APPENDIX 6

TECHNICAL SUPPORTING DOCUMENTS

Traffic Impact Assessment

Townsville Water Park, Beach Club and Hotel
1-105 Racecourse Road, Cluden

20 September 2024

Prepared for:
MCK TSV Pty Ltd
Report: 50890-RP02-A

GELEON

geleon

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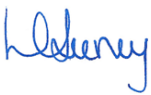
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1.   Introduction

1.1   Project background

Geleon has been engaged by MCK TSV Pty Ltd (the **Applicant**) to prepare a Traffic Impact Assessment (**TIA**) to accompany a Development Application (**DA**) to establish the Townsville Water Park, Beach Club and Hotel at 1-105 Racecourse Road, Cluden (Lot 1 SP101275 and Lot 2 RP748152) (**Figure 1.1**). The existing 52.301-hectare site is currently occupied by the Cluden Park Racecourse in the eastern portion, with this application related to the western portion of the site that is currently vacant.

Figure 1.1   Locality plan

1.2   Development details

The proposed development encompasses several land uses across three precincts, including food and drink outlet, shop, hotel, multiple dwelling, showroom, outdoor sport and recreation, short-term accommodation and function facility land uses. Specifically, the outdoor sport and recreation land use aims to establish a waterpark on the subject site. Within Precinct 3, the short-term accommodation, food and drink outlet, and function facility will be consolidated within a single hotel establishment.

It is understood that all three precincts will be constructed concurrently and will be operational within five years (2029).

Access to and from the three precincts will be facilitated by internal private roads connecting to the current Townsville Turf Club Access via a new four-leg, single-lane roundabout. Prior to commencement, the Townsville Turf Club Access will extend as part of Lakeside Drive, connecting Racecourse Road to Stuart Drive. Direct property access to the new extension of Lakeside Drive from the proposed land uses will be prohibited.

Details of the proposed development are provided in **Table 1.2**, with the site plan shown in **Figure 1.2**. Other relevant plans of development have been included in **Appendix A**.

Table 1.2   Development details

ID	Land Use	Quantity	
Precinct 1			
1	Food and drink outlet (fast food)	560	m² GFA
2	Shop / food and drink outlet (restaurant / café)	1,590	m² GFA
3	Hotel (Tavern)	1,215	m² GFA
Precinct 2			
4	Multiple dwelling	230	Units
Or			
4	Showroom	5,500	m² GFA
Precinct 3			
5	Outdoor sport and recreation (Waterpark)	371	parking spaces
6	Short-term accommodation	209	Rooms
7	Food and drink outlet (restaurant / café)	204	m² GFA
8	Function facility	1,523	m² GFA
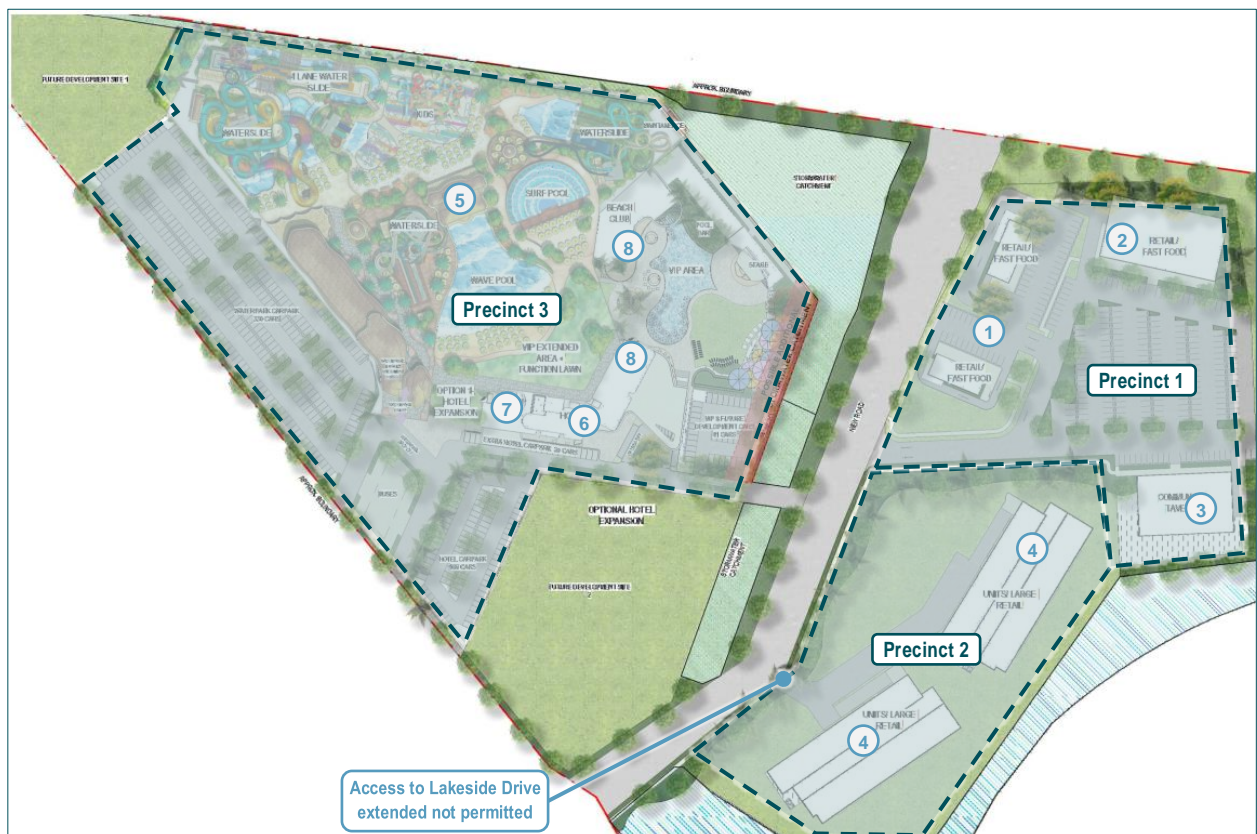
Figure 1.2   Master plan

1.3   Applicable planning scheme

The proposed development site falls under the jurisdiction of the City of Townsville (**Council**) and is governed by the *Townsville City Plan (Version 2022/02).*

1.4 Scope

The scope of the assessment presented in this report is as follows:

- assessment of public transport, pedestrian and cycling accessibility to / from site
- calculation of the anticipated development traffic generation and its impact to the external road network, and
- completion of Council and State development code templates to accompany the development application.

1.5 Limitations

While the calculations and analysis undertaken as part of the assessment and documented in this report are considered appropriate for the assessment, the following limitations should be noted:

- large events at the Cluden Park Racecourse have been not considered as these events would comprise event specific traffic management plans
- background traffic count data utilised in the assessment has been based on traffic counts which may not be 100% representative of the typical traffic volumes on the external road network, and
- background growth rates adopted for this study have been based on historical background traffic growth. While the use of these growth rates to establish traffic forecasts is considered acceptable for the short term (10-20 years), estimates become less reliable the further out they are calculated. This is due to potential changes in traffic conditions as a result of changes to the wider road network and different shifts in traffic generators and attractors and route choices. As such, the assessment contained in this report should be revisited should any significant changes in volumes at the intersections or adjacent road links be identified.

2. Existing conditions

2.1 Road network

2.1.1 Key roads

The hierarchy of the road network surrounding the development is shown in **Table 2.1.1**.

Table 2.1.1   Surrounding road network

Road name	Jurisdiction	No. of lanes	Speed limit	Median divided	Road hierarchy	Footpath / bicycle lanes	On-street parking
Bruce Highway ('*Racecourse Road*')	TMR [1]	4	80km/h	Yes	Highway	No footpaths / bicycle lanes on both sides	Nil
Townsville Connection Road ('*Stuart Drive*')	TMR [1]	2	70km/h	No	Highway	Footpath / off road bicycle path on southern side	Nil near subject site
Abbott Street Connection Road ('*Lakeside Drive*')	TMR [1]	2-4	60km/h	Partly	Trafficable Road	Partial footpaths both sides / bicycle lanes on both sides	Nil
Edison Street	Council	2	60km/h	No	Trafficable Road	Footpaths both sides / no bicycle provisions	Informal both sides
Townsville Turf Club Access	Private road	2	N/A	No	Private	Footpath on western side / bicycle lanes at intersection	Nil

Notes:
1.   *Department of Transport and Main Roads*

2.1.2 Key intersections

In addition to the surrounding road network, there are three key intersections in proximity to the subject site which development generated traffic will utilise once Lakeside Drive is extended from Racecourse Road to Stuart Drive. These intersections are located as shown in **Figure 2.1.2** and are identified as:

1.   Racecourse Road / Lakeside Drive signalised intersection
2.   Racecourse Road / Lakeside Drive / Townsville Turf Club Access signalised intersection
3.   Stuart Drive / Edison Street three-leg single lane roundabout.

Figure 2.1.2   Key intersections

2.2   Public transport

The development site is located within walking distance (<400m) of approximately 14 public transport stops (Stop ID's 890300, 890313, 890314, 890315, 890299, 890386, 890387, 890298, 890681, 890388, 890389, 890297, 890683, 890707).

Three bus stops are located directly adjacent the development site, known as 'Stuart Drive at Watt Street' (Stop ID: 890297), 'Stuart Drive at Edison Street' (Stop ID: 890681) and Stuart Drive at Marconi Street (Stop ID: 890298). These stops are serviced by two public bus routes, known as '207', '209', except for 'Stuart Drive at Edison Street' which is only serviced by '207'.

The closest Lakeside Drive bus stop known as Lakeside Drive near D'Arcy Drive hail 'n' ride (Stop ID: 890707) is serviced by one public bus route, '207'.

Locations of all stops within proximity to the development site are provided in **Figure 2.2.**

Figure 2.2   Public transport in proximity to site

2.3   Active transport

The subject site is located adjacent to Racecourse Road and Stuart Drive which forms part of TMR's *North Queensland Principal Cycle Network* and includes on-road and off-road bicycle provisions, respectively. The principal cycle network surrounding the proposed development and route priorities are illustrated in **Figure 2.3.1** and **Figure 2.3.2**.

LEGEND:
—— Principal Cycle Route

Source: Queensland Government, Brisbane, *Queensland Globe,* 2024
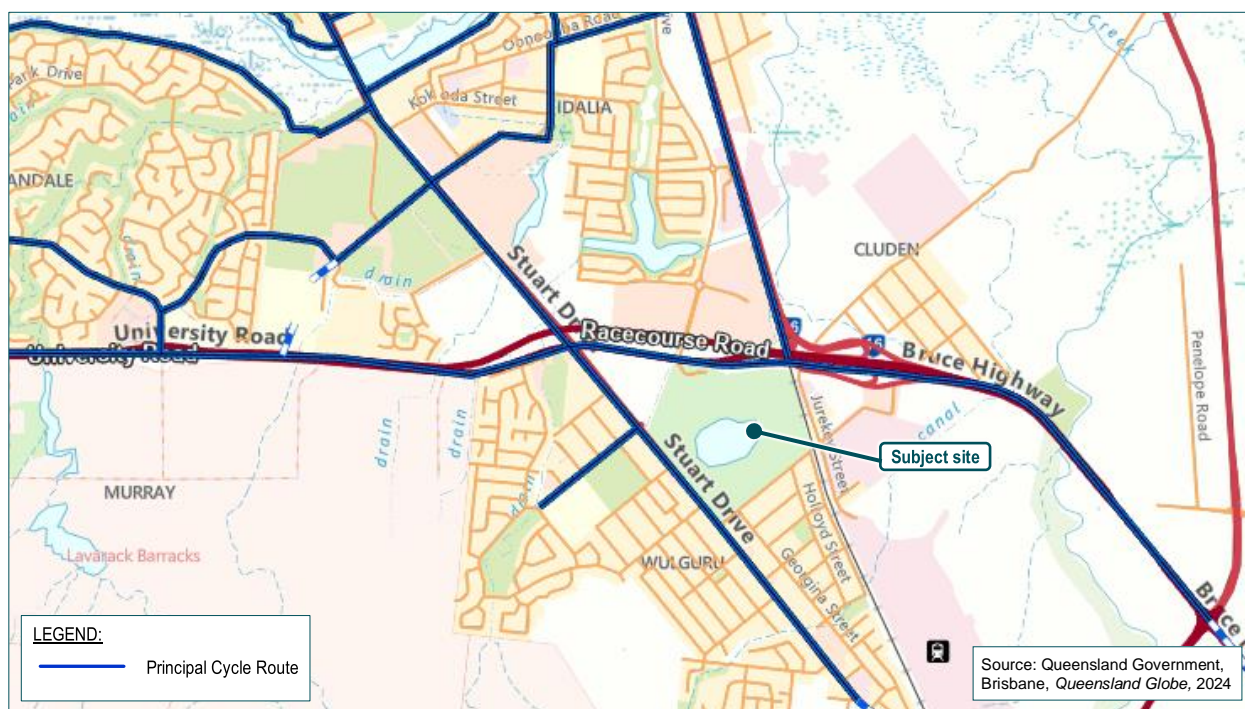
Figure 2.3.1   Principal cycle network

LEGEND:
—— Route Priority A
—— Route Priority B
—— Route Priority C

Source: Priority Route Mas, North Queensland, Addendum to *Principal Cyle Network Plan,* DTMR 2021
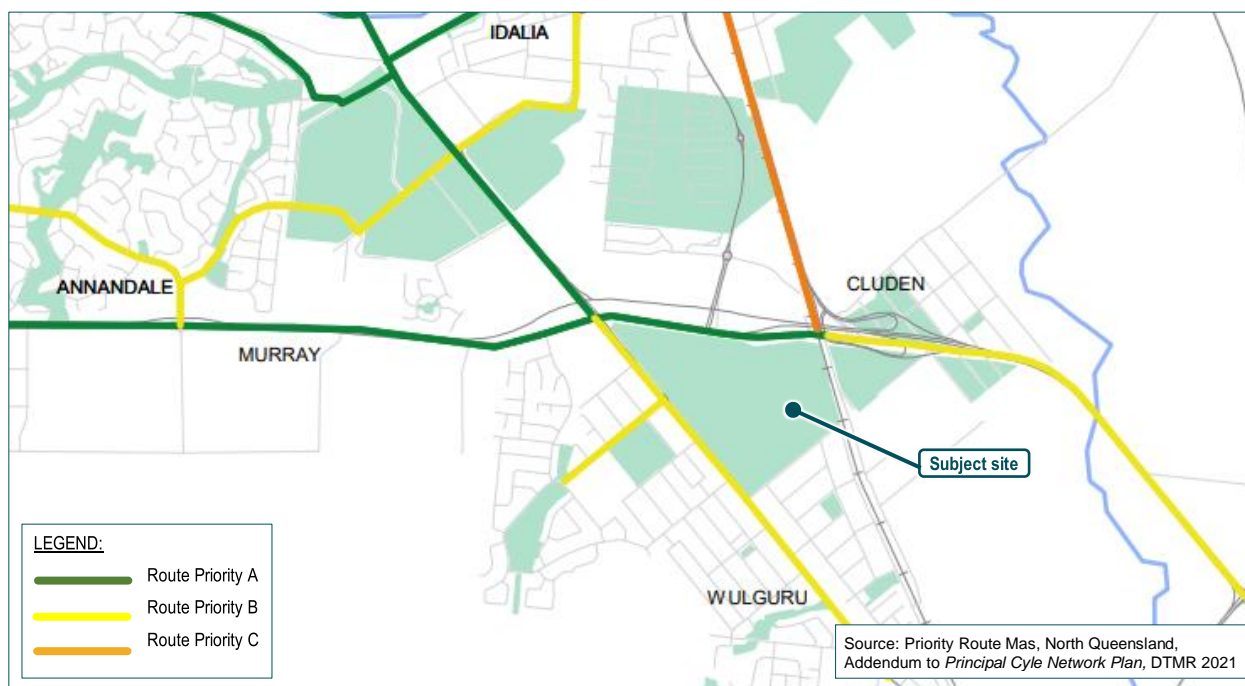
Figure 2.3.2   Priority route map

2.4 Road crash history

Crash data near the key intersections identified in **Section 2.1.2** was sourced from TMR and is summarised in **Table 2.4**. Data for the period between 2018 and 2024 can be categorised as follows:

- fatal crashes from 1 January 2018 to 30 April 2024, and
- non-fatal casualty (hospitalisation, medical treatment, and minor injury) crashes from 1 January 2018 to 30 November 2023.

Analysis of the crash data indicates that 12 crashes have occurred in proximity to the key intersections identified in **Section 2.1.2** (**Figure 2.4**). Three crashes have occurred at the Racecourse Road / Lakeside Drive / Townsville Turf Club Access intersection, two relating to vehicle adjacent approach crashes and the other relating to a vehicle travelling off the carriageway. Therefore, no crash clusters are present at this intersection.

Five crashes resulting in injury have occurred at the Racecourse Road / Lakeside Drive intersection with four relating to vehicle adjacent approach: through – through related crashes. It is therefore apparent that the Racecourse Road / Lakeside Drive intersection consists of a crash cluster.

Three crashes have occurred at the Stuart Drive / Edison Street roundabout with all three relating to rear end related crashes. However, the three rear end related crashes occur on each of the intersection approaches (one crash per intersection approach). Therefore, no crash clusters are considered present at this intersection.

Table 2.4   Crash details

Crash No.	Crash year	Road	DCA code	Crash DCA group description	Crash severity
1	2020	Lakeside Drive	101	Vehicles adjacent approach: through-through	Medical treatment
2	2019	Lakeside Drive	708	Off path-straight: mounts traffic island	Minor injury
3	2023	Lakeside Drive	101	Vehicles adjacent approach: through-through	Hospitalisation
4	2023	Lakeside Drive	101	Vehicles adjacent approach: through-through	Medical treatment
5	2023	Lakeside Drive	308	Vehicles same direction: right turn side swipe	Hospitalisation
6	2023	Lakeside Drive	101	Vehicles adjacent approach: through-through	Hospitalisation
7	2023	Edison Street	302	Vehicles same direction: left rear	Minor injury
8	2018	Lakeside Drive	101	Vehicles adjacent approach: through-through	Hospitalisation
9	2018	Lakeside Drive	101	Vehicles adjacent approach: through-through	Hospitalisation
10	2021	Stuart Drive	301	Vehicles same direction: rear end	Minor injury
11	2021	Lakeside Drive	301	Vehicles same direction: rear end	Medical treatment
12	2022	Stuart Drive	301	Vehicles same direction: rear end	Hospitalisation
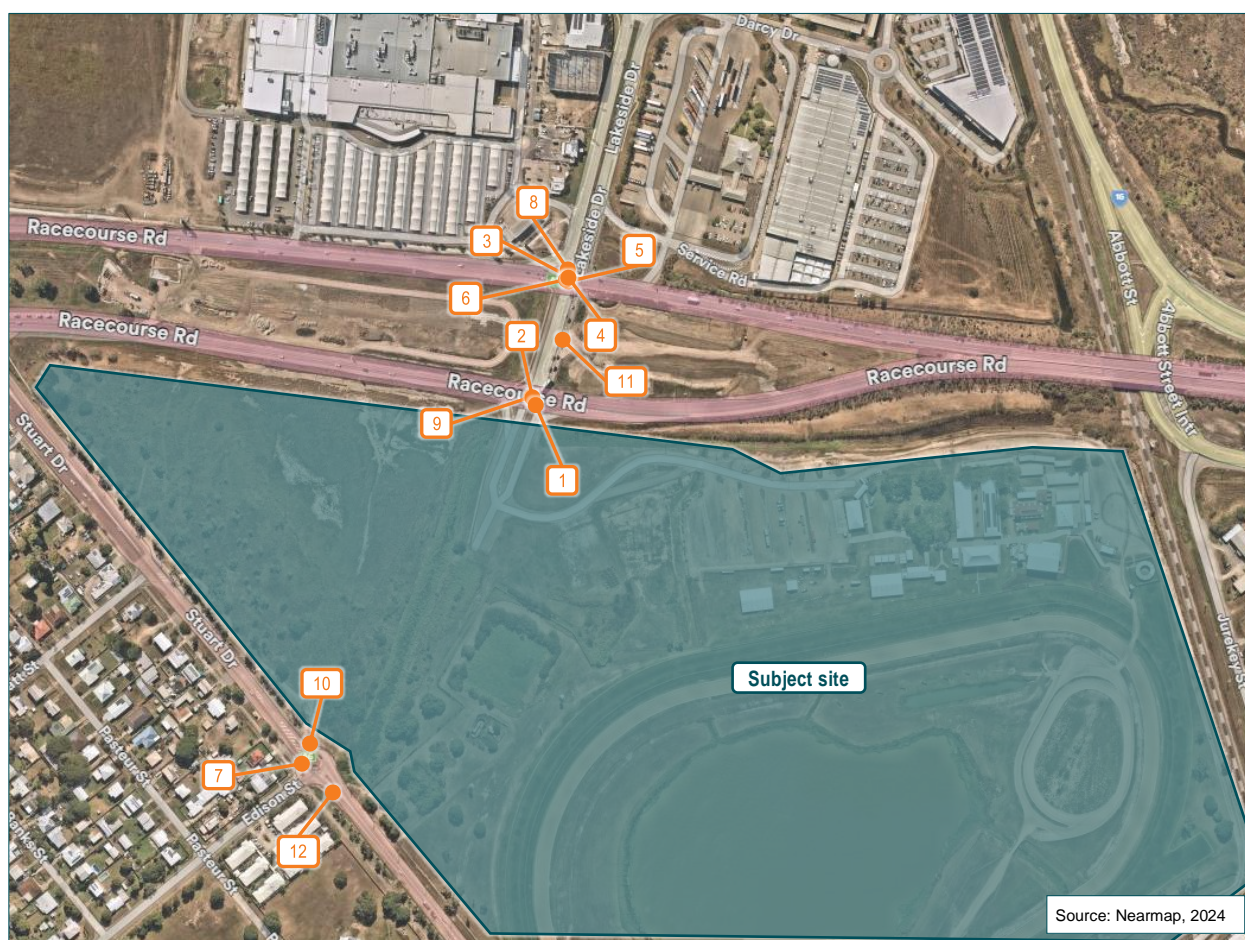
Figure 2.4   Crash data

2.5   Background traffic volumes

Traffic count data for the key intersections identified in **Section 2.1.2** was sourced from an intersection count conducted by Northern Consulting in May 2024 for a Thursday and Saturday of the same week (**Appendix B**). Typical peak periods for the intersections, as sourced from the provided count data, are presented in **Table 2.5.1**. Existing 2024 peak hour intersection traffic volumes are shown in **Figure 2.5**.

Table 2.5.1   Intersection peak periods

Intersection	AM peak	PM peak	Weekend peak
Racecourse Road / Lakeside Drive	7:45am – 8:45am	4:00pm – 5:00pm	11:15am – 12:15pm
Racecourse Road / Lakeside Drive / Townsville Turf Club Access	7:45am – 8:45am	4:15pm – 5:15pm	12:30pm – 1:30pm
Stuart Drive / Edison Street	7:45am – 8:45am	4:15pm – 5:15pm	11:00am – 12:00pm
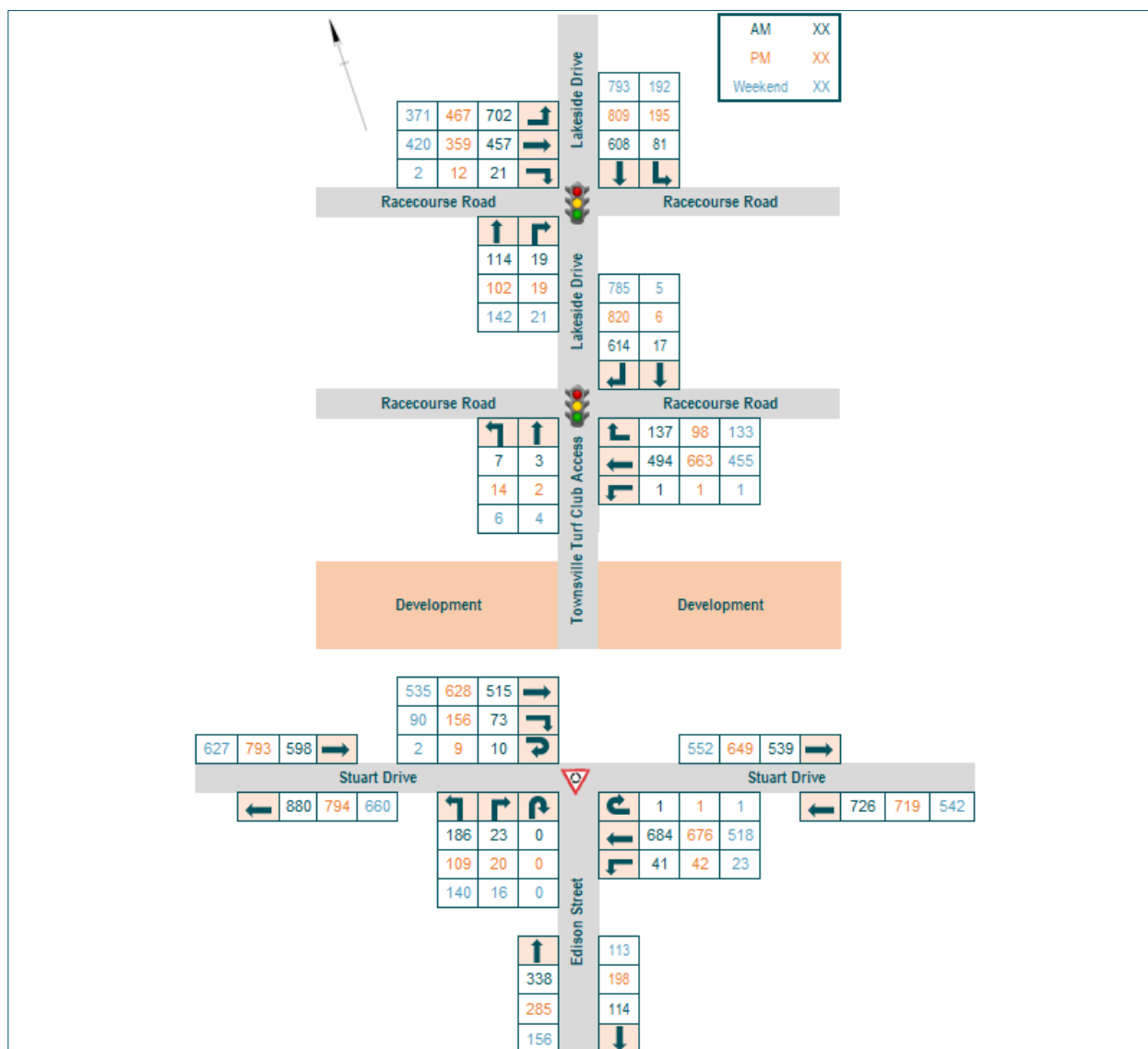
Figure 2.5   2024 background traffic volumes

In addition to the intersection count, annual volume data was sourced from TMR's *Open Data Portal – 2022 traffic census data*[1] for Racecourse Road and Lakeside Drive as detailed in **Table 2.5.2**. In addition, 2023 annual volume data for the below sites have been provided from TMR and are included as **Appendix C**. The 2023 annual volume data does not include growth rate data and therefore the 2022 10-year growth rates have been considered for this traffic impact assessment.

Table 2.5.2   Annual volume data

Road link	Count year	TAR Site ID	Count location	Travel Direction	AADT	10-year growth rate
Bruce Highway (*'Racecourse Road'*)	2022	92204	200m west of Cluden Park Racecourse	With gazettal	6,877 vpd	-
				Against gazettal	7,147 vpd	-
				Both directions	14,024 vpd	0.7%
Abbott Street Connection Road (*'Lakeside Drive'*)	2022	160693	Between Lakeland Drive and Oononba Road	With gazettal	5,469 vpd	-
				Against gazettal	5,007 vpd	-
				Both directions	10,476 vpd	-
Townsville Connection Road (*'Stuart Drive'*)	2022	92191	Stuart Drive 100m west of Edison Street	With gazettal	7,543 vpd	2.99%
				Against gazettal	7,740 vpd	2.88%
				Both directions	15,283 vpd	2.93%

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[1] Department of Transport and Main Roads (13 December 2022), *Open Data Portal – 2022 traffic census data*.

2.6 Intersection operation

Using the available background traffic data, an assessment of the existing operational performance of the intersections identified in **Section 2.1.2** has been undertaken using SIDRA 9.1 intersection analysis software.

2.6.1 Intersection performance criteria

Principal criteria against which intersection performance is assessed are:

- the intersection degree of saturation (DOS), which is the ratio of maximum movement demand volume to capacity at an intersection
- level of service (LOS) expressed as a function of the movement delay, and
- queue lengths on intersection legs.

For the purposes of this assessment, criteria outlined in Austroads *Guide to Traffic Management Part 3: Transport Studies and Analysis Methods (2020)* have been adopted. Austroads suggests that for intersections, LOS and DOS are the criteria upon which performance is measured. **Table 2.6.1.1** shows the maximum degree of saturation[2] for the various intersection types.

Table 2.6.1.1   Maximum degree of saturation for road intersections

Intersection type	Maximum degree of saturation
signalised intersection	0.9
roundabout	0.85
unsignalised intersection	0.8

While DOS is an important measure of the capacity and operational performance of an intersection, several other factors are also important, in particular, intersection and individual movement level of service (LOS) and delay, as well as the impact of identified vehicle queue lengths. While delay is calculated for all types of intersections, it is most critical for priority or sign-controlled intersections, where excessive delays to vehicle movements exiting minor side roads can lead to motorists accepting smaller gaps in the opposing traffic flows thereby increasing safety conflicts.

The LOS and delay criteria adopted for this assessment have been taken from the SIDRA Intersection 9.1 *User Guide*[3] and for ease of reference are summarised in **Table 2.6.1.2**.

For this assessment, where an intersection has been analysed and the outcome from that analysis indicates a level of service of LOS C or better based on the average delay per vehicle, then that intersection has been deemed to perform in a satisfactory or better manner. Delays producing a LOS D or LOS E have been deemed to be excessive and are considered to increase the potential for both unsafe operation and capacity constraints of the intersection.

Table 2.6.1.2   LOS criteria for road intersections using delay

Level of service	Average delay per vehicle (d) in seconds		
	Signalised intersections (SIDRA)	Roundabouts (SIDRA)	Unsignalised intersections (RTA NSW)
A	d ≤ 10	d ≤ 10	d < 14.5
B	10 < d ≤ 20	10 < d ≤ 20	14.5 < d <28.5
C	20 < d ≤ 35	20 < d ≤ 35	28.5 < d < 42.5
D	35 < d ≤ 55	35 < d ≤ 50	42.5 < d < 56.5
E	55 < d ≤ 80	50 < d ≤ 70	56.5 < d < 70.5
F	80 < d	70 < d	70.5 < d

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[2] Austroads (2020), *Guide to Traffic Management Part 3: Transport Studies and Analysis Methods, Sydney*, s.4.2.4, p.37.
[3] Akcelik & Associates Pty Ltd (December 2022), *Sidra Intersection 9.1 User Guide*, s.5.14.1, Table 5.14.1, Table 5.14.3, p.480-481.

2.7 Intersection assessment

As the Racecourse Road / Lakeside Drive and Racecourse Road / Lakeside Drive / Townsville Turf Club Access signalised intersections are in proximity to one another, the assessment of existing operational performance has been undertaken based on a modelled network approach (**Figure 2.7**). Based on TMR phasing data, a 120-second cycle time has been adopted for this analysis with both signalised intersections coordinated in the model.
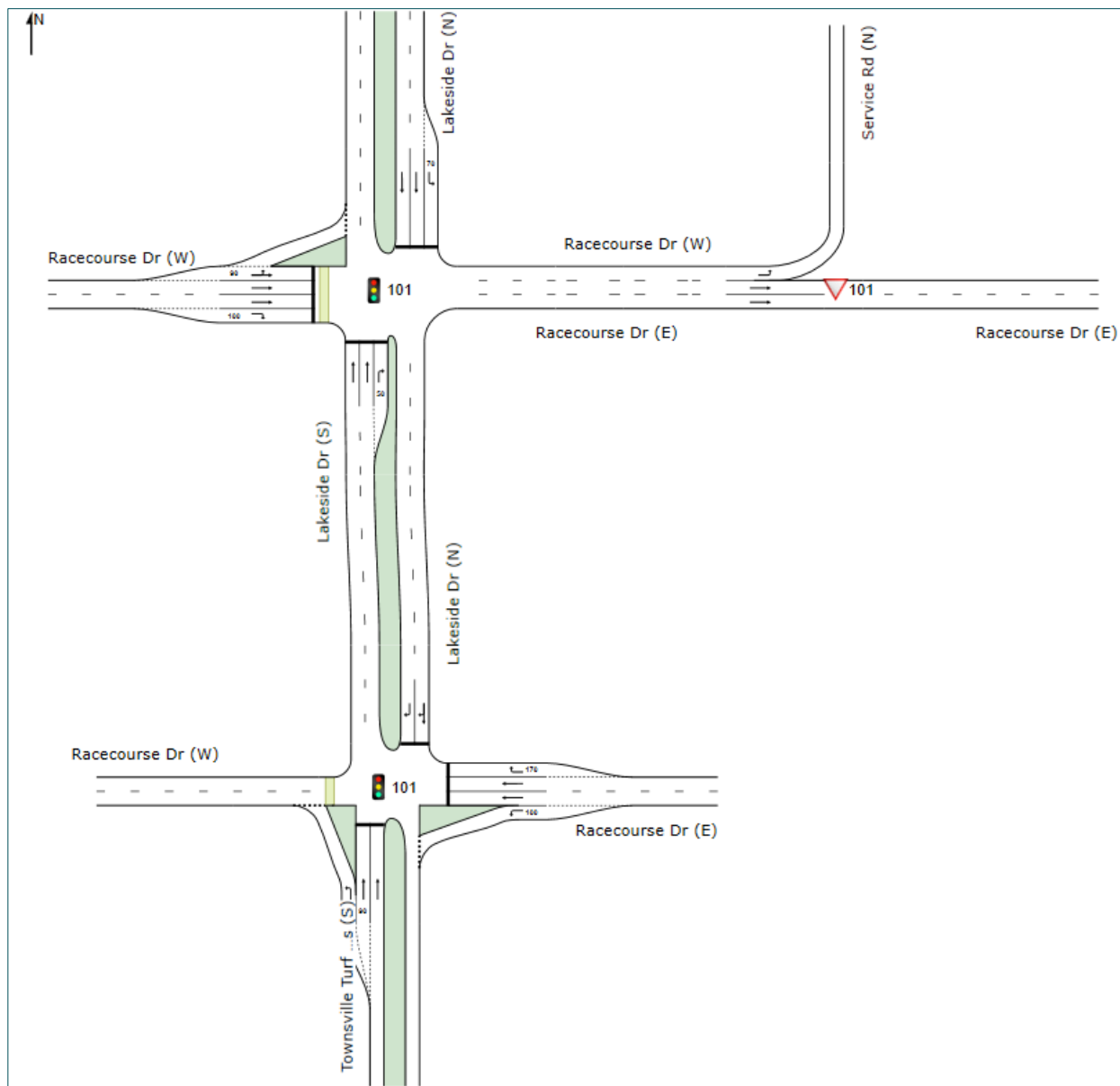
Figure 2.7   SIDRA network layout

2.7.1 Racecourse Road / Lakeside Drive

The existing intersection configuration is shown in **Figure 2.7.1** and the layout modelled in SIDRA is shown in **Figure 2.7**. A summary of the key performance indicators is provided in **Table 2.7.1**.

The results of the SIDRA analysis demonstrate that, under the existing conditions, the Lakeside Drive approaches of the intersection have exceeded capacity in terms of average delay, however overall, the signalised intersection still operates within acceptable key performance indicators for a signalised intersection. High delays of this nature for the minor legs of a signalised intersection are considered typical, as in most cases vehicles approaching the intersection on minor legs would wait an entire cycle before being given a green phase.

SIDRA outputs for the assessment are provided in **Appendix D**.
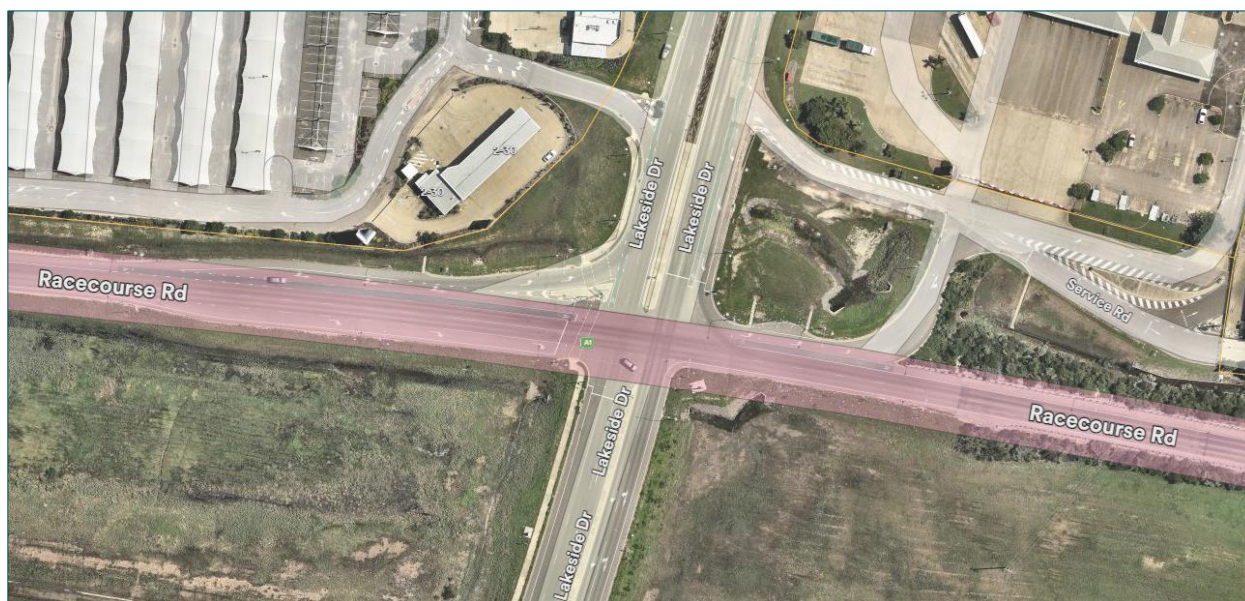
Figure 2.7.1   Existing Racecourse Road / Lakeside Drive layout

Table 2.7.1   2024 SIDRA results – Racecourse Road / Lakeside Drive

Approach	Degree of saturation	Average delay (s)	Level of service	95% back of queue (m)
2024 AM				
Lakeside Drive (S)	0.264	44.0	D	24.7
Lakeside Drive (N)	0.614	41.0	D	119.2
Racecourse Road (W)	0.575	9.3	A	66.6
2024 PM				
Lakeside Drive (S)	0.272	33.1	C	20.6
Lakeside Drive (N)	0.504	26.4	C	126.9
Racecourse Road (W)	0.431	13.5	B	73.1
2024 Weekend				
Lakeside Drive (S)	0.262	29.4	C	28.0
Lakeside Drive (N)	0.445	22.3	C	111.6
Racecourse Road (W)	0.380	17.1	B	75.1

2.7.2 Racecourse Road / Lakeside Drive / Townsville Turf Club Access

The existing intersection configuration is shown in **Figure 2.7.2** and the layout modelled in SIDRA is shown in **Figure 2.7**. A summary of the key performance indicators is provided in **Table 2.7.2**.

The results of the SIDRA analysis indicate that the existing Racecourse Road / Lakeside Drive / Townsville Turf Club Access signalised intersection operates within acceptable key performance indicators for a signalised intersection. Moderate delays were recorded for the right and through movements of the Racecourse Road eastern approach; however, these delays are not considered significant.

SIDRA outputs for the assessment are provided in **Appendix D**.

Figure 2.7.2   Existing Racecourse Road / Lakeside Drive / Townsville Turf Club Access layout

Table 2.7.2   2024 SIDRA results – Racecourse Road / Lakeside Drive / Townsville Turf Club

Approach	Degree of saturation	Average delay (s)	Level of service	95% back of queue (m)
2024 AM				
Townsville Turf Club Access (S)	0.016	22.1	C	0.9
Racecourse Road (E)	0.436	34.2	C	92.9
Lakeside Drive (N)	0.436	5.7	A	6.9
2024 PM				
Townsville Turf Club Access (S)	0.035	15.3	B	1.9
Racecourse Road (E)	0.563	35.3	D	124.6
Lakeside Drive (N)	0.560	7.1	A	24.5
2024 Weekend				
Townsville Turf Club Access (S)	0.012	26.1	C	0.8
Racecourse Road (E)	0.455	39.6	D	83.5
Lakeside Drive (N)	0.465	5.6	A	6.7

2.7.3   Stuart Drive / Edison Street

The existing intersection configuration is shown in **Figure 2.7.3.1** and the layout modelled in SIDRA is shown in **Figure 2.7.3.2**. A summary of the key performance indicators is provided in **Table 2.7.3**.

Figure 2.7.3.1   Existing Stuart Drive / Edison Street layout
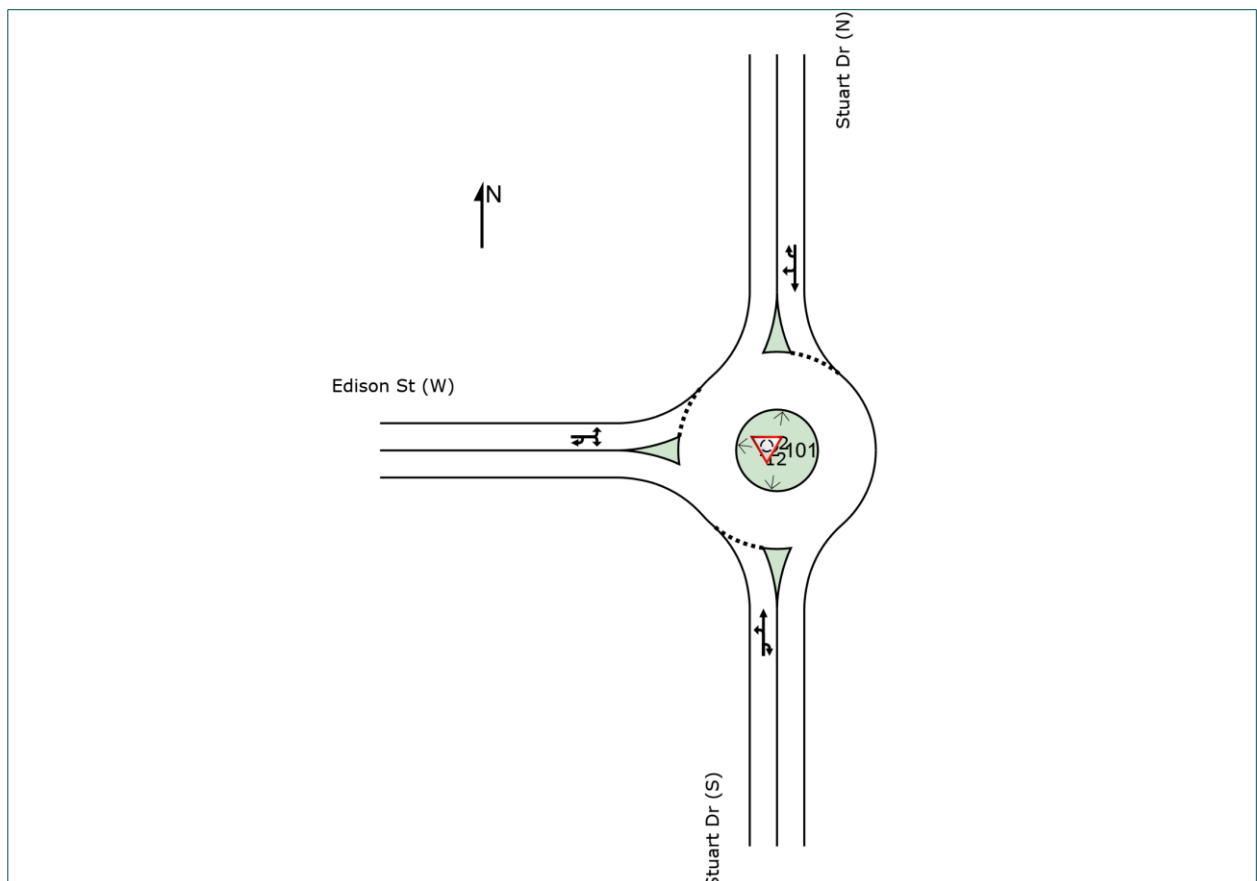
Figure 2.7.3.2   Existing Stuart Drive / Edison Street SIDRA layout

The results of the SIDRA analysis indicate that the existing Stuart Drive / Edison Street intersection operates within acceptable key performance indicators for a roundabout.

SIDRA outputs for the assessment are provided in **Appendix D**.

Table 2.7.3   2024 SIDRA results – Stuart Drive / Edison Street

Approach	Degree of saturation	Average delay (s)	Level of service	95% back of queue (m)
2024 AM				
Stuart Drive (S)	0.589	6.6	A	40.6
Stuart Drive (N)	0.433	6.5	A	29.5
Edison Street (W)	0.372	11.4	B	17.2
2024 PM				
Stuart Drive (S)	0.644	7.5	A	43.3
Stuart Drive (N)	0.544	6.6	A	42.3
Edison Street (W)	0.244	10.9	B	11.1
2024 Weekend				
Stuart Drive (S)	0.445	6.4	A	23.5
Stuart Drive (N)	0.429	6.3	A	26.8
Edison Street (W)	0.224	8.8	A	9.2

3. Traffic impact assessment

3.1 Traffic generation

A review of Council's *Townsville City Plan (Version 2022/02)* has not identified traffic generation rates for the existing and proposed land uses. In lieu of Council specific traffic generation rates, traffic generation rates for the development have been based on the rates provided in the RTA's *Guide to Traffic Generating Developments (GTGD)*, the updated RMS *Guide to Traffic Generating Developments – Technical Direction (TDT 2013/04)*, the Institute of Transportation Engineers (ITE) *Traffic Generation Data Trip Generation Manual (11th Edition)*, TMR's *Road Planning and Design Manual* and TMR's *Traffic Generation Data - 2006 – 2018*.

For the food and drink and function facility land uses within Precinct 3, appropriate trip generation 'discounts' have been applied as a percentage of external trips given that the development concept is a multi-purpose facility where uses will be primarily used by on site hotel guests or comprise multi-purpose trips. No discounts have been applied to the short-term accommodation component. A summary of the expected development traffic generation is shown in **Table 3.1**.

Table 3.1   Development traffic generation

ID	Land Use	Quantity		Peak Period	Traffic Generation Rate		External trip %	Traffic Generation Volume
Precinct 1								
1	Food and drink outlet (fast food)	560	m² GFA	AM	30	trips per 100m² GFA	100%	168
				PM	38	trips per 100m² GFA	100%	213
				Weekend	40	trips per 100m² GFA	100%	224
				Daily	370	trips per 100m² GFA	100%	2,072
2	Shop / food and drink outlet (restaurant / café)	1,590	m² GFA	AM	5	trips per 100m² GFA	100%	80
				PM	5	trips per 100m² GFA	100%	80
				Weekend	5	trips per 100m² GFA	100%	80
				Daily	60	trips per 100m² GFA	100%	954
3	Hotel (Tavern)	1,215	m² GFA	AM	4.1	trips per 100m² GFA[1]	100%	50
				PM	8.2	trips per 100m² GFA	100%	100
				Weekend	8.4	trips per 100m² GFA	100%	103
				Daily	69	trips per 100m² GFA	100%	839
					Sub -total AM peak hour trips			298
					Sub -total PM peak hour trips			393
					Sub -total Weekend peak hour trips			407
					Sub -total Daily trips			3,865
Precinct 2								
4	Multiple dwelling	230	Units	AM	0.53	trips per unit	100%	122
				PM	0.32	trips per unit	100%	74
				Weekend	0.53	trips per unit	100%	122
				Daily	4.6	trips per unit	100%	1,058
				Or				
4	Showroom	5,500	m² GFA	AM	0.2	trips per 100m² GFA	100%	11
				PM	2.7	trips per 100m² GFA	100%	149
				Weekend	3.9	trips per 100m² GFA	100%	215
				Daily	19	trips per 100m² GFA	100%	1,045
					Sub -total AM peak hour trips			122
					Sub -total PM peak hour trips			149
					Sub -total Weekend peak hour trips			215
					Sub -total Daily trips			1,058

Table 3.1   Development traffic generation (continued)

ID	Land Use	Quantity		Peak Period	Traffic Generation Rate		External trip %	Traffic Generation Volume
Precinct 3								
5	Outdoor sport and recreation (Waterpark)	371	Parking spaces	AM	0.28	trips per parking space	100%	104
				PM	0.28	trips per parking space	100%	104
				Weekend	0.28	trips per parking space	100%	104
				Daily	2.8	trips per parking space	100%	1,039
6	Hotel	209	Rooms	AM	0.25	trips per bed	100%	53
				PM	0.24	trips per bed	100%	51
				Weekend	0.25	trips per bed	100%	53
				Daily	2.7	trips per bed	100%	565
7	Food and drink outlet (restaurant / café)	204	m^2 GFA	AM	5	trips per 100m^2 GFA	50%	6
				PM	5	trips per 100m^2 GFA	50%	6
				Weekend	5	trips per 100m^2 GFA	50%	6
				Daily	60	trips per 100m^2 GFA	50%	62
8	Function facility	1,523	m^2 GFA	AM	10	trips per 100m^2 GFA	50%	77
				PM	10	trips per 100m^2 GFA	50%	77
				Weekend	10	trips per 100m^2 GFA	50%	77
				Daily	100	trips per 100m^2 GFA	50%	762
					Sub-total AM peak hour trips			240
					Sub-total PM peak hour trips			238
					Sub-total Weekend peak hour trips			240
					Sub-total Daily trips			2,428
					Total AM peak hour trips			660
					Total PM peak hour trips			780
					Total Weekend peak hour trips			862
					Total Daily hour trips			7,351

3.2   Trip distribution

3.2.1   In / Out directional splits

TMR's Guide to Traffic Impact Assessment (GTIA) stipulates[4]:

"*Peak hour development-generated traffic volumes need to be split into entry (IN) and exit (OUT) volumes for assignment of this traffic to the access intersection and to the surrounding road network.*"

Typical In / Out traffic splits were utilised for the residential components (i.e. 30% In / 70% Out in the AM peak hour, and 60% In / 40% Out during the PM peak hour). For the weekend peak hour, traffic splits of 40% In / 60% Out have been adopted. It is expected that short-term accommodation guests will behave in a similar manner.

For the commercial land uses, it is expected that regular ingress / egress trips would occur throughout the day, rather than concentrated in the peak hours. Therefore, for commercial activities, traffic splits of 50% 'In' and 50% 'Out' have been adopted for the peak hour trips.

For the outdoor sport and recreation (waterpark) land use, it is expected that most visitors will arrive in the morning and leave in the afternoon, therefore traffic splits of 90% In / 10% Out in the AM peak hour and 10% In / 90% Out in the PM peak hour have been adopted. For the weekend peak, being around midday, it is expected that visitor arrival / departure will vary when compared to weekday travel patterns, therefore traffic splits of 70% 'In' and 30% 'Out' have been adopted.

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4 Department of Transport and Main Roads (December 2018), *Guide to Traffic Impact Assessment (Version no. 1.2)* s.8.2.2, p.31.

For Precinct 2 which will either comprise dwelling unit or showroom land uses, the land use with the highest traffic generation has been adopted for this assessment. Based on the traffic generation calculations shown in **Table 3.1**, the dwelling unit land use has the higher traffic generation in the AM peak hour, however in the PM peak hour and weekend peak hour, the showroom land use has the higher traffic generation.

The peak hour traffic splits of the generated vehicle trips are provided in **Table 3.2.1**.

Table 3.2.1   Development traffic splits

ID	Land Use	Traffic Generation	Peak Period	IN%	IN Trips	OUT %	OUT TRIPS
Precinct 1							
1	Food and drink (fast food)	168	AM Peak	50%	84	50%	84
		213	PM Peak	50%	106.5	50%	106.5
		224	Weekend Peak	50%	112	50%	112
2	Shop / food and drink outlet (restaurant / café)	80	AM Peak	50%	40	50%	40
		80	PM Peak	50%	40	50%	40
		80	Weekend Peak	50%	40	50%	40
3	Hotel (Tavern)	50	AM Peak	50%	25	50%	25
		100	PM Peak	50%	50	50%	50
		103	Weekend Peak	50%	51.5	50%	51.5
		Sub-total AM peak hour In trips			149	Sub-total AM peak hour Out trips	149
		Sub-total PM peak hour In trips			196.5	Sub-total PM peak hour Out trips	196.5
		Sub-total Weekend peak hour In trips			203.5	Sub-total Weekend peak hour Out trips	203.5
Precinct 2							
4 & 5	Dwelling unit or showroom	122	AM Peak	30%	37	70%	85
		149	PM Peak	50%	74.5	50%	74.5
		215	Weekend Peak	50%	107.5	50%	107.5
Precinct 3							
6	Outdoor sport and recreation (Waterpark)	104	AM Peak	90%	94	10%	10
		104	PM Peak	10%	10	90%	94
		104	Weekend Peak	70%	73	30%	31
7	Hotel	53	AM Peak	30%	16	70%	37
		51	PM Peak	60%	31	40%	20
		53	Weekend Peak	40%	21	60%	32
8	Food and drink outlet (restaurant / café)	6	AM Peak	50%	3	50%	3
		6	PM Peak	50%	3	50%	3
		6	Weekend Peak	50%	3	50%	3
9	Function facility	77	AM Peak	50%	38.5	50%	38.5
		77	PM Peak	50%	38.5	50%	38.5
		77	Weekend Peak	50%	38.5	50%	38.5
		Sub-total AM peak hour In trips			151.5	Sub-total AM peak hour Out trips	88.5
		Sub-total PM peak hour In trips			82.5	Sub-total PM peak hour Out trips	155.5
		Sub-total Weekend peak hour In trips			135.5	Sub-total Weekend peak hour Out trips	104.5
		Total AM peak IN trips			338	Total AM peak OUT trips	322
		Total PM peak IN trips			354	Total PM peak OUT trips	426
		Total Weekend peak IN trips			446	Total Weekend peak OUT trips	416

3.3   Traffic distribution

The development traffic distribution to / from the site on the surrounding road network has been calculated based on the development's location to key activity generators (town centres, schools, shopping centres, quarries etc.) and existing intersection directional splits from observed background traffic volumes at the key intersections identified in **Section 2.1.2**.

Under the existing scenario, the road extension of Lakeside Drive from Racecourse Road to Stuart Drive, as mentioned in **Section 1.2**, does not exist, therefore traffic distribution only considers the Racecourse Road signalised intersections. The anticipated development traffic distribution percentages are shown in **Figure 3.3.1**, with the resultant traffic volumes shown in **Figure 3.3.2**.
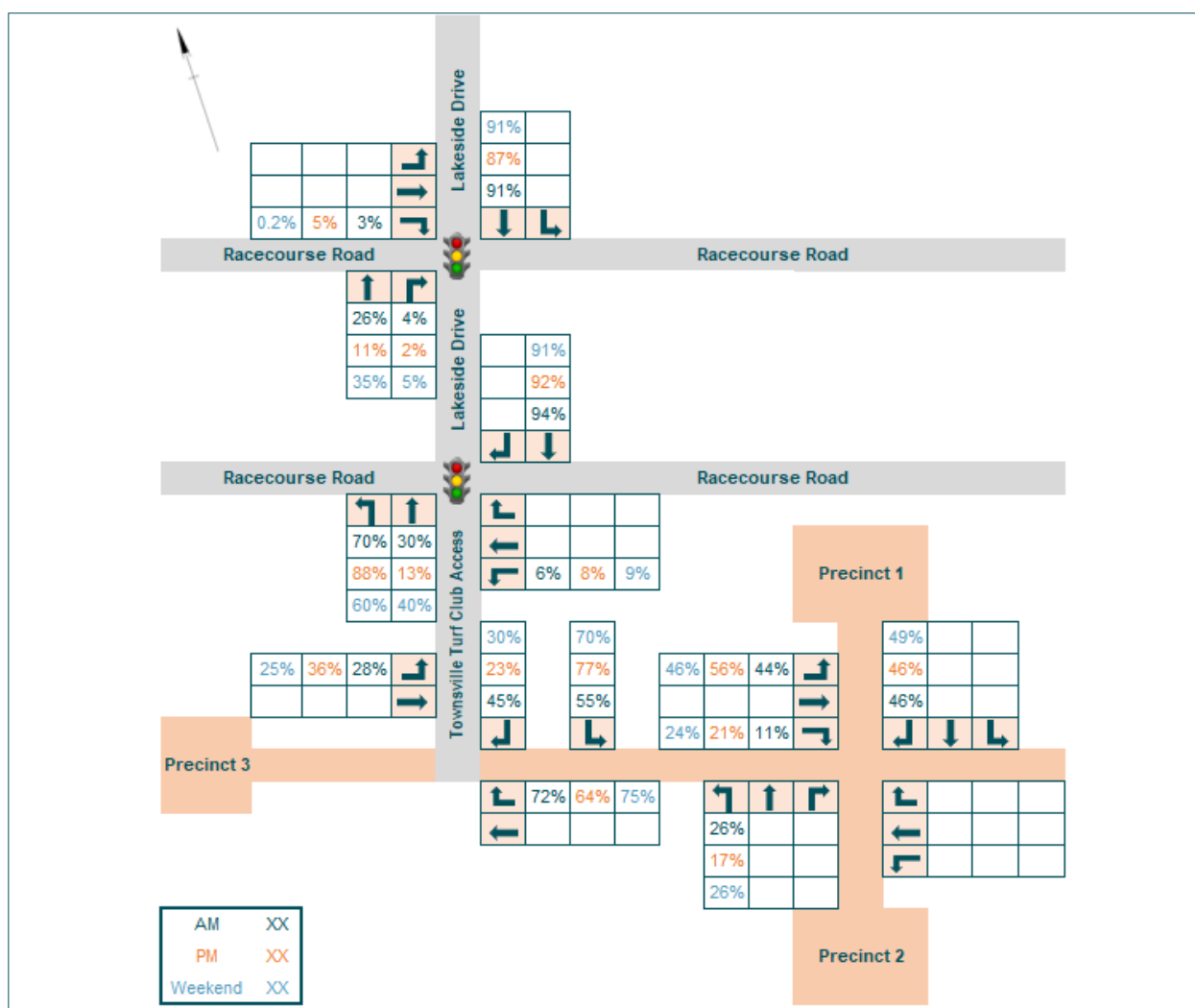
Figure 3.3.1   Development distributions (%)
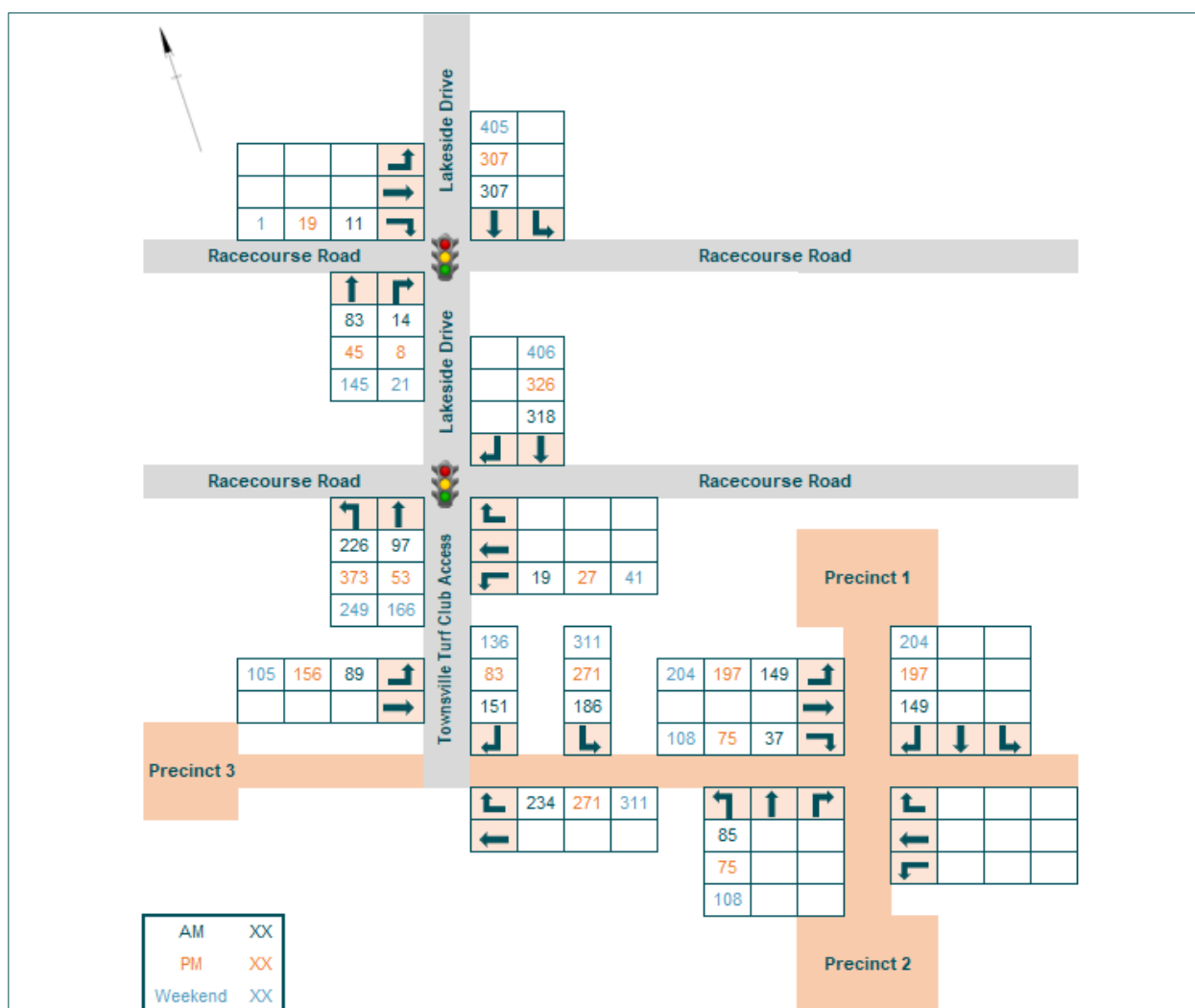
Figure 3.3.2   Development distributions (vehicles)

3.4   Assessment of development traffic impacts

3.4.1   Assumptions

The following assumptions have been relied upon for the purposes of undertaking this traffic assessment:

- the proposed development will not be staged, and the ultimate development will commence operation by 2029, and

- 2% compounding growth rate applied to traffic volumes on Lakeside Drive and Racecourse Road.

Based on these assumptions, the following scenarios have been analysed for the potentially affected intersections:

1. 2029 – Base case (existing with no development)

2. 2029 – Development case (existing with development)

3.5   Base case traffic volumes

Base case traffic volumes have been determined for the year of opening (2029) by applying the compounding annual growth rates (CAGR) determined in **Section 3.4.1**, to the background traffic volumes, the results of which are presented in **Figure 3.5**.

Figure 3.5   2029 – Base case traffic volumes (existing with no development)

3.6   Development traffic volumes

Development case traffic volumes have been calculated by adding development generated traffic to the existing (or background traffic) for the year of opening (2029), the results of which are presented in **Figure 3.6**.
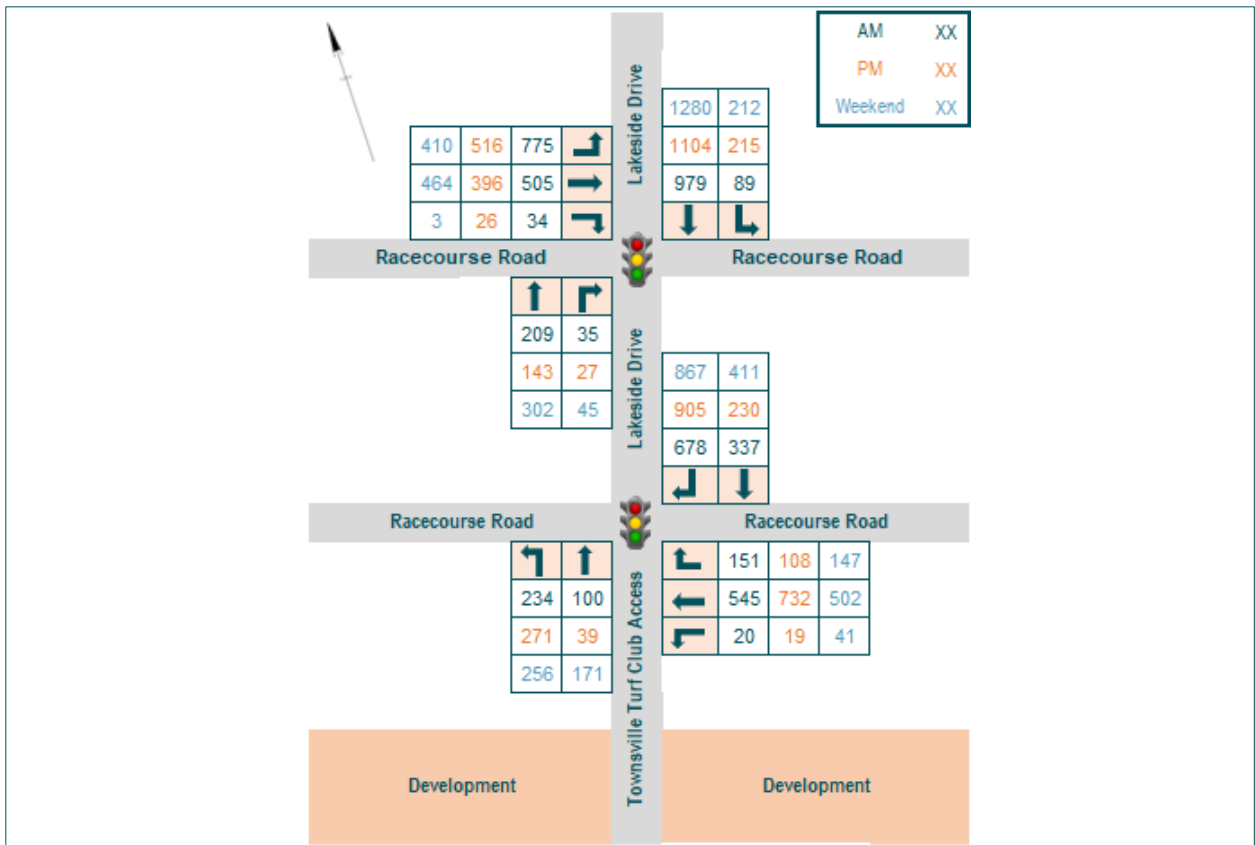
Figure 3.6   2029 – Development case traffic volumes (existing with development)

4. Intersection analysis

4.1 Study area

The extent of the study area adopted for this intersection analysis has been based on *Section 6.4* of TMR's *GTIA*, in particular any road link or intersection movements when the development generated traffic exceeds the base traffic by 5%.

Based on the above, the extent of the study area adopted for this assessment is shown in **Figure 4.1**.

Using the design traffic volumes determined for each scenario, intersection analysis using SIDRA 9.1 intersection analysis software was undertaken for the Racecourse Road / Lakeside Drive signalised intersection and Racecourse Road / Lakeside Drive / Townsville Turf Club Access signalised intersection for each of the scenarios outlined in **Section 3.4.1**.
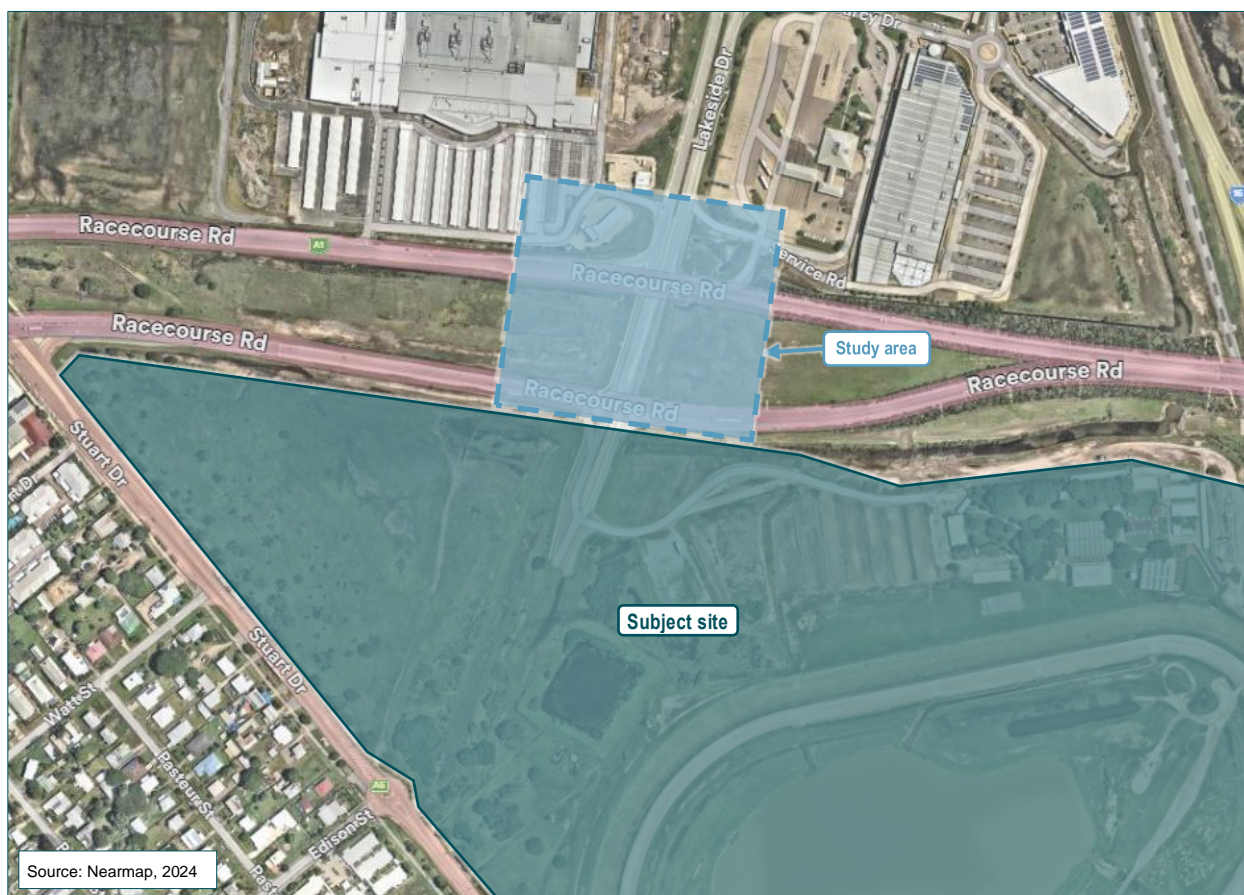
Figure 4.1   Study area

4.2 Racecourse Road / Lakeside Drive

A summary of the key performance indicators as determined by the SIDRA analysis for the year of opening (2029) base case and development case scenarios is presented in **Table 4.2**. The assessment considers the ultimate development being operational by 2029.

The results of the SIDRA analysis demonstrate that the Racecourse Road / Lakeside Drive signalised intersection exceeds acceptable key performance criteria in the year of opening (2029) development scenario in terms of degree of saturation, average delay and 95th percentile back of queue.

SIDRA outputs are included in **Appendix D** and **Appendix E**.

Table 4.2   Lakeside Drive SIDRA results – year of opening (2029) – Base vs. Development

Approach	Max degree of saturation (DOS)		Average delay (s)		Average level of service (LOS)		Max 95% back of queue (m)	
2029 AM peak hour	Base	Dev	Base	Dev	Base	Dev	Base	Dev
Lakeside Drive (S)	0.291	0.450	44.2	44.2	D	D	27.3	28.7
Lakeside Drive (N)	0.685	1.018	43.4	105.8	D	F	136.3	332.6
Racecourse Road (W)	0.637	0.647	9.7	10.0	A	A	94.8	106.8
2029 PM peak hour	Base	Dev	Base	Dev	Base	Dev	Base	Dev
Lakeside Drive (S)	0.300	0.391	32.8	32.8	C	C	22.7	23.0
Lakeside Drive (N)	0.559	0.848	27.6	37.4	C	D	146.7	288.4
Racecourse Road (W)	0.480	0.485	13.7	14.2	B	B	81.6	82.6
2029 Weekend peak hour	Base	Dev	Base	Dev	Base	Dev	Base	Dev
Lakeside Drive (S)	0.290	0.528	29.5	29.5	C	C	30.9	33.0
Lakeside Drive (N)	0.496	0.771	23.3	31.9	C	C	128.5	242.8
Racecourse Road (W)	0.419	0.434	17.2	17.9	B	B	84.1	87.7

4.3   Racecourse Road / Lakeside Drive / Townsville Turf Club Access

A summary of the key performance indicators as determined by the SIDRA analysis for the year of opening (2029) base case and development case scenarios is presented in **Table 4.3**. The assessment considers the ultimate development being operational by 2029.

The results of the SIDRA analysis demonstrate that the Racecourse Road / Lakeside Drive / Townsville Turf Club Access signalised intersection performs within acceptable key performance criteria for the year of opening (2029) base case and development case scenarios.

SIDRA outputs are included in **Appendix D** and **Appendix E**.

Table 4.3   Turf Club Access SIDRA results – year of opening (2029) – Base vs. Development

Approach	Max degree of saturation (DOS)		Average delay (s)		Average level of service (LOS)		Max 95% back of queue (m)	
2029 AM peak hour	Base	Dev	Base	Dev	Base	Dev	Base	Dev
Townsville Turf Club Access (S)	0.019	0.402	22.4	24.0	C	C	1.0	32.8
Racecourse Road (E)	0.482	0.482	34.7	34.7	C	C	104.5	104.5
Lakeside Drive (N)	0.482	0.672	5.7	5.7	A	A	8.2	19.7
2029 PM peak hour	Base	Dev	Base	Dev	Base	Dev	Base	Dev
Townsville Turf Club Access (S)	0.042	0.857	16.3	49.2	B	D	2.5	186.3
Racecourse Road (E)	0.621	0.621	36.1	36.1	D	D	141.0	141.0
Lakeside Drive (N)	0.618	0.825	7.4	7.4	A	A	33.8	87.5
2029 Weekend peak hour	Base	Dev	Base	Dev	Base	Dev	Base	Dev
Townsville Turf Club Access (S)	0.015	0.502	26.4	29.3	C	C	0.9	38.7
Racecourse Road (E)	0.502	0.502	40.2	40.2	D	D	93.6	93.6
Lakeside Drive (N)	0.513	0.740	5.6	5.6	A	A	7.5	20.2

4.4 Intersection delay

An assessment of aggregate-intersection-delay impact 'with development traffic' has been undertaken for the Racecourse Road / Lakeside Drive signalised intersection and Racecourse Road / Lakeside Drive / Townsville Turf Club Access signalised intersection in accordance with *Section 11.3.1* of TMR's *GTIA,* the results of which are shown in **Table 4.4**.

Table 4.4   Aggregate-intersection-delay-impact 'with development'

2029 Background delay impact (veh-min)			2029 Design delay impact (veh-min)			Net change (%)		
AM	PM	Weekend	AM	PM	Weekend	AM	PM	Weekend
1412.6	1493.7	1350.5	2195.4	1686.7	1500.2	55.4%	12.9%	11.1%

The assessment indicates that the aggregate-intersection-delay impact 'with development' is greater than 5%, and therefore mitigation measures are triggered by the aggregate-intersection-delay assessment.

4.5 Road safety assessment

A road safety assessment of the existing surrounding road network characteristics has been undertaken in accordance with *Section 9* of TMR's *GTIA* to determine whether development related traffic adversely impacts the safety and efficiency of the existing State-controlled road network, the results of which are shown in **Table 4.5**.

Table 4.5   Road safety assessment

Risk Item	Without development			With development			Mitigation measures / comments	With development and mitigation		
	Likelihood	Consequence	Risk Score	Likelihood	Consequence	Risk Score		Likelihood	Consequence	Risk Score
Increase in traffic at the Racecourse Road / Lakeside Drive signalised intersection. Potential for rear end, vehicle adjacent approach and vehicle opposite approach related crashes.	1	5	M	3	5	H	Existing road safety issues are present at the intersection with a crash cluster shown for vehicle adjacent approach: through – through related crashes. Additionally, the results of the SIDRA analysis for the 2029 – Development case (existing with development) scenario show capacity issues. Based on the above, it is proposed to: - extend Lakeside Drive, connecting Racecourse Road to Stuart Drive to reroute some vehicle movements away from Racecourse Road, and - apply a common control group (CCG) phasing sequence to the existing Racecourse Road eastbound / Lakeside Drive and Racecourse Road westbound / Lakeside Drive / Townsville Turf Club Access signalised intersections and modify the phasing sequence and timing to cater for existing and development generated traffic.	2	5	M
Increase in traffic at the Racecourse Road / Lakeside Drive / Townsville Turf Club Access intersection. Potential for rear end, vehicle adjacent approach and vehicle opposite approach related crashes.	1	5	M	2	5	M	No action. - review of previous 5-year crash data demonstrates no crash trends at the Racecourse Road / Lakeside Drive / Townsville Turf Club Access intersection, and - SIDRA analysis confirms no capacity issues with the introduction of development generated traffic volumes.	N/A		

5. Proposed infrastructure upgrades

5.1 Mitigation measures

As outlined in **Section 4.4**, an assessment of aggregate-intersection delay impact 'with development' has been undertaken for the Racecourse Road / Lakeside Drive signalised intersection and Racecourse Road / Lakeside Drive / Townsville Turf Club Access signalised intersection in accordance with *Section 11.3.1* of *GTIA*, which concludes that mitigation measures are triggered as a result of the development's aggregate-intersection-delay impact.

In addition, **Section 4.5** concludes that mitigation measures at the Racecourse Road / Lakeside Drive signalised intersection are triggered to address road safety issues.

To ensure the safety and efficiency of the State-controlled road network is maintained post development, the following infrastructure upgrades are proposed:

- apply a common control group (CCG) phasing sequence to the existing Racecourse Road / Lakeside Drive and Racecourse Road / Lakeside Drive / Townsville Turf Club Access signalised intersections and modify the phasing sequence and timing to cater for existing and development generated traffic, as well as a new road connection to Stuart Drive

- provide a new road connection between Racecourse Road and Stuart Drive connecting to the Stuart Drive / Edison Street roundabout in the south and Racecourse Road / Lakeside Drive signalised intersection in the north. The road connection will be to a two-lane, two-way road configuration in accordance with Council *Standard Drawing SD-002 – Typical Cross Sections, Major Collector Roads* and direct property access will be prohibited

- provide a new four-leg single lane roundabout at the midpoint between Racecourse Road and Stuart Drive. The eastbound and westbound approaches to this roundabout will facilitate access to the proposed development, and

- upgrade the existing Stuart Drive / Edison Street three-leg roundabout to a four-leg double lane roundabout in the north-south direction. A four-lane, two-way carriageway on both Stuart Drive approaches will be required for 130m on the approach and 170m on the departure side of the roundabout.

All transport infrastructure upgrades will be required prior to commencement of the development (year of opening (2029)) and will be designed in accordance with the TMR's *Road Planning and Design Manual, 2nd Edition* and Council's *Townsville City Plan (Version 2022/02)*.

Civil engineering drawings for the site are provided in **Appendix F**.

5.2 Revised traffic distribution

As a result of providing a new road connection between Racecourse Road and Stuart Drive, the traffic distribution of the surrounding road network will change. The following sections detail the changes to existing background traffic and development generated traffic as a result of Lakeside Drive being extended from Racecourse Road to Stuart Drive.

5.2.1 Revised background traffic distribution

Once Lakeside Drive is extended from Racecourse Road to Stuart Drive, it is expected that a proportion of existing traffic volumes at the key intersections identified in **Section 2.1.2** will reroute to the new 'Lakeside Drive extended' to travel between Racecourse Road and Stuart Drive. The following assumptions shown in **Table 5.2.1** have been made with revised 2024 background traffic volumes shown in **Figure 5.2.1**.

Table 5.2.1   Background traffic redistribution assumptions

Intersection	Existing configuration	Road corridor changes
Racecourse Road / Lakeside Drive	Signalised intersection	10% of eastbound through and left turning traffic, added to northbound through and right turn traffic on Lakeside Drive extended
Racecourse Road / Lakeside Drive / Townsville Turf Club Access	Signalised intersection	Increase in northbound traffic at the Racecourse Road / Lakeside Drive intersection added to northbound through traffic
		10% of southbound right turn traffic added to southbound through traffic
		10% of westbound through traffic added to westbound left turn traffic
Stuart Drive / Edison Street	3-leg single lane roundabout	Increase in northbound traffic at the Racecourse Road / Lakeside Drive intersection added to northbound movements into Lakeside Drive extended
		Increase in southbound traffic at the Racecourse Road / Lakeside Drive intersection added to southbound movements out of Lakeside Drive extended
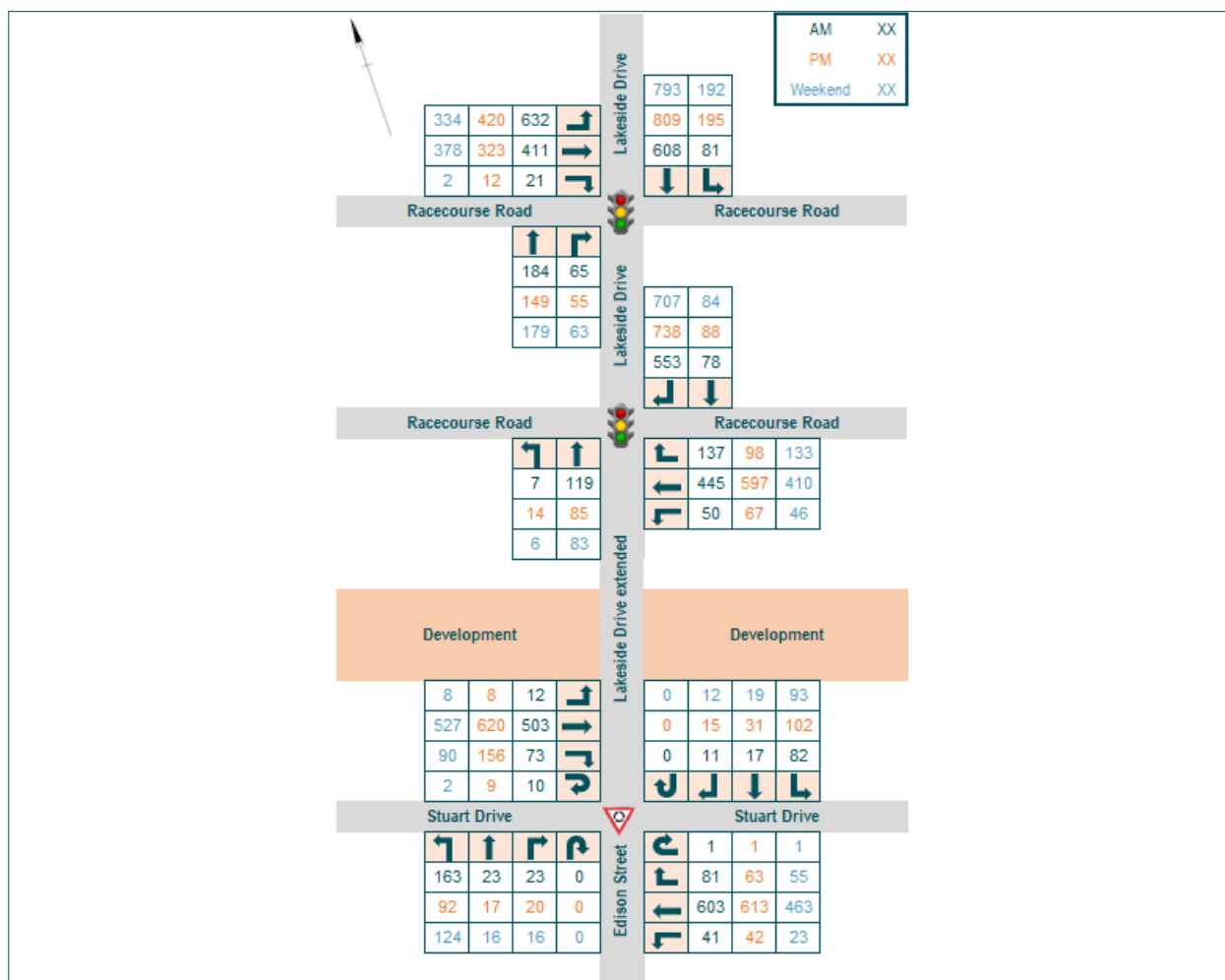
Figure 5.2.1   2024 Redistribution traffic volumes

5.2.2   Revised development traffic distribution

As a result of providing a new road connection from Racecourse Road to Stuart Street, the traffic distribution for the proposed development will change. The modified development traffic distribution percentages are shown in **Figure 5.2.2.1**, with the resultant traffic volumes shown in **Figure 5.2.2.2**.
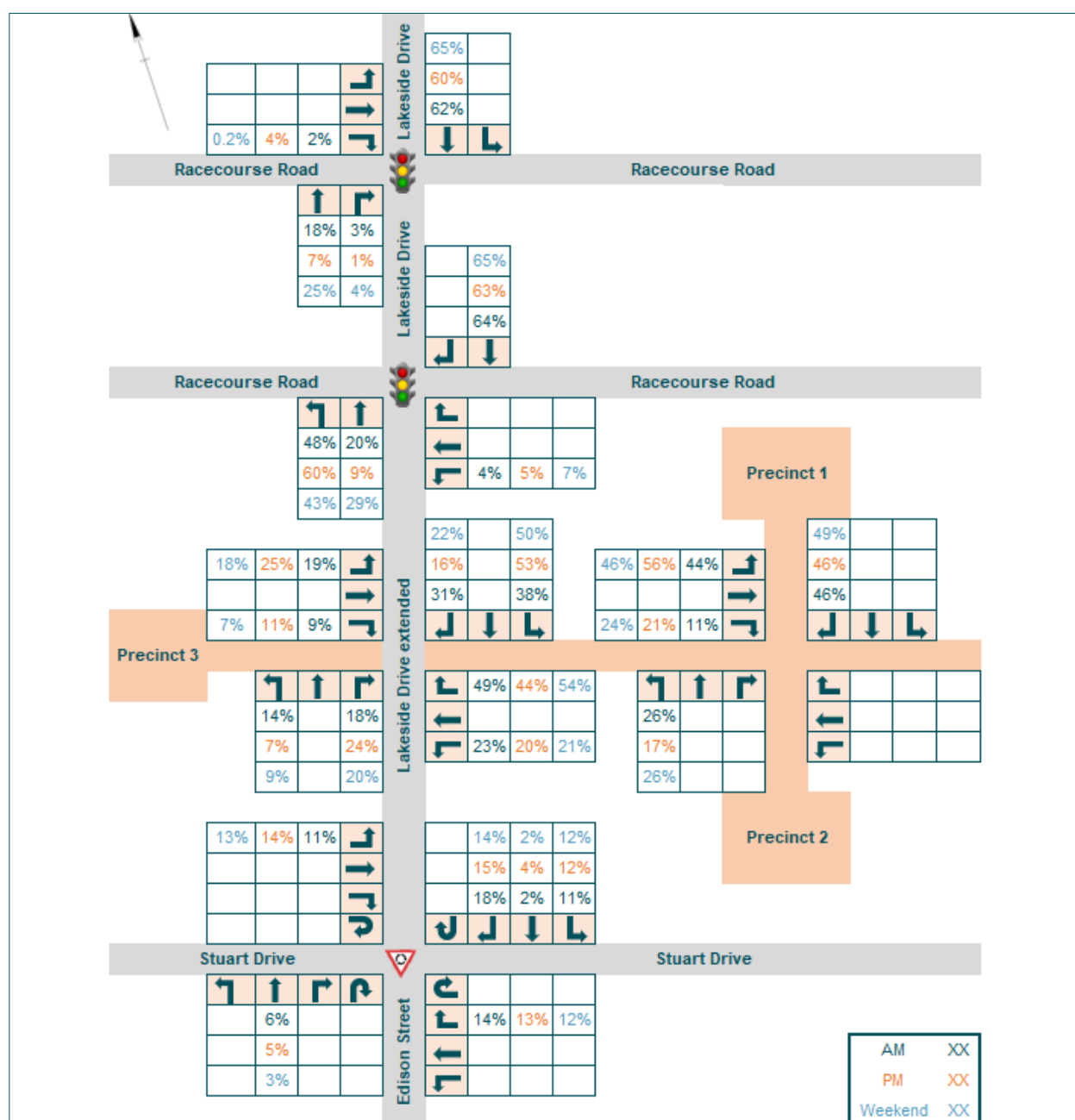
Figure 5.2.2.1   Post upgrades development distributions (%)
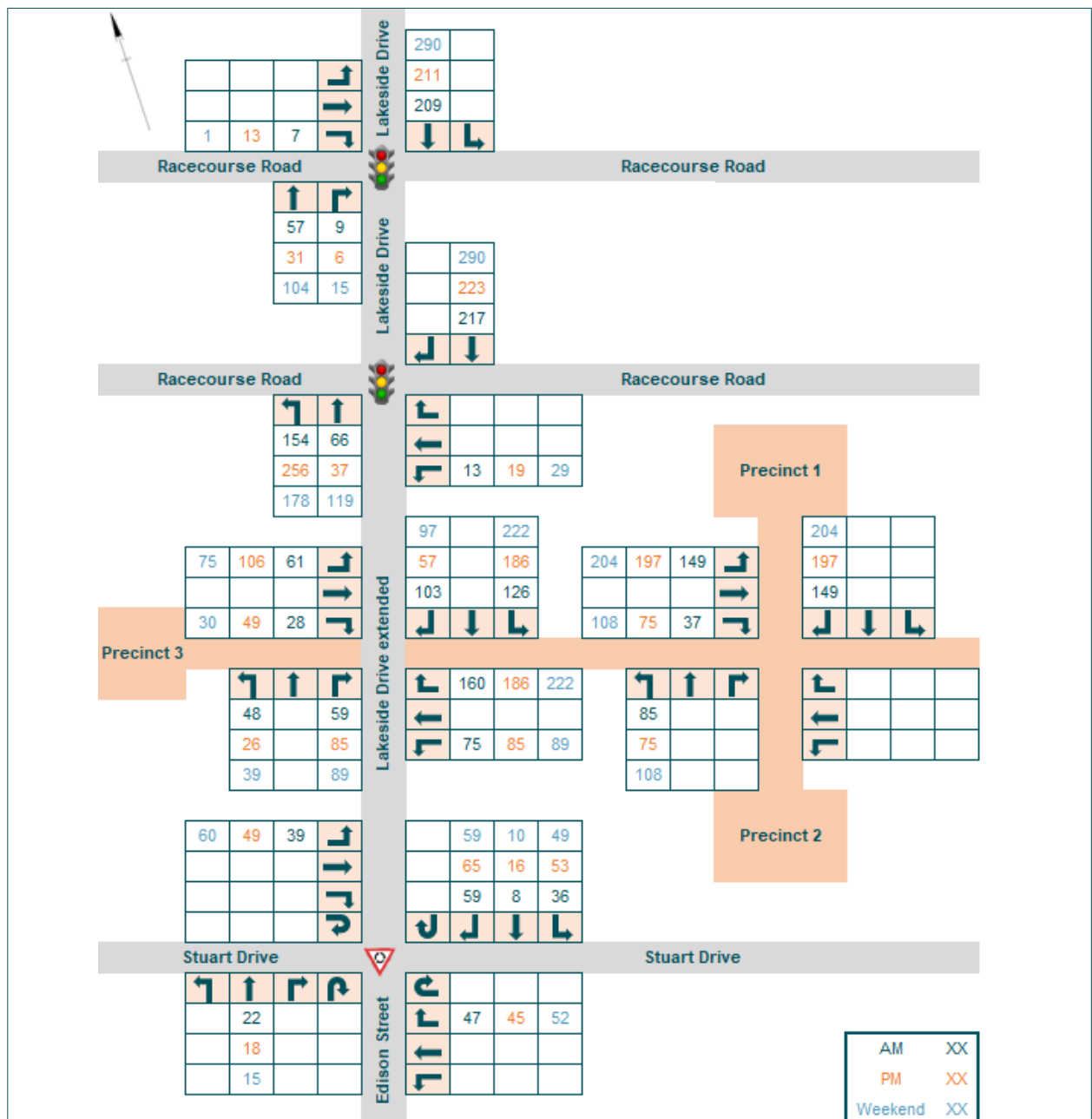
Figure 5.2.2.2   Post upgrades development distributions (vehicles)

5.3   Assessment of traffic impacts

5.3.1   Assumptions

The following assumptions have been relied upon for the purposes of undertaking this traffic assessment:

- the development will not be staged with the ultimate development expected to commence operation by 2029

- all transport infrastructure will be operational prior to commencement

- the 10-year design horizon is 2039

- 2% compounding growth rate applied to traffic volumes on Lakeside Drive, Racecourse Road and the future Lakeside Drive extension

- 3% compounding growth rate applied to traffic volumes on Stuart Drive, and

- 1% compounding growth rate applied to traffic volumes on Edison Street.

Based on these assumptions, the following scenarios have been analysed for the key intersections identified in **Section 2.1.2**:

1. 2029 – Design case (redistributed traffic with development)
2. 2039 – Design case (redistributed traffic with development).

5.4   Design traffic volumes

Design case traffic volumes have been calculated by adding development generated traffic to the redistributed traffic volumes for the year of opening (2029) (**Figure 5.4.1**) and the 10-year design horizon (2039) (**Figure 5.4.2**).
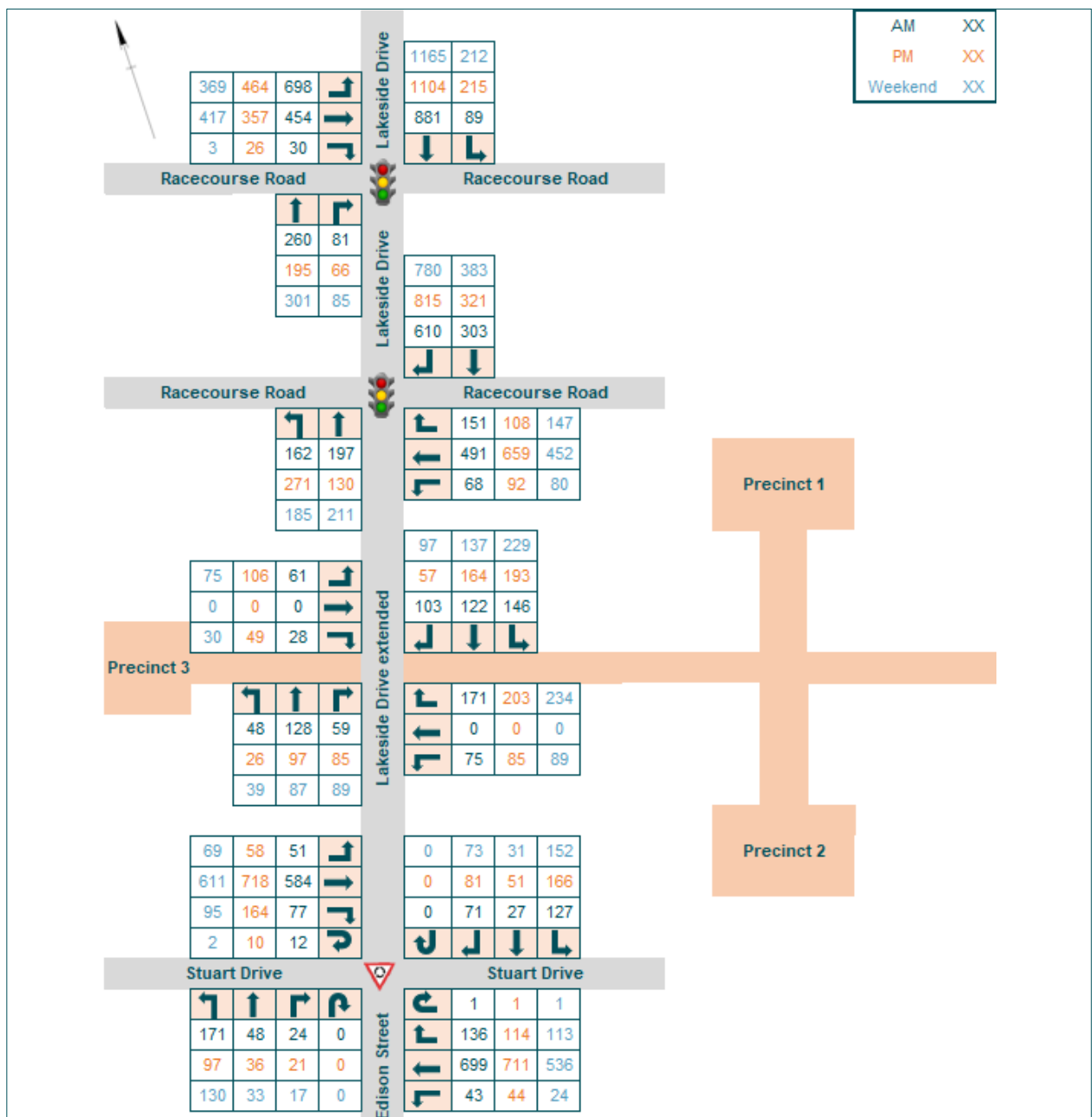
Figure 5.4.1   2029 – Design case traffic volumes (redistributed traffic with development)
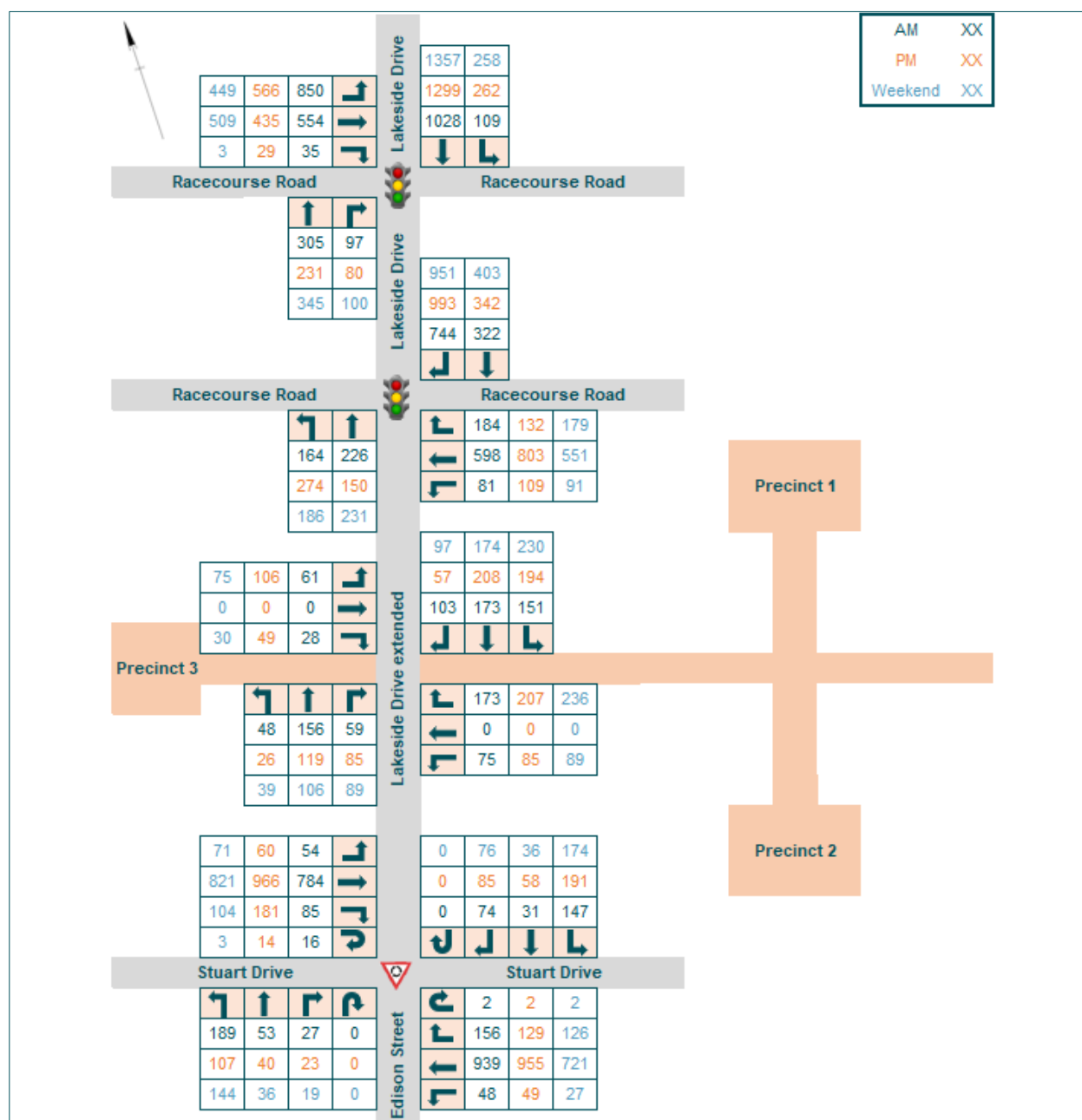
Figure 5.4.2   2039 - Design case traffic volumes (redistributed traffic with development)

5.5 Design case intersection analysis

Intersection analysis using SIDRA 9.1 intersection analysis software was undertaken for the scenarios mentioned in **Section 5.3.1** for the proposed transport infrastructure upgrades which includes the following intersections:

1. Racecourse Road / Lakeside Drive / Lakeside Drive extended signalised intersections
2. Lakeside Drive extended / Development Access 4-leg single lane roundabout
3. Stuart Drive / Lakeside Drive extended / Edison Street 4-leg double lane roundabout.

5.5.1 Racecourse Road / Lakeside Drive / Lakeside Drive extended

As part of the proposed transport infrastructure upgrades a CCG phasing sequence will be applied to the Racecourse Road / Lakeside Drive / Lakeside Drive extended signalised intersections with the phasing sequence and timing designed to cater for increased traffic movements in and out of the proposed development via Lakeside Drive extended. Maintaining a cycle time of 120 seconds, the proposed CCG phasing sequence is shown in **Figure 5.5.1**.

Figure 5.5.1   Proposed Racecourse Road / Lakeside Drive / Lakeside Drive extended phasing

A summary of the key performance indicators as determined by the SIDRA analysis for the year of opening (2029) and 10-year design horizon (2039) design case scenarios for the proposed Racecourse Road / Lakeside Drive / Lakeside Drive extended signalised intersections are presented in **Table 5.5.1.1** and **Table 5.5.1.2** with SIDRA outputs being provided in **Appendix G**.

The results of the SIDRA analysis demonstrate that the proposed Racecourse Road / Lakeside Drive / Lakeside Drive extended signalised intersections will operate within acceptable performance criteria in the year of opening (2029) and 10-year design horizon (2039) scenarios. Vehicle queues on all intersection approaches are contained prior to the next upstream intersection and within the proposed turn pockets.

Table 5.5.1.1   Racecourse Road design case SIDRA results – year of opening (2029)

Approach	Degree of saturation	Average delay (s)	Level of service	95% back of queue (m)
Racecourse Road / Lakeside Drive				
2029 AM				
Lakeside Drive (S)	0.716	38.5	D	53.2
Lakeside Drive (N)	0.634	34.5	C	161.1
Racecourse Road (W)	0.677	13.1	B	109.1
2029 PM				
Lakeside Drive (S)	0.642	45.1	D	40.9
Lakeside Drive (N)	0.612	24.3	C	176.9
Racecourse Road (W)	0.514	17.0	B	72.0
2029 Weekend				
Lakeside Drive (S)	0.657	30.1	C	51.9
Lakeside Drive (N)	0.611	22.4	C	178.9
Racecourse Road (W)	0.561	25.5	C	94.5
Racecourse Road / Lakeside Drive / Lakeside Drive extended				
2029 AM				
Lakeside Drive extended (S)	0.552	35.8	D	44.2
Racecourse Road (E)	0.404	29.4	C	88.6
Lakeside Drive (N)	0.558	6.9	A	46.2
2029 PM				
Lakeside Drive extended (S)	0.623	29.7	C	70.3
Racecourse Road (E)	0.722	40.3	D	140.2
Lakeside Drive (N)	0.566	6.2	A	41.6
2029 Weekend				
Lakeside Drive extended (S)	0.459	33.1	C	43.9
Racecourse Road (E)	0.679	45.9	D	95.5
Lakeside Drive (N)	0.523	5.0	A	29.2

Table 5.5.1.2   Racecourse Road design case SIDRA results – 10-year design horizon (2039)

Approach	Degree of saturation	Average delay (s)	Level of service	95% back of queue (m)
Racecourse Road / Lakeside Drive				
2039 AM				
Lakeside Drive (S)	0.839	44.1	D	67.7
Lakeside Drive (N)	0.754	39.0	D	204.4
Racecourse Road (W)	0.836	16.4	B	242.9
2039 PM				
Lakeside Drive (S)	0.761	46.8	D	50.7
Lakeside Drive (N)	0.745	28.3	C	239.8
Racecourse Road (W)	0.624	17.6	B	89.8
2039 Weekend				
Lakeside Drive (S)	0.752	33.3	C	66.2
Lakeside Drive (N)	0.735	26.0	C	239.1
Racecourse Road (W)	0.681	25.9	C	116.2
Racecourse Road / Lakeside Drive / Lakeside Drive extended				
2039 AM				
Lakeside Drive extended (S)	0.634	38.7	D	51.7
Racecourse Road (E)	0.492	30.5	C	112.3
Lakeside Drive (N)	0.653	7.2	A	66.0
2039 PM				
Lakeside Drive extended (S)	0.784	46.5	D	126.0
Racecourse Road (E)	0.881	49.7	D	201.7
Lakeside Drive (N)	0.667	6.4	A	61.3
2039 Weekend				
Lakeside Drive extended (S)	0.504	35.5	D	48.5
Racecourse Road (E)	0.828	50.8	D	127.9
Lakeside Drive (N)	0.610	5.2	A	40.8

5.5.2   Lakeside Drive extended / Development Access

As part of the proposed transport infrastructure upgrades a new four-leg single lane roundabout will be provided at the midpoint between Racecourse Road and Stuart Drive. Direct property access to the new Lakeside Drive extended will not be permitted with all development traffic to flow through the eastbound and westbound approaches to this roundabout. The SIDRA layout for the proposed roundabout is shown in **Figure 5.5.2**.

A summary of the key performance indicators as determined by the SIDRA analysis for the year of opening (2029) and 10-year design horizon (2039) design case scenarios for the proposed Lakeside Drive extended / Development Access roundabout are presented in **Table 5.5.2.1** and **Table 5.5.2.2** with SIDRA outputs being provided in **Appendix G**.

The results of the SIDRA analysis demonstrate that the proposed Lakeside Drive extended / Development Access roundabout will operate within acceptable performance criteria in the year of opening (2029) and 10-year design horizon (2039) scenarios. Vehicle queues on both Lakeside Drive approaches are contained prior to Racecourse Road and Stuart Drive.
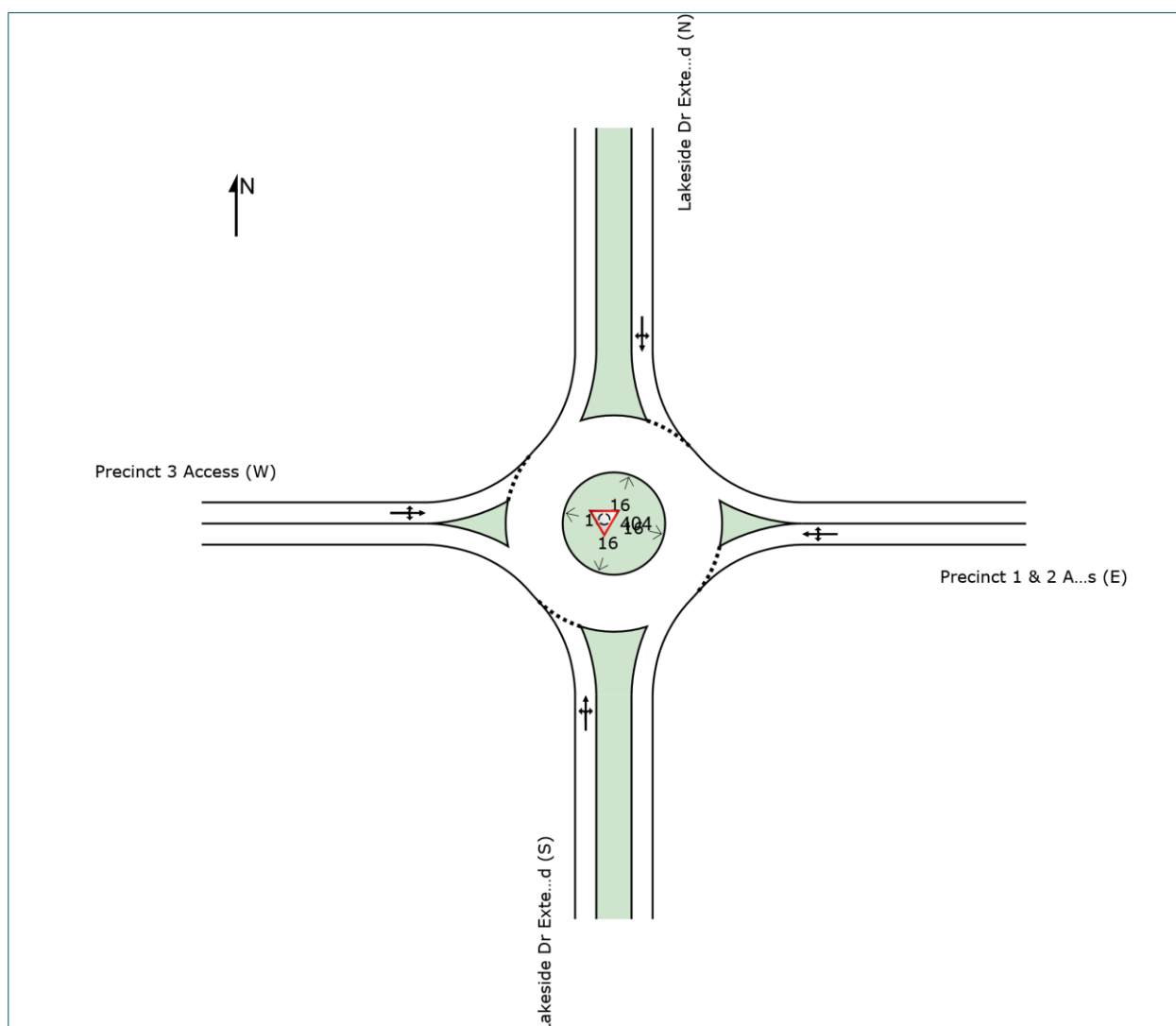
Figure 5.5.2   Proposed Lakeside Drive extended / Development Access roundabout SIDRA layout

Table 5.5.2.1   Development access design case SIDRA results – year of opening (2029)

Approach	Degree of saturation	Average delay (s)	Level of service	95% back of queue (m)
2029 AM				
Lakeside Drive extended (S)	0.247	7.5	A	11.6
Precincts 1 and 2 access (E)	0.251	9.1	A	11.8
Lakeside Drive extended (N)	0.298	6.1	A	15.7
Precinct 3 access (W)	0.099	7.8	A	4.1
2029 PM				
Lakeside Drive extended (S)	0.214	8.0	A	10.0
Precincts 1 and 2 access (E)	0.298	9.4	A	14.6
Lakeside Drive extended (N)	0.352	5.9	A	18.7
Precinct 3 access (W)	0.176	8.2	A	7.7
2029 Weekend				
Lakeside Drive extended (S)	0.239	8.5	A	11.1
Precincts 1 and 2 access (E)	0.330	9.4	A	16.4
Lakeside Drive extended (N)	0.383	6.1	A	21.5
Precinct 3 access (W)	0.126	8.1	A	5.3

Table 5.5.2.2   Development access design case SIDRA results – 10-year design horizon (2039)

Approach	Degree of saturation	Average delay (s)	Level of service	95% back of queue (m)
2029 AM				
Lakeside Drive extended (S)	0.277	7.5	A	13.5
Precincts 1 and 2 access (E)	0.257	9.4	A	12.2
Lakeside Drive extended (N)	0.319	6.0	A	17.1
Precinct 3 access (W)	0.102	8.0	A	4.3
2029 PM				
Lakeside Drive extended (S)	0.237	7.9	A	11.3
Precincts 1 and 2 access (E)	0.308	9.7	A	15.2
Lakeside Drive extended (N)	0.382	5.9	A	20.7
Precinct 3 access (W)	0.180	8.3	A	7.9
2029 Weekend				
Lakeside Drive extended (S)	0.261	8.4	A	12.4
Precincts 1 and 2 access (E)	0.341	9.7	A	17.0
Lakeside Drive extended (N)	0.406	6.1	A	23.4
Precinct 3 access (W)	0.128	8.2	A	5.4

5.5.3   Stuart Drive / Lakeside Drive extended / Edison Street

As part of the proposed transport infrastructure upgrades, the existing Stuart Drive / Edison Street three-leg roundabout will be upgraded to a four-leg double lane roundabout in the north-south direction. A four-lane, two-way carriageway on both Stuart Drive approaches will be required for 130m on the approach and 170m on the departure side of the roundabout. The SIDRA layout for the proposed roundabout is shown in **Figure 5.5.3**.

A summary of the key performance indicators as determined by the SIDRA analysis for the year of opening (2029) and 10-year design horizon (2039) design case scenarios for the proposed Stuart Drive / Lakeside Drive extended / Edison Street roundabout are presented in **Table 5.5.3.1** and **Table 5.5.3.2** with SIDRA outputs being provided in **Appendix G**.

The results of the SIDRA analysis demonstrate that the proposed Stuart Drive / Lakeside Drive extended / Edison Street roundabout will operate within acceptable performance criteria in the year of opening (2029) and 10-year design horizon (2039) scenarios. Vehicle queues on all intersection approaches are contained prior to the next upstream intersection.
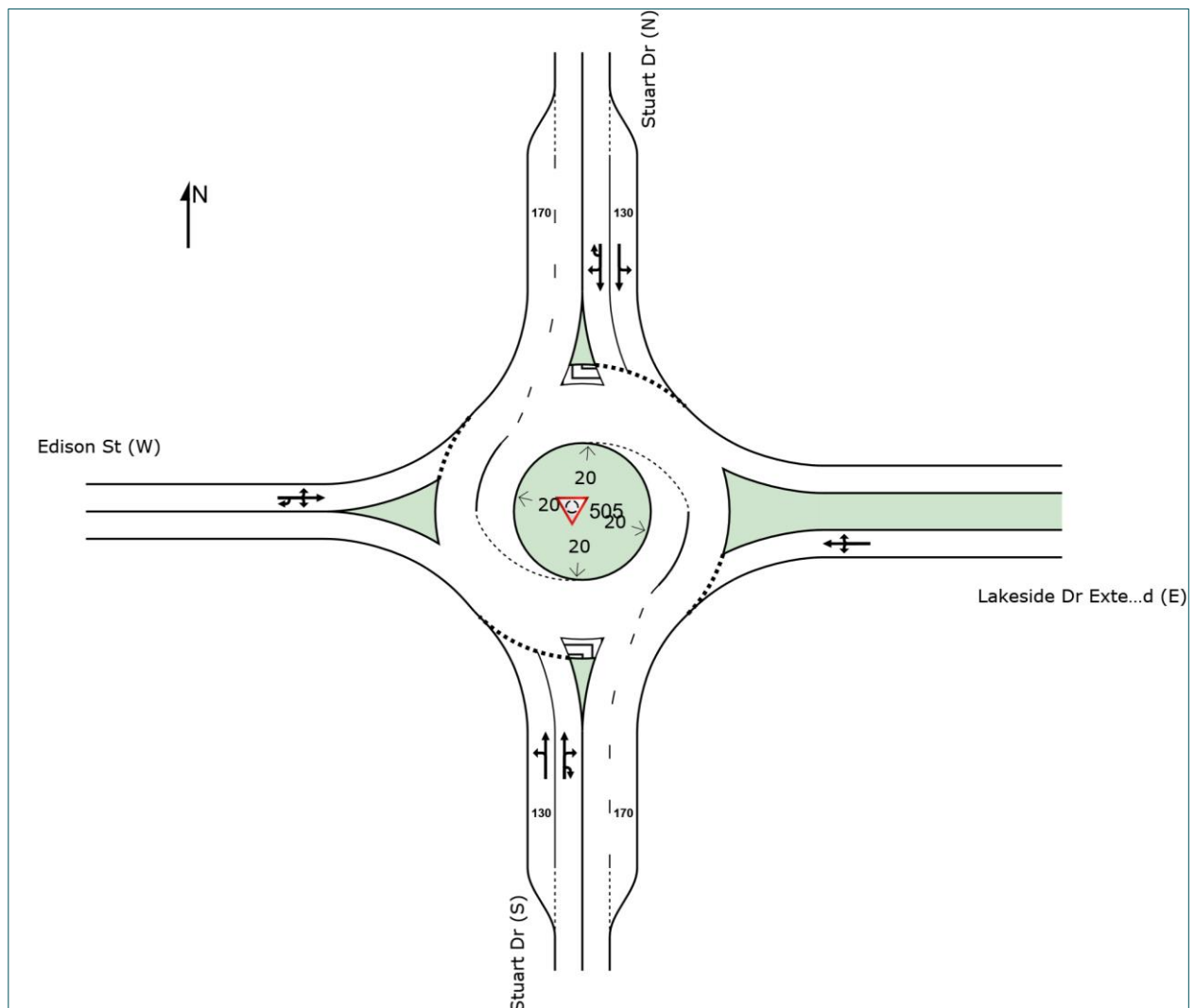
Figure 5.5.3   Stuart Drive / Lakeside Drive extended / Edison Street roundabout SIDRA layout

Table 5.5.3.1   Stuart Drive design case SIDRA results – year of opening (2029)

Approach	Degree of saturation	Average delay (s)	Level of service	95% back of queue (m)
2029 AM				
Stuart Drive (S)	0.370	8.1	A	19.0
Lakeside Drive Extended (E)	0.313	9.0	A	10.0
Stuart Drive (N)	0.315	7.7	A	15.2
Edison Street (W)	0.415	10.5	B	14.5
2029 PM				
Stuart Drive (S)	0.398	8.6	A	19.9
Lakeside Drive Extended (E)	0.449	10.4	B	16.6
Stuart Drive (N)	0.385	7.8	A	19.7
Edison Street (W)	0.279	9.6	A	8.7
2029 Weekend				
Stuart Drive (S)	0.282	7.6	A	12.9
Lakeside Drive Extended (E)	0.340	8.7	A	10.8
Stuart Drive (N)	0.310	7.2	A	14.3
Edison Street (W)	0.274	8.3	A	8.2

Table 5.5.3.2   Stuart Drive design case SIDRA results – 10-year design horizon (2039)

Approach	Degree of saturation	Average delay (s)	Level of service	95% back of queue (m)
2029 AM				
Stuart Drive (S)	0.490	9.1	A	28.7
Lakeside Drive Extended (E)	0.405	10.8	B	14.6
Stuart Drive (N)	0.420	8.4	A	22.8
Edison Street (W)	0.552	14.4	B	21.9
2029 PM				
Stuart Drive (S)	0.534	9.8	A	30.5
Lakeside Drive Extended (E)	0.601	13.7	B	25.9
Stuart Drive (N)	0.505	8.7	A	29.8
Edison Street (W)	0.379	12.2	B	13.1
2029 Weekend				
Stuart Drive (S)	0.372	8.1	A	18.6
Lakeside Drive Extended (E)	0.430	10.6	B	15.5
Stuart Drive (N)	0.406	7.8	A	20.8
Edison Street (W)	0.344	9.8	A	11.1

5.6   Design case road link assessment

Adopting industry accepted typical midblock capacity volumes, the trigger for road link duplication based on background traffic growth alone for the year of opening (2029) and 10-year design horizon (2039) scenarios is shown in **Table 5.6.1**.

Based on background traffic growth alone, the existing four-lane, two-way configuration of Lakeside Drive and Racecourse Road is suitable up to the 10-year design horizon (2039). Stuart Drive however, triggers duplication to a four-lane, two-way carriageway at the year of opening (2029) based on background traffic growth alone.

Table 5.6.1   Midblock capacity assessment – background traffic

Road link	Existing configuration	AADT (2024)	Duplication AADT (vpd)	Growth rate	AADT (2029)	AADT (2039)
Lakeside Drive	Four-lane, two-way road	9,878	37,600	2%	12,034	14,669
Racecourse Road	Four-lane, one-way road	23,528	37,600	2%	25,977	31,666
Stuart Drive	Two-lane, two-way road	14,042	16,000	3%	16,279	21,877

Introducing development generated traffic to the year of opening (2029) and 10-year design horizon (2039) scenarios, the trigger for road link duplication is shown in **Table 5.6.2**.

Table 5.6.2   Midblock capacity assessment – background plus development traffic

Road link	Configuration	AADT (2024)	Duplication AADT (vpd)	Development traffic	AADT (2029)	AADT (2039)
Lakeside Drive	Four-lane, two-way road	9,878	37,600	3,353	15,387	18,022
Racecourse Road	Four-lane, one-way road	23,528	37,600	2,770	28,747	34,436
Stuart Drive	Two-lane, two-way road	14,042	16,000	1,089	17,368	22,966
Lakeside Drive extended	Two-lane, two-way road	2,550 [1]	16,000	7,351	10,223	10,852
Note:						
1. Redistributed background traffic via new road connection between Racecourse Road and Stuart Drive						

The existing four-lane, two-way configuration of Lakeside Drive and Racecourse Road and the proposed two-lane, two-way configuration for the new Lakeside Drive extended road has capacity to accommodate development generated traffic and background traffic in the 10-year design horizon (2039).

Regarding Stuart Drive, duplication to a four-lane, two-way carriageway is required in the year of opening (2029) and 10-year design horizon (2039) scenarios, however the need to upgrade is triggered by background traffic growth only, irrespective of whether the proposed development is introduced. Additionally, as detailed in **Section 5.5.3** a suitable four-leg double lane roundabout can be established for the Stuart Drive / Lakeside Drive extended / Edison Street intersection using short entry and exit lanes to provide a four-lane, two-way carriageway for Stuart Drive through the roundabout.

Based on the above, it would not be reasonable for the Applicant to be required to upgrade Stuart Drive to a four-lane, two-way configuration as part of this development application, given that duplication is required as a consequence of background traffic growth alone, not as a consequence of the proposed development.

6. Response to development codes

A detailed review of the proposed development against the *Townsville City Plan (Version 2022/02) – Transport impact, access and parking code* and the relevant sections of the Department of State Development, Infrastructure, Local Government and Planning *State Code 1: Development in a state-controlled road environment* and *State Code 6: Protecting the state-controlled road network* are provided in **Appendix H**.

7. Conclusions

This report presents the findings related to assessment of traffic impact related matters for a proposed development located at 1-105 Racecourse Road, Cluden. Based on the presented findings, it can be concluded that the proposed development will not introduce any adverse traffic impacts which would prevent its approval with appropriate conditions.

8. References

1. City of Townsville, *Townsville City Plan (Version 2022/02)*, February 2022, Townsville.

2. Austroads, *Guide to Traffic Management Part 3: Transport Studies and Analysis Methods*, 2020, Sydney.

3. Akcelik & Associates, *SIDRA Intersection User Guide for Version 9.1*, 9th Edition, 2022, Melbourne.

4. Austroads, *Guide to Traffic Management Part 12: Traffic Impacts of Developments*, 2016, Sydney.

5. Queensland Government (Department of Transport and Main Roads), *Guide to Traffic Impact Assessment*, December 2018, Brisbane.

6. New South Wales Government (Roads and Traffic Authority), *Guide to Traffic Generating Developments – Issue 2.2*, 2002, Sydney.

7. New South Wales Government (Roads and Maritime Services), *Guide to Traffic Generating Developments - Technical Direction (TDT2013/04)*, 2014, Sydney.

8. Institute of Transportation Engineers, *Trip Generation Manual (10th Edition)*, 2017, Washington.

9. Queensland Government (Department of Transport and Main Roads), *Traffic Generation Data - 2006 - 2018*, November 2018, Brisbane.

10. Queensland Government (Department of Main Roads), *Road Planning and Design Manual: Chapter 3 Road Planning and Design Fundamentals*, December 2005, Brisbane.

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Appendix A   Plans of development

MASTERPLAN
BUBBLE DIAGRAM

PRECINCT BREAKDOWN

PRECINCT 1 - RETAIL/ FASTFOOD

SITE AREAS
- AREA   24,300m2

COMMERCIAL SITE AREAS
- RETAIL FAST FOOD 1   3,700m2
- RETAIL FAST FOOD 2   3,600m2
- RETAIL FAST FOOD 3   3,000m2
- COMMUNITY TAVEN   3,100m2

PARKING
- REQUIRED   x 275 (EST)
- SUPPLIED   x 240

PRECINCT 2 - UNITS OR LARGE FORMAT RETAIL

SITE AREAS
- AREA   23,250m2

APARTMENTS A + B AS SHOWN
- GROUND   x 170 CARS
- LEVEL 2   x 178 CARS
- LEVEL 3   x 44 UNITS
- LEVEL 4   x 44 UNITS
- LEVEL 5   x 44 UNITS
- LEVEL 6   x 44 UNITS
- LEVEL 7   x 44 UNITS
- LEVEL 8   x 10 UNITS
- TOTAL   x 230 UNITS

PARKING
- REQUIRED (1.5/UNITS)   x 173
- SUPPLIED   x 174

PRECINCT 3 - WATERPARK/ VIP/ HOTEL

SITE AREAS
- HOTEL   1,030m2
- WATERPARK   24,284m2
- VIP CLUB   9,596m2
- VIP EXTENDED AREA   1,600m2

FUTURE DEVELOPMENT SITE 1   11,100m2
FUTURE DEVELOPMENT SITE 2   5,950m2

HOTEL SUITES

- LEVEL 1	SUITES	x 32
- LEVEL 2	SUITES	x 32
- LEVEL 3	SUITES	x 32
- LEVEL 4	SUITES	x 32
- LEVEL 5	SUITES	x 32
- LEVEL 6	SUITES	x 32
- LEVEL 7	SUITES	x 17
TOTAL		**x 209**

PARKING
- REQUIRED   x 300 (EST)
- SUPPLIED   x 477

HOTEL EXPANSION OPTIONS:

OPTION 1 (EXTENSION OF EXISITING)

HOTEL SUITES

- LEVEL 1	SUITES	x 12
- LEVEL 2	SUITES	x 12
- LEVEL 3	SUITES	x 12
- LEVEL 4	SUITES	x 12
- LEVEL 5	SUITES	x 12
- LEVEL 6	SUITES	x 12
TOTAL		x 72 EXTRA ROOMS
TOTAL HOTEL ROOMS		**x 281**

HOTEL EXPANSION OPTIONS:

OPTION 1 (EXTENSION OF EXISITING)

HOTEL SUITES

- LEVEL 1	SUITES	x 28
- LEVEL 2	SUITES	x 28
- LEVEL 3	SUITES	x 28
- LEVEL 4	SUITES	x 28
- LEVEL 5	SUITES	x 28
- LEVEL 6	SUITES	x 28
- LEVEL 7	SUITES	x 28
TOTAL		x 196 EXTRA ROOMS
TOTAL HOTEL ROOMS		**x 405**

MASTERPLAN

FUTURE DEVELOPMENT SITE 1

4 LANE WATER SLIDE

WATERSLIDE

KIDS

WATERSLIDE

MAINTENANCE

APPROX BOUNDARY

STORMWATER CATCHMENT

WATERSLIDE

SURF POOL

BEACH CLUB

POOL BAR

STAGE

RETAIL/ FAST FOOD

RETAIL/ FAST FOOD

WATERPARK CARPARK 230 CARS

WAVE POOL

VIP AREA

RETAIL/ FAST FOOD

VIP EXTENDED AREA + FUNCTION LAWN

POSSIBLE ADDITIONAL STORMWATER CATCHMENT

CARPARK 235 CARS

OPTION 1- HOTEL EXPANSION

HOTEL

VIP & FUTURE DEVELOPMENT CARS 41 CARS

NEW ROAD

EXTRA HOTEL CARPARK 39 CARS

BUSES

OPTIONAL HOTEL EXPANSION

STORMWATER CATCHMENT

COMMUNITY TAVERN

APPROX BOUNDARY

HOTEL CARPARK 166 CARS

FUTURE DEVELOPMENT SITE 2

UNITS/ LARGE RETAIL

UNITS/ LARGE RETAIL

SEPTEMBER 2024

Document Set ID: 26418546
Version: 1, Version Date: 24/10/2024

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Appendix B   Intersection count data

| Leg | Lakeside Dr North | | | | | | East | | | Lakeside Dr South | | | | | | Racecourse Rd West | | | | | | |
| Direction | Southbound | | | | | | Westbound | | | Northbound | | | | | | Eastbound | | | | | | |
Start Time	Thru	Left	U-Turn	App Total	Peds CW	Peds CCW	App Total	Peds CW	Peds CCW	Right	Thru	U-Turn	App Total	Peds CW	Peds CCW	Right	Thru	Left	App Total	Peds CW	Peds CCW	Int Total
2024-05-09 06:00:00	59	34	0	93	0	0	0	0	0	2	6	0	8	0	0	0	153	34	187	0	0	288
2024-05-09 06:15:00	80	32	0	112	0	0	0	0	0	4	13	0	17	0	0	0	145	53	198	0	0	327
2024-05-09 06:30:00	80	23	0	103	0	0	0	0	0	1	8	1	10	0	0	2	148	63	213	0	0	326
2024-05-09 06:45:00	102	22	0	124	0	0	0	0	0	5	10	0	15	0	0	0	123	76	199	0	0	338
2024-05-09 07:00:00	88	16	0	104	0	0	0	0	0	4	9	0	13	0	0	0	120	95	215	0	0	332
2024-05-09 07:15:00	145	21	0	166	0	0	0	0	0	8	25	0	33	0	0	2	130	94	226	0	0	425
2024-05-09 07:30:00	115	16	0	131	0	0	0	0	0	11	14	0	25	0	0	7	115	159	281	1	0	437
2024-05-09 07:45:00	159	13	0	172	0	0	0	0	0	4	24	0	28	0	0	4	103	165	272	0	0	472
2024-05-09 08:00:00	143	17	0	160	0	0	0	0	0	3	18	0	21	0	0	7	106	179	292	0	0	473
2024-05-09 08:15:00	110	28	0	138	0	0	0	0	0	8	42	0	50	0	0	5	126	201	332	0	0	520
2024-05-09 08:30:00	196	23	0	219	0	0	0	0	0	4	30	0	34	0	0	5	122	157	284	0	0	537
2024-05-09 08:45:00	140	27	0	167	0	0	0	0	0	2	24	0	26	0	0	2	114	119	235	0	0	428
2024-05-09 09:00:00	145	38	0	183	0	0	0	0	0	5	25	0	30	0	0	6	92	80	178	0	0	391
2024-05-09 09:15:00	116	32	0	148	0	0	0	0	0	8	29	0	37	0	0	3	105	75	183	0	0	368
2024-05-09 09:30:00	119	30	0	149	0	0	0	0	0	6	21	0	27	0	0	7	78	70	155	0	0	331
2024-05-09 09:45:00	129	27	0	156	0	0	0	0	0	6	33	0	39	0	0	4	72	58	134	0	0	329
2024-05-09 10:00:00	114	36	0	150	0	0	0	0	0	7	19	0	26	0	0	3	85	63	151	0	0	327
2024-05-09 10:15:00	138	25	0	163	0	0	0	0	0	9	24	0	33	0	0	6	111	61	178	0	0	374
2024-05-09 10:30:00	136	34	0	170	0	0	0	0	0	7	30	0	37	0	0	4	81	77	162	0	0	369
2024-05-09 10:45:00	106	31	0	137	0	0	0	0	0	4	18	0	22	0	0	2	100	69	171	0	1	330
2024-05-09 11:00:00	132	36	0	168	0	0	0	0	0	4	30	0	34	0	0	2	86	60	148	0	0	350
2024-05-09 11:15:00	145	36	0	181	0	0	0	0	0	6	18	0	24	0	0	5	86	76	167	0	0	372
2024-05-09 11:30:00	128	30	0	158	0	0	0	0	0	9	13	0	22	0	0	2	84	66	152	0	0	332
2024-05-09 11:45:00	135	48	0	183	0	0	0	0	0	3	37	0	40	0	0	3	79	70	152	0	0	375
2024-05-09 12:00:00	126	57	0	183	0	0	0	0	0	5	26	0	31	0	0	2	73	83	158	0	0	372
2024-05-09 12:15:00	148	34	0	182	0	0	0	0	0	2	19	0	21	0	0	4	90	92	186	0	0	389
2024-05-09 12:30:00	184	22	0	206	0	0	0	0	0	2	26	0	28	0	0	2	102	91	195	0	0	429
2024-05-09 12:45:00	172	49	0	221	0	0	0	0	0	3	17	0	20	0	0	4	74	69	147	0	0	388
2024-05-09 13:00:00	154	50	0	204	0	0	0	0	0	2	25	0	27	0	0	3	84	68	155	0	0	386
2024-05-09 13:15:00	144	39	0	183	0	0	0	0	0	6	14	0	20	0	0	3	104	63	170	0	0	373
2024-05-09 13:30:00	137	42	0	179	0	0	0	0	0	5	20	0	25	0	0	4	94	55	153	0	0	357
2024-05-09 13:45:00	118	43	0	161	0	0	0	0	0	7	28	0	35	0	0	2	77	68	147	0	0	343
2024-05-09 14:00:00	140	37	0	177	0	0	0	0	0	5	23	0	28	0	0	2	90	69	161	0	0	366
2024-05-09 14:15:00	147	25	0	172	0	0	0	0	0	4	31	0	35	0	0	5	89	76	170	0	0	377
2024-05-09 14:30:00	142	23	0	165	0	0	0	0	0	7	24	0	31	0	0	2	85	93	180	0	0	376
2024-05-09 14:45:00	126	38	0	164	0	0	0	0	0	6	25	0	31	0	0	2	94	122	218	0	0	413
2024-05-09 15:00:00	164	45	0	209	0	0	0	0	0	7	28	0	35	0	0	4	105	95	204	0	0	448
2024-05-09 15:15:00	146	47	0	193	0	0	0	0	0	5	27	0	32	0	0	2	108	159	269	0	0	494
2024-05-09 15:30:00	159	60	0	219	0	0	0	0	0	8	19	0	27	0	0	3	110	96	209	0	0	455
2024-05-09 15:45:00	151	42	0	193	0	0	0	0	0	8	39	0	47	0	0	1	107	133	241	1	0	481
2024-05-09 16:00:00	168	60	0	228	0	0	0	0	0	4	27	0	31	0	0	3	80	133	216	0	0	475
2024-05-09 16:15:00	220	49	0	269	0	0	0	0	0	9	17	0	26	0	0	3	84	130	217	0	0	512
2024-05-09 16:30:00	196	38	0	234	0	0	0	0	0	1	30	0	31	0	0	6	103	119	228	0	0	493
2024-05-09 16:45:00	225	48	0	273	0	0	0	0	0	5	28	0	33	0	0	0	92	85	177	0	0	483
2024-05-09 17:00:00	183	37	0	220	0	0	0	0	0	1	18	0	19	0	0	0	98	101	199	0	0	438
2024-05-09 17:15:00	218	62	0	280	0	0	0	0	0	3	18	0	21	0	0	2	99	88	189	0	0	490
2024-05-09 17:30:00	183	37	0	220	0	0	0	0	0	5	22	0	27	0	0	2	107	108	217	0	0	464
2024-05-09 17:45:00	160	37	0	197	0	0	0	0	0	2	24	0	26	0	0	2	75	91	168	0	0	391
2024-05-09 18:00:00	154	30	0	184	0	0	0	0	0	4	20	0	24	0	0	1	69	86	156	0	0	364
2024-05-09 18:15:00	134	32	0	166	0	0	0	0	0	5	17	0	22	0	0	0	80	89	169	0	0	357
2024-05-09 18:30:00	105	32	0	137	0	0	0	0	0	4	5	0	9	0	0	0	50	66	116	0	0	262
2024-05-09 18:45:00	101	24	0	125	0	0	0	0	0	4	13	0	17	0	0	0	49	53	102	0	0	244
2024-05-09 19:00:00	128	21	0	149	0	0	0	0	0	0	7	0	7	0	0	0	37	50	87	0	0	243
2024-05-09 19:15:00	92	5	0	97	0	0	0	0	0	2	6	0	8	0	0	0	49	45	94	0	0	199
2024-05-09 19:30:00	73	14	0	87	0	0	0	0	0	2	6	0	8	0	0	0	33	47	80	0	0	175
2024-05-09 19:45:00	60	15	0	75	0	0	0	0	0	4	10	0	14	0	0	0	42	28	70	0	0	159
2024-05-09 20:00:00	97	18	0	115	0	0	0	0	0	2	7	0	9	0	0	0	27	33	60	0	0	184
2024-05-09 20:15:00	78	13	0	91	0	0	0	0	0	0	3	0	3	0	0	1	16	25	42	0	0	136
2024-05-09 20:30:00	69	11	0	80	0	0	0	0	0	2	5	0	7	0	0	0	20	26	46	0	0	133
2024-05-09 20:45:00	53	11	0	64	0	0	0	0	0	1	4	0	5	0	0	0	10	25	35	0	0	104
2024-05-09 21:00:00	62	9	0	71	0	0	0	0	0	1	2	0	3	0	0	1	23	30	54	0	0	128
2024-05-09 21:15:00	43	6	0	49	0	0	0	0	0	4	1	0	5	0	0	0	24	24	48	0	0	102
2024-05-09 21:30:00	32	3	0	35	0	0	0	0	0	2	1	0	3	0	0	1	13	19	33	0	0	71
2024-05-09 21:45:00	27	4	0	31	0	0	0	0	0	2	0	0	2	0	0	0	13	12	25	0	0	58
2024-05-11 06:00:00	23	10	0	33	0	0	0	0	0	2	4	0	6	0	0	1	48	19	68	0	0	107
2024-05-11 06:15:00	24	9	0	33	0	0	0	0	0	3	0	0	3	0	0	0	58	31	89	0	0	125
2024-05-11 06:30:00	29	10	0	39	0	0	0	0	0	5	4	0	9	0	0	2	56	36	94	0	0	142
2024-05-11 06:45:00	31	8	0	39	0	0	0	0	0	4	11	0	15	0	0	0	39	31	70	0	0	124
2024-05-11 07:00:00	36	7	0	43	0	0	0	0	0	1	6	0	7	0	0	2	55	37	94	0	0	144
2024-05-11 07:15:00	40	16	0	56	0	0	0	0	0	1	7	0	8	0	0	2	58	39	99	0	0	163

Time																						
2024-05-11 07:30:00	51	8	0	**59**	0	0	**0**	0	0	6	11	0	**17**	0	0	2	69	62	**133**	0	0	**209**
2024-05-11 07:45:00	77	19	0	**96**	0	0	**0**	0	0	3	25	0	**28**	0	0	0	72	71	**143**	0	0	**267**
2024-05-11 08:00:00	66	12	0	**78**	0	0	**0**	0	0	4	22	0	**26**	0	0	1	67	90	**158**	0	0	**262**
2024-05-11 08:15:00	75	23	0	**98**	0	0	**0**	0	0	5	32	0	**37**	0	0	0	77	59	**136**	0	0	**271**
2024-05-11 08:30:00	75	29	0	**104**	0	0	**0**	0	0	2	26	0	**28**	0	0	3	79	79	**161**	0	0	**293**
2024-05-11 08:45:00	114	29	0	**143**	0	0	**0**	0	0	7	24	0	**31**	0	0	2	88	91	**181**	0	0	**355**
2024-05-11 09:00:00	121	37	0	**158**	0	0	**0**	0	0	6	30	0	**36**	0	0	2	108	58	**168**	0	0	**362**
2024-05-11 09:15:00	135	26	0	**161**	0	0	**0**	0	0	4	26	0	**30**	0	0	1	93	76	**170**	0	0	**361**
2024-05-11 09:30:00	149	21	0	**170**	0	0	**0**	0	0	8	38	0	**46**	0	0	1	105	94	**200**	0	1	**416**
2024-05-11 09:45:00	147	40	0	**187**	0	0	**0**	0	0	8	44	0	**52**	0	0	1	82	99	**182**	0	0	**421**
2024-05-11 10:00:00	162	37	0	**199**	0	0	**0**	0	0	8	35	0	**43**	0	0	1	96	80	**177**	0	0	**419**
2024-05-11 10:15:00	178	37	0	**215**	0	0	**0**	0	0	4	41	0	**45**	0	0	1	95	91	**187**	0	0	**447**
2024-05-11 10:30:00	175	47	0	**222**	0	0	**0**	0	0	4	36	0	**40**	0	0	2	86	92	**180**	0	0	**442**
2024-05-11 10:45:00	211	25	0	**236**	0	0	**0**	0	0	5	32	0	**37**	0	0	0	104	91	**195**	0	0	**468**
2024-05-11 11:00:00	180	50	1	**231**	0	0	**0**	0	0	6	37	0	**43**	0	0	0	101	99	**200**	0	0	**474**
2024-05-11 11:15:00	191	50	0	**241**	0	0	**0**	0	0	8	33	0	**41**	0	0	0	122	89	**211**	0	0	**493**
2024-05-11 11:30:00	203	44	0	**247**	0	0	**0**	0	0	5	34	0	**39**	0	0	0	95	100	**195**	0	0	**481**
2024-05-11 11:45:00	191	47	0	**238**	0	0	**0**	0	0	2	33	0	**35**	0	0	0	105	99	**204**	0	0	**477**
2024-05-11 12:00:00	208	51	0	**259**	0	0	**0**	0	0	6	42	0	**48**	0	0	2	98	83	**183**	0	0	**490**
2024-05-11 12:15:00	205	51	0	**256**	0	0	**0**	0	0	3	36	0	**39**	0	0	1	99	95	**195**	0	0	**490**
2024-05-11 12:30:00	199	43	0	**242**	0	0	**0**	0	0	6	24	0	**30**	0	0	0	82	59	**141**	0	0	**413**
2024-05-11 12:45:00	154	54	0	**208**	0	0	**0**	0	0	6	36	0	**42**	0	0	5	101	83	**189**	0	0	**439**
2024-05-11 13:00:00	210	47	0	**257**	0	0	**0**	0	0	6	19	0	**25**	0	0	0	91	85	**176**	0	0	**458**
2024-05-11 13:15:00	184	62	0	**246**	0	0	**0**	0	0	8	34	0	**42**	0	0	0	111	68	**179**	0	0	**467**
2024-05-11 13:30:00	175	59	0	**234**	0	0	**0**	0	0	4	25	0	**29**	0	0	1	98	63	**162**	0	0	**425**
2024-05-11 13:45:00	160	57	0	**217**	0	0	**0**	0	0	5	17	0	**22**	0	0	2	77	78	**157**	0	0	**396**
2024-05-11 14:00:00	176	49	0	**225**	0	0	**0**	0	0	4	32	0	**36**	0	0	2	79	58	**139**	0	0	**400**
2024-05-11 14:15:00	176	54	0	**230**	0	0	**0**	0	0	1	30	0	**31**	0	0	8	89	79	**176**	0	0	**437**
2024-05-11 14:30:00	183	61	0	**244**	0	0	**0**	0	0	3	26	0	**29**	0	0	6	96	81	**183**	0	0	**456**
2024-05-11 14:45:00	172	57	0	**229**	0	0	**0**	0	0	3	26	0	**29**	0	0	4	88	60	**152**	0	0	**410**
2024-05-11 15:00:00	170	47	0	**217**	0	0	**0**	0	0	8	38	0	**46**	0	0	2	86	69	**157**	0	0	**420**
2024-05-11 15:15:00	157	59	0	**216**	0	0	**0**	0	0	4	21	0	**25**	0	0	1	96	81	**178**	0	0	**419**
2024-05-11 15:30:00	168	34	0	**202**	0	0	**0**	0	0	3	26	0	**29**	0	0	0	82	69	**151**	0	0	**382**
2024-05-11 15:45:00	159	29	0	**188**	0	0	**0**	0	0	1	22	0	**23**	0	0	1	77	87	**165**	0	0	**376**
2024-05-11 16:00:00	169	37	0	**206**	0	0	**0**	0	0	8	20	0	**28**	0	0	1	90	73	**164**	0	0	**398**
2024-05-11 16:15:00	181	42	0	**223**	0	0	**0**	0	0	1	24	0	**25**	0	0	4	73	101	**178**	0	0	**426**
2024-05-11 16:30:00	137	39	0	**176**	0	0	**0**	0	0	2	18	0	**20**	0	0	2	68	92	**162**	0	0	**358**
2024-05-11 16:45:00	136	38	0	**174**	0	0	**0**	0	0	3	29	0	**32**	0	0	1	57	81	**139**	0	0	**345**
2024-05-11 17:00:00	137	42	0	**179**	0	0	**0**	0	0	2	22	0	**24**	0	0	5	60	78	**143**	0	0	**346**
2024-05-11 17:15:00	130	31	0	**161**	0	0	**0**	0	0	2	18	0	**20**	0	0	2	49	75	**126**	0	0	**307**
2024-05-11 17:30:00	117	26	0	**143**	0	0	**0**	0	0	4	10	0	**14**	0	0	2	58	100	**160**	0	0	**317**
2024-05-11 17:45:00	132	23	0	**155**	0	0	**0**	0	0	0	13	0	**13**	0	0	3	40	83	**126**	0	0	**294**
2024-05-11 18:00:00	100	14	0	**114**	0	0	**0**	0	0	0	8	0	**8**	0	0	0	42	72	**114**	0	0	**236**
2024-05-11 18:15:00	93	12	0	**105**	0	0	**0**	0	0	2	5	0	**7**	0	0	0	32	75	**107**	0	0	**219**
2024-05-11 18:30:00	62	9	0	**71**	0	0	**0**	0	0	1	10	0	**11**	0	0	1	26	79	**106**	0	0	**188**
2024-05-11 18:45:00	71	9	0	**80**	0	0	**0**	0	0	0	8	0	**8**	0	0	0	39	70	**109**	0	0	**197**
2024-05-11 19:00:00	67	5	0	**72**	0	0	**0**	0	0	5	4	0	**9**	0	0	1	38	55	**94**	0	0	**175**
2024-05-11 19:15:00	71	17	0	**88**	0	0	**0**	0	0	3	6	0	**9**	0	0	1	29	48	**78**	0	0	**175**
2024-05-11 19:30:00	59	7	0	**66**	0	0	**0**	0	0	2	1	0	**3**	0	0	0	27	36	**63**	0	0	**132**
2024-05-11 19:45:00	60	7	0	**67**	0	0	**0**	0	0	2	4	0	**6**	0	0	1	18	29	**48**	0	0	**121**
2024-05-11 20:00:00	44	8	0	**52**	0	0	**0**	0	0	2	4	0	**6**	0	0	0	20	34	**54**	0	0	**112**
2024-05-11 20:15:00	57	10	0	**67**	0	0	**0**	0	0	4	3	0	**7**	0	0	1	21	35	**57**	0	0	**131**
2024-05-11 20:30:00	47	7	0	**54**	0	0	**0**	0	0	1	7	0	**8**	0	0	0	24	32	**56**	0	0	**118**
2024-05-11 20:45:00	37	5	0	**42**	0	0	**0**	0	0	1	6	0	**7**	0	0	0	25	35	**60**	0	0	**109**
2024-05-11 21:00:00	52	4	0	**56**	0	0	**0**	0	0	2	2	0	**4**	0	0	0	24	0	**24**	0	0	**84**
2024-05-11 21:15:00	66	10	0	**76**	0	0	**0**	0	0	4	5	0	**9**	0	0	1	34	0	**35**	0	0	**120**
2024-05-11 21:30:00	47	25	0	**72**	0	0	**0**	0	0	1	2	0	**3**	0	0	1	38	0	**39**	0	0	**114**
2024-05-11 21:45:00	44	16	0	**60**	0	0	**0**	0	0	0	2	0	**2**	0	0	0	27	0	**27**	0	1	**89**
Grand Total	15835	3842	1	**19678**	0	0	**0**	0	0	515	2478	1	**2994**	0	0	234	9710	9359	**19303**	2	3	**41975**
% Approach	80.5%	19.5%	0.0%							17.2%	82.8%	0.0%				1.2%	50.3%	48.5%				
% Total	37.7%	9.2%	0.0%	**46.9%**			**0.0%**			1.2%	5.9%	0.0%	**7.1%**			0.6%	23.1%	22.3%	**46.0%**			
Lights	15441	3549	1	**18991**			**0**			361	2383	1	**2745**			125	8636	9189	**17950**			**39686**
% Lights	97.5%	92.4%	100.0%	**96.5%**						70.1%	96.2%	100.0%	**91.7%**			53.4%	88.9%	98.2%	**93.0%**			**94.5%**
Articulated Trucks	139	170	0	**309**			**0**			102	11	0	**113**			3	508	27	**538**			**960**
% Articulated Trucks	0.9%	4.4%	0.0%	**1.6%**						19.8%	0.4%	0.0%	**3.8%**			1.3%	5.2%	0.3%	**2.8%**			**2.3%**
Buses and Single-Unit Trucks	245	121	0	**366**			**0**			51	80	0	**131**			106	562	139	**807**			**1304**
% Buses and Single-Unit Trucks	1.5%	3.1%	0.0%	**1.9%**						9.9%	3.2%	0.0%	**4.4%**			45.3%	5.8%	1.5%	**4.2%**			**3.1%**
Bicycles on Road	10	2	0	**12**			**0**			1	4	0	**5**			0	4	4	**8**			**25**
% Bicycles on Road	0.1%	0.1%	0.0%	**0.1%**						0.2%	0.2%	0.0%	**0.2%**			0.0%	0.0%	0.0%	**0.0%**			**0.1%**
Pedestrians					0	0		0	0					0	0					0	3	
% Pedestrians					0.0%	0.0%		0.0%	0.0%					0.0%	0.0%					0.0%	100.0%	
Bicycles on Crosswalk					0	0		0	0					0	0					2	0	
% Bicycles on Crosswalk					0.0%	0.0%		0.0%	0.0%					0.0%	0.0%					100.0%	0.0%	

Leg	Lakeside Dr						Racecourse Rd East						Turf Club Access						Racecourse Rd West			
Direction	Southbound						Westbound						Northbound						Eastbound			
Start Time	Right	Thru	U-Turn	App Total	Peds CW	Peds CCW	Right	Thru	Left	App Total	Peds CW	Peds CCW	Thru	Left	U-Turn	App Total	Peds CW	Peds CCW	App Total	Peds CW	Peds CCW	Int Total
2024-05-09 06:00:00	58	0	0	58	0	0	7	67	1	75	1	0	0	2	0	2	0	0	0	0	0	135
2024-05-09 06:15:00	75	0	0	75	0	0	12	73	0	85	0	0	0	0	0	0	0	0	0	0	0	160
2024-05-09 06:30:00	89	1	0	90	0	0	11	99	1	111	0	0	1	2	0	3	0	0	0	0	0	204
2024-05-09 06:45:00	91	1	0	92	0	0	15	120	0	135	0	0	2	0	0	2	0	0	0	0	0	229
2024-05-09 07:00:00	102	0	0	102	0	0	16	87	2	105	0	0	0	0	0	0	0	0	0	0	0	207
2024-05-09 07:15:00	153	6	0	159	0	0	29	98	0	127	0	0	2	0	0	2	0	0	0	0	0	288
2024-05-09 07:30:00	145	3	0	148	0	0	24	137	1	162	0	0	0	0	0	0	0	0	0	0	0	310
2024-05-09 07:45:00	160	6	0	166	0	0	28	131	0	159	0	0	0	2	0	2	0	0	0	0	0	327
2024-05-09 08:00:00	157	2	0	159	0	0	28	128	0	156	0	0	1	3	0	4	0	0	0	0	0	319
2024-05-09 08:15:00	129	3	0	132	0	0	48	133	0	181	0	0	1	0	0	1	0	0	0	0	0	314
2024-05-09 08:30:00	168	6	0	174	0	0	33	102	1	136	0	0	1	2	0	3	0	0	0	0	0	313
2024-05-09 08:45:00	151	2	0	153	0	0	22	90	0	112	0	0	1	0	0	1	0	0	0	0	0	266
2024-05-09 09:00:00	139	4	0	143	0	0	30	81	0	111	0	0	1	0	0	1	0	0	0	0	0	255
2024-05-09 09:15:00	117	2	0	119	0	0	34	84	0	118	0	0	0	3	0	3	0	0	0	0	0	240
2024-05-09 09:30:00	123	5	1	129	0	0	31	117	0	148	0	0	2	3	0	5	0	0	0	0	0	282
2024-05-09 09:45:00	131	3	0	134	0	0	30	93	0	123	0	0	1	2	0	3	0	0	0	0	0	260
2024-05-09 10:00:00	132	3	0	135	0	0	24	100	0	124	0	0	1	1	0	2	0	0	0	0	0	261
2024-05-09 10:15:00	141	6	0	147	0	0	37	87	0	124	0	0	1	2	0	3	0	0	0	0	0	274
2024-05-09 10:30:00	141	0	1	142	0	0	32	80	1	113	0	0	0	1	0	1	0	0	0	0	0	256
2024-05-09 10:45:00	111	0	0	111	0	0	26	86	0	112	0	0	0	2	0	2	0	0	0	0	0	225
2024-05-09 11:00:00	140	4	0	144	0	0	26	89	0	115	0	0	1	0	0	1	0	0	0	0	0	260
2024-05-09 11:15:00	149	3	1	153	0	0	20	80	0	100	0	0	2	3	0	5	0	0	0	0	0	258
2024-05-09 11:30:00	130	3	0	133	0	0	27	90	1	118	0	0	1	2	0	3	0	0	0	0	0	254
2024-05-09 11:45:00	135	5	0	140	0	0	32	64	0	96	0	0	2	1	0	3	0	0	0	0	0	239
2024-05-09 12:00:00	132	1	0	133	0	0	30	103	1	134	0	0	2	4	0	6	0	0	0	0	0	273
2024-05-09 12:15:00	147	3	0	150	0	0	20	94	0	114	0	0	2	2	0	4	0	0	0	0	0	268
2024-05-09 12:30:00	187	6	0	193	0	0	25	113	0	138	0	0	3	2	0	5	0	0	0	0	0	336
2024-05-09 12:45:00	173	1	0	174	0	0	22	84	1	107	0	0	1	1	0	2	0	0	0	0	0	283
2024-05-09 13:00:00	153	5	0	158	0	0	21	99	0	120	0	0	0	0	0	0	0	0	0	0	0	278
2024-05-09 13:15:00	139	2	0	141	0	0	20	84	0	104	0	0	1	0	0	1	0	0	0	0	0	246
2024-05-09 13:30:00	119	4	0	123	0	0	37	109	1	147	0	0	2	1	0	3	0	0	0	0	0	273
2024-05-09 13:45:00	119	0	0	119	0	0	29	102	0	131	0	0	1	0	0	1	0	0	0	0	0	251
2024-05-09 14:00:00	136	5	0	141	0	0	32	123	1	156	0	0	2	0	0	2	0	0	0	0	0	299
2024-05-09 14:15:00	151	2	0	153	0	0	26	129	0	155	0	0	1	2	0	3	0	0	0	0	0	311
2024-05-09 14:30:00	146	1	0	147	0	0	39	154	2	195	0	0	0	4	0	4	0	0	0	0	0	346
2024-05-09 14:45:00	139	4	0	143	0	0	30	142	1	173	0	0	2	2	0	4	0	0	0	0	0	320
2024-05-09 15:00:00	163	3	0	166	0	0	30	154	0	184	0	0	3	2	0	5	0	0	0	0	0	355
2024-05-09 15:15:00	158	2	0	160	0	0	31	191	2	224	0	0	1	2	0	3	0	0	0	0	0	387
2024-05-09 15:30:00	159	3	0	162	0	0	27	177	1	205	0	0	2	1	0	3	0	0	0	0	0	370
2024-05-09 15:45:00	166	4	0	170	0	0	47	155	0	202	0	0	1	1	0	2	0	0	0	0	0	374
2024-05-09 16:00:00	147	0	0	147	0	0	34	132	0	166	0	0	1	2	0	3	0	0	0	0	0	316
2024-05-09 16:15:00	247	1	0	248	0	0	26	178	0	204	0	0	0	5	0	5	0	0	0	0	0	457
2024-05-09 16:30:00	191	3	0	194	0	0	30	185	0	215	0	0	2	4	0	6	0	0	0	0	0	415
2024-05-09 16:45:00	225	0	0	225	0	0	29	156	0	185	0	0	0	2	0	2	0	0	0	1	0	412
2024-05-09 17:00:00	157	2	0	159	0	0	13	144	0	157	0	0	0	3	0	3	0	0	0	0	0	319
2024-05-09 17:15:00	192	2	0	194	0	0	28	130	1	159	0	0	2	3	0	5	0	0	0	0	0	358
2024-05-09 17:30:00	182	0	0	182	0	0	19	112	0	131	0	0	0	1	0	1	0	0	0	0	0	314
2024-05-09 17:45:00	140	0	0	140	0	0	26	100	0	126	0	0	1	0	0	1	0	0	0	0	0	267
2024-05-09 18:00:00	178	1	0	179	0	0	26	75	0	101	0	0	0	2	0	2	0	0	0	0	0	282
2024-05-09 18:15:00	129	1	0	130	0	0	13	63	0	76	0	0	1	0	0	1	0	0	0	0	0	207
2024-05-09 18:30:00	121	0	0	121	0	0	11	44	0	55	0	0	0	0	0	0	0	0	0	0	0	176
2024-05-09 18:45:00	113	0	0	113	0	0	15	30	0	45	0	0	0	0	0	0	0	0	0	0	0	158
2024-05-09 19:00:00	122	1	0	123	0	0	7	43	0	50	0	0	1	0	0	1	0	0	0	0	0	174
2024-05-09 19:15:00	94	0	0	94	0	0	8	10	0	18	0	0	0	0	0	0	0	0	0	0	0	112
2024-05-09 19:30:00	79	0	0	79	0	0	10	18	0	28	0	0	0	0	0	0	0	0	0	0	0	107
2024-05-09 19:45:00	60	0	0	60	0	0	12	27	0	39	0	0	0	0	0	0	0	0	0	0	0	99
2024-05-09 20:00:00	85	0	0	85	0	0	10	23	0	33	0	0	0	0	0	0	0	0	0	0	0	118
2024-05-09 20:15:00	74	0	0	74	0	0	4	5	0	9	0	0	0	0	0	0	0	0	0	0	0	83
2024-05-09 20:30:00	71	0	0	71	0	0	5	15	0	20	0	0	0	0	0	0	0	0	0	0	0	91
2024-05-09 20:45:00	47	0	0	47	0	0	7	19	0	26	0	0	0	0	0	0	0	0	0	0	0	73
2024-05-09 21:00:00	71	0	0	71	0	0	3	21	0	24	0	0	0	0	0	0	0	0	0	0	0	95
2024-05-09 21:15:00	37	0	0	37	0	0	4	21	0	25	0	0	0	0	0	0	0	0	0	0	0	62
2024-05-09 21:30:00	39	0	0	39	0	0	2	13	0	15	0	0	0	0	0	0	0	0	0	0	0	54
2024-05-09 21:45:00	26	0	0	26	0	0	2	25	0	27	0	0	0	0	0	0	0	0	0	0	0	53
2024-05-11 06:00:00	24	2	0	26	0	0	2	30	0	32	0	0	1	0	0	1	0	0	0	0	0	59
2024-05-11 06:15:00	25	0	0	25	0	0	4	42	0	46	0	0	1	1	0	2	0	0	0	0	0	73
2024-05-11 06:30:00	33	1	0	34	0	0	10	57	1	68	0	0	3	3	0	6	0	0	0	0	0	108
2024-05-11 06:45:00	27	1	0	28	0	0	12	28	0	40	0	0	0	1	0	1	0	0	0	0	0	69
2024-05-11 07:00:00	38	3	0	41	0	0	8	38	0	46	0	0	0	2	0	2	0	0	0	0	0	89
2024-05-11 07:15:00	41	3	0	44	0	0	5	37	0	42	0	0	1	0	0	1	0	0	0	0	0	87

																					Total
2024-05-11 07:30:00	49	1	0	**50**	0	0	23	57	0	**80**	0	0	0	0	0	**0**	0	0	0	0	0	**130**
2024-05-11 07:45:00	66	0	0	**66**	0	0	27	52	0	**79**	0	0	0	0	0	**0**	0	0	0	0	0	**145**
2024-05-11 08:00:00	77	0	0	**77**	0	0	32	59	0	**91**	0	0	0	1	0	**1**	0	0	0	0	0	**169**
2024-05-11 08:15:00	85	0	0	**85**	0	0	31	63	0	**94**	0	0	0	0	0	**0**	0	0	0	0	0	**179**
2024-05-11 08:30:00	74	3	0	**77**	0	0	28	85	0	**113**	0	0	0	0	0	**0**	0	0	0	0	0	**190**
2024-05-11 08:45:00	103	1	0	**104**	0	0	30	91	0	**121**	0	0	0	0	0	**0**	0	0	0	0	0	**225**
2024-05-11 09:00:00	135	4	0	**139**	0	0	35	82	0	**117**	0	0	2	0	0	**2**	0	0	0	0	0	**258**
2024-05-11 09:15:00	115	0	0	**115**	0	0	31	99	0	**130**	0	0	0	4	0	**4**	0	0	0	0	0	**249**
2024-05-11 09:30:00	170	1	0	**171**	0	0	55	92	0	**147**	0	0	1	0	0	**1**	0	0	0	0	0	**319**
2024-05-11 09:45:00	136	0	0	**136**	0	0	50	111	0	**161**	0	0	0	0	0	**0**	0	0	0	0	0	**297**
2024-05-11 10:00:00	162	2	0	**164**	0	0	32	91	0	**123**	0	0	1	1	0	**2**	0	0	0	0	0	**289**
2024-05-11 10:15:00	184	4	0	**188**	0	0	40	100	0	**140**	0	0	0	0	0	**0**	0	0	0	0	0	**328**
2024-05-11 10:30:00	170	1	0	**171**	0	0	39	88	1	**128**	0	0	0	2	0	**2**	0	0	0	0	0	**301**
2024-05-11 10:45:00	207	0	0	**207**	0	0	41	82	0	**123**	0	0	0	0	0	**0**	0	0	0	0	0	**330**
2024-05-11 11:00:00	179	0	0	**179**	0	0	38	87	0	**125**	0	0	0	0	0	**0**	0	0	0	0	0	**304**
2024-05-11 11:15:00	197	0	0	**197**	1	0	42	99	0	**141**	0	0	0	0	0	**0**	0	0	0	1	0	**338**
2024-05-11 11:30:00	204	3	0	**207**	0	0	41	99	0	**140**	0	0	0	2	0	**2**	0	0	0	0	0	**349**
2024-05-11 11:45:00	193	2	0	**195**	0	0	38	94	0	**132**	0	0	2	0	0	**2**	0	0	0	0	0	**329**
2024-05-11 12:00:00	204	3	0	**207**	0	0	50	81	0	**131**	0	0	1	0	0	**1**	0	0	0	0	0	**339**
2024-05-11 12:15:00	213	0	0	**213**	0	0	26	107	0	**133**	0	0	0	0	0	**0**	0	0	0	0	0	**346**
2024-05-11 12:30:00	206	0	0	**206**	0	0	35	94	0	**129**	0	0	1	4	0	**5**	0	0	0	0	0	**340**
2024-05-11 12:45:00	158	4	0	**162**	0	0	37	84	0	**121**	0	0	0	1	0	**1**	0	0	0	0	0	**284**
2024-05-11 13:00:00	216	0	0	**216**	0	0	27	104	0	**131**	0	0	3	1	0	**4**	0	0	0	0	0	**351**
2024-05-11 13:15:00	205	1	0	**206**	0	0	34	173	0	**207**	0	0	0	0	0	**0**	0	0	0	0	0	**413**
2024-05-11 13:30:00	196	0	0	**196**	0	0	23	97	0	**120**	0	0	2	2	0	**4**	0	0	0	0	0	**320**
2024-05-11 13:45:00	179	0	0	**179**	0	0	35	88	0	**123**	0	0	2	1	0	**3**	0	0	0	0	0	**305**
2024-05-11 14:00:00	178	7	0	**185**	0	0	28	91	2	**121**	0	0	2	0	0	**2**	0	0	0	0	0	**308**
2024-05-11 14:15:00	169	12	0	**181**	0	0	28	86	1	**115**	0	0	2	6	0	**8**	0	0	0	0	0	**304**
2024-05-11 14:30:00	169	7	0	**176**	0	0	32	83	0	**115**	0	0	3	0	0	**3**	0	0	0	0	0	**294**
2024-05-11 14:45:00	168	7	0	**175**	0	0	38	103	1	**142**	0	0	0	3	0	**3**	0	0	0	0	0	**320**
2024-05-11 15:00:00	164	3	1	**168**	0	0	41	103	2	**146**	0	0	1	2	0	**3**	0	0	0	0	0	**317**
2024-05-11 15:15:00	156	0	0	**156**	0	0	27	63	0	**90**	0	0	0	0	0	**0**	0	0	0	0	0	**246**
2024-05-11 15:30:00	168	0	0	**168**	0	0	27	91	0	**118**	0	0	0	0	0	**0**	0	0	0	0	0	**286**
2024-05-11 15:45:00	149	0	0	**149**	0	0	19	88	0	**107**	0	0	0	0	0	**0**	0	0	0	0	0	**256**
2024-05-11 16:00:00	171	1	1	**173**	0	0	25	72	0	**97**	0	0	0	2	0	**2**	0	0	0	0	0	**272**
2024-05-11 16:15:00	150	5	0	**155**	0	0	20	62	1	**83**	0	0	8	6	0	**14**	0	0	0	0	0	**252**
2024-05-11 16:30:00	153	5	0	**158**	0	0	21	79	2	**102**	0	0	1	2	0	**3**	0	0	0	0	0	**263**
2024-05-11 16:45:00	132	1	0	**133**	0	0	24	65	1	**90**	0	0	3	0	0	**3**	0	0	0	0	0	**226**
2024-05-11 17:00:00	138	7	0	**145**	0	0	21	75	1	**97**	0	0	2	3	0	**5**	0	0	0	0	0	**247**
2024-05-11 17:15:00	142	5	0	**147**	0	0	18	78	0	**96**	0	0	0	0	0	**0**	0	0	0	0	0	**243**
2024-05-11 17:30:00	114	1	0	**115**	0	0	15	70	0	**85**	0	0	0	0	0	**0**	0	0	0	0	0	**200**
2024-05-11 17:45:00	119	4	0	**123**	0	0	12	65	0	**77**	0	0	0	0	0	**0**	0	0	0	0	0	**200**
2024-05-11 18:00:00	112	1	0	**113**	0	0	6	54	1	**61**	0	0	0	1	0	**1**	0	0	0	0	0	**175**
2024-05-11 18:15:00	96	0	0	**96**	0	0	7	59	0	**66**	0	0	1	0	0	**1**	0	0	0	0	0	**163**
2024-05-11 18:30:00	76	0	0	**76**	0	0	12	42	0	**54**	0	0	0	0	0	**0**	0	0	0	0	0	**130**
2024-05-11 18:45:00	71	0	0	**71**	0	0	7	34	0	**41**	0	0	0	0	0	**0**	0	0	0	0	0	**112**
2024-05-11 19:00:00	66	0	0	**66**	0	0	6	25	0	**31**	0	0	1	0	0	**1**	0	0	0	0	0	**98**
2024-05-11 19:15:00	75	1	0	**76**	0	0	10	33	0	**43**	0	0	0	1	0	**1**	0	0	0	0	0	**120**
2024-05-11 19:30:00	56	1	0	**57**	0	0	3	29	0	**32**	0	0	1	0	0	**1**	0	0	0	0	0	**90**
2024-05-11 19:45:00	57	1	0	**58**	0	0	6	21	0	**27**	0	0	0	1	0	**1**	0	0	0	0	0	**86**
2024-05-11 20:00:00	51	0	0	**51**	0	0	5	19	0	**24**	0	0	0	0	0	**0**	0	0	0	0	0	**75**
2024-05-11 20:15:00	55	0	0	**55**	0	0	13	27	0	**40**	0	0	0	0	0	**0**	0	0	0	0	0	**95**
2024-05-11 20:30:00	46	0	0	**46**	0	0	4	23	0	**27**	0	0	1	1	0	**2**	0	0	0	0	0	**75**
2024-05-11 20:45:00	36	1	0	**37**	0	0	5	19	0	**24**	0	0	2	3	0	**5**	0	0	0	0	0	**66**
2024-05-11 21:00:00	47	2	0	**49**	0	0	7	25	0	**32**	0	0	0	1	0	**1**	0	0	0	0	0	**82**
2024-05-11 21:15:00	67	1	0	**68**	0	0	5	22	0	**27**	0	0	0	6	0	**6**	0	0	0	0	0	**101**
2024-05-11 21:30:00	51	1	0	**52**	0	0	2	29	1	**32**	0	0	1	1	0	**2**	0	0	0	0	0	**86**
2024-05-11 21:45:00	42	1	0	**43**	0	0	2	25	0	**27**	0	0	0	0	0	**0**	0	0	0	0	0	**70**
Grand Total	15996	240	5	**16241**	1	0	2889	10269	34	**13192**	1	0	103	142	0	**245**	0	0	0	2	0	**29678**
% Approach	98.5%	1.5%	0.0%				21.9%	77.8%	0.3%				42.0%	58.0%	0.0%							
% Total	53.9%	0.8%	0.0%	**54.7%**			9.7%	34.6%	0.1%	**44.5%**			0.3%	0.5%	0.0%	**0.8%**				**0.0%**		
Lights	15590	159	5	**15754**			2678	9283	28	**11989**			79	86	0	**165**				**0**		27908
% Lights	97.5%	66.3%	100.0%	**97.0%**			92.7%	90.4%	82.4%	**90.9%**			76.7%	60.6%	0.0%	**67.3%**						**94.0%**
Articulated Trucks	146	5	0	**151**			108	448	0	**556**			1	5	0	**6**				**0**		713
% Articulated Trucks	0.9%	2.1%	0.0%	**0.9%**			3.7%	4.4%	0.0%	**4.2%**			1.0%	3.5%	0.0%	**2.4%**						**2.4%**
Buses and Single-Unit Trucks	255	76	0	**331**			94	524	6	**624**			22	50	0	**72**				**0**		1027
% Buses and Single-Unit Trucks	1.6%	31.7%	0.0%	**2.0%**			3.3%	5.1%	17.6%	**4.7%**			21.4%	35.2%	0.0%	**29.4%**						**3.5%**
Bicycles on Road	5	0	0	**5**			9	14	0	**23**			1	1	0	**2**				**0**		30
% Bicycles on Road	0.0%	0.0%	0.0%	**0.0%**			0.3%	0.1%	0.0%	**0.2%**			1.0%	0.7%	0.0%	**0.8%**						**0.1%**
Pedestrians					1	0					0	0					0	0		1	0	
% Pedestrians					100.0%	0.0%					0.0%	0.0%					0.0%	0.0%		50.0%	0.0%	
Bicycles on Crosswalk					0	0					1	0					0	0		1	0	
% Bicycles on Crosswalk					0.0%	0.0%					100.0%	0.0%					0.0%	0.0%		50.0%	0.0%	

Leg	Stuart Dr North						Stuart Dr South						Edison St						
Direction	Southbound						Northbound						Eastbound						
Start Time	Right	Thru	U-Turn	App Total	Peds CW	Peds CCW	Thru	Left	U-Turn	App Total	Peds CW	Peds CCW	Right	Left	U-Turn	App Total	Peds CW	Peds CCW	Int Total
2024-05-09 06:00:00	10	89	1	100	0	0	65	2	0	67	0	0	3	14	0	17	0	0	184
2024-05-09 06:15:00	6	131	4	141	0	0	79	3	0	82	0	0	6	15	0	21	1	1	244
2024-05-09 06:30:00	2	172	1	175	0	0	134	5	0	139	0	0	4	15	0	19	1	0	333
2024-05-09 06:45:00	6	150	1	157	0	0	96	1	0	97	0	0	4	17	0	21	0	0	275
2024-05-09 07:00:00	10	108	1	119	0	0	129	2	0	131	0	0	4	25	0	29	1	0	279
2024-05-09 07:15:00	8	115	1	124	0	0	139	6	0	145	0	0	8	32	0	40	2	0	309
2024-05-09 07:30:00	9	117	3	129	0	0	167	6	0	173	0	0	1	50	0	51	2	0	353
2024-05-09 07:45:00	14	126	3	143	0	0	164	7	0	171	0	0	7	46	0	53	0	0	367
2024-05-09 08:00:00	24	123	2	149	0	0	198	10	0	208	0	0	5	56	0	61	2	0	418
2024-05-09 08:15:00	21	129	4	154	0	0	169	12	0	181	0	0	5	44	0	49	3	4	384
2024-05-09 08:30:00	14	137	1	152	0	0	153	12	1	166	0	0	6	40	0	46	0	0	364
2024-05-09 08:45:00	25	111	1	137	0	0	116	9	1	126	0	0	14	31	0	45	0	0	308
2024-05-09 09:00:00	18	108	0	126	0	0	126	5	0	131	0	0	11	31	0	42	1	0	299
2024-05-09 09:15:00	20	119	2	141	0	0	113	5	0	118	0	0	3	20	0	23	1	0	282
2024-05-09 09:30:00	16	105	0	121	0	0	120	3	0	123	0	0	7	29	0	36	0	0	280
2024-05-09 09:45:00	15	97	1	113	0	0	122	8	0	130	0	0	4	17	1	22	1	0	265
2024-05-09 10:00:00	9	124	0	133	0	0	124	6	0	130	0	0	2	26	0	28	0	0	291
2024-05-09 10:15:00	14	105	1	120	0	0	114	3	0	117	0	0	7	21	0	28	0	1	265
2024-05-09 10:30:00	21	106	2	129	0	0	119	3	0	122	0	0	1	20	0	21	1	0	272
2024-05-09 10:45:00	13	105	1	119	0	0	126	1	0	127	0	0	3	18	0	21	0	0	267
2024-05-09 11:00:00	19	92	0	111	0	0	115	4	0	119	0	0	2	18	0	20	0	1	250
2024-05-09 11:15:00	16	111	3	130	0	0	116	3	0	119	0	0	3	18	0	21	0	0	270
2024-05-09 11:30:00	22	91	1	114	0	0	83	6	0	89	0	0	8	13	0	21	0	0	224
2024-05-09 11:45:00	29	114	0	143	0	0	109	9	0	118	0	0	5	19	0	24	0	0	285
2024-05-09 12:00:00	16	124	0	140	0	0	119	3	0	122	0	0	6	25	0	31	0	0	293
2024-05-09 12:15:00	17	114	0	131	0	0	116	5	0	121	0	0	5	19	0	24	0	1	276
2024-05-09 12:30:00	21	117	3	141	0	0	98	6	0	104	0	0	6	13	0	19	0	0	264
2024-05-09 12:45:00	11	125	0	136	0	0	105	6	0	111	0	0	4	14	0	18	0	0	265
2024-05-09 13:00:00	16	121	1	138	0	0	109	7	1	117	0	0	3	12	0	15	0	0	270
2024-05-09 13:15:00	18	108	1	127	0	0	101	4	0	105	0	0	3	17	0	20	1	2	252
2024-05-09 13:30:00	17	114	2	133	0	0	102	1	0	103	0	0	4	16	0	20	1	1	256
2024-05-09 13:45:00	14	108	1	123	0	0	102	3	0	105	0	0	3	20	1	24	0	0	252
2024-05-09 14:00:00	17	127	0	144	0	0	141	2	0	143	0	0	5	17	0	22	2	2	309
2024-05-09 14:15:00	24	109	0	133	0	0	128	9	0	137	0	0	5	25	0	30	0	1	300
2024-05-09 14:30:00	21	112	0	133	0	0	126	12	0	138	0	0	8	19	0	27	0	0	298
2024-05-09 14:45:00	41	122	1	164	0	0	141	22	1	164	0	0	2	24	0	26	1	0	354
2024-05-09 15:00:00	32	174	2	208	0	0	152	9	0	161	0	0	17	43	0	60	0	2	429
2024-05-09 15:15:00	31	171	2	204	0	0	119	7	0	126	0	0	12	29	0	41	2	0	371
2024-05-09 15:30:00	32	184	2	218	0	0	158	11	0	169	0	0	5	22	1	28	0	0	415
2024-05-09 15:45:00	33	175	1	209	0	0	151	9	0	160	0	0	12	29	0	41	0	0	410
2024-05-09 16:00:00	30	147	3	180	0	0	176	11	0	187	0	0	4	23	0	27	2	0	394
2024-05-09 16:15:00	31	157	0	188	0	0	153	9	1	163	0	0	3	27	0	30	0	0	381
2024-05-09 16:30:00	40	158	4	202	0	0	173	5	0	178	0	0	4	29	0	33	0	0	413
2024-05-09 16:45:00	47	153	5	205	0	0	156	17	0	173	0	0	8	22	0	30	0	0	408
2024-05-09 17:00:00	38	160	0	198	0	0	194	11	0	205	0	0	5	31	0	36	1	0	439
2024-05-09 17:15:00	33	148	6	187	0	0	148	2	0	150	0	0	5	26	0	31	1	0	368
2024-05-09 17:30:00	30	148	4	182	0	0	127	2	0	129	0	0	2	21	0	23	1	2	334
2024-05-09 17:45:00	32	137	4	173	0	0	107	6	1	114	0	0	6	39	0	45	0	3	332
2024-05-09 18:00:00	27	114	5	146	0	0	130	2	0	132	0	0	8	27	0	35	2	0	313
2024-05-09 18:15:00	18	107	5	130	0	0	117	3	0	120	0	0	8	20	0	28	0	1	278
2024-05-09 18:30:00	27	98	1	126	0	0	109	5	0	114	0	0	6	14	0	20	0	1	260
2024-05-09 18:45:00	32	74	4	110	0	0	81	3	0	84	0	0	3	10	0	13	0	0	207
2024-05-09 19:00:00	19	69	0	88	0	0	43	4	0	47	0	0	2	15	0	17	0	0	152
2024-05-09 19:15:00	19	70	5	94	0	0	50	5	0	55	0	0	2	8	0	10	0	0	159
2024-05-09 19:30:00	17	61	2	80	0	0	37	1	0	38	0	0	2	10	0	12	0	0	130
2024-05-09 19:45:00	9	44	1	54	0	0	33	3	0	36	0	0	1	4	0	5	0	1	95
2024-05-09 20:00:00	12	49	1	62	0	0	30	0	0	30	0	0	4	10	0	14	2	0	106
2024-05-09 20:15:00	11	30	0	41	0	0	16	1	0	17	0	0	0	2	0	2	1	0	60
2024-05-09 20:30:00	10	49	1	60	0	0	25	0	0	25	0	0	0	3	0	3	0	0	88

Timestamp																			
2024-05-09 20:45:00	7	35	1	**43**	0	0	29	0	0	**29**	0	0	0	4	0	**4**	0	0	**76**
2024-05-09 21:00:00	6	42	0	**48**	0	0	23	0	0	**23**	0	0	1	2	0	**3**	0	0	**74**
2024-05-09 21:15:00	4	32	0	**36**	0	0	17	1	0	**18**	0	0	2	5	0	**7**	0	0	**61**
2024-05-09 21:30:00	4	25	1	**30**	0	0	15	2	0	**17**	0	0	1	2	0	**3**	0	1	**50**
2024-05-09 21:45:00	4	18	1	**23**	0	0	22	2	0	**24**	0	0	0	18	0	**18**	0	0	**65**
2024-05-11 06:00:00	4	61	0	**65**	0	0	8	2	0	**10**	0	0	1	6	0	**7**	1	1	**82**
2024-05-11 06:15:00	1	68	0	**69**	0	0	33	0	1	**34**	0	0	0	5	0	**5**	0	1	**108**
2024-05-11 06:30:00	2	99	0	**101**	0	0	62	1	0	**63**	0	0	2	9	0	**11**	0	0	**175**
2024-05-11 06:45:00	1	95	1	**97**	0	0	55	2	0	**57**	0	0	3	8	0	**11**	0	1	**165**
2024-05-11 07:00:00	4	55	0	**59**	0	0	59	1	0	**60**	0	0	1	9	0	**10**	1	1	**129**
2024-05-11 07:15:00	3	54	1	**58**	0	0	58	1	0	**59**	0	0	3	9	0	**12**	0	0	**129**
2024-05-11 07:30:00	7	75	0	**82**	0	0	71	3	0	**74**	0	0	0	23	0	**23**	0	0	**179**
2024-05-11 07:45:00	5	74	0	**79**	0	0	105	4	0	**109**	0	0	4	24	0	**28**	0	0	**216**
2024-05-11 08:00:00	11	72	1	**84**	0	0	80	2	0	**82**	0	0	4	18	0	**22**	0	0	**188**
2024-05-11 08:15:00	10	95	0	**105**	0	0	99	4	0	**103**	0	0	6	13	1	**20**	0	1	**228**
2024-05-11 08:30:00	17	84	0	**101**	0	0	122	2	0	**124**	0	0	2	21	0	**23**	0	1	**248**
2024-05-11 08:45:00	26	79	0	**105**	0	0	101	2	0	**103**	0	0	11	34	0	**45**	0	0	**253**
2024-05-11 09:00:00	19	100	2	**121**	0	0	147	3	0	**150**	0	0	6	23	0	**29**	0	0	**300**
2024-05-11 09:15:00	16	102	1	**119**	0	0	118	5	2	**125**	0	0	6	32	0	**38**	0	0	**282**
2024-05-11 09:30:00	17	105	0	**122**	0	0	140	2	0	**142**	0	0	3	35	0	**38**	0	0	**302**
2024-05-11 09:45:00	21	114	2	**137**	0	0	162	0	0	**162**	0	0	5	31	0	**36**	1	0	**335**
2024-05-11 10:00:00	20	117	1	**138**	0	0	136	4	0	**140**	0	0	6	28	0	**34**	1	0	**312**
2024-05-11 10:15:00	22	120	0	**142**	0	0	153	2	0	**155**	0	0	4	39	0	**43**	0	0	**340**
2024-05-11 10:30:00	17	152	0	**169**	0	0	115	6	0	**121**	0	0	4	31	0	**35**	2	0	**325**
2024-05-11 10:45:00	21	122	0	**143**	0	0	153	3	0	**156**	0	0	3	32	0	**35**	0	0	**334**
2024-05-11 11:00:00	19	119	0	**138**	0	0	139	9	0	**148**	0	0	1	26	0	**27**	0	1	**313**
2024-05-11 11:15:00	25	116	0	**141**	0	0	143	5	0	**148**	0	0	6	28	0	**34**	0	0	**323**
2024-05-11 11:30:00	25	150	0	**175**	0	0	134	4	0	**138**	0	0	5	37	0	**42**	0	0	**355**
2024-05-11 11:45:00	21	150	2	**173**	0	0	102	5	1	**108**	0	0	4	49	0	**53**	0	2	**334**
2024-05-11 12:00:00	22	130	1	**153**	0	0	121	7	0	**128**	0	0	7	25	0	**32**	1	0	**313**
2024-05-11 12:15:00	32	131	3	**166**	0	0	109	4	0	**113**	0	0	7	27	0	**34**	0	0	**313**
2024-05-11 12:30:00	31	120	1	**152**	0	0	104	2	0	**106**	0	0	2	18	0	**20**	0	0	**278**
2024-05-11 12:45:00	30	118	1	**149**	0	0	117	2	0	**119**	0	0	2	15	0	**17**	1	1	**285**
2024-05-11 13:00:00	26	122	1	**149**	0	0	96	3	0	**99**	0	0	4	20	0	**24**	0	0	**272**
2024-05-11 13:15:00	23	140	1	**164**	0	0	101	4	0	**105**	0	0	7	12	0	**19**	0	1	**288**
2024-05-11 13:30:00	17	111	0	**128**	0	0	117	4	0	**121**	0	0	4	26	1	**31**	0	0	**280**
2024-05-11 13:45:00	20	113	0	**133**	0	0	99	4	0	**103**	0	0	8	28	0	**36**	0	0	**272**
2024-05-11 14:00:00	15	107	3	**125**	0	0	110	7	1	**118**	0	0	2	17	0	**19**	0	0	**262**
2024-05-11 14:15:00	28	98	0	**126**	0	0	106	4	0	**110**	0	0	1	19	0	**20**	0	0	**256**
2024-05-11 14:30:00	17	107	1	**125**	0	0	107	4	0	**111**	0	0	6	22	0	**28**	0	1	**264**
2024-05-11 14:45:00	32	97	0	**129**	0	0	101	6	0	**107**	0	0	8	18	0	**26**	0	0	**262**
2024-05-11 15:00:00	31	97	2	**130**	0	0	102	4	0	**106**	0	0	3	24	0	**27**	0	0	**263**
2024-05-11 15:15:00	22	93	0	**115**	0	0	87	4	0	**91**	0	0	2	21	0	**23**	0	0	**229**
2024-05-11 15:30:00	18	109	1	**128**	0	0	84	3	0	**87**	0	0	5	20	0	**25**	0	0	**240**
2024-05-11 15:45:00	18	96	0	**114**	0	0	81	9	0	**90**	0	0	5	26	0	**31**	0	0	**235**
2024-05-11 16:00:00	21	105	0	**126**	0	0	77	2	0	**79**	0	0	3	19	0	**22**	1	0	**227**
2024-05-11 16:15:00	10	107	1	**118**	0	0	88	6	0	**94**	0	0	6	16	0	**22**	0	0	**234**
2024-05-11 16:30:00	22	114	1	**137**	0	0	88	5	0	**93**	0	0	8	30	0	**38**	0	0	**268**
2024-05-11 16:45:00	22	99	2	**123**	0	0	108	7	0	**115**	0	0	6	22	0	**28**	0	0	**266**
2024-05-11 17:00:00	20	82	0	**102**	0	0	71	5	0	**76**	0	0	3	24	0	**27**	0	0	**205**
2024-05-11 17:15:00	20	104	0	**124**	0	0	98	5	1	**104**	0	0	3	19	0	**22**	1	0	**250**
2024-05-11 17:30:00	24	103	1	**128**	0	0	108	5	0	**113**	0	0	2	22	0	**24**	2	2	**265**
2024-05-11 17:45:00	26	68	2	**96**	0	0	72	1	0	**73**	0	0	7	13	0	**20**	0	1	**189**
2024-05-11 18:00:00	20	82	1	**103**	0	0	69	3	0	**72**	0	0	5	12	0	**17**	1	2	**192**
2024-05-11 18:15:00	11	78	3	**92**	0	0	70	4	1	**75**	0	0	1	16	0	**17**	1	0	**184**
2024-05-11 18:30:00	12	66	3	**81**	0	0	103	4	0	**107**	0	0	4	18	0	**22**	0	0	**210**
2024-05-11 18:45:00	11	54	3	**68**	0	0	78	2	0	**80**	0	0	2	13	0	**15**	1	0	**163**
2024-05-11 19:00:00	7	52	2	**61**	0	0	51	1	0	**52**	0	0	1	16	0	**17**	0	1	**130**
2024-05-11 19:15:00	10	50	0	**60**	0	0	54	3	0	**57**	0	0	2	8	0	**10**	0	0	**127**
2024-05-11 19:30:00	5	46	1	**52**	0	0	26	4	0	**30**	0	0	6	12	0	**18**	0	0	**100**
2024-05-11 19:45:00	10	41	0	**51**	0	0	42	3	0	**45**	0	0	0	10	0	**10**	0	0	**106**
2024-05-11 20:00:00	12	37	0	**49**	0	0	42	1	0	**43**	0	0	2	9	0	**11**	0	0	**103**

2024-05-11 20:15:00	6	39	1	**46**	0	0	21	0	0	**21**	0	0	2	4	0	**6**	0	0	**73**
2024-05-11 20:30:00	6	28	0	**34**	0	0	31	3	0	**34**	0	0	0	12	0	**12**	0	0	**80**
2024-05-11 20:45:00	4	30	0	**34**	0	0	36	6	0	**42**	0	0	4	7	0	**11**	0	0	**87**
2024-05-11 21:00:00	9	25	2	**36**	0	0	34	1	0	**35**	0	0	2	3	0	**5**	0	0	**76**
2024-05-11 21:15:00	5	45	0	**50**	0	0	30	1	0	**31**	0	0	0	5	0	**5**	0	0	**86**
2024-05-11 21:30:00	7	32	2	**41**	0	0	26	1	0	**27**	0	0	1	5	0	**6**	3	0	**74**
2024-05-11 21:45:00	3	34	0	**37**	0	0	25	1	0	**26**	0	0	1	3	0	**4**	0	3	**67**
Grand Total	2248	12703	155	**15106**	0	0	12560	559	13	**13132**	0	0	534	2577	5	**3116**	51	46	**31354**
% Approach	14.9%	84.1%	1.0%				95.6%	4.3%	0.1%				17.1%	82.7%	0.2%				
% Total	7.2%	40.5%	0.5%	**48.2%**			40.1%	1.8%	0.0%	**41.9%**			1.7%	8.2%	0.0%	**9.9%**			
Lights	2197	11944	147	**14288**			11761	533	13	**12307**			510	2512	5	**3027**			**29622**
% Lights	97.7%	94.0%	94.8%	**94.6%**			93.6%	95.3%	100.0%	**93.7%**			95.5%	97.5%	100.0%	**97.1%**			**94.5%**
Articulated Trucks	0	198	0	**198**			208	0	0	**208**			2	6	0	**8**			**414**
% Articulated Trucks	0.0%	1.6%	0.0%	**1.3%**			1.7%	0.0%	0.0%	**1.6%**			0.4%	0.2%	0.0%	**0.3%**			**1.3%**
Buses and Single-Unit Trucks	49	532	8	**589**			558	23	0	**581**			21	56	0	**77**			**1247**
% Buses and Single-Unit Trucks	2.2%	4.2%	5.2%	**3.9%**			4.4%	4.1%	0.0%	**4.4%**			3.9%	2.2%	0.0%	**2.5%**			**4.0%**
Bicycles on Road	2	29	0	**31**			33	3	0	**36**			1	3	0	**4**			**71**
% Bicycles on Road	0.1%	0.2%	0.0%	**0.2%**			0.3%	0.5%	0.0%	**0.3%**			0.2%	0.1%	0.0%	**0.1%**			**0.2%**
Pedestrians					0	0					0	0					31	30	
% Pedestrians					0.0%	0.0%					0.0%	0.0%					60.8%	65.2%	
Bicycles on Crosswalk					0	0					0	0					20	16	
% Bicycles on Crosswalk					0.0%	0.0%					0.0%	0.0%					39.2%	34.8%	

Appendix C   TMR 2023 road link count data

Area
Region: 315 - North Queensland
District: 408 - Northern
Road: 842 - ABBOTT STREET CONNECTION ROAD

Site
ID: 160693
Type: C - Coverage
Description: Between Lakeland Dr & Oononba Rd

Spatial
TDist: 1.23 km
Latitude: -19.306431
Longitude: 146.818628

1. Select - **Traffic Year**
2. Select - **Road**
3. Select individual **Traffic Sites** using map select

Traffic Year
2023

Region
315 - North Queensland

District
408 - Northern

Road
All

Site Type
- P - Permanent
- C - Coverage

Direction of Travel
- With Gazettal
- Against Gazettal
- Both Directions

Quick Facts (Both Directions only)

AADT: 9,494

Collection year: 2023

Week day % of AADT: 103.83 %

Weekend day % of AADT: 90.42 %

total days in year: 365

days with data: 19

% of year with data 5.21%

Average daily traffic: 11,436

Growth % last year: -9.37 %

Growth % last 5 years: None

Growth % last 10 years: None

Site selection: 160693

Click anywhere on the map to DESELECT a site or click on a different site to CHANGE selection.

Local area zoom (visible once a single site is selected)

160693 - Between Lakeland Dr & Oononba Rd
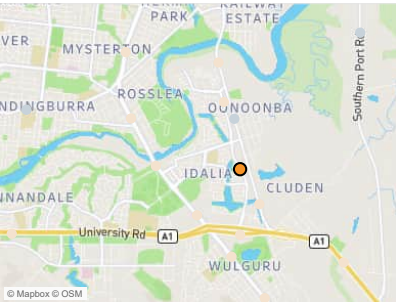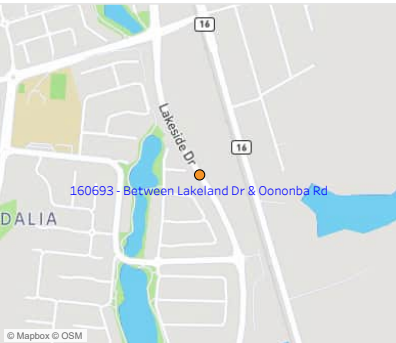
Segments overview for All
Selected road section with segment width and height proportional to length and AADT respectively.
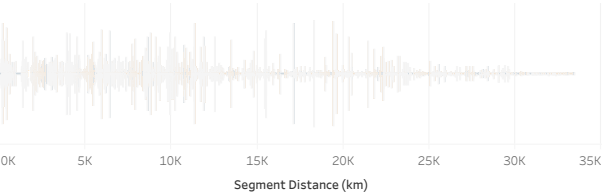
AADT History: 160693
Historical Annual Average Daily Traffic (AADT) values for the Site by Year and Direction of Travel.
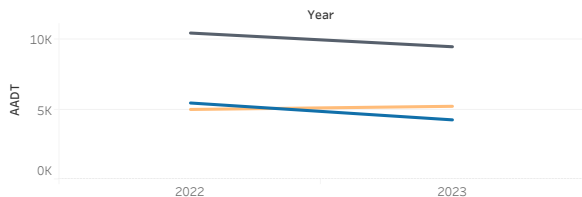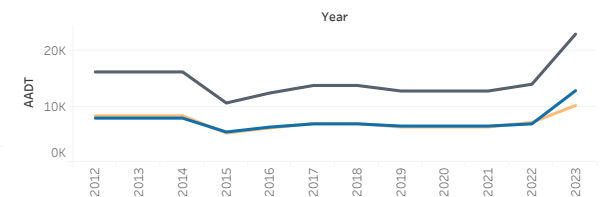

AADT and VKT totals by Vehicle Class and Direction of Travel: 160693
The below chart displays Annual Average Daily Traffic (AADT) and yearly Vehicle Kilometers Travelled (VKT 'millions') by Vehicle Class and Direction of Travel.

Vehicle Class Bins	Vehicle Class	With Gazettal			Against Gazettal			Both Directions		
		AADT	% of AADT Total	VKT	AADT	% of AADT Total	VKT	AADT	% of AADT Total	VKT
1 Bin	00 - All Vehicles	4,262	100.00%	2.7379	5,232	100.00%	3.3610	9,494	100.00%	6.0989
2 Bins	0A - Light Vehicles	4,067	95.42%	2.6125	4,927	94.18%	3.1654	8,997	94.76%	5.7794
	0B - Heavy Vehicles	195	4.58%	0.1254	305	5.82%	0.1956	497	5.24%	0.3196
4 Bins	1A - Short Vehicles	4,067	95.42%	2.6125	4,927	94.18%	3.1654	8,997	94.76%	5.7794
	1B - Trucks and Buses	185	4.34%	0.1188	286	5.47%	0.1838	471	4.96%	0.3025
	1C - Articulated Vehicles	9	0.22%	0.0060	16	0.31%	0.0104	25	0.26%	0.0159
	1D - Road Trains	1	0.02%	0.0005	2	0.04%	0.0013	2	0.02%	0.0012
12 Bins	2A - Short 2-Axle Vehicles	4,021	94.35%	2.5832	4,879	93.25%	3.1342	8,903	93.77%	5.7190
	2B - Short Vehicles Towing	46	1.07%	0.0293	49	0.93%	0.0313	94	0.99%	0.0604
	2C - 2-Axle Trucks and Buses	176	4.14%	0.1133	272	5.19%	0.1744	448	4.72%	0.2879
	2D - 3-Axle Trucks and Buses	6	0.14%	0.0038	10	0.20%	0.0067	16	0.17%	0.0104
	2E - 4-Axle Trucks	3	0.06%	0.0016	4	0.08%	0.0027	7	0.07%	0.0043
	2F - 3-Axle Articulate	3	0.07%	0.0019	5	0.10%	0.0034	8	0.08%	0.0049
	2G - 4-Axle Articulate	3	0.07%	0.0019	5	0.09%	0.0030	8	0.08%	0.0049
	2H - 5-Axle Articulate	0	0.01%	0.0003	1	0.02%	0.0007	1	0.01%	0.0006
	2I - 6-Axle Articulate	3	0.07%	0.0019	5	0.10%	0.0034	9	0.09%	0.0055
	2J - B Double	1	0.02%	0.0005	2	0.03%	0.0010	2	0.02%	0.0012
	2K - Double Road Trains	0	0.00%	0.0000	0	0.00%	0.0000	0	0.00%	0.0000
	2L - Triple Road Trains	0	0.00%	0.0000	1	0.01%	0.0003	0	0.00%	0.0000

Area
Region: 315 - North Queensland
District: 408 - Northern
Road: 10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)

Site
ID: 92204
Type: C - Coverage
Description: 200m West of Cluden Racecourse

Spatial
TDist: 2.88 km
Latitude: -19.318083
Longitude: 146.818648

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1. Select - **Traffic Year**
2. Select - **Road**
3. Select individual **Traffic Sites** using map select

Traffic Year
2023

Region
315 - North Queensland

District
408 - Northern

Road
10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)

Site Type
- P - Permanent
- C - Coverage

Direction of Travel
- With Gazettal
- Against Gazettal
- Both Directions

Quick Facts (Both Directions only)

AADT: 23,066

Collection year: 2023

Week day % of AADT: 105.17 %

Weekend day % of AADT: 87.07 %

total days in year: 365

days with data: 20

% of year with data: 5.48%

Average daily traffic: 25,588

Growth % last year: 64.48 %

Growth % last 5 years: None

Growth % last 10 years: None

Site selection: 92204

Click anywhere on the map to DESELECT a site or click on a different site to CHANGE selection.
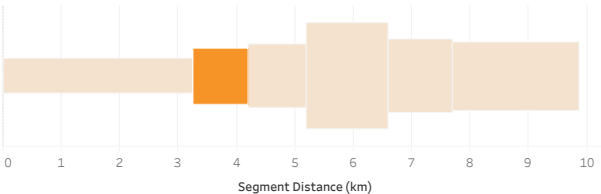

Local area zoom (visible once a single site is selected)

92204 - 200m West of Cluden Racecourse

Segments overview for 10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)
Selected road section with segment width and height proportional to length and AADT respectively.

AADT History: 92204
Historical Annual Average Daily Traffic (AADT) values for the Site by Year and Direction of Travel.
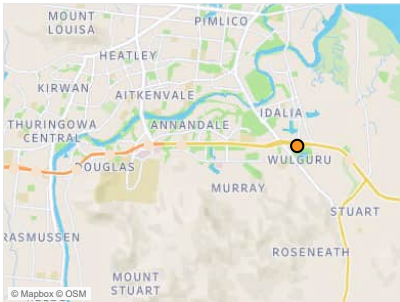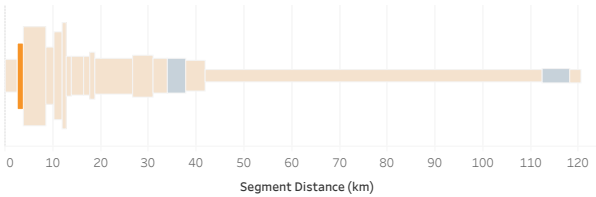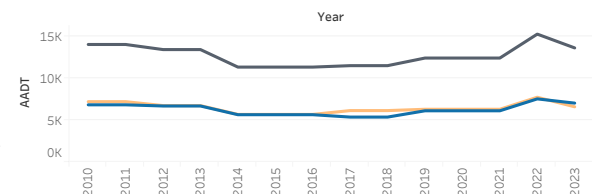

AADT and VKT totals by Vehicle Class and Direction of Travel: 92204
The below chart displays Annual Average Daily Traffic (AADT) and yearly Vehicle Kilometers Travelled (VKT 'millions') by Vehicle Class and Direction of Travel.

Vehicle Class Bins	Vehicle Class	With Gazettal			Against Gazettal			Both Directions		
		AADT	% of AADT Total	VKT	AADT	% of AADT Total	VKT	AADT	% of AADT Total	VKT
1 Bin	00 - All Vehicles	12,867	100.00%	6.1477	10,199	100.00%	4.8729	23,066	100.00%	11.0206
2 Bins	0A - Light Vehicles	11,498	89.36%	5.4935	8,914	87.40%	4.2589	20,411	88.49%	9.7521
	0B - Heavy Vehicles	1,369	10.64%	0.6541	1,285	12.60%	0.6140	2,655	11.51%	1.2685
4 Bins	1A - Short Vehicles	11,498	89.36%	5.4935	8,914	87.40%	4.2589	20,411	88.49%	9.7521
	1B - Trucks and Buses	970	7.54%	0.4635	930	9.12%	0.4444	1,903	8.25%	0.9092
	1C - Articulated Vehicles	237	1.84%	0.1131	225	2.21%	0.1077	461	2.00%	0.2204
	1D - Road Trains	162	1.26%	0.0775	130	1.27%	0.0619	291	1.26%	0.1389
12 Bins	2A - Short 2-Axle Vehicles	11,134	86.53%	5.3196	8,543	83.76%	4.0816	19,675	85.30%	9.4006
	2B - Short Vehicles Towing	364	2.83%	0.1740	371	3.64%	0.1774	736	3.19%	0.3516
	2C - 2-Axle Trucks and Buses	816	6.34%	0.3898	786	7.71%	0.3757	1,603	6.95%	0.7659
	2D - 3-Axle Trucks and Buses	106	0.82%	0.0504	101	0.99%	0.0482	208	0.90%	0.0992
	2E - 4-Axle Trucks	49	0.38%	0.0234	43	0.42%	0.0205	92	0.40%	0.0441
	2F - 3-Axle Articulate	30	0.23%	0.0141	33	0.32%	0.0156	62	0.27%	0.0298
	2G - 4-Axle Articulate	48	0.37%	0.0227	52	0.51%	0.0249	99	0.43%	0.0474
	2H - 5-Axle Articulate	18	0.14%	0.0086	19	0.19%	0.0093	37	0.16%	0.0176
	2I - 6-Axle Articulate	142	1.10%	0.0676	121	1.19%	0.0580	263	1.14%	0.1256
	2J - B Double	151	1.17%	0.0719	120	1.18%	0.0575	270	1.17%	0.1289
	2K - Double Road Trains	12	0.09%	0.0055	9	0.09%	0.0044	21	0.09%	0.0099
	2L - Triple Road Trains	0	0.00%	0.0000	0	0.00%	0.0000	0	0.00%	0.0000

AADT: **Complete Report**

Area
Region: 315 - North Queensland
District: 408 - Northern
Road: 830 - TOWNSVILLE CONNECTION ROAD

Site
ID: 92191
Type: C - Coverage
Description: Stuart Dr 100m West of Edison St

Spatial
TDist: 3.41 km
Latitude: -19.321975
Longitude: 146.817015

1. Select - **Traffic Year**
2. Select - **Road**
3. Select individual **Traffic Sites** using map select

Traffic Year
2023

Region
315 - North Queensland

District
408 - Northern

Road
830 - TOWNSVILLE CONNECTION ROAD

Site Type
- P - Permanent
- C - Coverage

Direction of Travel
- With Gazettal
- Against Gazettal
- Both Directions

Quick Facts (Both Directions only)

AADT: 13,633

Collection year: 2023

Week day % of AADT: 107.82 %

Weekend day % of AADT: 80.46 %

total days in year: 365

days with data: 19
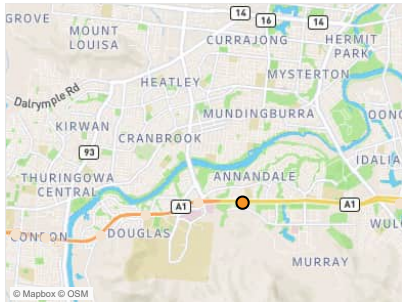
% of year with data 5.21%

Average daily traffic: 14,141

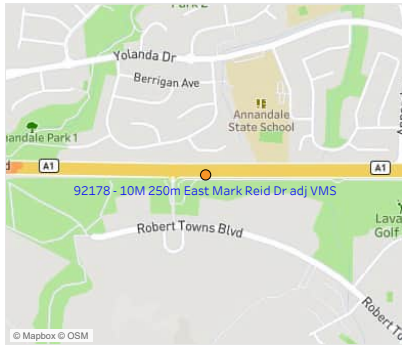Growth % last year: -10.80 %

Growth % last 5 years: None

Growth % last 10 years: None

Site selection: **92191**

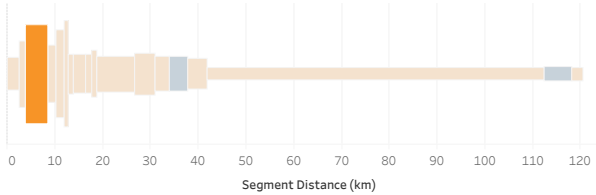Click anywhere on the map to DESELECT a site or click on a different site to CHANGE selection.
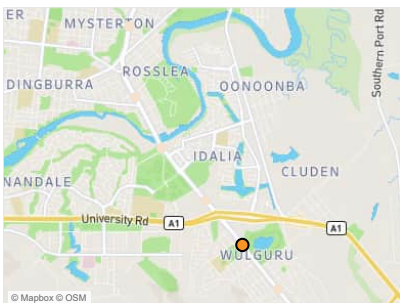
Local area zoom (visible once a single site is selected)

Segments overview for **830 - TOWNSVILLE CONNECTION ROAD**
Selected road section with segment width and height proportional to length and AADT respectively.

AADT History: **92191**
Historical Annual Average Daily Traffic (AADT) values for the Site by Year and Direction of Travel.

AADT and VKT totals by Vehicle Class and Direction of Travel: **92191**
The below chart displays Annual Average Daily Traffic (AADT) and yearly Vehicle Kilometers Travelled (VKT 'millions') by Vehicle Class and Direction of Travel.

Vehicle Class Bins	Vehicle Class	With Gazettal			Against Gazettal			Both Directions		
		AADT	% of AADT Total	VKT	AADT	% of AADT Total	VKT	AADT	% of AADT Total	VKT
1 Bin	00 - All Vehicles	7,037	100.00%	2.4298	6,596	100.00%	2.2775	13,633	100.00%	4.7073
2 Bins	0A - Light Vehicles	6,065	86.19%	2.0942	5,913	89.65%	2.0418	11,978	87.86%	4.1359
	0B - Heavy Vehicles	972	13.81%	0.3356	683	10.35%	0.2357	1,655	12.14%	0.5715
4 Bins	1A -Short Vehicles	6,065	86.19%	2.0942	5,913	89.65%	2.0418	11,978	87.86%	4.1359
	1B - Trucks and Buses	832	11.83%	0.2874	576	8.74%	0.1991	1,408	10.33%	0.4863
	1C - Articulated Vehicles	110	1.56%	0.0379	85	1.29%	0.0294	196	1.44%	0.0678
	1D - Road Trains	30	0.42%	0.0102	21	0.32%	0.0073	50	0.37%	0.0174
12 Bins	2A - Short 2-Axle Vehicles	5,917	84.09%	2.0432	5,762	87.35%	1.9894	11,679	85.67%	4.0328
	2B - Short Vehicles Towing	148	2.10%	0.0510	152	2.30%	0.0524	299	2.19%	0.1031
	2C - 2-Axle Trucks and Buses	708	10.06%	0.2444	469	7.11%	0.1619	1,177	8.63%	0.4062
	2D - 3-Axle Trucks and Buses	87	1.23%	0.0299	76	1.15%	0.0262	162	1.19%	0.0560
	2E - 4-Axle Trucks	38	0.54%	0.0131	32	0.48%	0.0109	70	0.51%	0.0240
	2F - 3-Axle Articulate	21	0.30%	0.0073	13	0.19%	0.0043	34	0.25%	0.0118
	2G - 4-Axle Articulate	28	0.40%	0.0097	20	0.31%	0.0071	49	0.36%	0.0169
	2H - 5-Axle Articulate	8	0.12%	0.0029	7	0.10%	0.0023	15	0.11%	0.0052
	2I - 6-Axle Articulate	52	0.74%	0.0180	46	0.69%	0.0157	98	0.72%	0.0339
	2J - B Double	29	0.41%	0.0100	20	0.31%	0.0071	49	0.36%	0.0169
	2K - Double Road Trains	1	0.01%	0.0002	1	0.01%	0.0002	1	0.01%	0.0005
	2L - Triple Road Trains	0	0.00%	0.0000	0	0.00%	0.0000	0	0.00%	0.0000

AADT: Complete Report

Area
Region: 315 - North Queensland
District: 408 - Northern
Road: 10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)

Site
ID: 92178
Type: C - Coverage
Description: 10M 250m East Mark Reid Dr adj VMS

Spatial
TDist: 7.81 km
Latitude: -19.317895
Longitude: 146.775643

1. Select - **Traffic Year**
2. Select - **Road**
3. Select individual **Traffic Sites** using map select

Traffic Year
2023

Region
315 - North Queensland

District
408 - Northern

Road
10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)

Site Type
- P - Permanent
- C - Coverage

Direction of Travel
- With Gazettal
- Against Gazettal
- Both Directions

Quick Facts (Both Directions only)

AADT: 34,164

Collection year: 2023

Week day % of AADT: 110.30 %

Weekend day % of AADT: 74.26 %

total days in year: 365

days with data: 20

% of year with data: 5.48%

Average daily traffic: 35,408

Growth % last year: -4.74 %

Growth % last 5 years: 0.71 %

Growth % last 10 years: None

Site selection: 92178

Click anywhere on the map to DESELECT a site or click on a different site to CHANGE selection.

Local area zoom (visible once a single site is selected)

92178 - 10M 250m East Mark Reid Dr adj VMS

Segments overview for 10M - BRUCE HIGHWAY (TOWNSVILLE - INGHAM)
Selected road section with segment width and height proportional to length and AADT respectively.

AADT History: 92178
Historical Annual Average Daily Traffic (AADT) values for the Site by Year and Direction of Travel.

AADT and VKT totals by Vehicle Class and Direction of Travel: 92178
The below chart displays Annual Average Daily Traffic (AADT) and yearly Vehicle Kilometers Travelled (VKT 'millions') by Vehicle Class and Direction of Travel.

Vehicle Class Bins	Vehicle Class	With Gazettal			Against Gazettal			Both Directions		
		AADT	% of AADT Total	VKT	AADT	% of AADT Total	VKT	AADT	% of AADT Total	VKT
1 Bin	00 - All Vehicles	16,391	100.00%	28.6093	17,773	100.00%	31.0215	34,164	100.00%	59.6309
2 Bins	0A - Light Vehicles	14,506	88.50%	25.3193	15,354	86.39%	26.7995	29,859	87.40%	52.1174
	0B - Heavy Vehicles	1,885	11.50%	3.2901	2,419	13.61%	4.2220	4,305	12.60%	7.5135
4 Bins	1A -Short Vehicles	14,506	88.50%	25.3193	15,354	86.39%	26.7995	29,859	87.40%	52.1174
	1B - Trucks and Buses	1,415	8.63%	2.4690	1,889	10.63%	3.2976	3,304	9.67%	5.7663
	1C - Articulated Vehicles	288	1.76%	0.5035	341	1.92%	0.5956	629	1.84%	1.0972
	1D - Road Trains	182	1.11%	0.3176	188	1.06%	0.3288	372	1.09%	0.6500
12 Bins	2A - Short 2-Axle Vehicles	14,114	86.11%	24.6355	14,940	84.06%	26.0767	29,053	85.04%	50.7101
	2B - Short Vehicles Towing	392	2.39%	0.6838	414	2.33%	0.7228	806	2.36%	1.4073
	2C - 2-Axle Trucks and Buses	1,193	7.28%	2.0828	1,671	9.40%	2.9160	2,863	8.38%	4.9971
	2D - 3-Axle Trucks and Buses	149	0.91%	0.2603	146	0.82%	0.2544	294	0.86%	0.5128
	2E - 4-Axle Trucks	72	0.44%	0.1259	73	0.41%	0.1272	147	0.43%	0.2564
	2F - 3-Axle Articulate	43	0.26%	0.0744	64	0.36%	0.1117	106	0.31%	0.1849
	2G - 4-Axle Articulate	59	0.36%	0.1030	76	0.43%	0.1334	133	0.39%	0.2326
	2H - 5-Axle Articulate	21	0.13%	0.0372	25	0.14%	0.0434	48	0.14%	0.0835
	2I - 6-Axle Articulate	166	1.01%	0.2890	176	0.99%	0.3071	342	1.00%	0.5963
	2J - B Double	170	1.04%	0.2975	178	1.00%	0.3102	348	1.02%	0.6082
	2K - Double Road Trains	11	0.07%	0.0200	11	0.06%	0.0186	24	0.07%	0.0417
	2L - Triple Road Trains	0	0.00%	0.0000	0	0.00%	0.0000	0	0.00%	0.0000
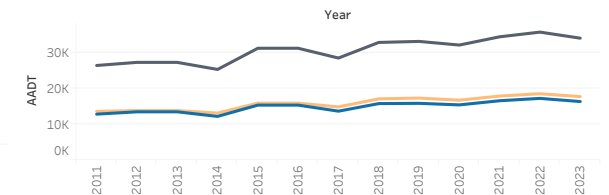
Appendix D   SIDRA outputs (existing)

MOVEMENT SUMMARY

🚦 Site: 101 [Racecourse_Lakeside_Existing_2024_AM (WEST)
(Site Folder: Existing - Racecourse Rd / Lakeside Dr)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

◧▭ Network: N101
[Racecourse_Lakeside_Townsv
ille Turf Club
Access_Existing_2024_AM
(Network Folder: Existing)]

2024 Background Traffic Volumes
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network User-Given Cycle Time)

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
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			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Lakeside Dr (S)															
2	T1	All MCs	120	5.3	120	5.3	0.085	39.5	LOS D	3.4	24.7	1.00	0.65	1.00	20.1
3	R2	All MCs	20	31.6	20	31.6	*0.264	70.7	LOS E	1.2	11.1	1.00	0.72	1.00	4.2
Approach			140	9.1	140	9.1	0.264	44.0	LOS D	3.4	24.7	1.00	0.66	1.00	17.3
North: Lakeside Dr (N)															
7	L2	All MCs	85	11.1	85	11.1	0.180	41.3	LOS D	3.8	29.1	0.80	0.75	0.80	16.3
8	T1	All MCs	640	4.4	640	4.4	*0.614	41.0	LOS D	16.4	119.2	0.93	0.80	0.93	16.4
Approach			725	5.2	725	5.2	0.614	41.0	LOS D	16.4	119.2	0.91	0.79	0.91	16.4
West: Racecourse Dr (W)															
10	L2	All MCs	739	2.0	739	2.0	0.575	5.9	LOS A	9.2	66.6	0.28	0.60	0.28	50.3
11	T1	All MCs	481	14.7	481	14.7	*0.575	14.1	LOS B	9.2	66.6	0.50	0.50	0.50	41.6
12	R2	All MCs	22	47.6	22	47.6	0.030	20.6	LOS C	0.6	6.0	0.50	0.66	0.50	36.4
Approach			1242	7.7	1242	7.7	0.575	9.3	LOS A	9.2	66.6	0.37	0.56	0.37	47.1
All Vehicles			2107	6.9	2107	6.9	0.614	22.5	LOS C	16.4	119.2	0.60	0.65	0.60	33.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance										
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)										
P4	Full	5	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		5	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

🚦 Site: 101 [Racecourse_Lakeside_Existing_2024_PM (WEST)
(Site Folder: Existing - Racecourse Rd / Lakeside Dr)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

▇▇ Network: N101
[Racecourse_Lakeside_Townsv
ille Turf Club
Access_Existing_2024_PM
(Network Folder: Existing)]

2024 Background Traffic Volumes
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network User-Given Cycle Time)

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			veh/h	%	veh/h	%									
South: Lakeside Dr (S)															
2	T1	All MCs	107	3.9	107	3.9	0.052	26.1	LOS C	2.8	20.6	0.93	0.47	0.93	25.9
3	R2	All MCs	20	36.8	20	36.8	*0.272	70.6	LOS E	1.2	11.5	1.00	0.72	1.00	4.2
Approach			127	9.1	127	9.1	0.272	33.1	LOS C	2.8	20.6	0.94	0.51	0.94	20.8
North: Lakeside Dr (N)															
7	L2	All MCs	205	4.6	205	4.6	0.258	28.6	LOS C	7.5	54.4	0.67	0.76	0.67	21.2
8	T1	All MCs	852	1.9	852	1.9	*0.504	25.9	LOS C	17.8	126.9	0.77	0.68	0.77	22.5
Approach			1057	2.4	1057	2.4	0.504	26.4	LOS C	17.8	126.9	0.75	0.69	0.75	22.1
West: Racecourse Dr (W)															
10	L2	All MCs	492	0.9	492	0.9	0.431	5.7	LOS A	4.5	32.1	0.23	0.56	0.23	50.9
11	T1	All MCs	378	9.2	378	9.2	*0.431	22.9	LOS C	9.7	73.1	0.62	0.61	0.62	34.6
12	R2	All MCs	13	75.0	13	75.0	0.029	33.0	LOS C	0.5	5.5	0.67	0.67	0.67	29.4
Approach			882	5.5	882	5.5	0.431	13.5	LOS B	9.7	73.1	0.40	0.59	0.40	43.5
All Vehicles			2066	4.2	2066	4.2	0.504	21.3	LOS C	17.8	126.9	0.61	0.64	0.61	32.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance										
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)										
P4	Full	5	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		5	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

🚦 Site: 101 [Racecourse_Lakeside_Existing_2024_Weekend (WEST) (Site Folder: Existing - Racecourse Rd / Lakeside Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

◧◨ Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Existing_2024_Weekend (Network Folder: Existing)]

2024 Background Traffic Volumes
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lakeside Dr (S)															
2	T1	All MCs	149	2.1	149	2.1	0.067	23.3	LOS C	3.9	28.0	0.91	0.43	0.91	27.6
3	R2	All MCs	22	14.3	22	14.3	*0.262	70.3	LOS E	1.4	10.7	1.00	0.72	1.00	4.2
Approach			172	3.7	172	3.7	0.262	29.4	LOS C	3.9	28.0	0.92	0.47	0.92	22.8
North: Lakeside Dr (N)															
7	L2	All MCs	202	5.2	202	5.2	0.234	24.7	LOS C	6.8	49.6	0.62	0.74	0.62	23.0
8	T1	All MCs	835	0.6	835	0.6	*0.445	21.7	LOS C	15.9	111.6	0.71	0.62	0.71	24.9
Approach			1037	1.5	1037	1.5	0.445	22.3	LOS C	15.9	111.6	0.69	0.64	0.69	24.5
West: Racecourse Dr (W)															
10	L2	All MCs	391	2.8	391	2.8	0.380	5.7	LOS A	3.8	27.0	0.25	0.56	0.25	50.8
11	T1	All MCs	442	4.5	442	4.5	*0.380	27.1	LOS C	10.3	75.1	0.68	0.64	0.68	32.2
12	R2	All MCs	2	0.0	2	0.0	0.004	34.9	LOS C	0.1	0.6	0.70	0.62	0.70	28.2
Approach			835	3.7	835	3.7	0.380	17.1	LOS B	10.3	75.1	0.48	0.60	0.48	40.5
All Vehicles			2043	2.6	2043	2.6	0.445	20.7	LOS C	15.9	111.6	0.62	0.61	0.62	32.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)											
P4	Full	5	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		5	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Racecourse_Lakeside_Townsville Turf Club Access_Existing_2024_AM (Site Folder: Existing - Racecourse Rd / Lakeside Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Existing_2024_AM (Network Folder: Existing)]

2024 Background traffic volumes
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network User-Given Cycle Time)

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Townsville Turf Club Access (S)															
1	L2	All MCs	7	57.1	7	57.1	0.016	8.2	LOS A	0.1	0.8	0.23	0.57	0.23	45.6
2	T1	All MCs	3	66.7	3	66.7	0.013	54.5	LOS D	0.1	0.9	0.93	0.57	0.93	9.3
Approach			11	60.0	11	60.0	0.016	22.1	LOS C	0.1	0.9	0.44	0.57	0.44	33.2
East: Racecourse Dr (E)															
4	L2	All MCs	1	0.0	1	0.0	0.001	5.9	LOS A	0.0	0.0	0.10	0.56	0.10	49.7
5	T1	All MCs	520	14.0	520	14.0	*0.436	33.5	LOS C	11.9	92.9	0.83	0.71	0.83	38.8
6	R2	All MCs	144	8.8	144	8.8	0.248	36.8	LOS D	6.1	45.9	0.77	0.76	0.77	27.5
Approach			665	12.9	665	12.9	0.436	34.2	LOS C	11.9	92.9	0.82	0.72	0.82	36.9
North: Lakeside Dr (N)															
8	T1	All MCs	18	23.5	18	23.5	*0.436	0.7	LOS A	0.7	5.0	0.04	0.55	0.04	43.6
9	R2	All MCs	646	5.0	646	5.0	0.436	5.9	LOS A	0.9	6.9	0.05	0.56	0.05	48.3
Approach			664	5.5	664	5.5	0.436	5.7	LOS A	0.9	6.9	0.04	0.56	0.04	48.2
All Vehicles			1340	9.6	1340	9.6	0.436	20.0	LOS B	11.9	92.9	0.43	0.64	0.43	40.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped]	[Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Racecourse_Lakeside_Townsville Turf Club Access_Existing_2024_PM (Site Folder: Existing - Racecourse Rd / Lakeside Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Existing_2024_PM (Network Folder: Existing)]

2024 Background traffic volumes
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network User-Given Cycle Time)

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Townsville Turf Club Access (S)															
1	L2	All MCs	15	35.7	15	35.7	0.035	9.8	LOS A	0.2	1.9	0.30	0.60	0.30	44.9
2	T1	All MCs	2	0.0	2	0.0	0.006	53.4	LOS D	0.1	0.4	0.93	0.55	0.93	9.5
Approach			17	31.2	17	31.2	0.035	15.3	LOS B	0.2	1.9	0.38	0.60	0.38	39.8
East: Racecourse Dr (E)															
4	L2	All MCs	1	0.0	1	0.0	0.001	5.9	LOS A	0.0	0.0	0.10	0.56	0.10	49.7
5	T1	All MCs	698	7.4	698	7.4	*0.563	35.3	LOS D	16.7	124.6	0.88	0.76	0.88	38.1
6	R2	All MCs	103	5.1	103	5.1	0.173	35.8	LOS D	4.2	31.0	0.75	0.75	0.75	27.9
Approach			802	7.1	802	7.1	0.563	35.3	LOS D	16.7	124.6	0.86	0.76	0.86	37.1
North: Lakeside Dr (N)															
8	T1	All MCs	6	66.7	6	66.7	*0.560	1.8	LOS A	2.5	18.1	0.11	0.59	0.11	41.0
9	R2	All MCs	863	2.0	863	2.0	0.560	7.1	LOS A	3.4	24.5	0.13	0.60	0.13	47.0
Approach			869	2.5	869	2.5	0.560	7.1	LOS A	3.4	24.5	0.13	0.60	0.13	47.0
All Vehicles			1688	5.0	1688	5.0	0.563	20.6	LOS C	16.7	124.6	0.48	0.67	0.48	40.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

🚦 Site: 101 [Racecourse_Lakeside_Townsville Turf Club Access_Existing_2024_Weekend (Site Folder: Existing - Racecourse Rd / Lakeside Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

🔳🔲 Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Existing_2024_Weekend (Network Folder: Existing)]

2024 Background traffic volumes
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network User-Given Cycle Time)

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Townsville Turf Club Access (S)															
1	L2	All MCs	6	33.3	6	33.3	0.012	7.8	LOS A	0.1	0.5	0.22	0.57	0.22	46.8
2	T1	All MCs	4	0.0	4	0.0	0.012	53.7	LOS D	0.1	0.8	0.93	0.57	0.93	9.4
Approach			11	20.0	11	20.0	0.012	26.1	LOS C	0.1	0.8	0.50	0.57	0.50	30.0
East: Racecourse Dr (E)															
4	L2	All MCs	1	0.0	1	0.0	0.001	5.9	LOS A	0.0	0.0	0.10	0.56	0.10	49.7
5	T1	All MCs	479	2.9	479	2.9	*0.455	38.8	LOS D	11.6	83.5	0.88	0.74	0.88	36.7
6	R2	All MCs	140	5.3	140	5.3	0.284	42.4	LOS D	6.4	47.2	0.83	0.78	0.83	25.3
Approach			620	3.4	620	3.4	0.455	39.6	LOS D	11.6	83.5	0.87	0.75	0.87	34.7
North: Lakeside Dr (N)															
8	T1	All MCs	5	0.0	5	0.0	*0.465	0.7	LOS A	0.9	6.2	0.04	0.57	0.04	43.4
9	R2	All MCs	826	0.6	826	0.6	0.465	5.7	LOS A	1.0	6.7	0.04	0.57	0.04	48.7
Approach			832	0.6	832	0.6	0.465	5.6	LOS A	1.0	6.7	0.04	0.57	0.04	48.7
All Vehicles			1462	1.9	1462	1.9	0.465	20.2	LOS C	11.6	83.5	0.39	0.65	0.39	40.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped] ped	[Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

▽ **Site: 101 [Stuart_Edison_Existing_2024_AM (Site Folder: Existing - Stuart Drive)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2024 Background Traffic Volumes
Site Category: Base Year
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: Stuart Dr (S)														
1	L2	All MCs	43	14.6	43	14.6	0.589	6.3	LOS A	5.4	40.6	0.42	0.49	0.42	54.5
2	T1	All MCs	720	8.3	720	8.3	0.589	6.6	LOS A	5.4	40.6	0.42	0.49	0.42	56.5
3u	U	All MCs	1	0.0	1	0.0	0.589	11.9	LOS B	5.4	40.6	0.42	0.49	0.42	57.6
Approach			764	8.6	764	8.6	0.589	6.6	LOS A	5.4	40.6	0.42	0.49	0.42	56.4
North: Stuart Dr (N)														
8	T1	All MCs	542	10.3	542	10.3	0.433	5.9	LOS A	3.9	29.5	0.20	0.50	0.20	56.6
9	R2	All MCs	77	2.7	77	2.7	0.433	9.4	LOS A	3.9	29.5	0.20	0.50	0.20	55.0
9u	U	All MCs	11	0.0	11	0.0	0.433	11.3	LOS B	3.9	29.5	0.20	0.50	0.20	58.2
Approach			629	9.2	629	9.2	0.433	6.5	LOS A	3.9	29.5	0.20	0.50	0.20	56.4
West: Edison St (W)														
10	L2	All MCs	196	2.1	196	2.1	0.372	10.9	LOS B	2.4	17.2	0.83	0.78	0.84	51.1
12	R2	All MCs	24	0.0	24	0.0	0.372	14.7	LOS B	2.4	17.2	0.83	0.78	0.84	51.1
12u	U	All MCs	1	0.0	1	0.0	0.372	16.5	LOS B	2.4	17.2	0.83	0.78	0.84	48.7
Approach			221	1.9	221	1.9	0.372	11.4	LOS B	2.4	17.2	0.83	0.78	0.84	51.0
All Vehicles			1615	7.9	1615	7.9	0.589	7.2	LOS A	5.4	40.6	0.39	0.53	0.39	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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 [Stuart_Edison_Existing_2024_PM (Site Folder: Existing - Stuart Drive)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2024 Background Traffic Volumes
Site Category: Base Year
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Stuart Dr (S)															
1	L2	All MCs	44	0.0	44	0.0	0.644	6.9	LOS A	6.0	43.3	0.61	0.56	0.61	54.2
2	T1	All MCs	712	4.4	712	4.4	0.644	7.5	LOS A	6.0	43.3	0.61	0.56	0.61	56.6
3u	U	All MCs	1	0.0	1	0.0	0.644	12.8	LOS B	6.0	43.3	0.61	0.56	0.61	56.7
Approach			757	4.1	757	4.1	0.644	7.5	LOS A	6.0	43.3	0.61	0.56	0.61	56.4
North: Stuart Dr (N)															
8	T1	All MCs	661	3.9	661	3.9	0.544	5.9	LOS A	5.9	42.3	0.22	0.50	0.22	58.0
9	R2	All MCs	164	0.6	164	0.6	0.544	9.4	LOS A	5.9	42.3	0.22	0.50	0.22	54.9
9u	U	All MCs	9	0.0	9	0.0	0.544	11.3	LOS B	5.9	42.3	0.22	0.50	0.22	58.0
Approach			835	3.2	835	3.2	0.544	6.6	LOS A	5.9	42.3	0.22	0.50	0.22	57.3
West: Edison St (W)															
10	L2	All MCs	115	6.4	115	6.4	0.244	10.3	LOS B	1.5	11.1	0.80	0.76	0.80	50.5
12	R2	All MCs	21	0.0	21	0.0	0.244	13.8	LOS B	1.5	11.1	0.80	0.76	0.80	51.5
12u	U	All MCs	1	0.0	1	0.0	0.244	15.6	LOS B	1.5	11.1	0.80	0.76	0.80	49.1
Approach			137	5.4	137	5.4	0.244	10.9	LOS B	1.5	11.1	0.80	0.76	0.80	50.6
All Vehicles			1728	3.8	1728	3.8	0.644	7.3	LOS A	6.0	43.3	0.44	0.55	0.44	56.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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 [Stuart_Edison_Existing_2024_Weekend (Site Folder: Existing - Stuart Drive)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2024 Background Traffic Volumes
Site Category: Base Year
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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Stuart Dr (S)															
1	L2	All MCs	24	8.7	24	8.7	0.445	6.1	LOS A	3.2	23.5	0.36	0.50	0.36	55.0
2	T1	All MCs	545	4.4	545	4.4	0.445	6.4	LOS A	3.2	23.5	0.36	0.50	0.36	57.7
3u	U	All MCs	1	0.0	1	0.0	0.445	11.8	LOS B	3.2	23.5	0.36	0.50	0.36	57.9
Approach			571	4.6	571	4.6	0.445	6.4	LOS A	3.2	23.5	0.36	0.50	0.36	57.6
North: Stuart Dr (N)															
8	T1	All MCs	563	2.8	563	2.8	0.429	5.8	LOS A	3.7	26.8	0.16	0.50	0.16	58.7
9	R2	All MCs	95	2.2	95	2.2	0.429	9.3	LOS A	3.7	26.8	0.16	0.50	0.16	55.3
9u	U	All MCs	2	0.0	2	0.0	0.429	11.2	LOS B	3.7	26.8	0.16	0.50	0.16	58.4
Approach			660	2.7	660	2.7	0.429	6.3	LOS A	3.7	26.8	0.16	0.50	0.16	58.2
West: Edison St (W)															
10	L2	All MCs	147	0.7	147	0.7	0.224	8.3	LOS A	1.3	9.2	0.67	0.70	0.67	53.3
12	R2	All MCs	17	12.5	17	12.5	0.224	12.8	LOS B	1.3	9.2	0.67	0.70	0.67	50.3
12u	U	All MCs	1	0.0	1	0.0	0.224	13.9	LOS B	1.3	9.2	0.67	0.70	0.67	50.5
Approach			165	1.9	165	1.9	0.224	8.8	LOS A	1.3	9.2	0.67	0.70	0.67	53.0
All Vehicles			1396	3.4	1396	3.4	0.445	6.7	LOS A	3.7	26.8	0.30	0.52	0.30	57.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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 [Racecourse_Lakeside_Existing_2029_AM (WEST)
(Site Folder: Existing - Racecourse Rd / Lakeside Dr)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101
[Racecourse_Lakeside_Townsv
ille Turf Club
Access_Existing_2029_AM
(Network Folder: Existing)]

2024 Background Traffic Volumes
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network User-Given Cycle Time)
Design Life Analysis (Final Year): Results for 5 years

Vehicle Movement Performance																	
Mov ID	Turn	Mov Class	Demand Flows [Total HV]		Arrival Flows [Total HV]		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh.	Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Lakeside Dr (S)															
2	T1	All MCs	132	5.3	132	5.3	0.094	39.7	LOS D	3.7	27.3	1.00	0.65	1.00	20.0
3	R2	All MCs	22	31.6	22	31.6	*0.291	70.9	LOS E	1.4	12.3	1.00	0.72	1.00	4.2
Approach			155	9.1	155	9.1	0.291	44.2	LOS D	3.7	27.3	1.00	0.66	1.00	17.2
North: Lakeside Dr (N)															
7	L2	All MCs	94	11.1	94	11.1	0.199	44.2	LOS D	4.2	32.4	0.81	0.76	0.81	16.2
8	T1	All MCs	707	4.4	707	4.4	*0.685	43.3	LOS D	18.8	136.3	0.95	0.82	0.95	16.1
Approach			801	5.2	801	5.2	0.685	43.4	LOS D	18.8	136.3	0.94	0.81	0.94	15.7
West: Racecourse Dr (W)															
10	L2	All MCs	816	2.0	816	2.0	0.637	6.0	LOS A	13.1	94.8	0.35	0.62	0.35	49.9
11	T1	All MCs	531	14.7	531	14.7	*0.637	14.8	LOS B	13.1	94.8	0.53	0.52	0.53	41.3
12	R2	All MCs	24	47.6	24	47.6	0.034	20.6	LOS C	0.7	6.7	0.50	0.66	0.50	36.4
Approach			1371	7.7	1371	7.7	0.637	9.7	LOS A	13.1	94.8	0.42	0.58	0.42	46.7
All Vehicles			2327	6.9	2327	6.9	0.685	23.6	LOS C	18.8	136.3	0.64	0.67	0.64	33.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance										
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		ped	m			sec	m	m/sec
West: Racecourse Dr (W)											
P4	Full	6	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		6	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

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

MOVEMENT SUMMARY

🚦 Site: 101 [Racecourse_Lakeside_Existing_2029_PM (WEST)
(Site Folder: Existing - Racecourse Rd / Lakeside Dr)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2024 Background Traffic Volumes
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network User-Given Cycle Time)
Design Life Analysis (Final Year): Results for 5 years

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lakeside Dr (S)															
2	T1	All MCs	119	3.9	119	3.9	0.057	25.7	LOS C	3.1	22.7	0.93	0.46	0.93	26.2
3	R2	All MCs	22	36.8	22	36.8	*0.300	70.8	LOS E	1.4	12.7	1.00	0.72	1.00	4.2
Approach			141	9.1	141	9.1	0.300	32.8	LOS C	3.1	22.7	0.94	0.51	0.94	21.0
North: Lakeside Dr (N)															
7	L2	All MCs	227	4.6	227	4.6	0.280	30.1	LOS C	8.2	60.0	0.67	0.76	0.67	21.4
8	T1	All MCs	940	1.9	940	1.9	*0.559	27.0	LOS C	20.6	146.7	0.79	0.70	0.79	22.4
Approach			1167	2.4	1167	2.4	0.559	27.6	LOS C	20.6	146.7	0.77	0.71	0.77	21.5
West: Racecourse Dr (W)															
10	L2	All MCs	543	0.9	543	0.9	0.480	5.7	LOS A	5.5	39.3	0.24	0.56	0.24	50.9
11	T1	All MCs	417	9.2	417	9.2	*0.480	23.4	LOS C	10.8	81.6	0.63	0.63	0.63	34.2
12	R2	All MCs	14	75.0	14	75.0	0.033	33.8	LOS C	0.5	6.1	0.68	0.67	0.68	29.1
Approach			974	5.5	974	5.5	0.480	13.7	LOS B	10.8	81.6	0.41	0.59	0.41	43.4
All Vehicles			2281	4.2	2281	4.2	0.559	22.0	LOS C	20.6	146.7	0.63	0.65	0.63	32.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped] ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)											
P4	Full	6	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		6	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

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

MOVEMENT SUMMARY

🚦 **Site: 101 [Racecourse_Lakeside_Existing_2029_Weekend (WEST) (Site Folder: Existing - Racecourse Rd / Lakeside Dr)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

🔲 **Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Existing_2029_Weekend (Network Folder: Existing)]**

2029 Background Traffic Volumes
Site Category: Future Conditions 1
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Site User-Given Phase Times)
Design Life Analysis (Final Year): Results for 5 years

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total] veh/h	HV %	Arrival Flows [Total] veh/h	HV %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh.] veh	[Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lakeside Dr (S)															
2	T1	All MCs	165	2.1	165	2.1	0.074	23.4	LOS C	4.3	30.9	0.91	0.44	0.91	27.5
3	R2	All MCs	24	14.3	24	14.3	*0.290	70.4	LOS E	1.5	11.9	1.00	0.73	1.00	4.2
Approach			189	3.7	189	3.7	0.290	29.5	LOS C	4.3	30.9	0.92	0.47	0.92	22.8
North: Lakeside Dr (N)															
7	L2	All MCs	223	5.2	223	5.2	0.258	25.7	LOS C	7.6	55.6	0.63	0.75	0.63	22.8
8	T1	All MCs	922	0.6	922	0.6	*0.496	22.7	LOS C	18.3	128.5	0.73	0.65	0.73	24.5
Approach			1145	1.5	1145	1.5	0.496	23.3	LOS C	18.3	128.5	0.71	0.67	0.71	23.9
West: Racecourse Dr (W)															
10	L2	All MCs	431	2.8	431	2.8	0.419	5.7	LOS A	4.5	32.0	0.25	0.56	0.25	50.8
11	T1	All MCs	488	4.5	488	4.5	*0.419	27.3	LOS C	11.6	84.1	0.69	0.65	0.69	32.1
12	R2	All MCs	2	0.0	2	0.0	0.004	34.9	LOS C	0.1	0.6	0.70	0.62	0.70	28.2
Approach			922	3.7	922	3.7	0.419	17.2	LOS B	11.6	84.1	0.48	0.61	0.48	40.4
All Vehicles			2256	2.6	2256	2.6	0.496	21.3	LOS C	18.3	128.5	0.64	0.63	0.64	32.0

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped] ped	[Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)											
P4	Full	6	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		6	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

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

MOVEMENT SUMMARY

🚦 **Site: 101 [Racecourse_Lakeside_Townsville Turf Club Access_Existing_2029_AM (Site Folder: Existing - Racecourse Rd / Lakeside Dr)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

🔲 **Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Existing_2029_AM (Network Folder: Existing)]**

2024 Background traffic volumes
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network User-Given Cycle Time)
Design Life Analysis (Final Year): Results for 5 years

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	95% Back Of Queue [Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Townsville Turf Club Access (S)													
1	L2	All MCs	8 57.1	8 57.1	0.019	8.6	LOS A	0.1	0.9	0.25	0.58	0.25	45.3
2	T1	All MCs	3 66.7	3 66.7	0.014	54.6	LOS D	0.1	1.0	0.93	0.58	0.93	9.3
Approach			12 60.0	12 60.0	0.019	22.4	LOS C	0.1	1.0	0.45	0.58	0.45	33.0
East: Racecourse Dr (E)													
4	L2	All MCs	1 0.0	1 0.0	0.001	5.9	LOS A	0.0	0.0	0.10	0.56	0.10	49.7
5	T1	All MCs	574 14.0	574 14.0	*0.482	34.1	LOS C	13.3	104.5	0.85	0.72	0.85	38.5
6	R2	All MCs	159 8.8	159 8.8	0.273	37.1	LOS D	6.8	51.2	0.78	0.77	0.78	27.4
Approach			735 12.9	735 12.9	0.482	34.7	LOS C	13.3	104.5	0.83	0.73	0.83	36.7
North: Lakeside Dr (N)													
8	T1	All MCs	20 23.5	20 23.5	*0.482	0.7	LOS A	0.8	5.9	0.04	0.55	0.04	43.5
9	R2	All MCs	714 5.0	714 5.0	0.482	5.9	LOS A	1.1	8.2	0.05	0.56	0.05	48.3
Approach			733 5.5	733 5.5	0.482	5.7	LOS A	1.1	8.2	0.05	0.56	0.05	48.3
All Vehicles			1479 9.6	1479 9.6	0.482	20.3	LOS C	13.3	104.5	0.44	0.65	0.44	40.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped] ped	AVERAGE BACK OF QUEUE [Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)											
P4	Full	58	54.3	LOS E[12]	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		58	54.3	LOS E[12]	0.2	0.2	0.95	0.95	208.1	200.0	0.96

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

MOVEMENT SUMMARY

Site: 101 [Racecourse_Lakeside_Townsville Turf Club Access_Existing_2029_PM (Site Folder: Existing - Racecourse Rd / Lakeside Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Existing_2029_PM (Network Folder: Existing)]

2024 Background traffic volumes
Site Category: Base Year
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network User-Given Cycle Time)
Design Life Analysis (Final Year): Results for 5 years

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Townsville Turf Club Access (S)													
1	L2	All MCs	16 35.7	16 35.7	0.042	11.0	LOS B	0.3	2.5	0.34	0.61	0.34	43.9
2	T1	All MCs	2 0.0	2 0.0	0.007	53.4	LOS D	0.1	0.4	0.93	0.55	0.93	9.5
Approach			19 31.2	19 31.2	0.042	16.3	LOS B	0.3	2.5	0.42	0.61	0.42	39.1
East: Racecourse Dr (E)													
4	L2	All MCs	1 0.0	1 0.0	0.001	5.9	LOS A	0.0	0.0	0.10	0.56	0.10	49.7
5	T1	All MCs	771 7.4	771 7.4	*0.621	36.2	LOS D	18.9	141.0	0.90	0.78	0.90	37.7
6	R2	All MCs	114 5.1	114 5.1	0.191	36.0	LOS D	4.7	34.4	0.75	0.75	0.75	27.8
Approach			886 7.1	886 7.1	0.621	36.1	LOS D	18.9	141.0	0.88	0.78	0.88	36.8
North: Lakeside Dr (N)													
8	T1	All MCs	7 66.7	7 66.7	*0.618	2.2	LOS A	3.7	26.6	0.14	0.60	0.14	40.3
9	R2	All MCs	953 2.0	953 2.0	0.618	7.5	LOS A	4.8	33.8	0.16	0.61	0.16	46.7
Approach			960 2.5	960 2.5	0.618	7.4	LOS A	4.8	33.8	0.16	0.61	0.16	46.6
All Vehicles			1864 5.0	1864 5.0	0.621	21.1	LOS C	18.9	141.0	0.51	0.69	0.51	40.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)											
P4	Full	58	54.3	LOS E[12]	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		58	54.3	LOS E[12]	0.2	0.2	0.95	0.95	208.1	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

🚦 Site: 101 [Racecourse_Lakeside_Townsville Turf Club Access_Existing_2029_Weekend (Site Folder: Existing - Racecourse Rd / Lakeside Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

🚃 Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Existing_2029_Weekend (Network Folder: Existing)]

2029 Background traffic volumes
Site Category: Future Conditions 1
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Site User-Given Phase Times)
Design Life Analysis (Final Year): Results for 5 years

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Townsville Turf Club Access (S)														
1	L2	All MCs	7	33.3	7	33.3	0.015	8.1	LOS A	0.1	0.7	0.24	0.58	0.24	46.5
2	T1	All MCs	5	0.0	5	0.0	0.013	53.7	LOS D	0.1	0.9	0.93	0.58	0.93	9.4
Approach			12	20.0	12	20.0	0.015	26.4	LOS C	0.1	0.9	0.51	0.58	0.51	29.8
East: Racecourse Dr (E)														
4	L2	All MCs	1	0.0	1	0.0	0.001	5.9	LOS A	0.0	0.0	0.10	0.56	0.10	49.7
5	T1	All MCs	529	2.9	529	2.9	*0.502	39.5	LOS D	13.0	93.6	0.89	0.76	0.89	36.5
6	R2	All MCs	155	5.3	155	5.3	0.314	42.8	LOS D	7.2	52.6	0.84	0.78	0.84	25.2
Approach			685	3.4	685	3.4	0.502	40.2	LOS D	13.0	93.6	0.88	0.76	0.88	34.5
North: Lakeside Dr (N)														
8	T1	All MCs	6	0.0	6	0.0	*0.513	0.7	LOS A	1.1	7.5	0.04	0.57	0.04	43.4
9	R2	All MCs	912	0.6	912	0.6	0.513	5.6	LOS A	1.1	7.5	0.04	0.57	0.04	48.7
Approach			918	0.6	918	0.6	0.513	5.6	LOS A	1.1	7.5	0.04	0.57	0.04	48.7
All Vehicles			1614	1.9	1614	1.9	0.513	20.4	LOS C	13.0	93.6	0.40	0.65	0.40	39.9

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped] ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)										
P4	Full	58	54.3	LOS E [12]	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		58	54.3	LOS E [12]	0.2	0.2	0.95	0.95	208.1	200.0	0.96

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

Appendix E   SIDRA outputs (development)

MOVEMENT SUMMARY

🚦 **Site: 101 [Racecourse_Lakeside_Development_2029_AM (WEST) (Site Folder: Development- Racecourse Rd / Lakeside Dr)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

◧▢ Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Development_2029_AM (Network Folder: Existing)]

2029 Development Traffic Volumes
Site Category: Future Conditions 1
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Site User-Given Phase Times)
Design Life Analysis (Final Year): Results for 5 years

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Lakeside Dr (S)															
2	T1	All MCs	220	3.2	220	3.2	0.153	24.5	LOS C	4.0	28.7	0.65	0.53	0.65	26.9
3	R2	All MCs	37	19.0	37	19.0	*0.450	71.5	LOS E	2.3	18.8	1.00	0.75	1.00	4.2
Approach			257	5.5	257	5.5	0.450	31.2	LOS C	4.0	28.7	0.70	0.56	0.70	21.8
North: Lakeside Dr (N)															
7	L2	All MCs	94	11.1	94	11.1	0.199	58.6	LOS E	4.2	32.4	0.81	0.76	0.81	16.2
8	T1	All MCs	1030	3.0	1030	3.0	*1.018	110.1	LOS F	45.8	332.6	1.00	1.39	1.58	7.9
Approach			1124	3.7	1124	3.7	1.018	105.8	LOS F	45.8	332.6	0.98	1.33	1.51	7.6
West: Racecourse Dr (W)															
10	L2	All MCs	816	2.0	816	2.0	0.647	6.1	LOS A	14.8	106.8	0.38	0.64	0.38	49.7
11	T1	All MCs	531	14.7	531	14.7	*0.647	15.2	LOS B	14.8	106.8	0.54	0.52	0.54	41.2
12	R2	All MCs	36	32.3	36	32.3	0.045	20.5	LOS C	1.0	9.0	0.51	0.67	0.51	36.4
Approach			1383	7.7	1383	7.7	0.647	10.0	LOS A	14.8	106.8	0.45	0.60	0.45	46.5
All Vehicles			2764	5.8	2764	5.8	1.018	50.9	LOS D	45.8	332.6	0.69	0.89	0.90	21.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

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

*   Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)											
P4	Full	6	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		6	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

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

MOVEMENT SUMMARY

🚦 **Site: 101 [Racecourse_Lakeside_Townsville Turf Club Access_Development_2029_AM (Site Folder: Development-Racecourse Rd / Lakeside Dr)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Development_2029_AM (Network Folder: Existing)]

2029 Development Traffic Volumes
Site Category: Future Conditions 1
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Site User-Given Phase Times)
Design Life Analysis (Final Year): Results for 5 years

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Townsville Turf Club Access (S)															
1	L2	All MCs	246	1.9	246	1.9	0.402	10.0	LOS A	4.6	32.8	0.40	0.68	0.40	45.9
2	T1	All MCs	106	2.2	106	2.2	*0.300	56.8	LOS E[11]	3.0	21.3	0.97	0.73	0.97	9.0
Approach			352	2.0	352	2.0	0.402	24.0	LOS C	4.6	32.8	0.57	0.70	0.57	32.9
East: Racecourse Dr (E)															
4	L2	All MCs	21	0.0	21	0.0	0.015	6.0	LOS A	0.1	0.5	0.11	0.57	0.11	49.7
5	T1	All MCs	574	14.0	574	14.0	*0.482	34.1	LOS C	13.3	104.5	0.85	0.72	0.85	38.5
6	R2	All MCs	159	8.8	159	8.8	0.273	37.1	LOS D	6.8	51.2	0.78	0.77	0.78	27.4
Approach			755	12.5	755	12.5	0.482	34.0	LOS C	13.3	104.5	0.81	0.73	0.81	36.9
North: Lakeside Dr (N)															
8	T1	All MCs	354	1.3	348	1.3	*0.672	0.8	LOS A	1.8	13.1	0.06	0.25	0.06	51.3
9	R2	All MCs	714	5.0	701	5.0	0.672	6.0	LOS A	2.7	19.7	0.09	0.50	0.09	49.0
Approach			1068	3.8	1050	3.8	0.672	4.3	LOS A	2.7	19.7	0.08	0.42	0.08	49.3
All Vehicles			2174	6.5	2156	6.6	0.672	17.9	LOS B	13.3	104.5	0.42	0.57	0.42	39.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

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

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)											
P4	Full	58	54.3	LOS E[12]	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		58	54.3	LOS E[12]	0.2	0.2	0.95	0.95	208.1	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay).
Pedestrian movement LOS values are based on average delay per pedestrian movement.

MOVEMENT SUMMARY

🚦 **Site: 101 [Racecourse_Lakeside_Development_2029_PM (WEST) (Site Folder: Development- Racecourse Rd / Lakeside Dr)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

▦ **Network: N101 [Racecourse_Lakeside_Townsv ille Turf Club Access_Development_2029_PM (Network Folder: Existing)]**

2029 Development Traffic Volumes
Site Category: Future Conditions 1
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Site User-Given Phase Times)
Design Life Analysis (Final Year): Results for 5 years

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			veh/h	%	veh/h	%									
South: Lakeside Dr (S)															
2	T1	All MCs	166	2.8	166	2.8	0.079	18.6	LOS B	3.2	23.0	0.68	0.47	0.68	31.0
3	R2	All MCs	31	26.6	31	26.6	*0.391	71.4	LOS E	1.9	16.5	1.00	0.74	1.00	4.2
Approach			196	6.5	196	6.5	0.391	26.8	LOS C	3.2	23.0	0.73	0.51	0.73	23.8
North: Lakeside Dr (N)															
7	L2	All MCs	227	4.6	227	4.6	0.280	31.0	LOS C	8.2	60.0	0.67	0.76	0.67	21.4
8	T1	All MCs	1263	1.4	1263	1.4	*0.848	38.5	LOS D	40.5	288.4	0.96	0.93	1.04	17.6
Approach			1490	1.9	1490	1.9	0.848	37.4	LOS D	40.5	288.4	0.92	0.90	0.98	17.5
West: Racecourse Dr (W)															
10	L2	All MCs	543	0.9	543	0.9	0.485	5.7	LOS A	5.6	40.1	0.24	0.56	0.24	50.9
11	T1	All MCs	417	9.2	417	9.2	*0.485	23.7	LOS C	10.9	82.6	0.63	0.63	0.63	34.1
12	R2	All MCs	34	30.8	34	30.8	0.064	33.5	LOS C	1.3	11.6	0.69	0.70	0.69	29.0
Approach			994	5.4	994	5.4	0.485	14.2	LOS B	10.9	82.6	0.42	0.59	0.42	42.9
All Vehicles			2680	3.5	2680	3.5	0.848	28.0	LOS C	40.5	288.4	0.72	0.76	0.76	27.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)											
P4	Full	6	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		6	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

🚦 **Site: 101 [Racecourse_Lakeside_Townsville Turf Club Access_Development_2029_PM (Site Folder: Development-Racecourse Rd / Lakeside Dr)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

◼◻ Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Development_2029_PM (Network Folder: Existing)]

2029 Development Traffic Volumes
Site Category: Future Conditions 1
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Site User-Given Phase Times)
Design Life Analysis (Final Year): Results for 5 years

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h	Demand Flows [Total HV] %	Arrival Flows [Total HV] veh/h	Arrival Flows [Total HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh.] veh	95% Back Of Queue [Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Townsville Turf Club Access (S)														
1	L2	All MCs	409	1.4	409	1.4	0.857	48.0	LOS D	26.3	186.3	1.00	1.04	1.18	27.8
2	T1	All MCs	58	0.0	58	0.0	*0.163	57.4	LOS E[11]	1.6	11.3	0.96	0.69	0.96	9.1
Approach			467	1.2	467	1.2	0.857	49.2	LOS D	26.3	186.3	0.99	1.00	1.15	25.0
East: Racecourse Dr (E)														
4	L2	All MCs	30	0.0	30	0.0	0.022	6.4	LOS A	0.2	1.2	0.16	0.58	0.16	49.3
5	T1	All MCs	771	7.4	771	7.4	*0.621	36.2	LOS D	18.9	141.0	0.90	0.78	0.90	37.7
6	R2	All MCs	114	5.1	114	5.1	0.191	36.0	LOS D	4.7	34.4	0.75	0.75	0.75	27.8
Approach			914	6.9	914	6.9	0.621	35.2	LOS D	18.9	141.0	0.86	0.77	0.86	37.0
North: Lakeside Dr (N)														
8	T1	All MCs	350	1.3	350	1.3	*0.825	3.9	LOS A	12.3	87.5	0.33	0.49	0.34	41.9
9	R2	All MCs	953	2.0	953	2.0	0.825	8.2	LOS A	12.3	87.5	0.28	0.60	0.29	46.7
Approach			1303	1.8	1303	1.8	0.825	7.1	LOS A	12.3	87.5	0.29	0.57	0.31	46.1
All Vehicles			2684	3.4	2684	3.4	0.857	24.0	LOS C	26.3	186.3	0.61	0.71	0.64	36.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

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

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped] ped	AVERAGE BACK OF QUEUE [Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)										
P4	Full	58	54.3	LOS E[12]	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		58	54.3	LOS E[12]	0.2	0.2	0.95	0.95	208.1	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay).
Pedestrian movement LOS values are based on average delay per pedestrian movement.

MOVEMENT SUMMARY

Site: 101 [Racecourse_Lakeside_Development_2029_Weekend (WEST) (Site Folder: Development- Racecourse Rd / Lakeside Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Development_2029_Weekend (Network Folder: Existing)]

2029 Development Traffic Volumes
Site Category: Future Conditions 1
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Site User-Given Phase Times)
Design Life Analysis (Final Year): Results for 5 years

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h]	HV %	Arrival Flows [Total veh/h]	HV %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh]	95% Back Of Queue Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lakeside Dr (S)															
2	T1	All MCs	318	1.1	318	1.1	0.141	12.7	LOS B	4.7	33.0	0.51	0.43	0.51	36.6
3	R2	All MCs	47	7.5	47	7.5	*0.528	71.6	LOS E	2.9	21.7	1.00	0.76	1.01	4.1
Approach			364	1.9	364	1.9	0.528	20.3	LOS C	4.7	33.0	0.57	0.47	0.58	28.3
North: Lakeside Dr (N)															
7	L2	All MCs	223	5.2	223	5.2	0.258	34.4	LOS C	7.6	55.6	0.63	0.75	0.63	22.8
8	T1	All MCs	1348	0.4	1348	0.4	*0.771	31.5	LOS C	34.5	242.8	0.89	0.80	0.89	21.7
Approach			1571	1.1	1571	1.1	0.771	31.9	LOS C	34.5	242.8	0.85	0.80	0.85	19.5
West: Racecourse Dr (W)															
10	L2	All MCs	431	2.8	431	2.8	0.434	5.8	LOS A	5.1	36.7	0.27	0.57	0.27	50.5
11	T1	All MCs	488	4.5	488	4.5	*0.434	28.5	LOS C	12.1	87.7	0.71	0.66	0.71	31.5
12	R2	All MCs	3	0.0	3	0.0	0.006	35.0	LOS C	0.1	0.9	0.70	0.63	0.70	28.2
Approach			923	3.7	923	3.7	0.434	17.9	LOS B	12.1	87.7	0.50	0.62	0.50	39.9
All Vehicles			2858	2.0	2858	2.0	0.771	25.9	LOS C	34.5	242.8	0.70	0.70	0.70	28.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped]	AVERAGE BACK OF QUEUE Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)											
P4	Full	6	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		6	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay).
Pedestrian movement LOS values are based on average delay per pedestrian movement.

MOVEMENT SUMMARY

🚦 **Site: 101 [Racecourse_Lakeside_Townsville Turf Club Access_Development_2029_Weekend (Site Folder: Development- Racecourse Rd / Lakeside Dr)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

◨▥ **Network: N101 [Racecourse_Lakeside_Townsv ille Turf Club Access_Development_2029_We ekend (Network Folder: Existing)]**

2029 Development Traffic Volumes
Site Category: Future Conditions 1
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Site User-Given Phase Times)
Design Life Analysis (Final Year): Results for 5 years

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Townsville Turf Club Access (S)															
1	L2	All MCs	269	0.9	269	0.9	0.465	10.1	LOS B	5.5	38.7	0.43	0.70	0.43	45.8
2	T1	All MCs	179	0.0	179	0.0	*0.502	58.1	LOS E [11]	5.2	36.4	1.00	0.77	1.00	8.8
Approach			448	0.5	448	0.5	0.502	29.3	LOS C	5.5	38.7	0.66	0.73	0.66	28.7
East: Racecourse Dr (E)															
4	L2	All MCs	44	0.0	44	0.0	0.034	6.0	LOS A	0.2	1.1	0.12	0.58	0.12	49.7
5	T1	All MCs	529	2.9	529	2.9	*0.502	39.5	LOS D	13.0	93.6	0.89	0.76	0.89	36.5
6	R2	All MCs	155	5.3	155	5.3	0.314	42.8	LOS D	7.2	52.6	0.84	0.78	0.84	25.2
Approach			728	3.2	728	3.2	0.502	38.1	LOS D	13.0	93.6	0.83	0.75	0.83	35.0
North: Lakeside Dr (N)															
8	T1	All MCs	433	0.0	433	0.0	*0.740	0.7	LOS A	2.9	20.2	0.08	0.27	0.08	51.2
9	R2	All MCs	912	0.6	912	0.6	0.740	5.6	LOS A	2.9	20.2	0.08	0.50	0.08	49.7
Approach			1345	0.4	1345	0.4	0.740	4.1	LOS A	2.9	20.2	0.08	0.43	0.08	49.9
All Vehicles			2522	1.2	2522	1.2	0.740	18.4	LOS B	13.0	93.6	0.40	0.57	0.40	38.8

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

[11] Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped] ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
West: Racecourse Dr (W)											
P4	Full	58	54.3	LOS E [12]	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		58	54.3	LOS E [12]	0.2	0.2	0.95	0.95	208.1	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
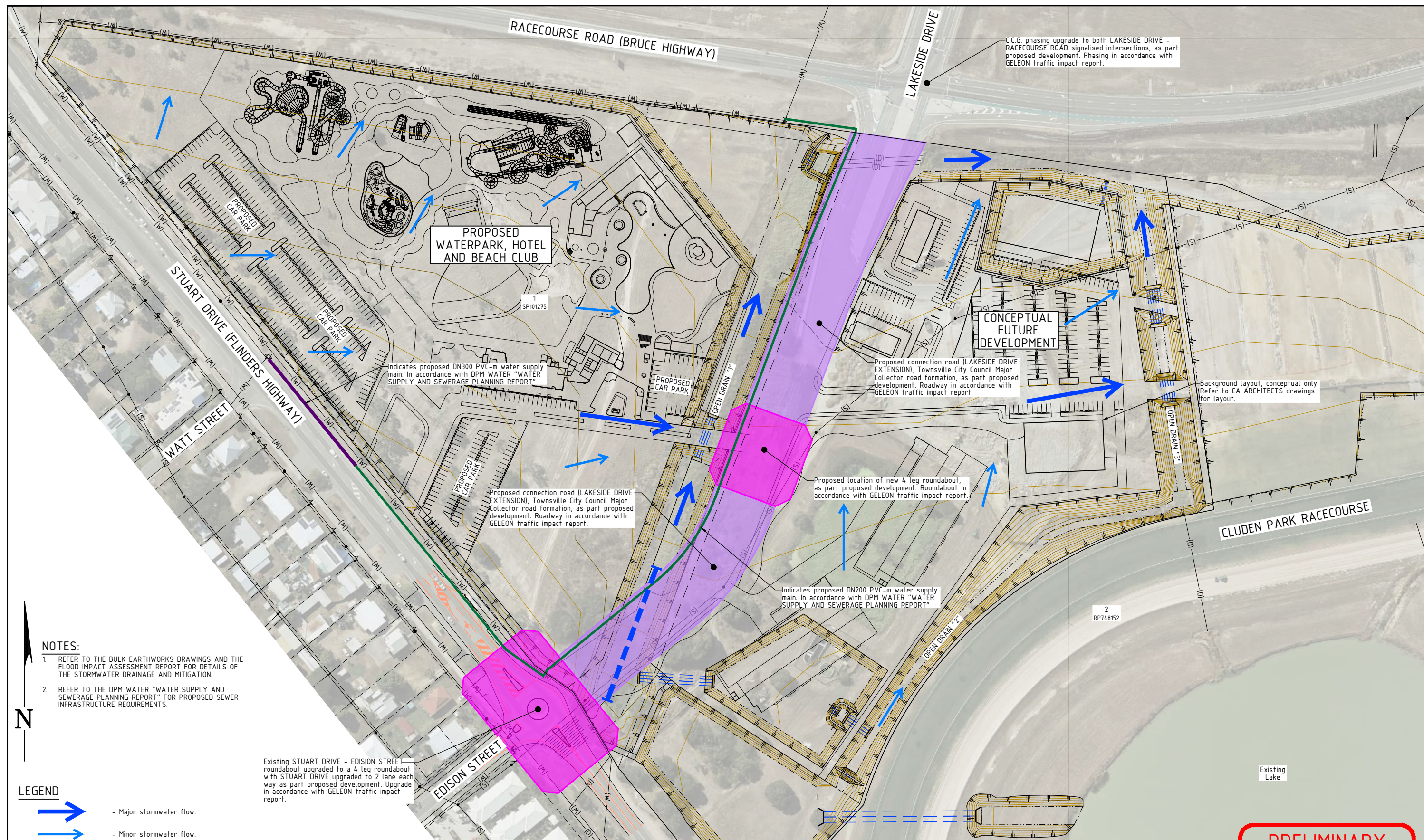
Appendix F   Civil engineering drawings

RACECOURSE ROAD (BRUCE HIGHWAY)

LAKESIDE DRIVE

C.C.G. phasing upgrade to both LAKESIDE DRIVE – RACECOURSE ROAD signalised intersections, as part proposed development. Phasing in accordance with GELEON traffic impact report.

PROPOSED WATERPARK, HOTEL AND BEACH CLUB

CONCEPTUAL FUTURE DEVELOPMENT

1
SP101275

PROPOSED CAR PARK

PROPOSED CAR PARK

PROPOSED CAR PARK

PROPOSED CAR PARK

STUART DRIVE (FLINDERS HIGHWAY)

WATT STREET

Indicates proposed DN300 PVC-m water supply main. In accordance with DPM WATER "WATER SUPPLY AND SEWERAGE PLANNING REPORT"

OPEN DRAIN "I"

Proposed connection road (LAKESIDE DRIVE EXTENSION), Townsville City Council Major Collector road formation, as part proposed development. Roadway in accordance with GELEON traffic impact report.

Proposed connection road (LAKESIDE DRIVE EXTENSION), Townsville City Council Major Collector road formation, as part proposed development. Roadway in accordance with GELEON traffic impact report.

Background layout, conceptual only. Refer to CA ARCHITECTS drawings for layout.

OPEN DRAIN "3"

Proposed location of new 4 leg roundabout, as part proposed development. Roundabout in accordance with GELEON traffic impact report.

CLUDEN PARK RACECOURSE

Indicates proposed DN200 PVC-m water supply main. In accordance with DPM WATER "WATER SUPPLY AND SEWERAGE PLANNING REPORT"

OPEN DRAIN "2"

2
RP748152

Existing STUART DRIVE – EDISION STREET roundabout upgraded to a 4 leg roundabout with STUART DRIVE upgraded to 2 lane each way as part proposed development. Upgrade in accordance with GELEON traffic impact report.

EDISON STREET

Existing Lake

N

NOTES:
1. REFER TO THE BULK EARTHWORKS DRAWINGS AND THE FLOOD IMPACT ASSESSMENT REPORT FOR DETAILS OF THE STORMWATER DRAINAGE AND MITIGATION.
2. REFER TO THE DPM WATER "WATER SUPPLY AND SEWERAGE PLANNING REPORT" FOR PROPOSED SEWER INFRASTRUCTURE REQUIREMENTS.

LEGEND

- Major stormwater flow.
- Minor stormwater flow.
- Existing RP boundary.
- Proposed DN200 water main.
- Proposed DN200 water main.
(S) - Existing sewer main.
(O) - Existing sewer manhole.
(D) - Existing stormwater drain line.
(W) - Existing water main.
- Stormwater drain line.
- Bulk earthworks major contour.
4.0 - Bulk earthworks minor contour.
4.5
- Top of batter.
- Toe of batter.
- Change of grade.

LAYOUT PLAN

PRELIMINARY
NOT FOR CONSTRUCTION

Scale 1:1000 @ A1
0 10 20 30 40m

ENGINEERING CERTIFICATION
Signed:
ANDREW IAN WALLACE – RPEQ No. 6743

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All work is to be carried out in accordance with LOCAL AUTHORITY'S standard details.

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Date 16/08/2024
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Approved AW
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TOWNSVILLE WATERPARK AND HOTEL
STUART DRIVE, CLUDEN
(1 on SP101275, 2 on RP748152)

OVERALL CONCEPT LAYOUT AND SERVICES PLAN

Drawing Number
BNC0084/C01

Issue
P1

Document Set ID: 26418546
Version: 1, Version Date: 24/10/2024

Appendix G   SIDRA outputs (design)

MOVEMENT SUMMARY

▽ **Site: 303 [Precinct 1 & 2_Precinct 3_Design_2029_AM (Site Folder: Final Design 1)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■□ **Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Design_2029_AM (Network Folder: Design)]**

2029 Design Traffic Volumes
Site Category: Proposed Design 2
Roundabout
Design Life Analysis (Final Year): Results for 5 years

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lakeside Dr Extended (S)															
1	L2	All MCs	51	0.0	51	0.0	0.247	6.1	LOS A	1.6	11.6	0.56	0.58	0.56	44.1
2	T1	All MCs	135	6.9	135	6.9	0.247	6.6	LOS A	1.6	11.6	0.56	0.58	0.56	36.5
3	R2	All MCs	62	0.0	62	0.0	0.247	10.6	LOS B	1.6	11.6	0.56	0.58	0.56	43.3
Approach			247	3.8	247	3.8	0.247	7.5	LOS A	1.6	11.6	0.56	0.58	0.56	40.8
East: Precinct 1 & 2 Access (E)															
4	L2	All MCs	79	0.0	79	0.0	0.251	6.0	LOS A	1.6	11.8	0.54	0.62	0.54	39.0
5	T1	All MCs	1	0.0	1	0.0	0.251	6.3	LOS A	1.6	11.8	0.54	0.62	0.54	45.0
6	R2	All MCs	179	3.5	179	3.5	0.251	10.6	LOS B	1.6	11.8	0.54	0.62	0.54	39.0
Approach			259	2.4	259	2.4	0.251	9.1	LOS A	1.6	11.8	0.54	0.62	0.54	39.0
North: Lakeside Dr Extended (N)															
7	L2	All MCs	152	2.8	152	2.8	0.298	4.7	LOS A	2.2	15.7	0.34	0.51	0.34	45.0
8	T1	All MCs	129	9.0	129	9.0	0.298	5.2	LOS A	2.2	15.7	0.34	0.51	0.34	38.6
9	R2	All MCs	108	0.0	108	0.0	0.298	9.1	LOS A	2.2	15.7	0.34	0.51	0.34	44.7
Approach			389	4.1	389	4.1	0.298	6.1	LOS A	2.2	15.7	0.34	0.51	0.34	43.6
West: Precinct 3 Access (W)															
10	L2	All MCs	64	0.0	64	0.0	0.099	6.4	LOS A	0.6	4.1	0.56	0.62	0.56	40.6
11	T1	All MCs	1	0.0	1	0.0	0.099	6.7	LOS A	0.6	4.1	0.56	0.62	0.56	46.3
12	R2	All MCs	29	0.0	29	0.0	0.099	10.9	LOS B	0.6	4.1	0.56	0.62	0.56	40.6
Approach			95	0.0	95	0.0	0.099	7.8	LOS A	0.6	4.1	0.56	0.62	0.56	40.7
All Vehicles			990	3.2	990	3.2	0.298	7.4	LOS A	2.2	15.7	0.47	0.57	0.47	41.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

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 [Stuart_Edison_Design_2029_AM (Site Folder: Final Design 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

◼◻ Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Design_2029_AM (Network Folder: Design)]

2029 Design Traffic Volumes
Site Category: Proposed Design 1
Roundabout
Design Life Analysis (Final Year): Results for 5 years

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Stuart Dr (S)																
1	L2	All MCs	45	14.6	45	14.6	0.370	6.4	LOS A	2.5	19.0	0.45	0.51	0.45	54.8
2	T1	All MCs	736	8.5	736	8.5	0.370	7.5	LOS A	2.5	19.0	0.46	0.53	0.46	56.6
3	R2	All MCs	144	4.9	144	4.9	0.370	11.3	LOS B	2.5	18.3	0.47	0.57	0.47	52.5
3u	U	All MCs	1	0.0	1	0.0	0.370	13.5	LOS B	2.5	18.3	0.47	0.57	0.47	56.9
Approach			926	8.2	926	8.2	0.370	8.1	LOS A	2.5	19.0	0.46	0.54	0.46	56.1
East: Lakeside Dr Extended (E)																
4	L2	All MCs	133	6.1	133	6.1	0.313	7.8	LOS A	1.4	10.0	0.62	0.75	0.62	50.2
5	T1	All MCs	28	8.2	28	8.2	0.313	7.3	LOS A	1.4	10.0	0.62	0.75	0.62	48.6
6	R2	All MCs	75	1.6	75	1.6	0.313	11.6	LOS B	1.4	10.0	0.62	0.75	0.62	50.7
Approach			236	4.9	236	4.9	0.313	9.0	LOS A	1.4	10.0	0.62	0.75	0.62	50.1
North: Stuart Dr (N)																
7	L2	All MCs	55	2.1	55	2.1	0.315	6.1	LOS A	2.0	15.2	0.45	0.52	0.45	54.4
8	T1	All MCs	614	10.3	614	10.3	0.315	7.2	LOS A	2.0	15.2	0.46	0.54	0.46	56.2
9	R2	All MCs	81	2.7	81	2.7	0.315	11.3	LOS B	2.0	14.7	0.47	0.57	0.47	54.0
9u	U	All MCs	12	0.0	12	0.0	0.315	13.6	LOS B	2.0	14.7	0.47	0.57	0.47	57.0
Approach			762	8.8	762	8.8	0.315	7.7	LOS A	2.0	15.2	0.46	0.54	0.46	55.9
West: Edison St (W)																
10	L2	All MCs	180	1.2	180	1.2	0.415	10.4	LOS B	2.0	14.5	0.71	0.84	0.81	53.2
11	T1	All MCs	50	4.7	50	4.7	0.415	9.3	LOS A	2.0	14.5	0.71	0.84	0.81	46.2
12	R2	All MCs	25	0.0	25	0.0	0.415	13.6	LOS B	2.0	14.5	0.71	0.84	0.81	52.9
12u	U	All MCs	1	0.0	1	0.0	0.415	15.7	LOS B	2.0	14.5	0.71	0.84	0.81	50.4
Approach			257	1.8	257	1.8	0.415	10.5	LOS B	2.0	14.5	0.71	0.84	0.81	52.3
All Vehicles			2181	7.3	2181	7.3	0.415	8.3	LOS A	2.5	19.0	0.51	0.60	0.52	55.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

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.

CCG MOVEMENT SUMMARY

⊞⊟ **Common Control Group: CCG1 [Racecourse Dr]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 120 seconds (CCG User-Given Phase Times)
Design Life Analysis (Final Year): Results for 5 years

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Vehicle Movement Performance (CCG)															
Site: 101 [Racecourse_Lakeside_Design_2029_AM (WEST)]															
South: Lakeside Dr (S)															
2	T1	All MCs	274	3.0	274	3.0	*0.716	34.2	LOS C	7.4	53.2	0.82	0.67	0.84	22.1
3	R2	All MCs	85	17.8	85	17.8	0.516	52.4	LOS D	4.5	36.0	0.90	0.76	0.90	5.5
Approach			359	6.5	359	6.5	0.716	38.5	LOS D	7.4	53.2	0.84	0.69	0.86	17.9
North: Lakeside Dr (N)															
7	L2	All MCs	94	11.1	94	11.1	0.140	36.3	LOS D	3.5	26.9	0.68	0.73	0.68	20.1
8	T1	All MCs	927	3.4	927	3.4	*0.634	34.4	LOS C	22.2	161.1	0.87	0.77	0.87	19.7
Approach			1021	4.1	1021	4.1	0.634	34.5	LOS C	22.2	161.1	0.85	0.76	0.85	18.5
West: Racecourse Dr (W)															
10	L2	All MCs	735	2.1	735	2.1	0.677	6.0	LOS A	15.0	109.1	0.45	0.66	0.45	49.4
11	T1	All MCs	478	14.6	478	14.6	*0.677	22.5	LOS C	15.0	109.1	0.64	0.63	0.64	36.0
12	R2	All MCs	32	36.6	32	36.6	0.060	32.9	LOS C	1.2	11.1	0.68	0.70	0.68	29.3
Approach			1244	7.8	1244	7.8	0.677	13.1	LOS B	15.0	109.1	0.53	0.65	0.53	43.9
All Vehicles			2624	6.1	2624	6.1	0.716	24.9	LOS C	22.2	161.1	0.70	0.70	0.70	30.9
Site: 101 [Racecourse_Lakeside_Lakeside Extended_Design_2029_AM]															
South: Lakeside Dr Extended (S)															
1	L2	All MCs	170	2.7	170	2.7	0.252	9.2	LOS A	2.6	18.5	0.33	0.65	0.33	47.1
2	T1	All MCs	208	5.6	208	5.6	0.552	57.6	LOS E[11]	6.0	44.2	1.00	0.78	1.00	10.2
Approach			378	4.3	378	4.3	0.552	35.8	LOS D	6.0	44.2	0.70	0.72	0.70	24.5
East: Racecourse Dr (E)															
4	L2	All MCs	72	11.3	72	11.3	0.055	6.3	LOS A	0.3	2.6	0.14	0.58	0.14	50.0
5	T1	All MCs	517	13.9	517	13.9	0.404	30.9	LOS C	11.3	88.6	0.80	0.68	0.80	39.9
6	R2	All MCs	159	8.8	159	8.8	0.254	34.7	LOS C	6.5	49.2	0.75	0.76	0.75	28.4
Approach			748	12.6	748	12.6	0.404	29.4	LOS C	11.3	88.6	0.72	0.69	0.72	38.4
North: Lakeside Dr (N)															
8	T1	All MCs	319	2.5	319	2.5	0.558	3.0	LOS A	3.6	26.2	0.16	0.25	0.16	34.3
9	R2	All MCs	643	5.1	643	5.1	0.558	8.9	LOS A	6.3	46.2	0.21	0.58	0.21	45.6
Approach			962	4.2	962	4.2	0.558	6.9	LOS A	6.3	46.2	0.19	0.47	0.19	44.6
All Vehicles			2088	7.2	2088	7.2	0.558	20.2	LOS C	11.3	88.6	0.47	0.59	0.47	37.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

∗ Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[Ped	Dist]					
		ped/h	sec		ped	m			sec	m	m/sec
Site: 101 [Racecourse_Lakeside_Design_2029_AM (WEST)]											
West: Racecourse Dr (W)											
P4	Full	23	54.2	LOS E	0.1	0.1	0.95	0.95	208.0	200.0	0.96
	All Pedestrians	23	54.2	LOS E	0.1	0.1	0.95	0.95	208.0	200.0	0.96
Site: 101 [Racecourse_Lakeside_Lakeside Extended_Design_2029_AM]											
West: Racecourse Dr (W)											
P4	Full	23	54.2	LOS E	0.1	0.1	0.95	0.95	208.0	200.0	0.96
	All Pedestrians	23	54.2	LOS E	0.1	0.1	0.95	0.95	208.0	200.0	0.96

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

MOVEMENT SUMMARY

▽ **Site: 303 [Precinct 1 & 2_Precinct 3_Design_2029_PM (Site Folder: Final Design 1)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

⬛⬛ **Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Design_2029_PM (Network Folder: Design)]**

2029 Design Traffic Volumes
Site Category: Proposed Design 2
Roundabout
Design Life Analysis (Final Year): Results for 5 years

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lakeside Dr Extended (S)															
1	L2	All MCs	27	0.0	27	0.0	0.214	5.9	LOS A	1.4	10.0	0.54	0.59	0.54	43.6
2	T1	All MCs	102	4.5	102	4.5	0.214	6.4	LOS A	1.4	10.0	0.54	0.59	0.54	36.0
3	R2	All MCs	89	0.0	89	0.0	0.214	10.4	LOS B	1.4	10.0	0.54	0.59	0.54	42.9
Approach			219	2.1	219	2.1	0.214	8.0	LOS A	1.4	10.0	0.54	0.59	0.54	40.8
East: Precinct 1 & 2 Access (E)															
4	L2	All MCs	91	0.0	91	0.0	0.298	6.2	LOS A	2.0	14.6	0.58	0.63	0.58	38.7
5	T1	All MCs	1	0.0	1	0.0	0.298	6.5	LOS A	2.0	14.6	0.58	0.63	0.58	44.8
6	R2	All MCs	213	2.5	213	2.5	0.298	10.7	LOS B	2.0	14.6	0.58	0.63	0.58	38.7
Approach			304	1.7	304	1.7	0.298	9.4	LOS A	2.0	14.6	0.58	0.63	0.58	38.7
North: Lakeside Dr Extended (N)															
7	L2	All MCs	202	1.0	202	1.0	0.352	5.1	LOS A	2.6	18.7	0.43	0.51	0.43	45.4
8	T1	All MCs	172	4.7	172	4.7	0.352	5.5	LOS A	2.6	18.7	0.43	0.51	0.43	38.6
9	R2	All MCs	60	0.0	60	0.0	0.352	9.6	LOS A	2.6	18.7	0.43	0.51	0.43	44.7
Approach			434	2.4	434	2.4	0.352	5.9	LOS A	2.6	18.7	0.43	0.51	0.43	43.5
West: Precinct 3 Access (W)															
10	L2	All MCs	112	0.0	112	0.0	0.176	6.8	LOS A	1.1	7.7	0.61	0.64	0.61	40.0
11	T1	All MCs	1	0.0	1	0.0	0.176	7.1	LOS A	1.1	7.7	0.61	0.64	0.61	45.9
12	R2	All MCs	52	0.0	52	0.0	0.176	11.2	LOS B	1.1	7.7	0.61	0.64	0.61	40.0
Approach			164	0.0	164	0.0	0.176	8.2	LOS A	1.1	7.7	0.61	0.64	0.61	40.1
All Vehicles			1122	1.8	1122	1.8	0.352	7.6	LOS A	2.6	18.7	0.52	0.58	0.52	41.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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 [Stuart_Edison_Design_2029_PM (Site Folder: Final Design 1)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

▣▣ **Network: N101
[Racecourse_Lakeside_Townsv
ille Turf Club
Access_Design_2029_PM
(Network Folder: Design)]**

2029 Design Traffic Volumes
Site Category: Proposed Design 1
Roundabout
Design Life Analysis (Final Year): Results for 5 years

Vehicle Movement Performance																
Mov ID	Turn	Mov Class	Demand Flows [Total HV]		Arrival Flows [Total HV]		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh.	Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Stuart Dr (S)															
1	L2	All MCs	46	0.0	46	0.0	0.398	6.7	LOS A	2.8	19.9	0.57	0.57	0.57	54.8
2	T1	All MCs	748	3.9	748	3.9	0.398	8.1	LOS A	2.8	19.9	0.58	0.59	0.58	57.1
3	R2	All MCs	121	2.9	121	2.9	0.398	12.1	LOS B	2.7	19.2	0.59	0.62	0.59	51.7
3u	U	All MCs	1	0.0	1	0.0	0.398	14.4	LOS B	2.7	19.2	0.59	0.62	0.59	56.4
Approach			916	3.6	916	3.6	0.398	8.6	LOS A	2.8	19.9	0.58	0.59	0.58	56.5
East: Lakeside Dr Extended (E)															
4	L2	All MCs	174	2.7	174	2.7	0.449	9.5	LOS A	2.3	16.6	0.71	0.85	0.83	50.0
5	T1	All MCs	53	2.2	53	2.2	0.449	8.6	LOS A	2.3	16.6	0.71	0.85	0.83	47.7
6	R2	All MCs	86	1.4	86	1.4	0.449	13.2	LOS B	2.3	16.6	0.71	0.85	0.83	49.6
Approach			313	2.2	313	2.2	0.449	10.4	LOS B	2.3	16.6	0.71	0.85	0.83	49.5
North: Stuart Dr (N)															
7	L2	All MCs	61	0.0	61	0.0	0.385	6.0	LOS A	2.7	19.7	0.45	0.50	0.45	54.4
8	T1	All MCs	757	4.0	757	4.0	0.385	7.1	LOS A	2.7	19.7	0.45	0.53	0.45	57.6
9	R2	All MCs	173	0.6	173	0.6	0.385	11.1	LOS B	2.7	19.1	0.47	0.57	0.47	53.8
9u	U	All MCs	11	0.0	11	0.0	0.385	13.4	LOS B	2.7	19.1	0.47	0.57	0.47	56.7
Approach			1001	3.2	1001	3.2	0.385	7.8	LOS A	2.7	19.7	0.46	0.54	0.46	56.8
West: Edison St (W)															
10	L2	All MCs	102	6.5	102	6.5	0.279	9.5	LOS A	1.2	8.7	0.68	0.79	0.68	52.7
11	T1	All MCs	39	3.0	39	3.0	0.279	8.1	LOS A	1.2	8.7	0.68	0.79	0.68	47.0
12	R2	All MCs	22	0.0	22	0.0	0.279	12.6	LOS B	1.2	8.7	0.68	0.79	0.68	53.5
12u	U	All MCs	1	0.0	1	0.0	0.279	14.7	LOS B	1.2	8.7	0.68	0.79	0.68	50.9
Approach			164	4.8	164	4.8	0.279	9.6	LOS A	1.2	8.7	0.68	0.79	0.68	51.9
All Vehicles			2394	3.3	2394	3.3	0.449	8.6	LOS A	2.8	19.9	0.55	0.62	0.57	55.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

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.

CCG MOVEMENT SUMMARY

⊟⊟ **Common Control Group: CCG1 [Racecourse Dr]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 120 seconds (CCG User-Given Phase Times)
Design Life Analysis (Final Year): Results for 5 years

Vehicle Movement Performance (CCG)

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 101 [Racecourse_Lakeside_Design_2029_PM (WEST)]															
South: Lakeside Dr (S)															
2	T1	All MCs	206	2.2	206	2.2	* 0.642	40.8	LOS D	5.7	40.9	0.85	0.67	0.86	19.7
3	R2	All MCs	70	16.5	70	16.5	0.507	57.6	LOS E	3.9	31.1	0.94	0.75	0.94	5.1
Approach			276	5.9	276	5.9	0.642	45.1	LOS D	5.7	40.9	0.87	0.69	0.88	15.8
North: Lakeside Dr (N)															
7	L2	All MCs	227	4.6	227	4.6	0.244	26.8	LOS C	7.2	52.5	0.59	0.74	0.59	24.3
8	T1	All MCs	1162	1.5	1162	1.5	* 0.612	23.8	LOS C	24.9	176.9	0.76	0.68	0.76	24.9
Approach			1389	2.0	1389	2.0	0.612	24.3	LOS C	24.9	176.9	0.73	0.69	0.73	23.3
West: Racecourse Dr (W)															
10	L2	All MCs	488	1.0	488	1.0	0.514	5.9	LOS A	8.4	60.6	0.42	0.63	0.42	49.2
11	T1	All MCs	375	9.3	375	9.3	0.514	29.7	LOS C	9.5	72.0	0.70	0.68	0.70	32.0
12	R2	All MCs	28	37.9	28	37.9	0.073	42.2	LOS D	1.2	11.3	0.79	0.71	0.79	25.6
Approach			891	5.6	891	5.6	0.514	17.0	LOS B	9.5	72.0	0.55	0.65	0.55	40.9
All Vehicles			2556	3.7	2556	3.7	0.642	24.0	LOS C	24.9	176.9	0.68	0.68	0.68	29.6
Site: 101 [Racecourse_Lakeside_Lakeside Extended_Design_2029_PM]															
South: Lakeside Dr Extended (S)															
1	L2	All MCs	286	2.0	286	2.0	0.623	15.7	LOS B	10.3	73.0	0.70	0.80	0.70	42.0
2	T1	All MCs	138	3.4	138	3.4	0.433	58.8	LOS E	4.0	28.9	0.99	0.76	0.99	10.0
Approach			423	2.5	423	2.5	0.623	29.7	LOS C	10.3	73.0	0.79	0.78	0.79	30.4
East: Racecourse Dr (E)															
4	L2	All MCs	98	5.9	98	5.9	0.078	6.2	LOS A	0.4	3.1	0.13	0.58	0.13	50.1
5	T1	All MCs	694	7.4	694	7.4	* 0.722	44.5	LOS D	18.8	140.2	0.97	0.85	0.99	34.8
6	R2	All MCs	114	5.1	114	5.1	0.246	43.6	LOS D	5.3	38.6	0.83	0.77	0.83	25.0
Approach			906	6.9	906	6.9	0.722	40.3	LOS D	18.8	140.2	0.86	0.81	0.88	34.5
North: Lakeside Dr (N)															
8	T1	All MCs	337	2.1	337	2.1	0.566	2.8	LOS A	5.5	38.9	0.18	0.35	0.18	32.3
9	R2	All MCs	858	1.9	858	1.9	0.566	7.6	LOS A	5.9	41.6	0.17	0.55	0.17	47.4
Approach			1195	1.9	1195	1.9	0.566	6.2	LOS A	5.9	41.6	0.18	0.50	0.18	46.1
All Vehicles			2524	3.8	2524	3.8	0.722	22.4	LOS C	18.8	140.2	0.53	0.66	0.53	36.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

✱ Critical Movement (Signal Timing)

Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		ped	m			sec	m	m/sec
Pedestrian Movement Performance (CCG)											
Site: 101 [Racecourse_Lakeside_Design_2029_PM (WEST)]											
West: Racecourse Dr (W)											
P4	Full	23	54.2	LOS E	0.1	0.1	0.95	0.95	208.0	200.0	0.96
	All Pedestrians	23	54.2	LOS E	0.1	0.1	0.95	0.95	208.0	200.0	0.96
Site: 101 [Racecourse_Lakeside_Lakeside Extended_Design_2029_PM]											
West: Racecourse Dr (W)											
P4	Full	23	54.2	LOS E	0.1	0.1	0.95	0.95	208.0	200.0	0.96
	All Pedestrians	23	54.2	LOS E	0.1	0.1	0.95	0.95	208.0	200.0	0.96

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

MOVEMENT SUMMARY

▽ Site: 303 [Precinct 1 & 2_Precinct 3_Design_2029_Weekend (Site Folder: Final Design 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2029 Design Traffic Volumes
Site Category: Proposed Design 2
Roundabout
Design Life Analysis (Final Year): Results for 5 years

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lakeside Dr Extended (S)															
1	L2	All MCs	42	0.0	42	0.0	0.239	6.5	LOS A	1.6	11.1	0.61	0.62	0.61	43.2
2	T1	All MCs	92	3.8	92	3.8	0.239	6.9	LOS A	1.6	11.1	0.61	0.62	0.61	35.3
3	R2	All MCs	95	0.0	95	0.0	0.239	10.9	LOS B	1.6	11.1	0.61	0.62	0.61	42.5
Approach			229	1.5	229	1.5	0.239	8.5	LOS A	1.6	11.1	0.61	0.62	0.61	40.7
East: Precinct 1 & 2 Access (E)															
4	L2	All MCs	95	0.0	95	0.0	0.330	6.2	LOS A	2.3	16.4	0.59	0.63	0.59	38.5
5	T1	All MCs	1	0.0	1	0.0	0.330	6.5	LOS A	2.3	16.4	0.59	0.63	0.59	44.7
6	R2	All MCs	244	0.9	244	0.9	0.330	10.7	LOS B	2.3	16.4	0.59	0.63	0.59	38.5
Approach			340	0.6	340	0.6	0.330	9.4	LOS A	2.3	16.4	0.59	0.63	0.59	38.6
North: Lakeside Dr Extended (N)															
7	L2	All MCs	240	0.0	240	0.0	0.383	5.0	LOS A	3.1	21.5	0.44	0.51	0.44	45.3
8	T1	All MCs	144	0.8	144	0.8	0.383	5.4	LOS A	3.1	21.5	0.44	0.51	0.44	38.2
9	R2	All MCs	103	0.0	103	0.0	0.383	9.5	LOS A	3.1	21.5	0.44	0.51	0.44	44.5
Approach			487	0.2	487	0.2	0.383	6.1	LOS A	3.1	21.5	0.44	0.51	0.44	43.8
West: Precinct 3 Access (W)															
10	L2	All MCs	80	0.0	80	0.0	0.126	6.8	LOS A	0.8	5.3	0.61	0.64	0.61	40.1
11	T1	All MCs	1	0.0	1	0.0	0.126	7.1	LOS A	0.8	5.3	0.61	0.64	0.61	46.0
12	R2	All MCs	33	0.0	33	0.0	0.126	11.3	LOS B	0.8	5.3	0.61	0.64	0.61	40.1
Approach			114	0.0	114	0.0	0.126	8.1	LOS A	0.8	5.3	0.61	0.64	0.61	40.2
All Vehicles			1170	0.6	1170	0.6	0.383	7.7	LOS A	3.1	21.5	0.53	0.58	0.53	41.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

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 [Stuart_Edison_Design_2029_Weekend (Site Folder: Final Design 1)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

◼◻ **Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Design_2029_Weekend (Network Folder: Design)]**

2029 Design Traffic Volumes
Site Category: Proposed Design 1
Roundabout
Design Life Analysis (Final Year): Results for 5 years

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Stuart Dr (S)															
1	L2	All MCs	25	8.7	25	8.7	0.282	6.2	LOS A	1.8	12.9	0.43	0.51	0.43	55.1
2	T1	All MCs	565	4.5	565	4.5	0.282	6.9	LOS A	1.8	12.9	0.43	0.53	0.43	57.6
3	R2	All MCs	119	2.0	119	2.0	0.282	11.2	LOS B	1.7	12.5	0.44	0.57	0.44	52.6
3u	U	All MCs	1	0.0	1	0.0	0.282	13.5	LOS B	1.7	12.5	0.44	0.57	0.44	56.9
Approach			710	4.2	710	4.2	0.282	7.6	LOS A	1.8	12.9	0.44	0.54	0.44	57.0
East: Lakeside Dr Extended (E)															
4	L2	All MCs	160	0.7	160	0.7	0.340	7.6	LOS A	1.5	10.8	0.62	0.75	0.63	51.9
5	T1	All MCs	33	0.0	33	0.0	0.340	7.1	LOS A	1.5	10.8	0.62	0.75	0.63	49.0
6	R2	All MCs	76	0.0	76	0.0	0.340	11.7	LOS B	1.5	10.8	0.62	0.75	0.63	51.4
Approach			268	0.4	268	0.4	0.340	8.7	LOS A	1.5	10.8	0.62	0.75	0.63	51.4
North: Stuart Dr (N)															
7	L2	All MCs	72	0.0	72	0.0	0.310	5.8	LOS A	2.0	14.3	0.40	0.50	0.40	54.9
8	T1	All MCs	643	2.8	643	2.8	0.310	6.7	LOS A	2.0	14.3	0.40	0.52	0.40	58.3
9	R2	All MCs	100	2.2	100	2.2	0.310	11.0	LOS B	2.0	14.0	0.41	0.55	0.41	54.3
9u	U	All MCs	2	0.0	2	0.0	0.310	13.3	LOS B	2.0	14.0	0.41	0.55	0.41	57.3
Approach			818	2.5	818	2.5	0.310	7.2	LOS A	2.0	14.3	0.40	0.52	0.40	57.6
West: Edison St (W)															
10	L2	All MCs	137	0.8	137	0.8	0.274	7.8	LOS A	1.2	8.2	0.61	0.73	0.61	54.6
11	T1	All MCs	34	3.4	34	3.4	0.274	7.5	LOS A	1.2	8.2	0.61	0.73	0.61	48.2
12	R2	All MCs	18	12.5	18	12.5	0.274	12.6	LOS B	1.2	8.2	0.61	0.73	0.61	51.4
12u	U	All MCs	1	0.0	1	0.0	0.274	14.1	LOS B	1.2	8.2	0.61	0.73	0.61	51.6
Approach			190	2.4	190	2.4	0.274	8.3	LOS A	1.2	8.2	0.61	0.73	0.61	53.6
All Vehicles			1987	2.8	1987	2.8	0.340	7.6	LOS A	2.0	14.3	0.47	0.58	0.47	56.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

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.

CCG MOVEMENT SUMMARY

⊞⊟ **Common Control Group: CCG1 [Racecourse Dr]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 120 seconds (CCG User-Given Phase Times)
Design Life Analysis (Final Year): Results for 5 years

Vehicle Movement Performance (CCG)																
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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
				%		%									
Site: 101 [Racecourse_Lakeside_Design_2029_Weekend (WEST)]																
South: Lakeside Dr (S)																
2	T1	All MCs	318	1.5	318	1.5	* 0.657	26.1	LOS C	7.3	51.9	0.70	0.57	0.71	25.9
3	R2	All MCs	89	6.5	89	6.5	0.401	44.2	LOS D	4.0	29.9	0.79	0.74	0.79	6.5
Approach			407	2.6	407	2.6	0.657	30.1	LOS C	7.3	51.9	0.72	0.61	0.73	21.4
North: Lakeside Dr (N)																
7	L2	All MCs	223	5.2	223	5.2	0.230	24.9	LOS C	6.7	49.1	0.56	0.73	0.56	25.5
8	T1	All MCs	1227	0.5	1227	0.5	* 0.611	21.9	LOS C	25.4	178.9	0.74	0.67	0.74	26.1
Approach			1450	1.2	1450	1.2	0.611	22.4	LOS C	25.4	178.9	0.71	0.68	0.71	24.4
West: Racecourse Dr (W)																
10	L2	All MCs	388	1.8	388	1.8	0.561	6.3	LOS A	13.2	94.5	0.62	0.70	0.62	44.7
11	T1	All MCs	439	4.5	439	4.5	* 0.561	42.3	LOS D	13.2	94.5	0.83	0.75	0.83	27.9
12	R2	All MCs	3	0.0	3	0.0	0.010	48.2	LOS D	0.2	1.1	0.84	0.63	0.84	23.5
Approach			831	3.2	831	3.2	0.561	25.5	LOS C	13.2	94.5	0.74	0.73	0.74	35.3
All Vehicles			2687	2.0	2687	2.0	0.657	24.5	LOS C	25.4	178.9	0.72	0.68	0.72	28.6
Site: 101 [Racecourse_Lakeside_Lakeside Extended_Design_2029_Weekend]																
South: Lakeside Dr Extended (S)																
1	L2	All MCs	194	1.2	194	1.2	0.323	9.4	LOS A	3.3	23.6	0.37	0.67	0.37	46.9
2	T1	All MCs	222	1.6	222	1.6	0.459	53.9	LOS D	6.2	43.9	0.97	0.77	0.97	10.8
Approach			416	1.4	416	1.4	0.459	33.1	LOS C	6.2	43.9	0.69	0.72	0.69	25.9
East: Racecourse Dr (E)																
4	L2	All MCs	84	1.4	84	1.4	0.068	6.1	LOS A	0.4	2.5	0.13	0.58	0.13	50.1
5	T1	All MCs	476	2.9	476	2.9	0.679	50.4	LOS D	13.3	95.5	0.99	0.83	1.00	33.0
6	R2	All MCs	155	5.3	155	5.3	0.471	53.6	LOS D	8.2	60.2	0.94	0.80	0.94	22.0
Approach			715	3.3	715	3.3	0.679	45.9	LOS D	13.3	95.5	0.88	0.80	0.89	31.7
North: Lakeside Dr (N)																
8	T1	All MCs	403	0.3	403	0.3	0.523	1.6	LOS A	3.3	22.9	0.11	0.24	0.11	39.3
9	R2	All MCs	822	0.7	822	0.7	0.523	6.6	LOS A	4.1	29.2	0.11	0.54	0.11	48.3
Approach			1225	0.6	1225	0.6	0.523	5.0	LOS A	4.1	29.2	0.11	0.44	0.11	47.5
All Vehicles			2356	1.5	2356	1.5	0.679	22.4	LOS C	13.3	95.5	0.45	0.60	0.45	35.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

＊ Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[Ped	Dist]					
		ped/h	sec		ped	m			sec	m	m/sec
Site: 101 [Racecourse_Lakeside_Design_2029_Weekend (WEST)]											
West: Racecourse Dr (W)											
P4	Full	6	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		6	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
Site: 101 [Racecourse_Lakeside_Lakeside Extended_Design_2029_Weekend]											
West: Racecourse Dr (W)											
P4	Full	58	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		58	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

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

MOVEMENT SUMMARY

▽ Site: 404 [Precinct 1 & 2_Precinct 3_Design_2039_AM (Site Folder: Final Design 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2039 Design Traffic Volumes
Site Category: Proposed Design 2
Roundabout
Design Life Analysis (Final Year): Results for 15 years

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lakeside Dr Extended (S)															
1	L2	All MCs	51	0.0	51	0.0	0.277	6.1	LOS A	1.9	13.5	0.58	0.58	0.58	44.0
2	T1	All MCs	164	6.9	164	6.9	0.277	6.7	LOS A	1.9	13.5	0.58	0.58	0.58	36.5
3	R2	All MCs	62	0.0	62	0.0	0.277	10.6	LOS B	1.9	13.5	0.58	0.58	0.58	43.3
Approach			277	4.1	277	4.1	0.277	7.5	LOS A	1.9	13.5	0.58	0.58	0.58	40.5
East: Precinct 1 & 2 Access (E)															
4	L2	All MCs	79	0.0	79	0.0	0.257	6.2	LOS A	1.7	12.2	0.57	0.63	0.57	38.8
5	T1	All MCs	1	0.0	1	0.0	0.257	6.5	LOS A	1.7	12.2	0.57	0.63	0.57	44.9
6	R2	All MCs	179	3.5	179	3.5	0.257	10.8	LOS B	1.7	12.2	0.57	0.63	0.57	38.8
Approach			259	2.4	259	2.4	0.257	9.4	LOS A	1.7	12.2	0.57	0.63	0.57	38.8
North: Lakeside Dr Extended (N)															
7	L2	All MCs	152	2.8	152	2.8	0.319	4.7	LOS A	2.4	17.1	0.34	0.50	0.34	45.0
8	T1	All MCs	157	9.0	157	9.0	0.319	5.2	LOS A	2.4	17.1	0.34	0.50	0.34	38.7
9	R2	All MCs	108	0.0	108	0.0	0.319	9.2	LOS A	2.4	17.1	0.34	0.50	0.34	44.7
Approach			417	4.4	417	4.4	0.319	6.0	LOS A	2.4	17.1	0.34	0.50	0.34	43.4
West: Precinct 3 Access (W)															
10	L2	All MCs	64	0.0	64	0.0	0.102	6.6	LOS A	0.6	4.3	0.59	0.63	0.59	40.3
11	T1	All MCs	1	0.0	1	0.0	0.102	6.9	LOS A	0.6	4.3	0.59	0.63	0.59	46.1
12	R2	All MCs	29	0.0	29	0.0	0.102	11.1	LOS B	0.6	4.3	0.59	0.63	0.59	40.3
Approach			95	0.0	95	0.0	0.102	8.0	LOS A	0.6	4.3	0.59	0.63	0.59	40.4
All Vehicles			1048	3.4	1048	3.4	0.319	7.4	LOS A	2.4	17.1	0.48	0.57	0.48	41.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

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: 505 [Stuart_Edison_Design_2039_AM (Site Folder: Final Design 1)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

◼◻ Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Design_2039_AM (Network Folder: Design)]

2039 Design Traffic Volumes
Site Category: Proposed Design 1
Roundabout
Design Life Analysis (Final Year): Results for 15 years

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Stuart Dr (S)															
1	L2	All MCs	50	14.6	50	14.6	0.490	6.7	LOS A	3.8	28.7	0.54	0.53	0.54	54.4
2	T1	All MCs	989	8.5	989	8.5	0.490	8.8	LOS A	3.8	28.7	0.55	0.55	0.55	56.2
3	R2	All MCs	164	5.2	164	5.2	0.490	11.7	LOS B	3.7	27.6	0.56	0.58	0.56	52.1
3u	U	All MCs	2	0.0	2	0.0	0.490	13.8	LOS B	3.7	27.6	0.56	0.58	0.56	56.6
Approach			1205	8.3	1205	8.3	0.490	9.1	LOS A	3.8	28.7	0.55	0.56	0.55	55.8
East: Lakeside Dr Extended (E)															
4	L2	All MCs	154	6.4	154	6.4	0.405	10.1	LOS B	2.0	14.6	0.71	0.85	0.80	49.0
5	T1	All MCs	33	8.7	33	8.7	0.405	8.7	LOS A	2.0	14.6	0.71	0.85	0.80	47.5
6	R2	All MCs	78	1.8	78	1.8	0.405	13.0	LOS B	2.0	14.6	0.71	0.85	0.80	49.5
Approach			264	5.4	264	5.4	0.405	10.8	LOS B	2.0	14.6	0.71	0.85	0.80	48.9
North: Stuart Dr (N)															
7	L2	All MCs	58	2.4	58	2.4	0.420	6.5	LOS A	3.0	22.8	0.54	0.54	0.54	53.6
8	T1	All MCs	825	10.3	825	10.3	0.420	8.1	LOS A	3.0	22.8	0.55	0.56	0.55	55.8
9	R2	All MCs	89	2.7	89	2.7	0.420	11.7	LOS B	2.9	21.9	0.56	0.59	0.56	53.7
9u	U	All MCs	16	0.0	16	0.0	0.420	13.9	LOS B	2.9	21.9	0.56	0.59	0.56	56.6
Approach			989	9.0	989	9.0	0.420	8.4	LOS A	3.0	22.8	0.55	0.56	0.55	55.6
West: Edison St (W)															
10	L2	All MCs	199	1.2	199	1.2	0.552	14.7	LOS B	3.1	21.9	0.80	0.97	1.05	51.2
11	T1	All MCs	56	5.1	56	5.1	0.552	12.1	LOS B	3.1	21.9	0.80	0.97	1.05	43.3
12	R2	All MCs	28	0.0	28	0.0	0.552	16.3	LOS B	3.1	21.9	0.80	0.97	1.05	51.0
12u	U	All MCs	1	0.0	1	0.0	0.552	18.4	LOS B	3.1	21.9	0.80	0.97	1.05	48.6
Approach			284	1.9	284	1.9	0.552	14.4	LOS B	3.1	21.9	0.80	0.97	1.05	50.2
All Vehicles			2742	7.6	2742	7.6	0.552	9.6	LOS A	3.8	28.7	0.59	0.63	0.62	54.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

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.

CCG MOVEMENT SUMMARY

⊞ **Common Control Group: CCG1 [Racecourse Dr]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 120 seconds (CCG User-Given Phase Times)
Design Life Analysis (Final Year): Results for 15 years

Vehicle Movement Performance (CCG)

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 202 [Racecourse_Lakeside_Design_2039_AM (WEST)]															
South: Lakeside Dr (S)															
2	T1	All MCs	321	3.1	321	3.1	*0.839	40.4	LOS D	9.4	67.7	0.94	0.79	1.01	19.8
3	R2	All MCs	102	18.1	102	18.1	0.618	55.7	LOS E	5.7	45.7	0.95	0.78	0.96	5.2
Approach			422	6.7	422	6.7	0.839	44.1	LOS D	9.4	67.7	0.94	0.79	1.00	16.3
North: Lakeside Dr (N)															
7	L2	All MCs	115	11.1	115	11.1	0.170	41.3	LOS D	4.3	33.2	0.69	0.74	0.69	19.9
8	T1	All MCs	1081	3.5	1081	3.5	*0.754	38.8	LOS D	28.1	204.4	0.93	0.83	0.93	18.8
Approach			1196	4.2	1196	4.2	0.754	39.0	LOS D	28.1	204.4	0.90	0.82	0.91	17.0
West: Racecourse Dr (W)															
10	L2	All MCs	895	2.1	895	2.1	0.836	8.3	LOS A	33.4	242.9	0.72	0.78	0.72	47.5
11	T1	All MCs	582	14.6	582	14.6	*0.836	27.7	LOS C	33.4	242.9	0.75	0.69	0.75	35.0
12	R2	All MCs	37	38.2	37	38.2	0.071	33.0	LOS C	1.4	13.2	0.69	0.70	0.69	29.3
Approach			1515	7.8	1515	7.8	0.836	16.4	LOS B	33.4	242.9	0.73	0.74	0.73	41.3
All Vehicles			3133	6.3	3133	6.3	0.839	28.7	LOS C	33.4	242.9	0.83	0.78	0.83	28.9
Site: 303 [Racecourse_Lakeside_Lakeside Extended_Design_2039_AM]															
South: Lakeside Dr Extended (S)															
1	L2	All MCs	172	3.3	172	3.3	0.299	11.1	LOS B	3.4	24.3	0.41	0.68	0.41	45.4
2	T1	All MCs	238	6.0	238	6.0	0.634	58.6	LOS E[11]	7.0	51.7	1.00	0.82	1.04	10.1
Approach			410	4.8	410	4.8	0.634	38.7	LOS D	7.0	51.7	0.75	0.76	0.77	22.9
East: Racecourse Dr (E)															
4	L2	All MCs	85	11.7	85	11.7	0.066	6.3	LOS A	0.4	3.1	0.14	0.58	0.14	50.0
5	T1	All MCs	630	13.9	630	13.9	0.492	32.2	LOS C	14.3	112.3	0.83	0.72	0.83	39.4
6	R2	All MCs	194	8.8	194	8.8	0.310	35.4	LOS D	8.2	61.4	0.77	0.78	0.77	28.1
Approach			909	12.6	909	12.6	0.492	30.5	LOS C	14.3	112.3	0.75	0.72	0.75	37.9
North: Lakeside Dr (N)															
8	T1	All MCs	339	2.9	339	2.9	0.653	3.0	LOS A	5.1	36.7	0.20	0.31	0.20	33.2
9	R2	All MCs	783	5.1	783	5.1	0.653	9.0	LOS A	9.0	66.0	0.25	0.59	0.25	45.6
Approach			1122	4.4	1122	4.4	0.653	7.2	LOS A	9.0	66.0	0.23	0.50	0.23	44.5
All Vehicles			2441	7.5	2441	7.5	0.653	21.1	LOS C	14.3	112.3	0.51	0.63	0.52	37.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[Ped	Dist]					
		ped/h	sec		ped	m			sec	m	m/sec
Site: 202 [Racecourse_Lakeside_Design_2039_AM (WEST)]											
West: Racecourse Dr (W)											
P4	Full	28	54.2	LOS E	0.1	0.1	0.95	0.95	208.1	200.0	0.96
	All Pedestrians	28	54.2	LOS E	0.1	0.1	0.95	0.95	208.1	200.0	0.96
Site: 303 [Racecourse_Lakeside_Lakeside Extended_Design_2039_AM]											
West: Racecourse Dr (W)											
P4	Full	28	54.2	LOS E	0.1	0.1	0.95	0.95	208.1	200.0	0.96
	All Pedestrians	28	54.2	LOS E	0.1	0.1	0.95	0.95	208.1	200.0	0.96

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

MOVEMENT SUMMARY

▽ **Site: 303 [Precinct 1 & 2_Precinct 3_Design_2039_PM (Site Folder: Final Design 1)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

◨◨ **Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Design_2039_PM (Network Folder: Design)]**

2039 Design Traffic Volumes
Site Category: Proposed Design 2
Roundabout
Design Life Analysis (Final Year): Results for 15 years

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV]		Arrival Flows [Total HV]		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh.	Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Lakeside Dr Extended (S)															
1	L2	All MCs	27	0.0	27	0.0	0.237	6.0	LOS A	1.6	11.3	0.56	0.59	0.56	43.7
2	T1	All MCs	125	4.5	125	4.5	0.237	6.4	LOS A	1.6	11.3	0.56	0.59	0.56	36.1
3	R2	All MCs	89	0.0	89	0.0	0.237	10.4	LOS B	1.6	11.3	0.56	0.59	0.56	43.0
Approach			242	2.3	242	2.3	0.237	7.9	LOS A	1.6	11.3	0.56	0.59	0.56	40.5
East: Precinct 1 & 2 Access (E)															
4	L2	All MCs	91	0.0	91	0.0	0.308	6.5	LOS A	2.1	15.2	0.61	0.64	0.61	38.4
5	T1	All MCs	1	0.0	1	0.0	0.308	6.8	LOS A	2.1	15.2	0.61	0.64	0.61	44.6
6	R2	All MCs	213	2.5	213	2.5	0.308	11.0	LOS B	2.1	15.2	0.61	0.64	0.61	38.4
Approach			304	1.7	304	1.7	0.308	9.7	LOS A	2.1	15.2	0.61	0.64	0.61	38.4
North: Lakeside Dr Extended (N)															
7	L2	All MCs	202	1.0	202	1.0	0.382	5.2	LOS A	2.9	20.7	0.44	0.51	0.44	45.3
8	T1	All MCs	210	4.7	210	4.7	0.382	5.6	LOS A	2.9	20.7	0.44	0.51	0.44	38.6
9	R2	All MCs	60	0.0	60	0.0	0.382	9.6	LOS A	2.9	20.7	0.44	0.51	0.44	44.7
Approach			472	2.5	472	2.5	0.382	5.9	LOS A	2.9	20.7	0.44	0.51	0.44	43.2
West: Precinct 3 Access (W)															
10	L2	All MCs	112	0.0	112	0.0	0.180	6.9	LOS A	1.1	7.9	0.62	0.65	0.62	39.7
11	T1	All MCs	1	0.0	1	0.0	0.180	7.3	LOS A	1.1	7.9	0.62	0.65	0.62	45.7
12	R2	All MCs	52	0.0	52	0.0	0.180	11.4	LOS B	1.1	7.9	0.62	0.65	0.62	39.7
Approach			164	0.0	164	0.0	0.180	8.3	LOS A	1.1	7.9	0.62	0.65	0.62	39.8
All Vehicles			1182	1.9	1182	1.9	0.382	7.6	LOS A	2.9	20.7	0.54	0.58	0.54	41.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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 [Stuart_Edison_Design_2039_PM (Site Folder: Final Design 1)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

▬▣ **Network: N101 [Racecourse_Lakeside_Townsv ille Turf Club Access_Design_2039_PM (Network Folder: Design)]**

2039 Design Traffic Volumes
Site Category: Proposed Design 1
Roundabout
Design Life Analysis (Final Year): Results for 15 years

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Stuart Dr (S)															
1	L2	All MCs	51	0.0	51	0.0	0.534	7.2	LOS A	4.2	30.5	0.67	0.61	0.67	54.3
2	T1	All MCs	1005	3.9	1005	3.9	0.534	9.5	LOS A	4.2	30.5	0.68	0.63	0.69	56.6
3	R2	All MCs	137	3.1	137	3.1	0.534	13.0	LOS B	4.2	30.4	0.70	0.66	0.72	51.0
3u	U	All MCs	2	0.0	2	0.0	0.534	15.2	LOS B	4.2	30.4	0.70	0.66	0.72	55.9
Approach			1195	3.6	1195	3.6	0.534	9.8	LOS A	4.2	30.5	0.68	0.63	0.69	56.1
East: Lakeside Dr Extended (E)															
4	L2	All MCs	200	2.8	200	2.8	0.601	13.5	LOS B	3.6	25.9	0.82	0.98	1.09	47.6
5	T1	All MCs	61	2.3	61	2.3	0.601	11.2	LOS B	3.6	25.9	0.82	0.98	1.09	45.5
6	R2	All MCs	90	1.6	90	1.6	0.601	15.8	LOS B	3.6	25.9	0.82	0.98	1.09	47.2
Approach			351	2.4	351	2.4	0.601	13.7	LOS B	3.6	25.9	0.82	0.98	1.09	47.1
North: Stuart Dr (N)															
7	L2	All MCs	63	0.0	63	0.0	0.505	6.3	LOS A	4.1	29.8	0.54	0.53	0.54	53.5
8	T1	All MCs	1017	4.0	1017	4.0	0.505	8.3	LOS A	4.1	29.8	0.55	0.55	0.55	57.2
9	R2	All MCs	191	0.6	191	0.6	0.505	11.5	LOS B	4.0	28.8	0.57	0.58	0.57	53.5
9u	U	All MCs	15	0.0	15	0.0	0.505	13.8	LOS B	4.0	28.8	0.57	0.58	0.57	56.4
Approach			1285	3.3	1285	3.3	0.505	8.7	LOS A	4.1	29.8	0.55	0.55	0.55	56.5
West: Edison St (W)															
10	L2	All MCs	112	6.5	112	6.5	0.379	12.6	LOS B	1.8	13.1	0.77	0.89	0.86	51.4
11	T1	All MCs	43	3.3	43	3.3	0.379	9.9	LOS A	1.8	13.1	0.77	0.89	0.86	45.1
12	R2	All MCs	24	0.0	24	0.0	0.379	14.3	LOS B	1.8	13.1	0.77	0.89	0.86	52.1
12u	U	All MCs	1	0.0	1	0.0	0.379	16.4	LOS B	1.8	13.1	0.77	0.89	0.86	49.7
Approach			181	4.8	181	4.8	0.379	12.2	LOS B	1.8	13.1	0.77	0.89	0.86	50.5
All Vehicles			3012	3.4	3012	3.4	0.601	9.9	LOS A	4.2	30.5	0.65	0.65	0.69	55.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

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.

CCG MOVEMENT SUMMARY

⬛⬜ **Common Control Group: CCG1 [Racecourse Dr]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 120 seconds (CCG User-Given Phase Times)
Design Life Analysis (Final Year): Results for 15 years

Vehicle Movement Performance (CCG)

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 101 [Racecourse_Lakeside_Design_2039_PM (WEST)]															
South: Lakeside Dr (S)															
2	T1	All MCs	244	2.3	244	2.3	*0.761	42.6	LOS D	7.1	50.7	0.91	0.74	0.96	19.1
3	R2	All MCs	84	16.8	84	16.8	0.610	58.9	LOS E	4.8	38.5	0.96	0.77	0.97	5.0
Approach			328	6.0	328	6.0	0.761	46.8	LOS D	7.1	50.7	0.92	0.75	0.96	15.4
North: Lakeside Dr (N)															
7	L2	All MCs	276	4.6	276	4.6	0.297	30.8	LOS C	9.1	66.2	0.61	0.75	0.61	24.0
8	T1	All MCs	1368	1.6	1368	1.6	*0.745	27.7	LOS C	33.7	239.8	0.85	0.77	0.85	23.3
Approach			1644	2.1	1644	2.1	0.745	28.3	LOS C	33.7	239.8	0.81	0.77	0.81	21.2
West: Racecourse Dr (W)															
10	L2	All MCs	595	1.0	595	1.0	0.624	6.0	LOS A	11.0	78.9	0.50	0.67	0.50	48.7
11	T1	All MCs	458	9.3	458	9.3	0.624	31.0	LOS C	11.9	89.8	0.74	0.71	0.74	31.6
12	R2	All MCs	31	41.6	31	41.6	0.083	42.4	LOS D	1.4	12.9	0.79	0.71	0.79	25.5
Approach			1083	5.6	1083	5.6	0.624	17.6	LOS B	11.9	89.8	0.61	0.69	0.61	40.5
All Vehicles			3056	3.8	3056	3.8	0.761	26.5	LOS C	33.7	239.8	0.75	0.74	0.75	28.2
Site: 101 [Racecourse_Lakeside_Lakeside Extended_Design_2039_PM]															
South: Lakeside Dr Extended (S)															
1	L2	All MCs	289	2.4	289	2.4	0.784	39.4	LOS D	17.6	126.0	1.00	1.01	1.12	30.2
2	T1	All MCs	159	3.6	159	3.6	0.502	59.3	LOS E	4.7	33.7	1.00	0.77	1.00	10.0
Approach			449	2.8	449	2.8	0.784	46.5	LOS D	17.6	126.0	1.00	0.92	1.08	23.7
East: Racecourse Dr (E)															
4	L2	All MCs	115	6.2	115	6.2	0.093	6.5	LOS A	0.6	4.1	0.14	0.59	0.14	50.0
5	T1	All MCs	846	7.4	846	7.4	*0.881	56.5	LOS E	27.1	201.7	1.00	1.04	1.19	31.3
6	R2	All MCs	139	5.1	139	5.1	0.300	44.2	LOS D	6.6	47.9	0.85	0.78	0.85	24.8
Approach			1100	7.0	1100	7.0	0.881	49.7	LOS D	27.1	201.7	0.89	0.96	1.04	31.4
North: Lakeside Dr (N)															
8	T1	All MCs	359	2.4	359	2.4	0.667	2.8	LOS A	7.7	55.1	0.22	0.40	0.22	31.3
9	R2	All MCs	1046	1.9	1046	1.9	0.667	7.7	LOS A	8.6	61.3	0.22	0.57	0.22	47.3
Approach			1405	2.0	1405	2.0	0.667	6.4	LOS A	8.6	61.3	0.22	0.53	0.22	46.1
All Vehicles			2953	4.0	2953	4.0	0.881	28.6	LOS C	27.1	201.7	0.59	0.75	0.65	33.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

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

＊ Critical Movement (Signal Timing)

Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[Ped	Dist]					
		ped/h	sec		ped	m			sec	m	m/sec
Site: 101 [Racecourse_Lakeside_Design_2039_PM (WEST)]											
West: Racecourse Dr (W)											
P4	Full	28	54.2	LOS E	0.1	0.1	0.95	0.95	208.1	200.0	0.96
	All Pedestrians	28	54.2	LOS E	0.1	0.1	0.95	0.95	208.1	200.0	0.96
Site: 101 [Racecourse_Lakeside_Lakeside Extended_Design_2039_PM]											
West: Racecourse Dr (W)											
P4	Full	28	54.2	LOS E	0.1	0.1	0.95	0.95	208.1	200.0	0.96
	All Pedestrians	28	54.2	LOS E	0.1	0.1	0.95	0.95	208.1	200.0	0.96

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

MOVEMENT SUMMARY

▽ **Site: 303 [Precinct 1 & 2_Precinct 3_Design_2039_Weekend (Site Folder: Final Design 1)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

◼◻ **Network: N101 [Racecourse_Lakeside_Townsville Turf Club Access_Design_2039_Weekend (Network Folder: Design)]**

2039 Design Traffic Volumes
Site Category: Proposed Design 2
Roundabout
Design Life Analysis (Final Year): Results for 15 years

Vehicle Movement Performance																
Mov ID	Turn	Mov Class	Demand Flows [Total HV]		Arrival Flows [Total HV]		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh.	Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Lakeside Dr Extended (S)															
1	L2	All MCs	42	0.0	42	0.0	0.261	6.5	LOS A	1.7	12.4	0.62	0.62	0.62	43.2
2	T1	All MCs	112	3.8	112	3.8	0.261	7.0	LOS A	1.7	12.4	0.62	0.62	0.62	35.4
3	R2	All MCs	95	0.0	95	0.0	0.261	11.0	LOS B	1.7	12.4	0.62	0.62	0.62	42.5
Approach			249	1.7	249	1.7	0.261	8.4	LOS A	1.7	12.4	0.62	0.62	0.62	40.4
East: Precinct 1 & 2 Access (E)															
4	L2	All MCs	95	0.0	95	0.0	0.341	6.4	LOS A	2.4	17.0	0.62	0.64	0.62	38.3
5	T1	All MCs	1	0.0	1	0.0	0.341	6.8	LOS A	2.4	17.0	0.62	0.64	0.62	44.6
6	R2	All MCs	244	0.9	244	0.9	0.341	10.9	LOS B	2.4	17.0	0.62	0.64	0.62	38.3
Approach			340	0.6	340	0.6	0.341	9.7	LOS A	2.4	17.0	0.62	0.64	0.62	38.4
North: Lakeside Dr Extended (N)															
7	L2	All MCs	240	0.0	240	0.0	0.406	5.0	LOS A	3.3	23.4	0.45	0.51	0.45	45.2
8	T1	All MCs	176	0.8	176	0.8	0.406	5.4	LOS A	3.3	23.4	0.45	0.51	0.45	38.2
9	R2	All MCs	103	0.0	103	0.0	0.406	9.5	LOS A	3.3	23.4	0.45	0.51	0.45	44.4
Approach			519	0.3	519	0.3	0.406	6.1	LOS A	3.3	23.4	0.45	0.51	0.45	43.5
West: Precinct 3 Access (W)															
10	L2	All MCs	80	0.0	80	0.0	0.128	7.0	LOS A	0.8	5.4	0.62	0.65	0.62	39.8
11	T1	All MCs	1	0.0	1	0.0	0.128	7.3	LOS A	0.8	5.4	0.62	0.65	0.62	45.8
12	R2	All MCs	33	0.0	33	0.0	0.128	11.4	LOS B	0.8	5.4	0.62	0.65	0.62	39.8
Approach			114	0.0	114	0.0	0.128	8.2	LOS A	0.8	5.4	0.62	0.65	0.62	39.9
All Vehicles			1221	0.6	1221	0.6	0.406	7.8	LOS A	3.3	23.4	0.55	0.58	0.55	41.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

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 [Stuart_Edison_Design_2039_Weekend (Site Folder: Final Design 1)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

2039 Design Traffic Volumes
Site Category: Proposed Design 1
Roundabout
Design Life Analysis (Final Year): Results for 15 years

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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Stuart Dr (S)															
1	L2	All MCs	28	8.7	28	8.7	0.372	6.4	LOS A	2.6	18.6	0.49	0.52	0.49	54.8
2	T1	All MCs	759	4.5	759	4.5	0.372	7.6	LOS A	2.6	18.6	0.49	0.54	0.49	57.4
3	R2	All MCs	133	2.1	133	2.1	0.372	11.4	LOS B	2.5	18.0	0.51	0.58	0.51	52.4
3u	U	All MCs	2	0.0	2	0.0	0.372	13.7	LOS B	2.5	18.0	0.51	0.58	0.51	56.8
Approach			922	4.3	922	4.3	0.372	8.1	LOS A	2.6	18.6	0.49	0.55	0.49	56.8
East: Lakeside Dr Extended (E)															
4	L2	All MCs	183	0.8	183	0.8	0.430	9.9	LOS A	2.2	15.5	0.71	0.85	0.81	50.7
5	T1	All MCs	37	0.0	37	0.0	0.430	8.4	LOS A	2.2	15.5	0.71	0.85	0.81	47.9
6	R2	All MCs	79	0.0	79	0.0	0.430	13.1	LOS B	2.2	15.5	0.71	0.85	0.81	50.2
Approach			300	0.5	300	0.5	0.430	10.6	LOS B	2.2	15.5	0.71	0.85	0.81	50.2
North: Stuart Dr (N)															
7	L2	All MCs	74	0.0	74	0.0	0.406	6.1	LOS A	2.9	20.8	0.46	0.51	0.46	54.3
8	T1	All MCs	864	2.8	864	2.8	0.406	7.4	LOS A	2.9	20.8	0.47	0.53	0.47	58.0
9	R2	All MCs	110	2.2	110	2.2	0.406	11.3	LOS B	2.8	20.3	0.48	0.55	0.48	54.1
9u	U	All MCs	3	0.0	3	0.0	0.406	13.5	LOS B	2.8	20.3	0.48	0.55	0.48	57.1
Approach			1052	2.6	1052	2.6	0.406	7.8	LOS A	2.9	20.8	0.47	0.53	0.47	57.4
West: Edison St (W)															
10	L2	All MCs	152	0.8	152	0.8	0.344	9.6	LOS A	1.6	11.1	0.69	0.81	0.73	53.9
11	T1	All MCs	38	3.7	38	3.7	0.344	8.6	LOS A	1.6	11.1	0.69	0.81	0.73	47.0
12	R2	All MCs	20	12.5	20	12.5	0.344	13.8	LOS B	1.6	11.1	0.69	0.81	0.73	50.7
12u	U	All MCs	1	0.0	1	0.0	0.344	15.1	LOS B	1.6	11.1	0.69	0.81	0.73	50.9
Approach			211	2.4	211	2.4	0.344	9.8	LOS A	1.6	11.1	0.69	0.81	0.73	52.7
All Vehicles			2484	2.9	2484	2.9	0.430	8.4	LOS A	2.9	20.8	0.53	0.60	0.54	56.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

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.

CCG MOVEMENT SUMMARY

⊞□ **Common Control Group: CCG1 [Racecourse Dr]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 120 seconds (CCG User-Given Phase Times)
Design Life Analysis (Final Year): Results for 15 years

Vehicle Movement Performance (CCG)																	
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] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 101 [Racecourse_Lakeside_Design_2039_Weekend (WEST)]															
South: Lakeside Dr (S)															
2	T1	All MCs	363	1.6	363	1.6	* 0.752	29.3	LOS C	9.3	66.2	0.80	0.67	0.83	24.3
3	R2	All MCs	105	6.7	105	6.7	0.474	47.1	LOS D	5.1	37.9	0.85	0.76	0.85	6.1
Approach			468	2.7	468	2.7	0.752	33.3	LOS C	9.3	66.2	0.81	0.69	0.83	20.0
North: Lakeside Dr (N)															
7	L2	All MCs	272	5.2	272	5.2	0.280	28.4	LOS C	8.5	61.9	0.58	0.74	0.58	25.1
8	T1	All MCs	1429	0.5	1429	0.5	* 0.735	25.5	LOS C	34.0	239.1	0.82	0.75	0.82	24.6
Approach			1701	1.2	1701	1.2	0.735	26.0	LOS C	34.0	239.1	0.78	0.75	0.78	22.3
West: Racecourse Dr (W)															
10	L2	All MCs	473	1.8	473	1.8	0.681	6.5	LOS A	16.2	116.2	0.69	0.74	0.69	44.7
11	T1	All MCs	536	4.5	536	4.5	* 0.681	43.0	LOS D	16.2	116.2	0.87	0.78	0.88	27.6
12	R2	All MCs	4	0.0	4	0.0	0.011	48.2	LOS D	0.2	1.3	0.84	0.64	0.84	23.5
Approach			1013	3.2	1013	3.2	0.681	25.9	LOS C	16.2	116.2	0.78	0.76	0.79	35.1
All Vehicles			3181	2.1	3181	2.1	0.752	27.0	LOS C	34.0	239.1	0.79	0.74	0.79	27.3
Site: 101 [Racecourse_Lakeside_Lakeside Extended_Design_2039_Weekend]															
South: Lakeside Dr Extended (S)															
1	L2	All MCs	196	1.4	196	1.4	0.390	12.2	LOS B	4.9	34.4	0.50	0.72	0.50	44.6
2	T1	All MCs	243	1.8	243	1.8	0.504	54.3	LOS D	6.8	48.5	0.98	0.78	0.98	10.7
Approach			439	1.6	439	1.6	0.504	35.5	LOS D	6.8	48.5	0.76	0.75	0.76	24.6
East: Racecourse Dr (E)															
4	L2	All MCs	96	1.5	96	1.5	0.078	6.2	LOS A	0.5	3.3	0.14	0.59	0.14	50.0
5	T1	All MCs	581	2.9	581	2.9	0.828	56.9	LOS E [11]	17.8	127.9	1.00	0.96	1.15	31.2
6	R2	All MCs	188	5.3	188	5.3	0.574	54.7	LOS D	10.3	75.1	0.96	0.82	0.96	21.7
Approach			865	3.3	865	3.3	0.828	50.8	LOS D	17.8	127.9	0.90	0.89	1.00	30.2
North: Lakeside Dr (N)															
8	T1	All MCs	424	0.3	424	0.3	0.610	1.7	LOS A	4.5	31.7	0.13	0.29	0.13	37.6
9	R2	All MCs	1002	0.7	1002	0.7	0.610	6.6	LOS A	5.8	40.8	0.14	0.54	0.14	48.3
Approach			1426	0.6	1426	0.6	0.610	5.2	LOS A	5.8	40.8	0.14	0.47	0.14	47.5
All Vehicles			2730	1.6	2730	1.6	0.828	24.5	LOS C	17.8	127.9	0.48	0.65	0.51	34.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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.

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

＊ Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
					[Ped	Dist]					
		ped/h	sec		ped	m			sec	m	m/sec
Site: 101 [Racecourse_Lakeside_Design_2039_Weekend (WEST)]											
West: Racecourse Dr (W)											
P4	Full	7	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
	All Pedestrians	7	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
Site: 101 [Racecourse_Lakeside_Lakeside Extended_Design_2039_Weekend]											
West: Racecourse Dr (W)											
P4	Full	71	54.3	LOS E	0.2	0.2	0.95	0.95	208.2	200.0	0.96
	All Pedestrians	71	54.3	LOS E	0.2	0.2	0.95	0.95	208.2	200.0	0.96

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

Appendix H   Development code responses

State code 1: Development in a state-controlled road environment

Table 1.2 Vehicular access, road layout and local roads

Performance outcomes	Acceptable outcomes	Response
Vehicular access to a state-controlled road or within 100 metres of a state-controlled road intersection		
PO15 The location, design and operation of a **new or changed access** to a **state-controlled road** does not compromise the safety of users of the **state-controlled road**.	No acceptable outcome is prescribed.	Not applicable. No access is proposed to a state-controlled road. As part of the proposed transport infrastructure upgrades a new four-leg single lane roundabout will be provided at the midpoint between Racecourse Road and Stuart Drive. Direct property access to the new Lakeside Drive extended will not be permitted with all development traffic to flow through the eastbound and westbound approaches to this roundabout.
PO16 The location, design and operation of a **new or changed access** does not adversely impact the **functional requirements** of the **state-controlled road**.	No acceptable outcome is prescribed.	**COMPLIES WITH PO16** As part of the proposed transport infrastructure upgrades a new four-leg single lane roundabout will be provided at the midpoint between Racecourse Road and Stuart Drive. Direct property access to the new Lakeside Drive extended will not be permitted with all development traffic to flow through the eastbound and westbound approaches to this roundabout.
PO17 The location, design and operation of a **new or changed access** is consistent with the **future intent** of the **state-controlled road**.	No acceptable outcome is prescribed.	Not applicable. No access is proposed to a state-controlled road.
PO18 New or changed access is consistent with the access for the relevant **limited access road policy**: 1. **LAR 1** where direct access is prohibited; or	No acceptable outcome is prescribed.	Not applicable.

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Performance outcomes	Acceptable outcomes	Response
2. **LAR 2** where access may be permitted, subject to assessment.		
PO19 New or changed access to a **local road** within 100 metres of an intersection with a **state-controlled road** does not compromise the safety of users of the **state-controlled road**.	No acceptable outcome is prescribed.	As part of the proposed transport infrastructure upgrades a new four-leg single lane roundabout will be provided at the midpoint between Racecourse Road and Stuart Drive. Direct property access to the new Lakeside Drive extended will not be permitted with all development traffic to flow through the eastbound and westbound approaches to this roundabout. Refer to **Geleon Traffic Impact Report 50890-RP02-A** which presents the findings of a Traffic Impact Assessment on the external road network
PO20 New or changed access to a **local road** within 100 metres of an intersection with a **state-controlled road** does not adversely impact on the operating performance of the intersection.	No acceptable outcome is prescribed.	As part of the proposed transport infrastructure upgrades a new four-leg single lane roundabout will be provided at the midpoint between Racecourse Road and Stuart Drive. Direct property access to the new Lakeside Drive extended will not be permitted with all development traffic to flow through the eastbound and westbound approaches to this roundabout. Refer to **Geleon Traffic Impact Report 50890-RP02-A** which presents the findings of a Traffic Impact Assessment on the external road network
Public passenger transport and active transport		
PO21 Development does not compromise the safety of users of **public passenger transport infrastructure**, **public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**COMPLIES WITH PO21.** The normal operation of public passenger transport infrastructure or public passenger services will not be interrupted during construction of the development.
PO22 Development maintains the ability for people to access **public passenger transport infrastructure, public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**COMPLIES WITH PO22.** The normal operation of public passenger transport infrastructure or public passenger services will not be interrupted during construction of the development.

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Performance outcomes	Acceptable outcomes	Response
PO23 Development does not adversely impact the operating performance of **public passenger transport infrastructure, public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**COMPLIES WITH PO23.** The normal operation of public passenger transport infrastructure or public passenger services will not be interrupted during construction of the development.
PO24 Development does not adversely impact the **structural integrity** or physical condition of **public passenger transport infrastructure** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**COMPLIES WITH PO24.** The normal operation of public passenger transport infrastructure or public passenger services will not be interrupted during construction of the development.

Table 1.3 Network impacts

Performance outcomes	Acceptable outcomes	Response
PO25 Development does not compromise the safety of users of the **state-controlled road** network.	No acceptable outcome is prescribed.	**COMPLIES WITH PO25.** The anticipated peak hour traffic generated by the development is 660 trips in the AM peak hour, 780 trips in the PM peak hour, 862 trips in the weekend peak and 7,351 daily trips. Refer to **Geleon Traffic Impact Assessment Report 50890-RP02-A** which presents the findings of a Traffic Impact Assessment on the external road network.
PO26 Development ensures **no net worsening** of the operating performance of the **state-controlled road** network.	No acceptable outcome is prescribed.	**COMPLIES WITH PO26.** The anticipated peak hour traffic generated by the development is 660 trips in the AM peak hour, 780 trips in the PM peak hour, 862 trips in the weekend peak and 7,351 daily trips. Refer to **Geleon Traffic Impact Assessment Report 50890-RP02-A** which presents the findings of a Traffic Impact Assessment on the external road network.
PO27 Traffic movements are not directed onto a **state-controlled road** where they can be accommodated on the **local road** network.	No acceptable outcome is prescribed.	**COMPLIES WITH PO27.** Given the geographical location of the development, most traffic entering and exiting the

Performance outcomes	Acceptable outcomes	Response
		development will travel through the Racecourse Road / Lakeside Drive intersections. An assessment of aggregate-intersection-delay impact 'with development' and road safety assessment has been undertaken which confirmed the following mitigation measures are required: − apply a common control group (CCG) phasing sequence to the existing Racecourse Road eastbound / Lakeside Drive and Racecourse Road westbound / Lakeside Drive / Townsville Turf Club Access signalised intersections and modify the phasing sequence and timing to cater for existing and development generated traffic, as well as a new road connection to Stuart Drive − provide a new road connection between Racecourse Road and Stuart Drive connecting to the Stuart Drive / Edison Street roundabout in the south and Racecourse Road / Lakeside Drive signalised intersection in the north. The road connection will be to a two-lane, two-way road configuration in accordance with Council Standard Drawing SD-002 – Typical Cross Sections, Major Collector Roads and direct property access will be prohibited − provide a new four-leg single lane roundabout at the midpoint between Racecourse Road and Stuart Drive. The eastbound and westbound approaches to this roundabout will facilitate access to the proposed development, and − upgrade the existing Stuart Drive / Edison Street three-leg roundabout to a four-leg double lane roundabout in the north-south

State Development Assessment Provisions v3.0

State code 1: Development in a state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
		direction. A four-lane, two-way carriageway on both Stuart Drive approaches will be required for 130m on the approach and 170m on the departure side of the roundabout. SIDRA analysis for the proposed infrastructure upgrades confirm that the development's impact has been mitigated to an acceptable level consistent with TMR's GTIA. Refer to **Geleon Traffic Impact Assessment Report 50890-RP02-A** which presents the findings of a Traffic Impact Assessment and a Road Safety Assessment on the external road network.
PO28 Development involving haulage exceeding 10,000 tonnes per year does not adversely impact the pavement of a **state-controlled road**.	No acceptable outcome is prescribed.	Not applicable.
PO29 Development does not impede delivery of **planned upgrades** of **state-controlled roads**.	No acceptable outcome is prescribed.	Not applicable.
PO30 Development does not impede delivery of **corridor improvements** located entirely within the **state-controlled road corridor**.	No acceptable outcome is prescribed.	Not applicable.

State code 6: Protection of state transport networks

Table 6.2 Development in general

Performance outcomes	Acceptable outcomes	Response
Network impacts		
PO1 Development does not compromise the safety of users of the **state-controlled road** network.	No acceptable outcome is prescribed.	**COMPLIES WITH PO1** No access is proposed to a state-controlled road. As part of the proposed transport infrastructure upgrades a new four-leg single lane roundabout will be provided at the midpoint between Racecourse Road and Stuart Drive. Direct property access to the new Lakeside Drive extended will not be permitted with all development traffic to flow through the eastbound and westbound approaches to this roundabout. Refer to Geleon Traffic Impact Assessment Report **50890-RP02-A** which presents the findings of a traffic impact assessment on the external road network.
PO2 Development does not adversely impact the structural integrity or physical condition of a **state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	**COMPLIES WITH PO2.** The development does not result in a worsening of the infrastructure condition of the state-controlled road as a result of implementing the proposed infrastructure upgrades. For further details in relation to the proposed development details, refer plans of development and Geleon Traffic Impact Assessment Report **50890-RP02-A**.
PO3 Development ensures **no net worsening** of the operating performance the **state-controlled road** network.	No acceptable outcome is prescribed.	**COMPLIES WITH PO3.** The development does not result in a worsening of the infrastructure condition of the state-controlled road as a result of implementing the proposed infrastructure upgrades. For further details in relation to the proposed development details, refer plans of development and Geleon Traffic Impact Assessment Report **50890-RP02-A**.

Performance outcomes	Acceptable outcomes	Response
PO4 Traffic movements are not directed onto a **state-controlled road** where they can be accommodated on the **local road** network.	No acceptable outcome is prescribed.	**COMPLIES WITH PO4.** Given the geographical location of the development, most traffic entering and exiting the development will travel through the Racecourse Road / Lakeside Drive intersections. An assessment of aggregate-intersection-delay impact 'with development' and road safety assessment has been undertaken which confirmed the following mitigation measures are required: − apply a common control group (CCG) phasing sequence to the existing Racecourse Road eastbound / Lakeside Drive and Racecourse Road westbound / Lakeside Drive / Townsville Turf Club Access signalised intersections and modify the phasing sequence and timing to cater for existing and development generated traffic, as well as a new road connection to Stuart Drive − provide a new road connection between Racecourse Road and Stuart Drive connecting to the Stuart Drive / Edison Street roundabout in the south and Racecourse Road / Lakeside Drive signalised intersection in the north. The road connection will be to a two-lane, two-way road configuration in accordance with Council Standard Drawing SD-002 – Typical Cross Sections, Major Collector Roads and direct property access will be prohibited − provide a new four-leg single lane roundabout at the midpoint between Racecourse Road and Stuart Drive. The eastbound and westbound approaches to this roundabout will facilitate access to the proposed development, and − upgrade the existing Stuart Drive / Edison Street three-leg roundabout to a four-leg

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State code 3: Development in a busway environment

Performance outcomes	Acceptable outcomes	Response
		double lane roundabout in the north-south direction. A four-lane, two-way carriageway on both Stuart Drive approaches will be required for 130m on the approach and 170m on the departure side of the roundabout.
		SIDRA analysis for the proposed infrastructure upgrades confirm that the development's impact has been mitigated to an acceptable level consistent with TMR's GTIA.
		Refer to **Geleon Traffic Impact Assessment Report 50890-RP02-A** which presents the findings of a Traffic Impact Assessment and a Road Safety Assessment on the external road network.
PO5 Development involving haulage exceeding 10,000 tonnes per year does not damage the pavement of a **state-controlled road**.	No acceptable outcome is prescribed.	Not applicable.
PO6 Development does not require a new **railway** level crossing.	No acceptable outcome is prescribed.	Not applicable.
PO7 Development does not adversely impact the operating performance of an existing **railway crossing**.	No acceptable outcome is prescribed.	Not applicable.
PO8 Development does not adversely impact on the safety of an existing **railway crossing**.	No acceptable outcome is prescribed.	Not applicable.
PO9 Development is designed and constructed to allow for on-site circulation to ensure vehicles do not queue in a **railway crossing**.	No acceptable outcome is prescribed.	Not applicable.
PO10 Development does not create a safety hazard within the **railway corridor**.	No acceptable outcome is prescribed.	Not applicable.
PO11 Development does not adversely impact the operating performance of the **railway corridor**.	No acceptable outcome is prescribed.	Not applicable.
PO12 Development does not interfere with or obstruct the **railway transport infrastructure** or **other rail infrastructure**.	No acceptable outcome is prescribed.	Not applicable.
PO13 Development does not adversely impact the structural integrity or physical condition of a	No acceptable outcome is prescribed.	Not applicable.

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Performance outcomes	Acceptable outcomes	Response
railway corridor or **rail transport infrastructure**.		
Planned upgrades		
PO21 Development does not impede delivery of **planned upgrades** of **state transport infrastructure**.	No acceptable outcome is prescribed.	**COMPLIES WITH PO21.** The proposed development does not impede delivery of planned upgrades of state transport infrastructure.

Table 6.3 Public passenger transport infrastructure and active transport

Performance outcomes	Acceptable outcomes	Response
PO22 Development does not damage or interfere with **public passenger transport infrastructure**, **active transport infrastructure** or **public passenger services**.	No acceptable outcome is prescribed.	**COMPLIES WITH PO22.** The proposed development does not impact existing public passenger transport infrastructure.
PO23 Development does not compromise the safety of **public passenger transport infrastructure**, **public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**COMPLIES WITH PO23.** The proposed development does not compromise the safety of public passenger transport infrastructure, public passenger services and active transport infrastructure.
PO24 Development does not adversely impact the operating performance of **public passenger transport infrastructure, public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**COMPLIES WITH PO24.** The normal operation of public passenger transport infrastructure or public passenger services will not be interrupted during construction of the development.
PO25 Development does not adversely impact the structural integrity or physical condition of **public passenger transport infrastructure** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**COMPLIES WITH PO25.** The proposed development does not adversely impact the structural integrity or physical condition of public passenger transport infrastructure and active transport infrastructure.
PO26 Upgraded or new **public passenger transport infrastructure** and **active transport infrastructure** is provided to accommodate the demand for **public passenger transport** and **active transport** generated by the development.	No acceptable outcome is prescribed.	Not applicable.

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Performance outcomes	Acceptable outcomes	Response
PO27 Development is designed to ensure the location of **public passenger transport infrastructure** prioritises and enables efficient **public passenger services**.	No acceptable outcome is prescribed.	Not applicable.
PO28 Development enables the provision or extension of **public passenger services**, **public passenger transport infrastructure** and **active transport infrastructure** to the development and avoids creating indirect or inefficient routes for **public passenger services**.	No acceptable outcome is prescribed.	Not applicable.
PO29 New or modified road networks are designed to enable development to be serviced by **public passenger services**.	**AO29.1** Roads catering for buses are arterial or **sub-arterial roads**, collector or their equivalent. AND **AO29.2** Roads intended to accommodate buses are designed and constructed in accordance with: 1. Road Planning and Design Manual, 2nd Edition, Volume 3 – Guide to Road Design; Department of Transport and Main Roads; 2. Supplement to Austroads Guide to Road Design (Parts 3, 4-4C and 6), Department of Transport and Main Roads; 3. Austroads Guide to Road Design (Parts 3, 4-4C and 6); 4. Austroads Design Vehicles and Turning Path Templates; 5. Queensland Manual of Uniform Traffic Control Devices, Part 13: Local Area Traffic Management and AS 1742.13-2009 Manual of Uniform Traffic Control Devices – Local Area Traffic Management; AND **AO29.3** Traffic calming devices are not installed on roads used for buses in accordance with section 2.3.2 Bus Route Infrastructure, Public	Not applicable.

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State code 3: Development in a busway environment

Performance outcomes	Acceptable outcomes	Response
	Transport Infrastructure Manual, Department of Transport and Main Roads, 2015.	
PO30 Development provides safe, direct and convenient access to existing and future **public passenger transport infrastructure** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**COMPLIES WITH PO30.** The development will provide connections to existing footpaths. Refer to plans of development.
PO31 On-site vehicular circulation ensures the safety of both **public passenger transport services** and pedestrians.	No acceptable outcome is prescribed.	Not applicable.
PO32 Taxi facilities are provided to accommodate the demand generated by the development.	No acceptable outcome is prescribed.	Not applicable.
PO33 Facilities are provided to accommodate the demand generated by the development for community transport services, courtesy transport services, and **booked hire services** other than taxis.	No acceptable outcome is prescribed.	Not applicable.
PO34 Taxi facilities are located and designed to provide convenient, safe and equitable access for passengers.	**AO34.1** A **taxi facility** is provided parallel to the kerb and adjacent to the main entrance. AND **AO34.2 Taxi facilities** are designed in accordance with: 1. AS2890.5–1993 Parking facilities – on-street parking and AS1428.1–2009 Design for access and mobility – general requirements for access – new building work; 2. AS1742.11–1999 Parking controls – manual of uniform traffic control devices 3. AS/NZS 2890.6–2009 Parking facilities –off street parking for people with disabilities; 4. Disability standards for accessible public	Not applicable.

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Performance outcomes	Acceptable outcomes	Response
	5. transport 2002 made under section 31(1) of the Disability Discrimination Act 1992; 6. AS/NZS 1158.3.1 – Lighting for roads and public spaces, Part 3.1: Pedestrian area (category P) lighting – Performance and design requirements; 7. Chapter 7 Taxi Facilities, Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015.	
PO35 Educational establishments are designed to ensure the safe and efficient operation of **public passenger services**, pedestrian and cyclist access and **active transport infrastructure**.	**AO35.1** Educational establishments are designed in accordance with the provisions of the Planning for Safe Transport Infrastructure at Schools, Department of Transport and Main Roads, 2011.	Not applicable.

9.3.5   Transport Impact, Access and Parking Code

Performance outcomes	Acceptable outcomes	Comment
Transport impact		
PO1 The development is located on roads that are appropriate for the nature of traffic generated, having regard to the safety and efficiency of the transport network, and the functions and characteristics identified of the road hierarchy.	**AO1** No acceptable outcome is nominated.	**COMPLIES WITH PO1.** Refer to Geleon Traffic Impact Assessment report **50890-RP02-A** which presents the findings of a traffic impact assessment on the external road network.
PO2 Development does not compromise the orderly provision or upgrading of the transport network.	**AO2** No acceptable outcome is nominated.	**COMPLIES WITH PO2.** Refer to Geleon Traffic Impact Assessment Report **50890-RP02-A** which presents the findings of a traffic impact assessment on the external road network.
PO3 On-site transport network infrastructure (including roads, parking, access and public transport, pedestrian and cyclist facilities) appropriately integrates and connects with surrounding networks.	**AO3** No acceptable outcome is nominated.	**COMPLIES WITH PO3.** Refer to the plans of development.
Site access		
PO4 As far as practicable, development is designed to encourage travel by public transport, walking and cycling.	**AO4** No acceptable outcome is nominated.	**COMPLIES WITH PO4.** Footpath connections will be provided to the external road network. For further details in this regard, refer to the plans of development.
PO5 Access arrangements are appropriate for: (a) the capacity of the parking area; (b) the volume, frequency and type of vehicle usage; (c) the function and characteristics of the access road and adjoining road network; and (d) the safety and efficiency of the road network.	**AO5** Access is provided in accordance with the standards identified in the Development manual planning scheme policy SC6.4 — SC6.4.5.5 Driveways, SC6.4.5.3 Public Transport Facilities and SC6.4.5.4 Car Parking.	**COMPLIES WITH AO5.** As part of the proposed transport infrastructure upgrades a new four-leg single lane roundabout will be provided at the midpoint between Racecourse Road and Stuart Drive. Direct property access to the new Lakeside Drive extended will not be permitted with all development traffic to flow through the eastbound and westbound approaches to this roundabout. For further details in relation to the location of the access, refer to **Section 5.0** of Geleon Traffic Impact Assessment Report **50890-RP02-A.**

PO6	AO6	COMPLIES WITH PO6.
Where practical, access for cyclists and pedestrians is clearly distinguished from vehicle access.	No acceptable outcome is nominated.	Provision for cyclists and pedestrians will be detailed at the next stage of the development.
PO7	**AO7**	**COMPLIES WITH AO7.**
Access is located and designed to provide safe and easy access to the site, having regard to its position, width and gradient.	Access is provided in accordance with the standards identified in the Development manual planning scheme policy no. SC6.4 — SC6.4.5.5 Driveways and SC6.4.3 Standard Drawings	Access into the proposed development will be provided in accordance with the Development manual planning scheme policy no. SC6.4 — SC6.4.5.5 Driveways and SC6.4.3 Standard Drawings. Access details will be provided at the next stage of the development.
PO8	**AO8**	**COMPLIES WITH AO8.**
All vehicles reasonably expected to use the site are able to travel the length of the driveway or driveway access without damage to vehicle or the driveway surface.	Access is provided in accordance with the standards identified in the Development manual planning scheme policy no. SC6.4 — SC6.4.5.5 Driveways, SC6.4.5.3 Public Transport Facilities and SC6.4.5.4 Car Parking.	Access into the proposed development will be provided in accordance with the Development manual planning scheme policy no. SC6.4 — SC6.4.5.5 Driveways, SC6.4.5.3 Public Transport Facilities and SC6.4.5.4 Car Parking. Access details will be provided at the next stage of the development.
PO9	**AO9**	**COMPLIES WITH AO9.**
A driveway does not cause change in the level of a footpath that is unsafe or inaccessible for people with mobility difficulties.	Access is provided in accordance with the standards identified in the Development manual planning scheme policy no. SC6.4 — SC6.4.5.5 Driveways and SC6.4.3 Standard Drawings.	Access into the proposed development will be provided in accordance with the Development manual planning scheme policy no. SC6.4 — SC6.4.5.5 Driveways and SC6.4.3 Standard Drawings. Access details will be provided at the next stage of the development.
PO10	**AO10**	**COMPLIES WITH AO10.**
Driveways are designed to withstand loadings from all vehicles reasonably expected to use the site.	Access is provided in accordance with the standards identified in the Development manual planning scheme policy no. SC6.4 — SC6.4.5.5 Driveways.	Access into the proposed development will be provided in accordance with the Development manual planning scheme policy no. SC6.4 — SC6.4.5.5 Driveways. Access details will be provided at the next stage of the development.
PO11	**AO11**	**COMPLIES WITH AO11.**
A driveway does not allow water to pond on adjacent properties or adjacent buildings and does not allow water to enter a building or property.	Access is provided in accordance with the standards identified in the Development manual planning scheme policy no. SC6.4 — SC6.4.5.5 Driveways.	Access into the proposed development will be provided in accordance with the Development manual planning scheme policy no. SC6.4 — SC6.4.5.5 Driveways. Access details will be provided at the next stage of the development.
PO12	**AO12**	**COMPLIES WITH AO12.**
Construction of a driveway does not damage or interfere with the location, function of or access to any services and infrastructure.	Access is provided in accordance with the standards identified in the Development manual planning scheme policy no. SC6.4 — SC6.4.5.5	Access into the proposed development will be provided in accordance with the Development manual planning scheme policy no. SC6.4 — SC6.4.5.5 Driveways, SC6.4.5.3 Public Transport Facilities, SC6.4.5.4

	Driveways, SC6.4.5.3 Public Transport Facilities, SC6.4.5.4 Car Parking and SC6.4.3 Standard Drawings.	Car Parking and SC6.4.3 Standard Drawings. Access details will be provided at the next stage of the development.
PO13 All vehicles reasonably expected to access the site can safely manoeuvre to allow vehicles to exit and enter in a forward motion.	**AO13** Access is provided in accordance with the standards identified in Development manual planning scheme policy no. SC6.4 - SC6.4.5.5 Driveways, SC6.4.5.3 Public Transport Facilities, SC6.4.5.4 Car Parking and SC6.4.3 Standard Drawings such that all vehicles reasonably expected to access the site, can exit and enter in a forward motion with no more than a three-point turn.	**COMPLIES WITH AO13.** Access into the proposed development will be provided in accordance with the Development manual planning scheme policy no. SC6.4 — SC6.4.5.5 Driveways, SC6.4.5.3 Public Transport Facilities, SC6.4.5.4 Car Parking and SC6.4.3 Standard Drawings. Access and service vehicle details will be provided at the next stage of the development.
Pedestrian and cyclist facilities		
PO14 Provision is made for the safe and convenient movement of pedestrians on-site and connecting to the external network, having regard to desire lines, legibility, safety, topographical constraints, shading and other weather protection and equitable access arrangements.	**AO14** No acceptable outcome is nominated.	**COMPLIES WITH PO14.** Provision for pedestrians will be detailed at the next stage of the development.
PO15 Provision is made for safe and convenient cycle movement to the site and within the site and connecting to the external network having regard to desire lines, users' needs, safety, topographical constraints and legibility.	**AO15** No acceptable outcome is nominated.	**COMPLIES WITH PO15.** Provision for cyclists will be detailed at the next stage of the development.
PO16 Parking areas, pathways and other elements of transport network infrastructure are designed to enhance public safety by discouraging crime and antisocial behaviour, having regard to: (a) provision of opportunities for casual surveillance; (b) provision of lighting; (c) the use of fencing to define public and private spaces, whilst allowing for appropriate sight lines; (d) minimising potential concealment points and assault locations; (e) minimising opportunities for graffiti and other vandalism; and (f) restricting unlawful access to buildings and between buildings.	**AO16** No acceptable outcome is nominated.	**COMPLIES WITH PO16.** The development will be designed at the detailed design stage to comply with these requirements.

Parking		
PO17 **Provision is made for on-site vehicle parking to:** (a) meet the demand likely to be generated by the development; and (b) avoid on street parking that would adversely impact on the safety or capacity of the road network or unduly impact on local amenity.	**AO17** Parking is provided in accordance with the standards identified in Parking rates planning scheme policy no. SC6.10.	**COMPLIES WITH AO17.** Car parking will be provided in accordance with the Parking rates planning scheme policy no. SC6.10.
PO18 Parking ensures access is provided for people with disabilities.	**AO18** Parking areas are designed in accordance with the standards identified in the Development manual planning scheme policy no. SC6.4 — SC6.4.5.4 Car Parking.	**COMPLIES WITH AO18.** Parking areas will be designed in accordance with the standards identified in the Development manual planning scheme policy no. SC6.4 — SC6.4.5.4 Car Parking.
PO19 Where the nature of the proposed development creates a demand, provision is made for set-down and pick-up facilities by bus, taxis or private vehicle, which: (a) are safe for pedestrians and vehicles; (b) are conveniently connected to the main component of the development by pedestrian pathway; and (c) provide for pedestrian priority and clear sight lines.	**AO19** No acceptable outcome is nominated.	**COMPLIES WITH PO19.** Provision will be made for set-down and pick-up facilities by bus, taxis or private vehicle.
PO20 Parking and servicing areas are designed to: (a) be clearly defined, marked and signed; (b) be convenient and accessible; (c) minimise large unbroken areas of hardstand to the extent practicable; (d) be safe for vehicles, pedestrians and cyclists; (e) provide shading;	**AO20** No acceptable outcome is nominated.	**COMPLIES WITH PO20.** Car parking design for the proposed development will be undertaken in accordance with Australian Standard *AS2890.1 – Parking Facilities* and *AS2890.6 – Off-street parking for people with disabilities.*

(f) be located to encourage multi-purpose trip ends and minimise vehicle movements within the site; and (g) minimise any adverse impacts on the amenity of surrounding land.		
PO21 Vehicle spaces have adequate dimensions to meet user requirements.	**AO21** Parking areas are designed in accordance with the standards identified in the Development manual planning scheme policy no. SC6.4 — SC6.4.5.3 Public Transport Facilities and SC6.4.5.4 Car Parking.	**COMPLIES WITH AO21.** Car parking design for the proposed development will be undertaken in accordance with Australian Standard *AS2890.1 – Parking Facilities* and *AS2890.6 – Off-street parking for people with disabilities.*
PO22 Pavement is constructed to an appropriate standard.	**AO22** No acceptable outcome is nominated.	**COMPLIES WITH PO22.** The development will be designed at the detailed design stage to comply with this requirement.
PO23 Parking and servicing areas are kept accessible and available for use as a parking area at all times during the normal business hours of the activity.	**AO23** No acceptable outcome is nominated	**COMPLIES WITH PO23.** The development will comply with this requirement.
PO24 Visitor parking for accommodation activities remains accessible and useable to visitors at all times.	**AO24** No acceptable outcome is nominated	**COMPLIES WITH PO24.** The development will comply with this requirement.
PO25 Multi-level parking areas are designed, articulated and finished to make a positive contribution to the local external streetscape character, as well as the internal user experience of the facility ensuring way finding technologies and aesthetic treatments are provided.	**AO25** No acceptable outcome is nominated	**Not applicable.**
Servicing		
PO26 Provision is made for the on-site loading, unloading, manoeuvring and access by service vehicles that: (a) are adequate to meet the demands generated by the development;	**AO26** Servicing areas are provided and designed in accordance with the standards identified in the Development manual planning scheme policy no. SC6.4 – SC6.4.5.3 Public Transport Facilities and SC6.4.5.4 Car Parking.	**COMPLIES WITH AO26.** Servicing areas will be provided and designed in accordance with the standards identified in the Development manual planning scheme policy no. SC6.4 – SC6.4.5.3 Public Transport Facilities and SC6.4.5.4 Car Parking.

(b) are able to accommodate the design service vehicle requirements; and (c) does not unduly impede vehicular, cyclist and pedestrian safety and convenience both within the site and external to the site.		
PO27 Refuse collection vehicles are able to safely access on-site refuse collection facilities.	**AO27** Refuse collection areas are provided and designed in accordance with the standards identified in the Development manual planning scheme policy no. SC6.4 – SC6.4.22 Waste Management, SC6.4.5.3 Public Transport Facilities and SC6.4.5.4 Car Parking.	**COMPLIES WITH AO27.** Refuse collection areas will be provided and designed in accordance with the standards identified in the Development manual planning scheme policy no. SC6.4 – SC6.4.22 Waste Management, SC6.4.5.3 Public Transport Facilities and SC6.4.5.4 Car Parking.
PO28 Servicing arrangements minimise any adverse impact on the amenity of premises in the vicinity, having regard to operating hours, noise generation, proximity to sensitive uses, odour generation and dust.	**AO28** No acceptable outcome is nominated	**COMPLIES WITH PO28.** The development will comply with this requirement.

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