Density Residential lot size from 600m² to 300m².

This assessment has been undertaken to assess the impacts of the proposed change on traffic, transport, and local road infrastructure as well as demonstrate the compliance of the change with relevant standards and Council controls.

1.2 Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the proposed development, including consideration of the following:

- existing traffic conditions surrounding the site
- suitability of the proposed parking in terms of supply (quantum)
- service vehicle requirements
- pedestrian and bicycle requirements
- the traffic generating characteristics of the proposed development
- suitability of the proposed access arrangements for the site
- the transport impact of the development proposal on the surrounding road network.

1.3 References

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

- Dubbo Regional Council Development Control Plan (DCP) 2013
- Dubbo regional Council Northwest Urban Release Area DCP 2023
- Australian/New Zealand Standard, Parking Facilities (AS 2890)
- traffic and car parking surveys undertaken by Geocounts (1 August 2024) as referenced in the context of this report
- Keswick Estate Masterplan Report, prepared by Blacksmith and Vee (May 2024)
- Email correspondence with Dubbo Regional Council
- 2020 Dubbo RSL TIA, prepared by TTM Consulting
- 2013 Keswick Estate TIA, prepared by Complete Urban
- other documents and data as referenced in this report.



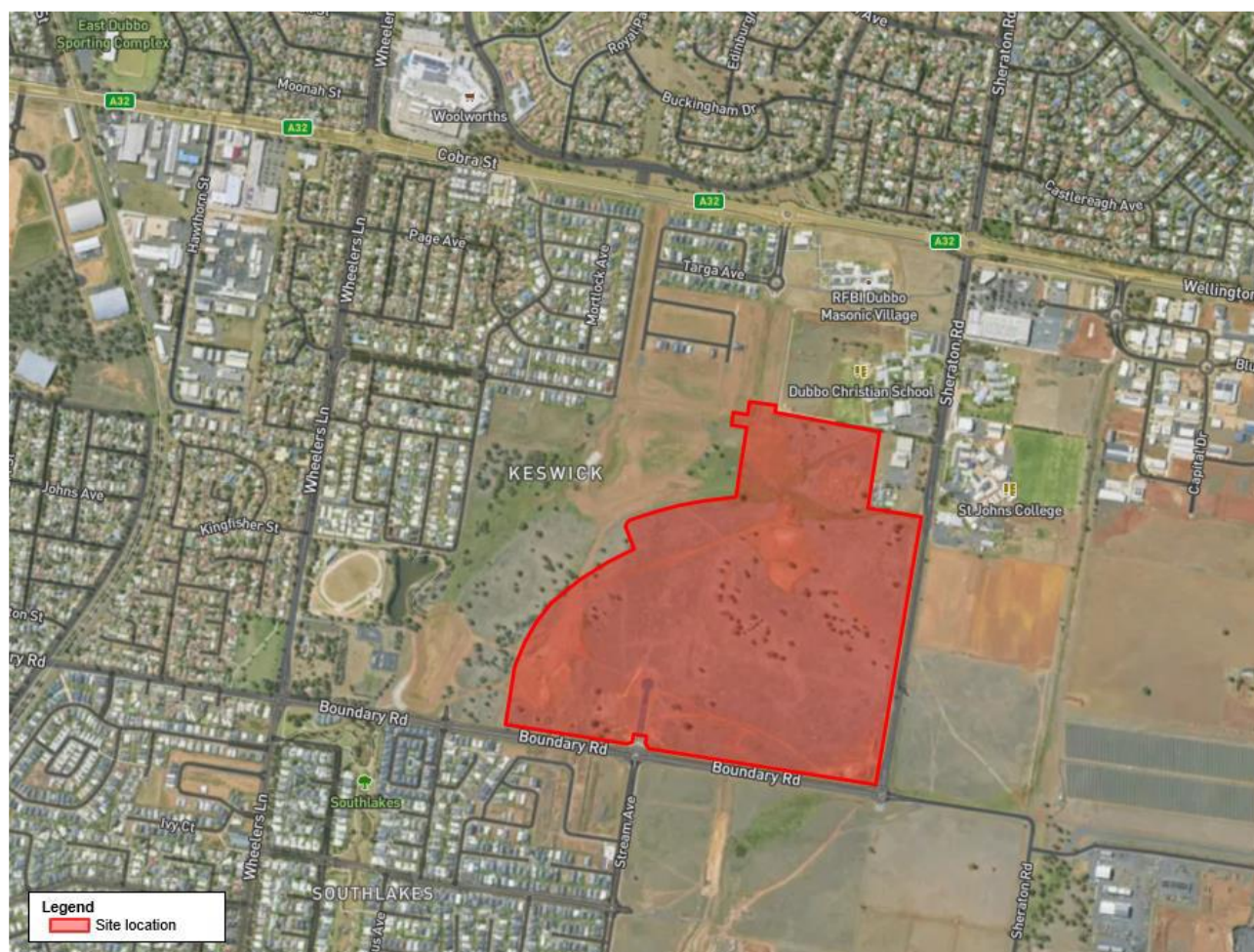
2. Existing Conditions

The subject site is located in Keswick Estate, a residential development approximately six kilometres southeast of Dubbo CBD. This report focuses on the last stages of the development (7-9) which make up the southernmost area. The site currently has a land use classification as Low Density Residential (R2) and is currently unoccupied by any land uses.

The surrounding properties predominantly include residential land uses. The rest of Keswick Estate is to the north and west of the proposed site. To the south of the proposed site is the Southlakes development, which is a residential area. To the east of the site is the South Keswick Concrete Works and the South Keswick Quarry.

The location of the subject site and its surrounding environs is shown in Figure 2-1.

Figure 2-1 – Subject Site and Its Environs



Source: Metromap (accessed 11 June 2024)

2.1 Transport Network

2.1.1 Road Hierarchy

Roads are classified according to the functions they perform. The main purpose of defining a road's functional class is to provide a basis for establishing the policies which guide the management of the road according to their intended service or qualities.

In terms of functional road classification, State roads are strategically important as they form the primary network used for the movement of people and goods between regions, and throughout the State. Transport for NSW (TfNSW) is responsible for funding, prioritising and carrying out works on State roads. State roads generally include roads classified as freeways, state highways, and main roads under the Roads Act 1993, and the regulation to manage the road system is stated in the Australian Road Rules.

TfNSW defines four levels in a typical functional road hierarchy, ranking from high mobility and low accessibility, to high accessibility and low mobility. These road classes are:

- Arterial Roads – Controlled by TfNSW, typically no limit in flow and designed to carry vehicles long distance between regional centres.
- Sub-Arterial Roads – Managed by either Council or TfNSW under a joint agreement. Typically, their operating capacity ranges between 10,000 and 20,000 vehicles per day, and their aim is to carry through traffic between specific areas in a sub region or provide connectivity from arterial road routes (regional links).
- Collector Roads – Provide connectivity between local sites and the sub-arterial road network, and typically carry between 2,000 and 10,000 vehicles per day.
- Local Roads – Provide direct access to properties and the collector road system and typically carry between 500 and 4,000 vehicles per day.

2.1.2 Surrounding Road Network

Sheraton Road

Sheraton Road is classified as a local road and functions as a collector road, aligned in a north-south direction past the site. Sheraton Road provides access to three schools: St Johns College, St Johns Primary School and Dubbo Christian School. At the northern end, the first 800m of Sheraton Road is configured as a dual carriageway, whilst the southern end is undivided with one lane in either direction. The speed limit of Sheraton Road is 60 km/h past the site.

Boundary Road

Boundary Road is classified as a local road and in the vicinity of the site functions as a collector road and is aligned in an east-west direction. At the eastern end of Boundary Road are the South Keswick and Holcim Quarries. Boundary Road is a two-way, two-lane median divided road past the site. The speed limit of Boundary Road is 60 km/h adjacent to the site.

Mitchell Highway

Mitchell Highway is classified as a State Road, functioning as a main arterial route, which forms part of many connections, including Sydney to Dubbo. Mitchell Highway is a two-way, divided road, which serves as the main route into Dubbo CBD from the east. Directly north of the site, there are two eastbound travel lanes, whilst there is only one westbound lane. The speed limit in the vicinity of the site is 60 km/h.

2.1.3 Surrounding Intersections

The following intersections which currently exist in the vicinity of the site have been considered as part of this assessment:

- Boundary Road/ Stream Avenue (Roundabout)
- Boundary Road/ Sheraton Road (Roundabout)
- Boundary Road/ Wheelers Lane (Roundabout)
- Wheelers Lane/ Mitchell Highway (multi-lane Roundabout)
- Sheraton Road/ Mitchell Highway (multi-lane Roundabout)
- Capstan Drive/ Mitchell Highway (multi-lane Roundabout)

2.2 Traffic Volumes

Stantec commissioned/ traffic movement counts at key intersections near the site on Thursday 1 August, 2024, during the following peak periods:

- 7:00am and 10:00am
- 2:30pm and 6:30pm.

The AM and PM peak hours were identified to be 8am to 9am and 3pm to 4pm. The traffic volumes are summarised in Appendix A.

2.2.1 Traffic estimation at Boundary Road/ Stream Avenue

Traffic volumes at this intersection have been determined based on the traffic movements at the adjacent two surveyed intersections (Boundary Rd/ Wheelers Lane and Boundary Road/ Sheraton Road). These volumes have been based on an estimated 80/20 outbound/ inbound split in the AM, as determined from the Mitchell Highway/ Capstan Avenue



intersection. The opposite is assumed for the evening peak. All traffic for the Southlakes development is expected to enter/ exit the site at this location, as opposed to the intersection of Boundary Road/ Alexandrina Avenue. Using these assumptions, the existing traffic flows at the roundabout can be estimated. Figure 2-2 shows the traffic movements during the AM peak and Figure 2-3 shows the traffic movements during the PM peak.

Figure 2-2: Boundary Road/ Stream Avenue intersection traffic estimates - AM Peak

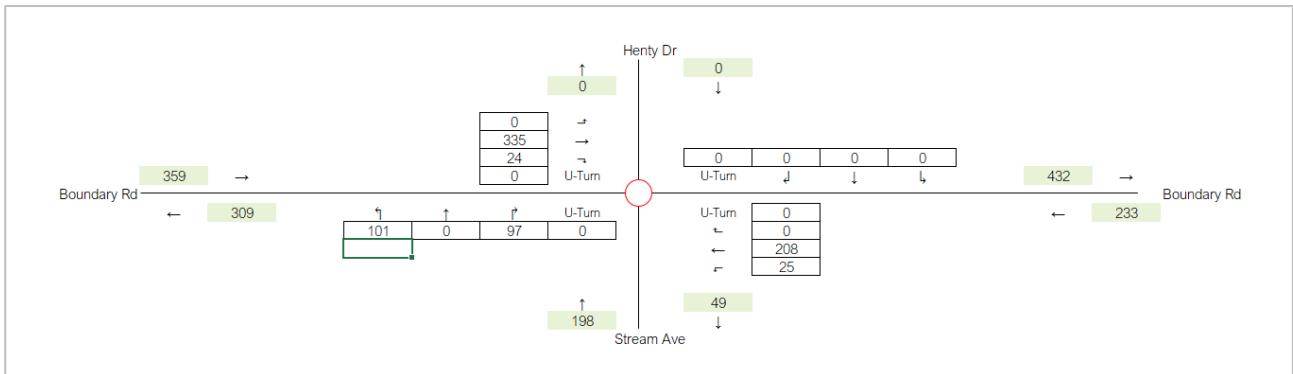
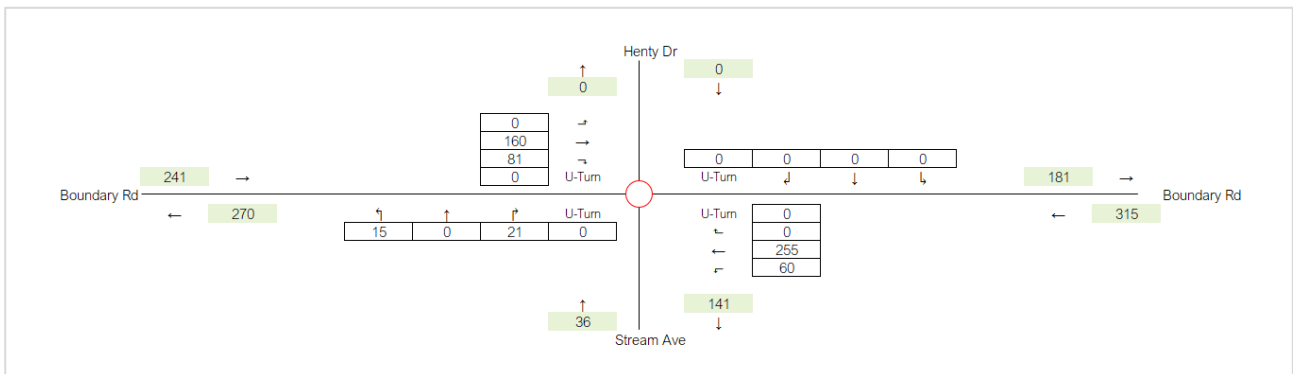


Figure 2-3: Boundary Road/ Stream Avenue intersection traffic estimates - PM Peak



2.3 Intersection Operation

The operation of the key intersections within the study area has been assessed using SIDRA INTERSECTION¹ (SIDRA), a modelling software package which calculates intersection performance.

The commonly used measure of intersection performance, as defined by Transport for NSW (TfNSW), is vehicle delay. SIDRA determines the average delay that vehicles encounter and provides a measure of the level of service.

Table 2-1 shows the criteria that SIDRA adopts in assessing the level of service.

Table 2-1: SIDRA Level of Service Criteria

Level of Service (LOS)	Average Delay per vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but crash study required
D	43 to 56	Near capacity	Near capacity, crash study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

¹ Program used under license from Akcelik & Associates Pty Ltd.

Table 2-2 presents a summary of the existing operation of the intersection, with full results presented in Appendix B.

Table 2-2: Existing Operating Conditions (Details shown are associated with the outlined worst movement)

Intersection	Peak	Worst Approach	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Boundary Road/ Wheelers Lane	AM	North	0.21	8	8	A
	PM	North	0.34	7	13	A
Mitchell Highway/ Wheelers Lane	AM	South	0.73	13	47	A
	PM	North	0.85	23	69	B
Boundary Road/ Sheraton Road	AM	North	0.15	9	5	A
	PM	North	0.19	9	6	A
Mitchell Highway/ Sheraton Road	AM	East	0.44	11	20	A
	PM	West	0.40	10	18	A
Boundary Road/ Stream Avenue	AM	South	0.09	7	3	A
	PM	South	0	8	1	A
Mitchell Highway/ Capstan Drive	AM	South	0.06	10	2	A
	PM	South	0.06	9	2	A

The analysed intersections appear to operate well at Level of Service B or better, with some queues experienced at certain approaches but with overall minor delays.

The values highlighted in orange indicate approaches where the degree of saturation is approaching the maximum practical degree of saturation as specified in the TfNSW Traffic Modelling guidelines for roundabouts. Once the maximum practical degree of saturation is reached, the identified approaches are sensitive to increases in traffic.

2.4 Public Transport

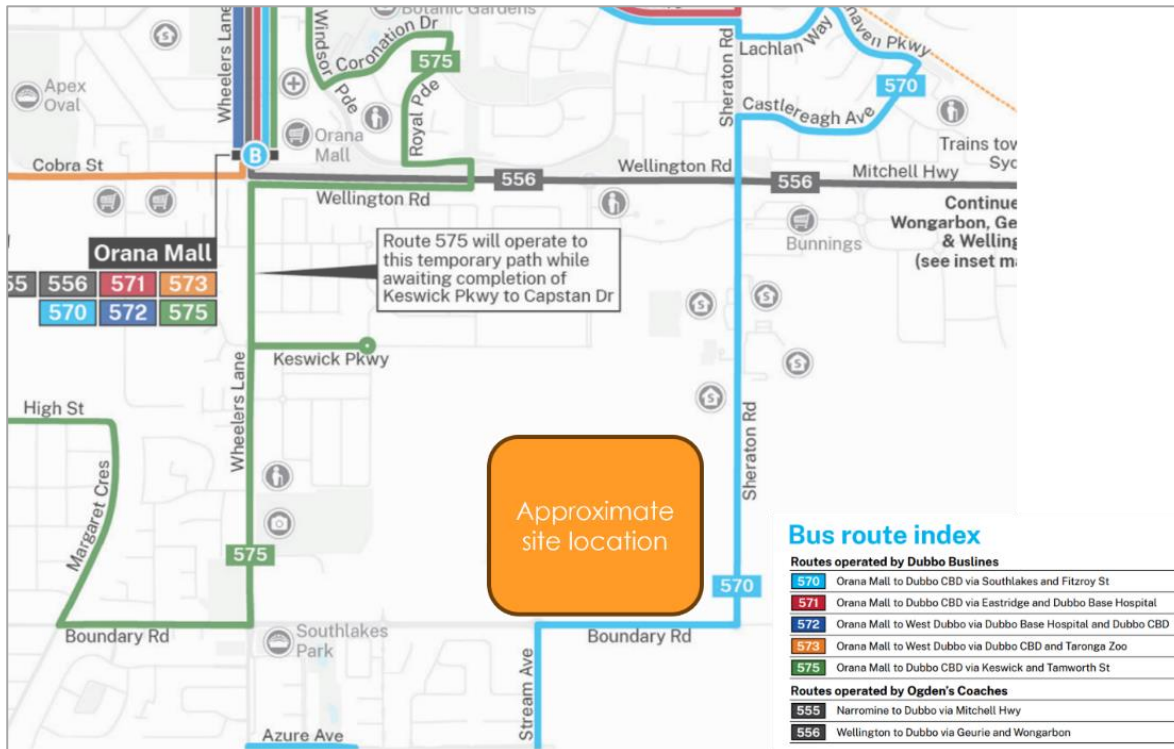
Bus services are provided on the existing frontage roads around the site, providing local connections to Dubbo CBD and Orana Mall. A review of the public transport available near the site is summarised in Table 2-3, Figure 2-4 and Figure 2-5.

Table 2-3: Public Transport Provision

Service	Route #	Route Description	Location of route	Frequency On/Off Peak
Bus	570	Orana Mall to Dubbo CBD	See Figure 2-4	Hourly throughout the weekday (6am - 6pm). Bi-hourly on the weekend (8am – 6pm).

Source: Transport for NSW

Figure 2-4: Surrounding public transport network



Source: Transport for NSW

Figure 2-5: Bus stops in the vicinity of the proposed development



Source: Transport for NSW Trip Planner

2.5 Pedestrian Infrastructure

Pedestrian paths are located as follows:

- Boundary Road (south side) along the entire frontage of the site. This is a 1.6m wide path, providing access from the schools on Sheraton Road to the proposed Southlakes subdivision.
- Sheraton Road (both sides) from the Mitchell Highway intersection to opposite St Johns College. There is an off-road path along the western side of Sheraton Road past the site.

There are kerb ramps and crossing locations provided in sections where there is not currently a path, which allows for further provision of pedestrian infrastructure.

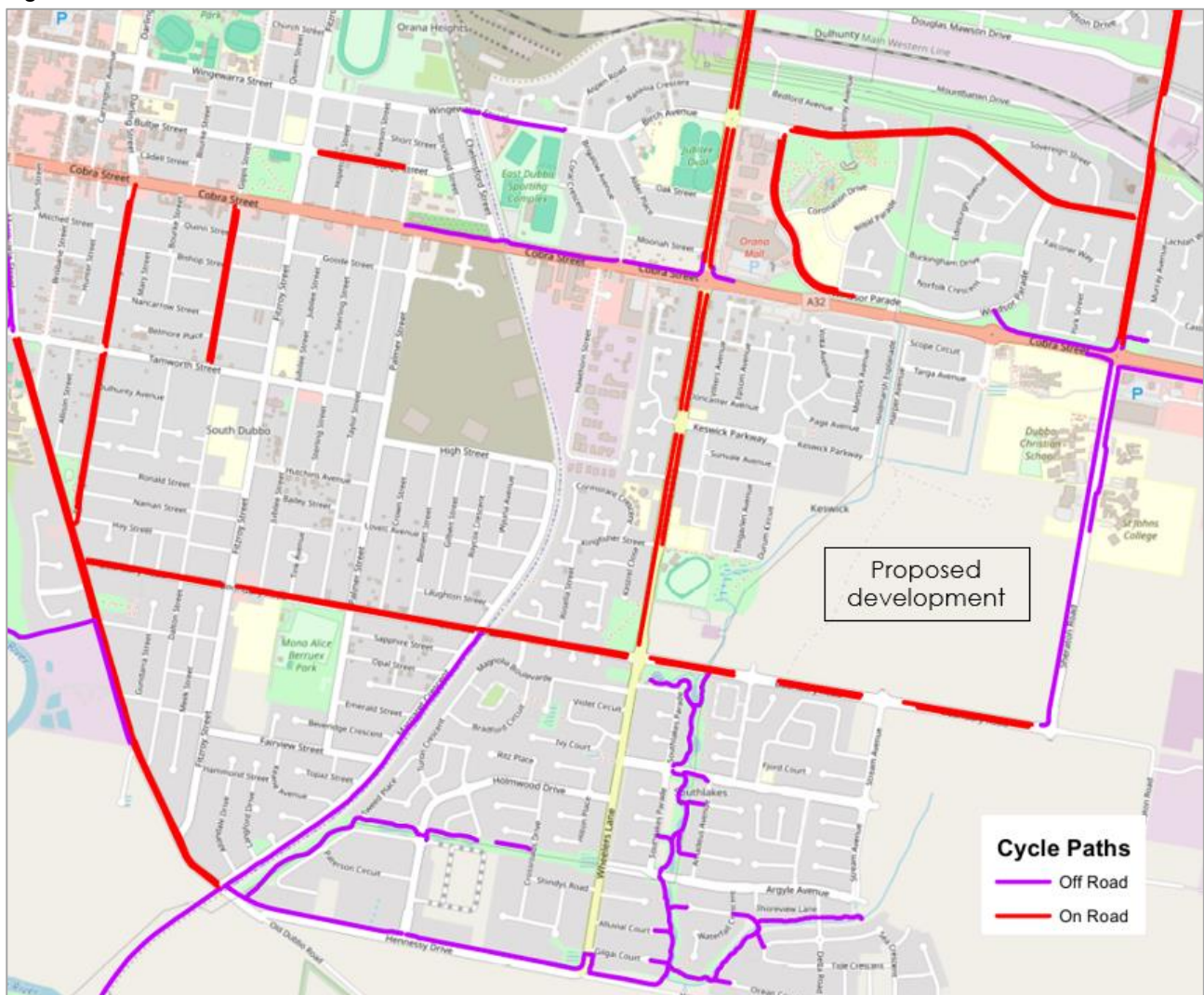
There are refuge islands provided at the following intersections:

- Boundary Road/ Sheraton Road
- Boundary Road/ Stream Avenue
- Boundary Road/ Alexandrina Avenue.

2.6 Cycle Infrastructure

The cycling network of Dubbo including on-road and off-road cycleways is shown in Figure 2-6. An approximate 1.5m wide on-road cycleway is provided on Boundary Road along the entire length of the frontage. An off-road facility is provided on the western side of Sheraton Road, which is offset from the carriageway by approximately eight metres.

Figure 2-6: Dubbo bike network



Source: [DubboCycleTracks.pdf.aspx \(nsw.gov.au\)](http://DubboCycleTracks.pdf.aspx%20(nsw.gov.au))

3. Development Proposal

3.1 Background

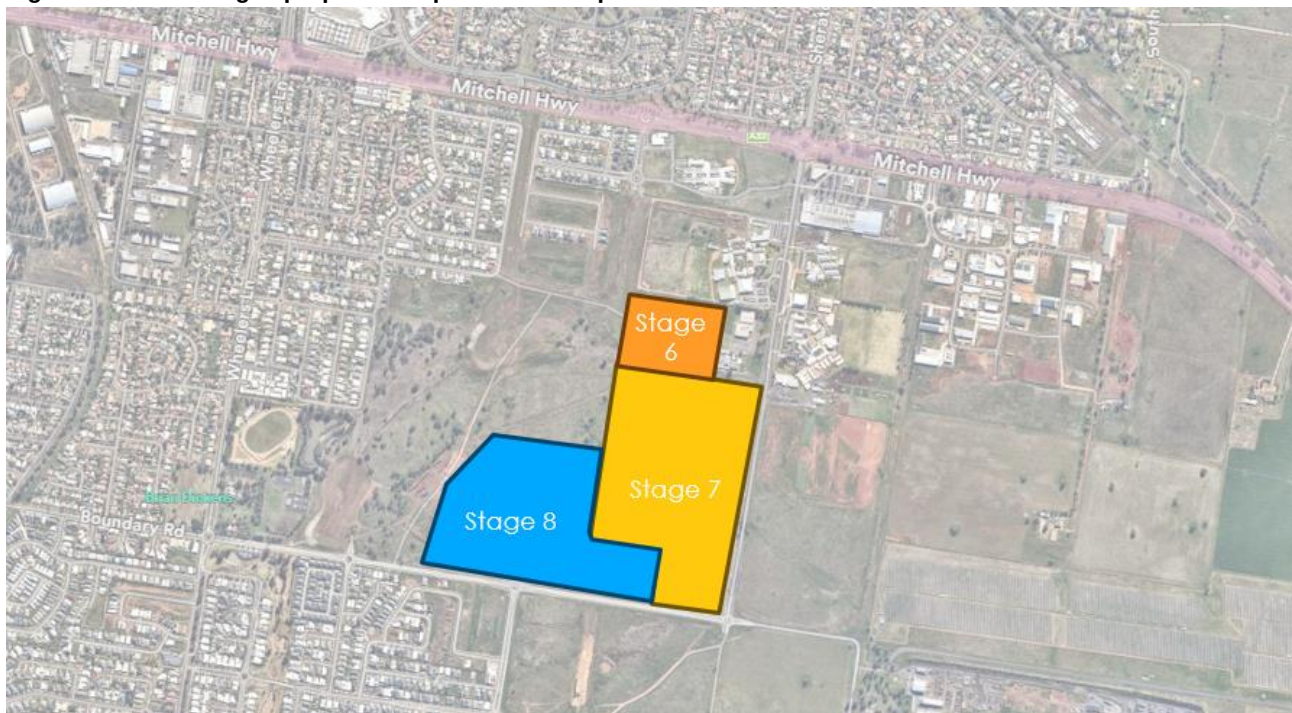
As outlined in Section 1.3, a Traffic Impact Assessment was prepared as part of the Development Application for Keswick Estate Stage 5. This was undertaken in 2013. This report assessed the future state of the network associated with Stage 5, as well as the expected impacts of Stages 6, 7 and 8 of Keswick Estate. Since this report was published, the stage numbering of Keswick Estate has changed. Figure 3-1 shows the stages proposed in 2013 and Figure 3-2 shows the stages proposed currently. As the land use and stage numbers have changed, the proposed number of total dwellings has changed.

As described the scale of development has also changed between the two assessments. Table 3-1 shows the difference in total dwellings proposed between the 2013 assessment and the maximum number of dwellings for this proposal. There is an increase in total dwellings proposed due to the proposed change of land use from low density residential to general residential.

Table 3-1: Comparison of proposed dwellings

Report	Total dwellings proposed
2013 Stage 5 TIA	645
Current Proposal	1,608 (maximum)
Change	+963

Figure 3-1: Stages proposed as part of 2013 report



Source: Keswick Estate Stage 5 TIA

Figure 3-2: Stages proposed as part of this assessment



Source: Dubbo Regional Council

3.2 Land Uses

The updated proposal seeks an increase to the proposed dwelling yield and will include a mixture of R2 Low Density Residential and R1 General Residential lots. The exact number of dwellings is not known at this stage, but Council have advised that the number of dwellings could range from between 1413 - 1608 dwellings. As a conservative approach for this assessment, the higher end of this estimate has been assessed.

Developable Area

Currently, the total development area has been identified as 62.51 hectares. Approximately 3.3 hectares of land previously scheduled for housing on the subject site has been sold to a private developer and will be the new location for the Dubbo RSL. Therefore, there is 59.21 hectares of remaining land available for housing development (as per correspondence from Council).

Table 3-2 indicates dwelling estimates at the site.

Table 3-2: Dwelling estimates

Land Zone	Minimum Allotment Size (MLS)	Area (NDA)	Maximum Expected Density	Maximum Dwelling Yield
R1 – General Residential	N/A	19.465 Ha	35 dwellings per hectare	681 dwellings
R2 – Low Density Residential	300sqm	39.745 Ha	23.3 dwellings per hectare	927 dwellings
Total				1608 Dwellings

Source: Dubbo Regional Council (via email on Friday 25 October 2024)

Proportion of low and medium density dwellings and lots

The development is a mix of low and medium density. A set of assumptions have been made to estimate the number of low and medium density lots on the site. These assumptions are as follows:

- The previous Keswick Masterplan has been used to determine the ratio of R2 Low Density Residential lots to R1 General Residential lots (approx. 3:1).



- The R1 General Residential Land is expected to have a mix of low and medium density dwellings. These dwellings are assumed to be approximately 75 per cent medium density and 25 per cent low density.
- All low-density residential dwellings on land classified as R1 General Residential and R2 Low Density Residential are assumed to have a density of one dwelling per lot.
- The R1 General Residential medium density lots are assumed to have an average density of four dwellings per lot.

The dwelling and lot numbers are outlined in Table 3-3. These numbers are indicative and will be refined further at a later stage of design.

Table 3-3: Development Schedule (indicative)

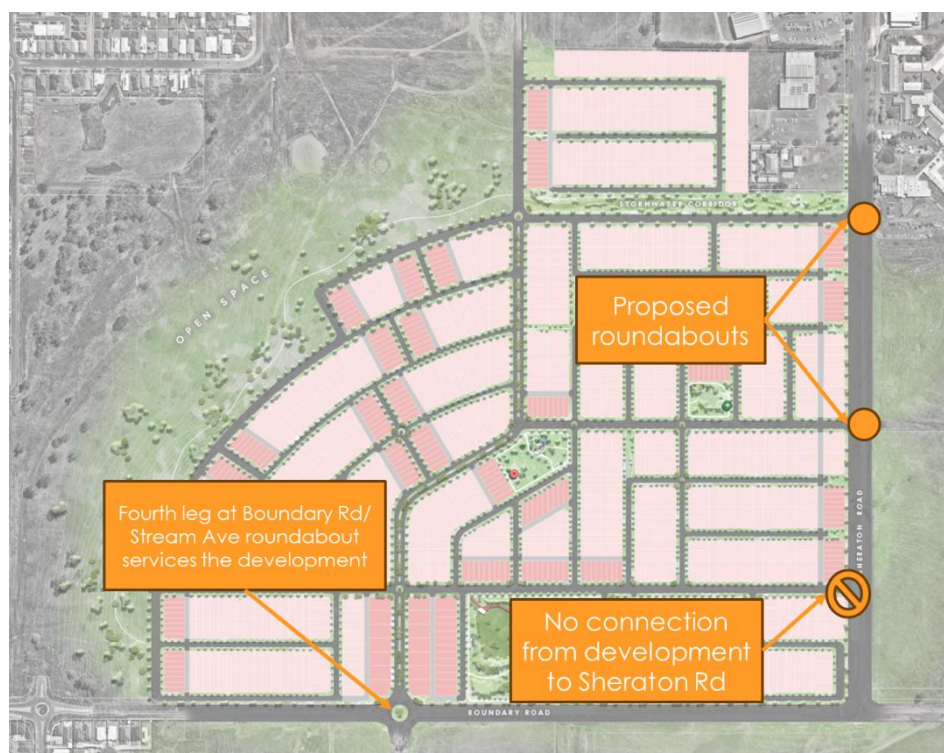
Land Zone	Dwellings	Average Density (dwellings per lot)	Lots
R2 Low Density Residential	927	1 dwelling per lot	927
R1 General Residential – low density	170	1 dwelling per lot	170
R1 General Residential – medium density	511	~4 dwellings per lot	128
TOTAL	1608	N/A	1225

Source: DRC Keswick Estate Masterplan and email dated Friday 25 October 2024

3.3 Vehicle Access

The development proposes to construct two new dual carriageway roundabouts on Sheraton Road and open a fourth leg at the existing Boundary Road/ Stream Avenue intersection (see Figure 3-3). In addition, there are expected to be intersections with the internal roads of previously completed stages of Keswick Estate. Appendix C shows the overall Keswick Estate Masterplan.

Figure 3-3: Proposed intersections as part of the development



Source: Dubbo Regional Council

3.4 Internal Roads

The site has four main street types proposed, with the following characteristics:

Single Lane Boulevard (street type 1):

- 2.5m on-street parking on both sides of the road
- Suitable as a bus route
- 3m median
- 4.5m verge
- Proposes one street tree every 15 metres

Urban Street (street type 2):

- On-street parking both sides
- Not suitable as a bus route
- 3.3m traffic lanes
- 4.5m verge
- Proposed one street tree every 15 metres

Local Street (street type 3):

- This is based off the local street category in the Dubbo North-West Urban release area DCP
- Informal roadside parking
- Street trees
- Undivided carriageway
- 4 – 5.5m verge
- Footpaths provided both sides

Laneway (street type 4):

- Shared surface for all road users
- No parking
- No service vehicle access
- Street trees on sides without vehicle accesses

3.5 Car Parking

Most streets in this development are of types 1, 2, or 3 (as outlined in section 3.4). Street types 1 and 2 propose formalised on-street parking, whereas type 3 only provides informal roadside parking.

Off-street residential car parking will be provided in line with the requirements of the Dubbo DCP, which would subject to assessment as part of each lot's individual Development Application.

3.6 Pedestrian Facilities

The development proposes a high number of facilities to increase pedestrian amenity. Street types 1, 2, and 3 all have pedestrian paths on either side of the road, whilst type 4 is a shared space. It is expected that this shared space will have a suitable speed limit to ensure it is safe for pedestrians.

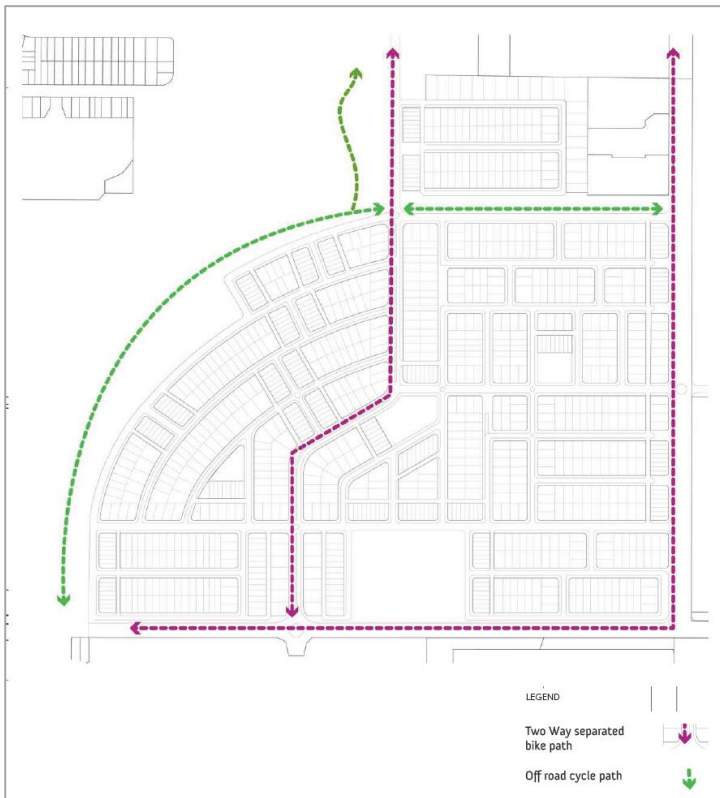
The suitability of the proposed pedestrian facilities is discussed in Section 4.2 of this report.

3.7 Bicycle Facilities

The development proposes separated cycle facilities in the form of two-way separated bike lanes and off-road cycle paths. Bi-directional separated paths are proposed within the subdivision on the Single Lane Boulevard types, and externally on Boundary Road and Sheraton Road. Off-road cycle paths are proposed in other areas to provide further connectivity. Figure 3-4 shows the proposed cycle network of the development.



Figure 3-4: Proposed active transport network



Source: Keswick estate masterplan

The existing cycleway on Boundary Road has limited cycleway line markings; drivers may think this is roadside parking and park in the way of the cycleway. It is recommended this be upgraded and cycleway markings be implemented prior to the development completion.

4. Sustainable Transport Infrastructure

The increase in density proposed is likely to result in increased traffic and parking demand. It is important that the transport network provide adequate bus, walking, and cycling facilities for the proposed development.

4.1 Bicycle Facilities

It is expected that residential dwellings should have suitable bicycle parking arrangements as required for residents and visitors. For smaller dwellings where a garage is not provided, a secure, safe and accessible bike storage facility could also be considered. This would be considered and addressed in the individual development applications.

4.2 Walking and Cycling Network

The neighbourhood has been designed to be “liveable and leafy” through the provision of pedestrian paths and shared spaces. The proposed facilities will encourage a walkable and safe neighbourhood provided the final design accounts for safe crossing locations. Good connectivity throughout the walking and cycling network is essential.

The proposed separated cycle paths provide a safe option for cyclists. There is a proposal to change the existing unseparated, one-directional cycleways on Boundary Road to a separated bi-directional cycleway. The proposed off-road paths would link the recreational spaces of the development to the residential area.

4.3 Public Transport

The existing bus network makes use of both Sheraton Road and Boundary Road. It is proposed that the main north-south road through the development will be designed to accommodate a bus route. There is limited detail at this stage about location of stops. This is to be addressed in later stages of design. However, the connectivity of the proposal appears suitable from the current concept plan.

5. Traffic Impact Assessment

5.1 Traffic Generation

The following section outlines the expected traffic generation used in the assessment of the proposal.

5.1.1 Subject Site

Traffic generation estimates for the proposed development have been sourced from the following, as indicated from Dubbo Regional Council:

- Dubbo City Council – Dubbo Expanded Urban Area Traffic Management & Road Contribution Study (June 1998).
- Dubbo City Council – Dubbo Urban Area Traffic Management & Road Contribution Study (June 1993).

This has been assessed for all three stages combined, as there is no breakdown provided in the masterplan. There are three different dwelling types proposed as part of this development. Table 5-1 shows the trip generation rate for the two different density types. For this assessment, the design rates have been applied without consideration for internal trips. It is not expected that many internal trips will occur, as the subdivision has no schools, shopping facilities, etc. The following trip generation rates have been applied for this assessment:

Table 5-1: Estimated development traffic generation – peak hour

Dwelling type	No. of Dwellings	Design Generation Rates		Traffic Generation Estimates	
		AM Peak Hour (vehicle movements/ dwelling)	PM Peak Hour (vehicle movements/ dwelling)	AM Peak Hour (vph)	PM Peak Hour (vph)
Low Density Residential (R1 & R2)	1097	1.1	1.1	1207	1207
Medium Density (R1)	511	0.89	0.89	455	455
Total	1,608			1,662	1,662

Table 5-1 shows a maximum trip generation of 1,662 vehicle movements during both peak hours.

Table 5-2 provides a comparison of the traffic generation associated with the 2013 Keswick Estate Stage 5 development and this revised proposal.

Table 5-2: Comparison of trips between the 2013 assessment and the current proposal

Report	Maximum peak hour trips (vph)
2013 Stage 5 TIA	548
Current Proposal	1,662
Additional Traffic Generation	+1,114

Table 5-2 indicates that the revised proposal will result in an increase of 1,114 vehicles in the peak hour.

5.1.2 Dubbo RSL

In 2020, TTM Consulting prepared a Traffic Assessment for the proposed Dubbo RSL Club which outlines the proposed impacts associated with the RSL on Boundary Road. Figure 5-1 shows the approximate location of the RSL. The RSL traffic generation rates are:

- Weekday AM: No vehicle trips
- Weekday PM: 100 vph

Figure 5-1: Dubbo RSL location within the proposed development site



5.1.3 Other Traffic Generating Land Uses

St Johns College

As per future development plans provided by Council, it is understood that the proposed northern site access on Sheraton Road will be constructed as a four-leg roundabout, aligning with the existing car park entrance servicing St Johns College. A high-level review of aerial imagery shows that this car park can accommodate approximately 60 vehicles.

For the purpose of modelling this intersection, it is conservatively assumed that all 60 of these vehicles enter the site in the AM peak and leave in the PM peak. In terms of distribution, an 85/15 split from north/ south to access the site has been assumed, resulting in 10 vehicles leaving in the AM peak and 10 entering during the PM peak.

Southlakes Estate

At both the intersections of Boundary Road and Stream Avenue and Boundary Road and Sheraton Road traffic from the Southlakes residential development is expected. The traffic generation for this has been established using the 2017 *Traffic Study – Southlakes Estate Dubbo* (Geolyse, 2017). This report expects 192 and 132 peak hour movements at Stream Avenue and Sheraton Road respectively.

These trips have been accounted for as part of the 2034 Baseline prior to completion of stages 7, 8, and 9 of Keswick Estate.

5.2 Background Traffic Growth

The impacts of the proposed development need to be assessed against the expected traffic flows at the time of completion. Council have advised that the proposal will be completed in 2034. The 2017 Southlakes TIA indicates that the development is expected to be completed prior to 2034, requiring this to be considered as part of the 2034 baseline/ overall area traffic.

To forecast potential traffic increase from developments further afield, historic growth has been reviewed from traffic counts on Mitchell Highway for the years 2009, 2022, and 2024. Overall, between 2009 and 2024, traffic has increased

by two per cent year on year on Mitchell Highway. However, this rate has decreased significantly from 2022 to 2024. As such, a one per cent growth rate has been applied for this assessment to account to additional background traffic growth not attributed to the Southlakes and Keswick Estate developments. This growth rate has been applied to all background traffic, not just Mitchell Highway. This is considered conservative given the Southlakes land release is expected to be a large contributor of the background traffic growth in this area.

The growth rate of one per cent is also consistent with previous TIA's for both Keswick Estate and Southlakes.

5.3 Development Traffic Distribution

The directional distribution and assignment of traffic generated by the proposed development will be influenced by several factors, including the:

- configuration of the arterial road network in the immediate vicinity of the site
- existing operation of intersections providing access between the local and arterial road network
- distribution of households in the vicinity of the site
- surrounding employment centres, retail centres and schools in relation to the site
- configuration of access points to the site.

The following distribution can be established for the four intersections connecting this development:

- Mitchell Highway/ Capstan Avenue: **45 per cent**
- Boundary Road/ Stream Avenue/ Henty Drive: **45 per cent**
- Sheraton Road/ Site Access (northern): **5 per cent**
- Sheraton Road/ Site Access (southern): **5 per cent**

It is assumed that most trips to/ from the development are from/ to the Dubbo town centre. As such:

- For the vehicles using Mitchell Highway and Boundary Road, 95 per cent of the traffic is assumed to be coming from/ going to the CBD, with five per cent coming from/ going to the east.
- For the vehicles using Sheraton Road, 90 per cent is expected to travel northbound, and 10 per cent is expected to travel southbound to the quarry area.

Finally, an 80/20 out/in split is assumed in the AM peak, with the opposite assumed in the PM peak.

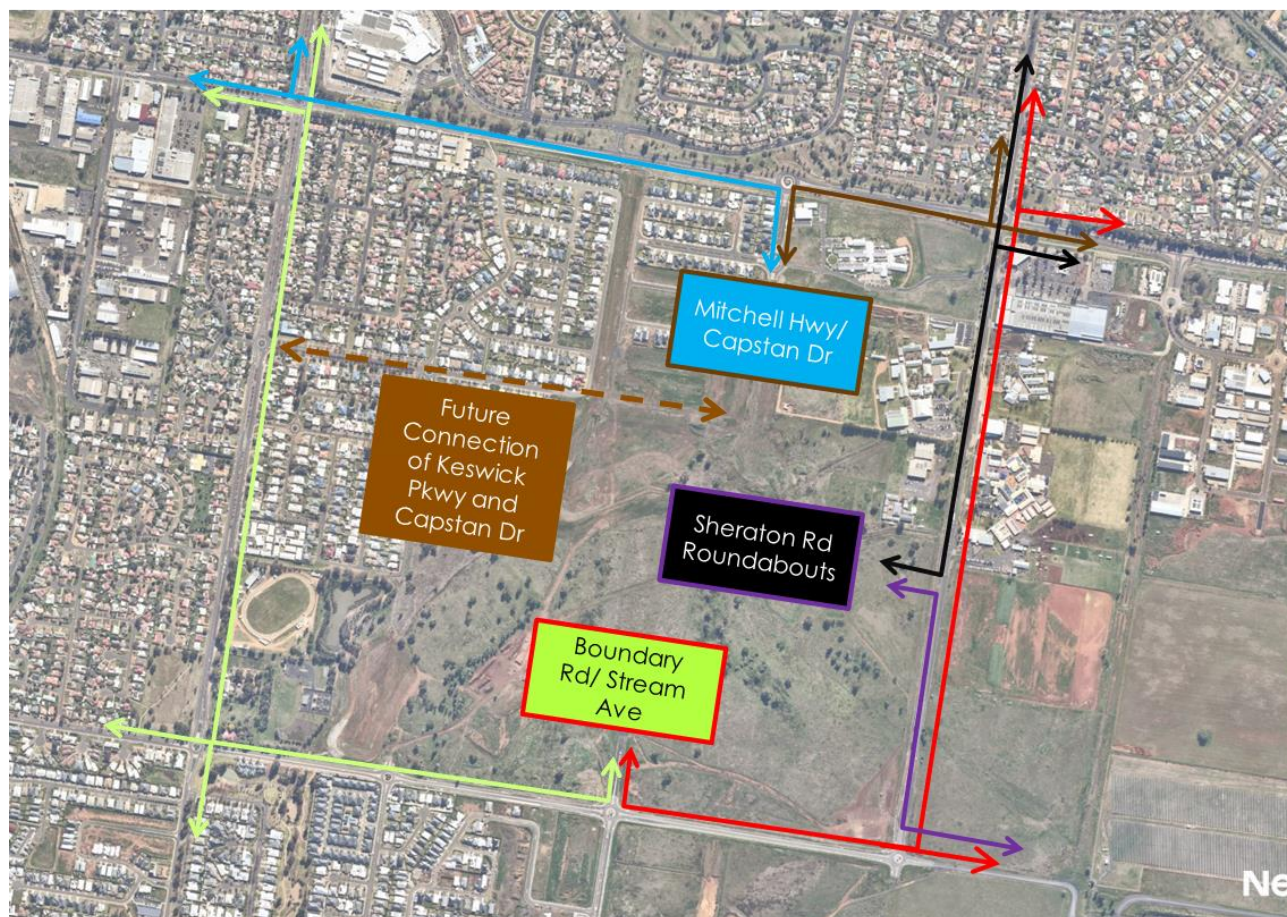
Appendix D shows the distribution of these trips at each access to the site.

5.4 Traffic Distribution across the Network

To account for the effects on the other intersections in the vicinity of the development, the traffic from Keswick needs to be distributed across these. Assumptions have been made as follows.

- The traffic that leaves the development will be distributed at the adjacent intersections based off the existing traffic flows. The proportion of vehicles that take each turning option will be applied to the generated traffic. However, it is assumed the traffic will not turn back towards the development. This distribution is visualised in Figure 5-2.
- The traffic generated from the Southlakes development will be attributed across the adjacent intersections based on the existing traffic flows also. This is to ensure consistency across the assessment, rather than using previous assumptions.
- It is expected that a portion of the vehicles that enter the St Johns College Access at the northern Sheraton Road/ Site Access roundabout are from the development. To account for this traffic, 10 vehicle trips (from the development) that use the Mitchell Highway/ Sheraton Road intersection have been removed.
- 10% of the trips that exit the two site access intersections on Sheraton Road are assumed to be associated with school drop off/ pick up.
- It has been indicated in the future Keswick Parkway (existing) will be connected to Capstan Drive. This is expected to be used by vehicles entering/ exiting this development. This connection has been shown on Figure 5-2, however, has not been assessed as part of the modelling of this development. It is expected a minimal/ negligible amount of traffic will use this road (at most five per cent), which is all expected to be diverted from the Capstan Drive/ Mitchell Highway intersection. As a result, this traffic is still expected to use the Mitchell Highway/ Wheelers Lane intersection to access Dubbo Town Centre. Therefore, the total amount of vehicles through this intersection is expected to stay the same, and is likely to have little impact on the overall performance of the intersection.

Figure 5-2: Assumed traffic flow paths from proposed accesses



5.5 Traffic Impact

The impacts of the development traffic can be assessed against both the existing traffic and the expected background traffic when the development is completed. The development has been indicated to be fully completed in 8-10 years, so a baseline traffic estimation for 2034 has been developed. A further future state has not been assessed, given the opening is still 10 years away. The following sections outline the intersection performance in the 2034 baseline as well as when the development is completed. Detailed traffic performance of each intersection can be found in Appendix E (2034 Baseline) and Appendix F (2034 baseline + development).

2034 Base

The performance of each intersection in the 2034 baseline is assessed in Table 5-3. This has been determined assuming one per cent background traffic growth and factoring in the development traffic from Southlakes estate (Section 5.2). It is understood that the intersections proposed to access the development are planned to be constructed (separately) prior to the opening of the development. Therefore the base scenario includes the intersection arrangement, without any traffic servicing the development.

Table 5-3: Intersection performance (2034 Base)

Intersection	Peak	Worst performing approach	Degree of Saturation	Average Delay (sec)	95th Percentile Queue (m)	Level of Service
Boundary Road/ Wheelers Lane	AM	North	0.25	8	10	A
	PM	North	0.40	7	17	A
Mitchell Highway/ Wheelers Lane	AM	South	0.90	25	91	B
	PM	North	1.10	>70	>200	F
Boundary Road/ Sheraton Road	AM	North	0.20	9	7	A
	PM	North	0.24	8	8	A
Mitchell Highway/ Sheraton Road	AM	East	0.55	13	29	A
	PM	East	0.53	12	27	A
Boundary Road/ Stream Avenue	AM	South	0.15	9	5	A
	PM	South	0.07	8	2	A
Mitchell Highway/ Capstan Drive	AM	South	0.07	10	2	A
	PM	South	0.07	10	2	A

In the 2034 baseline scenario, all intersections aside from the Mitchell Highway/ Wheelers Lane roundabout are still expected to perform at LOS A in both the morning and evening peak. The intersection of Mitchell Highway/ Wheelers Lane is expected to be operating over-capacity in the PM peak and nearing capacity during the AM peak, even without development traffic.

2034 Base + Development

The performance of each intersection when including the proposed development traffic is provided in Table 5-4.

Table 5-4: Intersection performance (2034 Base + development)

Intersection	Peak	Worst performing approach	Degree of Saturation	Average Delay (sec)	95th Percentile Queue (m)	Level of Service
Boundary Road/ Wheelers Lane	AM	South	0.52	11	24	A
	PM	North	0.89	24	123	B
Mitchell Highway/ Wheelers Lane	AM	South	1.75	>70	>200	F
	PM	North	1.77	>70	>200	F
Boundary Road/ Sheraton Road	AM	North	0.20	9	7	A
	PM	North ^[1]	0.26	8	9	A
Mitchell Highway/ Sheraton Road	AM	West	0.60	14	34	A
	PM	East	0.62	13	35	A
Boundary Road/ Stream Avenue	AM	North	0.67	16	48	B
	PM	North	0.15	10	5	A
Mitchell Highway/ Capstan Drive	AM	South	0.94	37	105	C
	PM	East	0.62	12	44	A
Sheraton Rd/ Site Access (northern)	AM	West	0.10	8	3	A
	PM	East	0.08	7	2	A
Sheraton Rd/ Site Access (southern)	AM	West	0.10	10	3	A
	PM	West	0.02	6	1	A

[1] The south approach has the highest delays (8.5 seconds), however, it only sees one vehicle in the peak hour, so this has not been considered as part of this analysis.

The introduction of the development traffic impacts the LOS across the intersections at differing rates. The Mitchell Highway/ Wheelers Lane intersection (which is already operating near to capacity in the AM and overcapacity in the PM in the base scenario) sees a decrease in LOS, to LOS F, because of the additional traffic.



The Boundary Road/ Wheelers Lane intersection, Boundary Road/ Stream Avenue intersection, and Mitchell Highway/ Capstan Drive intersection are expected to have a decrease in LOS (to LOS B/C). They are still operating with spare capacity ($DOS < 1$) in the future scenario with the development traffic present. There is spare capacity at all other intersections. The newly constructed intersections on Sheraton Road have significant spare capacity, and minimal delays.

Summary

Most intersections analysed are expected to continue to operate well with spare capacity in 2034 with the development.

The intersection of Mitchell Highway and Wheelers Lane is approaching the maximum practical degree of saturation in the PM peak under existing conditions, resulting in it being sensitive to traffic increases. The forecast background growth results in the intersection operating near capacity in the AM peak and overcapacity in the PM peak by 2034 regardless of any development traffic from the Keswick Estate.

Therefore, it is evident from the results that the capacity of the intersection of Mitchell Highway and Wheelers Lane needs to be increased to accommodate the future background growth regardless of the Keswick Estate development. The other intersections that are approaching Saturation ($0.8 < DOS < 1$) should be monitored closely prior to the opening of the development.

5.6 Mitigating Measures

The Mitchell Highway/ Wheelers Lane intersection is at capacity by 2034 due to background traffic growth and the proposed development.. Further assessment on varying scenarios and potential upgrades is recommended considering the wider area traffic growth and road network as it is expected an intersection upgrade will be required within the next 10 years. In addition, it is recommended that Dubbo Regional Council consider further and promote the sustainable transport options for residents who use this intersection to commute to the CBD (public transport and active transport facilities). It is also expected that as delays increase at this intersection drivers will choose alternative routes to get to their destinations therefore alleviating some pressure on this roundabout.

The Mitchell Highway/ Capstan Drive intersection is expected to reach LOS C in the AM peak once the development is complete. This intersection approaches saturation for vehicles exiting the development (South approach $DOS = 0.94$). It is expected that these delays could encourage vehicles entering/ exiting the development to use other access points, such as Wheelers Lane/ Keswick Parkway.

As explained in Section 5.4, some of the modelled traffic would use the Keswick Parkway/ Wheelers Lane intersection in reality, which would improve performance at the Mitchell Highway/ Capstan Drive intersection. This should be monitored and assessed. If excessive delays are occurring at Mitchell Highway/ Capstan Drive, mitigation measures should be investigated. Any delays at this intersection are only expected to impact development traffic, without a significant impact to the through movements on Mitchell Highway.

6. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

- The proposed development is expected to have a mix of on and off-street parking available, which is expected to comply with all relevant standards. The details of this are expected to be finalised at a later stage of design and subsequent development applications.
- The site is expected to generate up to 1662 vehicle movements in both the AM and PM peak.
- There is adequate capacity in most of the surrounding road network to cater for the traffic generated by the proposed development. The Mitchell Highway/ Wheelers Lane intersection is expected to be operating near/at capacity in 2034 without including the development traffic.
- It is recommended to provide sustainable transport options (active and public transport) for the future residents to reduce reliance on private car, thus improving intersection performance and capacity in future year scenario.
- An assessment into upgrades of the Mitchell Highway/ Wheelers Lane intersection would be recommended considering wider road network and traffic growth prior to the opening of Keswick Estate Stages 7, 8 and 9. Further investigation/ monitoring of the Mitchell Highway/ Capstan Drive intersection is recommended prior to the opening of Keswick Estate Stages 7, 8 and 9.

Based on the above, the proposed development is supported from traffic point of view.

Appendix A. Traffic Surveys (2024)



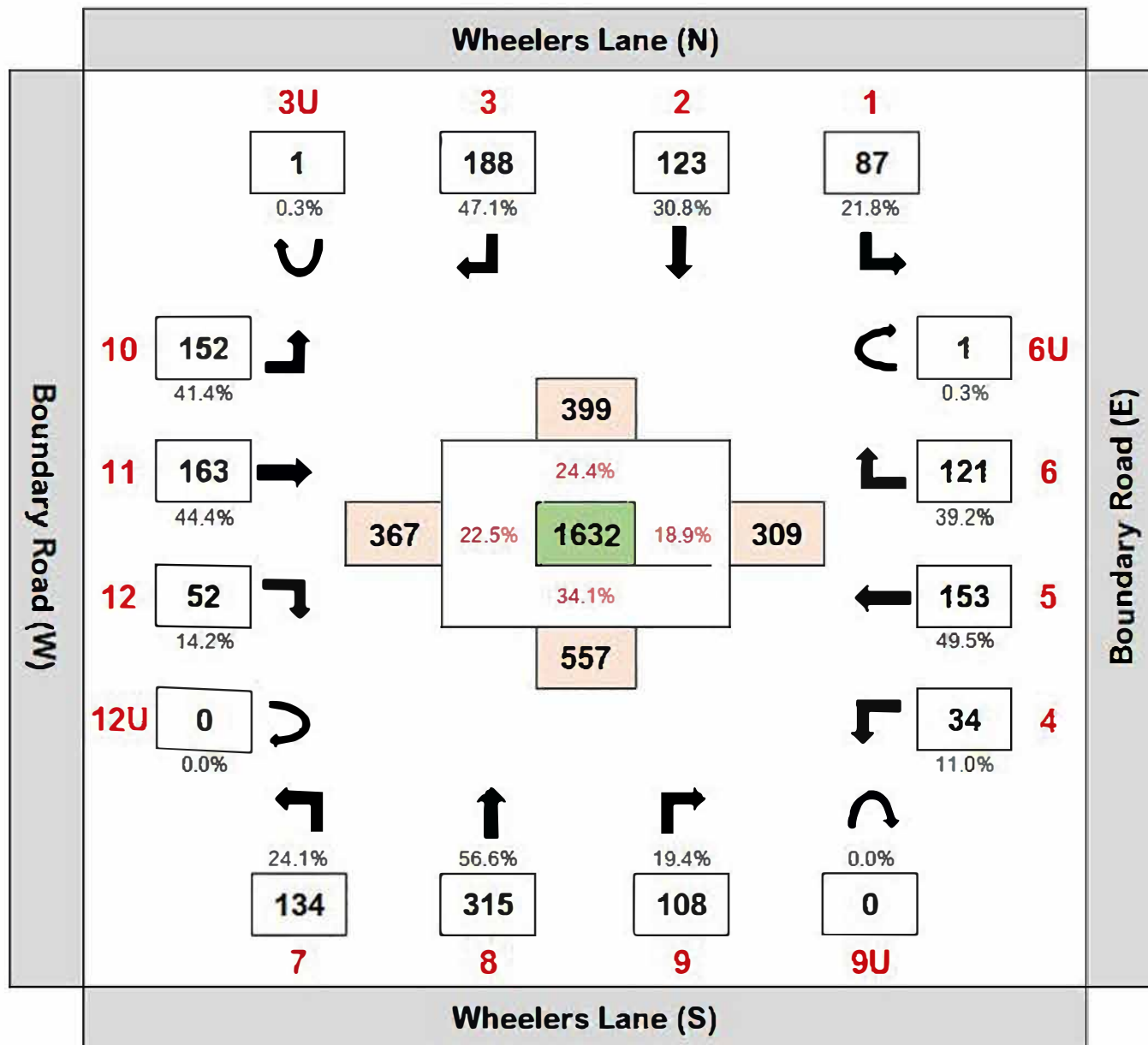
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All Vehicles



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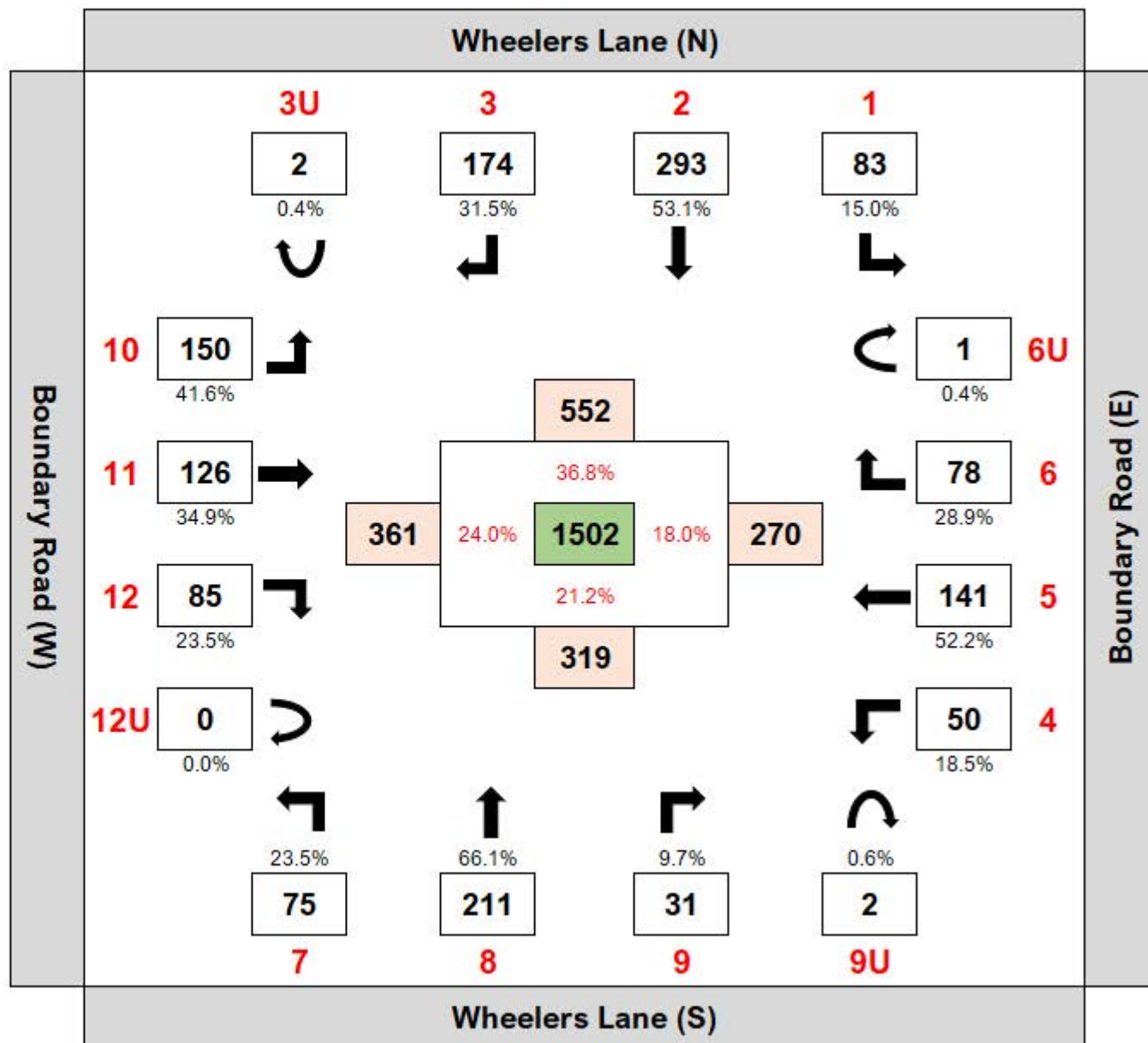
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All Vehicles



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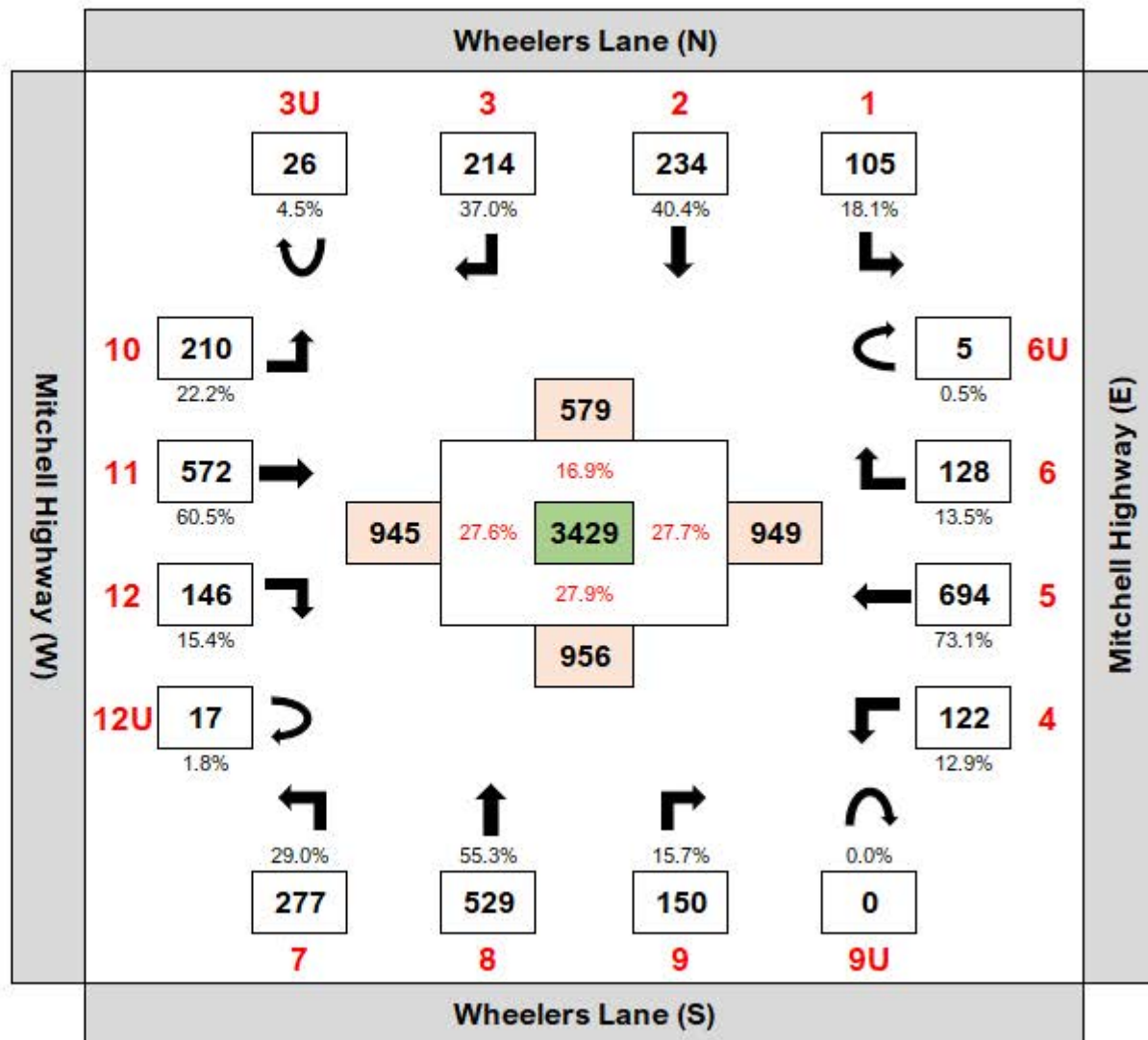


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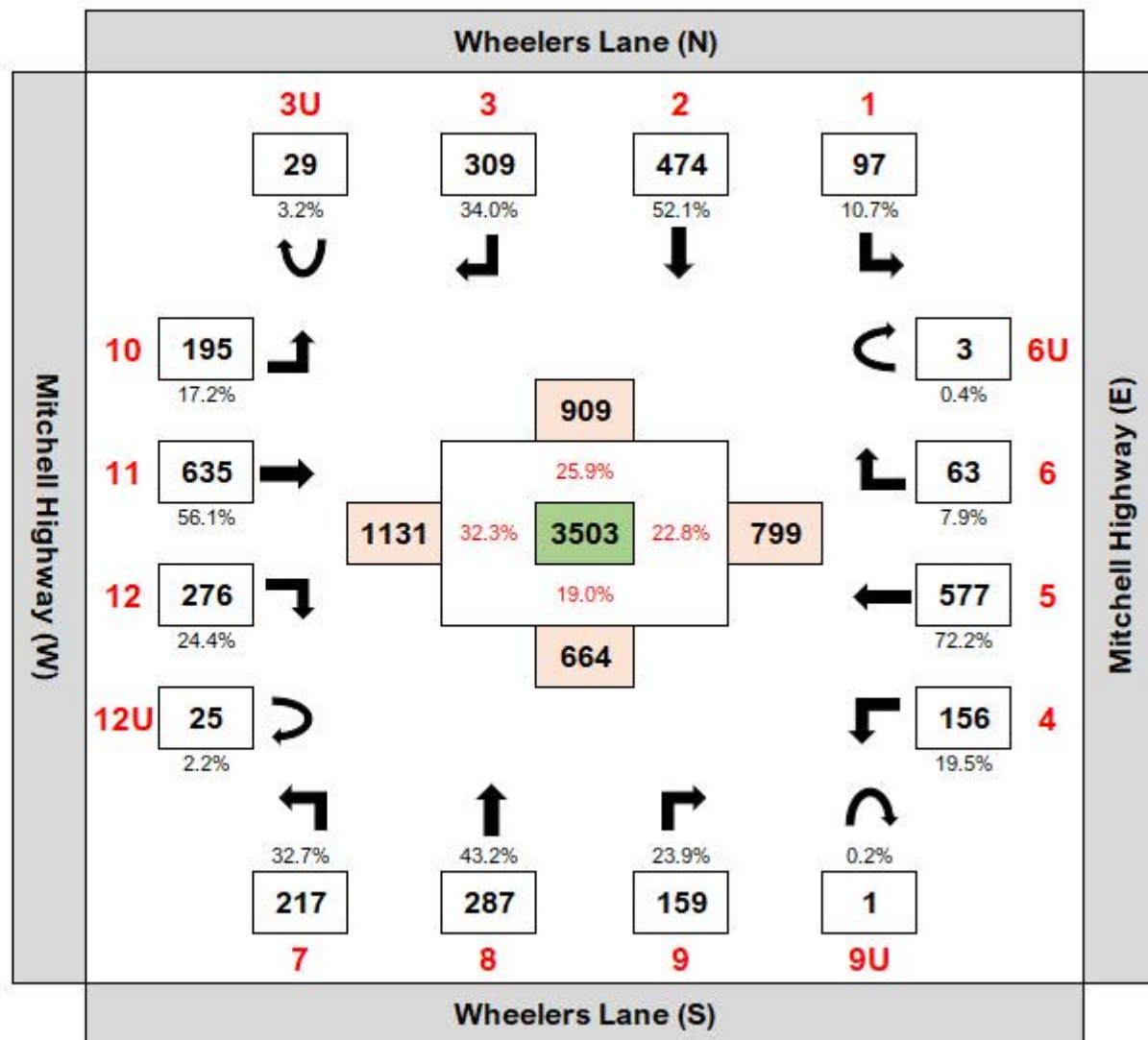
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All Vehicles



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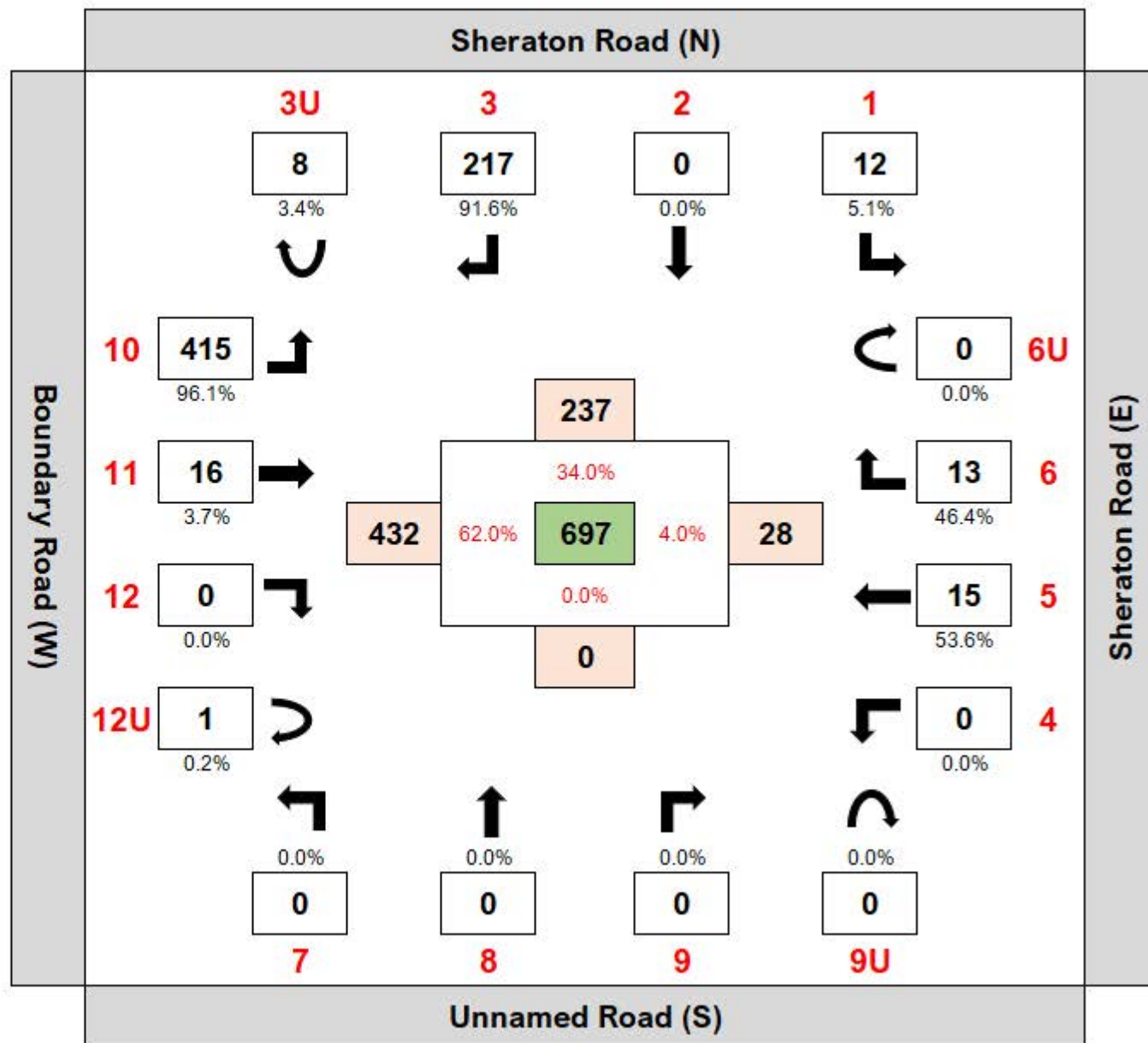
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All Vehicles



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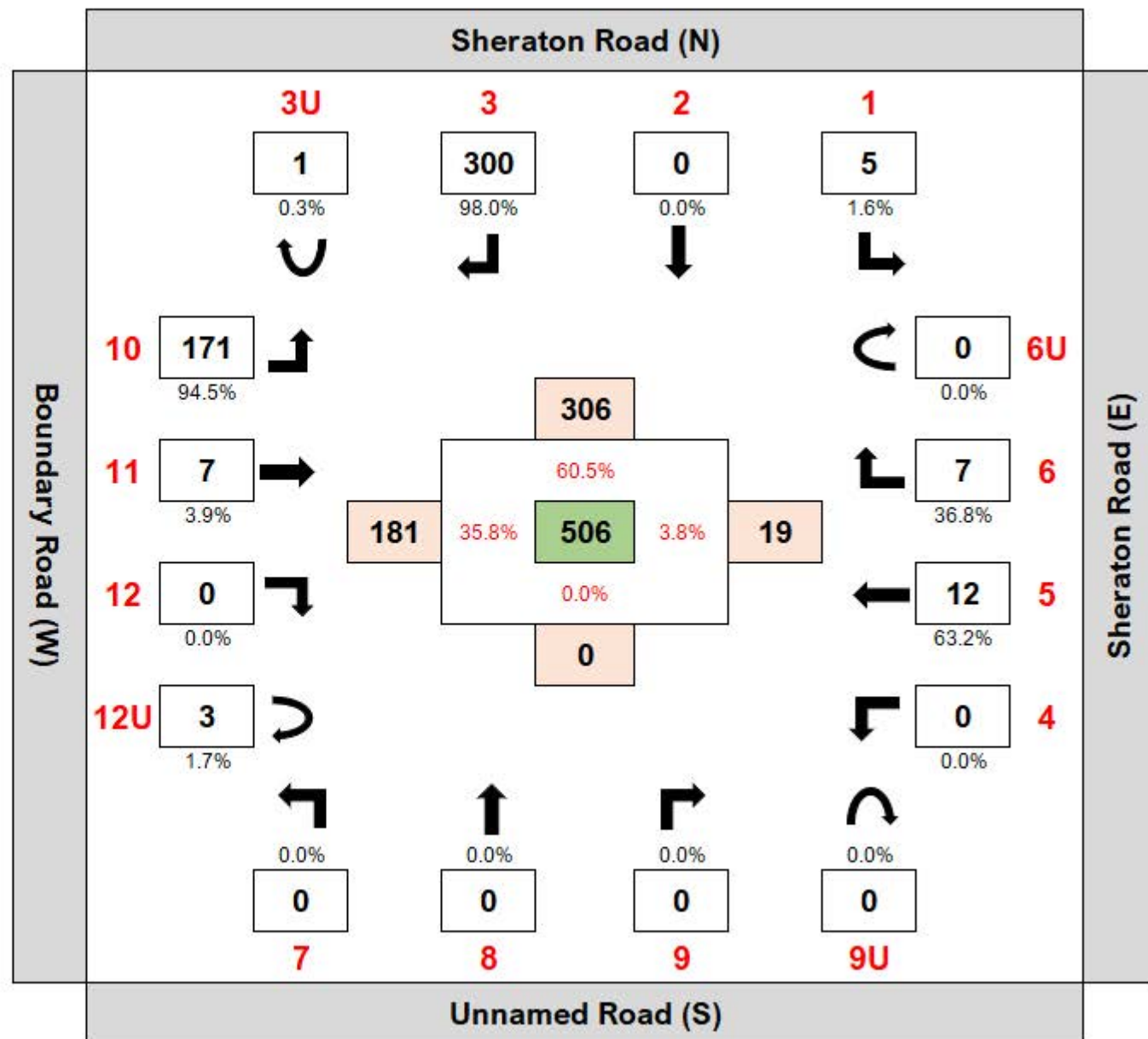
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All Vehicles



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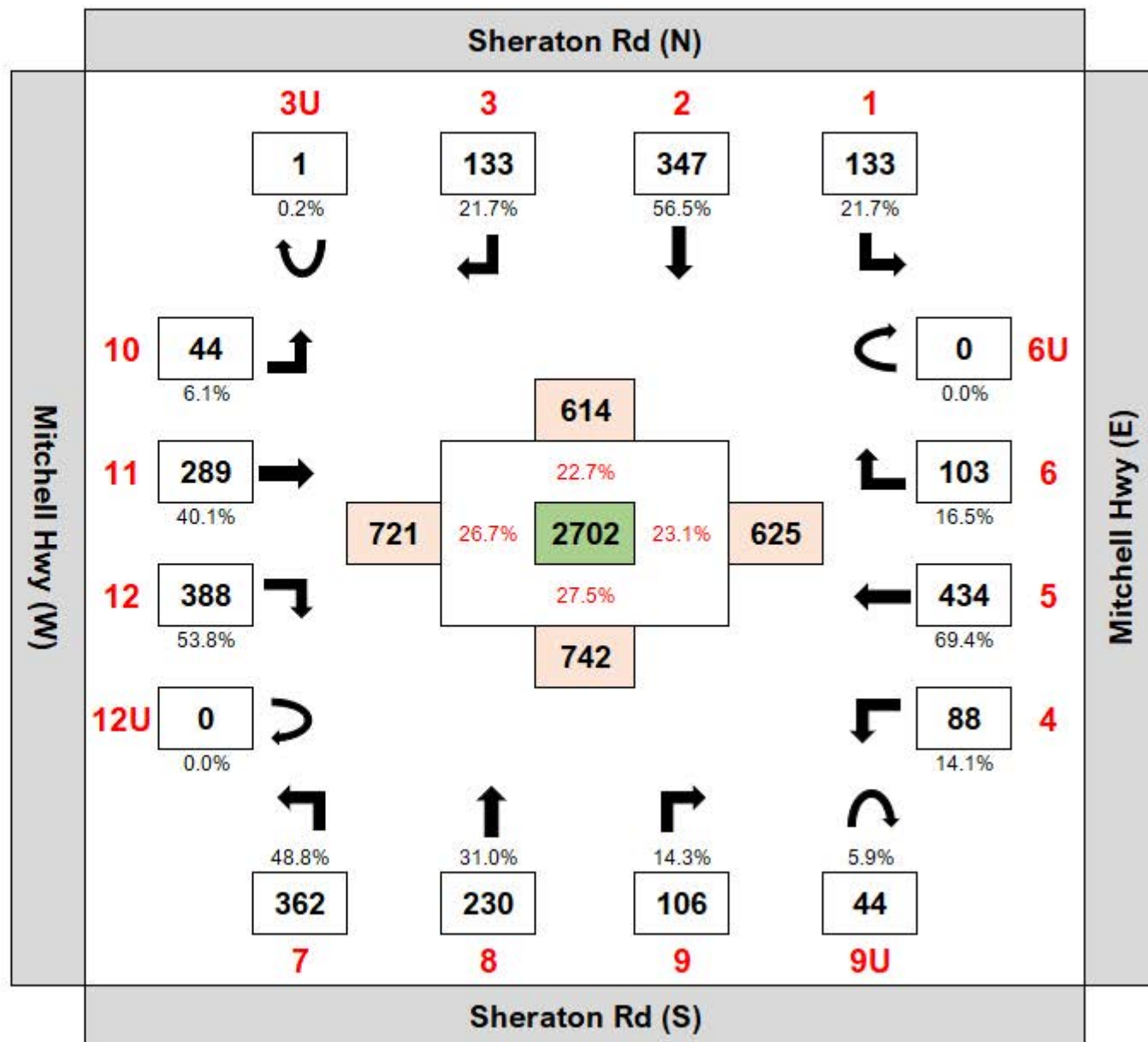
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Select Hour Starting

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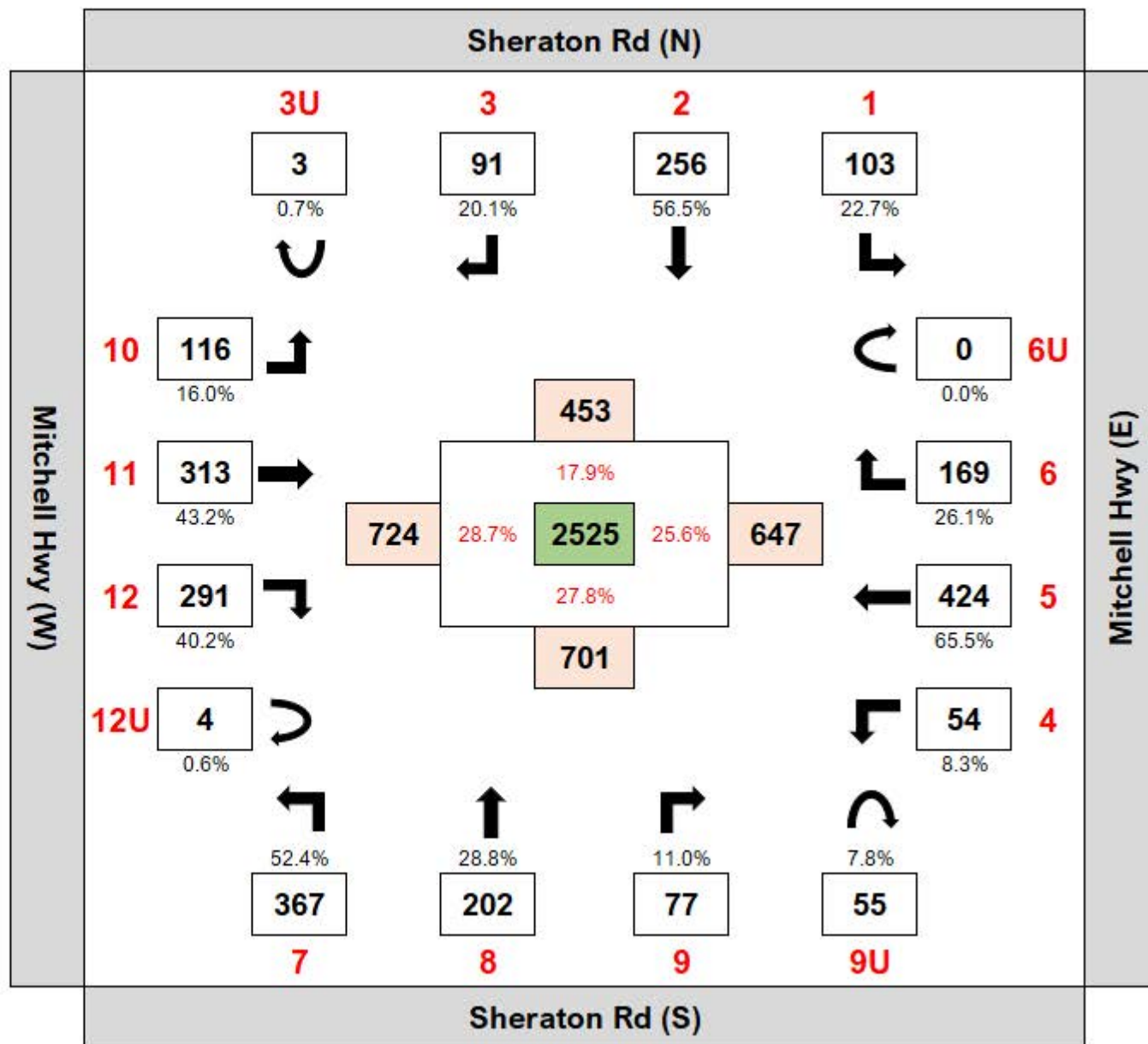
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All Vehicles



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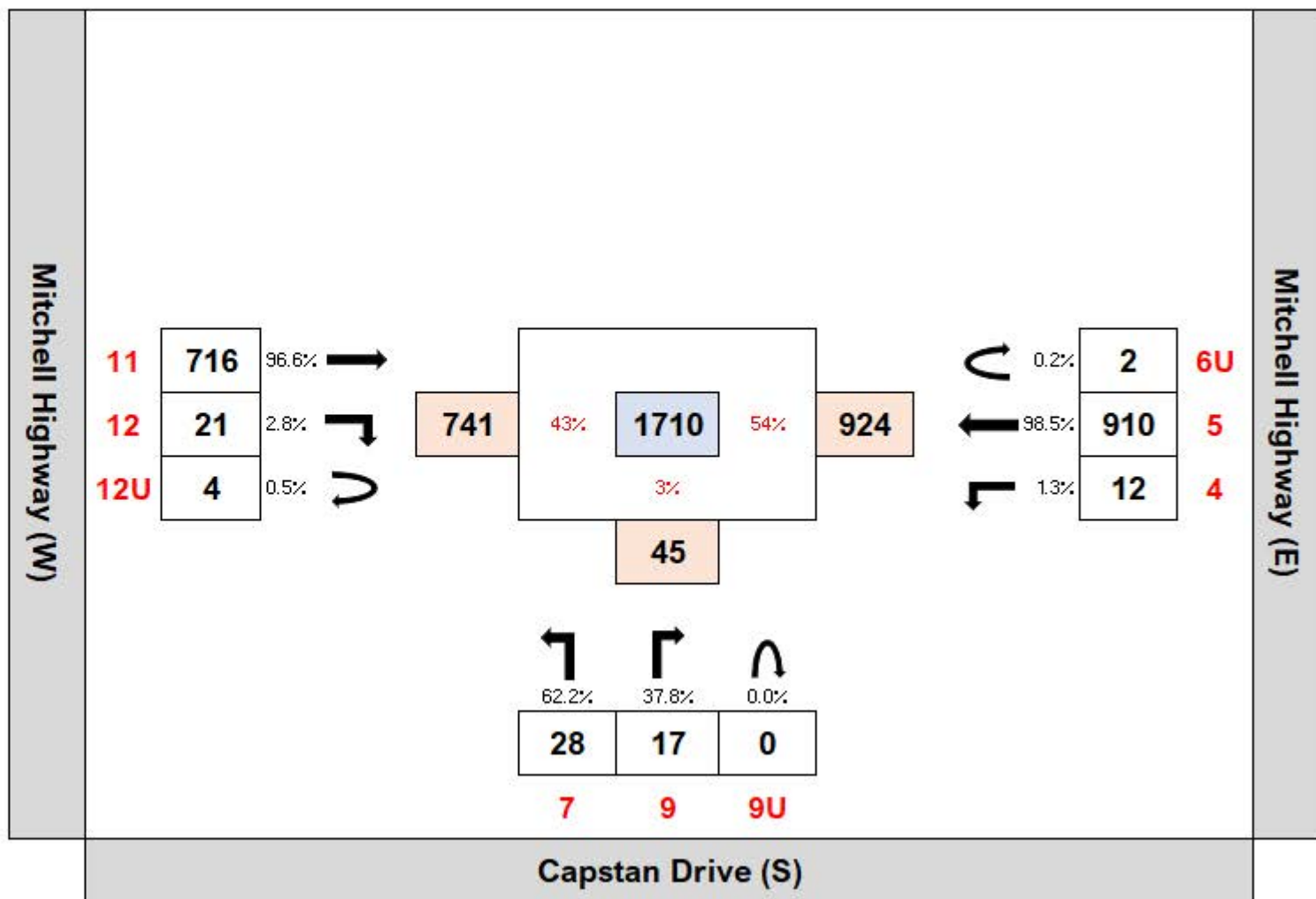
Select User Type

All vehicles



Select Hour Starting

8:00



Select User Type

All vehicles

Select Hour Starting

15:00



Mitchell Highway (W)

11	705	91.8%	→
12	43	5.6%	↘
12U	20	2.6%	↺

768

45%	1688	52%
2%		
42		

878

↺	0.0%	0	6U
↖	97.9%	860	5
↘	2.1%	18	4

Mitchell Highway (E)

↖	69.0%	29	7
↗	31.0%	13	9
↺	0.0%	0	9U

Capstan Drive (S)

Appendix B. SIDRA Results (2024 Base)



MOVEMENT SUMMARY

 **Site: 101 [1. Boundary Road/ Wheelers Lane AM (Site Folder: Existing)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Wheelers Lane															
1	L2	All MCs	141	3.0	141	3.0	0.292	6.0	LOS A	1.4	9.8	0.52	0.60	0.52	48.9
2	T1	All MCs	332	1.3	332	1.3	0.292	6.0	LOS A	1.4	9.8	0.52	0.63	0.52	52.4
3	R2	All MCs	114	0.9	114	0.9	0.292	10.7	LOS A	1.4	9.6	0.53	0.66	0.53	47.6
3u	U	All MCs	1	0.0	1	0.0	0.292	12.8	LOS A	1.4	9.6	0.53	0.66	0.53	51.0
Approach			587	1.6	587	1.6	0.292	6.9	LOS A	1.4	9.8	0.52	0.63	0.52	50.5
East: Boundary Road															
4	L2	All MCs	36	2.9	36	2.9	0.181	4.4	LOS A	0.8	5.5	0.44	0.48	0.44	49.1
5	T1	All MCs	161	2.0	161	2.0	0.181	4.0	LOS A	0.8	5.5	0.44	0.48	0.44	49.6
6	R2	All MCs	127	4.1	127	4.1	0.139	8.8	LOS A	0.6	4.1	0.45	0.67	0.45	46.4
6u	U	All MCs	1	0.0	1	0.0	0.139	10.6	LOS A	0.6	4.1	0.45	0.67	0.45	46.5
Approach			325	2.9	325	2.9	0.181	6.0	LOS A	0.8	5.5	0.44	0.55	0.44	48.2
North: Wheelers Lane															
7	L2	All MCs	92	4.6	92	4.6	0.208	5.6	LOS A	1.0	7.8	0.47	0.54	0.47	49.0
8	T1	All MCs	129	9.8	129	9.8	0.208	5.7	LOS A	1.0	7.8	0.47	0.54	0.47	53.0
9	R2	All MCs	198	8.0	198	8.0	0.201	10.4	LOS A	1.0	7.4	0.47	0.66	0.47	46.3
9u	U	All MCs	1	0.0	1	0.0	0.201	12.3	LOS A	1.0	7.4	0.47	0.66	0.47	49.6
Approach			420	7.8	420	7.8	0.208	7.9	LOS A	1.0	7.8	0.47	0.60	0.47	48.8
West: Boundary Road															
10	L2	All MCs	160	2.6	160	2.6	0.189	5.4	LOS A	0.8	5.9	0.54	0.63	0.54	49.1
11	T1	All MCs	172	0.6	172	0.6	0.227	4.6	LOS A	1.1	7.5	0.54	0.58	0.54	48.7
12	R2	All MCs	55	1.9	55	1.9	0.227	9.2	LOS A	1.1	7.5	0.54	0.58	0.54	47.9
12u	U	All MCs	1	0.0	1	0.0	0.227	11.0	LOS A	1.1	7.5	0.54	0.58	0.54	48.0
Approach			387	1.6	387	1.6	0.227	5.6	LOS A	1.1	7.5	0.54	0.60	0.54	48.7
All Vehicles			1720	3.4	1720	3.4	0.292	6.7	LOS A	1.4	9.8	0.50	0.60	0.50	49.2

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.

MOVEMENT SUMMARY

 **Site: 101 [1. Boundary Road/ Wheelers Lane PM (Site Folder: Existing)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Wheelers Lane															
1	L2	All MCs	79	2.7	79	2.7	0.163	5.6	LOS A	0.7	5.1	0.45	0.56	0.45	49.1
2	T1	All MCs	222	3.3	222	3.3	0.163	5.6	LOS A	0.7	5.1	0.46	0.58	0.46	52.8
3	R2	All MCs	33	3.2	33	3.2	0.163	10.3	LOS A	0.7	5.1	0.46	0.59	0.46	48.2
3u	U	All MCs	2	0.0	2	0.0	0.163	12.3	LOS A	0.7	5.1	0.46	0.59	0.46	51.7
Approach			336	3.1	336	3.1	0.163	6.1	LOS A	0.7	5.1	0.45	0.58	0.45	51.4
East: Boundary Road															
4	L2	All MCs	53	2.0	53	2.0	0.201	5.0	LOS A	0.9	6.4	0.53	0.55	0.53	48.9
5	T1	All MCs	148	0.7	148	0.7	0.201	4.6	LOS A	0.9	6.4	0.53	0.55	0.53	49.3
6	R2	All MCs	82	1.3	82	1.3	0.114	9.9	LOS A	0.5	3.2	0.53	0.73	0.53	46.1
6u	U	All MCs	1	0.0	1	0.0	0.114	11.7	LOS A	0.5	3.2	0.53	0.73	0.53	46.2
Approach			284	1.1	284	1.1	0.201	6.2	LOS A	0.9	6.4	0.53	0.60	0.53	48.2
North: Wheelers Lane															
7	L2	All MCs	87	3.6	87	3.6	0.335	5.4	LOS A	1.9	13.4	0.45	0.51	0.45	49.0
8	T1	All MCs	308	1.0	308	1.0	0.335	5.3	LOS A	1.9	13.4	0.45	0.51	0.45	53.2
9	R2	All MCs	183	8.0	183	8.0	0.208	10.4	LOS A	1.0	7.4	0.43	0.65	0.43	46.4
9u	U	All MCs	2	0.0	2	0.0	0.208	12.2	LOS A	1.0	7.4	0.43	0.65	0.43	49.7
Approach			581	3.6	581	3.6	0.335	6.9	LOS A	1.9	13.4	0.44	0.56	0.44	50.2
West: Boundary Road															
10	L2	All MCs	158	3.3	158	3.3	0.161	4.5	LOS A	0.7	4.9	0.43	0.54	0.43	49.4
11	T1	All MCs	133	0.0	133	0.0	0.197	3.9	LOS A	0.9	6.2	0.42	0.55	0.42	48.8
12	R2	All MCs	89	1.2	89	1.2	0.197	8.5	LOS A	0.9	6.2	0.42	0.55	0.42	48.0
12u	U	All MCs	1	0.0	1	0.0	0.197	10.3	LOS A	0.9	6.2	0.42	0.55	0.42	48.1
Approach			381	1.7	381	1.7	0.197	5.3	LOS A	0.9	6.2	0.42	0.54	0.42	48.8
All Vehicles			1582	2.6	1582	2.6	0.335	6.2	LOS A	1.9	13.4	0.46	0.57	0.46	49.8

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.

MOVEMENT SUMMARY

 **Site: 101 [2. Wheelers Lane/ Mitchell Highway AM (Site Folder: Existing)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Wheelers Lane															
1	L2	All MCs	292	2.2	292	2.2	0.731	11.8	LOS A	6.5	46.6	0.91	1.02	1.34	51.9
2	T1	All MCs	557	2.1	557	2.1	0.731	12.5	LOS A	6.5	46.6	0.90	1.04	1.35	48.7
3	R2	All MCs	158	0.7	158	0.7	0.731	19.1	LOS B	5.9	42.1	0.90	1.06	1.36	49.0
3u	U	All MCs	1	0.0	1	0.0	0.731	21.4	LOS B	5.9	42.1	0.90	1.06	1.36	47.0
Approach			1007	1.9	1007	1.9	0.731	13.4	LOS A	6.5	46.6	0.90	1.04	1.35	49.6
East: Mitchell Highway															
4	L2	All MCs	128	13.1	128	13.1	0.555	8.4	LOS A	3.9	28.3	0.73	0.76	0.85	54.4
5	T1	All MCs	731	1.4	731	1.4	0.555	8.4	LOS A	3.9	28.3	0.74	0.78	0.86	54.6
6	R2	All MCs	135	9.4	135	9.4	0.555	15.0	LOS B	3.7	27.1	0.74	0.81	0.88	52.7
6u	U	All MCs	5	0.0	5	0.0	0.555	17.2	LOS B	3.7	27.1	0.74	0.81	0.88	53.0
Approach			999	4.0	999	4.0	0.555	9.3	LOS A	3.9	28.3	0.74	0.79	0.86	54.3
North: Wheelers Lane															
7	L2	All MCs	111	18.1	111	18.1	0.412	7.5	LOS A	2.5	18.7	0.76	0.73	0.81	53.9
8	T1	All MCs	246	5.1	246	5.1	0.412	6.9	LOS A	2.5	18.7	0.76	0.74	0.81	52.1
9	R2	All MCs	225	4.7	225	4.7	0.412	13.4	LOS A	2.3	17.3	0.76	0.85	0.83	49.9
9u	U	All MCs	27	23.1	27	23.1	0.412	16.6	LOS B	2.3	17.3	0.76	0.85	0.83	47.9
Approach			609	8.1	609	8.1	0.412	9.8	LOS A	2.5	18.7	0.76	0.78	0.82	51.3
West: Mitchell Highway															
10	L2	All MCs	221	4.3	221	4.3	0.663	10.0	LOS A	4.8	35.1	0.76	0.94	0.98	53.9
11	T1	All MCs	602	4.4	602	4.4	0.663	10.6	LOS A	4.8	35.1	0.77	0.96	1.00	53.3
12	R2	All MCs	154	6.8	154	6.8	0.663	17.3	LOS B	4.4	32.4	0.78	0.98	1.02	51.0
12u	U	All MCs	18	0.0	18	0.0	0.663	19.5	LOS B	4.4	32.4	0.78	0.98	1.02	51.2
Approach			995	4.7	995	4.7	0.663	11.7	LOS A	4.8	35.1	0.77	0.96	1.00	53.0
All Vehicles			3611	4.3	3611	4.3	0.731	11.2	LOS A	6.5	46.6	0.79	0.90	1.03	52.1

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.

MOVEMENT SUMMARY

 **Site: 101 [2. Wheelers Lane/ Mitchell Highway PM_calibrated (Site Folder: Existing)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Wheelers Lane															
1	L2	All MCs	228	0.9	228	0.9	0.626	11.7	LOS A	4.6	32.7	0.87	0.96	1.17	51.9
2	T1	All MCs	312	3.0	312	3.0	0.626	12.1	LOS A	4.6	32.7	0.87	0.98	1.18	48.7
3	R2	All MCs	167	2.5	167	2.5	0.626	18.1	LOS B	4.4	31.5	0.87	0.99	1.18	48.8
3u	U	All MCs	1	0.0	1	0.0	0.626	20.3	LOS B	4.4	31.5	0.87	0.99	1.18	47.1
Approach			708	2.2	708	2.2	0.626	13.4	LOS A	4.6	32.7	0.87	0.97	1.18	49.7
East: Mitchell Highway															
4	L2	All MCs	164	8.3	164	8.3	0.834	20.4	LOS B	8.3	60.9	0.96	1.16	1.72	46.9
5	T1	All MCs	607	5.0	607	5.0	0.834	21.0	LOS B	8.3	60.9	0.96	1.17	1.72	46.7
6	R2	All MCs	66	15.9	66	15.9	0.834	28.5	LOS B	7.8	57.8	0.95	1.17	1.73	45.1
6u	U	All MCs	3	0.0	3	0.0	0.834	29.8	LOS C	7.8	57.8	0.95	1.17	1.73	45.5
Approach			841	6.5	841	6.5	0.834	21.5	LOS B	8.3	60.9	0.96	1.17	1.72	46.6
North: Wheelers Lane															
7	L2	All MCs	102	5.2	102	5.2	0.851	20.5	LOS B	9.7	69.8	0.98	1.22	1.85	46.4
8	T1	All MCs	499	2.3	499	2.3	0.851	20.4	LOS B	9.7	69.8	0.97	1.23	1.85	44.3
9	R2	All MCs	325	3.2	325	3.2	0.851	27.3	LOS B	9.2	66.3	0.97	1.24	1.86	42.8
9u	U	All MCs	31	10.3	31	10.3	0.851	30.2	LOS C	9.2	66.3	0.97	1.24	1.86	41.4
Approach			957	3.2	957	3.2	0.851	23.1	LOS B	9.7	69.8	0.97	1.23	1.85	43.9
West: Mitchell Highway															
10	L2	All MCs	205	3.1	205	3.1	0.735	10.7	LOS A	6.1	44.2	0.73	0.94	0.98	53.4
11	T1	All MCs	668	3.6	668	3.6	0.735	10.9	LOS A	6.1	44.2	0.73	0.95	0.98	52.9
12	R2	All MCs	291	0.7	291	0.7	0.735	16.6	LOS B	6.1	43.6	0.73	0.98	0.98	50.9
12u	U	All MCs	26	0.0	26	0.0	0.735	19.2	LOS B	6.1	43.6	0.73	0.98	0.98	50.9
Approach			1191	2.7	1191	2.7	0.735	12.4	LOS A	6.1	44.2	0.73	0.96	0.98	52.4
All Vehicles			3697	3.6	3697	3.6	0.851	17.4	LOS B	9.7	69.8	0.87	1.08	1.41	48.1

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.

MOVEMENT SUMMARY

 Site: 101 [3. Boundary Road/ Sheraton Road AM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Boundary Road															
5	T1	All MCs	16	46.7	16	46.7	0.024	4.7	LOS A	0.1	0.8	0.35	0.49	0.35	48.0
6	R2	All MCs	14	23.1	14	23.1	0.024	8.4	LOS A	0.1	0.8	0.32	0.53	0.32	47.0
6u	U	All MCs	1	0.0	1	0.0	0.024	9.9	LOS A	0.1	0.8	0.32	0.53	0.32	47.7
Approach			31	34.5	31	34.5	0.024	6.5	LOS A	0.1	0.8	0.34	0.51	0.34	47.5
North: Sheraton Road															
7	L2	All MCs	13	16.7	13	16.7	0.014	4.5	LOS A	0.1	0.4	0.11	0.46	0.11	50.1
9	R2	All MCs	228	0.9	228	0.9	0.151	8.9	LOS A	0.7	4.6	0.09	0.63	0.09	47.4
9u	U	All MCs	8	0.0	8	0.0	0.151	11.0	LOS A	0.7	4.6	0.09	0.63	0.09	50.7
Approach			249	1.7	249	1.7	0.151	8.7	LOS A	0.7	4.6	0.09	0.62	0.09	47.6
West: Boundary Road															
10	L2	All MCs	437	1.2	437	1.2	0.272	3.2	LOS A	1.4	9.9	0.11	0.40	0.11	50.4
11	T1	All MCs	17	50.0	17	50.0	0.022	3.3	LOS A	0.1	0.9	0.12	0.34	0.12	49.4
12u	U	All MCs	1	0.0	1	0.0	0.022	9.4	LOS A	0.1	0.9	0.12	0.34	0.12	49.7
Approach			455	3.0	455	3.0	0.272	3.3	LOS A	1.4	9.9	0.11	0.40	0.11	50.3
All Vehicles			735	3.9	735	3.9	0.272	5.2	LOS A	1.4	9.9	0.11	0.48	0.11	49.2

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.

MOVEMENT SUMMARY

 **Site: 101 [3. Boundary Road/ Sheraton Road PM (Site Folder: Existing)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Boundary Road															
5	T1	All MCs	13	8.3	13	8.3	0.016	4.4	LOS A	0.1	0.5	0.38	0.49	0.38	48.9
6	R2	All MCs	7	28.6	7	28.6	0.016	8.8	LOS A	0.1	0.5	0.37	0.52	0.37	47.2
6u	U	All MCs	1	0.0	1	0.0	0.016	10.2	LOS A	0.1	0.5	0.37	0.52	0.37	48.0
Approach			21	15.0	21	15.0	0.016	6.3	LOS A	0.1	0.5	0.37	0.50	0.37	48.2
North: Sheraton Road															
7	L2	All MCs	5	40.0	5	40.0	0.006	4.7	LOS A	0.0	0.2	0.08	0.47	0.08	50.0
9	R2	All MCs	316	1.3	316	1.3	0.193	8.8	LOS A	0.8	6.0	0.06	0.63	0.06	47.5
9u	U	All MCs	1	100.0	1	100.0	0.193	12.1	LOS A	0.8	6.0	0.06	0.63	0.06	47.6
Approach			322	2.3	322	2.3	0.193	8.8	LOS A	0.8	6.0	0.06	0.63	0.06	47.5
West: Boundary Road															
10	L2	All MCs	180	1.8	180	1.8	0.112	3.2	LOS A	0.5	3.6	0.06	0.40	0.06	50.5
11	T1	All MCs	7	28.6	7	28.6	0.012	3.0	LOS A	0.0	0.4	0.07	0.44	0.07	49.0
12u	U	All MCs	3	0.0	3	0.0	0.012	9.2	LOS A	0.0	0.4	0.07	0.44	0.07	48.8
Approach			191	2.8	191	2.8	0.112	3.3	LOS A	0.5	3.6	0.06	0.40	0.06	50.4
All Vehicles			534	3.0	534	3.0	0.193	6.7	LOS A	0.8	6.0	0.07	0.54	0.07	48.5

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.

MOVEMENT SUMMARY

 **Site: 101 [4. Sheraton Road/ Mitchell Highway AM (Site Folder: Existing)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Sheraton Road															
1	L2	All MCs	381	6.6	381	6.6	0.450	6.4	LOS A	2.6	19.5	0.69	0.72	0.74	55.3
2	T1	All MCs	242	7.0	242	7.0	0.450	6.8	LOS A	2.6	19.5	0.70	0.77	0.76	51.3
3	R2	All MCs	112	1.9	112	1.9	0.450	12.4	LOS A	2.6	18.6	0.70	0.77	0.77	52.3
3u	U	All MCs	46	2.3	46	2.3	0.450	14.8	LOS B	2.6	18.6	0.70	0.77	0.77	50.2
Approach			781	5.8	781	5.8	0.450	7.9	LOS A	2.6	19.5	0.69	0.75	0.75	53.2
East: Mitchell Highway															
4	L2	All MCs	93	9.1	93	9.1	0.440	9.1	LOS A	2.7	19.8	0.76	0.79	0.85	54.3
5	T1	All MCs	457	3.9	457	3.9	0.440	9.4	LOS A	2.7	19.8	0.76	0.81	0.86	54.1
6	R2	All MCs	108	15.5	108	15.5	0.440	16.5	LOS B	2.5	18.9	0.76	0.85	0.88	51.6
6u	U	All MCs	1	0.0	1	0.0	0.440	18.3	LOS B	2.5	18.9	0.76	0.85	0.88	52.1
Approach			659	6.5	659	6.5	0.440	10.5	LOS A	2.7	19.8	0.76	0.81	0.86	53.7
North: Sheraton Road															
7	L2	All MCs	140	9.0	140	9.0	0.399	7.1	LOS A	2.2	16.2	0.71	0.70	0.75	54.7
8	T1	All MCs	365	3.5	365	3.5	0.399	6.8	LOS A	2.2	16.2	0.71	0.74	0.76	52.0
9	R2	All MCs	140	1.5	140	1.5	0.399	12.9	LOS A	2.1	15.2	0.71	0.80	0.77	52.3
9u	U	All MCs	1	0.0	1	0.0	0.399	15.1	LOS B	2.1	15.2	0.71	0.80	0.77	50.2
Approach			646	4.2	646	4.2	0.399	8.2	LOS A	2.2	16.2	0.71	0.75	0.76	52.6
West: Mitchell Highway															
10	L2	All MCs	46	4.5	46	4.5	0.398	7.2	LOS A	2.2	16.6	0.64	0.65	0.64	55.1
11	T1	All MCs	304	9.0	304	9.0	0.398	7.7	LOS A	2.2	16.6	0.64	0.65	0.64	55.5
12	R2	All MCs	408	5.4	408	5.4	0.398	12.8	LOS A	2.3	17.0	0.63	0.72	0.63	51.2
12u	U	All MCs	1	0.0	1	0.0	0.398	15.2	LOS B	2.3	17.0	0.63	0.72	0.63	51.4
Approach			760	6.8	760	6.8	0.398	10.4	LOS A	2.3	17.0	0.63	0.69	0.63	53.1
All Vehicles			2846	5.9	2846	5.9	0.450	9.2	LOS A	2.7	19.8	0.70	0.75	0.75	53.2

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

Vehicle movement LOS values are based on average delay per movement.

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.

MOVEMENT SUMMARY

 **Site: 101 [4. Sheraton Road/ Mitchell Highway PM (Site Folder: Existing)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Sheraton Road															
1	L2	All MCs	386	6.5	386	6.5	0.423	6.3	LOS A	2.3	17.3	0.67	0.72	0.71	55.5
2	T1	All MCs	213	4.0	213	4.0	0.423	6.6	LOS A	2.3	17.3	0.68	0.76	0.74	51.2
3	R2	All MCs	81	7.8	81	7.8	0.423	12.6	LOS A	2.3	16.5	0.68	0.76	0.74	51.2
3u	U	All MCs	58	0.0	58	0.0	0.423	14.6	LOS B	2.3	16.5	0.68	0.76	0.74	50.4
Approach			738	5.4	738	5.4	0.423	7.7	LOS A	2.3	17.3	0.68	0.74	0.72	53.2
East: Mitchell Highway															
4	L2	All MCs	57	3.7	57	3.7	0.396	7.5	LOS A	2.2	16.0	0.67	0.69	0.68	55.0
5	T1	All MCs	446	6.6	446	6.6	0.396	7.9	LOS A	2.2	16.0	0.67	0.72	0.69	54.7
6	R2	All MCs	179	11.2	179	11.2	0.396	14.5	LOS A	2.1	15.8	0.68	0.79	0.72	51.9
6u	U	All MCs	1	0.0	1	0.0	0.396	16.6	LOS B	2.1	15.8	0.68	0.79	0.72	52.3
Approach			683	7.6	683	7.6	0.396	9.6	LOS A	2.2	16.0	0.67	0.73	0.70	54.0
North: Sheraton Road															
7	L2	All MCs	108	2.9	108	2.9	0.284	6.2	LOS A	1.4	10.4	0.64	0.63	0.64	55.4
8	T1	All MCs	269	8.6	269	8.6	0.284	6.1	LOS A	1.4	10.4	0.64	0.67	0.64	52.3
9	R2	All MCs	96	4.4	96	4.4	0.284	12.0	LOS A	1.3	9.9	0.65	0.72	0.65	52.1
9u	U	All MCs	3	33.3	3	33.3	0.284	15.6	LOS B	1.3	9.9	0.65	0.72	0.65	49.6
Approach			477	6.6	477	6.6	0.284	7.4	LOS A	1.4	10.4	0.64	0.67	0.64	52.9
West: Mitchell Highway															
10	L2	All MCs	122	0.9	122	0.9	0.403	7.0	LOS A	2.4	17.8	0.65	0.64	0.65	55.3
11	T1	All MCs	329	6.1	329	6.1	0.403	7.5	LOS A	2.4	17.8	0.65	0.65	0.65	55.2
12	R2	All MCs	306	6.5	306	6.5	0.403	13.5	LOS A	2.3	17.2	0.66	0.74	0.66	51.6
12u	U	All MCs	4	0.0	4	0.0	0.403	15.9	LOS B	2.3	17.2	0.66	0.74	0.66	51.8
Approach			762	5.4	762	5.4	0.403	9.9	LOS A	2.4	17.8	0.65	0.69	0.65	53.7
All Vehicles			2660	6.2	2660	6.2	0.423	8.8	LOS A	2.4	17.8	0.66	0.71	0.68	53.5

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

Vehicle movement LOS values are based on average delay per movement.

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.

MOVEMENT SUMMARY

 **Site: 101 [5. Boundary Road/ Stream Ave AM (Site Folder: Existing)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Stream Ave															
1	L2	All MCs	106	0.0	106	0.0	0.088	5.2	LOS A	0.3	2.4	0.30	0.52	0.30	53.6
3	R2	All MCs	102	9.3	102	9.3	0.093	9.6	LOS A	0.4	2.8	0.32	0.64	0.32	49.8
3u	U	All MCs	1	0.0	1	0.0	0.093	11.5	LOS A	0.4	2.8	0.32	0.64	0.32	50.1
Approach			209	4.5	209	4.5	0.093	7.4	LOS A	0.4	2.8	0.31	0.58	0.31	51.6
East: Boundary Road															
4	L2	All MCs	26	0.0	26	0.0	0.056	4.3	LOS A	0.2	1.7	0.12	0.43	0.12	54.2
5	T1	All MCs	219	4.3	219	4.3	0.128	4.2	LOS A	0.6	4.1	0.11	0.40	0.11	54.6
6u	U	All MCs	1	0.0	1	0.0	0.128	10.8	LOS A	0.6	4.1	0.10	0.40	0.10	53.8
Approach			246	3.8	246	3.8	0.128	4.3	LOS A	0.6	4.1	0.11	0.40	0.11	54.6
West: Boundary Road															
11	T1	All MCs	353	1.2	353	1.2	0.218	4.7	LOS A	1.1	7.6	0.26	0.44	0.26	53.8
12	R2	All MCs	25	8.3	25	8.3	0.218	9.2	LOS A	1.1	7.6	0.25	0.44	0.25	52.6
12u	U	All MCs	1	0.0	1	0.0	0.218	11.1	LOS A	1.1	7.6	0.25	0.44	0.25	52.9
Approach			379	1.7	379	1.7	0.218	5.0	LOS A	1.1	7.6	0.26	0.44	0.26	53.8
All Vehicles			835	3.0	835	3.0	0.218	5.4	LOS A	1.1	7.6	0.23	0.47	0.23	53.4

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

Vehicle movement LOS values are based on average delay per movement.

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.

MOVEMENT SUMMARY

 Site: 101 [5. Boundary Road/ Stream Ave PM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Stream Ave															
1	L2	All MCs	16	6.7	16	6.7	0.016	5.7	LOS A	0.1	0.4	0.35	0.52	0.35	53.2
3	R2	All MCs	22	4.8	22	4.8	0.020	9.6	LOS A	0.1	0.6	0.33	0.63	0.33	49.8
3u	U	All MCs	1	0.0	1	0.0	0.020	11.5	LOS A	0.1	0.6	0.33	0.63	0.33	50.0
Approach			39	5.4	39	5.4	0.020	8.1	LOS A	0.1	0.6	0.34	0.58	0.34	51.1
East: Boundary Road															
4	L2	All MCs	63	5.0	63	5.0	0.082	4.9	LOS A	0.3	2.4	0.22	0.48	0.22	53.6
5	T1	All MCs	268	0.8	268	0.8	0.187	4.4	LOS A	0.8	5.9	0.20	0.41	0.20	54.3
6u	U	All MCs	1	0.0	1	0.0	0.187	11.0	LOS A	0.8	5.9	0.20	0.41	0.20	53.4
Approach			333	1.6	333	1.6	0.187	4.5	LOS A	0.8	5.9	0.21	0.43	0.21	54.1
West: Boundary Road															
11	T1	All MCs	168	2.5	168	2.5	0.130	4.2	LOS A	0.6	4.2	0.10	0.48	0.10	53.7
12	R2	All MCs	85	0.0	85	0.0	0.130	8.8	LOS A	0.6	4.2	0.10	0.52	0.10	52.4
12u	U	All MCs	1	0.0	1	0.0	0.130	10.8	LOS A	0.6	4.2	0.10	0.52	0.10	52.4
Approach			255	1.7	255	1.7	0.130	5.8	LOS A	0.6	4.2	0.10	0.49	0.10	53.3
All Vehicles			626	1.8	626	1.8	0.187	5.3	LOS A	0.8	5.9	0.17	0.46	0.17	53.6

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.

MOVEMENT SUMMARY

 **Site: 101 [8. Mitchell Hwy / Capstan Dr AM (Site Folder: Existing)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Capstan Dr															
1	L2	All MCs	29	0.0	29	0.0	0.059	8.0	LOS A	0.2	1.5	0.54	0.72	0.54	52.0
3	R2	All MCs	18	0.0	18	0.0	0.059	11.9	LOS A	0.2	1.5	0.54	0.72	0.54	51.4
3u	U	All MCs	1	0.0	1	0.0	0.059	14.3	LOS A	0.2	1.5	0.54	0.72	0.54	51.4
Approach			48	0.0	48	0.0	0.059	9.6	LOS A	0.2	1.5	0.54	0.72	0.54	51.8
East: Mitchell Hwy															
4	L2	All MCs	13	8.3	13	8.3	0.305	3.8	LOS A	1.5	11.3	0.12	0.34	0.12	54.8
5	T1	All MCs	958	4.4	958	4.4	0.329	4.5	LOS A	1.7	12.5	0.12	0.34	0.12	55.4
6u	U	All MCs	2	0.0	2	0.0	0.329	11.7	LOS A	1.7	12.5	0.11	0.34	0.11	54.5
Approach			973	4.4	973	4.4	0.329	4.5	LOS A	1.7	12.5	0.12	0.34	0.12	55.4
West: Mitchell Hwy															
11	T1	All MCs	754	6.4	754	6.4	0.255	3.6	LOS A	1.4	10.7	0.11	0.35	0.11	55.3
12	R2	All MCs	22	0.0	22	0.0	0.255	9.3	LOS A	1.4	10.4	0.11	0.36	0.11	54.2
12u	U	All MCs	4	25.0	4	25.0	0.255	11.9	LOS A	1.4	10.4	0.11	0.36	0.11	53.4
Approach			780	6.3	780	6.3	0.255	3.8	LOS A	1.4	10.7	0.11	0.35	0.11	55.2
All Vehicles			1801	5.1	1801	5.1	0.329	4.4	LOS A	1.7	12.5	0.12	0.35	0.12	55.2

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.

MOVEMENT SUMMARY

 **Site: 101 [8. Mitchell Hwy / Capstan Dr PM (Site Folder: Existing)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Capstan Dr															
1	L2	All MCs	31	0.0	31	0.0	0.057	7.9	LOS A	0.2	1.5	0.55	0.72	0.55	52.3
3	R2	All MCs	14	7.7	14	7.7	0.057	12.2	LOS A	0.2	1.5	0.55	0.72	0.55	51.5
3u	U	All MCs	1	0.0	1	0.0	0.057	14.2	LOS A	0.2	1.5	0.55	0.72	0.55	51.7
Approach			45	2.3	45	2.3	0.057	9.4	LOS A	0.2	1.5	0.55	0.72	0.55	52.0
East: Mitchell Hwy															
4	L2	All MCs	19	5.6	19	5.6	0.311	4.0	LOS A	1.6	11.7	0.21	0.36	0.21	54.4
5	T1	All MCs	905	6.6	905	6.6	0.336	4.7	LOS A	1.8	13.0	0.20	0.36	0.20	54.9
6u	U	All MCs	1	0.0	1	0.0	0.336	11.8	LOS A	1.8	13.0	0.20	0.35	0.20	54.1
Approach			925	6.6	925	6.6	0.336	4.7	LOS A	1.8	13.0	0.20	0.36	0.20	54.9
West: Mitchell Hwy															
11	T1	All MCs	742	5.2	742	5.2	0.260	3.6	LOS A	1.5	11.0	0.09	0.37	0.09	55.2
12	R2	All MCs	45	0.0	45	0.0	0.260	9.2	LOS A	1.5	10.7	0.10	0.41	0.10	53.8
12u	U	All MCs	22	4.8	22	4.8	0.260	11.7	LOS A	1.5	10.7	0.10	0.41	0.10	53.6
Approach			809	4.9	809	4.9	0.260	4.1	LOS A	1.5	11.0	0.09	0.37	0.09	55.0
All Vehicles			1780	5.7	1780	5.7	0.336	4.6	LOS A	1.8	13.0	0.16	0.37	0.16	54.9

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

Vehicle movement LOS values are based on average delay per movement.

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.

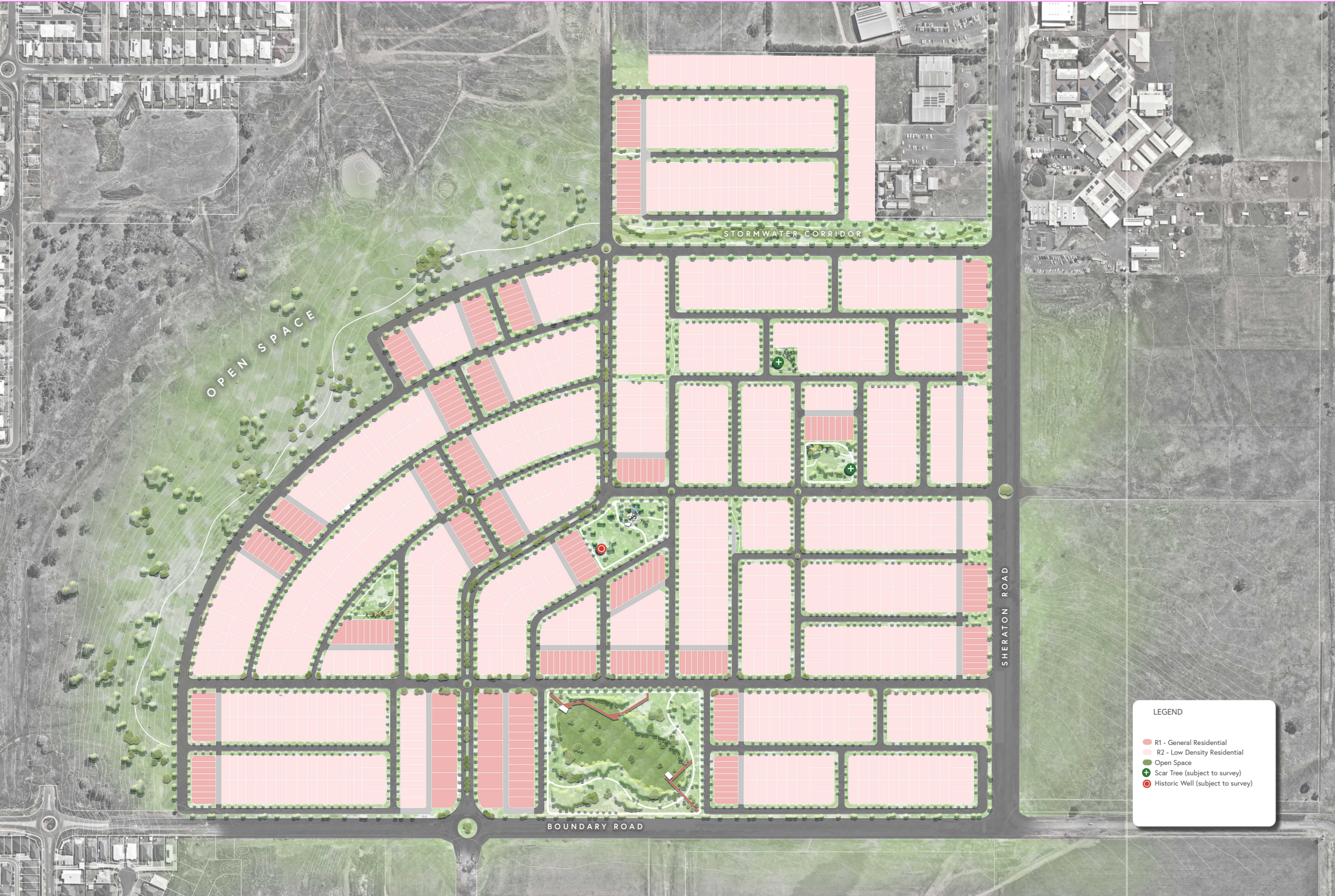
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

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.

Appendix C. Keswick Estate Masterplan



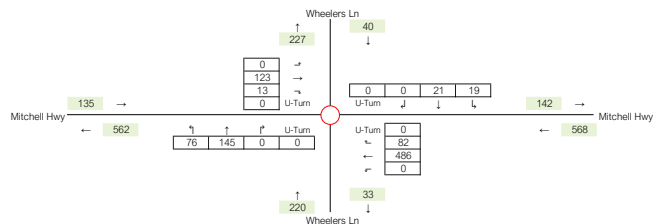
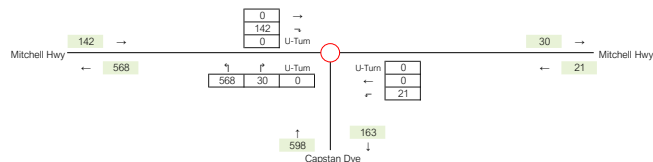
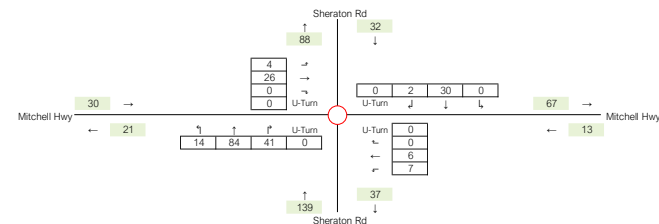
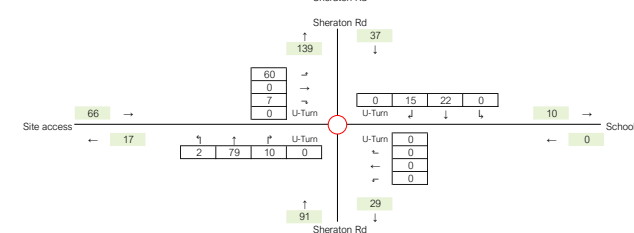
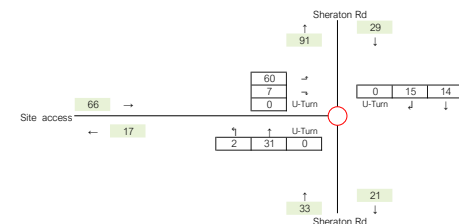
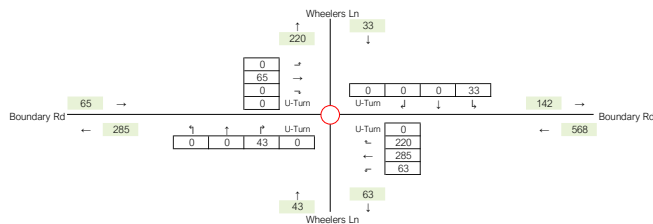
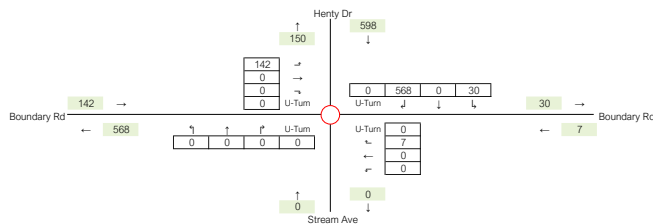
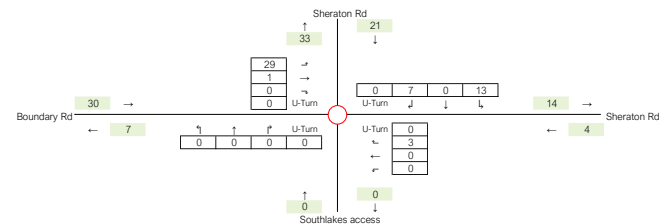


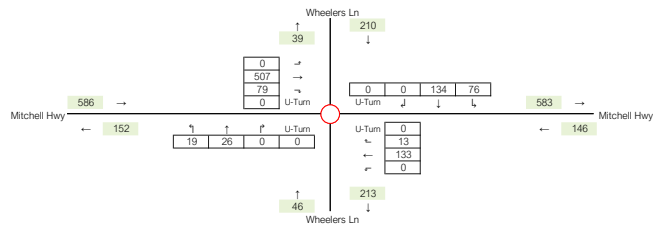
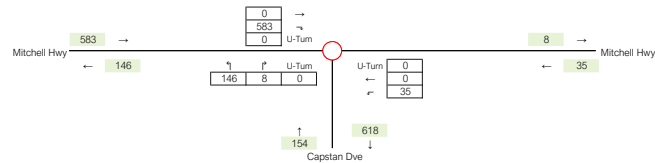
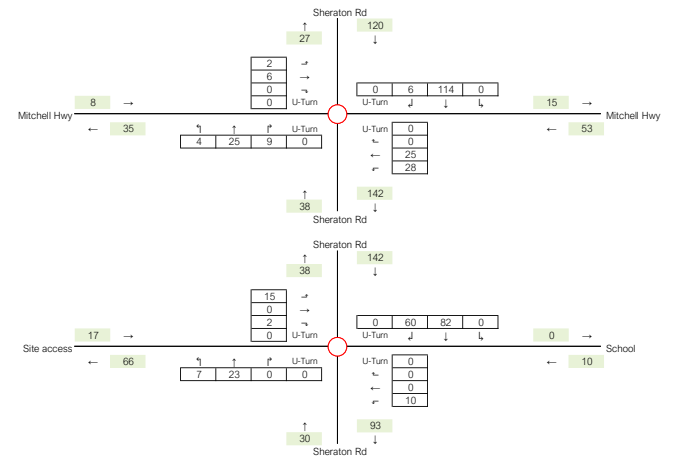
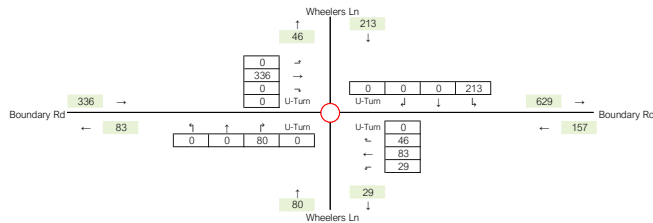
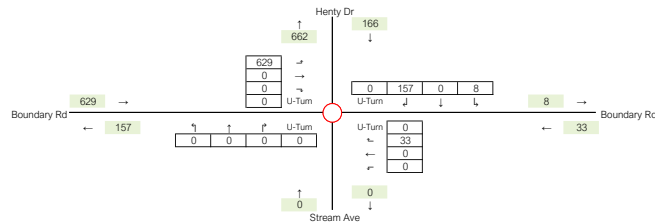
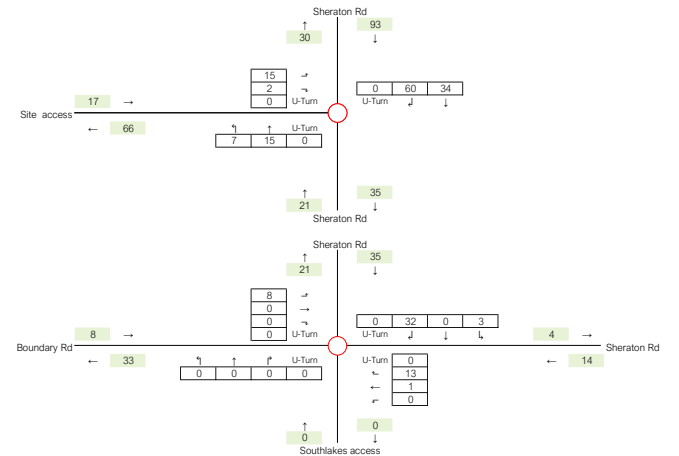
LEGEND

- R1 - General Residential
- R2 - Low Density Residential
- Open Space
- Scar Tree (subject to survey)
- Historic Well (subject to survey)

Appendix D. Development Traffic Distribution







Appendix E. SIDRA Results (2034 Baseline)



MOVEMENT SUMMARY

 Site: 101 [1. Boundary Road/ Wheelers Lane AM (Site Folder: 2034 Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Wheelers Lane															
1	L2	All MCs	155	2.7	155	2.7	0.348	6.4	LOS A	1.7	12.2	0.58	0.64	0.58	48.7
2	T1	All MCs	364	1.2	364	1.2	0.348	6.4	LOS A	1.7	12.2	0.58	0.67	0.58	52.1
3	R2	All MCs	141	0.7	141	0.7	0.348	11.2	LOS A	1.7	11.8	0.59	0.70	0.59	47.3
3u	U	All MCs	1	0.0	1	0.0	0.348	13.2	LOS A	1.7	11.8	0.59	0.70	0.59	50.6
Approach			661	1.4	661	1.4	0.348	7.4	LOS A	1.7	12.2	0.58	0.67	0.58	50.2
East: Boundary Road															
4	L2	All MCs	45	2.3	45	2.3	0.233	4.5	LOS A	1.0	7.5	0.48	0.49	0.48	49.0
5	T1	All MCs	203	1.6	203	1.6	0.233	4.2	LOS A	1.0	7.5	0.48	0.49	0.48	49.4
6	R2	All MCs	161	3.9	161	3.9	0.181	9.0	LOS A	0.8	5.5	0.48	0.68	0.48	46.3
6u	U	All MCs	1	0.0	1	0.0	0.181	10.8	LOS A	0.8	5.5	0.48	0.68	0.48	46.4
Approach			411	2.6	411	2.6	0.233	6.1	LOS A	1.0	7.5	0.48	0.57	0.48	48.1
North: Wheelers Lane															
7	L2	All MCs	113	3.7	113	3.7	0.253	6.1	LOS A	1.4	10.0	0.53	0.58	0.53	48.8
8	T1	All MCs	142	9.6	142	9.6	0.253	6.2	LOS A	1.4	10.0	0.53	0.58	0.53	52.8
9	R2	All MCs	218	8.2	218	8.2	0.239	10.9	LOS A	1.2	9.2	0.54	0.69	0.54	46.2
9u	U	All MCs	1	0.0	1	0.0	0.239	12.8	LOS A	1.2	9.2	0.54	0.69	0.54	49.4
Approach			474	7.6	474	7.6	0.253	8.3	LOS A	1.4	10.0	0.53	0.63	0.53	48.6
West: Boundary Road															
10	L2	All MCs	176	2.4	176	2.4	0.226	5.9	LOS A	1.0	7.3	0.59	0.67	0.59	48.8
11	T1	All MCs	213	0.5	213	0.5	0.289	5.0	LOS A	1.4	10.0	0.60	0.62	0.60	48.5
12	R2	All MCs	60	1.8	60	1.8	0.289	9.6	LOS A	1.4	10.0	0.60	0.62	0.60	47.7
12u	U	All MCs	1	0.0	1	0.0	0.289	11.3	LOS A	1.4	10.0	0.60	0.62	0.60	47.8
Approach			449	1.4	449	1.4	0.289	6.0	LOS A	1.4	10.0	0.60	0.64	0.60	48.5
All Vehicles			1995	3.1	1995	3.1	0.348	7.1	LOS A	1.7	12.2	0.55	0.63	0.55	49.0

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.

MOVEMENT SUMMARY

 **Site: 101 [1. Boundary Road/ Wheelers Lane PM (Site Folder: 2034 Base)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Wheelers Lane															
1	L2	All MCs	86	2.4	86	2.4	0.192	5.9	LOS A	0.9	6.2	0.50	0.59	0.50	48.9
2	T1	All MCs	244	3.4	244	3.4	0.192	6.0	LOS A	0.9	6.2	0.51	0.61	0.51	52.5
3	R2	All MCs	42	2.5	42	2.5	0.192	10.6	LOS A	0.9	6.1	0.51	0.63	0.51	47.9
3u	U	All MCs	2	0.0	2	0.0	0.192	12.7	LOS A	0.9	6.1	0.51	0.63	0.51	51.4
Approach			375	3.1	375	3.1	0.192	6.5	LOS A	0.9	6.2	0.50	0.61	0.50	51.1
East: Boundary Road															
4	L2	All MCs	67	1.6	67	1.6	0.268	5.2	LOS A	1.3	9.0	0.58	0.58	0.58	48.7
5	T1	All MCs	191	0.6	191	0.6	0.268	4.9	LOS A	1.3	9.0	0.58	0.58	0.58	49.1
6	R2	All MCs	105	1.0	105	1.0	0.152	10.2	LOS A	0.6	4.4	0.56	0.75	0.56	46.0
6u	U	All MCs	1	0.0	1	0.0	0.152	12.0	LOS A	0.6	4.4	0.56	0.75	0.56	46.0
Approach			364	0.9	364	0.9	0.268	6.5	LOS A	1.3	9.0	0.57	0.63	0.57	48.1
North: Wheelers Lane															
7	L2	All MCs	114	2.8	114	2.8	0.401	5.8	LOS A	2.4	17.2	0.53	0.55	0.53	48.8
8	T1	All MCs	339	0.9	339	0.9	0.401	5.7	LOS A	2.4	17.2	0.53	0.55	0.53	52.9
9	R2	All MCs	201	7.9	201	7.9	0.244	10.8	LOS A	1.2	8.9	0.49	0.68	0.49	46.3
9u	U	All MCs	2	0.0	2	0.0	0.244	12.7	LOS A	1.2	8.9	0.49	0.68	0.49	49.6
Approach			656	3.4	656	3.4	0.401	7.3	LOS A	2.4	17.2	0.52	0.59	0.52	49.9
West: Boundary Road															
10	L2	All MCs	175	3.6	175	3.6	0.190	4.8	LOS A	0.8	5.9	0.47	0.57	0.47	49.2
11	T1	All MCs	174	0.0	174	0.0	0.248	4.2	LOS A	1.2	8.2	0.47	0.56	0.47	48.7
12	R2	All MCs	98	1.1	98	1.1	0.248	8.7	LOS A	1.2	8.2	0.47	0.56	0.47	48.0
12u	U	All MCs	1	0.0	1	0.0	0.248	10.5	LOS A	1.2	8.2	0.47	0.56	0.47	48.0
Approach			447	1.6	447	1.6	0.248	5.4	LOS A	1.2	8.2	0.47	0.56	0.47	48.8
All Vehicles			1842	2.4	1842	2.4	0.401	6.5	LOS A	2.4	17.2	0.51	0.59	0.51	49.5

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.

MOVEMENT SUMMARY

 **Site: 101 [2. Wheelers Lane/ Mitchell Highway AM (Site Folder: 2034 Base)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Wheelers Lane															
1	L2	All MCs	328	2.2	328	2.2	0.903	22.5	LOS B	12.7	90.4	1.00	1.37	2.22	45.1
2	T1	All MCs	625	2.0	625	2.0	0.903	24.1	LOS B	12.7	90.4	0.99	1.38	2.23	42.4
3	R2	All MCs	174	0.6	174	0.6	0.903	31.5	LOS C	11.1	78.6	0.98	1.38	2.23	42.2
3u	U	All MCs	1	0.0	1	0.0	0.903	33.8	LOS C	11.1	78.6	0.98	1.38	2.23	40.7
Approach			1128	1.9	1128	1.9	0.903	24.8	LOS B	12.7	90.4	0.99	1.37	2.23	43.1
East: Mitchell Highway															
4	L2	All MCs	142	13.3	142	13.3	0.649	9.8	LOS A	5.3	38.3	0.81	0.85	1.03	53.9
5	T1	All MCs	803	1.4	803	1.4	0.649	9.8	LOS A	5.3	38.3	0.81	0.87	1.04	54.0
6	R2	All MCs	148	9.2	148	9.2	0.649	16.6	LOS B	5.0	36.2	0.82	0.89	1.06	51.9
6u	U	All MCs	6	0.0	6	0.0	0.649	18.7	LOS B	5.0	36.2	0.82	0.89	1.06	52.2
Approach			1100	4.0	1100	4.0	0.649	10.7	LOS A	5.3	38.3	0.81	0.87	1.04	53.6
North: Wheelers Lane															
7	L2	All MCs	122	18.1	122	18.1	0.508	8.7	LOS A	3.4	25.8	0.83	0.84	0.97	53.3
8	T1	All MCs	278	4.9	278	4.9	0.508	8.1	LOS A	3.4	25.8	0.83	0.85	0.97	51.6
9	R2	All MCs	247	4.7	247	4.7	0.508	14.8	LOS B	3.2	23.6	0.82	0.92	0.98	49.0
9u	U	All MCs	31	24.1	31	24.1	0.508	18.3	LOS B	3.2	23.6	0.82	0.92	0.98	47.0
Approach			678	8.1	678	8.1	0.508	11.1	LOS A	3.4	25.8	0.83	0.88	0.98	50.7
West: Mitchell Highway															
10	L2	All MCs	243	4.3	243	4.3	0.809	13.6	LOS A	7.6	55.3	0.87	1.08	1.34	51.2
11	T1	All MCs	663	4.4	663	4.4	0.809	14.5	LOS B	7.6	55.3	0.88	1.09	1.36	50.5
12	R2	All MCs	174	6.7	174	6.7	0.809	21.6	LOS B	6.8	49.9	0.88	1.11	1.39	48.2
12u	U	All MCs	20	0.0	20	0.0	0.809	23.7	LOS B	6.8	49.9	0.88	1.11	1.39	48.4
Approach			1100	4.7	1100	4.7	0.809	15.6	LOS B	7.6	55.3	0.88	1.09	1.36	50.2
All Vehicles			4006	4.3	4006	4.3	0.903	16.1	LOS B	12.7	90.4	0.88	1.08	1.45	48.9

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.

MOVEMENT SUMMARY

 **Site: 101 [2. Wheelers Lane/ Mitchell Highway PM (Site Folder: 2034 Base)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Wheelers Lane															
1	L2	All MCs	258	0.8	258	0.8	0.763	15.9	LOS B	6.7	47.6	0.94	1.09	1.48	49.1
2	T1	All MCs	352	3.0	352	3.0	0.763	16.4	LOS B	6.7	47.6	0.93	1.10	1.49	46.1
3	R2	All MCs	184	2.3	184	2.3	0.763	22.7	LOS B	6.3	45.3	0.93	1.11	1.49	46.2
3u	U	All MCs	1	0.0	1	0.0	0.763	24.8	LOS B	6.3	45.3	0.93	1.11	1.49	44.6
Approach			795	2.1	795	2.1	0.763	17.7	LOS B	6.7	47.6	0.93	1.10	1.49	47.0
East: Mitchell Highway															
4	L2	All MCs	180	8.2	180	8.2	0.981	46.6	LOS D	17.9	131.7	1.00	1.68	3.30	35.3
5	T1	All MCs	668	5.0	668	5.0	0.981	47.8	LOS D	17.9	131.7	1.00	1.67	3.29	35.0
6	R2	All MCs	73	15.9	73	15.9	0.981	55.9	LOS D	16.4	121.2	1.00	1.65	3.27	34.0
6u	U	All MCs	3	0.0	3	0.0	0.981	57.1	LOS E	16.4	121.2	1.00	1.65	3.27	34.2
Approach			924	6.5	924	6.5	0.981	48.2	LOS D	17.9	131.7	1.00	1.67	3.29	35.0
North: Wheelers Lane															
7	L2	All MCs	113	5.6	113	5.6	1.106	123.9	LOS F	46.8	335.9	1.00	3.07	7.13	20.3
8	T1	All MCs	560	2.3	560	2.3	1.106	123.8	LOS F	46.8	335.9	1.00	3.04	7.08	20.0
9	R2	All MCs	358	3.2	358	3.2	1.106	131.5	LOS F	41.7	300.4	1.00	2.91	6.83	19.8
9u	U	All MCs	34	9.4	34	9.4	1.106	134.3	LOS F	41.7	300.4	1.00	2.91	6.83	19.5
Approach			1064	3.2	1064	3.2	1.106	126.7	LOS F	46.8	335.9	1.00	3.00	6.99	19.9
West: Mitchell Highway															
10	L2	All MCs	226	3.3	226	3.3	0.863	15.1	LOS B	9.8	71.0	0.86	1.11	1.42	50.3
11	T1	All MCs	735	3.6	735	3.6	0.863	15.3	LOS B	9.8	71.0	0.86	1.12	1.42	49.9
12	R2	All MCs	326	0.6	326	0.6	0.863	21.1	LOS B	9.8	69.6	0.86	1.13	1.42	48.0
12u	U	All MCs	29	0.0	29	0.0	0.863	23.6	LOS B	9.8	69.6	0.86	1.13	1.42	48.0
Approach			1317	2.7	1317	2.7	0.863	16.9	LOS B	9.8	71.0	0.86	1.12	1.42	49.4
All Vehicles			4100	3.6	4100	3.6	1.106	52.6	LOS D	46.8	335.9	0.94	1.73	3.30	33.2

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.

MOVEMENT SUMMARY

 Site: 101 [3. Boundary Road/ Sheraton Road AM (Site Folder: 2034 Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: site access															
1	L2	All MCs	1	0.0	1	0.0	0.046	6.5	LOS A	0.2	1.3	0.40	0.52	0.40	52.9
2	T1	All MCs	135	0.0	135	0.0	0.082	5.5	LOS A	0.3	2.4	0.39	0.51	0.39	53.3
3	R2	All MCs	1	0.0	1	0.0	0.082	9.9	LOS A	0.3	2.4	0.38	0.51	0.38	52.5
3u	U	All MCs	1	0.0	1	0.0	0.082	12.1	LOS A	0.3	2.4	0.38	0.51	0.38	52.5
Approach			138	0.0	138	0.0	0.082	5.6	LOS A	0.3	2.4	0.39	0.51	0.39	53.3
East: Boundary Road															
4	L2	All MCs	1	0.0	1	0.0	0.011	6.0	LOS A	0.0	0.4	0.43	0.47	0.43	50.0
5	T1	All MCs	20	42.1	20	42.1	0.030	5.0	LOS A	0.1	1.0	0.39	0.52	0.39	48.2
6	R2	All MCs	15	21.4	15	21.4	0.030	8.7	LOS A	0.1	1.0	0.37	0.54	0.37	47.1
6u	U	All MCs	1	0.0	1	0.0	0.030	10.1	LOS A	0.1	1.0	0.37	0.54	0.37	47.7
Approach			37	31.4	37	31.4	0.030	6.6	LOS A	0.1	1.0	0.38	0.53	0.38	47.8
North: Sheraton Road															
7	L2	All MCs	14	15.4	14	15.4	0.017	4.6	LOS A	0.1	0.5	0.13	0.46	0.13	50.1
8	T1	All MCs	1	0.0	1	0.0	0.017	4.4	LOS A	0.1	0.5	0.13	0.46	0.13	54.7
9	R2	All MCs	300	0.7	300	0.7	0.198	8.9	LOS A	1.0	6.8	0.12	0.62	0.12	47.3
9u	U	All MCs	9	0.0	9	0.0	0.198	11.0	LOS A	1.0	6.8	0.12	0.62	0.12	50.6
Approach			324	1.3	324	1.3	0.198	8.8	LOS A	1.0	6.8	0.12	0.61	0.12	47.6
West: Boundary Road															
10	L2	All MCs	532	1.2	532	1.2	0.394	4.1	LOS A	2.2	15.8	0.36	0.46	0.36	49.6
11	T1	All MCs	20	47.4	20	47.4	0.033	4.4	LOS A	0.1	1.2	0.34	0.44	0.34	48.8
12	R2	All MCs	1	0.0	1	0.0	0.033	9.8	LOS A	0.1	1.2	0.34	0.44	0.34	49.0
12u	U	All MCs	1	0.0	1	0.0	0.033	10.2	LOS A	0.1	1.2	0.34	0.44	0.34	49.0
Approach			554	2.9	554	2.9	0.394	4.1	LOS A	2.2	15.8	0.35	0.46	0.35	49.6
All Vehicles			1053	3.0	1053	3.0	0.394	5.8	LOS A	2.2	15.8	0.29	0.51	0.29	49.3

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.

MOVEMENT SUMMARY

 Site: 101 [3. Boundary Road/ Sheraton Road PM (Site Folder: 2034 Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: site access															
1	L2	All MCs	1	0.0	1	0.0	0.001	6.7	LOS A	0.0	0.0	0.43	0.49	0.43	53.1
2	T1	All MCs	1	0.0	1	0.0	0.003	5.5	LOS A	0.0	0.1	0.41	0.56	0.41	51.5
3	R2	All MCs	1	0.0	1	0.0	0.003	10.0	LOS A	0.0	0.1	0.40	0.58	0.40	50.3
3u	U	All MCs	1	0.0	1	0.0	0.003	12.2	LOS A	0.0	0.1	0.40	0.58	0.40	50.3
Approach			4	0.0	4	0.0	0.003	8.6	LOS A	0.0	0.1	0.41	0.55	0.41	51.2
East: Boundary Road															
4	L2	All MCs	1	0.0	1	0.0	0.007	6.9	LOS A	0.0	0.2	0.48	0.52	0.48	49.7
5	T1	All MCs	14	7.7	14	7.7	0.020	4.9	LOS A	0.1	0.6	0.44	0.56	0.44	48.8
6	R2	All MCs	8	25.0	8	25.0	0.020	9.3	LOS A	0.1	0.6	0.43	0.57	0.43	47.1
6u	U	All MCs	1	0.0	1	0.0	0.020	10.5	LOS A	0.1	0.6	0.43	0.57	0.43	47.8
Approach			24	13.0	24	13.0	0.020	6.8	LOS A	0.1	0.6	0.44	0.56	0.44	48.2
North: Sheraton Road															
7	L2	All MCs	5	40.0	5	40.0	0.123	4.7	LOS A	0.5	3.6	0.08	0.40	0.08	50.0
8	T1	All MCs	139	3.0	139	3.0	0.123	4.3	LOS A	0.5	3.6	0.08	0.40	0.08	54.7
9	R2	All MCs	394	0.3	394	0.3	0.241	8.8	LOS A	1.1	7.8	0.08	0.63	0.08	47.5
9u	U	All MCs	1	0.0	1	0.0	0.241	11.0	LOS A	1.1	7.8	0.08	0.63	0.08	50.8
Approach			539	1.4	539	1.4	0.241	7.6	LOS A	1.1	7.8	0.08	0.57	0.08	49.2
West: Boundary Road															
10	L2	All MCs	247	1.3	247	1.3	0.153	3.2	LOS A	0.7	5.1	0.07	0.40	0.07	50.5
11	T1	All MCs	9	22.2	9	22.2	0.015	3.0	LOS A	0.1	0.5	0.09	0.44	0.09	49.5
12	R2	All MCs	1	0.0	1	0.0	0.015	8.9	LOS A	0.1	0.5	0.09	0.44	0.09	49.2
12u	U	All MCs	3	0.0	3	0.0	0.015	9.3	LOS A	0.1	0.5	0.09	0.44	0.09	49.2
Approach			261	2.0	261	2.0	0.153	3.3	LOS A	0.7	5.1	0.07	0.40	0.07	50.4
All Vehicles			828	1.9	828	1.9	0.241	6.2	LOS A	1.1	7.8	0.09	0.51	0.09	49.5

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.

MOVEMENT SUMMARY

 **Site: 101 [4. Sheraton Road/ Mitchell Highway AM (Site Folder: 2034 Base)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Sheraton Road															
1	L2	All MCs	419	6.5	419	6.5	0.632	8.2	LOS A	4.8	35.7	0.81	0.86	1.01	54.2
2	T1	All MCs	392	4.8	392	4.8	0.632	8.5	LOS A	4.8	35.7	0.81	0.89	1.02	50.7
3	R2	All MCs	183	1.1	183	1.1	0.632	14.4	LOS A	4.6	33.3	0.81	0.90	1.03	51.3
3u	U	All MCs	51	2.1	51	2.1	0.632	16.8	LOS B	4.6	33.3	0.81	0.90	1.03	49.2
Approach			1044	4.7	1044	4.7	0.632	9.8	LOS A	4.8	35.7	0.81	0.88	1.02	52.1
East: Mitchell Highway															
4	L2	All MCs	112	8.5	112	8.5	0.546	11.0	LOS A	4.0	29.0	0.84	0.88	1.06	53.2
5	T1	All MCs	503	4.0	503	4.0	0.546	11.4	LOS A	4.0	29.0	0.84	0.90	1.06	52.8
6	R2	All MCs	120	15.8	120	15.8	0.546	19.0	LOS B	3.6	26.9	0.83	0.94	1.08	50.0
6u	U	All MCs	1	0.0	1	0.0	0.546	20.5	LOS B	3.6	26.9	0.83	0.94	1.08	50.5
Approach			736	6.6	736	6.6	0.546	12.6	LOS A	4.0	29.0	0.84	0.91	1.07	52.4
North: Sheraton Road															
7	L2	All MCs	154	8.9	154	8.9	0.525	9.1	LOS A	3.6	26.0	0.81	0.85	0.97	53.9
8	T1	All MCs	442	3.1	442	3.1	0.525	8.6	LOS A	3.6	26.0	0.81	0.87	0.98	51.1
9	R2	All MCs	154	1.4	154	1.4	0.525	14.9	LOS B	3.3	23.8	0.81	0.90	0.99	51.3
9u	U	All MCs	1	0.0	1	0.0	0.525	17.2	LOS B	3.3	23.8	0.81	0.90	0.99	49.2
Approach			751	3.9	751	3.9	0.525	10.0	LOS A	3.6	26.0	0.81	0.87	0.98	51.7
West: Mitchell Highway															
10	L2	All MCs	51	4.2	51	4.2	0.518	9.4	LOS A	3.4	25.8	0.77	0.81	0.91	54.2
11	T1	All MCs	335	9.1	335	9.1	0.518	10.2	LOS A	3.7	26.8	0.77	0.81	0.91	54.6
12	R2	All MCs	449	5.4	449	5.4	0.518	14.5	LOS A	3.7	26.8	0.77	0.83	0.88	50.7
12u	U	All MCs	1	0.0	1	0.0	0.518	16.9	LOS B	3.7	26.8	0.77	0.83	0.88	50.9
Approach			836	6.8	836	6.8	0.518	12.5	LOS A	3.7	26.8	0.77	0.82	0.90	52.4
All Vehicles			3366	5.5	3366	5.5	0.632	11.1	LOS A	4.8	35.7	0.81	0.87	0.99	52.1

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.

MOVEMENT SUMMARY

 Site: 101 [4. Sheraton Road/ Mitchell Highway PM (Site Folder: 2034 Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Sheraton Road															
1	L2	All MCs	424	6.5	424	6.5	0.531	7.3	LOS A	3.5	25.6	0.76	0.80	0.88	55.0
2	T1	All MCs	272	3.5	272	3.5	0.531	7.7	LOS A	3.5	25.6	0.76	0.85	0.90	50.9
3	R2	All MCs	103	7.1	103	7.1	0.531	13.7	LOS A	3.3	24.0	0.76	0.85	0.90	50.8
3u	U	All MCs	64	0.0	64	0.0	0.531	15.7	LOS B	3.3	24.0	0.76	0.85	0.90	49.8
Approach			863	5.1	863	5.1	0.531	8.8	LOS A	3.5	25.6	0.76	0.83	0.89	52.7
East: Mitchell Highway															
4	L2	All MCs	96	2.2	96	2.2	0.529	9.4	LOS A	3.6	26.7	0.79	0.84	0.96	54.2
5	T1	All MCs	492	6.6	492	6.6	0.529	10.1	LOS A	3.6	26.7	0.79	0.86	0.97	53.6
6	R2	All MCs	197	11.2	197	11.2	0.529	17.1	LOS B	3.3	25.3	0.79	0.91	0.99	50.4
6u	U	All MCs	1	0.0	1	0.0	0.529	19.0	LOS B	3.3	25.3	0.79	0.91	0.99	50.8
Approach			785	7.2	785	7.2	0.529	11.8	LOS A	3.6	26.7	0.79	0.87	0.97	52.8
North: Sheraton Road															
7	L2	All MCs	119	2.7	119	2.7	0.427	7.1	LOS A	2.5	18.1	0.73	0.71	0.79	54.9
8	T1	All MCs	447	5.6	447	5.6	0.427	7.0	LOS A	2.5	18.1	0.73	0.76	0.80	52.0
9	R2	All MCs	105	4.0	105	4.0	0.427	13.2	LOS A	2.4	17.2	0.73	0.81	0.81	52.0
9u	U	All MCs	3	33.3	3	33.3	0.427	17.0	LOS B	2.4	17.2	0.73	0.81	0.81	49.4
Approach			675	5.0	675	5.0	0.427	8.1	LOS A	2.5	18.1	0.73	0.76	0.80	52.4
West: Mitchell Highway															
10	L2	All MCs	135	0.8	135	0.8	0.476	7.9	LOS A	3.2	23.4	0.72	0.72	0.78	54.9
11	T1	All MCs	362	6.1	362	6.1	0.476	8.5	LOS A	3.2	23.4	0.72	0.73	0.79	54.8
12	R2	All MCs	337	6.6	337	6.6	0.476	14.8	LOS B	3.1	22.8	0.73	0.81	0.81	50.8
12u	U	All MCs	4	0.0	4	0.0	0.476	17.0	LOS B	3.1	22.8	0.73	0.81	0.81	51.0
Approach			838	5.4	838	5.4	0.476	11.0	LOS A	3.2	23.4	0.73	0.76	0.80	53.1
All Vehicles			3161	5.7	3161	5.7	0.531	10.0	LOS A	3.6	26.7	0.75	0.80	0.87	52.8

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

Vehicle movement LOS values are based on average delay per movement.

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.

MOVEMENT SUMMARY

 Site: 101 [5. Boundary Road/ Stream Ave AM (Site Folder: 2034 Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Stream Ave															
1	L2	All MCs	51	0.0	51	0.0	0.064	6.1	LOS A	0.3	1.8	0.38	0.56	0.38	53.3
3	R2	All MCs	163	6.5	163	6.5	0.145	9.7	LOS A	0.7	4.8	0.36	0.64	0.36	49.7
3u	U	All MCs	1	0.0	1	0.0	0.145	11.7	LOS A	0.7	4.8	0.36	0.64	0.36	49.9
Approach			215	4.9	215	4.9	0.145	8.9	LOS A	0.7	4.8	0.37	0.62	0.37	50.5
East: Boundary Road															
4	L2	All MCs	80	0.0	80	0.0	0.085	4.8	LOS A	0.4	2.5	0.23	0.49	0.23	53.8
5	T1	All MCs	242	4.3	242	4.3	0.181	4.4	LOS A	0.9	6.3	0.21	0.41	0.21	54.1
6u	U	All MCs	1	0.0	1	0.0	0.181	11.0	LOS A	0.9	6.3	0.21	0.41	0.21	53.3
Approach			323	3.3	323	3.3	0.181	4.5	LOS A	0.9	6.3	0.22	0.43	0.22	54.1
West: Boundary Road															
11	T1	All MCs	388	1.1	388	1.1	0.288	5.2	LOS A	1.5	10.9	0.35	0.49	0.35	53.2
12	R2	All MCs	79	4.0	79	4.0	0.288	9.5	LOS A	1.5	10.9	0.35	0.50	0.35	52.1
12u	U	All MCs	1	0.0	1	0.0	0.288	11.4	LOS A	1.5	10.9	0.35	0.50	0.35	52.2
Approach			468	1.6	468	1.6	0.288	5.9	LOS A	1.5	10.9	0.35	0.49	0.35	53.0
All Vehicles			1006	2.8	1006	2.8	0.288	6.1	LOS A	1.5	10.9	0.31	0.50	0.31	52.8

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

Vehicle movement LOS values are based on average delay per movement.

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.

MOVEMENT SUMMARY

 Site: 101 [5. Boundary Road/ Stream Ave PM (Site Folder: 2034 Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Stream Ave															
1	L2	All MCs	68	1.5	68	1.5	0.064	5.8	LOS A	0.3	2.0	0.39	0.55	0.39	53.2
3	R2	All MCs	75	1.4	75	1.4	0.067	9.8	LOS A	0.3	2.1	0.38	0.65	0.38	49.8
3u	U	All MCs	1	0.0	1	0.0	0.067	11.8	LOS A	0.3	2.1	0.38	0.65	0.38	49.9
Approach			144	1.5	144	1.5	0.067	7.9	LOS A	0.3	2.1	0.39	0.60	0.39	51.4
East: Boundary Road															
4	L2	All MCs	120	2.6	120	2.6	0.126	5.3	LOS A	0.5	3.8	0.30	0.51	0.30	53.5
5	T1	All MCs	297	1.1	297	1.1	0.231	4.6	LOS A	1.1	7.9	0.29	0.44	0.29	53.9
6u	U	All MCs	1	0.0	1	0.0	0.231	11.3	LOS A	1.1	7.9	0.29	0.44	0.29	53.0
Approach			418	1.5	418	1.5	0.231	4.8	LOS A	1.1	7.9	0.29	0.46	0.29	53.8
West: Boundary Road															
11	T1	All MCs	185	2.3	185	2.3	0.184	4.6	LOS A	0.9	6.4	0.21	0.49	0.21	53.1
12	R2	All MCs	144	0.0	144	0.0	0.184	8.9	LOS A	0.9	6.4	0.21	0.55	0.21	51.7
12u	U	All MCs	1	0.0	1	0.0	0.184	11.0	LOS A	0.9	6.4	0.21	0.55	0.21	51.7
Approach			331	1.3	331	1.3	0.184	6.5	LOS A	0.9	6.4	0.21	0.52	0.21	52.5
All Vehicles			893	1.4	893	1.4	0.231	5.9	LOS A	1.1	7.9	0.28	0.50	0.28	52.9

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

Vehicle movement LOS values are based on average delay per movement.

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.

MOVEMENT SUMMARY

 Site: 101 [8. Mitchell Hwy / Capstan Dr AM (Site Folder: 2034 Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Capstan Dr															
1	L2	All MCs	33	0.0	33	0.0	0.068	8.8	LOS A	0.3	1.8	0.57	0.74	0.57	51.8
3	R2	All MCs	20	0.0	20	0.0	0.068	12.2	LOS A	0.3	1.8	0.57	0.74	0.57	51.2
3u	U	All MCs	1	0.0	1	0.0	0.068	14.5	LOS B	0.3	1.8	0.57	0.74	0.57	51.2
Approach			54	0.0	54	0.0	0.068	10.2	LOS A	0.3	1.8	0.57	0.74	0.57	51.6
East: Mitchell Hwy															
4	L2	All MCs	14	7.7	14	7.7	0.336	3.8	LOS A	1.8	12.9	0.13	0.34	0.13	54.8
5	T1	All MCs	1054	4.4	1054	4.4	0.362	4.7	LOS A	2.0	14.4	0.13	0.34	0.13	55.3
6u	U	All MCs	2	0.0	2	0.0	0.362	11.7	LOS A	2.0	14.4	0.12	0.34	0.12	54.5
Approach			1069	4.4	1069	4.4	0.362	4.7	LOS A	2.0	14.4	0.13	0.34	0.13	55.3
West: Mitchell Hwy															
11	T1	All MCs	829	6.5	829	6.5	0.281	3.7	LOS A	1.7	12.2	0.12	0.35	0.12	55.2
12	R2	All MCs	24	0.0	24	0.0	0.281	9.3	LOS A	1.6	12.0	0.12	0.36	0.12	54.2
12u	U	All MCs	4	25.0	4	25.0	0.281	11.9	LOS A	1.6	12.0	0.12	0.36	0.12	53.3
Approach			858	6.4	858	6.4	0.281	3.9	LOS A	1.7	12.2	0.12	0.35	0.12	55.2
All Vehicles			1981	5.2	1981	5.2	0.362	4.5	LOS A	2.0	14.4	0.14	0.35	0.14	55.2

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.

MOVEMENT SUMMARY

Site: 101 [8. Mitchell Hwy / Capstan Dr PM (Site Folder: 2034 Base)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Capstan Dr															
1	L2	All MCs	34	0.0	34	0.0	0.065	8.7	LOS A	0.2	1.8	0.58	0.73	0.58	52.1
3	R2	All MCs	15	7.1	15	7.1	0.065	12.4	LOS A	0.2	1.8	0.58	0.73	0.58	51.3
3u	U	All MCs	1	0.0	1	0.0	0.065	14.5	LOS A	0.2	1.8	0.58	0.73	0.58	51.5
Approach			49	2.1	49	2.1	0.065	9.9	LOS A	0.2	1.8	0.58	0.73	0.58	51.8
East: Mitchell Hwy															
4	L2	All MCs	21	5.0	21	5.0	0.344	4.0	LOS A	1.8	13.4	0.22	0.36	0.22	54.4
5	T1	All MCs	996	6.7	996	6.7	0.370	4.9	LOS A	2.0	15.0	0.22	0.36	0.22	54.8
6u	U	All MCs	1	0.0	1	0.0	0.370	11.8	LOS A	2.0	15.0	0.21	0.36	0.21	54.0
Approach			1018	6.6	1018	6.6	0.370	4.9	LOS A	2.0	15.0	0.22	0.36	0.22	54.8
West: Mitchell Hwy															
11	T1	All MCs	817	5.3	817	5.3	0.285	3.6	LOS A	1.7	12.6	0.10	0.37	0.10	55.1
12	R2	All MCs	49	0.0	49	0.0	0.285	9.2	LOS A	1.7	12.2	0.10	0.41	0.10	53.8
12u	U	All MCs	23	0.0	23	0.0	0.285	11.6	LOS A	1.7	12.2	0.10	0.41	0.10	53.8
Approach			889	4.9	889	4.9	0.285	4.1	LOS A	1.7	12.6	0.10	0.37	0.10	55.0
All Vehicles			1957	5.7	1957	5.7	0.370	4.7	LOS A	2.0	15.0	0.17	0.37	0.17	54.8

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.

Appendix F. SIDRA Results (2034 Baseline + Development)



MOVEMENT SUMMARY

 **Site: 101 [1. Boundary Road/ Wheelers Lane AM (Site Folder: 2034 Base + Dev)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Wheelers Lane															
1	L2	All MCs	155	2.7	155	2.7	0.521	9.5	LOS A	3.4	23.9	0.80	0.88	0.98	47.2
2	T1	All MCs	364	1.2	364	1.2	0.521	9.8	LOS A	3.4	23.9	0.80	0.90	0.99	50.2
3	R2	All MCs	186	0.6	186	0.6	0.521	15.1	LOS B	3.2	22.4	0.80	0.93	1.00	45.1
3u	U	All MCs	1	0.0	1	0.0	0.521	17.1	LOS B	3.2	22.4	0.80	0.93	1.00	48.1
Approach			706	1.3	706	1.3	0.521	11.2	LOS A	3.4	23.9	0.80	0.90	0.99	48.1
East: Boundary Road															
4	L2	All MCs	111	1.0	111	1.0	0.574	5.6	LOS A	4.0	28.1	0.65	0.65	0.71	48.4
5	T1	All MCs	503	0.6	503	0.6	0.574	5.3	LOS A	4.0	28.1	0.65	0.65	0.71	48.8
6	R2	All MCs	393	1.6	393	1.6	0.438	9.6	LOS A	2.3	16.6	0.59	0.72	0.61	46.1
6u	U	All MCs	1	0.0	1	0.0	0.438	11.3	LOS A	2.3	16.6	0.59	0.72	0.61	46.2
Approach			1007	1.0	1007	1.0	0.574	7.0	LOS A	4.0	28.1	0.62	0.68	0.67	47.7
North: Wheelers Lane															
7	L2	All MCs	147	2.9	147	2.9	0.316	6.8	LOS A	1.9	13.7	0.64	0.64	0.64	48.5
8	T1	All MCs	142	9.6	142	9.6	0.316	6.9	LOS A	1.9	13.7	0.64	0.64	0.64	52.4
9	R2	All MCs	218	8.2	218	8.2	0.275	11.8	LOS A	1.5	11.2	0.63	0.72	0.63	45.8
9u	U	All MCs	1	0.0	1	0.0	0.275	13.6	LOS A	1.5	11.2	0.63	0.72	0.63	49.0
Approach			508	7.0	508	7.0	0.316	9.0	LOS A	1.9	13.7	0.64	0.67	0.64	48.3
West: Boundary Road															
10	L2	All MCs	176	2.4	176	2.4	0.294	7.6	LOS A	1.4	10.0	0.71	0.76	0.71	47.7
11	T1	All MCs	281	0.4	281	0.4	0.431	6.9	LOS A	2.6	18.3	0.76	0.78	0.84	47.9
12	R2	All MCs	60	1.8	60	1.8	0.431	11.4	LOS A	2.6	18.3	0.76	0.78	0.84	47.2
12u	U	All MCs	1	0.0	1	0.0	0.431	13.2	LOS A	2.6	18.3	0.76	0.78	0.84	47.2
Approach			518	1.2	518	1.2	0.431	7.6	LOS A	2.6	18.3	0.74	0.78	0.79	47.7
All Vehicles			2740	2.3	2740	2.3	0.574	8.6	LOS A	4.0	28.1	0.69	0.75	0.77	47.9

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.

MOVEMENT SUMMARY

 Site: 101 [1. Boundary Road/ Wheelers Lane PM (Site Folder: 2034 Base + Dev)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Wheelers Lane															
1	L2	All MCs	86	2.4	86	2.4	0.257	6.4	LOS A	1.2	9.0	0.59	0.64	0.59	48.6
2	T1	All MCs	244	3.4	244	3.4	0.257	6.5	LOS A	1.2	9.0	0.59	0.67	0.59	52.0
3	R2	All MCs	126	0.8	126	0.8	0.257	11.2	LOS A	1.2	8.7	0.59	0.72	0.59	47.0
3u	U	All MCs	2	0.0	2	0.0	0.257	13.2	LOS A	1.2	8.7	0.59	0.72	0.59	50.3
Approach			459	2.5	459	2.5	0.257	7.8	LOS A	1.2	9.0	0.59	0.68	0.59	49.9
East: Boundary Road															
4	L2	All MCs	98	1.1	98	1.1	0.414	5.6	LOS A	2.4	16.9	0.68	0.63	0.70	48.3
5	T1	All MCs	278	0.4	278	0.4	0.414	5.2	LOS A	2.4	16.9	0.68	0.63	0.70	48.8
6	R2	All MCs	153	0.7	153	0.7	0.234	10.3	LOS A	1.1	7.6	0.63	0.77	0.63	45.9
6u	U	All MCs	1	0.0	1	0.0	0.234	12.1	LOS A	1.1	7.6	0.63	0.77	0.63	45.9
Approach			529	0.6	529	0.6	0.414	6.8	LOS A	2.4	16.9	0.67	0.67	0.68	47.8
North: Wheelers Lane															
7	L2	All MCs	338	0.9	338	0.9	0.893	26.2	LOS B	17.4	123.0	1.00	1.37	2.15	38.9
8	T1	All MCs	339	0.9	339	0.9	0.893	26.1	LOS B	17.4	123.0	1.00	1.37	2.15	41.5
9	R2	All MCs	201	7.9	201	7.9	0.442	17.3	LOS B	2.7	20.5	0.81	0.88	0.94	43.0
9u	U	All MCs	2	0.0	2	0.0	0.442	18.8	LOS B	2.7	20.5	0.81	0.88	0.94	45.8
Approach			880	2.5	880	2.5	0.893	24.1	LOS B	17.4	123.0	0.96	1.26	1.87	40.8
West: Boundary Road															
10	L2	All MCs	175	3.6	175	3.6	0.285	6.7	LOS A	1.2	8.9	0.59	0.68	0.59	48.2
11	T1	All MCs	527	0.0	527	0.0	0.613	6.3	LOS A	4.7	32.6	0.70	0.74	0.83	48.2
12	R2	All MCs	98	1.1	98	1.1	0.613	10.8	LOS A	4.7	32.6	0.70	0.74	0.83	47.4
12u	U	All MCs	1	0.0	1	0.0	0.613	12.6	LOS A	4.7	32.6	0.70	0.74	0.83	47.5
Approach			801	0.9	801	0.9	0.613	7.0	LOS A	4.7	32.6	0.68	0.72	0.78	48.1
All Vehicles			2669	1.7	2669	1.7	0.893	12.7	LOS A	17.4	123.0	0.75	0.88	1.09	45.6

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.

MOVEMENT SUMMARY

 **Site: 101 [2. Wheelers Lane/ Mitchell Highway AM (Site Folder: 2034 Base + Dev)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Wheelers Lane															
1	L2	All MCs	407	1.8	407	1.8	1.750	689.3	LOS F	220.3	1564.5	1.00	7.87	21.53	5.0
2	T1	All MCs	778	1.6	778	1.6	1.750	690.3	LOS F	220.3	1564.5	1.00	7.11	19.90	5.0
3	R2	All MCs	174	0.6	174	0.6	1.750	697.2	LOS F	156.4	1107.1	1.00	6.35	18.26	5.0
3u	U	All MCs	1	0.0	1	0.0	1.750	699.5	LOS F	156.4	1107.1	1.00	6.35	18.26	5.0
Approach			1360	1.5	1360	1.5	1.750	690.9	LOS F	220.3	1564.5	1.00	7.24	20.18	5.0
East: Mitchell Highway															
4	L2	All MCs	142	13.3	142	13.3	1.024	53.0	LOS D	38.8	277.8	1.00	2.20	4.50	33.4
5	T1	All MCs	1315	0.9	1315	0.9	1.024	53.6	LOS D	38.8	277.8	1.00	2.17	4.49	33.2
6	R2	All MCs	235	5.8	235	5.8	1.024	61.8	LOS E	34.4	246.0	1.00	2.13	4.47	32.1
6u	U	All MCs	6	0.0	6	0.0	1.024	64.0	LOS E	34.4	246.0	1.00	2.13	4.47	32.1
Approach			1698	2.6	1698	2.6	1.024	54.8	LOS D	38.8	277.8	1.00	2.17	4.49	33.1
North: Wheelers Lane															
7	L2	All MCs	142	15.6	142	15.6	0.564	9.3	LOS A	4.0	29.8	0.86	0.89	1.05	53.2
8	T1	All MCs	300	4.6	300	4.6	0.564	8.8	LOS A	4.0	29.8	0.86	0.90	1.05	51.2
9	R2	All MCs	247	4.7	247	4.7	0.564	15.7	LOS B	3.7	27.0	0.85	0.95	1.06	48.6
9u	U	All MCs	31	24.1	31	24.1	0.564	19.1	LOS B	3.7	27.0	0.85	0.95	1.06	46.7
Approach			720	7.6	720	7.6	0.564	11.7	LOS A	4.0	29.8	0.86	0.92	1.05	50.4
West: Mitchell Highway															
10	L2	All MCs	243	4.3	243	4.3	0.793	12.0	LOS A	7.5	54.6	0.82	1.03	1.21	52.4
11	T1	All MCs	792	3.7	792	3.7	0.793	12.7	LOS A	7.5	54.6	0.82	1.05	1.23	51.8
12	R2	All MCs	188	6.7	188	6.7	0.793	19.5	LOS B	6.9	50.3	0.83	1.06	1.26	49.6
12u	U	All MCs	20	0.0	20	0.0	0.793	21.7	LOS B	6.9	50.3	0.83	1.06	1.26	49.8
Approach			1243	4.2	1243	4.2	0.793	13.7	LOS A	7.5	54.6	0.82	1.05	1.23	51.5
All Vehicles			5021	3.4	5021	3.4	1.750	210.7	LOS F	220.3	1564.5	0.94	3.08	7.44	13.9

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.

MOVEMENT SUMMARY

 **Site: 101 [2. Wheelers Lane/ Mitchell Highway PM (Site Folder: 2034 Base + Dev)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Wheelers Lane															
1	L2	All MCs	278	0.8	278	0.8	0.819	17.5	LOS B	7.8	55.3	0.96	1.15	1.63	48.0
2	T1	All MCs	379	2.8	379	2.8	0.819	18.3	LOS B	7.8	55.3	0.95	1.16	1.64	45.1
3	R2	All MCs	184	2.3	184	2.3	0.819	24.6	LOS B	7.4	52.7	0.95	1.17	1.64	45.2
3u	U	All MCs	1	0.0	1	0.0	0.819	26.7	LOS B	7.4	52.7	0.95	1.17	1.64	43.7
Approach			842	2.0	842	2.0	0.819	19.4	LOS B	7.8	55.3	0.95	1.16	1.63	46.1
East: Mitchell Highway															
4	L2	All MCs	180	8.2	180	8.2	0.893	22.5	LOS B	11.4	83.7	0.98	1.26	2.02	45.7
5	T1	All MCs	808	4.2	808	4.2	0.893	22.9	LOS B	11.4	83.7	0.98	1.26	2.03	45.6
6	R2	All MCs	86	13.4	86	13.4	0.893	30.0	LOS C	11.0	80.8	0.98	1.26	2.04	44.2
6u	U	All MCs	3	0.0	3	0.0	0.893	31.5	LOS C	11.0	80.8	0.98	1.26	2.04	44.6
Approach			1078	5.6	1078	5.6	0.893	23.4	LOS B	11.4	83.7	0.98	1.26	2.03	45.5
North: Wheelers Lane															
7	L2	All MCs	193	3.3	193	3.3	1.777	713.0	LOS F	198.0	1412.2	1.00	7.50	21.21	4.8
8	T1	All MCs	701	1.8	701	1.8	1.777	713.1	LOS F	198.0	1412.2	1.00	7.29	20.71	4.8
9	R2	All MCs	358	3.2	358	3.2	1.777	719.9	LOS F	164.6	1182.9	1.00	6.71	19.37	4.9
9u	U	All MCs	34	9.4	34	9.4	1.777	722.9	LOS F	164.6	1182.9	1.00	6.71	19.37	4.9
Approach			1285	2.6	1285	2.6	1.777	715.2	LOS F	198.0	1412.2	1.00	7.14	20.38	4.9
West: Mitchell Highway															
10	L2	All MCs	226	3.3	226	3.3	1.283	267.7	LOS F	145.2	1036.7	1.00	5.50	14.38	11.4
11	T1	All MCs	1268	2.1	1268	2.1	1.283	267.8	LOS F	145.2	1036.7	1.00	5.46	14.31	11.5
12	R2	All MCs	409	0.5	409	0.5	1.283	273.7	LOS F	141.0	998.2	1.00	5.40	14.22	11.5
12u	U	All MCs	29	0.0	29	0.0	1.283	276.3	LOS F	141.0	998.2	1.00	5.40	14.22	11.5
Approach			1934	1.9	1934	1.9	1.283	269.2	LOS F	145.2	1036.7	1.00	5.45	14.30	11.5
All Vehicles			5139	2.8	5139	2.8	1.777	288.3	LOS F	198.0	1412.2	0.99	4.29	11.17	10.8

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.

MOVEMENT SUMMARY

 Site: 101 [3. Boundary Road/ Sheraton Road AM (Site Folder: 2034 Base + Dev)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: site access															
1	L2	All MCs	1	0.0	1	0.0	0.046	6.5	LOS A	0.2	1.3	0.41	0.52	0.41	52.8
2	T1	All MCs	135	0.0	135	0.0	0.082	5.5	LOS A	0.3	2.4	0.40	0.51	0.40	53.3
3	R2	All MCs	1	0.0	1	0.0	0.082	10.0	LOS A	0.3	2.4	0.39	0.51	0.39	52.5
3u	U	All MCs	1	0.0	1	0.0	0.082	12.1	LOS A	0.3	2.4	0.39	0.51	0.39	52.5
Approach			138	0.0	138	0.0	0.082	5.6	LOS A	0.3	2.4	0.40	0.51	0.40	53.3
East: Boundary Road															
4	L2	All MCs	1	0.0	1	0.0	0.012	6.1	LOS A	0.0	0.4	0.44	0.47	0.44	49.9
5	T1	All MCs	20	42.1	20	42.1	0.032	5.1	LOS A	0.1	1.1	0.39	0.53	0.39	48.1
6	R2	All MCs	18	17.6	18	17.6	0.032	8.6	LOS A	0.1	1.1	0.38	0.55	0.38	47.0
6u	U	All MCs	1	0.0	1	0.0	0.032	10.2	LOS A	0.1	1.1	0.38	0.55	0.38	47.6
Approach			40	28.9	40	28.9	0.032	6.8	LOS A	0.1	1.1	0.39	0.54	0.39	47.7
North: Sheraton Road															
7	L2	All MCs	27	7.7	27	7.7	0.032	4.5	LOS A	0.1	0.9	0.13	0.46	0.13	50.2
8	T1	All MCs	1	0.0	1	0.0	0.032	4.4	LOS A	0.1	0.9	0.13	0.46	0.13	54.7
9	R2	All MCs	307	0.7	307	0.7	0.202	8.9	LOS A	1.0	7.0	0.12	0.62	0.12	47.3
9u	U	All MCs	9	0.0	9	0.0	0.202	11.0	LOS A	1.0	7.0	0.12	0.62	0.12	50.6
Approach			345	1.2	345	1.2	0.202	8.6	LOS A	1.0	7.0	0.12	0.60	0.12	47.6
West: Boundary Road															
10	L2	All MCs	562	1.1	562	1.1	0.416	4.1	LOS A	2.4	17.2	0.37	0.46	0.37	49.6
11	T1	All MCs	20	47.4	20	47.4	0.033	4.5	LOS A	0.1	1.2	0.34	0.44	0.34	48.8
12	R2	All MCs	1	0.0	1	0.0	0.033	9.8	LOS A	0.1	1.2	0.34	0.44	0.34	49.0
12u	U	All MCs	1	0.0	1	0.0	0.033	10.2	LOS A	0.1	1.2	0.34	0.44	0.34	49.0
Approach			584	2.7	584	2.7	0.416	4.2	LOS A	2.4	17.2	0.37	0.46	0.37	49.6
All Vehicles			1107	2.9	1107	2.9	0.416	5.8	LOS A	2.4	17.2	0.29	0.51	0.29	49.3

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.

MOVEMENT SUMMARY

 Site: 101 [3. Boundary Road/ Sheraton Road PM (Site Folder: 2034 Base + Dev)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: site access															
1	L2	All MCs	1	0.0	1	0.0	0.001	6.2	LOS A	0.0	0.0	0.44	0.46	0.44	53.7
2	T1	All MCs	1	0.0	1	0.0	0.002	5.2	LOS A	0.0	0.1	0.42	0.55	0.42	51.7
3	R2	All MCs	1	0.0	1	0.0	0.002	10.2	LOS A	0.0	0.1	0.42	0.58	0.42	50.3
3u	U	All MCs	1	0.0	1	0.0	0.002	12.4	LOS A	0.0	0.1	0.42	0.58	0.42	50.3
Approach			4	0.0	4	0.0	0.002	8.5	LOS A	0.0	0.1	0.42	0.54	0.42	51.4
East: Boundary Road															
4	L2	All MCs	1	0.0	1	0.0	0.012	7.0	LOS A	0.0	0.3	0.49	0.52	0.49	49.5
5	T1	All MCs	15	7.1	15	7.1	0.031	5.1	LOS A	0.1	0.9	0.46	0.57	0.46	48.8
6	R2	All MCs	22	9.5	22	9.5	0.031	9.1	LOS A	0.1	0.9	0.44	0.62	0.44	47.0
6u	U	All MCs	1	0.0	1	0.0	0.031	10.8	LOS A	0.1	0.9	0.44	0.62	0.44	47.3
Approach			39	8.1	39	8.1	0.031	7.6	LOS A	0.1	0.9	0.45	0.60	0.45	47.8
North: Sheraton Road															
7	L2	All MCs	9	22.2	9	22.2	0.128	4.5	LOS A	0.5	3.8	0.09	0.40	0.09	50.2
8	T1	All MCs	139	3.0	139	3.0	0.128	4.3	LOS A	0.5	3.8	0.09	0.40	0.09	54.7
9	R2	All MCs	427	0.2	427	0.2	0.261	9.0	LOS A	1.3	8.8	0.08	0.62	0.08	47.5
9u	U	All MCs	1	0.0	1	0.0	0.261	11.2	LOS A	1.3	8.8	0.08	0.62	0.08	50.8
Approach			577	1.3	577	1.3	0.261	7.8	LOS A	1.3	8.8	0.08	0.56	0.08	49.1
West: Boundary Road															
10	L2	All MCs	256	1.2	256	1.2	0.165	3.2	LOS A	0.8	5.7	0.11	0.40	0.11	50.4
11	T1	All MCs	9	22.2	9	22.2	0.016	3.1	LOS A	0.1	0.5	0.13	0.44	0.13	49.4
12	R2	All MCs	1	0.0	1	0.0	0.016	9.0	LOS A	0.1	0.5	0.13	0.44	0.13	49.1
12u	U	All MCs	3	0.0	3	0.0	0.016	9.5	LOS A	0.1	0.5	0.13	0.44	0.13	49.1
Approach			269	2.0	269	2.0	0.165	3.3	LOS A	0.8	5.7	0.11	0.40	0.11	50.3
All Vehicles			889	1.8	889	1.8	0.261	6.4	LOS A	1.3	8.8	0.11	0.52	0.11	49.4

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.

MOVEMENT SUMMARY

 **Site: 101 [4. Sheraton Road/ Mitchell Highway AM (Site Folder: 2034 Base + Dev)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Sheraton Road															
1	L2	All MCs	434	6.3	434	6.3	0.725	9.5	LOS A	6.5	47.6	0.86	0.93	1.17	53.4
2	T1	All MCs	480	3.9	480	3.9	0.725	9.8	LOS A	6.5	47.6	0.86	0.96	1.19	50.0
3	R2	All MCs	226	0.9	226	0.9	0.725	15.9	LOS B	6.2	44.2	0.86	0.97	1.20	50.4
3u	U	All MCs	51	2.1	51	2.1	0.725	18.3	LOS B	6.2	44.2	0.86	0.97	1.20	48.2
Approach			1191	4.2	1191	4.2	0.725	11.2	LOS A	6.5	47.6	0.86	0.95	1.18	51.1
East: Mitchell Highway															
4	L2	All MCs	119	8.0	119	8.0	0.576	11.5	LOS A	4.3	31.6	0.86	0.91	1.11	52.8
5	T1	All MCs	508	3.9	508	3.9	0.576	12.0	LOS A	4.3	31.6	0.86	0.93	1.12	52.3
6	R2	All MCs	120	15.8	120	15.8	0.576	19.6	LOS B	3.9	29.1	0.85	0.96	1.13	49.6
6u	U	All MCs	1	0.0	1	0.0	0.576	21.2	LOS B	3.9	29.1	0.85	0.96	1.13	50.1
Approach			748	6.5	748	6.5	0.576	13.2	LOS A	4.3	31.6	0.86	0.93	1.12	52.0
North: Sheraton Road															
7	L2	All MCs	154	8.9	154	8.9	0.589	10.5	LOS A	4.4	31.9	0.86	0.91	1.10	53.2
8	T1	All MCs	474	2.9	474	2.9	0.589	9.9	LOS A	4.4	31.9	0.86	0.93	1.10	50.4
9	R2	All MCs	156	1.4	156	1.4	0.589	16.4	LOS B	4.0	28.8	0.85	0.95	1.11	50.3
9u	U	All MCs	1	0.0	1	0.0	0.589	18.6	LOS B	4.0	28.8	0.85	0.95	1.11	48.3
Approach			784	3.8	784	3.8	0.589	11.3	LOS A	4.4	31.9	0.86	0.93	1.10	50.9
West: Mitchell Highway															
10	L2	All MCs	55	3.8	55	3.8	0.597	11.0	LOS A	4.3	32.0	0.84	0.89	1.07	53.1
11	T1	All MCs	362	8.4	362	8.4	0.597	11.9	LOS A	4.7	34.1	0.84	0.90	1.07	53.2
12	R2	All MCs	449	5.4	449	5.4	0.597	15.9	LOS B	4.7	34.1	0.85	0.90	1.05	50.0
12u	U	All MCs	1	0.0	1	0.0	0.597	18.2	LOS B	4.7	34.1	0.85	0.90	1.05	50.1
Approach			867	6.6	867	6.6	0.597	13.9	LOS A	4.7	34.1	0.84	0.90	1.06	51.5
All Vehicles			3591	5.1	3591	5.1	0.725	12.3	LOS A	6.5	47.6	0.86	0.93	1.12	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.

MOVEMENT SUMMARY

 **Site: 101 [4. Sheraton Road/ Mitchell Highway PM (Site Folder: 2034 Base + Dev)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Sheraton Road															
1	L2	All MCs	428	6.4	428	6.4	0.573	7.7	LOS A	4.0	29.4	0.79	0.84	0.95	54.6
2	T1	All MCs	298	3.2	298	3.2	0.573	8.2	LOS A	4.0	29.4	0.79	0.88	0.97	50.8
3	R2	All MCs	113	6.5	113	6.5	0.573	14.3	LOS A	3.8	27.4	0.79	0.89	0.97	50.6
3u	U	All MCs	64	0.0	64	0.0	0.573	16.3	LOS B	3.8	27.4	0.79	0.89	0.97	49.6
Approach			903	4.9	903	4.9	0.573	9.3	LOS A	4.0	29.4	0.79	0.86	0.96	52.4
East: Mitchell Highway															
4	L2	All MCs	125	1.7	125	1.7	0.616	11.0	LOS A	4.7	34.7	0.85	0.92	1.13	53.1
5	T1	All MCs	518	6.3	518	6.3	0.616	11.8	LOS A	4.7	34.7	0.85	0.94	1.14	52.4
6	R2	All MCs	197	11.2	197	11.2	0.616	19.1	LOS B	4.3	32.1	0.85	0.98	1.16	49.2
6u	U	All MCs	1	0.0	1	0.0	0.616	21.0	LOS B	4.3	32.1	0.85	0.98	1.16	49.6
Approach			841	6.8	841	6.8	0.616	13.4	LOS A	4.7	34.7	0.85	0.95	1.14	51.7
North: Sheraton Road															
7	L2	All MCs	119	2.7	119	2.7	0.510	7.8	LOS A	3.3	24.1	0.77	0.79	0.89	54.6
8	T1	All MCs	567	4.5	567	4.5	0.510	7.7	LOS A	3.3	24.1	0.77	0.82	0.90	51.8
9	R2	All MCs	111	3.8	111	3.8	0.510	14.0	LOS A	3.1	22.7	0.77	0.85	0.92	51.9
9u	U	All MCs	3	33.3	3	33.3	0.510	17.9	LOS B	3.1	22.7	0.77	0.85	0.92	49.2
Approach			800	4.2	800	4.2	0.510	8.6	LOS A	3.3	24.1	0.77	0.82	0.90	52.2
West: Mitchell Highway															
10	L2	All MCs	137	0.8	137	0.8	0.493	8.1	LOS A	3.4	24.9	0.74	0.74	0.83	54.7
11	T1	All MCs	368	6.0	368	6.0	0.493	8.9	LOS A	3.4	24.9	0.74	0.75	0.83	54.7
12	R2	All MCs	337	6.6	337	6.6	0.493	15.1	LOS B	3.3	24.2	0.75	0.83	0.85	50.6
12u	U	All MCs	4	0.0	4	0.0	0.493	17.4	LOS B	3.3	24.2	0.75	0.83	0.85	50.8
Approach			846	5.3	846	5.3	0.493	11.3	LOS A	3.4	24.9	0.75	0.78	0.84	52.9
All Vehicles			3391	5.3	3391	5.3	0.616	10.7	LOS A	4.7	34.7	0.79	0.85	0.96	52.3

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.

MOVEMENT SUMMARY

 **Site: 101 [5. Boundary Road/ Stream Ave AM (Site Folder: 2034 Base + Dev)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Stream Ave															
1	L2	All MCs	51	0.0	51	0.0	0.244	11.0	LOS A	1.6	11.4	0.82	0.73	0.82	51.2
2	T1	All MCs	117	0.0	117	0.0	0.244	8.8	LOS A	1.6	11.4	0.82	0.73	0.82	51.6
3	R2	All MCs	163	6.5	163	6.5	0.284	14.5	LOS A	1.8	13.1	0.82	0.79	0.82	47.2
3u	U	All MCs	1	0.0	1	0.0	0.284	16.2	LOS B	1.8	13.1	0.82	0.79	0.82	47.4
Approach			332	3.2	332	3.2	0.284	11.9	LOS A	1.8	13.1	0.82	0.76	0.82	49.3
East: Boundary Road															
4	L2	All MCs	80	0.0	80	0.0	0.154	8.9	LOS A	0.8	5.5	0.70	0.74	0.70	51.1
5	T1	All MCs	242	4.3	242	4.3	0.329	7.5	LOS A	2.1	15.4	0.77	0.69	0.77	51.7
6	R2	All MCs	7	0.0	7	0.0	0.329	12.1	LOS A	2.1	15.4	0.77	0.69	0.77	51.0
6u	U	All MCs	1	0.0	1	0.0	0.329	14.2	LOS A	2.1	15.4	0.77	0.69	0.77	50.9
Approach			331	3.2	331	3.2	0.329	7.9	LOS A	2.1	15.4	0.75	0.71	0.75	51.5
North: Henty Drive															
7	L2	All MCs	32	0.0	32	0.0	0.061	10.1	LOS A	0.3	1.9	0.62	0.71	0.62	50.9
8	T1	All MCs	1	0.0	1	0.0	0.061	8.9	LOS A	0.3	1.9	0.62	0.71	0.62	51.4
9	R2	All MCs	598	0.0	598	0.0	0.666	15.8	LOS B	6.9	48.4	0.87	0.90	1.14	46.6
9u	U	All MCs	1	0.0	1	0.0	0.666	17.9	LOS B	6.9	48.4	0.87	0.90	1.14	46.6
Approach			632	0.0	632	0.0	0.666	15.5	LOS B	6.9	48.4	0.85	0.89	1.11	46.8
West: Boundary Road															
10	L2	All MCs	149	0.0	149	0.0	0.198	6.0	LOS A	0.9	6.3	0.48	0.60	0.48	53.0
11	T1	All MCs	388	1.1	388	1.1	0.418	5.5	LOS A	2.5	17.7	0.52	0.57	0.52	52.3
12	R2	All MCs	79	4.0	79	4.0	0.418	10.0	LOS A	2.5	17.7	0.52	0.57	0.52	51.4
12u	U	All MCs	1	0.0	1	0.0	0.418	12.0	LOS A	2.5	17.7	0.52	0.57	0.52	51.6
Approach			618	1.2	618	1.2	0.418	6.2	LOS A	2.5	17.7	0.51	0.58	0.51	52.4
All Vehicles			1912	1.5	1912	1.5	0.666	10.6	LOS A	6.9	48.4	0.72	0.73	0.81	49.7

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

Vehicle movement LOS values are based on average delay per movement.

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

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.

MOVEMENT SUMMARY

 Site: 101 [5. Boundary Road/ Stream Ave PM (Site Folder: 2034 Base + Dev)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Stream Ave															
1	L2	All MCs	68	1.5	68	1.5	0.075	7.0	LOS A	0.4	2.5	0.52	0.61	0.52	53.1
2	T1	All MCs	1	0.0	1	0.0	0.075	6.0	LOS A	0.4	2.5	0.52	0.61	0.52	53.5
3	R2	All MCs	75	1.4	75	1.4	0.075	10.6	LOS A	0.4	2.6	0.51	0.68	0.51	49.5
3u	U	All MCs	1	0.0	1	0.0	0.075	12.7	LOS A	0.4	2.6	0.51	0.68	0.51	49.5
Approach			145	1.4	145	1.4	0.075	8.9	LOS A	0.4	2.6	0.51	0.65	0.51	51.1
East: Boundary Road															
4	L2	All MCs	120	2.6	120	2.6	0.150	6.3	LOS A	0.6	4.7	0.44	0.59	0.44	52.9
5	T1	All MCs	297	1.1	297	1.1	0.296	5.3	LOS A	1.5	10.8	0.46	0.53	0.46	53.0
6	R2	All MCs	35	0.0	35	0.0	0.296	10.1	LOS A	1.5	10.8	0.46	0.53	0.46	52.1
6u	U	All MCs	1	0.0	1	0.0	0.296	12.2	LOS A	1.5	10.8	0.46	0.53	0.46	52.1
Approach			453	1.4	453	1.4	0.296	6.0	LOS A	1.5	10.8	0.45	0.55	0.45	52.9
North: Henty Drive															
7	L2	All MCs	8	0.0	8	0.0	0.015	7.4	LOS A	0.1	0.4	0.48	0.58	0.48	52.3
8	T1	All MCs	1	0.0	1	0.0	0.015	7.1	LOS A	0.1	0.4	0.48	0.58	0.48	52.8
9	R2	All MCs	165	0.0	165	0.0	0.153	10.3	LOS A	0.7	5.2	0.47	0.67	0.47	49.6
9u	U	All MCs	1	0.0	1	0.0	0.153	12.4	LOS A	0.7	5.2	0.47	0.67	0.47	49.6
Approach			176	0.0	176	0.0	0.153	10.2	LOS A	0.7	5.2	0.47	0.66	0.47	49.8
West: Boundary Road															
10	L2	All MCs	662	0.0	662	0.0	0.475	4.7	LOS A	3.2	22.2	0.34	0.49	0.34	53.5
11	T1	All MCs	185	2.3	185	2.3	0.300	4.9	LOS A	1.6	11.1	0.30	0.54	0.30	52.4
12	R2	All MCs	144	0.0	144	0.0	0.300	9.3	LOS A	1.6	11.1	0.30	0.54	0.30	51.7
12u	U	All MCs	1	0.0	1	0.0	0.300	11.4	LOS A	1.6	11.1	0.30	0.54	0.30	51.7
Approach			993	0.4	993	0.4	0.475	5.4	LOS A	3.2	22.2	0.33	0.51	0.33	53.0
All Vehicles			1766	0.7	1766	0.7	0.475	6.3	LOS A	3.2	22.2	0.39	0.55	0.39	52.5

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

Vehicle movement LOS values are based on average delay per movement.

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.

MOVEMENT SUMMARY

 Site: 101 [8. Mitchell Hwy / Capstan Dr AM (Site Folder: 2034 Base + Dev)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Capstan Dr															
1	L2	All MCs	631	0.0	631	0.0	0.937	37.4	LOS C	15.0	104.7	0.96	1.51	2.59	41.9
3	R2	All MCs	52	0.0	52	0.0	0.937	30.6	LOS C	15.0	104.7	0.96	1.51	2.59	41.5
3u	U	All MCs	1	0.0	1	0.0	0.937	33.0	LOS C	15.0	104.7	0.96	1.51	2.59	41.5
Approach			683	0.0	683	0.0	0.937	36.9	LOS C	15.0	104.7	0.96	1.51	2.59	41.9
East: Mitchell Hwy															
4	L2	All MCs	36	2.9	36	2.9	0.404	4.6	LOS A	2.4	17.1	0.39	0.43	0.39	53.6
5	T1	All MCs	1054	4.4	1054	4.4	0.435	9.9	LOS A	2.7	19.5	0.39	0.43	0.39	54.0
6u	U	All MCs	2	0.0	2	0.0	0.435	12.3	LOS A	2.7	19.5	0.39	0.43	0.39	53.1
Approach			1092	4.3	1092	4.3	0.435	9.7	LOS A	2.7	19.5	0.39	0.43	0.39	54.0
West: Mitchell Hwy															
11	T1	All MCs	829	6.5	829	6.5	0.347	3.8	LOS A	2.5	18.3	0.24	0.39	0.24	54.2
12	R2	All MCs	174	0.0	174	0.0	0.347	9.4	LOS A	2.4	17.5	0.24	0.46	0.24	52.5
12u	U	All MCs	4	25.0	4	25.0	0.347	12.1	LOS A	2.4	17.5	0.24	0.46	0.24	51.7
Approach			1007	5.4	1007	5.4	0.347	4.8	LOS A	2.5	18.3	0.24	0.40	0.24	53.9
All Vehicles			2782	3.7	2782	3.7	0.937	14.6	LOS B	15.0	104.7	0.48	0.69	0.88	50.4

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.

MOVEMENT SUMMARY

 **Site: 101 [8. Mitchell Hwy / Capstan Dr PM (Site Folder: 2034 Base + Dev)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Capstan Dr															
1	L2	All MCs	187	0.0	187	0.0	0.334	10.1	LOS A	1.7	12.1	0.75	0.80	0.77	52.4
3	R2	All MCs	23	4.5	23	4.5	0.334	13.0	LOS A	1.7	12.1	0.75	0.80	0.77	51.7
3u	U	All MCs	1	0.0	1	0.0	0.334	15.2	LOS B	1.7	12.1	0.75	0.80	0.77	51.8
Approach			212	0.5	212	0.5	0.334	10.5	LOS A	1.7	12.1	0.75	0.80	0.77	52.3
East: Mitchell Hwy															
4	L2	All MCs	57	1.9	57	1.9	0.578	10.5	LOS A	4.8	35.3	0.80	0.81	1.02	50.4
5	T1	All MCs	996	6.7	996	6.7	0.623	11.7	LOS A	6.0	44.3	0.81	0.82	1.05	50.8
6u	U	All MCs	1	0.0	1	0.0	0.623	18.1	LOS B	6.0	44.3	0.82	0.82	1.07	50.2
Approach			1054	6.4	1054	6.4	0.623	11.6	LOS A	6.0	44.3	0.81	0.82	1.05	50.8
West: Mitchell Hwy															
11	T1	All MCs	817	5.3	817	5.3	0.481	3.7	LOS A	4.0	29.1	0.17	0.34	0.17	55.0
12	R2	All MCs	664	0.0	664	0.0	0.481	9.3	LOS A	3.9	27.5	0.18	0.58	0.18	50.6
12u	U	All MCs	23	0.0	23	0.0	0.481	11.7	LOS A	3.9	27.5	0.18	0.58	0.18	50.6
Approach			1504	2.9	1504	2.9	0.481	6.3	LOS A	4.0	29.1	0.17	0.45	0.17	52.9
All Vehicles			2769	4.0	2769	4.0	0.623	8.6	LOS A	6.0	44.3	0.46	0.62	0.55	52.0

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.

MOVEMENT SUMMARY

 **Site: 101 [7. Sheraton Road northern entrance to site AM (Site Folder: 2034 Base + Dev)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Sheraton Road															
1	L2	All MCs	2	0.0	2	0.0	0.257	4.1	LOS A	1.5	10.3	0.12	0.39	0.12	54.2
2	T1	All MCs	762	1.2	762	1.2	0.257	4.2	LOS A	1.5	10.3	0.12	0.40	0.12	54.6
3	R2	All MCs	11	0.0	11	0.0	0.257	8.8	LOS A	1.5	10.3	0.13	0.40	0.13	31.0
3u	U	All MCs	1	0.0	1	0.0	0.257	10.9	LOS A	1.5	10.3	0.13	0.40	0.13	53.6
Approach			776	1.2	776	1.2	0.257	4.2	LOS A	1.5	10.3	0.12	0.40	0.12	54.3
East: St Johns College Access															
4	L2	All MCs	5	0.0	5	0.0	0.013	3.1	LOS A	0.0	0.3	0.35	0.60	0.35	49.9
5	T1	All MCs	1	0.0	1	0.0	0.013	3.0	LOS A	0.0	0.3	0.35	0.60	0.35	50.5
6	R2	All MCs	5	0.0	5	0.0	0.013	6.9	LOS A	0.0	0.3	0.35	0.60	0.35	49.1
6u	U	All MCs	1	0.0	1	0.0	0.013	8.9	LOS A	0.0	0.3	0.35	0.60	0.35	6.7
Approach			13	0.0	13	0.0	0.013	5.2	LOS A	0.0	0.3	0.35	0.60	0.35	46.4
North: Sheraton Road															
7	L2	All MCs	53	0.0	53	0.0	0.075	4.2	LOS A	0.4	2.6	0.12	0.45	0.12	36.7
8	T1	All MCs	347	1.2	347	1.2	0.214	4.2	LOS A	1.2	8.7	0.11	0.41	0.11	54.5
9	R2	All MCs	16	0.0	16	0.0	0.214	8.8	LOS A	1.2	8.7	0.11	0.41	0.11	53.7
9u	U	All MCs	1	0.0	1	0.0	0.214	10.8	LOS A	1.2	8.7	0.11	0.41	0.11	53.7
Approach			417	1.0	417	1.0	0.214	4.4	LOS A	1.2	8.7	0.11	0.41	0.11	52.7
West: Unnamed road access to site															
10	L2	All MCs	63	0.0	63	0.0	0.098	7.1	LOS A	0.4	2.8	0.58	0.71	0.58	52.0
11	T1	All MCs	1	0.0	1	0.0	0.098	7.3	LOS A	0.4	2.8	0.58	0.71	0.58	29.5
12	R2	All MCs	7	0.0	7	0.0	0.098	12.0	LOS A	0.4	2.8	0.58	0.71	0.58	51.5
12u	U	All MCs	1	0.0	1	0.0	0.098	14.0	LOS A	0.4	2.8	0.58	0.71	0.58	51.5
Approach			73	0.0	73	0.0	0.098	7.7	LOS A	0.4	2.8	0.58	0.71	0.58	51.6
All Vehicles			1278	1.1	1278	1.1	0.257	4.5	LOS A	1.5	10.3	0.15	0.42	0.15	53.6

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.

MOVEMENT SUMMARY

 **Site: 101 [7. Sheraton Road northern entrance to site PM (Site Folder: 2034 Base + Dev)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Sheraton Road															
1	L2	All MCs	7	0.0	7	0.0	0.117	4.5	LOS A	0.6	4.3	0.28	0.43	0.28	53.5
2	T1	All MCs	283	2.6	283	2.6	0.117	4.6	LOS A	0.6	4.3	0.28	0.43	0.28	53.8
3	R2	All MCs	5	0.0	5	0.0	0.117	9.2	LOS A	0.6	4.2	0.28	0.44	0.28	30.5
3u	U	All MCs	1	0.0	1	0.0	0.117	11.3	LOS A	0.6	4.2	0.28	0.44	0.28	52.9
Approach			297	2.5	297	2.5	0.117	4.7	LOS A	0.6	4.3	0.28	0.43	0.28	53.4
East: St Johns College Access															
4	L2	All MCs	11	0.0	11	0.0	0.077	4.7	LOS A	0.3	1.9	0.47	0.74	0.47	47.3
5	T1	All MCs	1	0.0	1	0.0	0.077	4.1	LOS A	0.3	1.9	0.47	0.74	0.47	47.9
6	R2	All MCs	53	0.0	53	0.0	0.077	8.0	LOS A	0.3	1.9	0.47	0.74	0.47	46.6
6u	U	All MCs	1	0.0	1	0.0	0.077	10.0	LOS A	0.3	1.9	0.47	0.74	0.47	7.1
Approach			65	0.0	65	0.0	0.077	7.4	LOS A	0.3	1.9	0.47	0.74	0.47	46.2
North: Sheraton Road															
7	L2	All MCs	5	0.0	5	0.0	0.119	4.1	LOS A	0.6	4.3	0.08	0.40	0.08	37.1
8	T1	All MCs	638	1.3	638	1.3	0.340	4.3	LOS A	2.2	15.4	0.08	0.42	0.08	54.5
9	R2	All MCs	63	0.0	63	0.0	0.340	8.7	LOS A	2.2	15.4	0.08	0.43	0.08	53.6
9u	U	All MCs	1	0.0	1	0.0	0.340	10.8	LOS A	2.2	15.4	0.08	0.43	0.08	53.6
Approach			707	1.2	707	1.2	0.340	4.7	LOS A	2.2	15.4	0.08	0.42	0.08	54.3
West: Unnamed road access to site															
10	L2	All MCs	16	0.0	16	0.0	0.021	5.3	LOS A	0.1	0.6	0.43	0.57	0.43	52.9
11	T1	All MCs	1	0.0	1	0.0	0.021	5.6	LOS A	0.1	0.6	0.43	0.57	0.43	30.2
12	R2	All MCs	2	0.0	2	0.0	0.021	10.2	LOS A	0.1	0.6	0.43	0.57	0.43	52.4
12u	U	All MCs	1	0.0	1	0.0	0.021	12.3	LOS A	0.1	0.6	0.43	0.57	0.43	52.4
Approach			20	0.0	20	0.0	0.021	6.2	LOS A	0.1	0.6	0.43	0.57	0.43	51.7
All Vehicles			1089	1.4	1089	1.4	0.340	4.9	LOS A	2.2	15.4	0.17	0.45	0.17	53.7

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

Vehicle movement LOS values are based on average delay per movement.

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

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.

MOVEMENT SUMMARY

 **Site: 101 [6. Sheraton Road Southern entrance to site AM
(Site Folder: 2034 Base + Dev)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Sheraton Road															
1	L2	All MCs	1	0.0	1	0.0	0.128	4.2	LOS A	0.6	4.5	0.11	0.39	0.11	54.3
2	T1	All MCs	723	1.3	723	1.3	0.365	4.4	LOS A	2.3	16.5	0.11	0.39	0.11	54.7
3u	U	All MCs	1	0.0	1	0.0	0.365	10.8	LOS A	2.3	16.5	0.11	0.39	0.11	53.8
Approach			725	1.3	725	1.3	0.365	4.4	LOS A	2.3	16.5	0.11	0.39	0.11	54.7
North: Sheraton Road															
8	T1	All MCs	338	1.2	338	1.2	0.178	4.2	LOS A	0.9	6.7	0.06	0.41	0.06	54.8
9	R2	All MCs	16	0.0	16	0.0	0.178	8.7	LOS A	0.9	6.7	0.06	0.41	0.06	53.8
9u	U	All MCs	1	0.0	1	0.0	0.178	10.8	LOS A	0.9	6.7	0.06	0.41	0.06	53.8
Approach			355	1.2	355	1.2	0.178	4.4	LOS A	0.9	6.7	0.06	0.41	0.06	54.7
West: Unnamed Road (access to development)															
10	L2	All MCs	63	0.0	63	0.0	0.101	9.0	LOS A	0.5	3.2	0.60	0.71	0.60	51.6
12	R2	All MCs	7	0.0	7	0.0	0.101	12.5	LOS A	0.5	3.2	0.60	0.71	0.60	51.1
12u	U	All MCs	1	0.0	1	0.0	0.101	14.5	LOS B	0.5	3.2	0.60	0.71	0.60	51.1
Approach			72	0.0	72	0.0	0.101	9.5	LOS A	0.5	3.2	0.60	0.71	0.60	51.6
All Vehicles			1152	1.2	1152	1.2	0.365	4.7	LOS A	2.3	16.5	0.12	0.42	0.12	54.5

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

Vehicle movement LOS values are based on average delay per movement.

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.

MOVEMENT SUMMARY

 **Site: 101 [6. Sheraton Road Southern entrance to site PM (Site Folder: 2034 Base + Dev)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sheraton Road															
1	L2	All MCs	7	0.0	7	0.0	0.059	4.7	LOS A	0.3	2.0	0.23	0.42	0.23	53.8
2	T1	All MCs	275	2.7	275	2.7	0.168	4.5	LOS A	0.8	6.0	0.20	0.41	0.20	54.2
3u	U	All MCs	1	0.0	1	0.0	0.168	11.0	LOS A	0.8	6.0	0.19	0.40	0.19	53.4
Approach			283	2.6	283	2.6	0.168	4.5	LOS A	0.8	6.0	0.20	0.41	0.20	54.2
North: Sheraton Road															
8	T1	All MCs	575	1.5	575	1.5	0.302	4.3	LOS A	1.7	11.8	0.04	0.43	0.04	54.7
9	R2	All MCs	63	0.0	63	0.0	0.302	8.7	LOS A	1.7	11.8	0.04	0.44	0.04	53.7
9u	U	All MCs	1	0.0	1	0.0	0.302	10.7	LOS A	1.7	11.8	0.04	0.44	0.04	53.7
Approach			639	1.3	639	1.3	0.302	4.7	LOS A	1.7	11.8	0.04	0.43	0.04	54.6
West: Unnamed Road (access to development)															
10	L2	All MCs	16	0.0	16	0.0	0.020	5.6	LOS A	0.1	0.6	0.40	0.55	0.40	53.0
12	R2	All MCs	2	0.0	2	0.0	0.020	10.0	LOS A	0.1	0.6	0.40	0.55	0.40	52.5
12u	U	All MCs	1	0.0	1	0.0	0.020	12.1	LOS A	0.1	0.6	0.40	0.55	0.40	52.5
Approach			19	0.0	19	0.0	0.020	6.4	LOS A	0.1	0.6	0.40	0.55	0.40	52.9
All Vehicles			941	1.7	941	1.7	0.302	4.7	LOS A	1.7	11.8	0.09	0.43	0.09	54.4

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.

