

Goodwins Road Subdivision

Traffic Impact Assessment

Prepared for
Hutchings Spurr Pty Ltd

Client representative
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Date
15 October 2025

Rev01

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1. Introduction

A residential subdivision is proposed at 22 Goodwins Road, Clarendon Vale, east of Hobart. The development proposes establishment of 80 residential house lots on the site, along with new roads and paths through public open spaces along Stokell Creek and adjacent to Clarence Plain Rivulet.

Additional information has been requested by Clarence City Council in relation to the Planning Application, including a Traffic Impact Assessment (TIA) and Hutchings Spurr have engaged pitt&sherry to undertake the assessment.

Previously, pitt&sherry prepared a TIA for the same site dated 23 December 2022 (ref: T-P.22.1698-TRA-REP-001-Rev00). More recently, in June 2025, Hutchings Spurr have updated the site layout, number of lots and access arrangement. The goals of this TIA are to assess the impact of the proposed development on the wider road network and also assess the siting and design of accessways and any other items related to transport, considering the latest design.

The TIA has been prepared with reference to the Department of State Growth (State Growth) publication *Traffic Impact Assessment (TIA) Guidelines* and will address the relevant parts of the Road and Railway Assets Code, *Tasmanian Planning Scheme – Clarence* (the Planning Scheme).

2. Location and key intersections

The site is located at 22 Goodwins Road, Clarendon Vale, with 2 proposed access points from Goodwins Road. The study area for this TIA includes the wider road network consisting of Goodwins Road, Mockridge Road, Hawthorne Place, Rokeby Road and Pass Road.

The key intersections for this TIA, as shown in Figure 1, are:

- Goodwins Road/ Pass Road/ Commerce Drive (4-leg, roundabout)
- Goodwins Road/ Mockridge Road (3-leg, give-way T-intersection)
- Rokeby Road/ Hawthorne Place (3-leg, give-way T-intersection), and
- Rokeby Road/ Pass Road/ Tollard Drive (4-leg, signal-controlled).

The site location, study area and key intersections for TIA are shown in Figure 1.

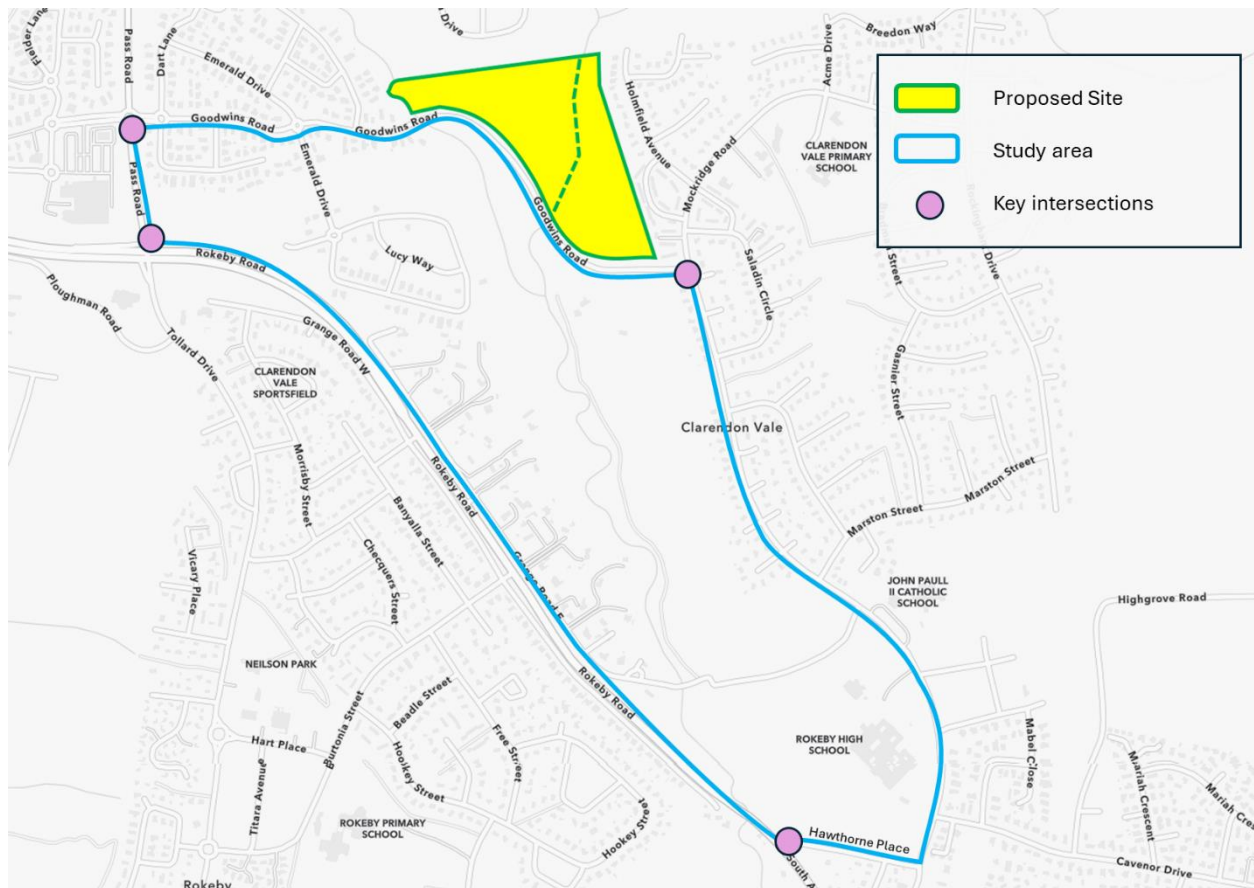


Figure 1: Site, study area and key intersections

3. Existing conditions

3.1 Land use

The proposed Goodwins Road subdivision site is located on the currently vacant rural land on the western side of Clarendon Vale, City of Clarence. Points of note in the local area are shown in Figure 2, and include:

- Glebe Hill Village Shopping Centre
- Clarendon Vale Primary School
- John Paul II Catholic Primary School
- Bayview Secondary College (formerly Rokeby High School); and
- Rokeby Park and Ride site (construction not yet commenced).



Figure 2: Site and surrounding area

The site is zoned as a mixture of 20.0 – Rural and 26.0 – Utilities under the Planning Scheme. This utilities zone is a future major road corridor for Rokeby Bypass (as shown in the *Clarence Local Provisions Schedule, Overlay Map CLA-C.3.0*). Although this future corridor is shown in the Planning Scheme, it is no longer shown on LISTmap as a proposed transport corridor. Figure 3 shows the land zoning of the site and its local context.

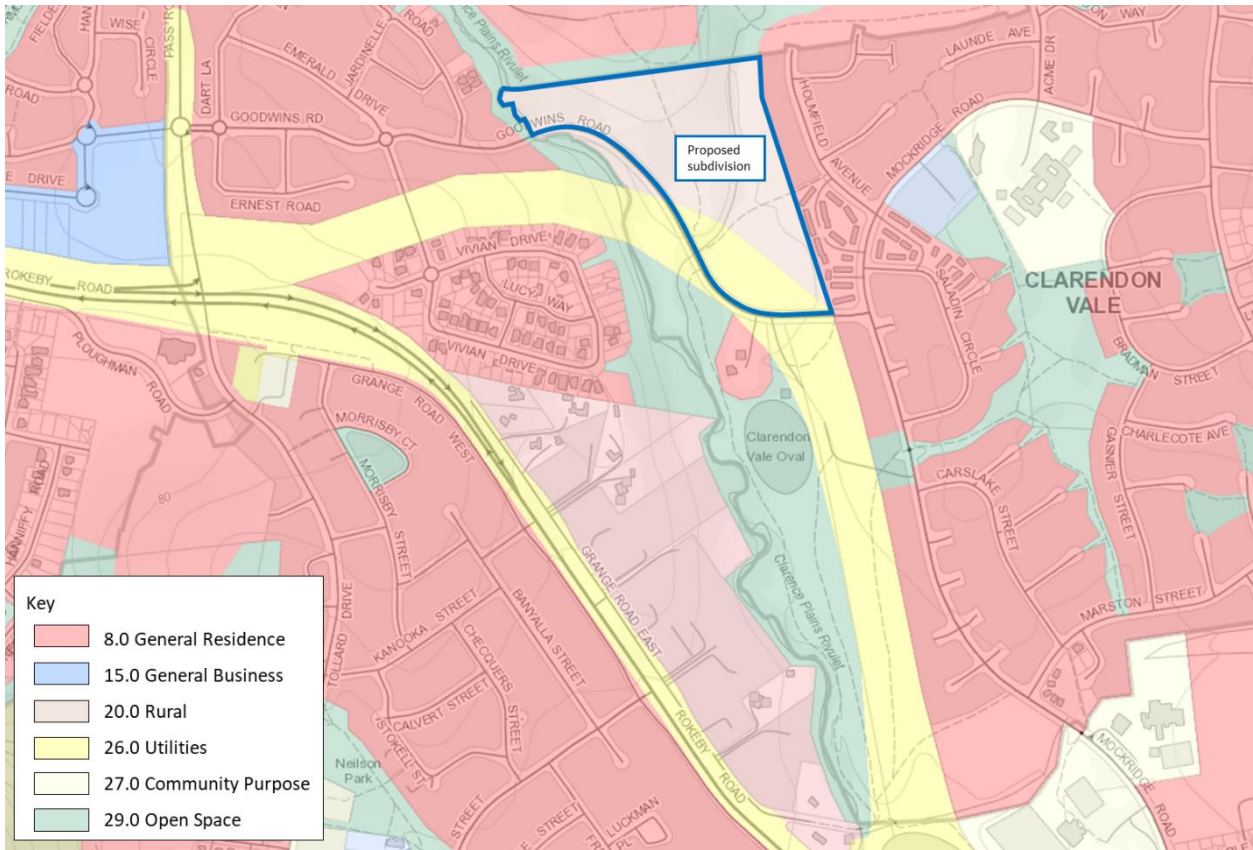


Figure 3: Zoning of site and surrounding area

3.2 Surrounding road network

3.2.1 Goodwins Road

The proposed subdivision would be accessed from 2 new minor road accesses off Goodwins Road. Goodwins Road (shown in Figure 4 and Figure 5) is a Council owned collector road which connects from Pass Road roundabout through to Mockridge Road. Goodwins Road is a sealed two-way road with painted central median. The posted speed limit varies from 50km/h to 60km/h.



Figure 4: Goodwins Road (facing west)



Figure 5: Goodwins Road (facing east)

3.2.2 Commerce Drive

Commerce Drive is a new access road to service the newly constructed Glebe Hill Village Shopping Centre (2022). Commerce Drive originates as a slipway exit from Rokeby Road westbound. The one-way slip lane converts to a two-way local road which traverses three roundabouts and two right-angle direction changes to skirt the Glebe Hill Village Shopping Centre and connect at the Pass Road/ Goodwins Road roundabout.

3.2.3 Pass Road

Pass Road (shown in Figure 6 and Figure 7) is a council owned collector road linking from Rokeby Road, Rokeby to Cambridge Road, Mornington across the Clarence Plains. Pass Road travels in a north-south direction and is configured with a two-way single carriageway. The speed limit is 60km/h in the built-up areas at the north and south, and 80km/h in the rural area.



Figure 6: Pass Road in rural area (facing north)



Figure 7: Pass Road near Goodwins Road (facing south)

3.2.4 Mockridge Road

Mockridge Road (shown in Figure 8 and Figure 9) is a key collector road in Clarendon Vale and provides access to three neighbourhood schools (Clarendon Vale Primary School, Bayview Secondary College and John Paul II Catholic Primary School). Mockridge Road is a sealed two-way single carriageway with a posted 50km/h speed limit, however 40km/h school zone speed restrictions apply during school days, 7.45-9.00am and 2.30-3.30pm and variable speed signs and fixed school zone signs are installed.



Figure 8: Mockridge Road (facing north)



Figure 9: Mockridge Road (facing south)

3.2.5 Hawthorne Place

Hawthorne Place operates as the continuation of Mockridge Road and provides the primary connection for Clarendon Vale to Rokeby Road. Hawthorne Place borders Bayview Secondary College grounds and 40km/h school zone speed restrictions apply during school days, 7.45-9.00am and 2.30-3.30pm Pass Road. Outside of these hours, speed limit is 50km/h.

3.2.6 Rokeby Road

Rokeby Road is a Category 2 State Growth arterial road. Rokeby Road is the continuation of South Arm Highway south of Oceana Drive, Howrah, and continues into South Arm Road south of Hawthorne Place, Oakdowns. Rokeby Road in the vicinity of the intersection with Pass Road is configured as a dual carriageway with two lanes in the northwest direction, and a single lane in the southwest direction (as shown in Figure 10). The speed limit in this area is 80km/h.

Further south, Rokeby Road is configured as a single carriageway, typically with one lane in each direction, plus a central painted median strip or right turn at side streets. In the vicinity of the Rokeby Road/ Hawthorne Place intersection, the posted speed limit is 60km/h and increasing to 70km/h north of Burtonia Street.

Rokeby Road carries approximately 17,000¹ vehicles per day.



Figure 10: Rokeby Road (facing northwest)



Figure 11: Rokeby Road (facing southeast)

¹ Traffic volumes based on Geocounts traffic count in 2019.

3.3 Traffic volumes

3.3.1 Input data

The input data for this TIA includes intersection turn counts undertaken in 2022 and 2023, and Sydney Coordinated Adaptive Traffic System (SCATS) detector count and signal data obtained from State Growth in 2022 and 2025. The available data is summarised in Table 1.

Table 1: Summary of data

#	Data type	Intersection	Date	Time
1	Intersection turning movement count	Goodwins Rd/ Mockridge Rd Rokeby Rd/ Hawthorne Pl Goodwins Rd/ Pass Rd/ Commerce Dr	17 Nov 2022	06:30-09:30 & 15:00-18:00
		Goodwins Rd/ Pass Rd/ Commerce Dr	22–23 Nov 2023	08:00-09:00 & 16:30-18:00
2	SCATS detector count & signal data	Rokeby Rd/ Pass Rd/ Tollard Dr	14–20 Nov 2022, 22–28 Sep 2025	24 hours

3.3.2 Existing traffic volumes

As shown in Table 1, intersection turn count data was collected at Goodwins Road / Mockridge Road, Rokeby Road / Hawthorne Place and Goodwins Road / Pass Road / Commerce Drive on 17 November 2022 for 3 hours during the AM and PM peak periods.

From this data, the peak Hours for the local network were identified as:

- AM peak 07:45 – 08:45, and
- PM peak 16:30 – 17:30.

Additionally, turn count data was collected at Goodwins Road / Pass Road / Commerce Drive intersection on 22–23 November 2023..

SCATS detector count and signal data was collected for the Rokeby Road / Pass Road / Tollard Drive intersection for the week of 14-20 November 2022 as well as the recent week of 22–28 September 2025.

Based on comparison of the SCATS detector total count at the Rokeby Road / Pass Road / Tollard Drive intersection between 2022 and 2025 peak hours, the Network Traffic Linear Growth Rates were determined as:

- AM peak 2.6% per annum; and
- PM peak 0.9% per annum.

The above growth rates were applied on the 2022 and 2023 surveyed traffic counts to estimate traffic volumes at Goodwins Road / Mockridge Road, Rokeby Road / Hawthorne Place and Goodwins Road / Pass Road / Commerce Drive for AM and PM peak of current year 2025.

Accordingly, the estimated existing 2025 traffic volumes in the study area are shown in Figure 12 and Figure 13, for AM and PM peak hour, respectively.

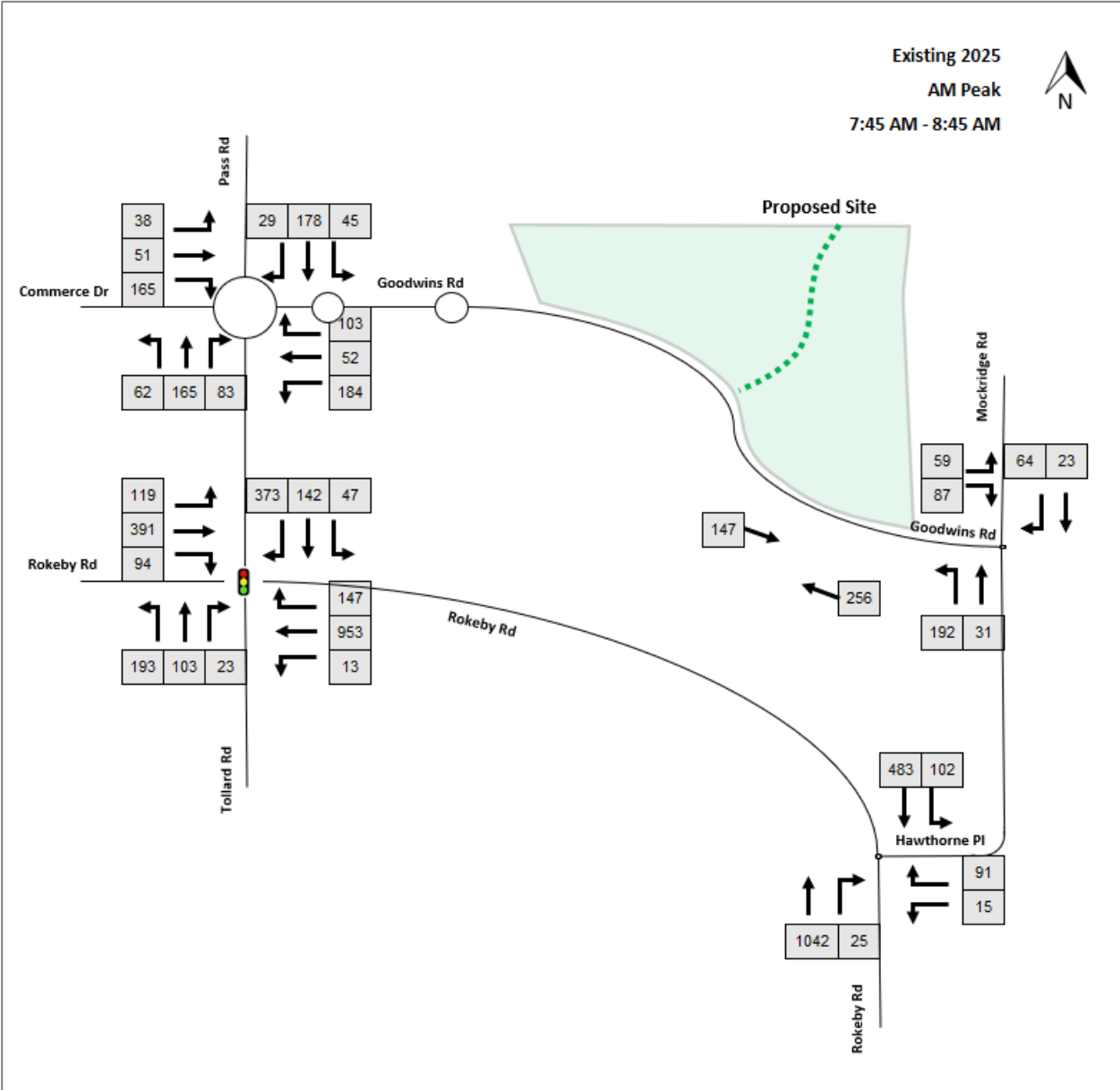


Figure 12: Existing 2025 AM peak hour traffic volumes

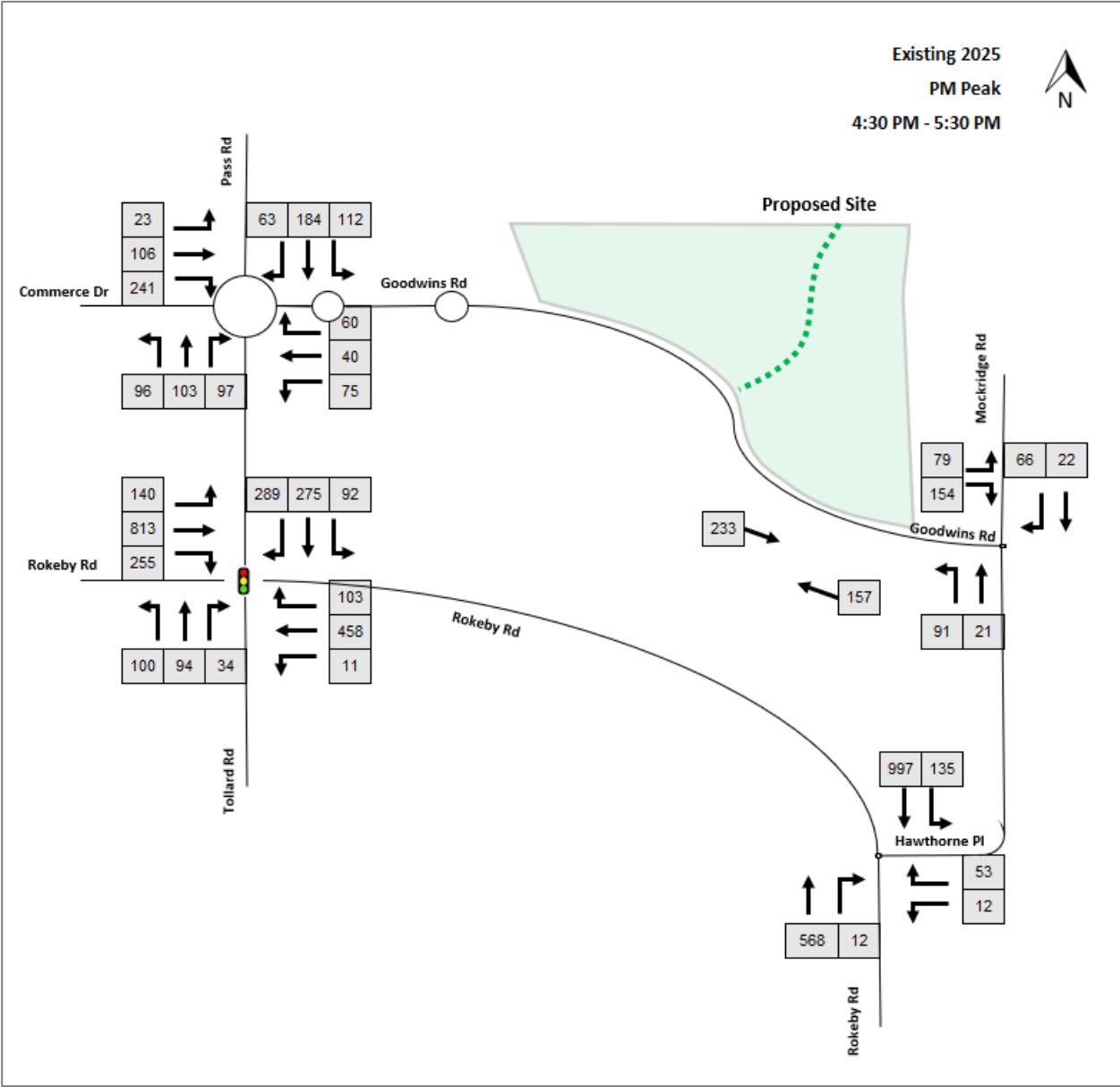


Figure 13: Existing 2025 PM peak hour traffic volumes

3.4 Traffic modelling

3.4.1 Traffic modelling software

The operation of the intersections in the vicinity of the hillside subdivision has been modelled using SIDRA Intersection 9.1 traffic modelling software. SIDRA Intersection rates the performance of the intersections based on the vehicle delay and the corresponding Level of Service (LOS). Table 2 shows the criteria that SIDRA Intersection adopts in assessing the LOS. Generally, LOS D or better is considered an acceptable level of intersection operation.

Table 2: SIDRA Intersection Level of Service (LOS) criteria

LOS	Delay Per Vehicle (secs)		
	Signals	Roundabout	Sign Control
A	10 or less	10 or less	10 or less
B	10 to 20	10 to 20	10 to 15
C	20 to 35	20 to 35	15 to 25
D	35 to 55	35 to 50	25 to 35
E	55 to 80	50 to 70	35 to 50
F	Greater than 80	Greater than 70	Greater than 50

3.4.2 Traffic modelling intersection layouts

The geometry of the intersections used for the SIDRA Intersection traffic models was developed with reference to aerial photography obtained from LISTmap and observations made during the site visit. The aerial photography combined with the site visit informed the number, width and length of trafficable lanes and speed limits.

3.5 Existing intersection performance

3.5.1 Goodwins Road/ Pass Road/ Commerce Drive

The existing 2025 LOS for each approach of the Goodwins Road/ Pass Road/ Commerce Drive intersection is shown in Figure 14 and Figure 15. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 3. Full results are presented in Appendix A

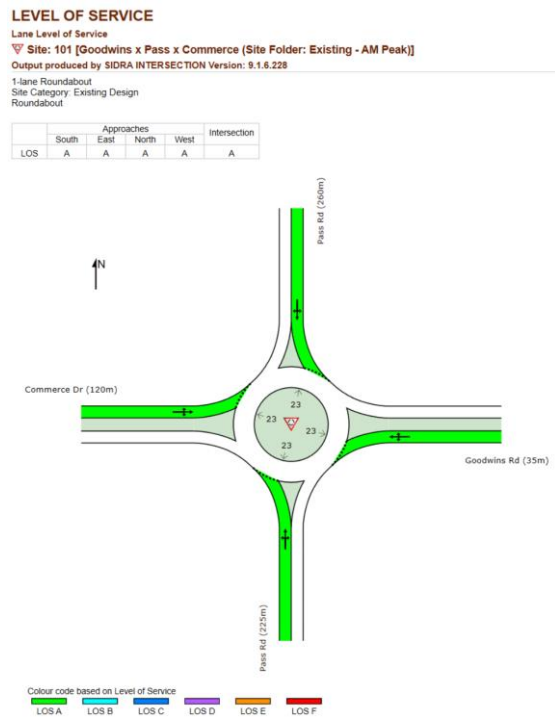


Figure 14: Existing AM peak hour lane Level of Service (LOS)

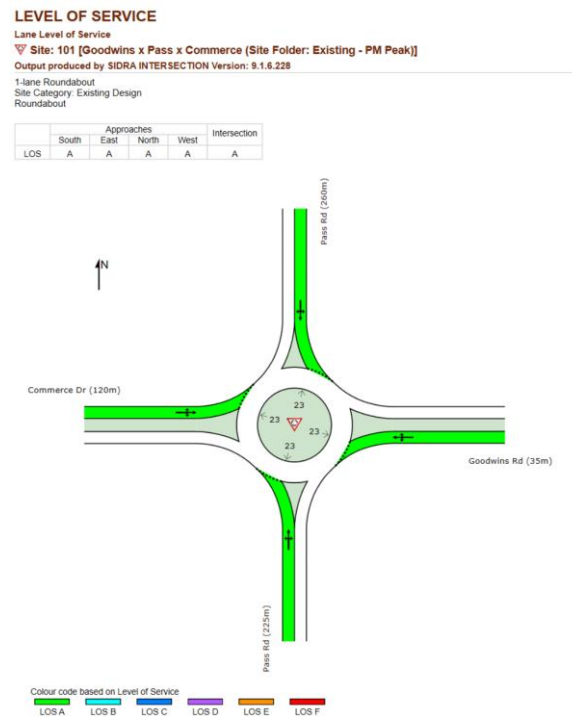


Figure 15: Existing PM peak hour lane Level of Service (LOS)

Table 3: Goodwins Road/ Pass Road/ Commerce Drive operational performance – existing 2025

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95th Percentile Queue (m)
South: Pass Road	AM	0.288	6.4	LOS A	14.2
East: Goodwins Road		0.377	6.3	LOS A	18.6
North: Pass Road		0.265	6.5	LOS A	12.3
West: Commerce Drive		0.278	9.6	LOS A	12.8
All Vehicles		0.377	7.1	LOS A	18.6
South: Pass Road	PM	0.262	6.5	LOS A	12.1
East: Goodwins Road		0.212	6.9	LOS A	9.4
North: Pass Road		0.422	8.1	LOS A	21.5
West: Commerce Drive		0.362	9	LOS A	17.6
All Vehicles		0.422	7.8	LOS A	21.5

Based on the above, the intersection of Goodwins Road/ Pass Road/ Commerce Drive currently operates well with minimal queues and delays and a LOS A.

3.5.2 Goodwins Road/ Mockridge Road

The existing 2025 LOS for each approach of the Goodwins Road/ Mockridge Road intersection is shown in Figure 16 and Figure 17. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 4. Full results are presented in Appendix A.

LEVEL OF SERVICE

Lane Level of Service

Site: 102 [Goodwins x Mockridge (Site Folder: Existing - AM Peak)]

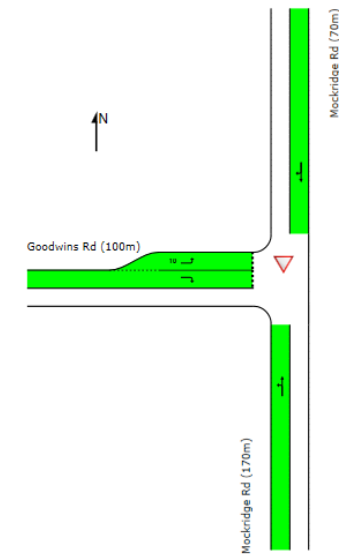
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction

Site Category: Existing Design

Give-Way (Two-Way)

LOS	Approaches			Intersection
	South	North	West	
NA	NA	NA	A	NA (TWSC)
(TWSC)	(TWSC)			



Colour code based on Level of Service
LOS A LOS B LOS C LOS D LOS E LOS F

Figure 16: Existing AM peak hour lane Level of Service (LOS)

LEVEL OF SERVICE

Lane Level of Service

Site: 102 [Goodwins x Mockridge (Site Folder: Existing - PM Peak)]

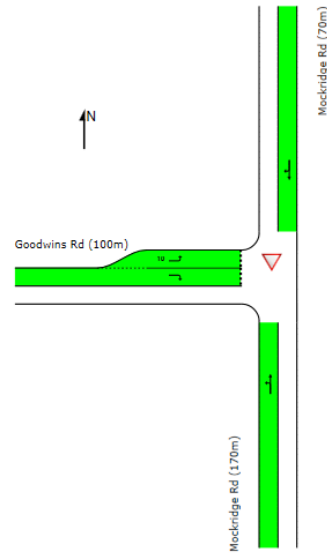
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction

Site Category: Existing Design

Give-Way (Two-Way)

LOS	Approaches			Intersection
	South	North	West	
NA	NA	NA	A	NA (TWSC)
(TWSC)	(TWSC)			



Colour code based on Level of Service
LOS A LOS B LOS C LOS D LOS E LOS F

Figure 17: Existing PM peak hour lane Level of Service (LOS)

Table 4: Goodwins Road/ Mockridge Road operational performance – existing 2025

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
South: Mockridge Road	AM	0.119	4.8	LOS A	0
North: Mockridge Road		0.048	4.1	LOS A	1.9
West: Goodwins Road		0.066	5.8	LOS A	1.1
All Vehicles		0.119	5	LOS A	1.9
South: Mockridge Road	PM	0.059	4.5	LOS A	0
North: Mockridge Road		0.045	3.8	LOS A	1.8
West: Goodwins Road		0.113	5.7	LOS A	1.9
All Vehicles		0.113	5	LOS A	1.9

Based on the above, the intersection of Goodwins Road/ Mockridge Road currently operates well with minimal queues and delays and a LOS A.

3.5.3 Rokeby Road/ Hawthorne Place

The LOS for each approach of the Rokeby Road/ Hawthorne Place intersection is shown in Figure 18 and Figure 19. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 5. Full results are presented in Appendix A.

LEVEL OF SERVICE

Lane Level of Service

Site: 103 [Rokeby x Hawthorne (Site Folder: Existing - AM Peak)]

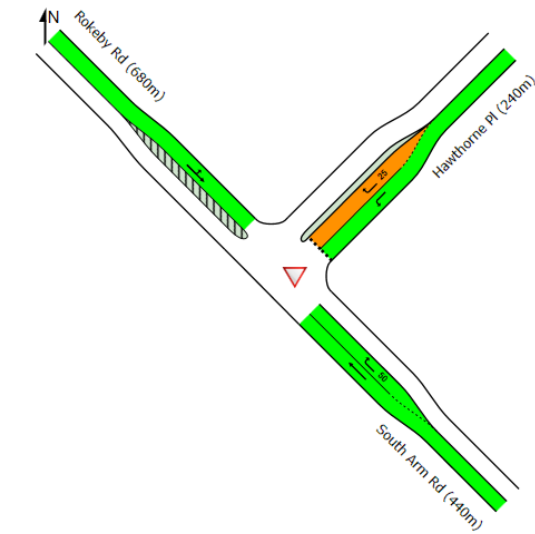
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction

Site Category: Existing Design

Give-Way (Two-Way)

	Approaches		Intersection
	Southeast	Northeast	Northwest
LOS	NA (TWSC)	D	NA (TWSC)



Colour code based on Level of Service
LOS A LOS B LOS C LOS D LOS E LOS F

Figure 18: Existing AM peak hour lane Level of Service (LOS)

LEVEL OF SERVICE

Lane Level of Service

Site: 103 [Rokeby x Hawthorne (Site Folder: Existing - PM Peak)]

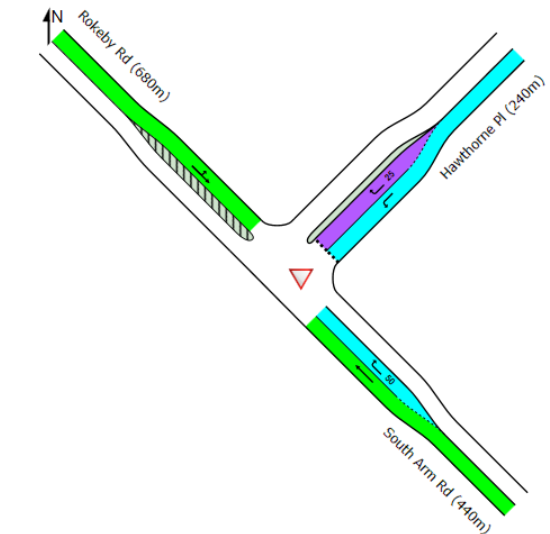
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction

Site Category: Existing Design

Give-Way (Two-Way)

	Approaches		Intersection
	Southeast	Northeast	Northwest
LOS	NA (TWSC)	D	NA (TWSC)



Colour code based on Level of Service
LOS A LOS B LOS C LOS D LOS E LOS F

Figure 19: Existing PM peak hour lane Level of Service (LOS)

Table 5: Rokeby Road/ Hawthorne Place operational performance – existing 2025

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
Southeast: Rokeby Road	AM	0.579	0.4	LOS A	0.7
Northeast: Hawthorne Place		0.622	34.4	LOS D	14.6
Northwest: Rokeby Road		0.331	1.1	LOS A	0
All Vehicles		0.622	2.7	LOS A	14.6
Southeast: Rokeby Road	PM	0.314	0.4	LOS A	0.7
Northeast: Hawthorne Place		0.357	27.6	LOS D	7.4
Northwest: Rokeby Road		0.62	1.1	LOS A	0
All Vehicles		0.62	1.8	LOS A	7.4

Based on the above, the intersection of Rokeby Road/ Hawthorne Place currently operates with an overall LOS A. It is difficult to turn right out of Hawthorne Drive in both the AM and PM peak periods due to high traffic volumes and limited gaps on Rokeby Road.

3.5.4 Rokeby Road/ Pass Road/ Tollard Drive

The LOS for each approach of the Rokeby Road/ Pass Road/ Tollard Drive intersection is shown in Figure 20 and Figure 21 below. A summary of the SIDRA Intersection results for degree of saturation, average delay, LOS and 95th percentile queue is provided in Table 6. Detailed SIDRA outputs are presented in Appendix A.

LEVEL OF SERVICE

Lane Level of Service

Site: 104 [Rokeby x Pass x Tollard (Site Folder: Existing - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Signalised 4way intersection

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Practical Cycle Time)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

	Approaches				Intersection
	South	East	North	West	
LOS	D	D	D	C	D

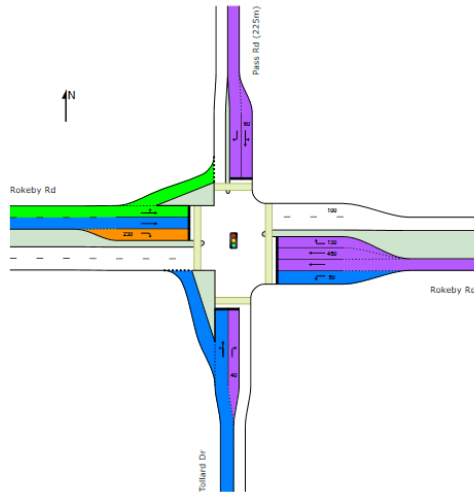


Figure 20: Existing AM peak hour lane Level of Service (LOS)

LEVEL OF SERVICE

Lane Level of Service

Site: 104 [Rokeby x Pass x Tollard (Site Folder: Existing - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Signalised 4way intersection

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 105 seconds (Site Practical Cycle Time)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

	Approaches				Intersection
	South	East	North	West	
LOS	C	D	D	C	D

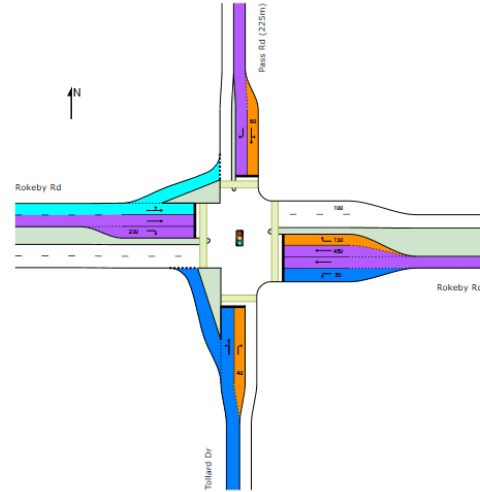


Figure 21: Existing PM peak hour lane Level of Service (LOS)

Table 6: Rokeby Road/ Pass Road/ Tollard Drive operational performance – existing 2025

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
South: Tollard Dr	AM	0.575	35.6	LOS D	77.8
East: Rokeby Road		0.877	47.8	LOS D	188.5
North: Pass Road		0.86	46.2	LOS D	139.5
West: Rokeby Road		0.802	23.4	LOS C	64.5
All Vehicles		0.877	40.3	LOS D	188.5
South: Tollard Dr	PM	0.409	27.7	LOS C	48.8
East: Rokeby Road		0.907	49	LOS D	90.5
North: Pass Road		0.874	54.3	LOS D	157.7
West: Rokeby Road		0.826	30.7	LOS C	202.8
All Vehicles		0.907	40.2	LOS D	202.8

The Rokeby Road/ Pass Road/ Tollard Drive intersection currently exhibits acceptable level of service (LOS D) during both AM and PM peak hours. Long queues are experienced on Rokeby Road on the east approach (citybound) and west approach (towards South Arm) during the AM and PM peak hours, respectively, but a degree of saturation less than 1.0 is maintained.

3.6 Public transport

Metro Tasmania operate the public bus service in the area. Local bus stops on route 624 are located on Goodwins Road, with bus stop 4126 located near the Mockridge Road intersection, at the easterly boundary of the proposed subdivision. Buses run twice an hour throughout the day and link to Shoreline Plaza Interchange, Rosny Park Interchange and Hobart City Interchange.

A new park and ride public transport facility is planned for Rokeby. It will be situated northeast of the Pass Road/ Rokeby Road intersection and is currently at concept design stage. The park and ride site will be very convenient at less than 1km away from the site and may also result in improved frequency of bus services to the area.

3.7 Pedestrian and cycling infrastructure

Roadside footpaths are present at the western section of Goodwins Road and there is a pedestrian refuge island to facilitate crossing Goodwins Road just to the west of the site. However, the road frontage of the proposed subdivision is currently undeveloped ranging from long grass to scrubby bush and is not suitable for walking or cycling.

There are no on-road cycle lanes in the area.

Opposite the site, the Clarence Plains Rivulet area provides some gravel tracks. Additional walking/cycling paths along Stokell Creek are shown in the subdivision concept plan (see Appendix B).

3.8 Crash history

State Growth has provided crash data relating to traffic accidents in the area surrounding the site during the last 10 years. The data is summarised in Table 7 and the locations of the crashes are shown in Figure 22, below.

Table 7: Crash history summary

Location	Crash Severity	Count	Serious And Prominent Crash Types
Mid-Block			
Goodwins Road	Serious - 1	18	189 - Other curve (2, including 1 serious) 130 - Vehicles in same lane/ rear end (3) 167 - Animal (not ridden) (3)
	Minor – 3		
	Property Damage Only - 10		
Hawthorne Place	Property Damage Only - 1	1	163 - Vehicle door
Mockridge Road	Serious - 4	13	189 - Other curve (3, including 2 serious) 149 - Other manoeuvring (1 serious) 181 - Off right bend into object/parked vehicle (1 serious)
	Minor - 2		
	First Aid - 1		
	Property Damage Only - 6		
Pass Road	Property Damage - 1	1	149 - Other manoeuvring
Rokeby Road	Serious - 1	34	130 - Vehicles in same lane/ rear end (16, including 1 serious) 133 - Vehicles in parallel lane/ lane side swipe (3) 120 - Wrong side/other head on, not overtaking (2)
	Minor - 3		
	First Aid - 5		
	Property Damage Only - 25		
Intersections			
Burtonia Street / Rokeby Road	Property Damage Only - 11	11	110 - Cross traffic (3) 113 - Right near (3) 114 - Two right turning (2)
Goodwins Road / Mockridge Road	Serious - 1	3	121 – Right through (1 serious)
	First Aid - 1		
	Property Damage Only - 1		
Hawthorne Place / Rokeby Road	Property Damage Only - 2	2	
Marston Street / Mockridge Road	Property Damage Only - 1	1	
Pass Road/ Goodwins Road	Property Damage Only - 5	5	
Pass Road/ Rokeby Road/ Tollard Drive	Minor - 14	37	121 - Right through (15) 130 - Vehicles in same lane/ rear end (9) 110 - Cross traffic (5) 102- Far side (2) 132 - Vehicles in same lane/ right rear (2)
	First Aid - 3		
	Property Damage Only - 20		

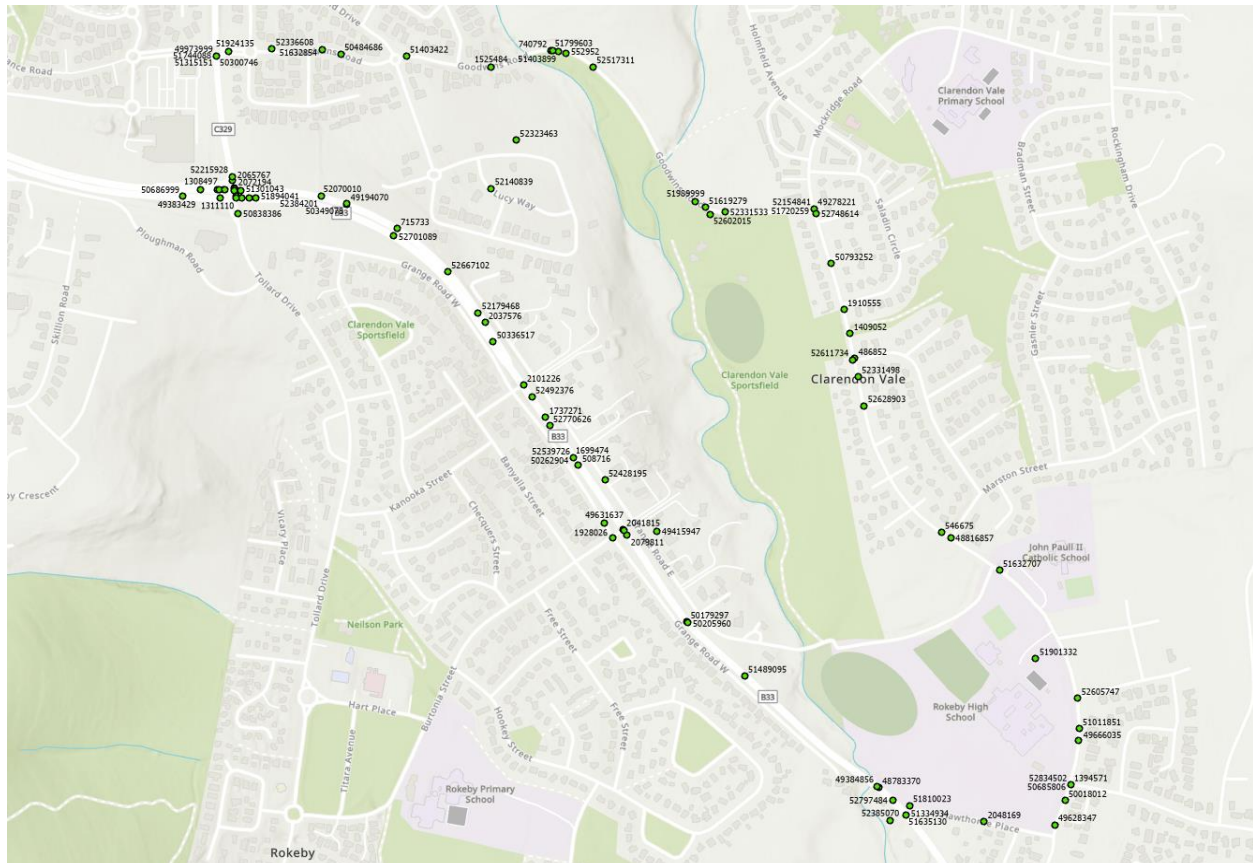


Figure 22: Crash sites

As shown above, 143 crashes have occurred on the roads of interest in the vicinity of the site in the last 10 years. Of these crashes, 7 were serious, 25 minor, 12 required first aid, and 99 resulted in property damage only.

It is noted that crash type 130 – Vehicles in the same lane/ rear end accounted for 26% of all recorded crashes. 50% of the crashes occurred at intersections, and of those, more than half occurred at the Rokeby Road/ Pass Road/ Tollard Drive intersection. This is typical for a busy signalised intersection.

There have been 15 right-through crashes at the Pass Rd/ Rokeby Rd/ Tollard Dr intersection in the past 10 years which would likely be a result of the filtered right turn movements on the Pass Road and Tollard Drive approaches. Since 2024, split phases have been introduced at these approaches, meaning the right-turn movements occur in dedicated phases (i.e. not filtered anymore). This has resulted in significant reduction in right-through crashes at this intersection. In fact, only 1 right-through crash has been recorded at this intersection since the start of 2024.

There have been 2 right-near crashes at the Hawthorne PI/ Rokeby Rd intersection, likely from vehicles attempting to turn right onto Rokeby Road from Hawthorne Place when there are limited gaps due to high traffic volumes. Consideration could be given to limiting right-turn movements onto Rokeby Road either at peak times or permanently, or installation of traffic signals.

4. Development proposal

4.1 Overview

The proposed development at 22 Goodwins Road, Clarendon Vale is a residential subdivision of 80 lots. The design was sourced from Hutchings Spurr drawing number 24140, revision B, dated 16/06/2025 (Design Drawing), which is attached in Appendix B.

The site is divided into 2 hubs, as summarised in Table 8.:

Table 8: Summary of the hubs

Hub	Number of Lots	Access Reference Number
Western hub	39	Access #1
Eastern hub	41	Access #2

4.2 Site access for vehicles

Access to the proposed subdivision is provided from Goodwins Road. The layout of the eastern and western hubs, lots, internal roads, and the 2 access points are shown in Figure 23.

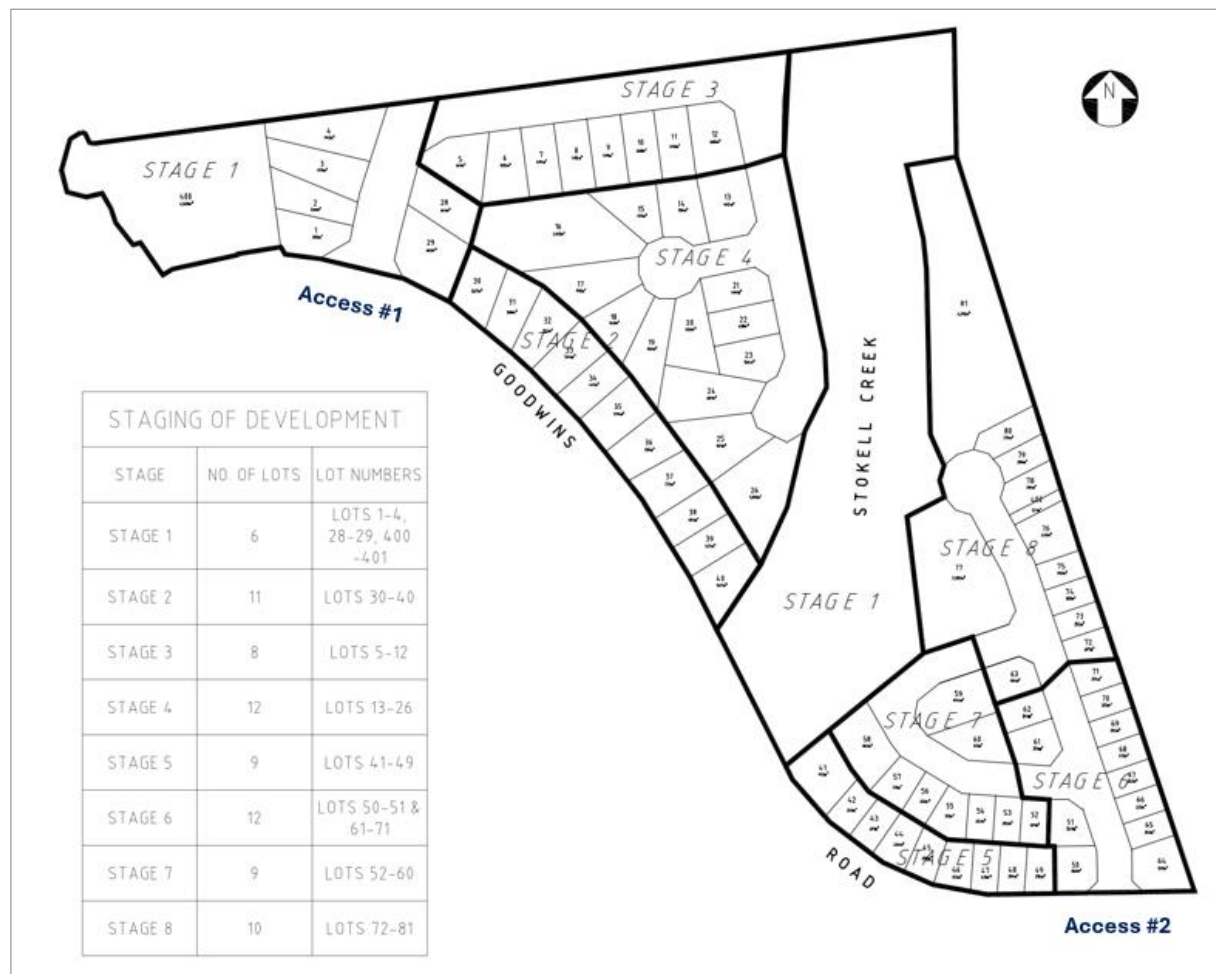


Figure 23: Proposed subdivision and access roads

4.2.1 Access #1

The Access #1 refers to the access point for the proposed lots and internal roads of the western hub. Hutchings Spurr has proposed a give-way controlled intersection for Access #1. It is also understood that the council is considering upgrading this intersection to a roundabout in future. As such, in the Design Drawing of Access #1, the proposed priority-controlled intersection is shown in solid lines, whereas the footprint of the roundabout has been shown with dotted lines. Screenshot of Access #1 Design Drawing is presented in Figure 24.

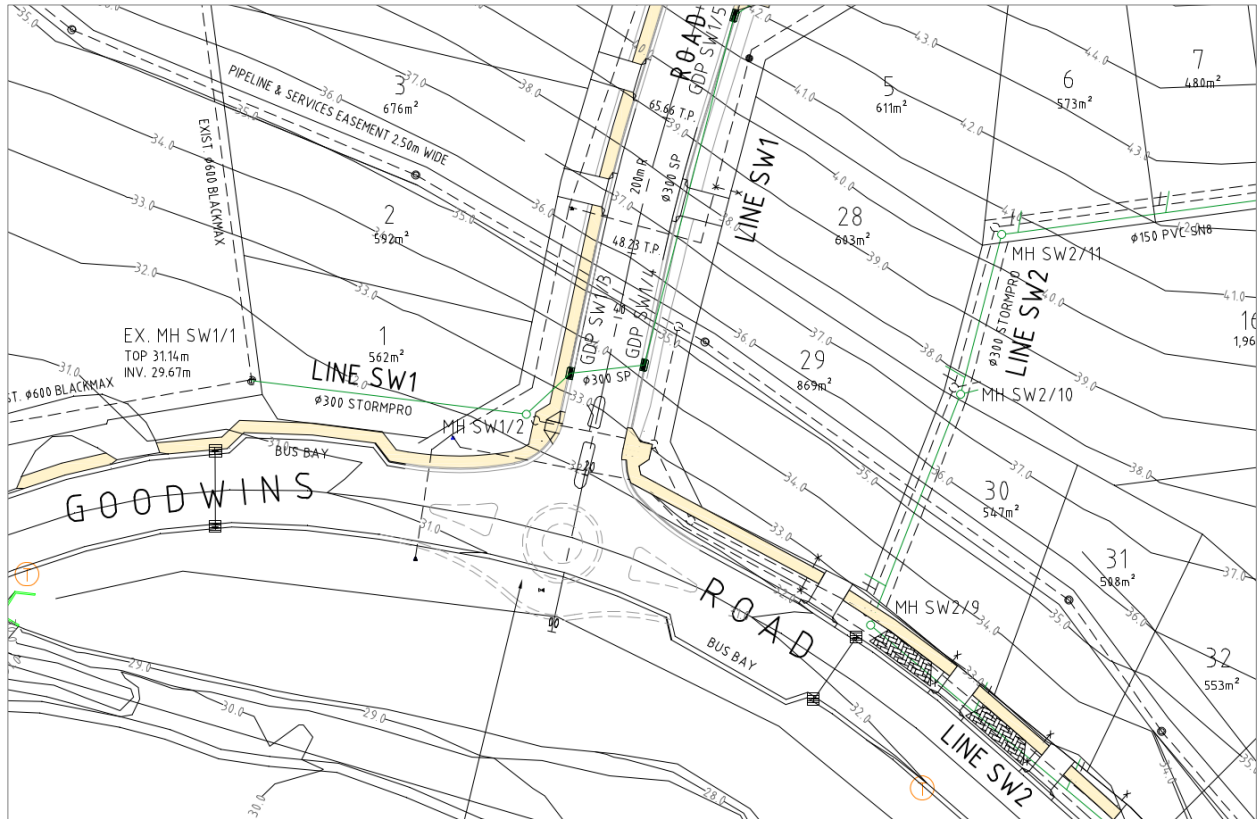


Figure 24: Proposed design of Access #1

4.2.2 Access #2

The Access #2 refers to the access point for the proposed lots and internal roads of the eastern hub. Hutchings Spurr has proposed a give-way controlled intersection for Access #2, as shown in Figure 25.

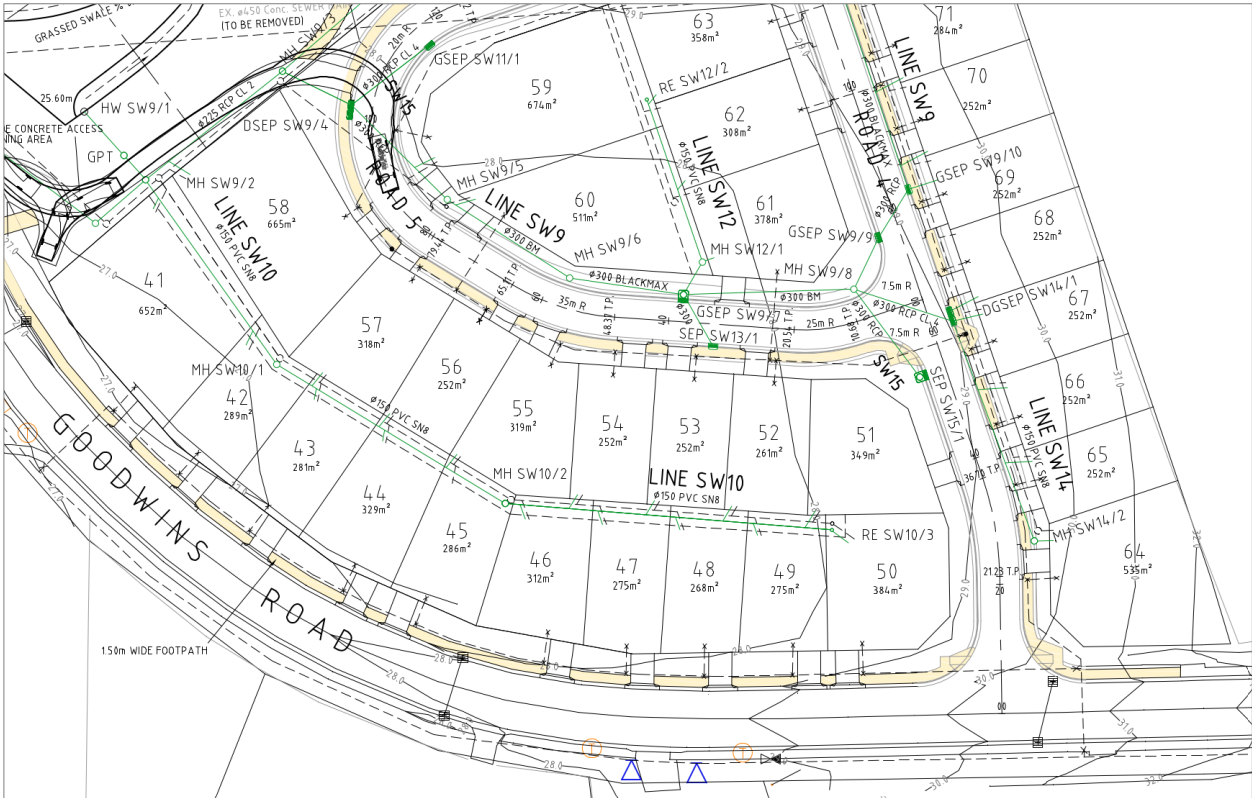


Figure 25: Proposed design of Access #2

4.3 Internal roads

The site internal roads are no-through roads, with cul-de-sac at the end, and are assumed to include one vehicle lane in each direction. The internal road, reserve, footpath and cul-de-sac layouts in the concept design were reviewed against the requirements of LGAT standard drawings for residential roads, and the findings are summarised in Table 9.

Table 9: Site Internal Road, Reserve and Cul-de-sac design compliance with LGAT Drawings

Road Type	Road Length	Minimum Road Width		Minimum Reservation Width		Minimum Footpath Requirements		Cul-De-Sac Diameter	
		LGAT	Provided	LGAT	Provided	LGAT	Provided	LGAT	Provided
Cul-de-sac	> 150m	8.9 m	✓	18.0 m	✓	One side only	✓	18.0 m	✓
	≤ 150m	6.9 m	✓	15.0 m	✓	One side only	✓	18.0 m	✓

Overall, the site internal roads, reserves and cul-de-sac designs comply with the LGAT standard requirements.

4.4 Sight distances

pitt&sherry traffic engineers visited the site on Tuesday 22 November 2022. The location of each proposed access/egress was visited, and observations are outlined below.

The Safe Intersection Sight Distance (SISD) at each site access has been assessed in accordance with the *Austrroads Guide to Road Design Part 4A*. The speed limit on Goodwins Road varies from 50km/h (at Access #1) to 60km/h (at Access #2 and #3) resulting in required sight distances of 97m and 123m respectively.

4.4.1 Access #1

The proposed Access #1 road will be located on Goodwins Road just east of the Clarence Rivulet, near the western boundary of the subdivision. The sight distance to the east and west are shown in Figure 26 and Figure 27, below.

Roadside vegetation on the southside of Goodwins Road impedes the sight distance in both directions, but more significantly to the west, where sight distance was observed at only 87m. To achieve the Austrroads SISD requirements at Access #1 the roadside vegetation on the southside of Goodwins Road would need to be removed or trimmed and maintained periodically.

The posted speed limit on Goodwins Road changes from 50km/h to 60km/h approximately 80m to the east of Access #1. Goodwins Road at this point is a wide single carriage way with one lane in each direction and a 2m wide painted central median. Lanes are 3.3m wide giving an overall seal width of 8.8m. There are currently no pedestrian footpaths in this section.

Given the proximity to the change of posted speed limit, and the slight downhill grade at this point, it would be prudent to assume that cars may be travelling faster than 50km/h, and additional vegetation clearing/trimming to the east approach to achieve the required distance of 123m for vehicles travelling at 60km/h would be advisable if possible.



Figure 26: Goodwins Road, east approach to Access #1



Figure 27: Goodwins Road, west approach to Access #1

4.4.2 Access #2

The proposed Access #2 road will be located on Goodwins Road near the eastern boundary of the subdivision. The sight distance to the east and west are shown in Figure 28 and Figure 29, below.

Access #2 is located approximately 95m to the west of the Mockridge Road/ Goodwins Road intersection. The posted speed limit on Goodwins Road increases to 60km/h at this point for westbound traffic and reduces to 50km/h for eastbound.

Due to the proximity to the T-intersection, and the change in posted speed limit, it is estimated that the 85th percentile operating speed is closer to 50km/h as vehicles will not have reached full speed after turning into Goodwins Road, and not have increased speed to 60km/h. Therefore, the available of east sight distance of 97m to the intersection is sufficient to meet the Austroads SISD requirements.

The sight distance to the west is currently greater than 150m, however it is likely to be impacted by the development. Construction of buildings, fences, and other sight line obstructions should be positioned to ensure the required SISD of 123m is preserved.

Goodwins Road at this point is a wide single carriage way with one lane in each direction and overall seal width of 8.8m. A sealed pedestrian footpath is present along the westbound roadside.



Figure 28: Goodwins Road, east approach to Access #3



Figure 29: Goodwins Road, west approach to Access #3

The SISD requirements and the observed sight distances at the proposed site accesses are shown in Table 10.

Table 10: Sight distance assessment

Location	Approach	Vehicle Speed	SISD Requirement ²	Available SISD	Meets Requirement
Access #1	East	50km/h	97m	100m	Yes
	West	50km/h	97m	87m	Yes (with vegetation trimming)
Access #2	East	50km/h ^[1]	97m	97m	Yes
	West	60km/h	123m	>150m ^[2]	Yes

^[1] Westbound vehicle speed is estimated to be less than the speed limit of 60km/h due to the proximity to the intersection and proximity to increase in posted speed limit.

^[2] SISD is likely to be impacted by development. Construction of buildings, fences, and other sight line obstructions should be positioned to preserve minimum SISD of 123m.

4.5 Car parking

The Planning Scheme car parking space requirements for a residential development in any zone which is not General Residential Zone (extract from Table C2.1, Tasmanian Planning Scheme – Clarence) are shown in the Table 11, below.

Table 11: Extract from Table C2.1 Parking Space Requirements

Use		Parking Space Requirements	
		Car	Bicycle
Residential	Any Residential use in any other zone	1 space per bedroom or 2 spaces per 3 bedrooms + 1 visitor space for every 5 multiple dwellings or every 10 bedrooms for a non-dwelling residential use (rounded up to the nearest whole number)	No requirement for single dwellings, multiple dwellings, residential care facility, assisted housing and retirement village. All other uses require 1 space per 5 bedrooms in other forms of accommodation.

Details of the proposed house layouts have not been provided. If the development consists of entirely 3-bedroom single dwellings, each lot will be required to accommodate 2 off-street car park spaces. The concept plan provided indicates sufficient space to easily meet this requirement.

¹ As per Table 3.2 of Austroads Guide to Road Design Part 4A with reaction time 2.0 sec.

5. Traffic impact assessment

5.1 Traffic generation

5.1.1 Trip generation rates

Traffic generation rates for the development have been based on following guideline and associated report issued by Transport for New South Wales (TfNSW):

- *TfNSW Guide to Transport Impact Assessment 2024* (TfNSW Guide), and
- *TfNSW Trip Generation Surveys – Low Density Residential – Data Report, October 2022* (TfNSW Data Report).

The TfNSW Data Report recommends the following trip generation rates for low density residential houses:

- Daily vehicle trips: 7.9 per dwelling
- Weekday AM peak hour vehicle trips: 0.73 per dwelling; and
- Weekday PM peak hour vehicle trips: 0.79 per dwelling.

5.1.2 In / out split

The TfNSW Data Report recommends incoming / outgoing split for low density residential developments as follows:

- AM Peak Hour 41% in / 59% out; and
- PM Peak Hour 56% in / 44% out.

5.1.3 Generated trips

Based on the above rates, the expected traffic generation of the proposed development of 80 residential dwellings is summarised in Table 12 (two-way trips):

Table 12: Summary of development trips (two-way)

No of Dwelling	Period	Trip Generation Rates (Per Dwelling)	Generated Trips	In%	Out%	Incoming Trips	Outgoing Trips
80	AM peak hour	0.73	58	41%	59%	24	34
	PM peak hour	0.79	63	56%	44%	35	28
	Daily	7.9	634	-	-	-	-

5.1.4 Directional distribution

The traffic distribution and assignment is based on a number of factors including:

- The location of major distribution roads around the site
- The location of traffic generating developments, and
- Existing traffic patterns.

Based on the above, the expected network-wide development traffic distribution percentages during AM and PM peak hour are shown in Figure 30 and Figure 31, respectively.

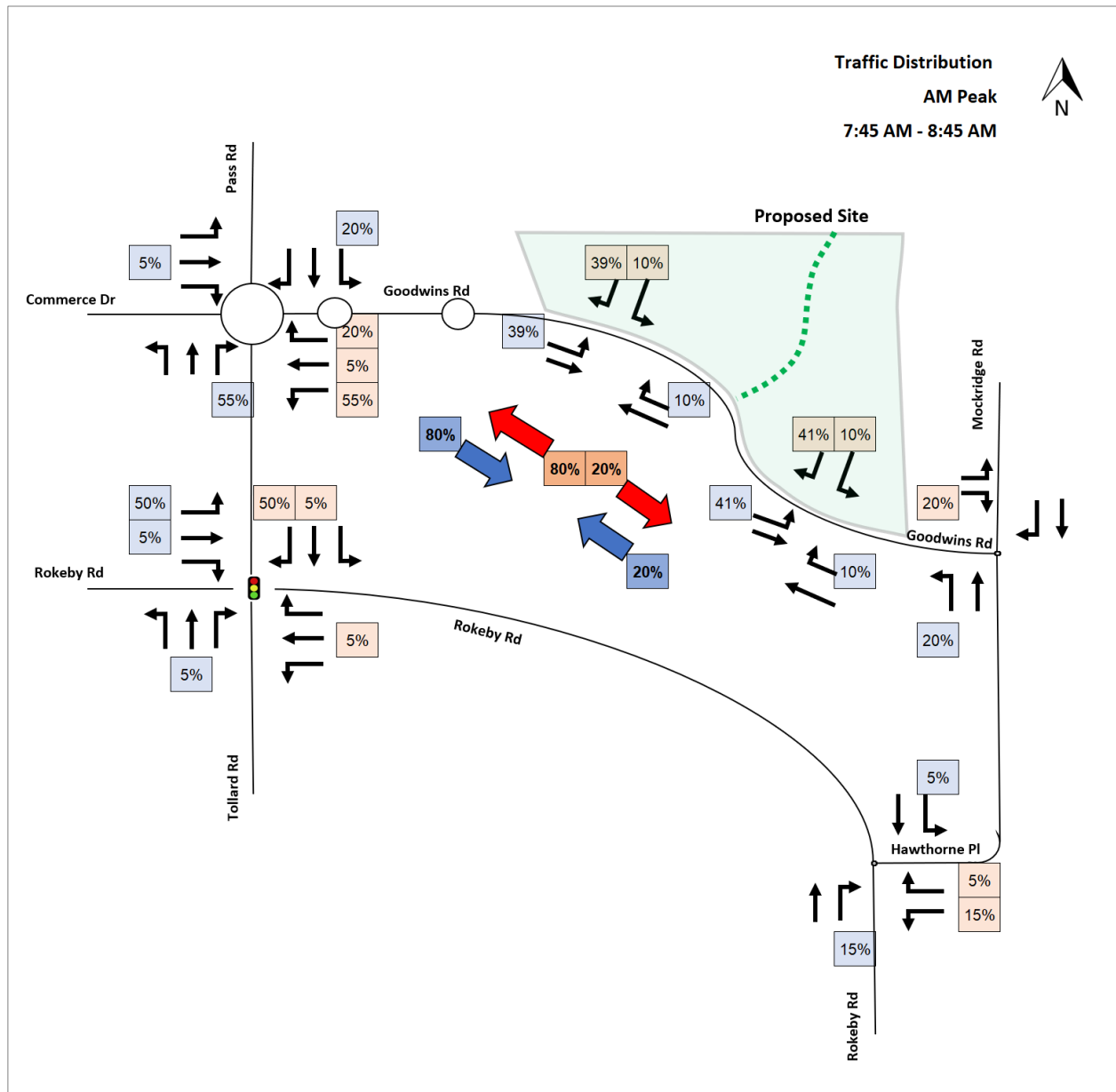


Figure 30: Traffic distribution, AM peak hour

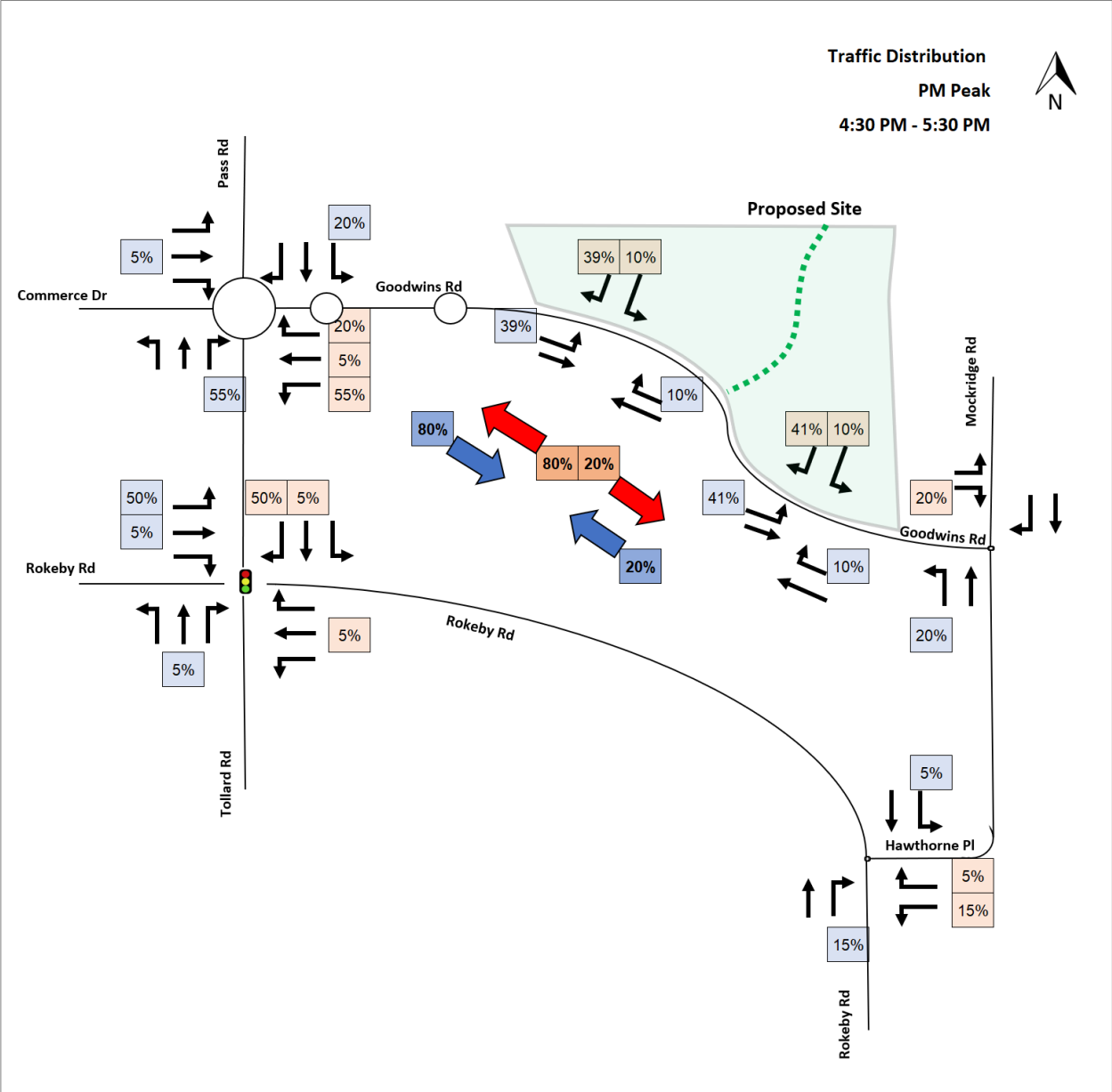


Figure 31: Traffic distribution, PM peak hour

5.1.5 Network-wide distribution of development traffic

Considering the expected traffic generation from the proposed subdivision, and the estimated distribution, the traffic generated by the proposed development and their distribution on the wider network during weekday AM and PM peak hours are shown in Figure 32 and Figure 33, respectively.

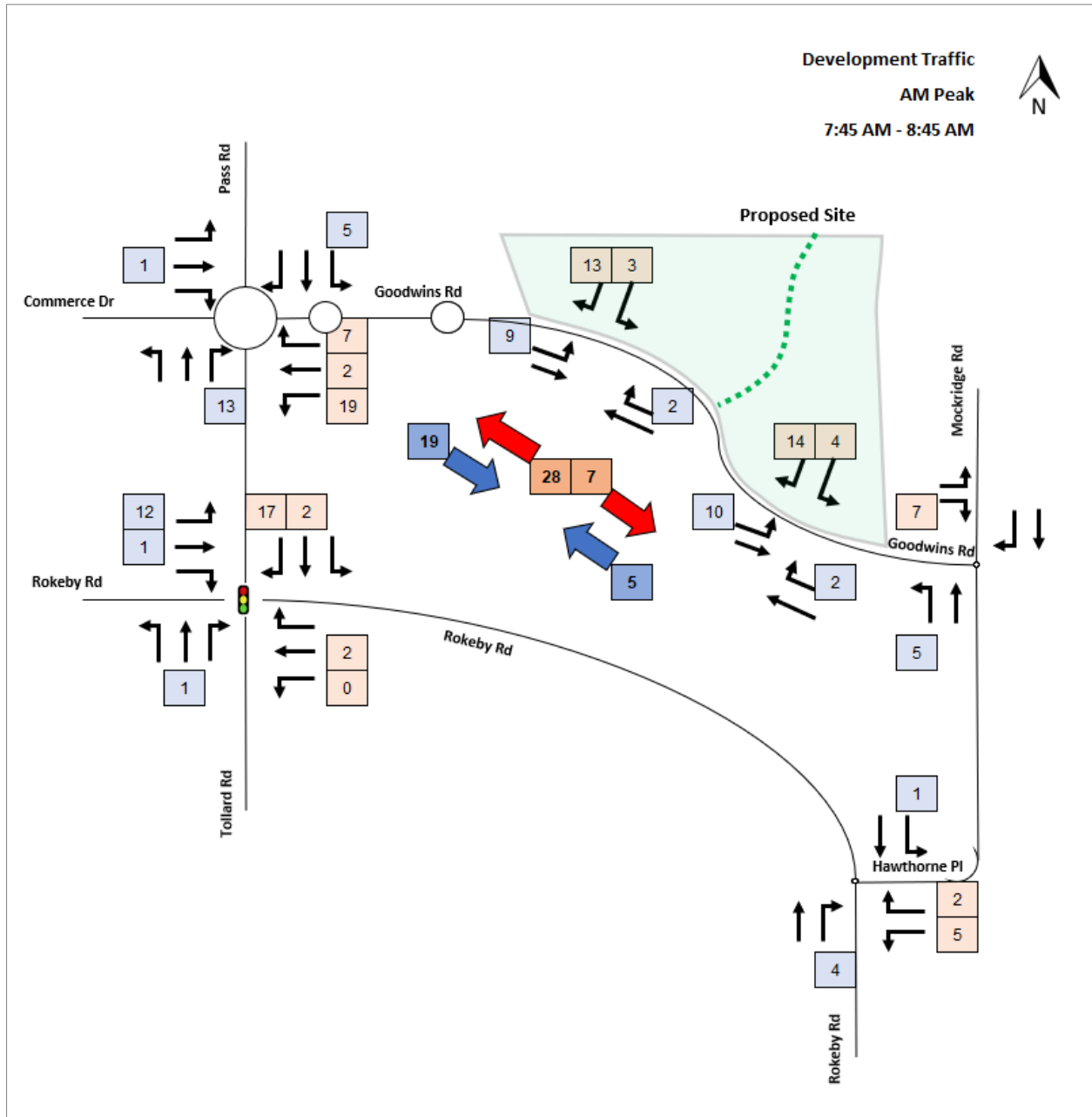


Figure 32: Network-wide distribution of development traffic - AM peak

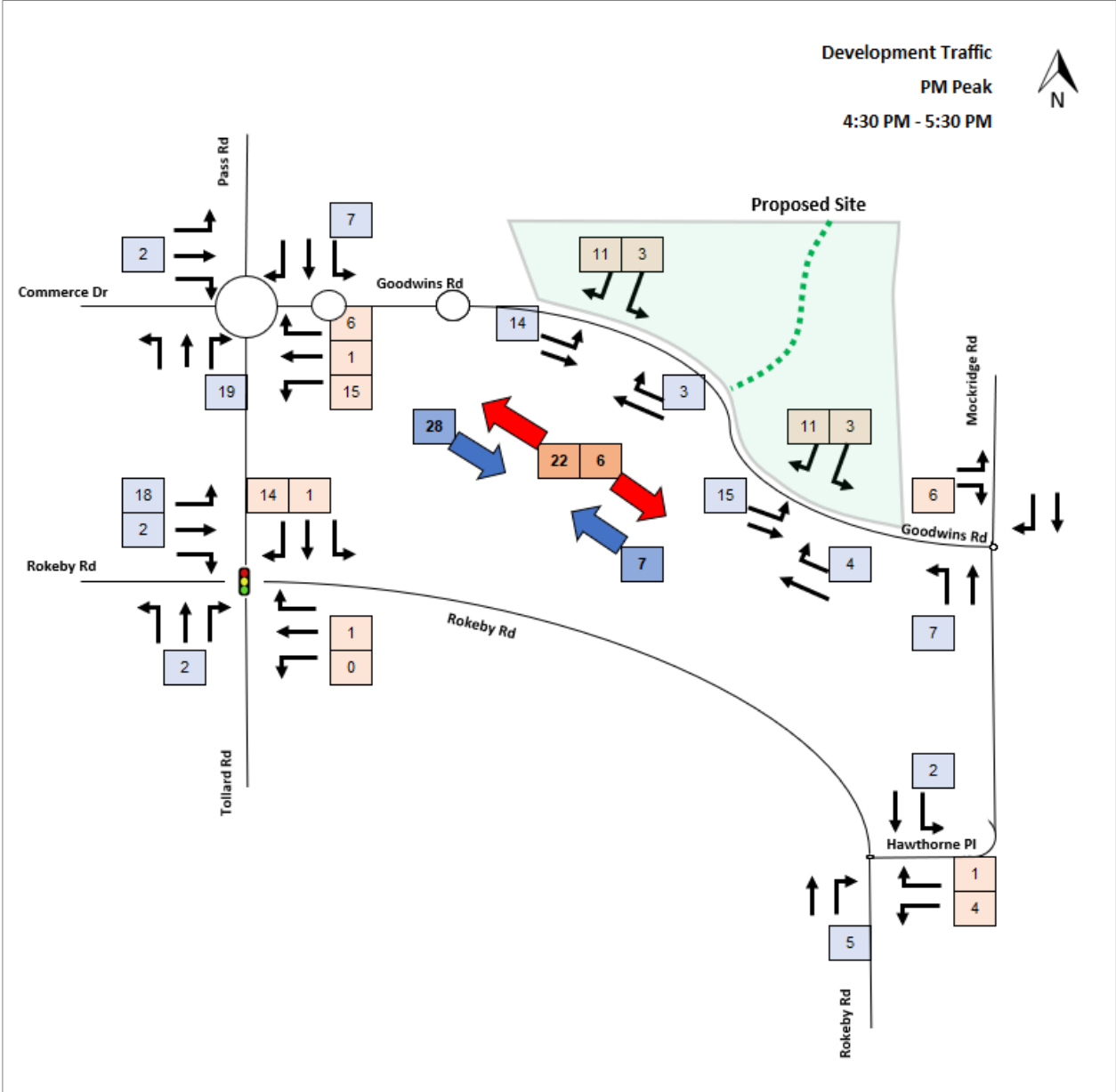


Figure 33: Network-wide distribution of development traffic - PM peak

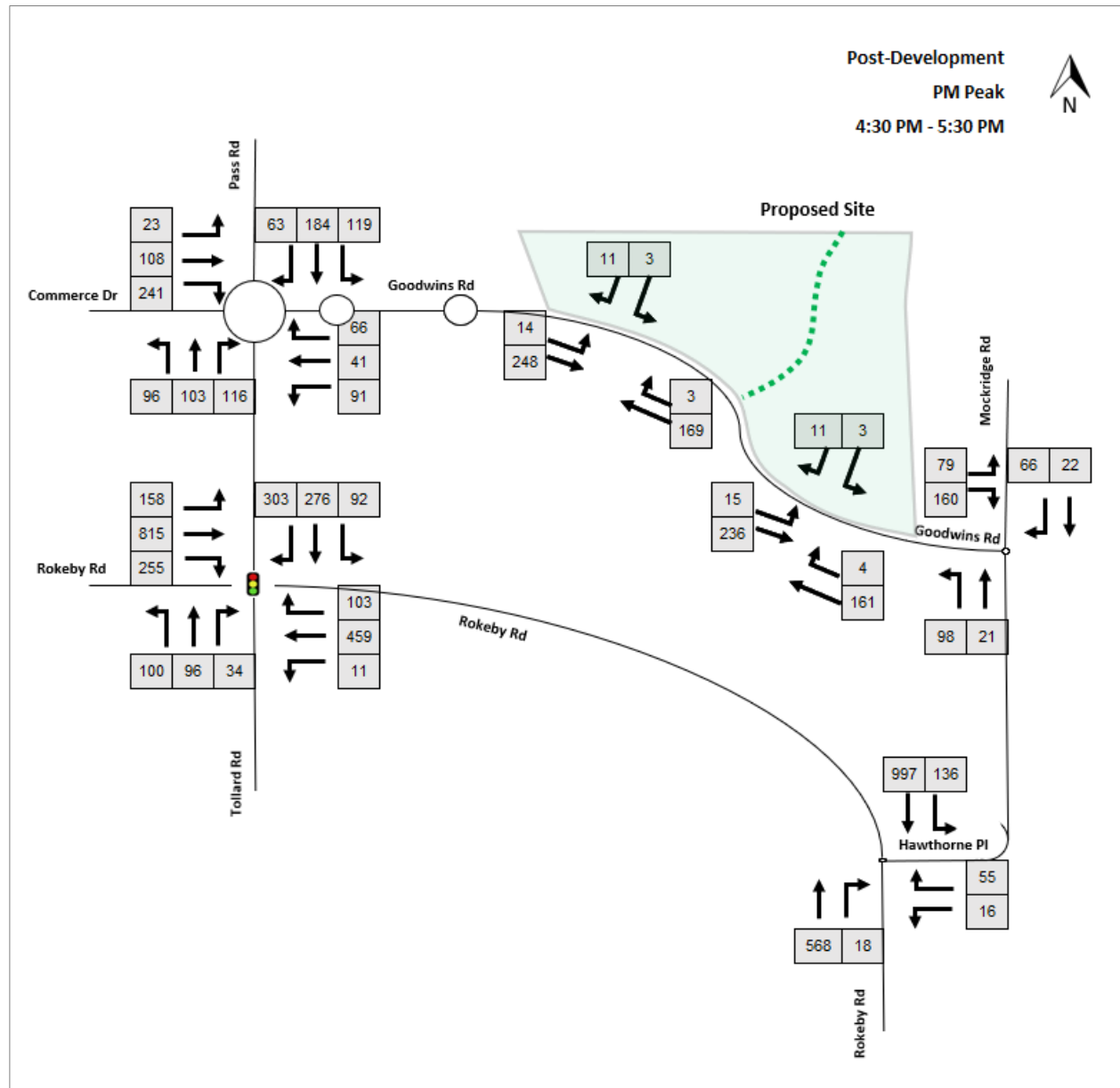


Figure 35: Forecast traffic volumes post development – PM peak hour

The proposed residential subdivision is in keeping with the residential developments of the surrounding areas and therefore it is reasonable to assume that the ratio or heavy vehicle movements generated by the development will be consistent with the existing ratios of heavy vehicles observed during the traffic surveys.

5.3 Post-development intersection performance

Applying the calculated traffic volumes to the SIDRA Intersection models of each intersection, an assessment of the impact the additional traffic generated by the proposed development will have on the local network.

5.3.1 Goodwins Road/ Pass Road/ Commerce Drive

The LOS for each approach of the Goodwins Road/ Pass Road/ Commerce Drive intersection is shown in Figure 36 and Figure 37. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 13. Full results are presented in Appendix C.

LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Goodwins x Pass x Commerce (Site Folder: Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1-lane Roundabout
Site Category: Existing Design
Roundabout

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

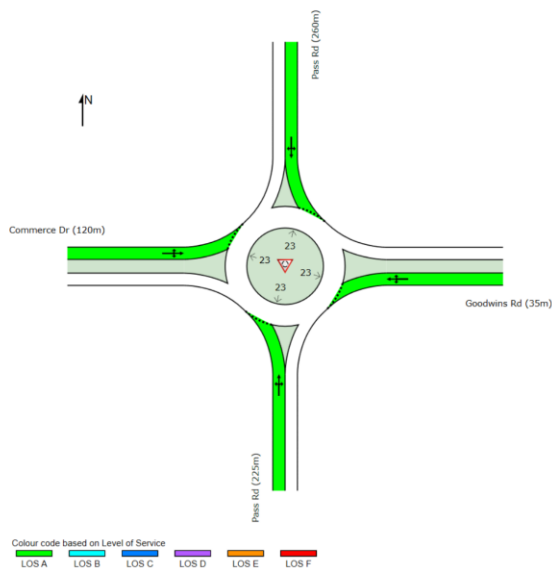


Figure 36: Post-development AM peak hour lane Level of Service (LOS)

LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Goodwins x Pass x Commerce (Site Folder: Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1-lane Roundabout
Site Category: Existing Design
Roundabout

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

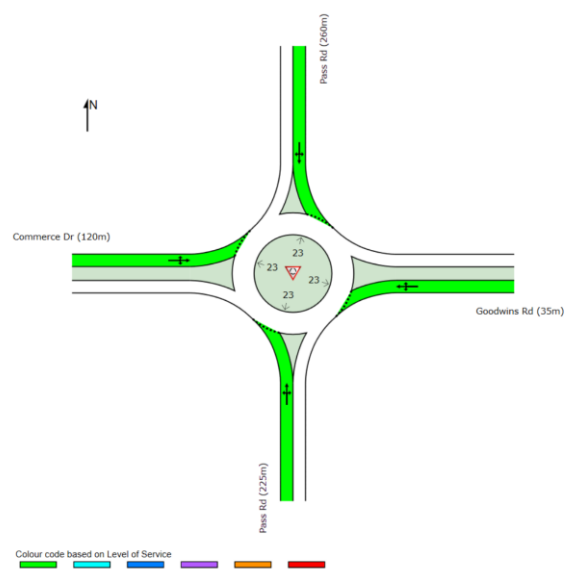


Figure 37: Post-development PM peak hour lane Level of Service (LOS)

Table 13: Goodwins Road/ Pass Road/ Commerce Drive post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
South: Pass Road	AM	0.303	6.7	LOS A	15.2
East: Goodwins Road		0.408	6.4	LOS A	20.6
North: Pass Road		0.274	6.6	LOS A	12.8
West: Commerce Drive		0.284	9.7	LOS A	13.2
All Vehicles		0.408	7.2	LOS A	20.6
South: Pass Road	PM	0.281	6.7	LOS A	13.2
East: Goodwins Road		0.241	6.9	LOS A	10.8
North: Pass Road		0.439	8.4	LOS A	22.6
West: Commerce Drive		0.374	9.2	LOS A	18.3
All Vehicles		0.439	8	LOS A	22.6

5.3.2 Goodwins Road/ Mockridge Road

The LOS for each approach of the Goodwins Road/ Mockridge Road intersection is shown in Figure 38 and Figure 39. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 14. Full results are presented in Appendix C.

LEVEL OF SERVICE

Lane Level of Service

Site: 102 [Goodwins x Mockridge (Site Folder: Post Development - AM Peak)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
LOS	NA	NA	A	NA (TWSC)
	(TWSC)	(TWSC)		

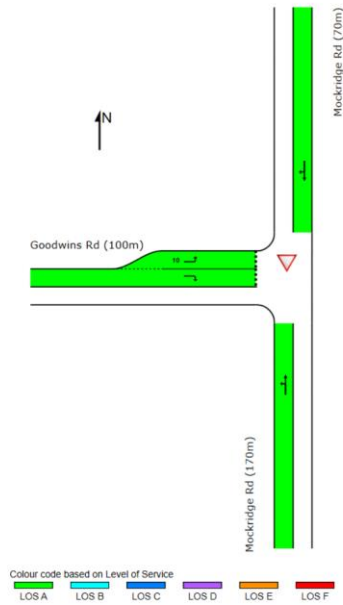


Figure 38: Post-development AM peak hour lane Level of Service (LOS)

LEVEL OF SERVICE

Lane Level of Service

Site: 102 [Goodwins x Mockridge (Site Folder: Post Development - PM Peak)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
LOS	NA	NA	A	NA (TWSC)
	(TWSC)	(TWSC)		

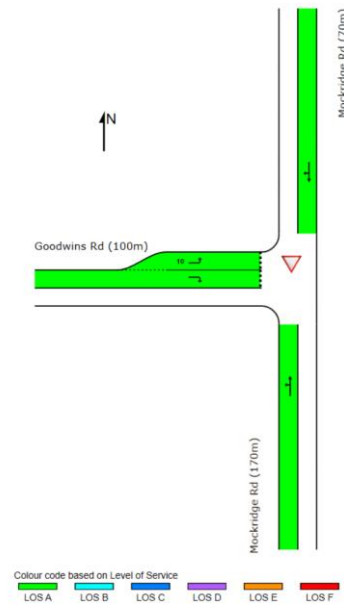


Figure 39: Post-development PM peak hour lane Level of Service (LOS)

Table 14: Goodwins Road/ Mockridge Road post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
South: Mockridge Road	AM	0.122	4.8	LOS A	0
North: Mockridge Road		0.049	4.1	LOS A	1.9
West: Goodwins Road		0.071	5.8	LOS A	1.2
All Vehicles		0.122	5	LOS A	1.9
South: Mockridge Road	PM	0.063	4.6	LOS A	0
North: Mockridge Road		0.045	3.9	LOS A	1.8
West: Goodwins Road		0.117	5.7	LOS A	2
All Vehicles		0.117	5	LOS A	2

5.3.3 Rokeby Road/ Hawthorne Place

The LOS for each approach of the Rokeby Road/ Hawthorne Place intersection is shown in Figure 40 and Figure 41. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 15. Full results are presented in Appendix C.

LEVEL OF SERVICE

Lane Level of Service

Site: 103 [Rokeby x Hawthorne (Site Folder: Post Development - AM Peak)]

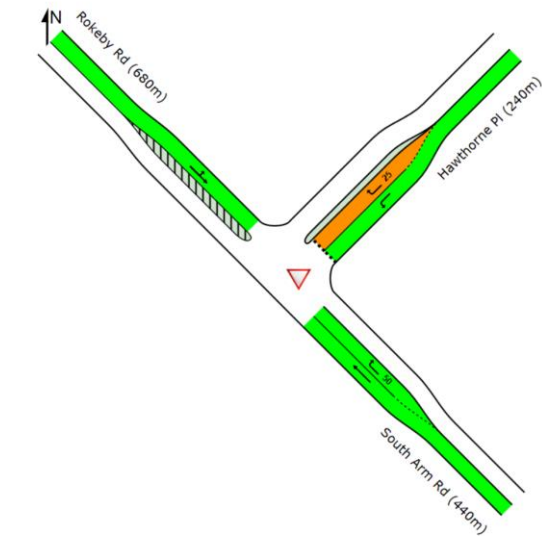
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction

Site Category: Existing Design

Give-Way (Two-Way)

	Approaches		Intersection
	Southeast	Northeast	Northwest
LOS	NA (TWSC)	D	NA (TWSC)



Colour code based on Level of Service
LOS A LOS B LOS C LOS D LOS E LOS F

LEVEL OF SERVICE

Lane Level of Service

Site: 103 [Rokeby x Hawthorne (Site Folder: Post Development - PM Peak)]

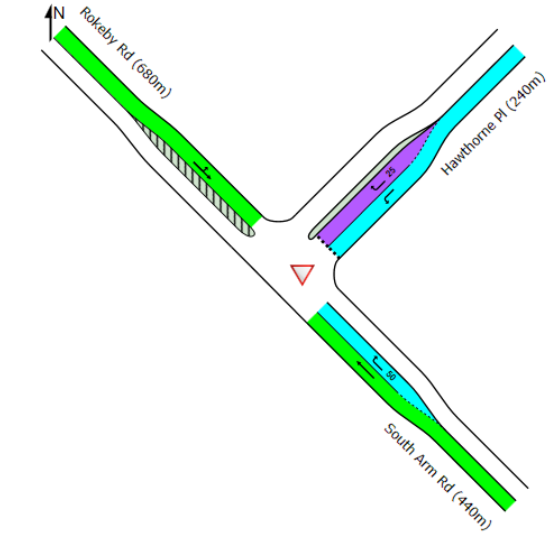
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction

Site Category: Existing Design

Give-Way (Two-Way)

	Approaches		Intersection
	Southeast	Northeast	Northwest
LOS	NA (TWSC)	D	NA (TWSC)



Colour code based on Level of Service
LOS A LOS B LOS C LOS D LOS E LOS F

Figure 40: Post-development AM peak hour lane Level of Service (LOS)

Figure 41: Post-development PM peak hour lane Level of Service (LOS)

Table 15: Rokeby Road/ Hawthorne Place post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
Southeast: Rokeby Road	AM	0.579	0.5	LOS A	0.8
Northeast: Hawthorne Place		0.631	33.6	LOS D	14.9
Northwest: Rokeby Road		0.332	1.1	LOS A	0
All Vehicles		0.631	2.8	LOS A	14.9
Southeast: Rokeby Road	PM	0.314	0.5	LOS A	1
Northeast: Hawthorne Place		0.373	27.2	LOS D	7.7
Northwest: Rokeby Road		0.621	1.1	LOS A	0
All Vehicles		0.621	2	LOS A	7.7

5.3.4 Rokeby Road/ Pass Road/ Tollard Drive

The LOS for each approach of the Rokeby Road/ Pass Road/ Tollard Drive intersection is shown in Figure 42 and Figure 43 below. A summary of the SIDRA Intersection results for degree of saturation, average delay, LOS and 95th percentile queue is provided in Table 16. Detailed SIDRA outputs are presented in Appendix C.

LEVEL OF SERVICE

Lane Level of Service

Site: 104 [Rokeby x Pass x Tollard (Site Folder: Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Signalised 4way intersection
Site Category: Existing Design
Signal - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 95 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

	South	East	North	West	Intersection
LOS	D	D	D	C	D

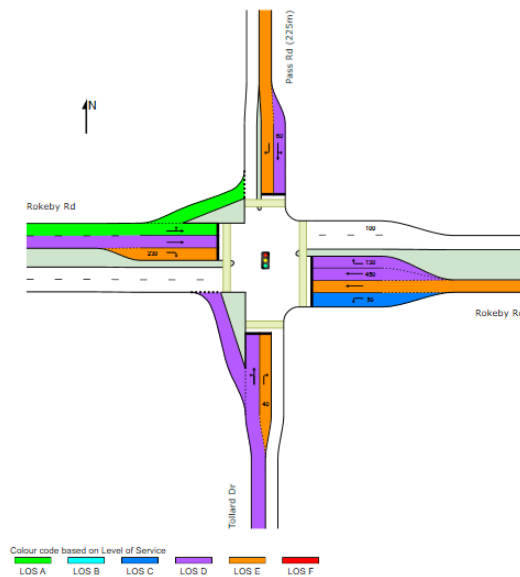


Figure 42: Post-development AM peak hour lane Level of Service (LOS)

LEVEL OF SERVICE

Lane Level of Service

Site: 104 [Rokeby x Pass x Tollard (Site Folder: Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Signalised 4way intersection
Site Category: Existing Design
Signal - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 105 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

	South	East	North	West	Intersection
LOS	C	D	E	C	D

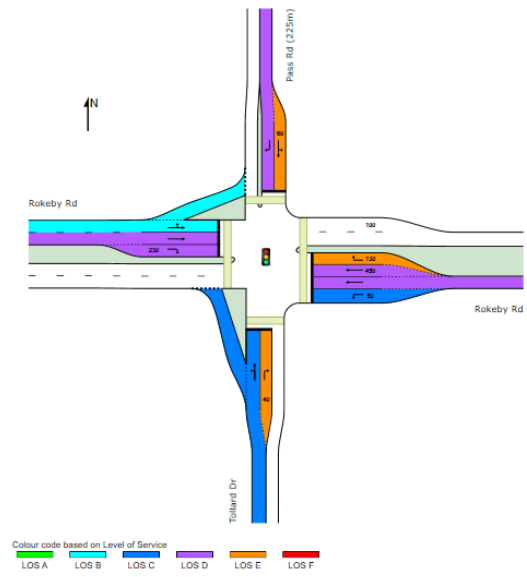


Figure 43: Post-development PM peak hour lane Level of Service (LOS)

Table 16: Rokeby Road/ Pass Road/ Tollard Drive post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
South: Tollard Dr	AM	0.603	41	LOS D	83.9
East: Rokeby Road		0.866	48.7	LOS D	193.7
North: Pass Road		0.873	50.6	LOS D	156
West: Rokeby Road		0.847	25.1	LOS C	69.7
All Vehicles		0.873	42.7	LOS D	193.7
South: Tollard Dr	PM	0.416	28.2	LOS C	50.4
East: Rokeby Road		0.907	49	LOS D	90.7
North: Pass Road		0.886	55.5	LOS E	161.5
West: Rokeby Road		0.828	30	LOS C	204.2
All Vehicles		0.907	40.2	LOS D	204.2

5.3.5 Goodwins Road/ Site Access 1

The LOS for each approach of the Goodwins Road/ Site Access 1 intersection is shown in Figure 44 and Figure 45. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 17. Full results are presented in Appendix C.

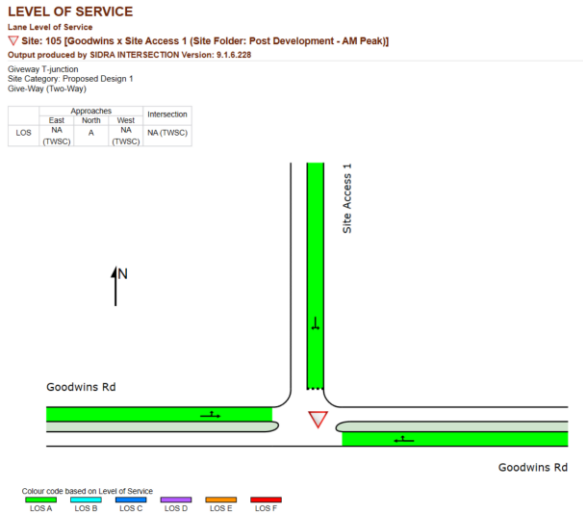


Figure 44: Post-development AM peak hour lane Level of Service (LOS)

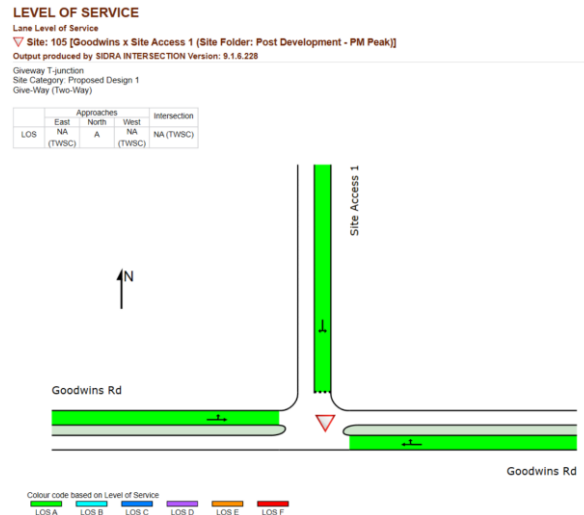


Figure 45: Post-development PM peak hour lane Level of Service (LOS)

Table 17: Goodwins Road/ Site Access 1 post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
East: Goodwins Road	AM	0.15	0	LOS A	0.1
North: Site Access 1		0.013	4.5	LOS A	0.2
West: Goodwins Road		0.091	0.3	LOS A	0
All Vehicles		0.15	0.3	LOS A	0.2
East: Goodwins Road	PM	0.093	0.1	LOS A	0.2
North: Site Access 1		0.011	4.5	LOS A	0.2
West: Goodwins Road		0.142	0.3	LOS A	0
All Vehicles		0.142	0.4	LOS A	0.2

5.3.6 Goodwins Road/ Site Access 1 – Roundabout

As discussed in Section 4.2.1, the council is considering upgrading this intersection to a roundabout. Accordingly, SIDRA assessment of the roundabout, as per the Design Drawing (Figure 24), was also undertaken. The LOS for each approach of the Goodwins Road/ Site Access 1 roundabout is shown in Figure 46 and Figure 47. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 18. Full results are presented in Appendix C.

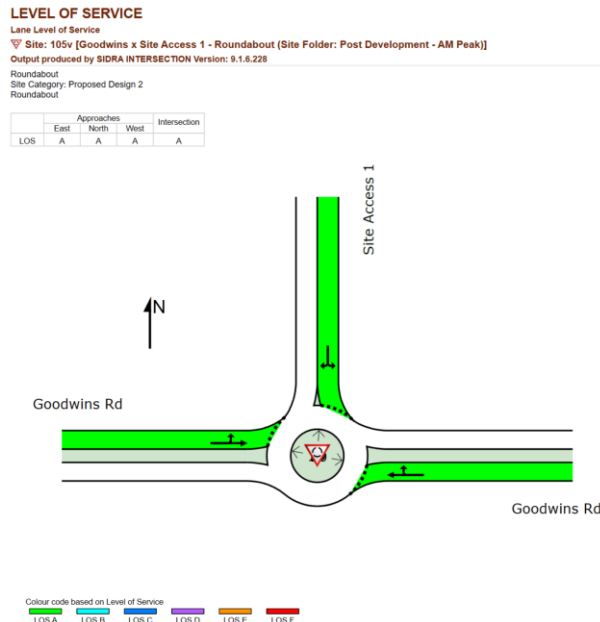


Figure 46: Post-development AM peak hour lane Level of Service (LOS)

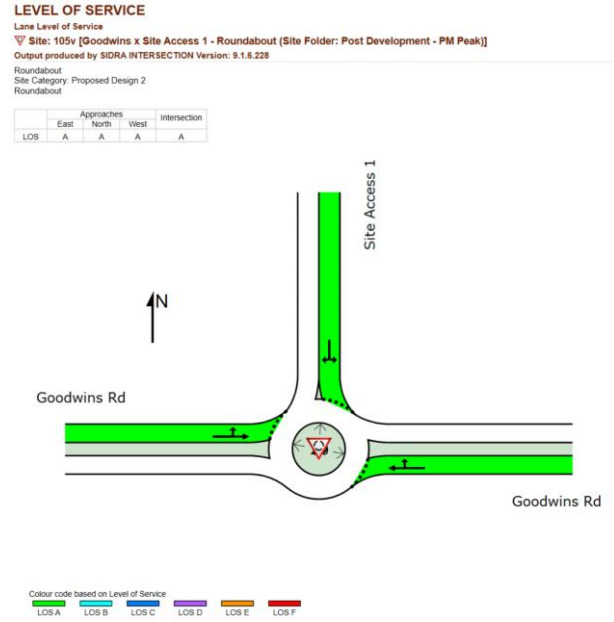


Figure 47: Post-development PM peak hour lane Level of Service (LOS)

Table 18: Goodwins Road/ Site Access 1 post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
East: Goodwins Road	AM	0.195	4.6	LOS A	9.2
North: Site Access 1		0.016	6.4	LOS A	0.5
West: Goodwins Road		0.109	4.6	LOS A	4.4
All Vehicles		0.195	4.7	LOS A	9.2
East: Goodwins Road	PM	0.124	4.6	LOS A	5.4
North: Site Access 1		0.015	6.8	LOS A	0.5
West: Goodwins Road		0.171	4.6	LOS A	7.2
All Vehicles		0.171	4.7	LOS A	7.2

5.3.7 Goodwins Road/ Site Access 2

The LOS for each approach of the Goodwins Road/ Site Access 2 intersection is shown in Figure 48 and Figure 49. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 19. Full results are presented in Appendix C.

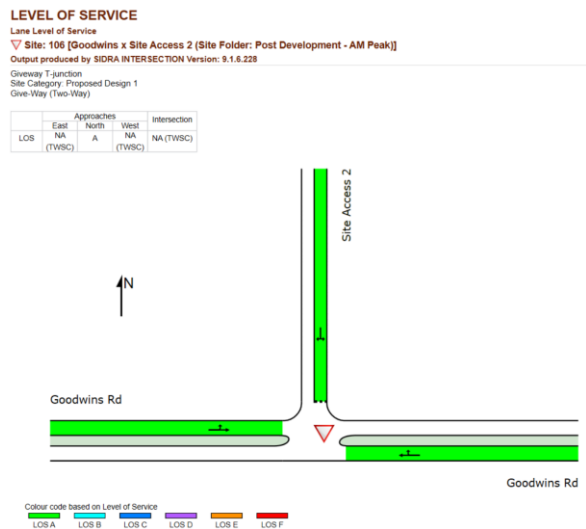


Figure 48: Post-development AM peak hour lane Level of Service

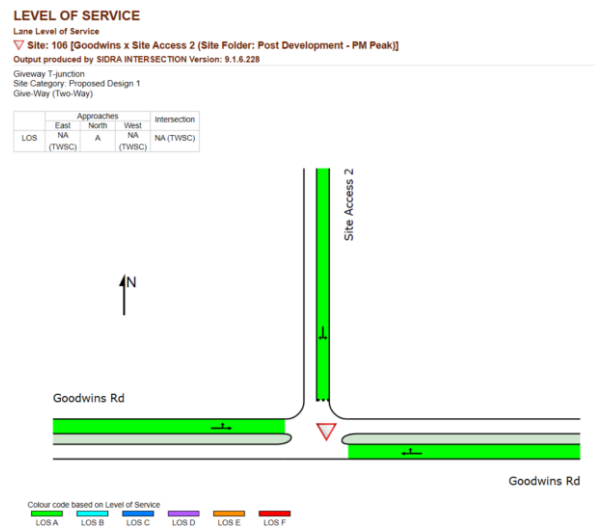


Figure 49: Post-development PM peak hour lane Level of Service

Table 19: Goodwins Road/ Site Access 2 post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
East: Goodwins Road	AM	0.143	0	LOS A	0.1
North: Site Access 2		0.014	4.5	LOS A	0.3
West: Goodwins Road		0.088	0.4	LOS A	0
All Vehicles		0.143	0.3	LOS A	0.3
East: Goodwins Road	PM	0.089	0.2	LOS A	0.2
North: Site Access 2		0.011	4.5	LOS A	0.2
West: Goodwins Road		0.136	0.3	LOS A	0
All Vehicles		0.136	0.4	LOS A	0.2

5.4 Traffic impact post-development – discussion

Based on the modelling results presented above, the following can be expected:

- The proposed Access #1 is expected to operate at LOS A with a give-way controlled intersection and a roundabout, the roundabout increases delays for all movements compared with the give-way controlled intersection.
- The proposed Access #2 is expected to operate at LOS A.
- Impact to the Goodwins Road/ Pass Road/ Commerce Drive is minor, resulting in just over a one second overall increase in delays in the AM and PM peak hours.
- Impact to the Goodwins Road/ Mockridge Road is likely not to be noticeable, with additional delays in the order of one tenth of a second in the AM and PM peak hours.
- Impact to the Rokeby Road/ Hawthorne Place is likely not to be noticeable, though people turning right would experience delay due to the through volumes on Rokeby Road.
- The development does add right turning traffic to the Pass Road approach of the Rokeby Road/ Pass Road/ Tollard Drive intersection, particularly in the morning which brings this approach to LOS E, from a previous LOS D, once an intersection or approach is at LOS D it does not take my additional traffic to push it to LOS E. Congestion at this intersection does already occur and overall this development does result in an overall minor increase in volumes to an already busy and congested intersection.

5.5 10 years post-development traffic volumes

A compounding growth factor of 2% has been applied to the existing 2025 traffic volumes to estimate the 2035 traffic volumes. This level of growth is based on the change of traffic values observed at the nearest Rokeby Road traffic station A2069070 (*Geocounts website*). This level of traffic growth represents a moderate growth area and accounts for the likelihood of ongoing residential developments in the Rokeby region in the future.

No growth has been applied to the traffic generated by the proposed subdivision as this development is not expected to expand or generate additional future traffic volumes beyond the initial traffic generation calculated.

The ratio of heavy vehicles in the network has been assumed to remain consistent over the next 10 years.

The expected 10 years post development total traffic volumes, i.e. for the 2035 weekday AM and PM peak hours, are shown in Figure 50 and Figure 51.

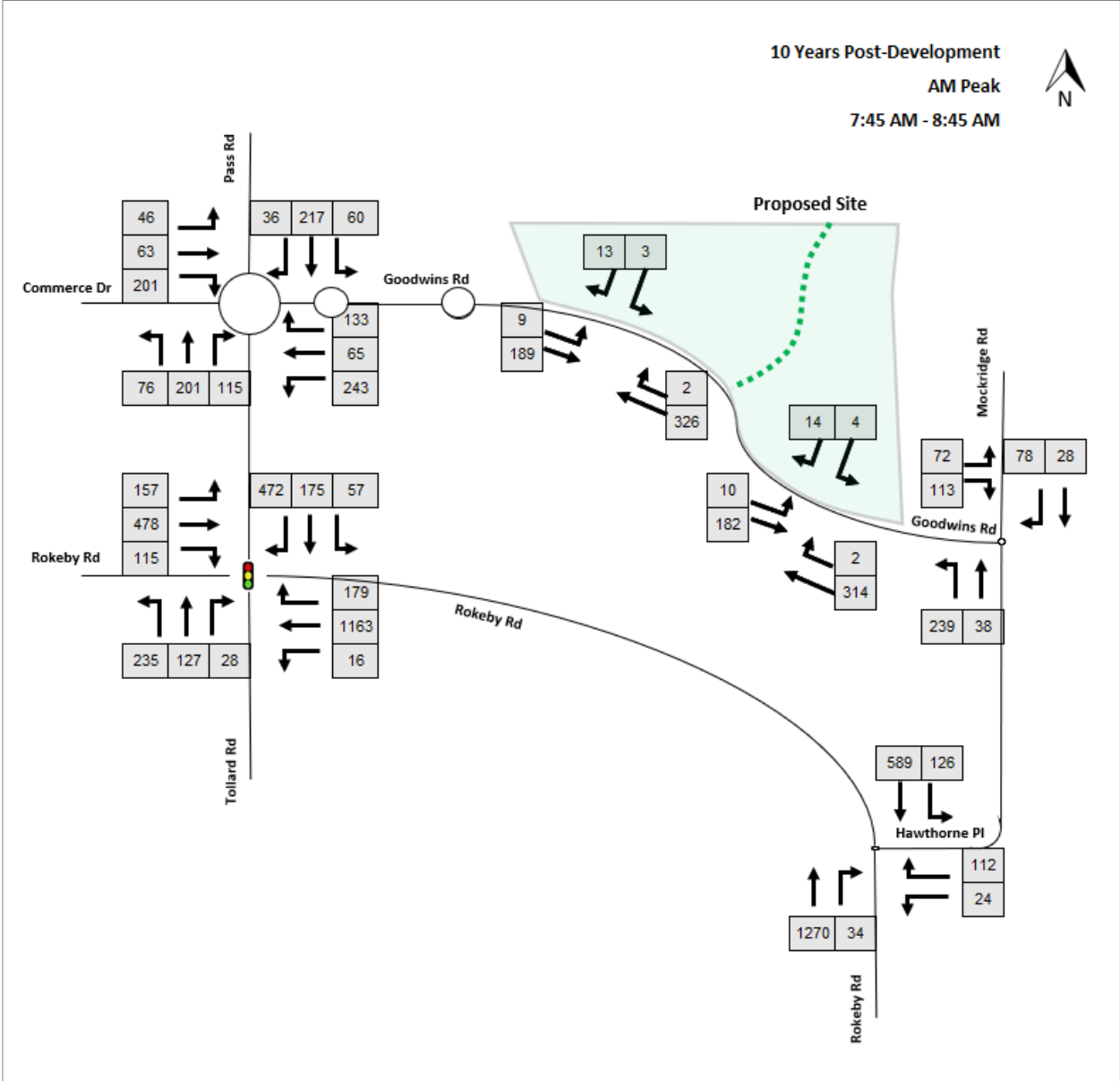


Figure 50: Forecast traffic volumes 10 years post development – AM peak hour

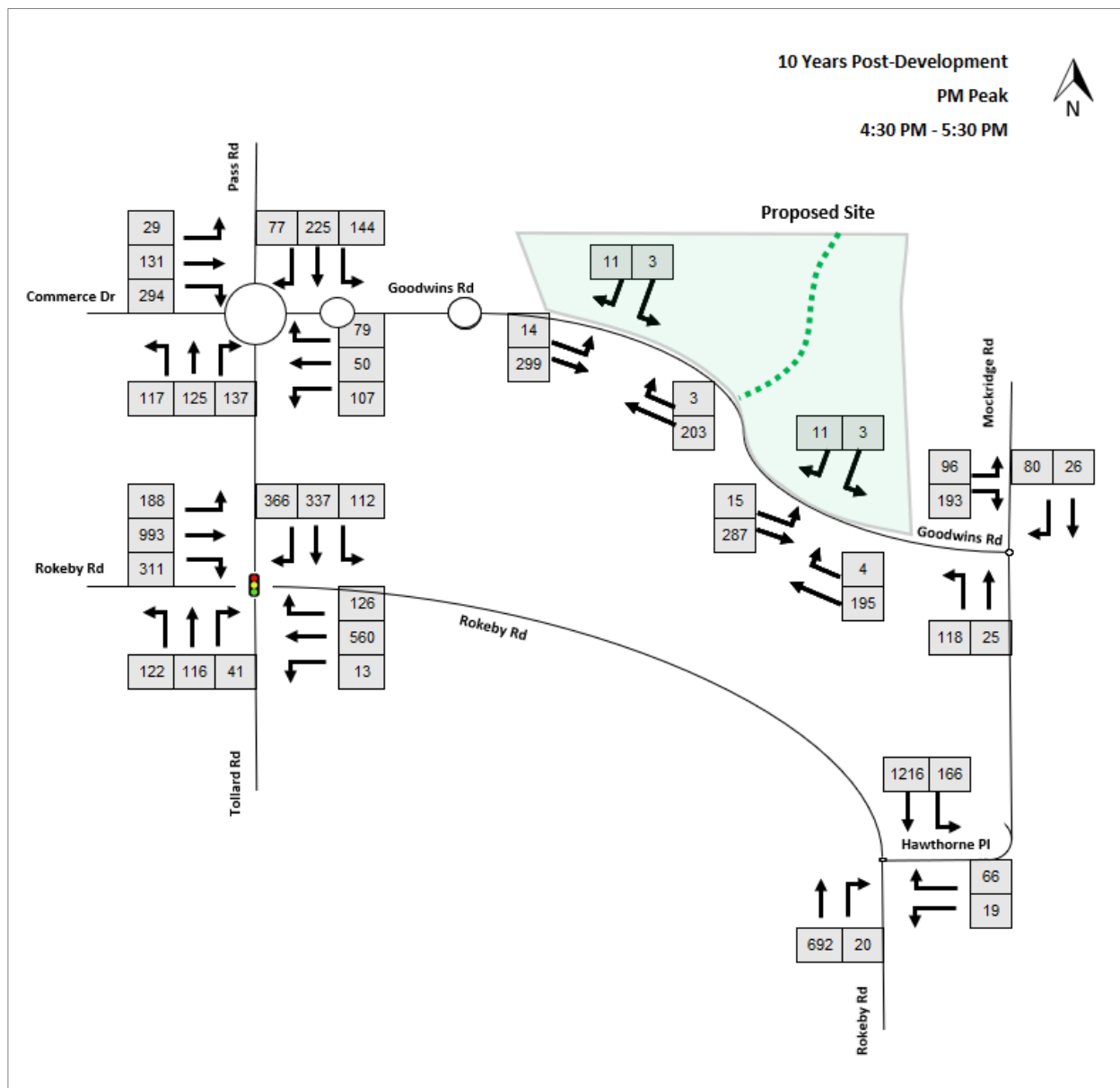


Figure 51: Forecast traffic volumes 10 years post development – PM peak hour

5.6 10 years post-development intersection performance

By applying the calculated traffic volumes to the SIDRA Intersection model, the 10 years post development performance of each intersection were predicted, as summarised in the following sections.

5.6.1 Goodwins Road/ Pass Road/ Commerce Drive

The LOS for each approach of the Goodwins Road/ Pass Road/ Commerce Drive intersection is shown in Figure 52 and Figure 53. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 20. Full results are presented in Appendix D.

LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Goodwins x Pass x Commerce (Site Folder: 10 Yrs Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1-lane Roundabout

Site Category: Existing Design

Roundabout

	South	East	North	West	Intersection
LOS	A	A	A	B	A

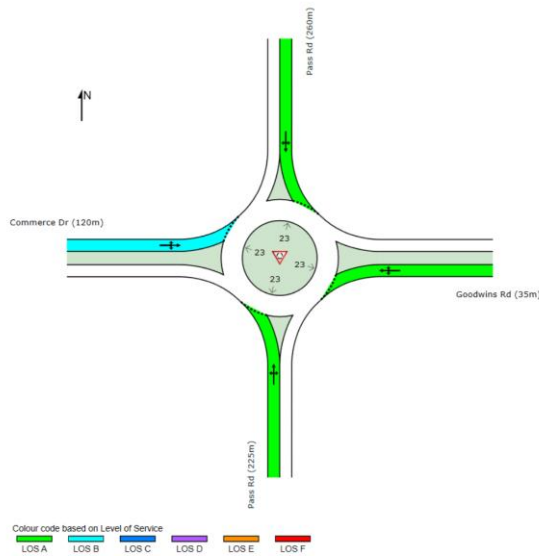


Figure 52: 10 years Post-development AM peak hour lane Level of Service (LOS)

LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Goodwins x Pass x Commerce (Site Folder: 10 Yrs Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1-lane Roundabout

Site Category: Existing Design

Roundabout

	South	East	North	West	Intersection
LOS	A	A	B	A	A

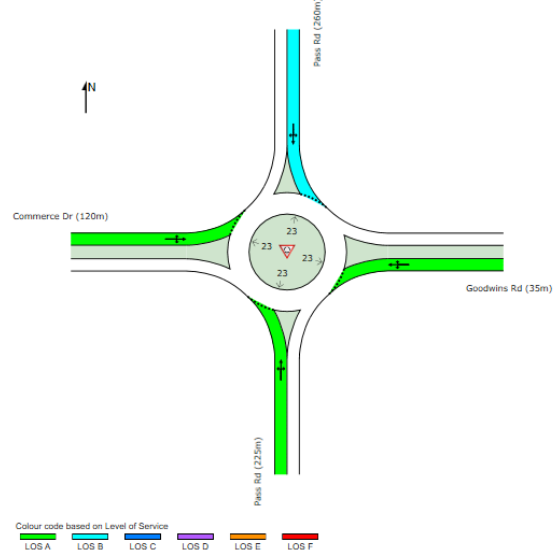


Figure 53: 10 years Post-development PM peak hour lane Level of Service (LOS)

Table 20: Goodwins Road/ Pass Road/ Commerce Drive 10 years post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
South: Pass Road	AM	0.387	7.1	LOS A	21
East: Goodwins Road		0.535	8.5	LOS A	33.5
North: Pass Road		0.358	7.3	LOS A	17.9
West: Commerce Drive		0.376	10.6	LOS B	18.8
All Vehicles		0.535	8.3	LOS A	33.5
South: Pass Road	PM	0.351	7.1	LOS A	17.6
East: Goodwins Road		0.324	8.1	LOS A	15.7
North: Pass Road		0.599	12.2	LOS B	42.7
West: Commerce Drive		0.483	9.9	LOS A	25.9
All Vehicles		0.599	9.6	LOS A	42.7

5.6.2 Goodwins Road/ Mockridge Road

The LOS for each approach of the Goodwins Road/ Mockridge Road intersection is shown in Figure 54 and Figure 55. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 21. Full results are presented in Appendix D.

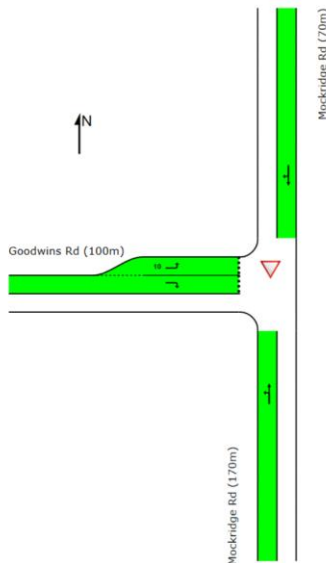
LEVEL OF SERVICE

Lane Level of Service

Site: 102 [Goodwins x Mockridge (Site Folder: 10 Yrs Post Development - AM Peak)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
LOS	NA	NA	A	NA (TWSC)
	(TWSC)	(TWSC)		



Colour code based on Level of Service
LOS A LOS B LOS C LOS D LOS E LOS F

Figure 54: 10 years Post-development AM peak hour lane Level of Service (LOS)

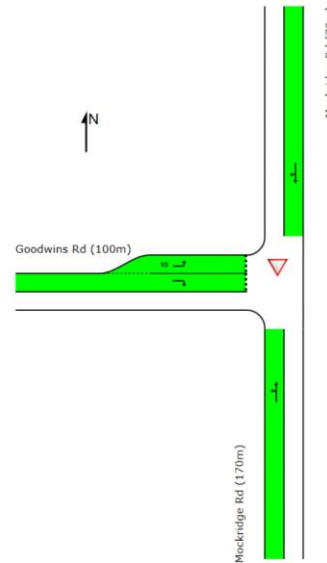
LEVEL OF SERVICE

Lane Level of Service

Site: 102 [Goodwins x Mockridge (Site Folder: 10 Yrs Post Development - PM Peak)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
LOS	NA	NA	A	NA (TWSC)
	(TWSC)	(TWSC)		



Colour code based on Level of Service
LOS A LOS B LOS C LOS D LOS E LOS F

Figure 55: 10 years Post-development PM peak hour lane Level of Service (LOS)

Table 21: Goodwins Road/ Mockridge Road 10 years post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
South: Mockridge Road	AM	0.148	4.8	LOS A	0
North: Mockridge Road		0.062	4.3	LOS A	2.4
West: Goodwins Road		0.088	5.9	LOS A	1.5
All Vehicles		0.148	5.1	LOS A	2.4
South: Mockridge Road	PM	0.075	4.6	LOS A	0
North: Mockridge Road		0.056	4	LOS A	2.2
West: Goodwins Road		0.144	5.8	LOS A	2.5
All Vehicles		0.144	5.1	LOS A	2.5

5.6.3 Rokeby Road/ Hawthorne Place

The LOS for each approach of the Rokeby Road/ Hawthorne Place intersection is shown in Figure 56 and Figure 57. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 22. Full results are presented in Appendix D.

LEVEL OF SERVICE

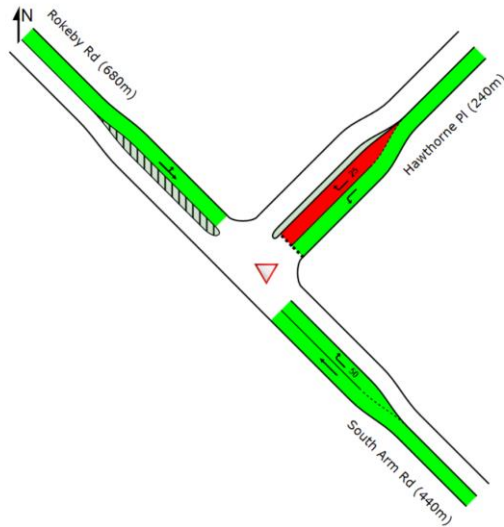
Lane Level of Service

Site: 103 [Rokeby x Hawthorne (Site Folder: 10 Yrs Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches		Intersection
	Southeast	Northeast	Northwest
LOS	NA (TWSC)	F	NA (TWSC)



Colour code based on Level of Service
LOS A LOS B LOS C LOS D LOS E LOS F

LEVEL OF SERVICE

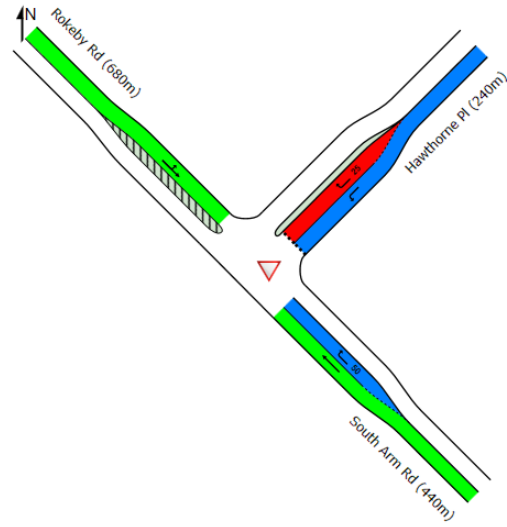
Lane Level of Service

Site: 103 [Rokeby x Hawthorne (Site Folder: 10 Yrs Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches		Intersection
	Southeast	Northeast	Northwest
LOS	NA (TWSC)	F	NA (TWSC)



Colour code based on Level of Service
LOS A LOS B LOS C LOS D LOS E LOS F

Figure 56: 10 years Post-development AM peak hour lane Level of Service (LOS)

Figure 57: 10 years Post-development PM peak hour lane Level of Service (LOS)

Table 22: Rokeby Road/ Hawthorne Place post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
Southeast: Rokeby Road	AM	0.705	0.7	LOS A	1.1
Northeast: Hawthorne Place		2.058	848.1	LOS F	290.5
Northwest: Rokeby Road		0.405	1.2	LOS A	0
All Vehicles		2.058	54.3	LOS F	290.5
Southeast: Rokeby Road	PM	0.383	0.8	LOS A	2.3
Northeast: Hawthorne Place		1.195	236	LOS F	71.9
Northwest: Rokeby Road		0.757	1.5	LOS A	0
All Vehicles		1.195	10.4	LOS B	71.9

5.6.4 Rokeby Road/ Pass Road/ Tollard Drive

The LOS for each approach of the Rokeby Road/ Pass Road/ Tollard Drive intersection is shown in Figure 58 and Figure 59 below. A summary of the SIDRA Intersection results for degree of saturation, average delay, LOS and 95th percentile queue is provided in Table 23. Detailed SIDRA outputs are presented in Appendix D.

LEVEL OF SERVICE

Lane Level of Service

Site: 104 [Rokeby x Pass x Tollard (Site Folder: 10 Yrs Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Signalised 4way intersection

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 98 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

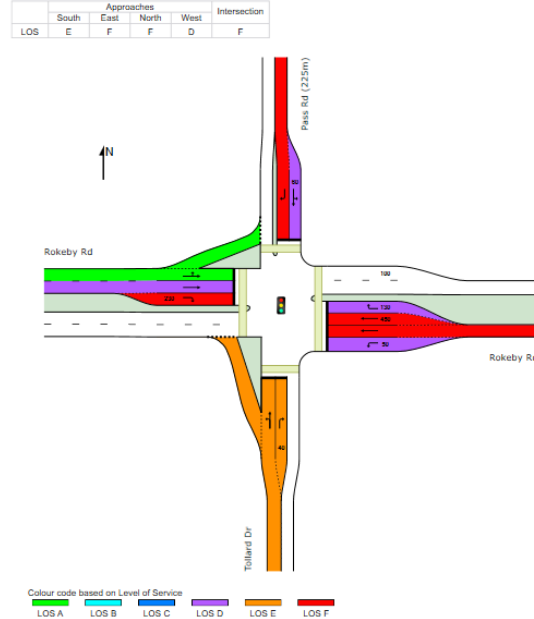


Figure 58: 10 years Post-development AM peak hour lane Level of Service (LOS)

LEVEL OF SERVICE

Lane Level of Service

Site: 104 [Rokeby x Pass x Tollard (Site Folder: 10 Yrs Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Signalised 4way intersection

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

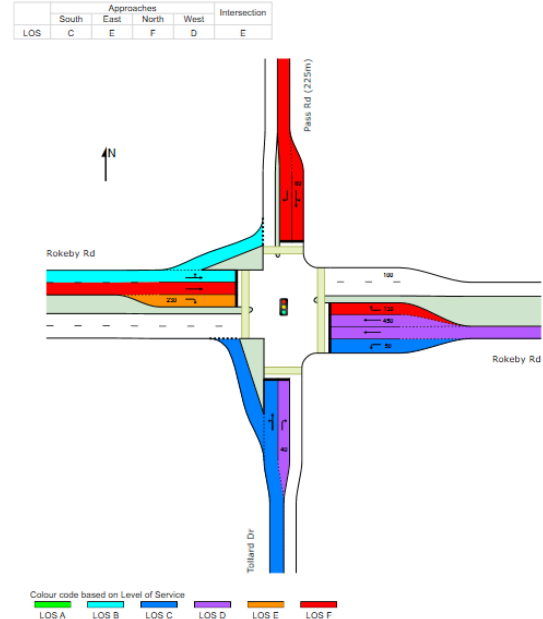


Figure 59: 10 years Post-development PM peak hour lane Level of Service (LOS)

Table 23: Rokeby Road/ Pass Road/ Tollard Drive post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
South: Tollard Dr	AM	0.826	60	LOS E	119
East: Rokeby Road		1.054	113.9	LOS F	388.8
North: Pass Road		1.077	117	LOS F	322
West: Rokeby Road		1.069	39	LOS D	94.2
All Vehicles		1.077	90.5	LOS F	388.8
South: Tollard Dr	PM	0.469	29.6	LOS C	61.1
East: Rokeby Road		1.109	67.9	LOS E	108.5
North: Pass Road		1.139	142.1	LOS F	333.1
West: Rokeby Road		1.031	53.2	LOS D	347
All Vehicles		1.139	76.4	LOS E	347

5.6.5 Goodwins Road/ Site Access 1

The LOS for each approach of the Goodwins Road/ Site Access 1 intersection is shown in Figure 60 and Figure 61. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 24. Full results are presented in Appendix D.

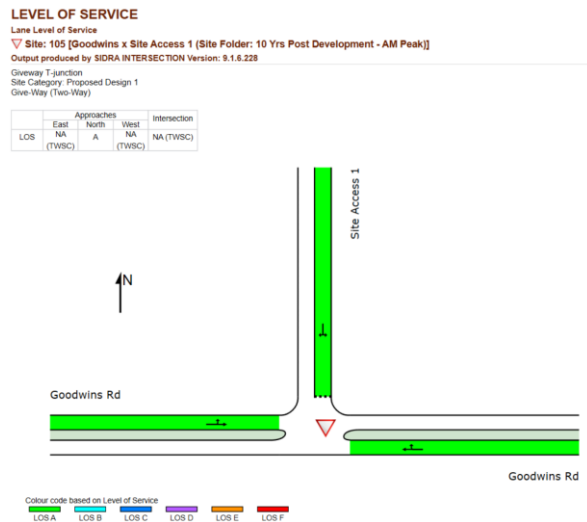


Figure 60: 10 years Post-development AM peak hour lane Level of Service (LOS)

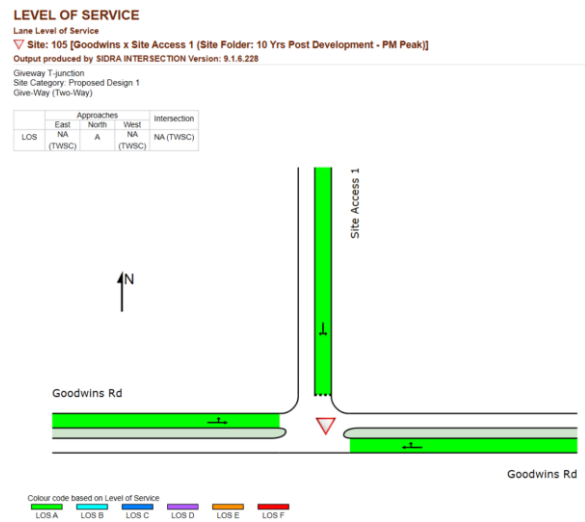


Figure 61: 10 years Post-development PM peak hour lane Level of Service (LOS)

Table 24: Goodwins Road/ Site Access 1 (priority-controlled): 10 years post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
East: Goodwins Road	AM	0.181	0	LOS A	0.1
North: Site Access 1		0.014	4.7	LOS A	0.2
West: Goodwins Road		0.109	0.3	LOS A	0
All Vehicles		0.181	0.3	LOS A	0.2
East: Goodwins Road	PM	0.112	0.1	LOS A	0.2
North: Site Access 1		0.012	4.7	LOS A	0.2
West: Goodwins Road		0.17	0.3	LOS A	0
All Vehicles		0.17	0.3	LOS A	0.2

5.6.6 Goodwins Road/ Site Access 1 – Roundabout

As discussed in Section 4.2.1, the council is considering upgrading this intersection to a roundabout. Accordingly, SIDRA assessment of the roundabout, as per the Design Drawing (Figure 24), was also undertaken for 10 years post-development. The LOS for each approach of the Goodwins Road/ Site Access 1 roundabout is shown in Figure 62 and Figure 63. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 25. Full results are presented in Appendix D.

LEVEL OF SERVICE

Lane Level of Service

Site: 105v [Goodwins x Site Access 1 - Roundabout (Site Folder: 10 Yrs Post Development - AM Peak)]

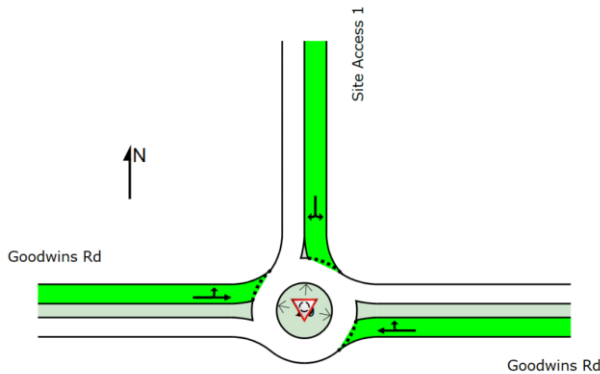
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout

Site Category: Proposed Design 2

Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	A	A	A



Colour code based on Level of Service:

LOS A LOS B LOS C LOS D LOS E LOS F

LEVEL OF SERVICE

Lane Level of Service

Site: 105v [Goodwins x Site Access 1 - Roundabout (Site Folder: 10 Yrs Post Development - PM Peak)]

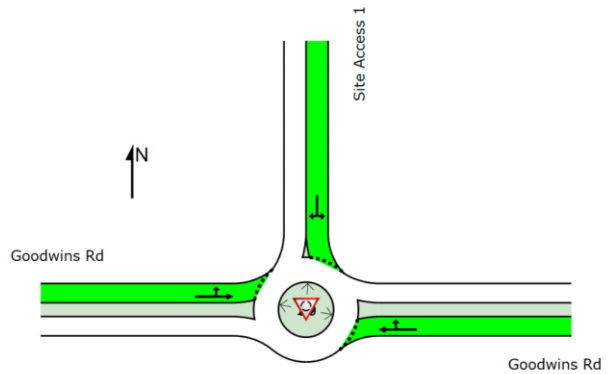
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout

Site Category: Proposed Design 2

Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	A	A	A



Colour code based on Level of Service:

LOS A LOS B LOS C LOS D LOS E LOS F

Figure 62: 10 years Post-development AM peak hour lane Level of Service (LOS)

Figure 63: 10 years Post-development PM peak hour lane Level of Service (LOS)

Table 25: Goodwins Road/ Site Access 1 (roundabout): 10 years post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
East: Goodwins Road	AM	0.233	4.6	LOS A	11.6
North: Site Access 1		0.016	6.6	LOS A	0.5
West: Goodwins Road		0.131	4.6	LOS A	5.4
All Vehicles		0.233	4.7	LOS A	11.6
East: Goodwins Road	PM	0.146	4.6	LOS A	6.7
North: Site Access 1		0.015	7.1	LOS A	0.5
West: Goodwins Road		0.203	4.6	LOS A	8.8
All Vehicles		0.203	4.7	LOS A	8.8

5.6.7 Goodwins Road/ Site Access 2

The LOS for each approach of the Goodwins Road/ Site Access 2 intersection is shown in Figure 64 and Figure 65. A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 26. Full results are presented in Appendix D.

LEVEL OF SERVICE

Lane Level of Service

Site: 106 [Goodwins x Site Access 2 (Site Folder: 10 Yrs Post Development - AM Peak)]

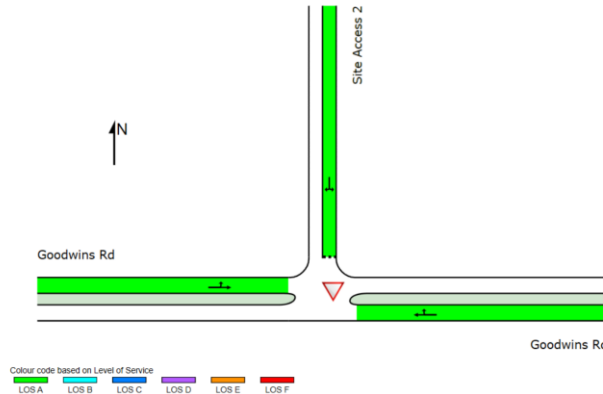
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction

Site Category: Proposed Design 1

Give-Way (Two-Way)

	Approaches			Intersection
	East	North	West	
LOS	NA	A	NA	NA (TWSC)
	(TWSC)		(TWSC)	



LEVEL OF SERVICE

Lane Level of Service

Site: 106 [Goodwins x Site Access 2 (Site Folder: 10 Yrs Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction

Site Category: Proposed Design 1

Give-Way (Two-Way)

	Approaches			Intersection
	East	North	West	
LOS	NA	A	NA	NA (TWSC)
	(TWSC)		(TWSC)	



Figure 64: 10 years Post-development AM peak hour lane Level of Service (LOS)

Figure 65: 10 years Post-development PM peak hour lane Level of Service (LOS)

Table 26: Goodwins Road/ Site Access 2 (priority-controlled): 10 years post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (secs)	Level of Service	95 th Percentile Queue (m)
East: Goodwins Road	AM	0.174	0	LOS A	0.1
North: Site Access 2		0.015	4.6	LOS A	0.3
West: Goodwins Road		0.106	0.3	LOS A	0
All Vehicles		0.174	0.3	LOS A	0.3
East: Goodwins Road	PM	0.108	0.1	LOS A	0.2
North: Site Access 2		0.012	4.7	LOS A	0.2
West: Goodwins Road		0.164	0.3	LOS A	0
All Vehicles		0.164	0.3	LOS A	0.2

5.7 Traffic impact 10 years post-development – discussion

Based on the modelling results presented above, the following can be expected 10 years post development:

- The proposed Access #1 is expected to operate at LOS A with a give-way controlled intersection and a roundabout, the roundabout increases delays for all movements compared with the give-way controlled intersection.
- The proposed Access #2 is expected to operate at LOS A.
- The Goodwins Road/ Pass Road/ Commerce Drive roundabout is expected to operate at LOS A.
- The Goodwins Road/ Mockridge Road intersection is expected to operate at LOS A.
- It will become increasingly difficult to turn right out of Hawthorne Place.
- The operation of the Rokeby Road/ Pass Road/ Tollard Drive intersection is expected to deteriorate due to proposed overall traffic volumes increases in the area due to development.

The South Arm Highway Upgrades (SAHU) project is proposed to address the current and expected congestion on Rokeby Road/ South Arm Highway including at Hawthorne Drive and Pass Road.

Based on the assessment completed, localised impacts are minor with good levels of service at immediate nearby intersections. All congestion is associated with Rokeby Road/ South Arm Highway. The addition of this subdivision is not expected to be a detriment to the road network and is in keeping with other residential development in the area.

6. Planning Scheme assessment

The proposed development has been assessed against Use and Development standards of C2.0 Parking and Sustainable Transport Code and C3.0 Road and Railway Assets Code of the *Tasmanian Planning Scheme - Clarence*.

6.1 C2.0 Parking and Sustainable Transport Code

6.1.1 Use standards

The proposed development has been assessed against the C2.0 Parking and Sustainable Transport Code of the Planning Scheme. The Use Standards assessment is shown in Table 27.

Table 27: Parking and Sustainable Transport Code - Use Standards

C2.5.1 Car Parking Numbers	
Objective: To ensure that an appropriate level of car parking spaces are provided to meet the needs of the use.	
Acceptable Solution	Comment
Acceptable Solution A1 The number of on-site car parking spaces must be no less than the number specified in Table C2.1	Complies with Acceptable Solution A1 Residential Use Class – in any other zone – the lots will need to provide 1 space per bedroom or 2 spaces per 3 bedrooms as per Table C2.1 The lot sizes are sufficient to provide off-street car park spaces on each lot.
C2.5.2 Bicycle Parking Numbers	
Objective: To ensure that an appropriate level of bicycle parking spaces are provided to meet the needs of the use.	
Acceptable Solution	Comment
Acceptable Solution A1 Bicycle parking spaces must: a) Be provided on the site or within 50m of the site; and b) Be no less than the number specified in table c2.1.	Complies with Acceptable Solution A1 Residential Use Class – single dwellings – there is no requirement for bicycle parking spaces (as per Table C2.1)

C2.5.3 Motorcycle Parking Numbers

Objective:

To ensure that an appropriate level of motorcycle parking spaces are provided to meet the needs of the use.

Acceptable Solution	Comment
Acceptable Solution A1 The number of on-site motorcycle parking spaces for all uses must: a) Be no less than the number specified in Table C2.4; and b) If an existing use or development is extended or intensified, the number of on-site motorcycle parking spaces must be based on the proposed extension or intensification, provided the existing number of motorcycle parking spaces is maintained.	Complies with Acceptable Solution A1 Residential Use Class – in any other zone – each lot is required to provide 2 car spaces (based on 3 bedroom dwelling). Given each lot requires <20 car spaces, there is no requirement for motorcycle parking spaces for each lot (as per Table C2.4)

C2.5.4 Loading Bays

Objective:

That adequate access for goods delivery and collection is provided, and to avoid unreasonable loss of amenity and adverse impacts on traffic flows.

Acceptable Solution	Comment
Acceptable Solution A1 A loading bay must be provided for uses with a floor area of more than 1000m² in a single occupancy.	Complies with Acceptable Solution A1 The proposed subdivision does not have any buildings of floor area of >1000m², therefore no requirement applies.

6.2 C3.0 Roads and Railway Assets Code

6.2.1 Use Standards

The proposed development has been assessed against the C3.0 Road and Railway Assets Code of the Planning Scheme. The Use Standards assessment is shown in Table 28.

Table 28: Road and Railway Assets Code - Use Standards

C3.5.1 Traffic Generation At A Vehicle Crossing, Level Crossing pr New Junction	
Objective: To minimise any adverse effects on the safety and efficiency of the road or rail network from vehicular traffic generated from the site at an existing or new vehicle crossing or level crossing or new junction.	
Acceptable Solution	Comment
A1.1 For a category 1 road or a limited access road, vehicular traffic to and from the site will not require: - A new junction - A new vehicle crossing; or - A new level crossing.	Complies with acceptable solution A1 The A1 criteria are addressed below. - Goodwins Road is not a Category 1 or limited access road. - The development proposes to create three new roads with junctions on Goodwins Road. Written consent is required from the road authority (Clarence City Council). - No rail in the vicinity - not applicable - The proposed subdivision is expected to generate 693 vehicle movements per day. Based on peak hour traffic volumes, Goodwins Road is expected to currently carry approximately 5,000 vehicle movements per day. The development would be expected to add approximately 14% more traffic onto the road which is less than the 20% additional traffic as shown in Table 3.1 The subdivision is expected to generate a typical percentage of heavy vehicle traffic and the increase in vehicles longer than 5.5m would also be <20% and comply with Table C.3.1. - The proposed access roads for the subdivision are two-way roads to allow vehicles to enter and leave the subdivision in a forward direction.
A1.2 For a road, excluding a category 1 road or a limited access road, written consent for a new junction, vehicle crossing, or level crossing to serve the use and development has been issued by the road authority.	
A1.3 For the rail network, written consent for a new private level crossing to serve the use and development has been issued by the rail authority.	
A1.4 Vehicular traffic to and from the site, using an existing vehicle crossing or private level crossing, will not increase by more than: - The amounts in Table C3.1; or - Allowed by a licence issued under Part IVA of the Roads and Jetties Act 1935 in respect to a limited access road.	
A1.5 Vehicular traffic must be able to enter and leave a major road in a forward direction.	

7. Conclusion

An assessment of the traffic impacts associated with the proposed subdivision at 22 Goodwins Road has been undertaken in accordance with the Department of State Growth's Publication *Traffic Impact Assessments (TIA) Guidelines* and the *Tasmanian Planning Scheme – Clarence*. The analysis and discussion presented in this report can be summarised as follows:

- In order for the new roads proposed as part of the subdivision are to achieve Safe Intersection Sight Distances (SISDs) in accordance with *Austrroads Guide to Road Design Part 4A*:
 - Vegetation on the south side of Goodwins Road, to the east and west of Access Road #1 should be cleared, or trimmed and maintained
 - Construction of buildings, fences, and other sight line obstructions associated with the new development should be positioned to not impede sight lines from Access Road #2 (west)
 - Alternatively, the access road entrances should be relocated to achieve acceptable SISDs
- Reduction of the posted speed limit to 50km/h for the western section of Goodwins Road may be considered to improve safe access/egress to the subdivision for vehicles and pedestrians
- Based on traffic generation rates recommended in Transport for New South Wales *Guide to Transport Impact Assessment 2024*, the proposed development would generate 58 vehicles per hour (arrival plus departure) during AM peak, and 63 vehicles per hour (arrival plus departure) during PM peak
- The impacts of the traffic generated by the proposed subdivision post-development can be summarised as-
 - The proposed Access #1 is expected to operate at LOS A with a give-way controlled intersection and a roundabout, the roundabout increases delays for all movements compared with the give-way controlled intersection
 - The proposed Access #1 is expected to operate at LOS A
 - Impact to the Goodwins Road/ Pass Road/ Commerce Drive is minor, resulting in just over a one second overall increase in delays in the AM and PM peak hours
 - Impact to the Goodwins Road/ Mockridge Road is likely not to be noticeable, with additional delays in the order of one tenth of a second in the AM and PM peak hours
 - Impact to the Rokeby Road/ Hawthorne Place is likely not to be noticeable, though people turning right would experience delay due to the through volumes on Rokeby Road
 - The development does add right turning traffic to the Pass Road approach of the Rokeby Road/ Pass Road/ Tollard Drive intersection, particularly in the morning which brings this approach to LOS E, from a previous LOS D, once an intersection or approach is at LOS D it does not take my additional traffic to push it to LOS E. Congestion at this intersection does already occur and overall this development does result in an overall minor increase in volumes to an already busy and congested intersection
- The impacts of the proposed subdivision traffic 10 years post-development can be summarised as-
 - The proposed Access #1 is expected to operate at LOS A with a give-way controlled intersection and a roundabout, the roundabout increases delays for all movements compared with the give-way controlled intersection
 - The proposed Access #1 is expected to operate at LOS A
 - The Goodwins Road/ Pass Road/ Commerce Drive roundabout is expected to operate at LOS A
 - The Goodwins Road/ Mockridge Road intersection is expected to operate at LOS A
 - It will become increasingly difficult to turn right out of Hawthorne Place
 - The operation of the Rokeby Road/ Pass Road/ Tollard Drive intersection is expected to deteriorate due to proposed overall traffic volumes increases in the area due to development

- The South Arm Highway Upgrade (SAHU) project is proposed to address the current and expected congestion on Rokeby Road/ South Arm Highway including at Hawthorne Drive and Pass Road
- Based on the assessment completed, localised impacts are minor with good levels of service at immediate nearby intersections. All congestion is associated with Rokeby Road/ South Arm Highway. The addition of this subdivision is not expected to be a detriment to the road network and is in keeping with other residential development in the area; and
- The proposed subdivision layout has been assessed to meet the requirements of the Planning Scheme.

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SIDRA Intersection Modelling Outputs - Existing

Appendix A

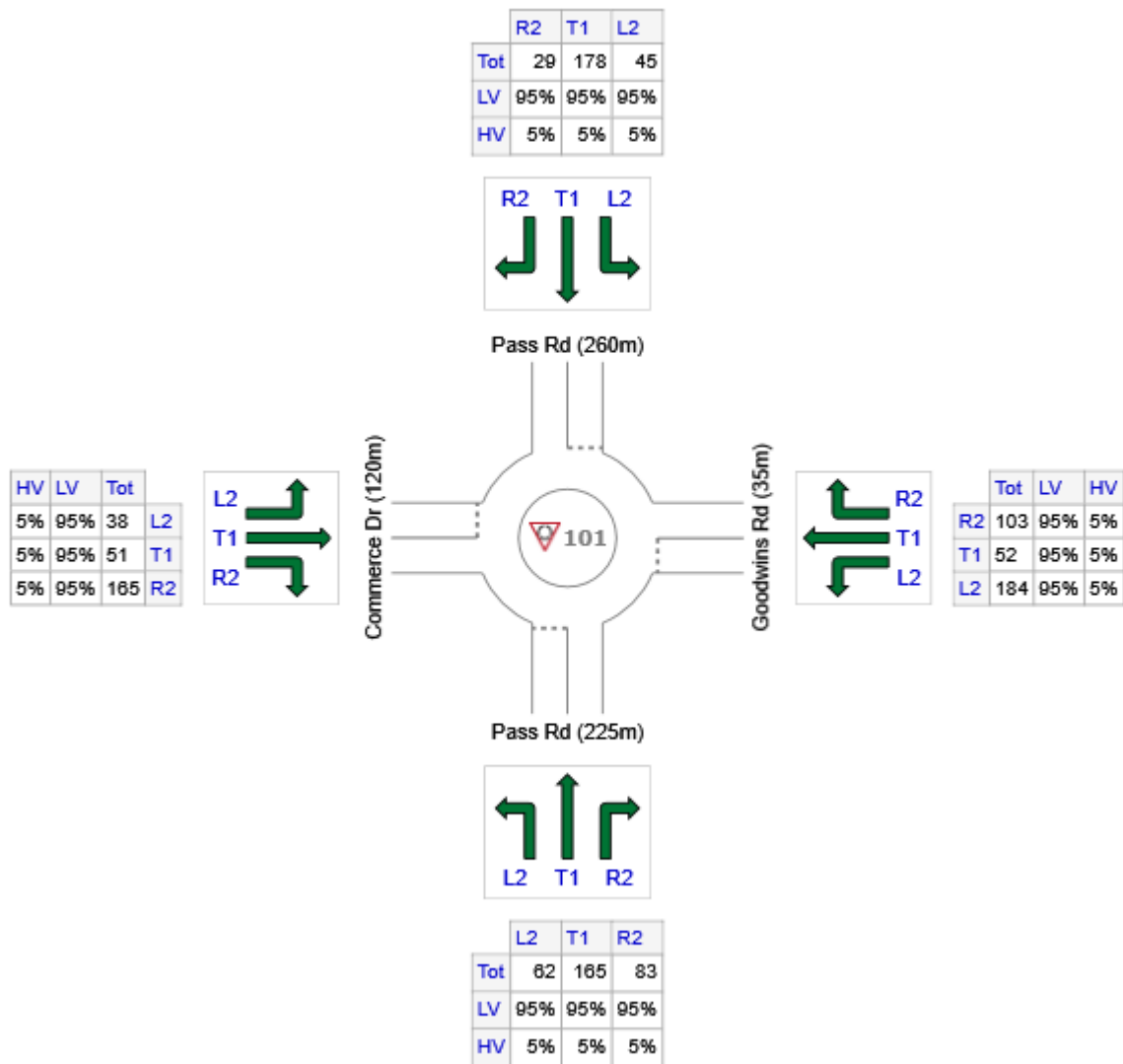
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: Existing - AM Peak)]**

1-lane Roundabout
Site Category: Existing Design
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Pass Rd (225m)	310	295	16
E: Goodwins Rd (35m)	339	322	17
N: Pass Rd (260m)	252	239	13
W: Commerce Dr (120m)	254	241	13
Total	1155	1097	58

MOVEMENT SUMMARY

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: Existing - AM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1-lane Roundabout
Site Category: Existing Design
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Pass Rd (225m)															
1	L2	All MCs	65	5.0	65	5.0	0.288	5.0	LOS A	2.0	14.2	0.48	0.53	0.48	42.7
2	T1	All MCs	174	5.0	174	5.0	0.288	5.1	LOS A	2.0	14.2	0.48	0.53	0.48	46.4
3	R2	All MCs	87	5.0	87	5.0	0.288	10.1	LOS B	2.0	14.2	0.48	0.53	0.48	39.5
Approach			326	5.0	326	5.0	0.288	6.4	LOS A	2.0	14.2	0.48	0.53	0.48	44.3
East: Goodwins Rd (35m)															
4	L2	All MCs	194	5.0	194	5.0	0.377	4.8	LOS A	2.6	18.6	0.66	0.64	0.66	40.2
5	T1	All MCs	55	5.0	55	5.0	0.377	5.2	LOS A	2.6	18.6	0.66	0.64	0.66	35.4
6	R2	All MCs	108	5.0	108	5.0	0.377	9.6	LOS A	2.6	18.6	0.66	0.64	0.66	40.4
Approach			357	5.0	357	5.0	0.377	6.3	LOS A	2.6	18.6	0.66	0.64	0.66	39.7
North: Pass Rd (260m)															
7	L2	All MCs	47	5.0	47	5.0	0.265	5.8	LOS A	1.7	12.3	0.57	0.56	0.57	31.4
8	T1	All MCs	187	5.0	187	5.0	0.265	5.9	LOS A	1.7	12.3	0.57	0.56	0.57	46.4
9	R2	All MCs	31	5.0	31	5.0	0.265	11.0	LOS B	1.7	12.3	0.57	0.56	0.57	34.0
Approach			265	5.0	265	5.0	0.265	6.5	LOS A	1.7	12.3	0.57	0.56	0.57	42.4
West: Commerce Dr (120m)															
10	L2	All MCs	40	5.0	40	5.0	0.278	6.3	LOS A	1.8	12.8	0.60	0.65	0.60	40.7
11	T1	All MCs	54	5.0	54	5.0	0.278	6.3	LOS A	1.8	12.8	0.60	0.65	0.60	23.2
12	R2	All MCs	174	5.0	174	5.0	0.278	11.4	LOS B	1.8	12.8	0.60	0.65	0.60	38.8
Approach			267	5.0	267	5.0	0.278	9.6	LOS A	1.8	12.8	0.60	0.65	0.60	36.4
All Vehicles			1216	5.0	1216	5.0	0.377	7.1	LOS A	2.6	18.6	0.58	0.60	0.58	40.9

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.

LEVEL OF SERVICE

Lane Level of Service

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: Existing - AM Peak)]**

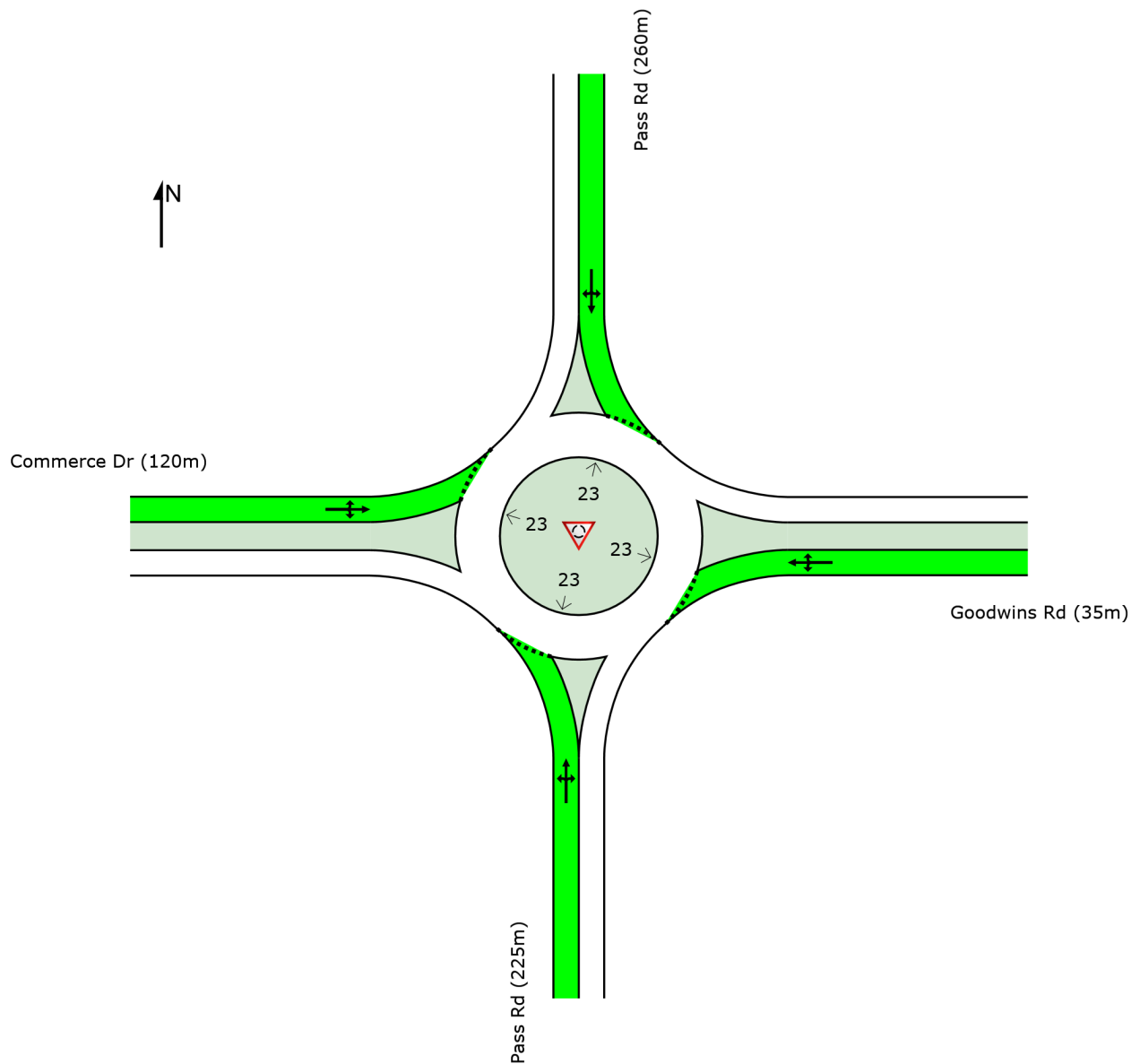
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1-lane Roundabout

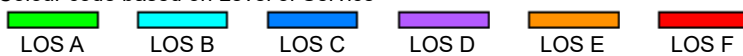
Site Category: Existing Design

Roundabout

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



Colour code based on Level of Service



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

Roundabout Level of Service Method: SIDRA Roundabout LOS

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

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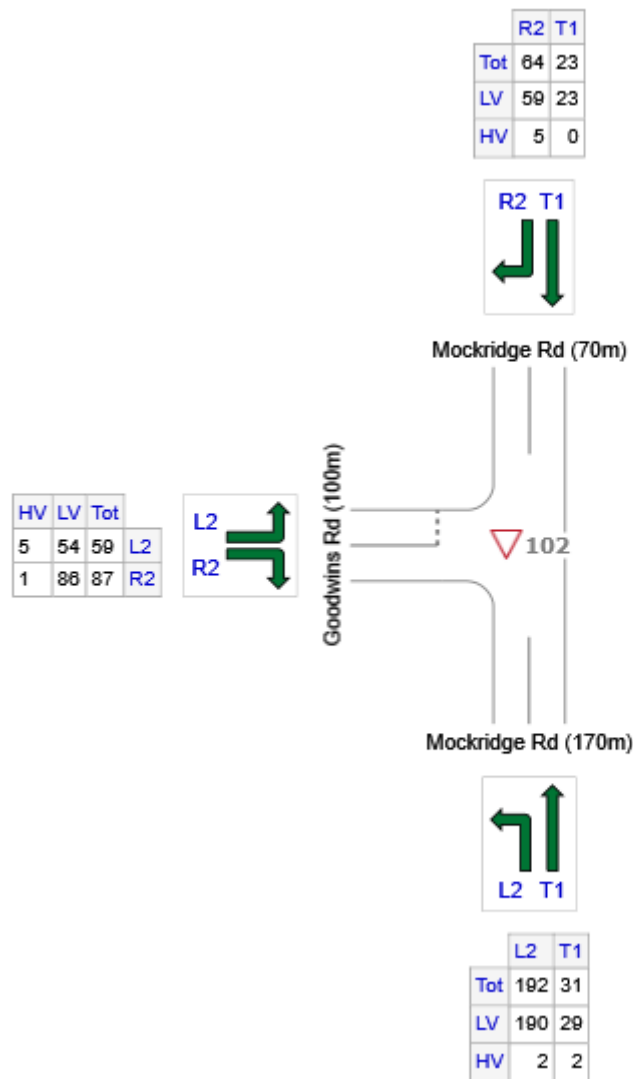
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▽ Site: 102 [Goodwins x Mockridge (Site Folder: Existing - AM Peak)]

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Volume Display Method: Total and Veh



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Mockridge Rd (170m)	223	219	4
N: Mockridge Rd (70m)	87	82	5
W: Goodwins Rd (100m)	146	140	6
Total	456	441	15

MOVEMENT SUMMARY

▼ Site: 102 [Goodwins x Mockridge (Site Folder: Existing - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Mockridge Rd (170m)															
1	L2	All MCs	202	1.0	202	1.0	0.119	5.6	LOS A	0.0	0.0	0.00	0.50	0.00	35.7
2	T1	All MCs	33	6.5	33	6.5	0.119	0.0	LOS A	0.0	0.0	0.00	0.50	0.00	45.7
Approach			235	1.8	235	1.8	0.119	4.8	NA	0.0	0.0	0.00	0.50	0.00	36.7
North: Mockridge Rd (70m)															
8	T1	All MCs	24	0.0	24	0.0	0.048	0.6	LOS A	0.3	1.9	0.34	0.44	0.34	46.1
9	R2	All MCs	67	7.8	67	7.8	0.048	5.4	LOS A	0.3	1.9	0.34	0.44	0.34	23.4
Approach			92	5.7	92	5.7	0.048	4.1	NA	0.3	1.9	0.34	0.44	0.34	27.9
West: Goodwins Rd (100m)															
10	L2	All MCs	62	8.5	62	8.5	0.031	5.6	LOS A	0.1	1.1	0.10	0.54	0.10	33.6
12	R2	All MCs	92	1.1	92	1.1	0.066	5.9	LOS A	0.2	1.1	0.18	0.58	0.18	39.1
Approach			154	4.1	154	4.1	0.066	5.8	LOS A	0.2	1.1	0.15	0.56	0.15	37.3
All Vehicles			480	3.3	480	3.3	0.119	5.0	NA	0.3	1.9	0.11	0.51	0.11	35.2

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

LEVEL OF SERVICE

Lane Level of Service

▽ Site: 102 [Goodwins x Mockridge (Site Folder: Existing - AM Peak)]

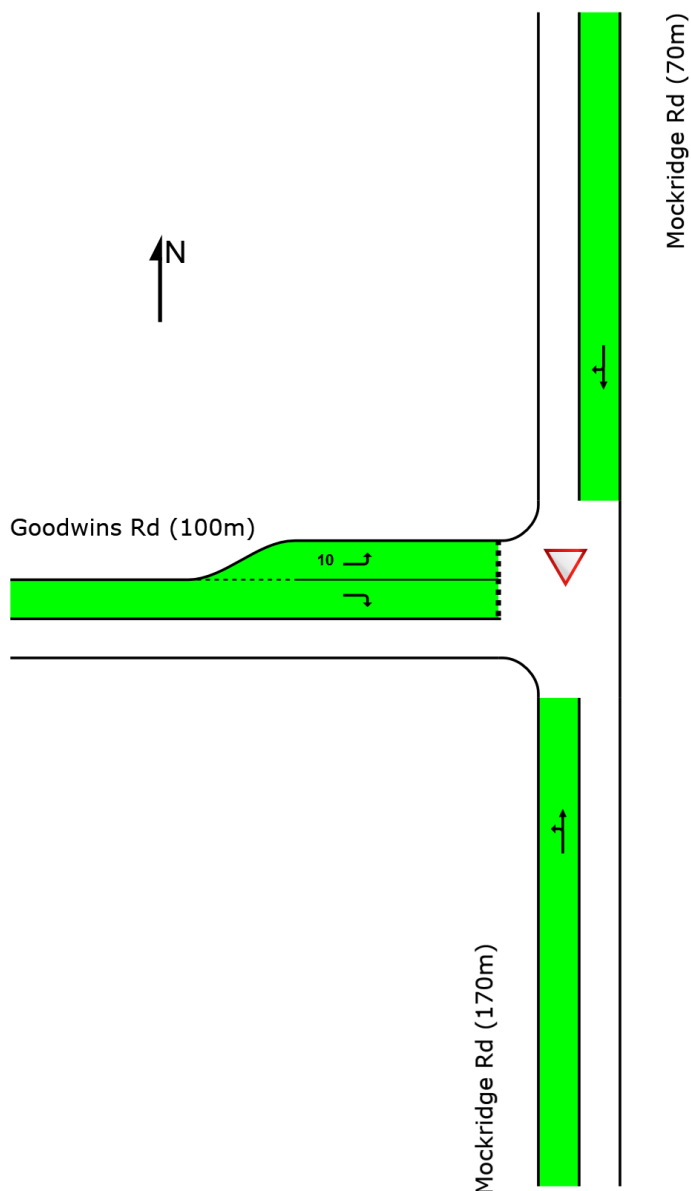
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Giveway T-junction

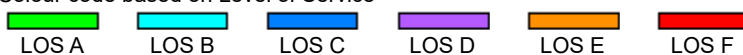
Site Category: Existing Design

Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
LOS	NA (TWSC)	NA (TWSC)	A	NA (TWSC)



Colour code based on Level of Service



NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

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

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

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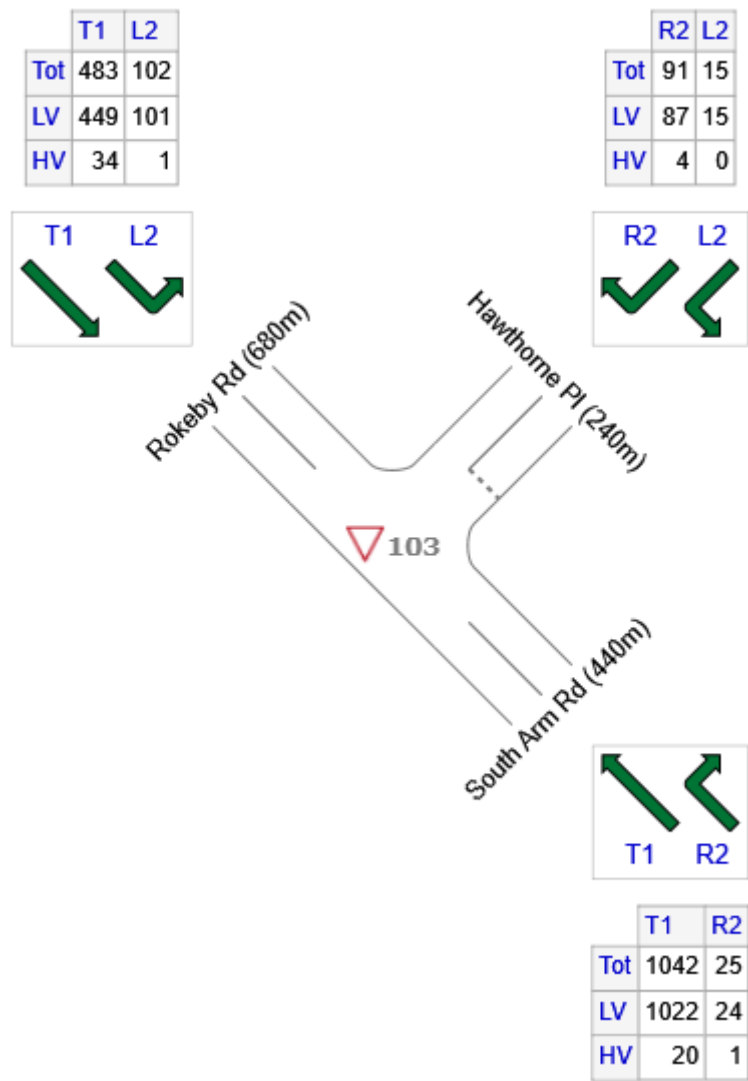
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▼ Site: 103 [Rokeby x Hawthorne (Site Folder: Existing - AM Peak)]

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Volume Display Method: Total and Veh



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: South Arm Rd (440m)	1067	1046	21
NE: Hawthorne Pl (240m)	106	102	4
NW: Rokeby Rd (680m)	585	550	35
Total	1758	1698	60

MOVEMENT SUMMARY

▼ Site: 103 [Rokeby x Hawthorne (Site Folder: Existing - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: South Arm Rd (440m)															
22	T1	All MCs	1097	1.9	1097	1.9	0.579	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.4
23	R2	All MCs	26	4.0	26	4.0	0.021	7.7	LOS A	0.1	0.7	0.57	0.65	0.57	47.4
Approach			1123	2.0	1123	2.0	0.579	0.4	NA	0.1	0.7	0.01	0.02	0.01	59.2
NorthEast: Hawthorne PI (240m)															
24	L2	All MCs	16	0.0	16	0.0	0.012	7.0	LOS A	0.0	0.3	0.48	0.60	0.48	48.3
26	R2	All MCs	96	4.4	96	4.4	0.622	38.9	LOS E	2.0	14.6	0.95	1.09	1.42	34.4
Approach			112	3.8	112	3.8	0.622	34.4	LOS D	2.0	14.6	0.88	1.02	1.28	35.5
NorthWest: Rokeby Rd (680m)															
27	L2	All MCs	107	1.0	107	1.0	0.331	5.7	LOS A	0.0	0.0	0.00	0.10	0.00	56.0
28	T1	All MCs	508	7.0	508	7.0	0.331	0.1	LOS A	0.0	0.0	0.00	0.10	0.00	58.9
Approach			616	6.0	616	6.0	0.331	1.1	NA	0.0	0.0	0.00	0.10	0.00	58.5
All Vehicles			1851	3.4	1851	3.4	0.622	2.7	NA	2.0	14.6	0.06	0.11	0.09	57.1

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

LEVEL OF SERVICE

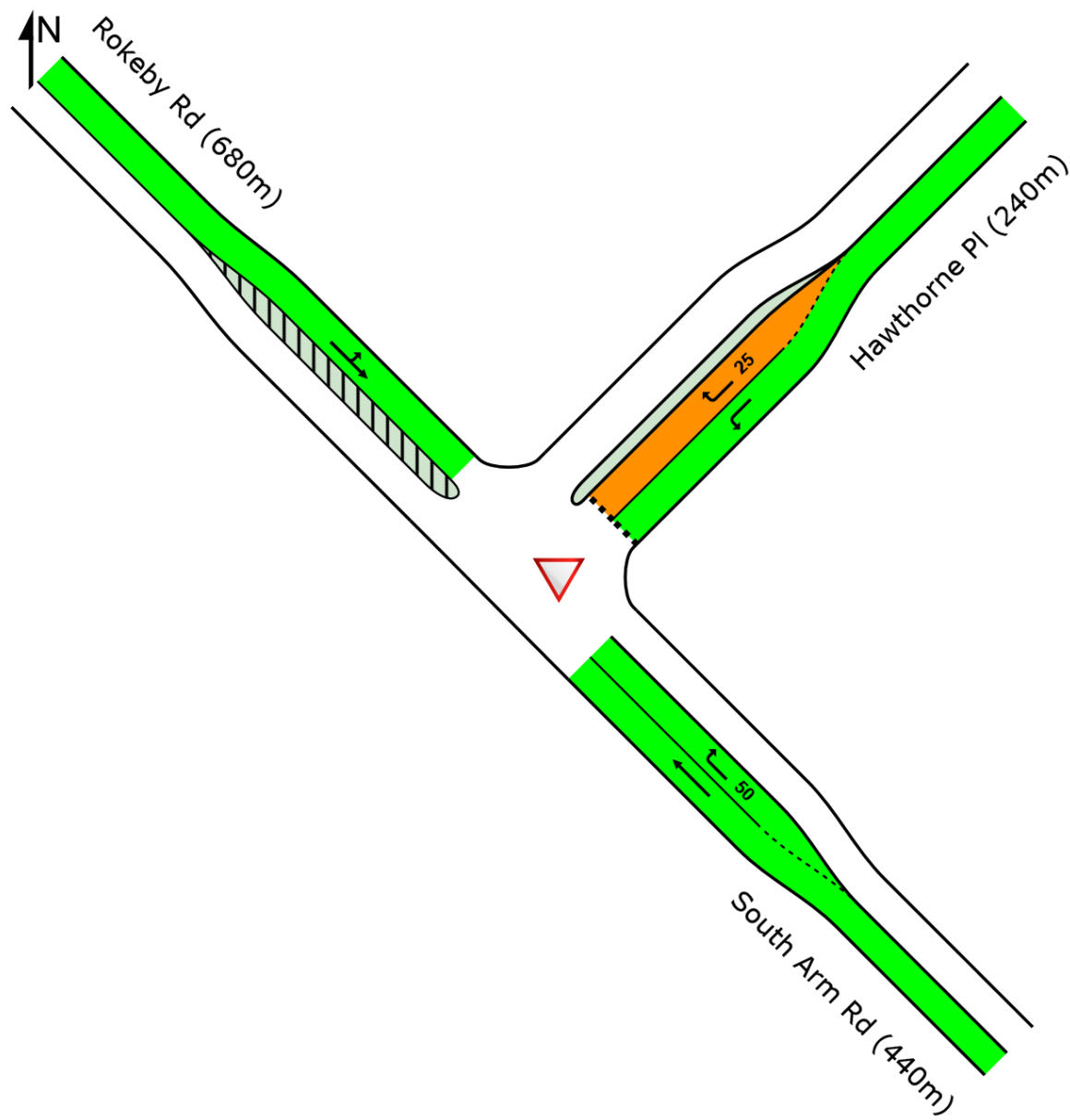
Lane Level of Service

▽ Site: 103 [Rokeby x Hawthorne (Site Folder: Existing - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches			Intersection
	Southeast	Northeast	Northwest	
LOS	NA (TWSC)	D	NA (TWSC)	NA (TWSC)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
-------	-------	-------	-------	-------	-------

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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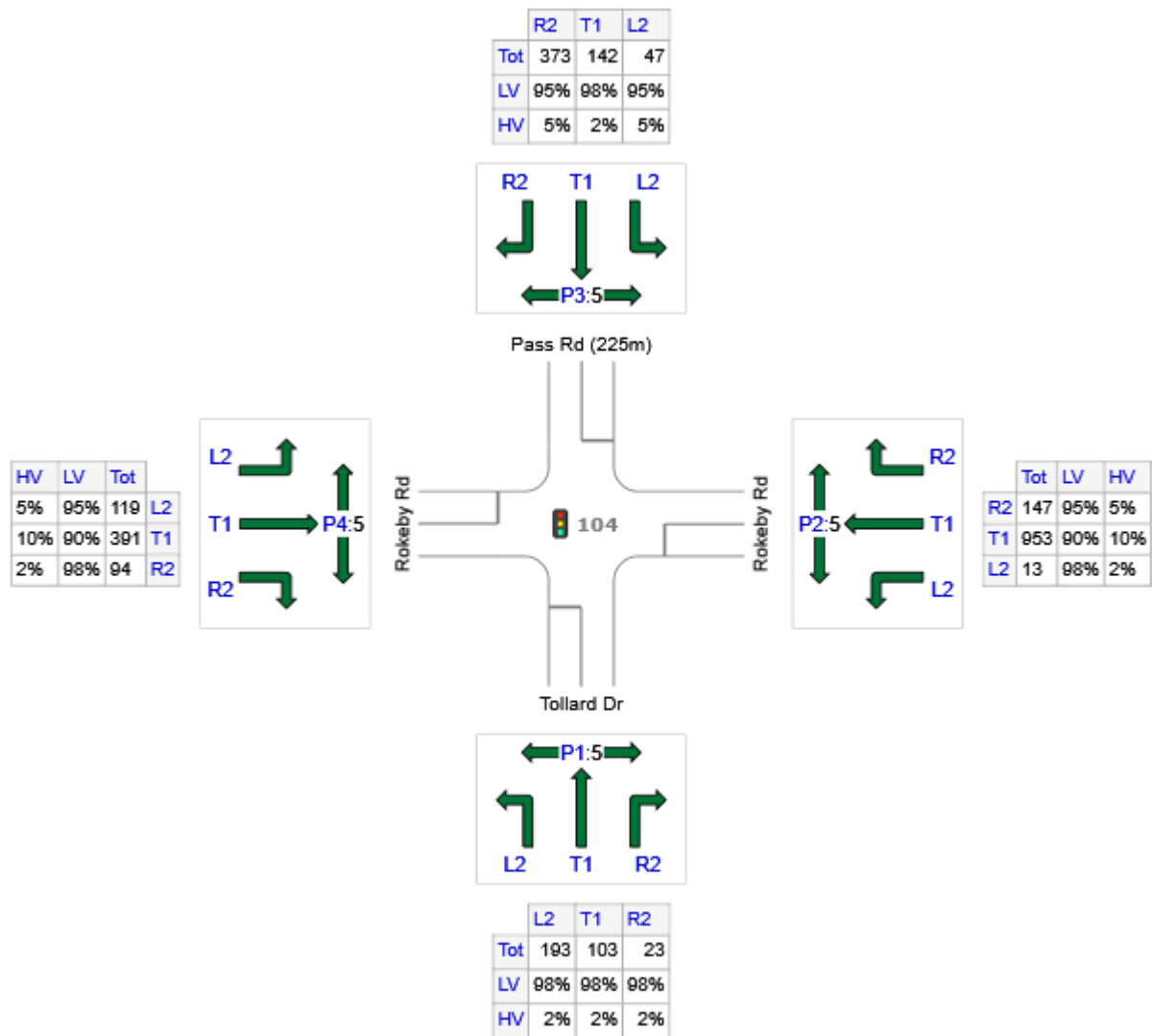
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 **Site: 104 [Rokeby x Pass x Tollard (Site Folder: Existing - AM Peak)]**

Signalised 4way intersection
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Tollard Dr	319	313	6
E: Rokeby Rd	1113	1010	103
N: Pass Rd (225m)	562	538	24
W: Rokeby Rd	604	557	47
Total	2598	2418	180

Site: 104 [Rokeby x Pass x Tollard (Site Folder: Existing - AM Peak)]

Signalised 4way intersection
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

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

- * Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	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	ped/h	sec		ped	m			sec	m	m/sec
South: Tollard Dr												
P1	Full	5	5	39.2	LOS D	0.0	0.0	0.93	0.93	193.1	200.0	1.04
East: Rokeby Rd												

P2 Full	5	5	39.2	LOS D	0.0	0.0	0.93	0.93	193.1	200.0	1.04
North: Pass Rd (225m)											
P3 Full	5	5	39.2	LOS D	0.0	0.0	0.93	0.93	193.1	200.0	1.04
West: Rokeby Rd											
P4 Full	5	5	39.2	LOS D	0.0	0.0	0.93	0.93	193.1	200.0	1.04
All Pedestrians	20	21	39.2	LOS D	0.0	0.0	0.93	0.93	193.1	200.0	1.04

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.

LEVEL OF SERVICE

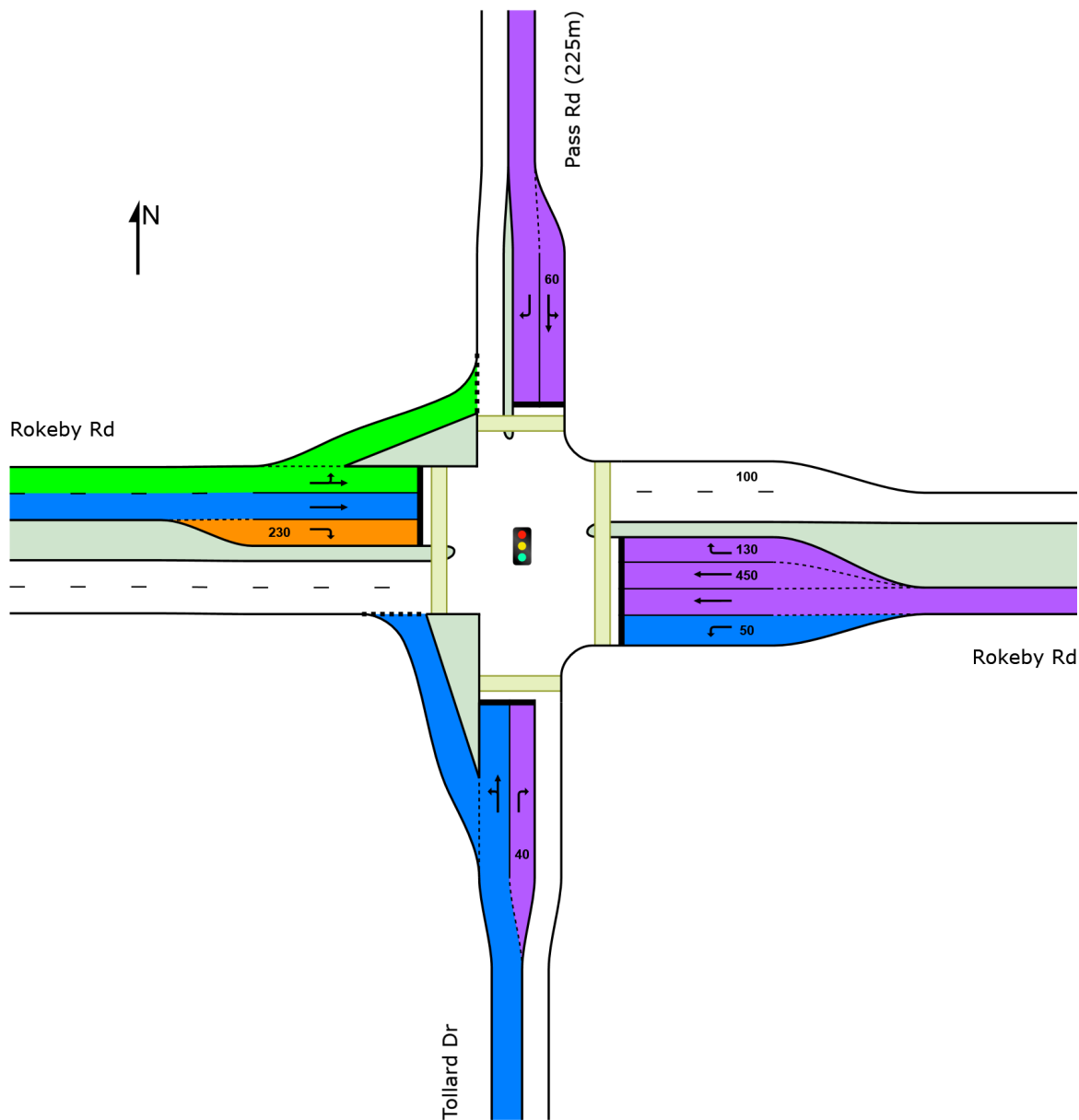
Lane Level of Service

 **Site: 104 [Rokeby x Pass x Tollard (Site Folder: Existing - AM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Signalised 4way intersection
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

	Approaches				Intersection
	South	East	North	West	
LOS	D	D	D	C	D



Colour code based on Level of Service



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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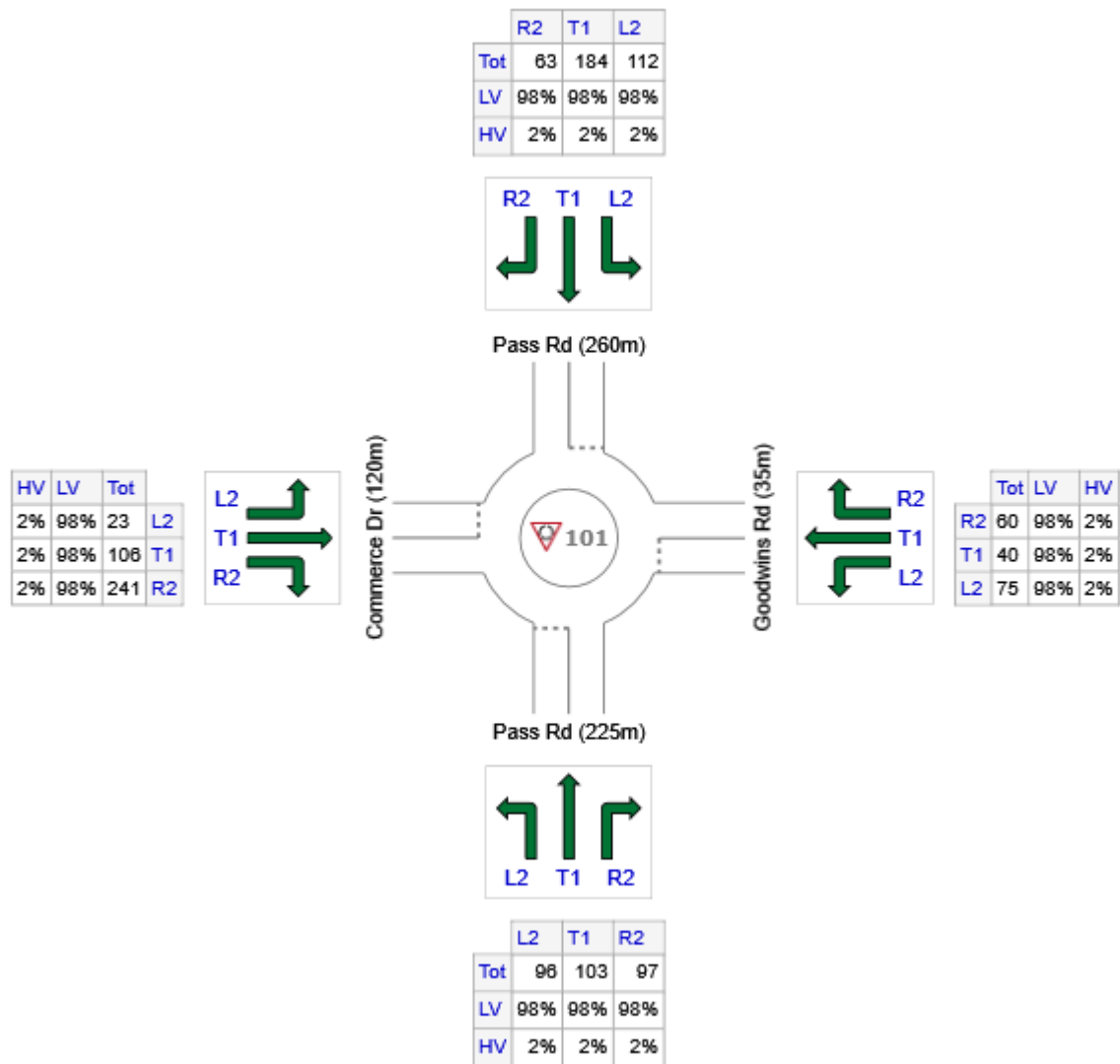
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

🚧 Site: 101 [Goodwins x Pass x Commerce (Site Folder: Existing - PM Peak)]

1-lane Roundabout
Site Category: Existing Design
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Pass Rd (225m)	296	290	6
E: Goodwins Rd (35m)	175	172	4
N: Pass Rd (260m)	359	352	7
W: Commerce Dr (120m)	370	363	7
Total	1200	1176	24

MOVEMENT SUMMARY

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: Existing - PM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1-lane Roundabout
Site Category: Existing Design
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Pass Rd (225m)															
1	L2	All MCs	101	2.0	101	2.0	0.262	4.8	LOS A	1.7	12.1	0.43	0.53	0.43	43.0
2	T1	All MCs	108	2.0	108	2.0	0.262	4.8	LOS A	1.7	12.1	0.43	0.53	0.43	47.0
3	R2	All MCs	102	2.0	102	2.0	0.262	9.9	LOS A	1.7	12.1	0.43	0.53	0.43	39.6
Approach			312	2.0	312	2.0	0.262	6.5	LOS A	1.7	12.1	0.43	0.53	0.43	43.8
East: Goodwins Rd (35m)															
4	L2	All MCs	79	2.0	79	2.0	0.212	5.1	LOS A	1.3	9.4	0.66	0.66	0.66	40.1
5	T1	All MCs	42	2.0	42	2.0	0.212	5.5	LOS A	1.3	9.4	0.66	0.66	0.66	34.9
6	R2	All MCs	63	2.0	63	2.0	0.212	9.9	LOS A	1.3	9.4	0.66	0.66	0.66	40.4
Approach			184	2.0	184	2.0	0.212	6.9	LOS A	1.3	9.4	0.66	0.66	0.66	39.3
North: Pass Rd (260m)															
7	L2	All MCs	118	2.0	118	2.0	0.422	7.2	LOS A	3.0	21.5	0.74	0.66	0.74	30.4
8	T1	All MCs	194	2.0	194	2.0	0.422	7.3	LOS A	3.0	21.5	0.74	0.66	0.74	45.5
9	R2	All MCs	66	2.0	66	2.0	0.422	12.3	LOS B	3.0	21.5	0.74	0.66	0.74	33.1
Approach			378	2.0	378	2.0	0.422	8.1	LOS A	3.0	21.5	0.74	0.66	0.74	38.7
West: Commerce Dr (120m)															
10	L2	All MCs	24	2.0	24	2.0	0.362	5.6	LOS A	2.5	17.6	0.56	0.62	0.56	41.6
11	T1	All MCs	112	2.0	112	2.0	0.362	5.7	LOS A	2.5	17.6	0.56	0.62	0.56	23.6
12	R2	All MCs	254	2.0	254	2.0	0.362	10.7	LOS B	2.5	17.6	0.56	0.62	0.56	39.7
Approach			389	2.0	389	2.0	0.362	9.0	LOS A	2.5	17.6	0.56	0.62	0.56	35.7
All Vehicles			1263	2.0	1263	2.0	0.422	7.8	LOS A	3.0	21.5	0.60	0.62	0.60	39.0

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.

LEVEL OF SERVICE

Lane Level of Service

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: Existing - PM Peak)]**

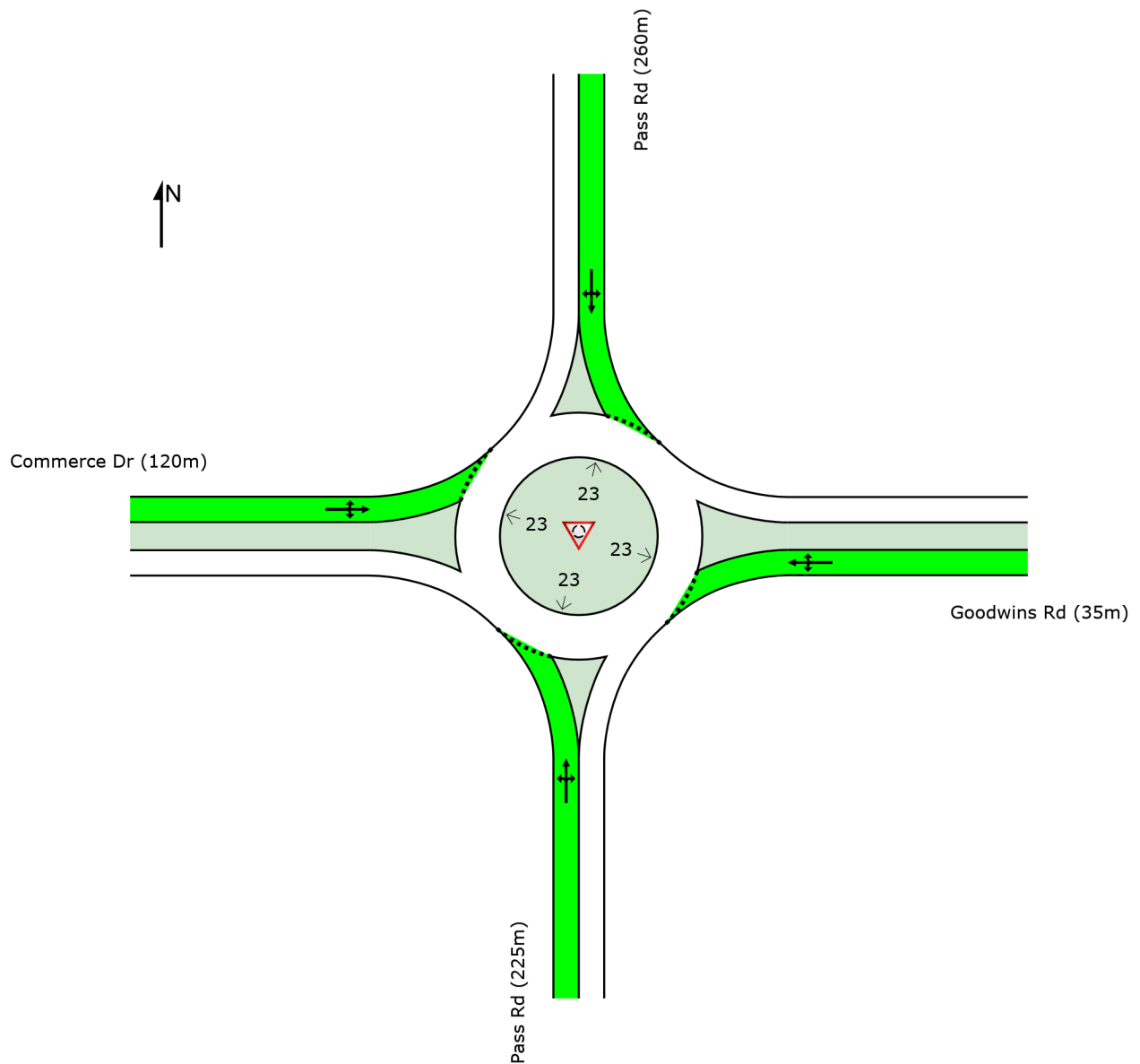
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1-lane Roundabout

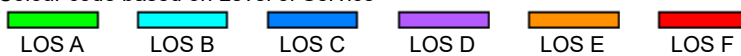
Site Category: Existing Design

Roundabout

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



Colour code based on Level of Service



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

Roundabout Level of Service Method: SIDRA Roundabout LOS

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

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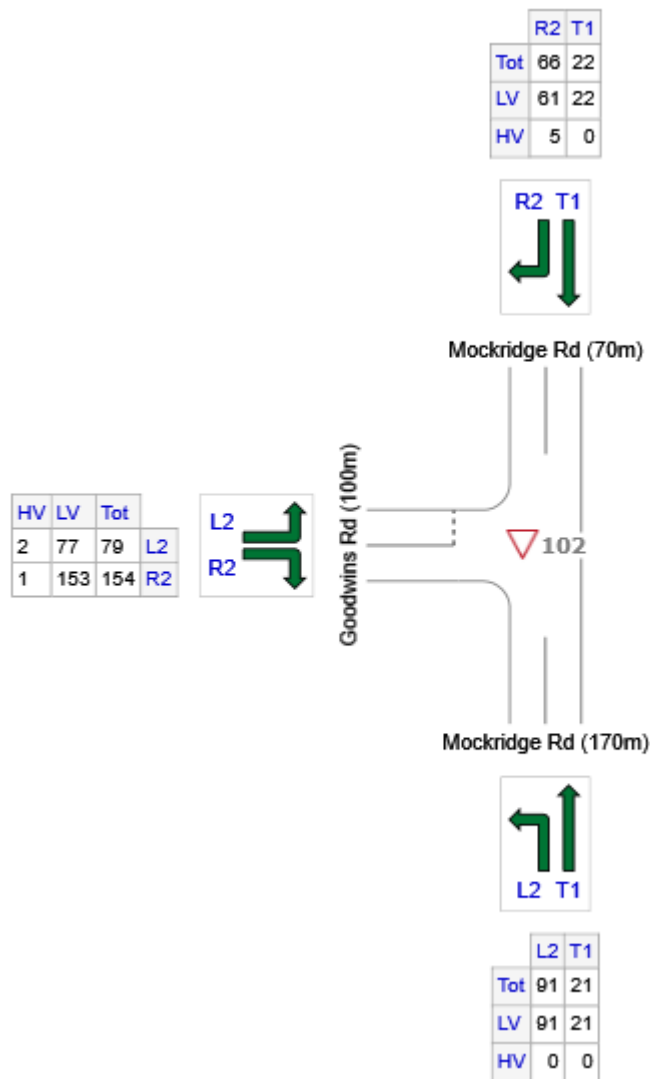
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▼ Site: 102 [Goodwins x Mockridge (Site Folder: Existing - PM Peak)]

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Volume Display Method: Total and Veh



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Mockridge Rd (170m)	112	112	0
N: Mockridge Rd (70m)	88	83	5
W: Goodwins Rd (100m)	233	230	3
Total	433	425	8

MOVEMENT SUMMARY

▼ Site: 102 [Goodwins x Mockridge (Site Folder: Existing - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Mockridge Rd (170m)															
1	L2	All MCs	96	0.0	96	0.0	0.059	5.5	LOS A	0.0	0.0	0.00	0.47	0.00	36.1
2	T1	All MCs	22	0.0	22	0.0	0.059	0.0	LOS A	0.0	0.0	0.00	0.47	0.00	46.4
Approach			118	0.0	118	0.0	0.059	4.5	NA	0.0	0.0	0.00	0.47	0.00	37.6
North: Mockridge Rd (70m)															
8	T1	All MCs	23	0.0	23	0.0	0.045	0.3	LOS A	0.2	1.8	0.23	0.41	0.23	46.9
9	R2	All MCs	69	7.6	69	7.6	0.045	5.0	LOS A	0.2	1.8	0.23	0.41	0.23	23.7
Approach			93	5.7	93	5.7	0.045	3.8	NA	0.2	1.8	0.23	0.41	0.23	28.0
West: Goodwins Rd (100m)															
10	L2	All MCs	83	2.5	83	2.5	0.040	5.6	LOS A	0.2	1.4	0.08	0.55	0.08	34.0
12	R2	All MCs	162	0.6	162	0.6	0.113	5.8	LOS A	0.3	1.9	0.16	0.58	0.16	39.4
Approach			245	1.3	245	1.3	0.113	5.7	LOS A	0.3	1.9	0.13	0.57	0.13	37.9
All Vehicles			456	1.8	456	1.8	0.113	5.0	NA	0.3	1.9	0.12	0.51	0.12	35.7

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

LEVEL OF SERVICE

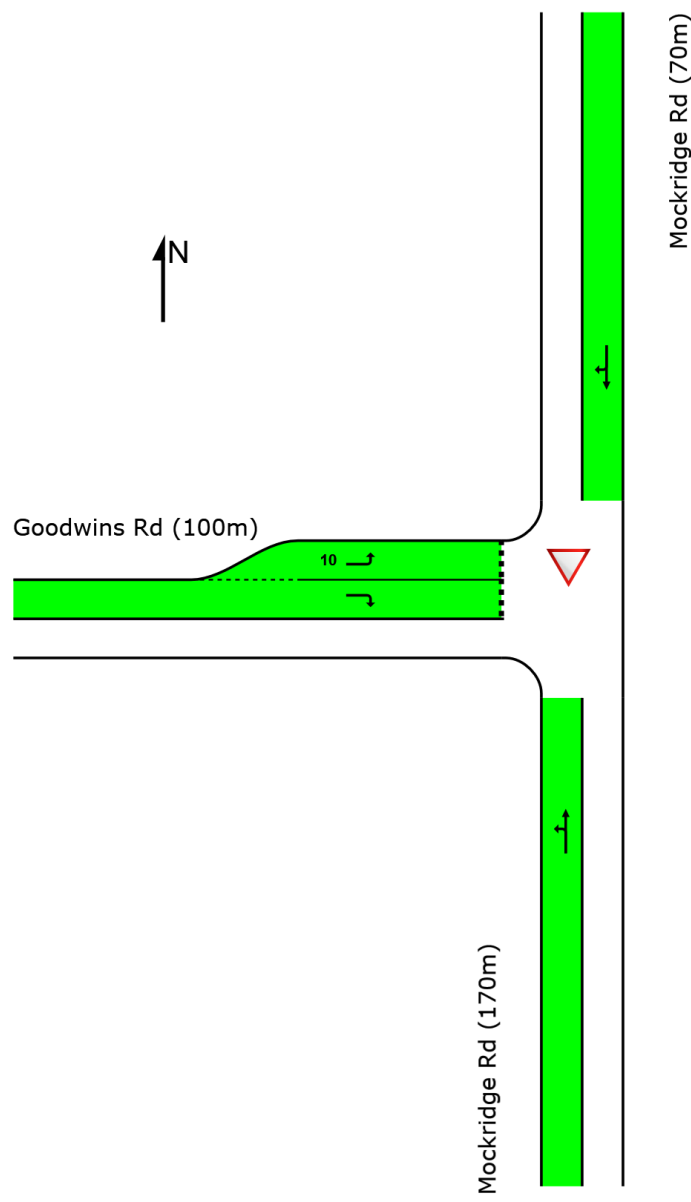
Lane Level of Service

▽ Site: 102 [Goodwins x Mockridge (Site Folder: Existing - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
LOS	NA (TWSC)	NA (TWSC)	A	NA (TWSC)



Colour code based on Level of Service



NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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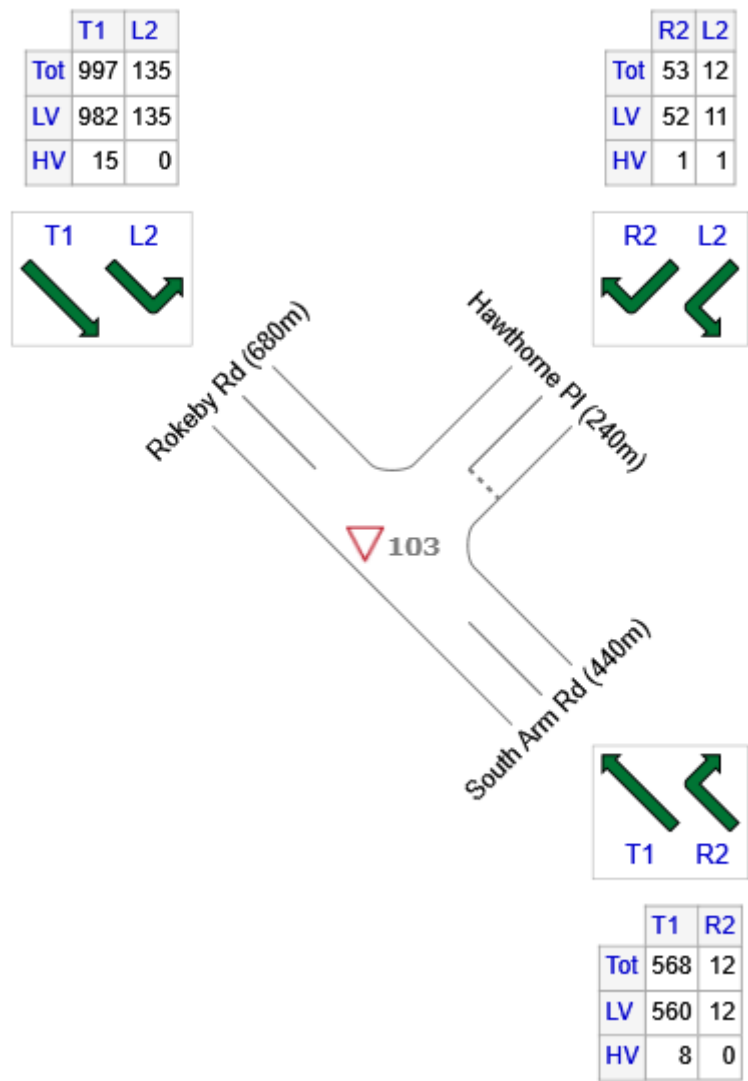
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▼ Site: 103 [Rokeby x Hawthorne (Site Folder: Existing - PM Peak)]

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Volume Display Method: Total and Veh



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: South Arm Rd (440m)	580	572	8
NE: Hawthorne Pl (240m)	65	63	2
NW: Rokeby Rd (680m)	1132	1117	15
Total	1777	1752	25

MOVEMENT SUMMARY

▼ Site: 103 [Rokeby x Hawthorne (Site Folder: Existing - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: South Arm Rd (440m)															
22	T1	All MCs	598	1.4	598	1.4	0.314	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
23	R2	All MCs	13	0.0	13	0.0	0.026	13.2	LOS B	0.1	0.7	0.80	0.89	0.80	43.5
Approach			611	1.4	611	1.4	0.314	0.4	NA	0.1	0.7	0.02	0.02	0.02	59.5
NorthEast: Hawthorne PI (240m)															
24	L2	All MCs	13	8.3	13	8.3	0.025	12.1	LOS B	0.1	0.6	0.74	0.85	0.74	44.1
26	R2	All MCs	56	1.9	56	1.9	0.357	31.1	LOS D	1.0	7.4	0.92	1.01	1.09	37.4
Approach			68	3.1	68	3.1	0.357	27.6	LOS D	1.0	7.4	0.89	0.98	1.02	38.3
NorthWest: Rokeby Rd (680m)															
27	L2	All MCs	142	0.0	142	0.0	0.620	5.9	LOS A	0.0	0.0	0.00	0.07	0.00	56.1
28	T1	All MCs	1049	1.5	1049	1.5	0.620	0.5	LOS A	0.0	0.0	0.00	0.07	0.00	58.8
Approach			1192	1.3	1192	1.3	0.620	1.1	NA	0.0	0.0	0.00	0.07	0.00	58.5
All Vehicles			1871	1.4	1871	1.4	0.620	1.8	NA	1.0	7.4	0.04	0.09	0.04	57.9

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

LEVEL OF SERVICE

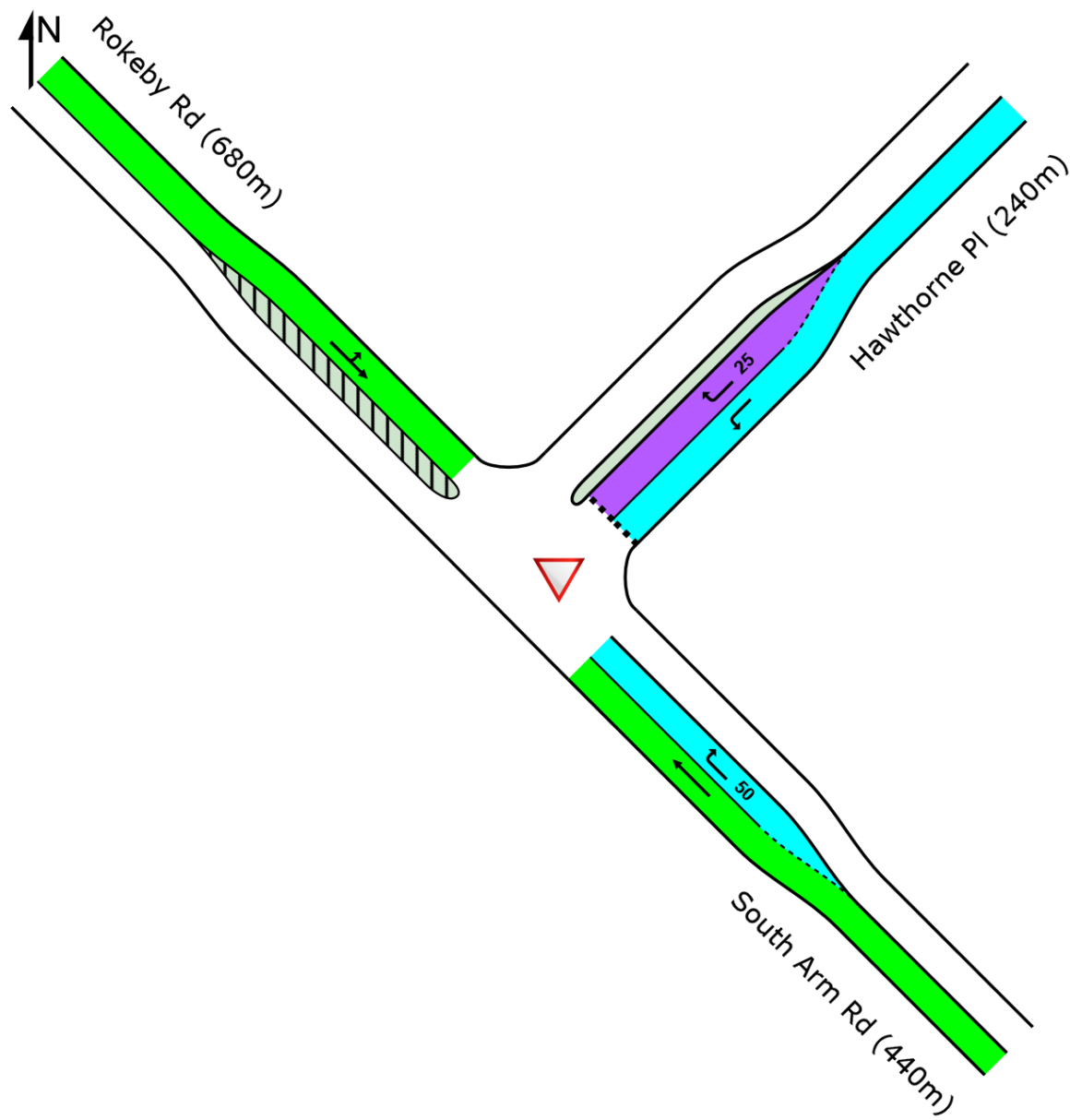
Lane Level of Service

▽ Site: 103 [Rokeby x Hawthorne (Site Folder: Existing - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches			Intersection
	Southeast	Northeast	Northwest	
LOS	NA (TWSC)	D	NA (TWSC)	NA (TWSC)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
-------	-------	-------	-------	-------	-------

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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Project: C:\Users\shhasan\OneDrive - pitt&sherry\P.25.1233 - 22 Goodwins Road - TIA update - Project Site Documents\20 Project Delivery\02
Traffic modelling\SIDRA\GoodwinsRd project v2.sip9

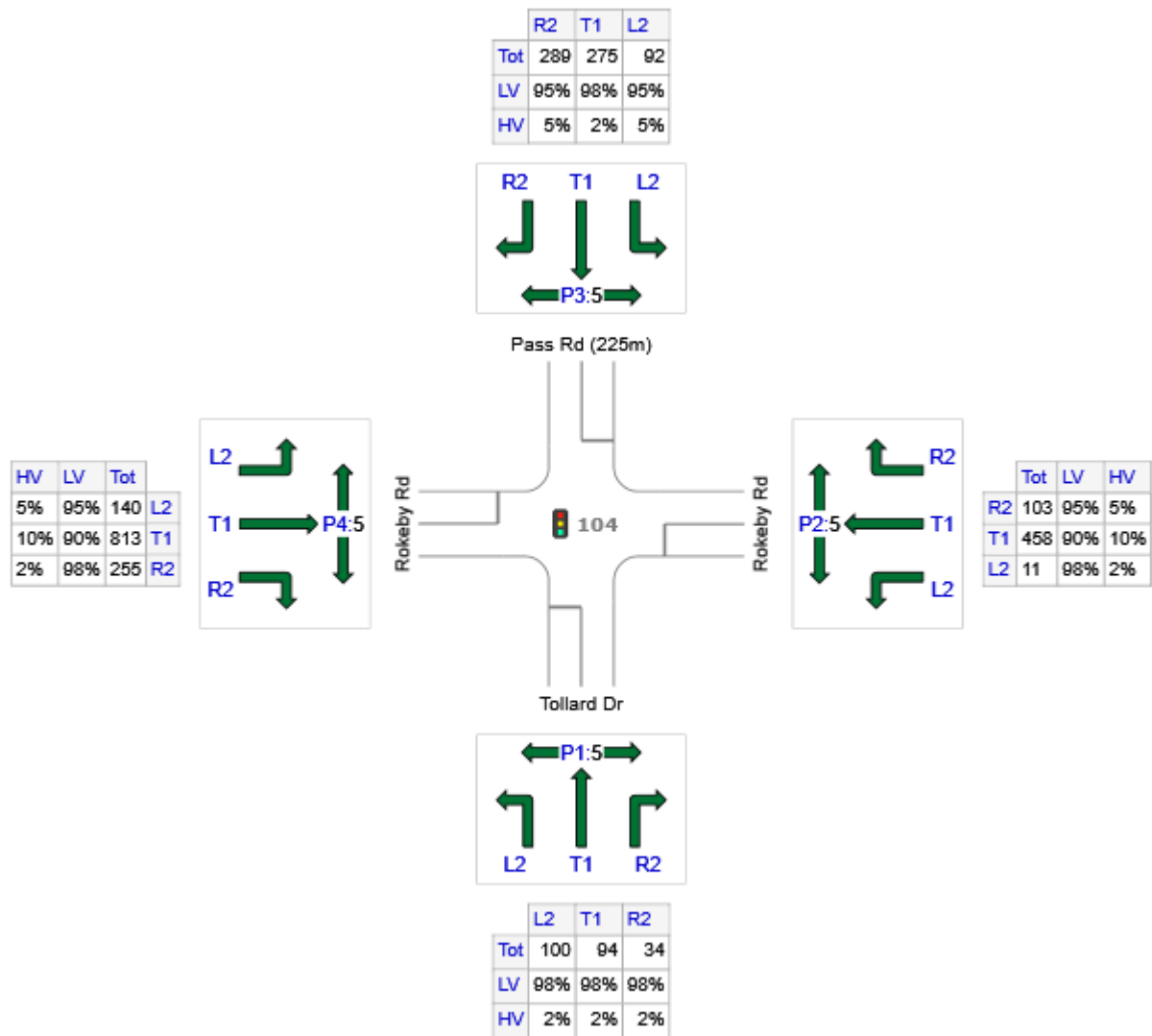
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 **Site: 104 [Rokeby x Pass x Tollard (Site Folder: Existing - PM Peak)]**

Signalised 4way intersection
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Tollard Dr	228	223	5
E: Rokeby Rd	572	521	51
N: Pass Rd (225m)	656	631	25
W: Rokeby Rd	1208	1115	93
Total	2664	2490	174

MOVEMENT SUMMARY

Site: 104 [Rokeby x Pass x Tollard (Site Folder: Existing - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Signalised 4way intersection

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 105 seconds (Site Practical Cycle Time)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance																
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist]					
			veh/h	%	veh/h	%	v/c	sec			m				km/h	
South: Tollard Dr																
1	L2	All MCs	105	2.0	105	2.0	0.409	9.4	LOS A	6.9	48.8	0.85	0.75	0.85	42.1	
2	T1	All MCs	99	2.0	99	2.0	* 0.409	37.4	LOS D	6.9	48.8	0.85	0.75	0.85	36.3	
3	R2	All MCs	36	2.0	36	2.0	0.228	55.1	LOS E	1.8	12.7	0.97	0.72	0.97	30.9	
Approach			240	2.0	240	2.0	0.409	27.7	LOS C	6.9	48.8	0.87	0.75	0.87	37.8	
East: Rokeby Rd																
4	L2	All MCs	12	2.0	12	2.0	0.022	22.2	LOS C	0.2	1.7	0.75	0.67	0.75	43.9	
5	T1	All MCs	482	10.0	482	10.0	0.684	44.2	LOS D	11.9	90.5	0.99	0.84	1.02	40.7	
6	R2	All MCs	108	5.0	108	5.0	* 0.907	73.2	LOS E	6.6	47.9	1.00	0.98	1.52	23.7	
Approach			602	8.9	602	8.9	0.907	49.0	LOS D	11.9	90.5	0.98	0.86	1.10	37.0	
North: Pass Rd (225m)																
7	L2	All MCs	97	5.0	97	5.0	0.874	62.5	LOS E	22.0	157.7	1.00	1.04	1.23	28.4	
8	T1	All MCs	289	2.0	289	2.0	* 0.874	57.9	LOS E	22.0	157.7	1.00	1.04	1.23	26.1	
9	R2	All MCs	304	5.0	304	5.0	0.608	48.2	LOS D	13.7	100.0	0.93	0.83	0.93	31.9	
Approach			691	3.7	691	3.7	0.874	54.3	LOS D	22.0	157.7	0.97	0.95	1.10	26.8	
West: Rokeby Rd																
10	L2	All MCs	147	5.0	147	5.0	0.452	7.7	LOS A	12.0	90.3	0.60	0.63	0.60	52.2	
11	T1	All MCs	856	10.0	856	10.0	* 0.826	29.1	LOS C	26.7	202.8	0.84	0.81	0.89	49.5	
12	R2	All MCs	268	2.0	268	2.0	0.662	48.3	LOS D	12.8	91.2	0.97	0.84	0.97	33.5	
Approach			1272	7.7	1272	7.7	0.826	30.7	LOS C	26.7	202.8	0.84	0.80	0.88	45.0	
All Vehicles			2804	6.5	2804	6.5	0.907	40.2	LOS D	26.7	202.8	0.90	0.84	0.98	37.5	

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

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

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

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

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

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

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

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

- * Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Tollard Dr												
P1	Full	5	5	46.7	LOS E	0.0	0.0	0.94	0.94	200.5	200.0	1.00
East: Rokeby Rd												

P2 Full	5	5	46.7	LOS E	0.0	0.0	0.94	0.94	200.5	200.0	1.00
North: Pass Rd (225m)											
P3 Full	5	5	46.7	LOS E	0.0	0.0	0.94	0.94	200.5	200.0	1.00
West: Rokeby Rd											
P4 Full	5	5	46.7	LOS E	0.0	0.0	0.94	0.94	200.5	200.0	1.00
All Pedestrians	20	21	46.7	LOS E	0.0	0.0	0.94	0.94	200.5	200.0	1.00

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.

LEVEL OF SERVICE

Lane Level of Service

 **Site: 104 [Rokeby x Pass x Tollard (Site Folder: Existing - PM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

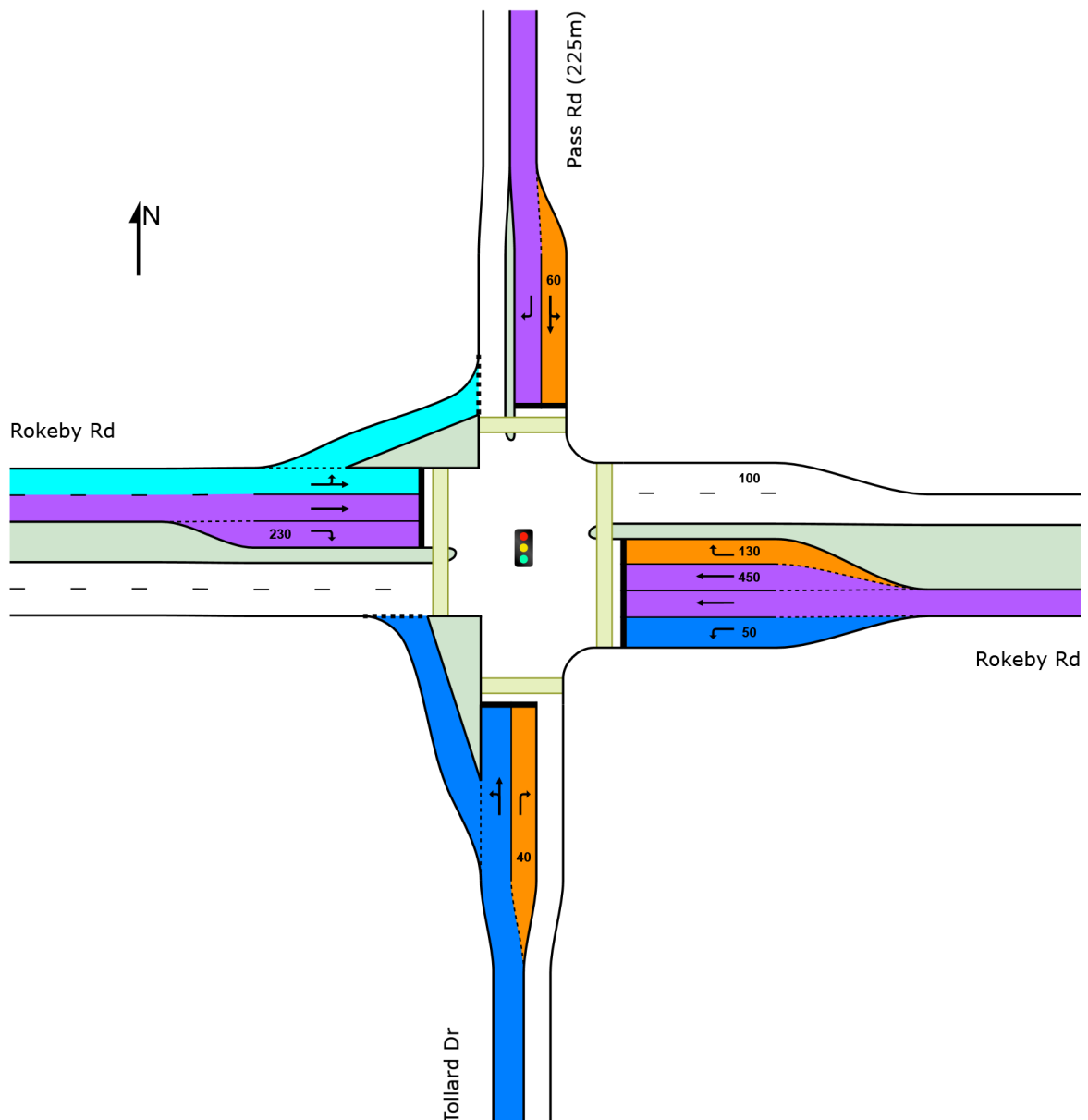
Signalised 4way intersection

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 105 seconds (Site Practical Cycle Time)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

	Approaches				Intersection
	South	East	North	West	
LOS	C	D	D	C	D



Colour code based on Level of Service

					
LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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Project: C:\Users\shhasan\OneDrive - pitt&sherry\P.25.1233 - 22 Goodwins Road - TIA update - Project Site Documents\20 Project Delivery\02
Traffic modelling\SIDRA\GoodwinsRd project v2.sip9

Subdivision Concept Plan

Appendix B

pitt&sherry

DRAWING LISTS

- 24140/00 REV A COVER SHEET
- 24140/01 REV A ROAD & STORMWATER PLAN 1
- 24140/02 REV A ROAD & STORMWATER PLAN 2
- 24140/03 REV A SEWER PLAN 1
- 24140/04 REV A SEWER PLAN 2
- 24140/05 REV A WATER RETICULATION PLAN 1
- 24140/06 REV A WATER RETICULATION PLAN 2
- 24140/07 REV A ROAD 1 LONG & CROSS SECTIONS
- 24140/08 REV A ROAD 2 LONG & CROSS SECTIONS 1
- 24140/09 REV A ROAD 2 CROSS SECTIONS 2
- 24140/10 REV A ROAD 2 CROSS SECTIONS 3
- 24140/11 REV A ROAD 3 LONG & CROSS SECTIONS
- 24140/12 REV A ROAD 4 LONG & CROSS SECTIONS
- 24140/13 REV A ROAD 4 CROSS SECTIONS 2
- 24140/14 REV A ROAD 5 LONG & CROSS SECTIONS 1
- 24140/15 REV A ROAD 5 LONG & CROSS SECTIONS 2
- 24140/16 REV A STORMWATER LONG SECTIONS 1
- 24140/17 REV A STORMWATER LONG SECTIONS 2
- 24140/18 REV A STORMWATER LONG SECTIONS 3
- 24140/19 REV A STORMWATER LONG SECTIONS 4
- 24140/20 REV A SEWER LONG SECTIONS 1
- 24140/22 REV A SEWER LONG SECTIONS 2
- 24140/23 REV A SEWER LONG SECTIONS 3
- 24140/24 REV A STOKELL CREEK STORMWATER WORKS SECTIONS 1
- 24140/24 REV A STOKELL CREEK STORMWATER WORKS SECTIONS 2

TASWATER INFRASTRUCTURE WATER NOTES:

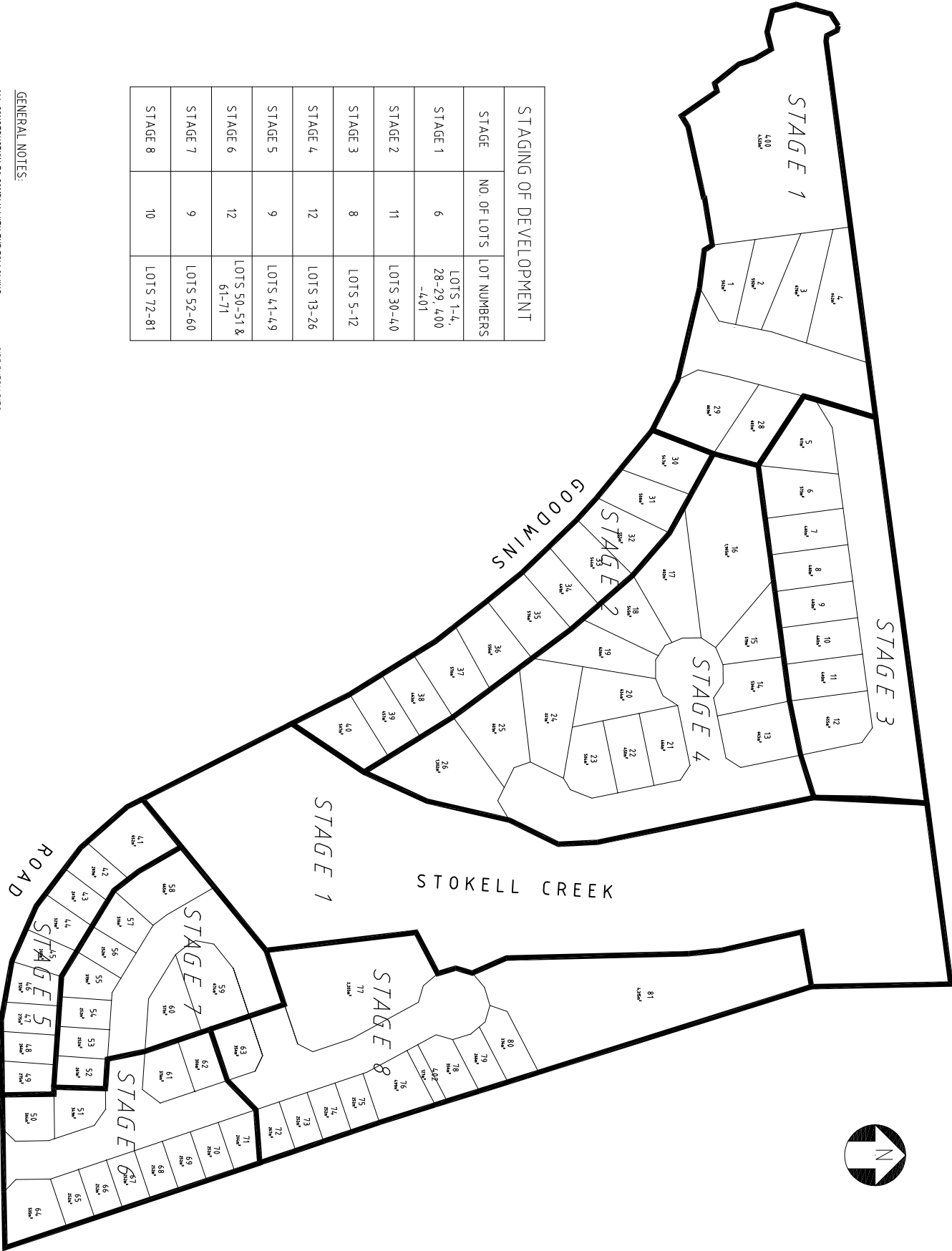
1. ALL WATER SUPPLY WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH THE WATER CODE OF AUSTRALIA WSA 03-2011-31 MRWA EDITION V2.1. TASWATER'S SUPPLEMENTS TO THESE CODES & ALL RELEVANT W. H. & S. STANDARDS.
2. GENERALLY WATER MAINS TO BE INSTALLED AFTER THE CONSTRUCTION OF STORM WATER AND SEWER ASSETS.
3. FOR MINIMUM COVER OVER PIPES AND TRENCH WIDTHS, REFER TASWATER TW WSA03-2011-31 MRWA V2 TABLE 1 MRWA-W-202
4. PIPE TRENCHFILL SHALL BE IN ACCORDANCE WITH MRWA-W-202
5. PIPE EMBEDMENT SHALL BE IN ACCORDANCE WITH MRWA-W-203
6. FOR PIPES GRADES GREATER THAN 10% EMBEDMENT WILL BE 20mm CEMENT TREATED CLASS 3 FCR PLANT MIXED 3% CEMENT
7. FOR PIPES GRADES LESS THAN 10% EMBEDMENT WILL BE 7mm FCR AND AS NOTED ON THE APPROVED WATER MAIN PLANS & LONG SECTIONS WHERE SHOWN
8. ALL WATER MAINS WORKS MUST BE TESTED AND INSPECTED BY TASWATER PRIOR TO BACKFILL
9. ALL WATER MAIN CONNECTIONS ARE TO BE DONE BY TASWATER AT DEVELOPERS COST.
10. LOCATE ALL EXISTING GAS, ELECTRICAL, TELECOMMUNICATIONS, WATER MAINS, SEWER MAINS AND STORMWATER MAINS ETC PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND ADVISE THE ENGINEER OF ANYTHING THAT APPEARS NOT BE HAVE BEEN CONSIDERED IN THE DESIGN.
11. BULKHEADS AND TRENCH STOPS TO BE IN ACCORDANCE WITH DRG. MRWA-W-208 & 209 AND AS NOTED ON THE APPROVED WATER LONG SECTIONS WHERE SHOWN
12. WATER MAIN CLEARANCES SHALL BE IN ACCORDANCE WITH WSA 03-2011-31, 5123.2 TABLE 55
13. THRUST AND ANCHOR BLOCKS SHALL BE CONSTRUCTED IN ACCORDANCE MRWA-W-204 & 205A
14. LOT CONNECTIONS TO BE IN ACCORDANCE WITH TASWATER DRG. No. TWS-W-002 SHEET 5 OF 19 FOR DN24 & DN25 BELOW GROUND CONNECTIONS
15. FOR LOT CONNECTIONS TO RETICULATION MAINS REFER MRWA-W-110
16. STOP VALVES SHALL BE CONSTRUCTED IN ACCORDANCE WITH MRWA-W-202
17. HYDRANT SHALL BE CONSTRUCTED IN ACCORDANCE WITH MRWA-W-205
18. ALL WATER MAINS SHALL BE INSTALLED IN ACCORDANCE WITH MRWA-W-108 & MRWA-W-109
19. ALL TRENCHES UNDER TRAFFICKED AREAS TO BE BACK FILLED WITH APPROVED FCR INCLUDING FUTURE DRIVEWAY EXTENSIONS.
20. FURNISHING OF MAINS TO BE CARRIED OUT IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS
21. ELECTROPHORIC TRUCKER TAPE TO BE PLACED IN ALL WATER MAIN TRENCHES ABOVE THE PIPE
22. WATER MAINS TO BE BEDDED ON 80mm APPROVED 7mm CLEAN METAL
23. WATER MAINS BLOCKS TO BE APPROVED ALL SLOPED CHANGES OF DIRECTION, BOTH VERTICALLY AND HORIZONTALLY AT 1:100
24. TRENCH STOPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MRWA-W-204
25. FIRE HYDRANT & VALVE MARKERS TO BE IN ACCORDANCE WITH DRAWINGS MRWA-W-300 & 301 ALL VALVES ETC TO BE RESILIENT SEATED POWDER COATED CLASS 16
26. WHERE DUNO PIPES CROSS UNDER ROADS THEY MUST BE DUNO PIPES D.I.C. PRE
27. ALL WATER WORKS MUST BE TESTED AND INSPECTED BY TASWATER PRIOR TO BACKFILL
28. PROPERTY CONNECTIONS LOCATED WITHIN AN AREA SUBJECT TO TRAFFICABLE LOADS MUST BE INSTALLED IN A CLASS 'B' WETER BOX AND SURROUND
29. ALL WORK TO BE DONE BY CONTRACTOR AT DEVELOPERS COST UNLESS NOTED OTHERWISE
30. ALL CONNECTIONS TO EXISTING WATER OR SEWER TO BE DONE BY TASWATER AT DEVELOPERS COST.
31. CONTRACTOR TO VERIFY LOCATION OF ALL EXISTING SERVICES PRIOR TO UNDERTAKING ANY EXCAVATION AND TO NOTIFY THE ENGINEER OF ANYTHING THAT DOES NOT APPEAR TO HAVE BEEN CONSIDERED IN THE DESIGN

TRAFFIC MANAGEMENT NOTES:

1. THE CONTRACTOR IS TO PREPARE A TRAFFIC MANAGEMENT PLAN FOR APPROVAL BY THE DEVELOPMENT ENGINEER PRIOR TO COMMENCING WORKS ON SITE
2. THE TRAFFIC MANAGEMENT PLAN SHALL COMPLY WITH THE REQUIREMENTS OF AS 1742
3. TRAFFIC MANAGEMENT SHALL BE IMPLEMENTED DURING CONSTRUCTION OF ALL WORKS WITHIN THE ROAD RESERVATION
4. THE CONTRACTOR SHALL MAINTAIN ONE TRAFFICABLE LANE AT ALL TIMES
5. DISRUPTIONS TO TRAFFIC SHALL BE MINIMIZED
6. ALL PERSONS INVOLVED IN TRAFFIC MANAGEMENT MUST HOLD APPROPRIATE QUALIFICATIONS - TO COUNCIL APPROVAL
7. APPROPRIATE SAFETY GEAR SHALL BE WORN BY ALL PERSONS WORKING IN THE ROAD RESERVATION

TASWATER INFRASTRUCTURE SEWER NOTES:

1. ALL SEWER WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH THE SEWER CODE OF AUSTRALIA WSA 02-2011-31 MRWA EDITION V2.0. TASWATER'S SUPPLEMENTS TO THESE CODES & ALL RELEVANT W. H. & S. STANDARDS.
2. ALL SEWER PIPES TO BE 1500 UPVC CLASS S186 AT 165% MINIMUM FALL UNDO
3. FOR MINIMUM COVER OVER PIPES, REFER MRWA-S-201, TABLE 201-C
4. ALL PRODUCTS USED IN CONSTRUCTION TO COMPLY WITH THE CITY WEST WATER MATERIAL LIST
5. ALL SEWER WORKS MUST BE TESTED AND INSPECTED BY TASWATER PRIOR TO BACKFILL
6. ALL LIVE SEWER CONNECTIONS ARE TO BE DONE BY TASWATER AT THE DEVELOPERS COST.
7. ALL MAINTENANCE STRUCTURES TO BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING
8. MRWA-S-309 MAINTENANCE HOLES - GENERAL CONSTRUCTION REQUIREMENTS
9. MRWA-S-310 CONCRETE MAINTENANCE HOLES - BASE CONSTRUCTION
10. MRWA-S-311 CONCRETE MAINTENANCE HOLES - INFILL DROP
11. ALL WORK TO BE DONE BY CONTRACTOR AT DEVELOPERS COST UNDO
12. LOCATE ALL EXISTING GAS, ELECTRICAL, TELECOMMUNICATIONS, WATER MAINS, SEWER MAINS AND STORMWATER MAINS ETC PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND ADVISE THE ENGINEER OF ANYTHING THAT APPEARS NOT BE HAVE BEEN CONSIDERED IN THE DESIGN
13. ALL MAINTENANCE/INSPECTION MNS IN TRAFFICABLE AREAS TO HAVE MIN. CLASS 07 LIDS.
14. PIPE EMBEDMENT TO BE IN ACCORDANCE WITH MRWA-S-202
15. FOR PIPES GRADES GREATER THAN 10% EMBEDMENT WILL BE 20mm CEMENT TREATED CLASS 3 FCR PLANT MIXED 3% CEMENT
16. FOR PIPES GRADES LESS THAN 10% EMBEDMENT WILL BE 7mm FCR
17. BULKHEADS AND TRENCH STOPS TO BE IN CONSTRUCTED ACCORDANCE WITH DRG. MRWA-W-208 & 209 AND AS NOTED ON THE APPROVED SEWER PLANS AND LONG SECTIONS
18. LOT CONNECTIONS TO BE IN ACCORDANCE WITH MRWA-S-301 TO MRWA-S-304 AND AS NOTED ON THE APPROVED SEWER LONG SECTIONS
19. A NOTED SEWER PIPES SHALL BE INSTALLED IN ACCORDANCE WITH MRWA-S-303 TO SURFACE CONNECTIONS IN ACCORDANCE WITH MRWA-S-303 TO SURFACE
20. SEWER PIPE CLEARANCES TO BE IN ACCORDANCE WITH WSA 02-2011-31 MRWA VER. 2 SECTION 5.1, TABLE 5.4 AND TASWATER'S SUPPLEMENT



STAGING OF DEVELOPMENT		
STAGE	NO. OF LOTS	LOT NUMBERS
STAGE 1	6	LOTS 1-6, 28-29, 4,00 -4,01
STAGE 2	11	LOTS 30-40
STAGE 3	8	LOTS 5-12
STAGE 4	12	LOTS 13-26
STAGE 5	9	LOTS 41-49
STAGE 6	12	LOTS 50-51 & 61-71
STAGE 7	9	LOTS 52-60
STAGE 8	10	LOTS 72-81

GENERAL NOTES:

- ALL CONSTRUCTION TO COMPLY WITH THE FOLLOWING LOCAL GOVT STANDARDS & THE MUNICIPAL STANDARD SPECIFICATION.
- TSD-002-43 URBAN ROADS TYPICAL SERVICE LOCATIONS
- TSD-004-43 REFERENCE POINTS
- TSD-006-43 URBAN ROADS
- TSD-R06-43 URBAN ROADS TYPICAL SECTION & PAVEMENT WIDTHS
- TSD-R07-43 CUL-DE-SAC TURNING HEADS
- TSD-R14-43 STANDARD VEHICLE CROSSING
- TSD-R14-43 FOOTPATHS
- TSD-R14-43 CONSTRUCTION DETAILS
- TSD-R14-43 CONCRETE KERB AND CHANNELS
- TSD-R14-43 PROFILE DIMENSIONS
- TSD-R14-43 CONSTRUCTION DETAILS
- TSD-R14-43 VEHICULAR CROSSINGS
- TSD-R23-43 SIGNS
- SIDE ENTRY PITS
- TSD-SW04-43 GRATE AND FRAME DETAILS
- TSD-SW04-43 TYPE 3
- TSD-SW11-43 KERB TRANSITIONS
- TSD-SW28-43 GUIDES TO SEGMENT CONTROL
- TSD-R04-43 MANHOLE STRIP DETAILS
- TSD-SW02-43 GENERAL ARRANGEMENTS
- TSD-SW03-43 BENCHING DETAILS
- EXCAVATION, ALL STRUCTURES TO BE LOCATED CLEAR OF ANY WATERCOURSE
- FOR BACKFILL OVER ALL PIPES UNDER PROPOSED DRIVEWAYS & ROADWAYS
- ALL STORM WATER LOT CONNECTIONS TO BE Ø150

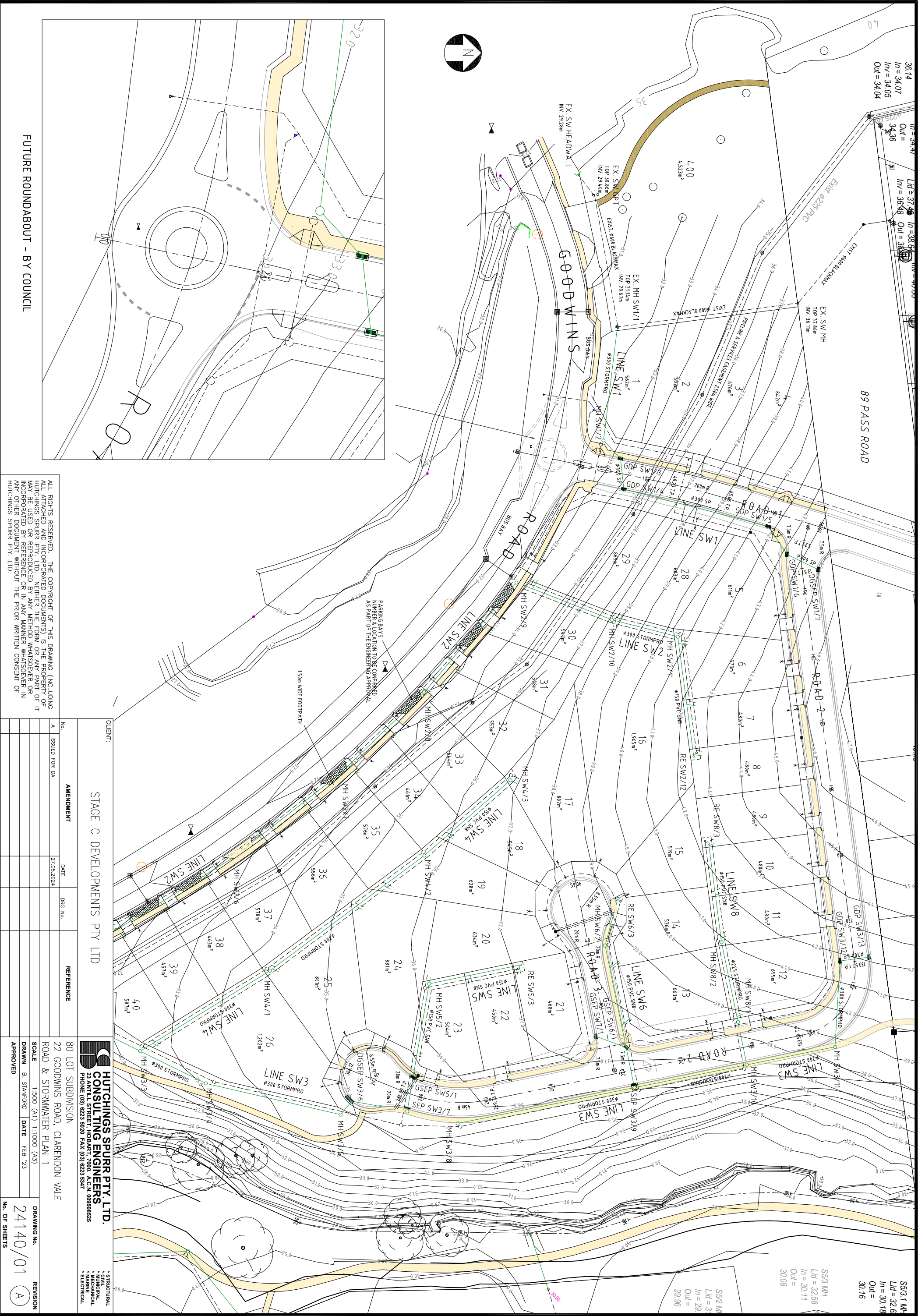
CLIENT:

STAGE C DEVELOPMENTS PTY LTD

HUTCHINGS SPURR PTY. LTD.
CONSULTING ENGINEERS
23 ANTILL STREET, HOBART, 7000. A.C.N. 009060525
PHONE (03) 6223 5020 FAX (03) 6223 5347

STRUCTURAL
CIVIL
MUNICIPAL
MARINE
ELECTRICAL

AMENDMENT		DATE	DRG No.	REFERENCE
A	ISSUED TO TASWATER	20.09.2018		
B	GENERAL REVISION	16.06.2025		
80 LOT SUBDIVISION				
22 GOODWINS ROAD, CLARENDON VALE				
COVER SHEET				
SCALE		1:500 (A1)	1:1,000 (A2)	
DRAWN	B. STANFORD	DATE	FEB 23	
APPROVED				DRAWING No. 24140/00
				REVISION (B)
				No. OF SHEETS



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CLIENT:			
STAGE C DEVELOPMENTS PTY LTD			
AMENDMENT		DATE	DRG No.
A	ISSUED FOR DA	27/05/2024	
REFERENCE		DRAWING No.	
80 LOT SUBDIVISION		22 GOODWINS ROAD, CLARENDON VALE	
ROAD & STORMWATER PLAN 1		SCALE 1:500 (A1) 1:1000 (A3)	
DRAWN B. STANFORD		DATE FEB 23	
APPROVED		24140/01	
		REVISION (A)	
		No. OF SHEETS	

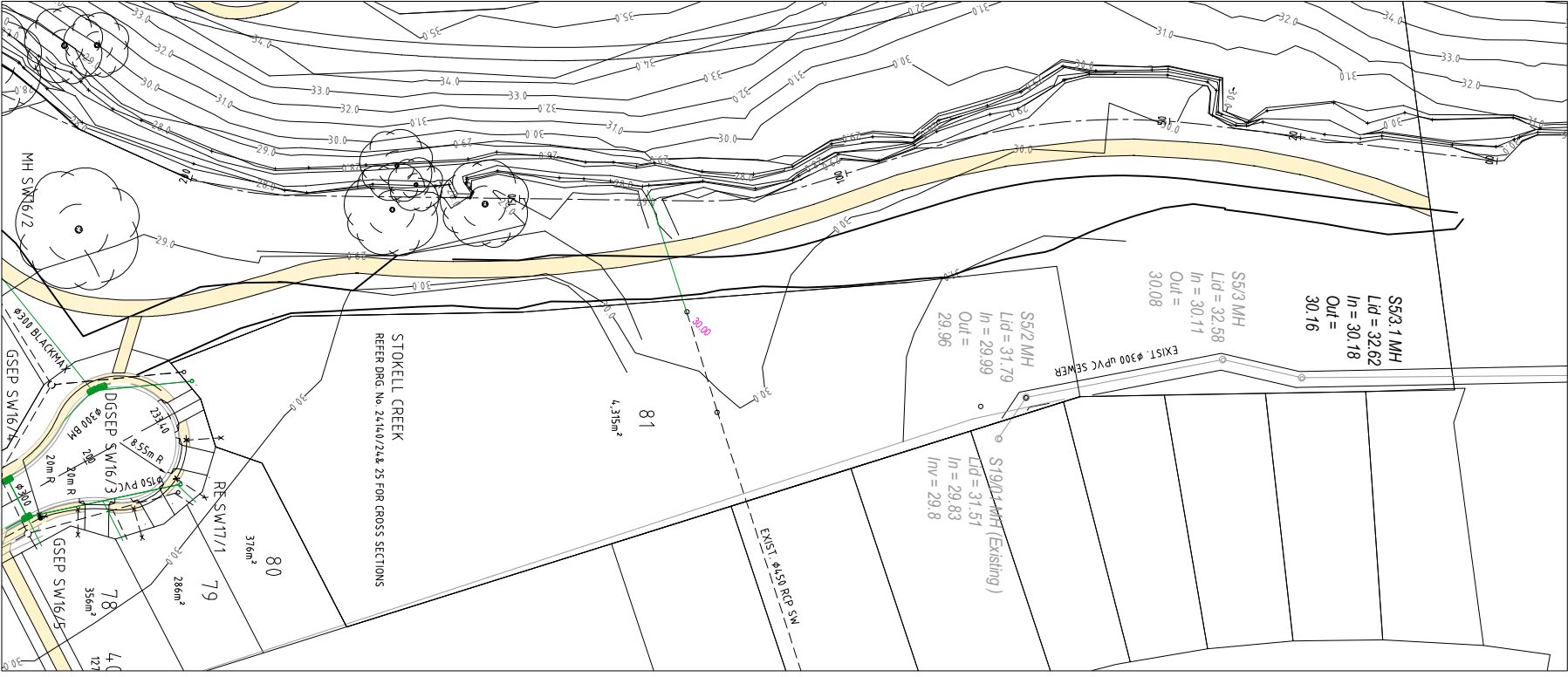
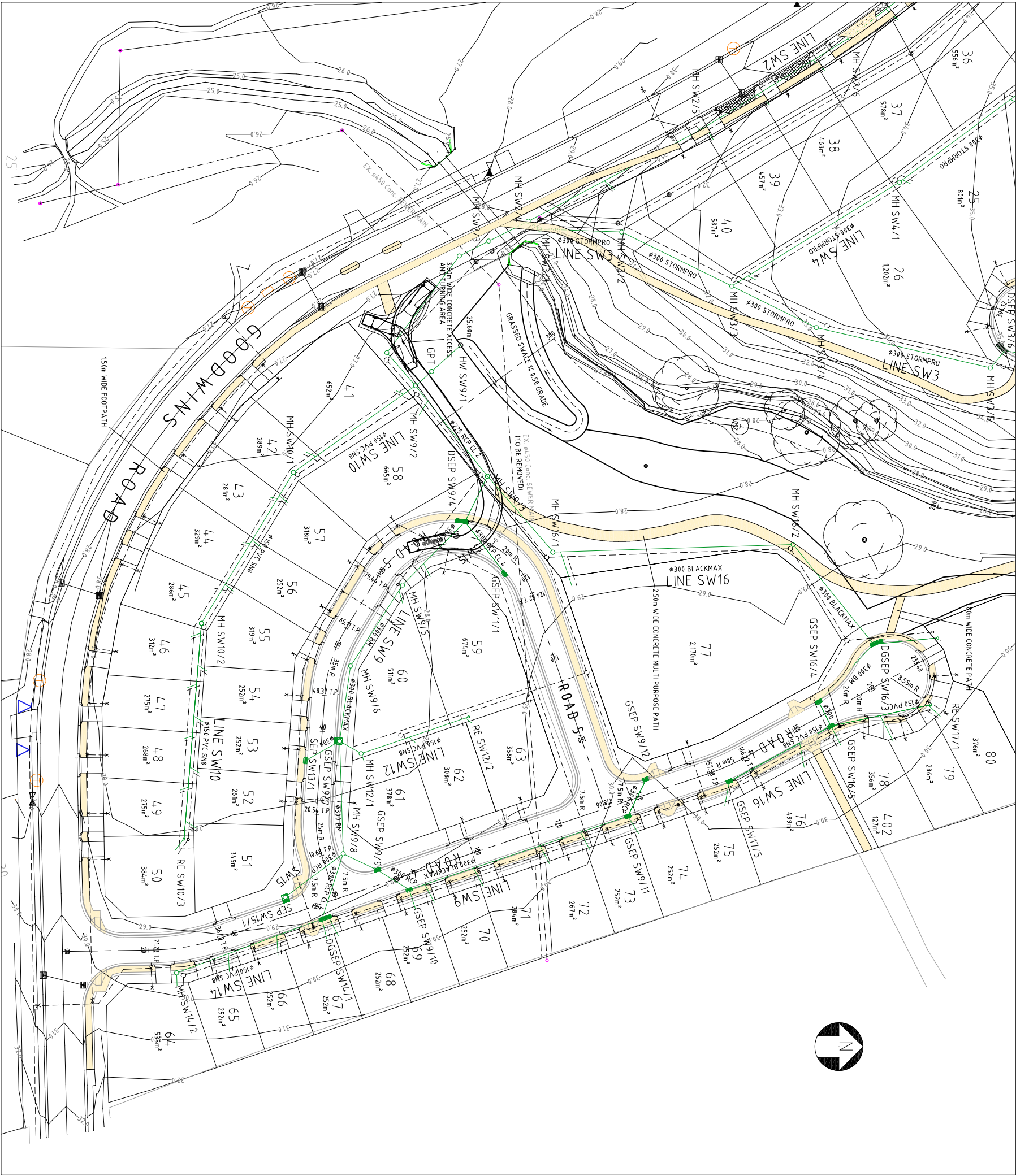
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MARINE
ELECTRICAL

S5/3 MH
Ld = 32.58
In = 30.11
Out = 30.08

S5/3.1 MH
Ld = 32.6
In = 30.18
Out = 30.16

S5/2 MH
Ld = 3
In = 29
Out = 29.96



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CLIENT:			
STAGE C DEVELOPMENTS PTY LTD			
AMENDMENT			
No.	DATE	DWG No.	REFERENCE
A	ISSUED FOR DA	27.05.2024	
B	GENERAL REVISION	12.08.2025	
80 LOT SUBDIVISION			
22 GOODWINS ROAD, CLARENDON VALE			
ROAD & STORMWATER PLAN 2			
SCALE 1:500 (A1) 1:1000 (A3)			
DRAWN	B. STANFORD	DATE	FEB 23
APPROVED			
DRAWING No. 24140/02			
No. OF SHEETS B			

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AMENDMENT			
No.	DATE	DRG No.	REFERENCE
A	ISSUED FOR DA	27/05/2024	

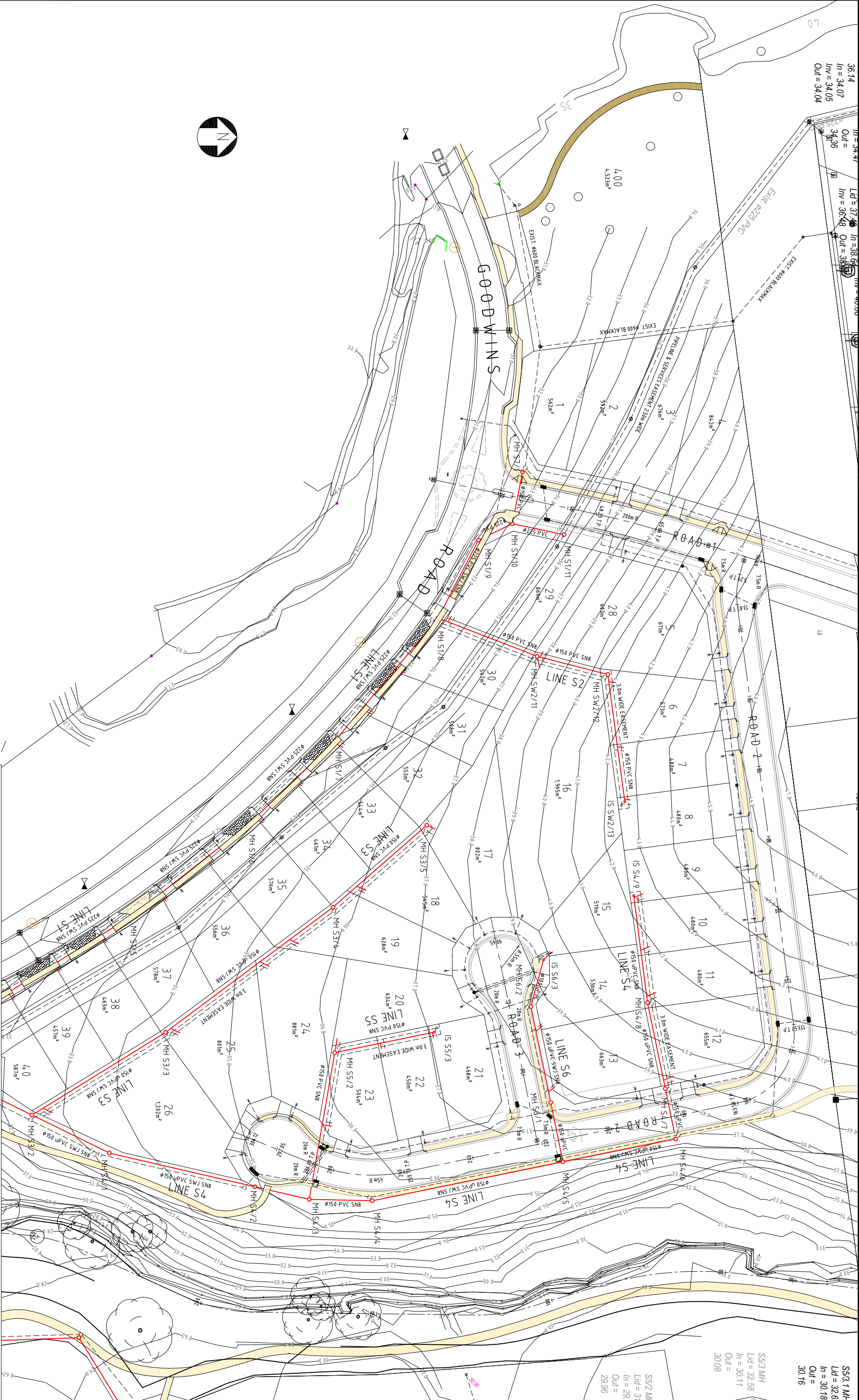
80 LOT SUBDIVISION			
22 GOODWINS ROAD, CLARENDON VALE			
SEWER PLAN 1			
SCALE	1:500 (A1)	1:1000 (A3)	
DRAWN	B. STANFORD	DATE	FEB 23
APPROVED			
DRAWING No.		REVISION	
24140/03		A	
No. OF SHEETS			

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CONSULTING ENGINEERS
23 ANTILL STREET, HOBART, 7000, A.C.N. 009506525
PHONE (03) 6223 5020 FAX (03) 6223 5347

STRUCTURAL
CIVIL
MUNICIPAL
MARINE
ELECTRICAL

CLIENT:

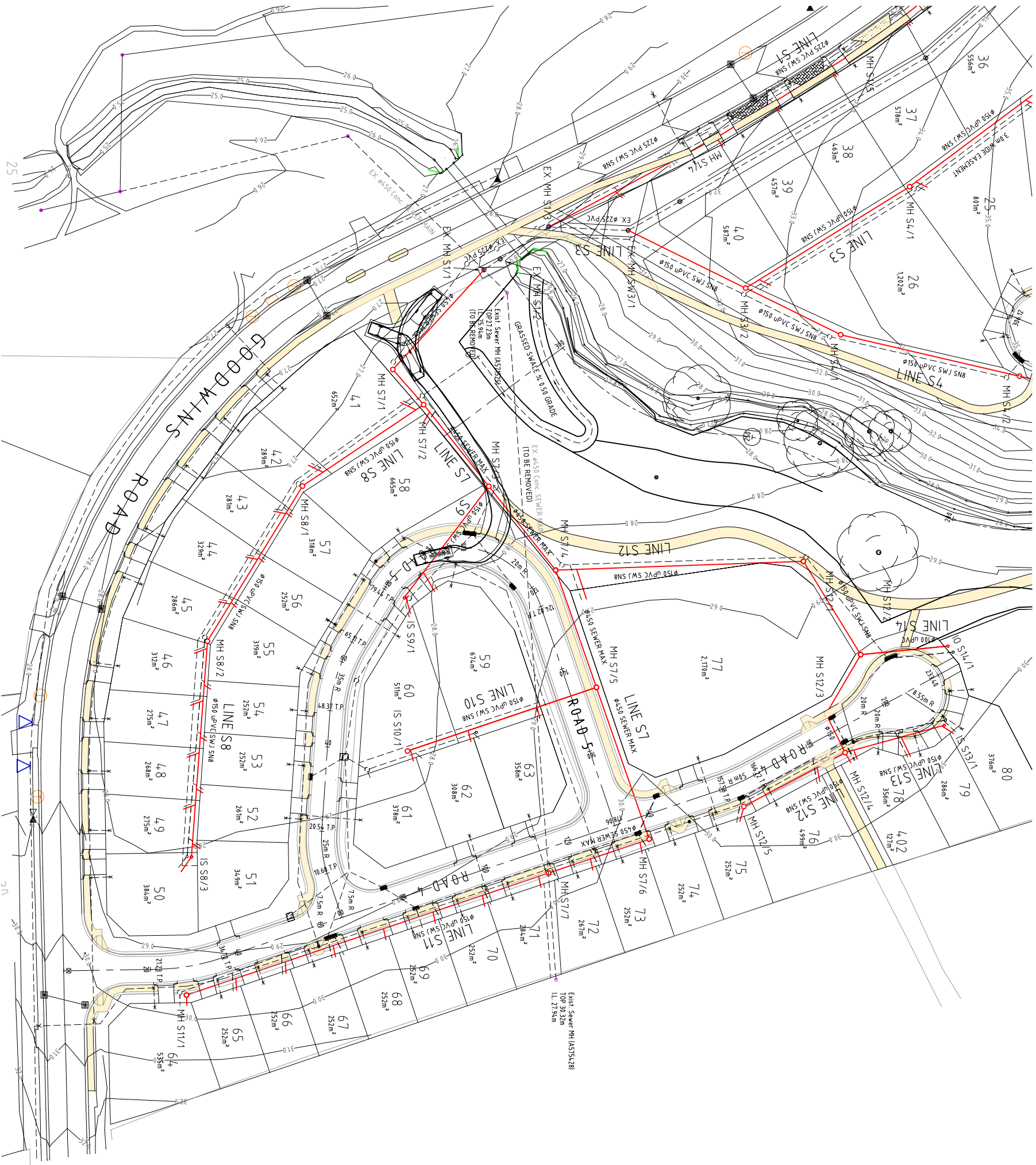
STAGE C DEVELOPMENTS PTY LTD



SS3.1 MH
Lid = 32.6
In = 30.18
Out = 30.16

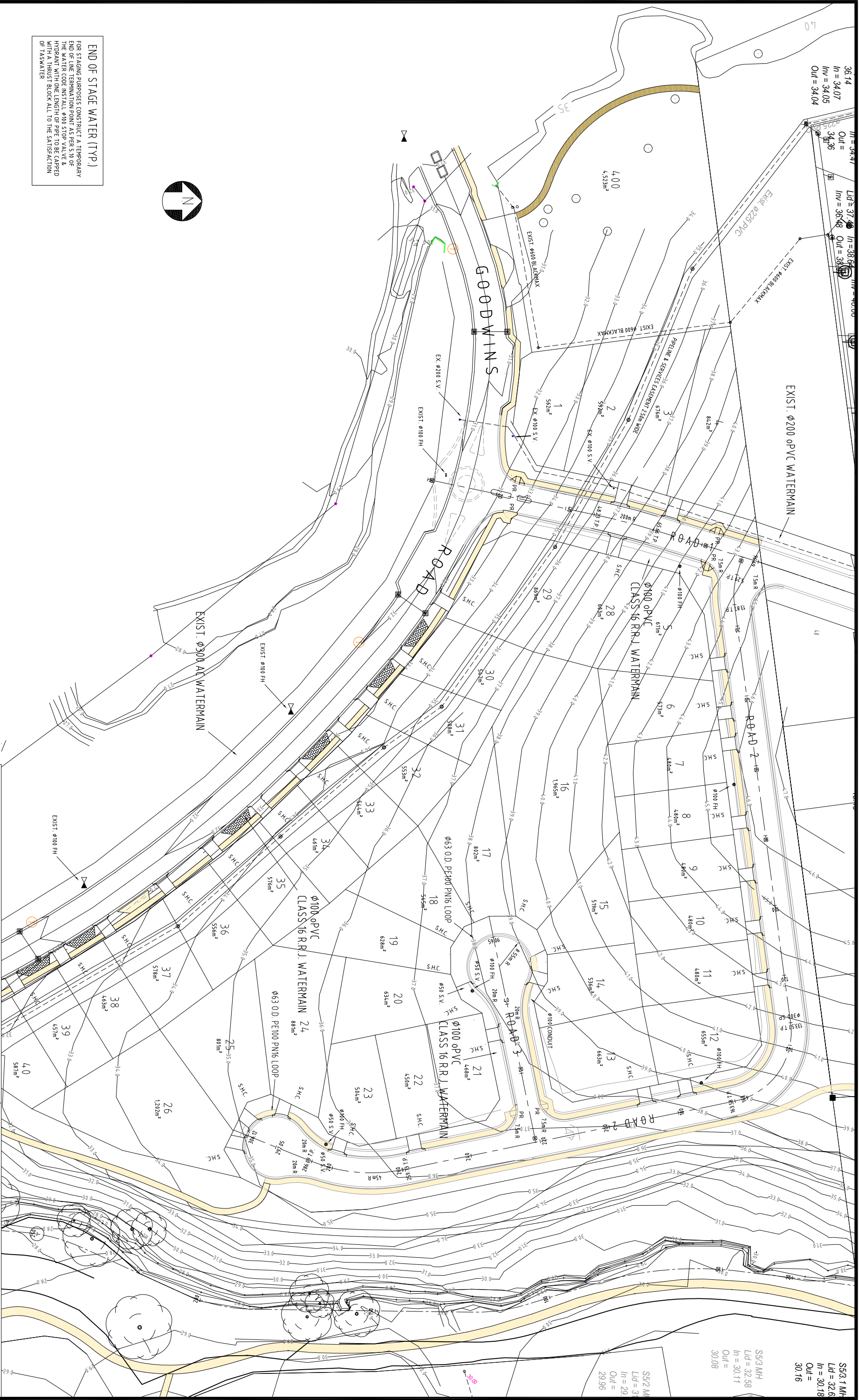
SS3 MH
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In = 30.11
Out = 30.08

SS2 MH
Lid = 3
In = 29
Out = 29.96



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 HUTCHINGS SPURR PTY. LTD. CONSULTING ENGINEERS 23 ANTILL STREET, HOBART, 7000, A.C.N. 009508525 PHONE (03) 6223 5020 FAX (03) 6223 5347			
* STRUCTURAL * CIVIL * MUNICIPAL * MARINE * ELECTRICAL			
AMENDMENT		DATE	DRG No.
A		27.05.2024	
REFERENCE		80 LOT SUBDIVISION 22 GOODWINS ROAD, CLARENDON VALE	
SCALE		1:500 (A1) 1:1000 (A2)	DRAWING No.
DRAWN B. STANFORD		DATE FEB 23	REVISION
APPROVED			24140/04 (A)
No. OF SHEETS			



END OF STAGE WATER (TYP.)
FOR STAGING PURPOSES CONSTRUCT A TEMPORARY
END OF LINE TERMINATION POINT AS PER 5.10 OF
THE WATER CODE INSTALL Ø100 STOP VALVE &
HYDRANT WITH ONE LENGTH OF PIPE TO BE CARPED
WITH A THROUST BLOCK ALL TO THE SATISFACTION
OF TASKWATER



S.H.C. SINGLE HOUSE CONNECTION

SUPPLY AND INSTALLION OF DN25mm (ID 20mm) HDPE PN16 SDP11
PROPERTY WATER CONNECTION WITH ID 20mm SENSUS IPERL WATER
METER PER TASKWATER ENDORSED STANDARD PLANS
BELOW GROUND LOW HAZARD WATER CONNECTION BY TASKWATER
AT DEVELOPERS EXPENSE

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ANY OTHER DOCUMENT WITHOUT THE PRIOR WRITTEN CONSENT OF
HUTCHINGS SPURR PTY. LTD.

CLIENT: STAGE C DEVELOPMENTS PTY LTD			
AMENDMENT			
No.	DATE	DOC No.	REFERENCE
A	ISSUED FOR DA	27/05/2024	
80 LOT SUBDIVISION			
22 GOODWINS ROAD, CLARENDON VALE			
WATER RETICULATION PLAN 1			
SCALE 1:500 (A1) 1:1000 (A3)			
DRAWN	B. STANFORD	DATE	FEB 23
APPROVED			
24140/05			
No. OF SHEETS			

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STRUCTURAL
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MUNICIPAL
MARINE
ELECTRICAL

REVISION

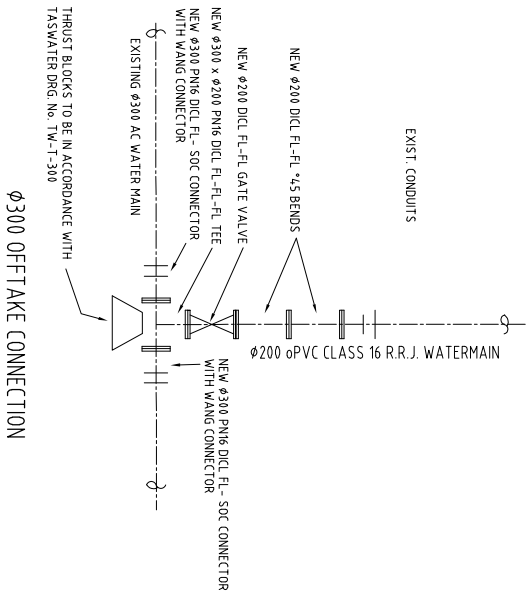
PROPERTY WATER CONNECTIONS LOCATED WITHIN AN AREA SUBJECTED TO TRAFFIC/ALBE LOADS MUST BE INSTALLED IN A CLASS B+ METER BOX AND SURROUND.

S.H.C. SINGLE HOUSE CONNECTION

SUPPLY AND INSTALLATION OF DN25mm (ID 20mm) HDPE PN16 SDR11 PROPERTY WATER CONNECTION WITH ID 20mm SENSUS IPERL WATER METER PER TASWATER ENDORSED STANDARD PLANS BELOW GROUND LOW HAZARD WATER CONNECTION BY TASWATER AT DEVELOPERS EXPENSE

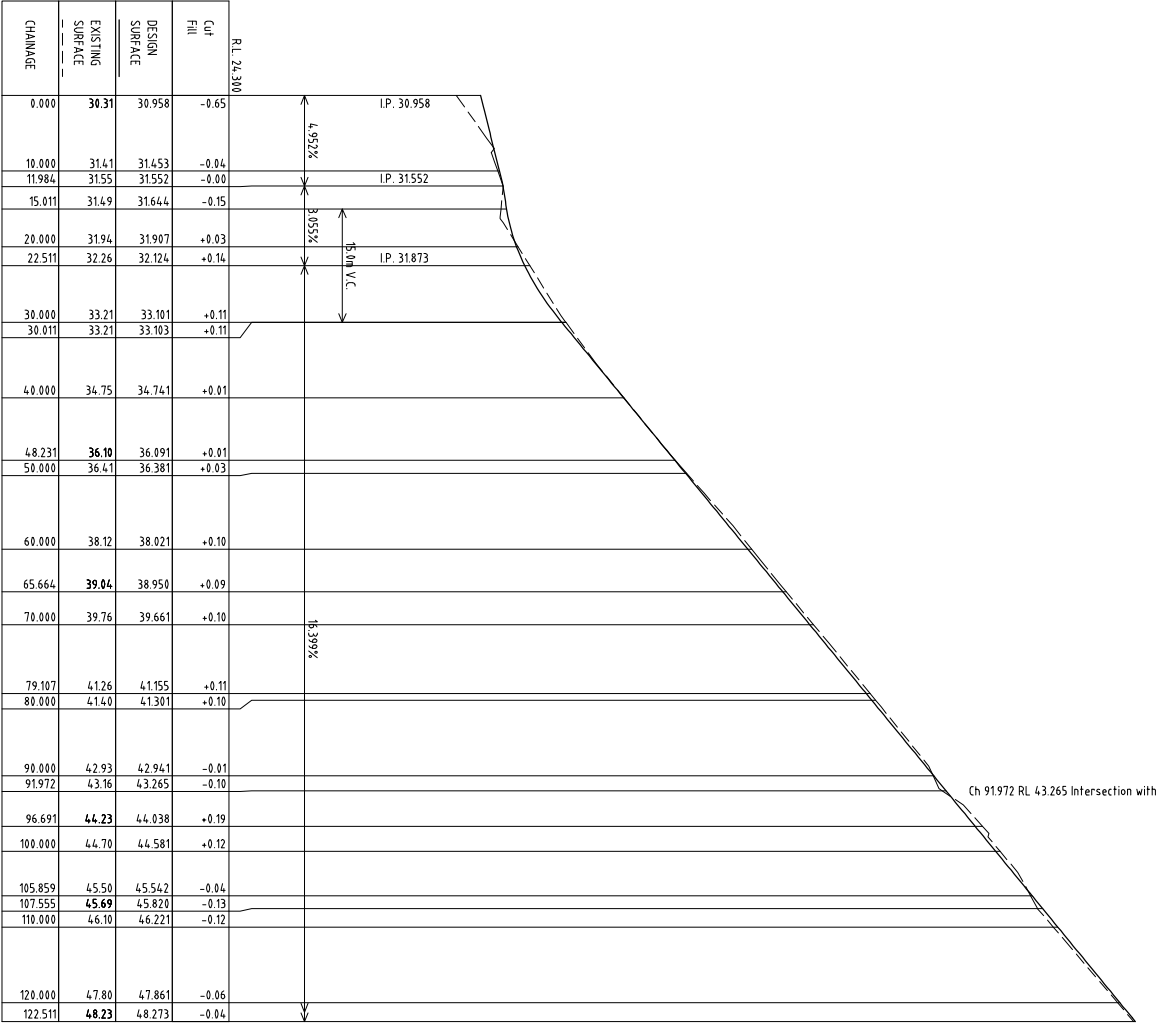


WATERMAIN IN FILL PLACE AND COMPACT STRUCTURAL FILL PRIOR TO TRENCH EXCAVATION MAX 150MM LAYERS. 95% MODIFIED COMPACTION TO A.S 1289



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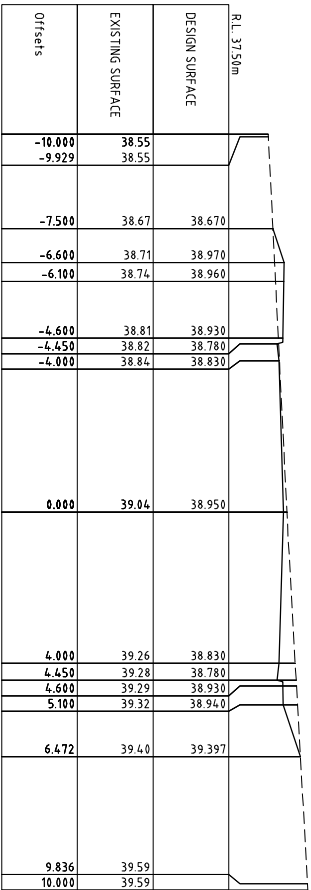
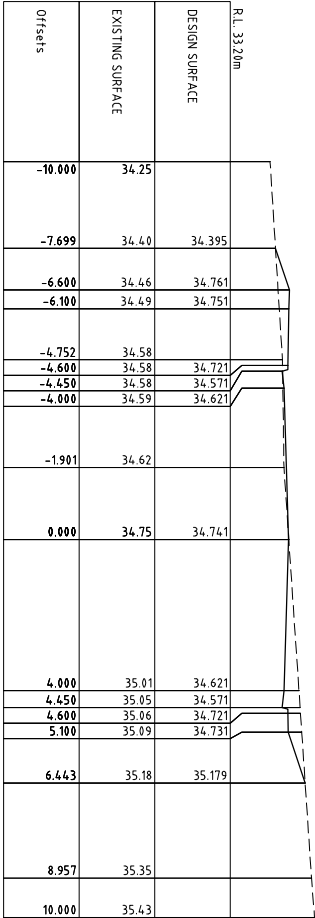
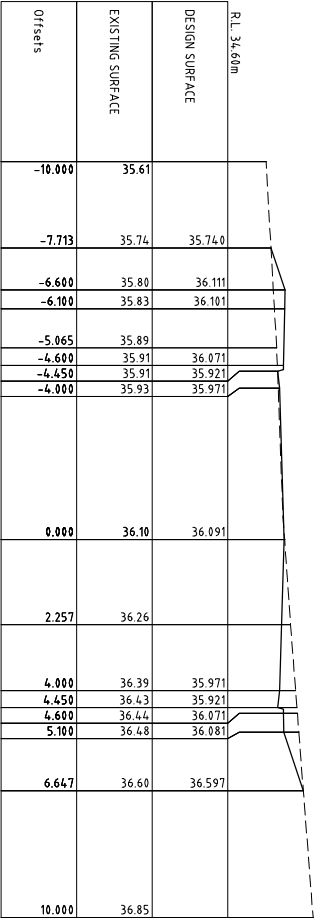
CLIENT:			
STAGE C DEVELOPMENTS PTY LTD			
80 LOT SUBDIVISION			
22 GOODWIN'S ROAD, CLARENDON VALE			
WATER RETICULATION PLAN 2			
SCALE 1:500 (A1) 1:1000 (A3)			
DRAWN B. STANFORD DATE FEB 23			
APPROVED			
24140/06			
No. OF SHEETS			
HUTCHINGS SPURR PTY. LTD.			
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STRUCTURAL			
CIVIL			
MUNICIPAL			
MARINE			
ELECTRICAL			



LONGITUDINAL SECTION

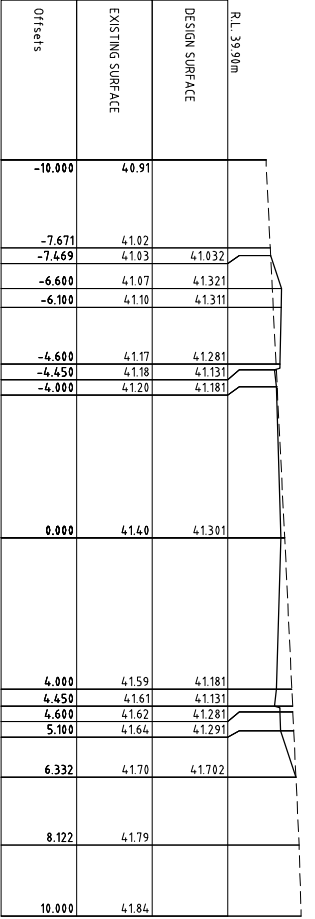
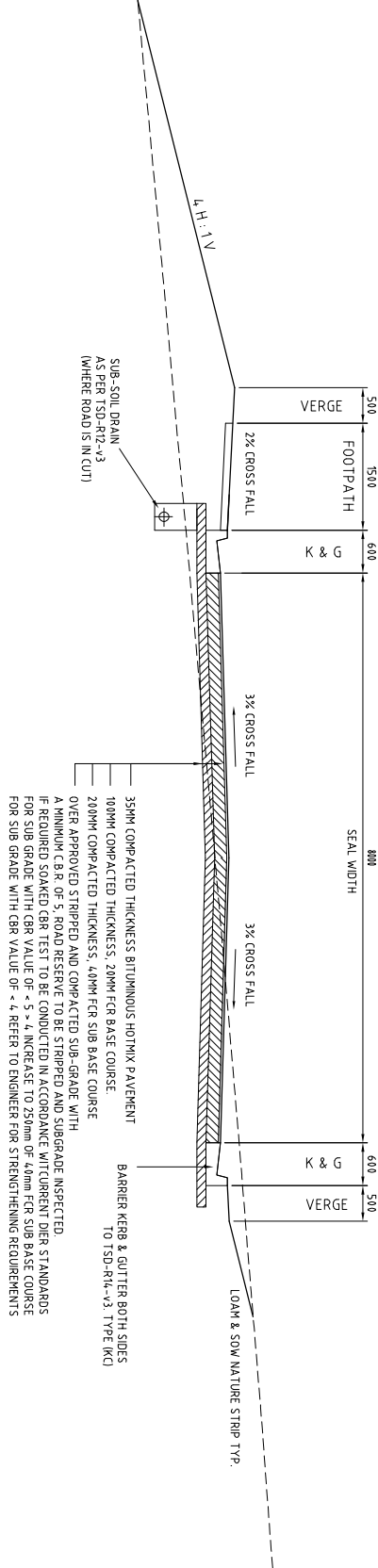
R O A D 1

SCALES: HORIZ 1:500 (A1)
VERT 1:100 (A1)



TYPICAL CROSS SECTION

R O A D 5
NOT TO SCALE



CROSS SECTIONS
ROAD 1
SCALES: 1:100 (A1)

Ch 60.000

Ch 65.664 T.P.

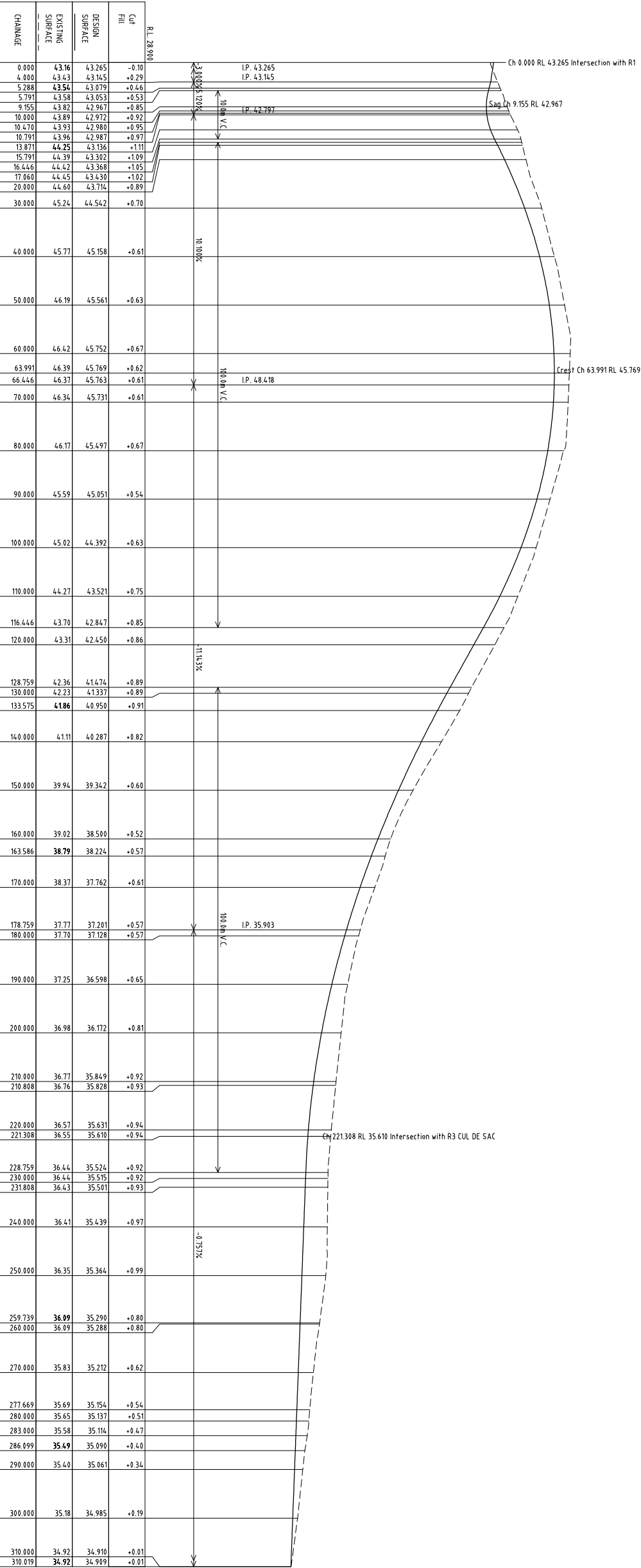
Ch 96.691

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CLIENT:				STAGE C DEVELOPMENTS PTY LTD			
AMENDMENT				REFERENCE			
No.	ISSUED FOR DA	DATE	27/05/2024	DRG No.			
A							
80 LOT SUBDIVISION				22 GOODOWNS ROAD, CLARENDON VALE			
ROAD 1 LONG & CROSS SECTIONS				SCALE 1:500 (A1) 1:1000 (A3)			
DRAWN B. STANFORD				DATE FEB 23			
APPROVED				DRAWING No. 24140/07			
				REVISION (A)			

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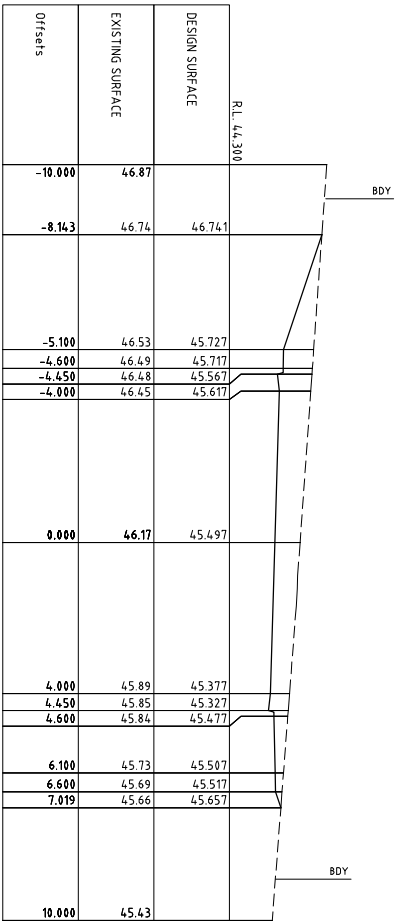
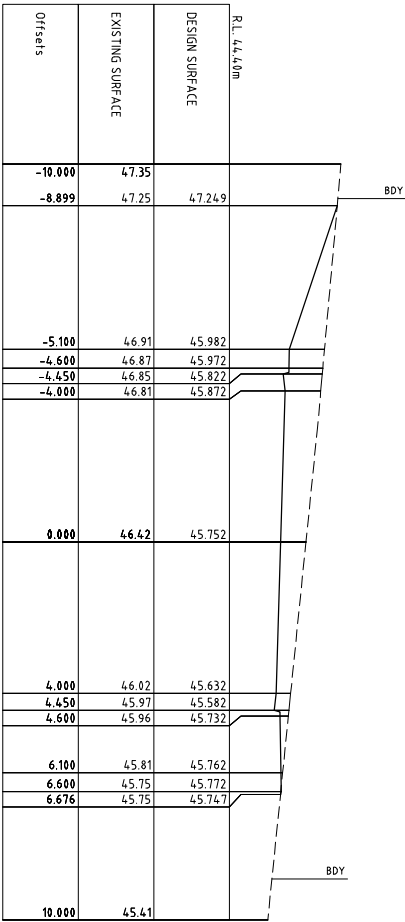
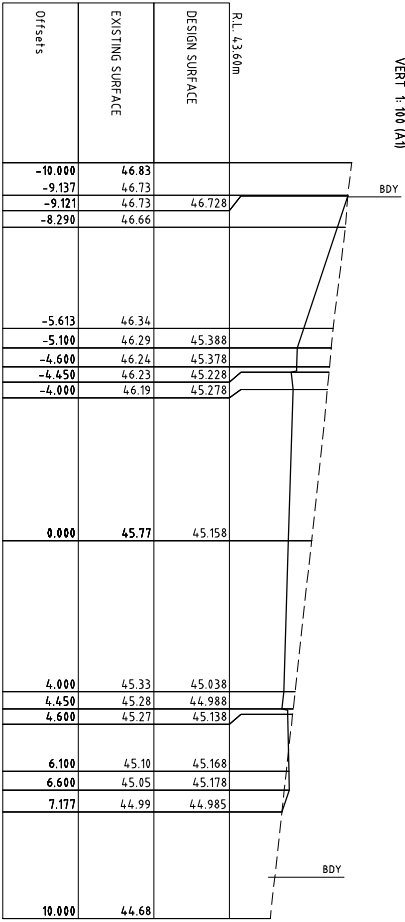
STRUCTURAL
CIVIL
MECHANICAL
ELECTRICAL



LONGITUDINAL SECTION

R O A D 2

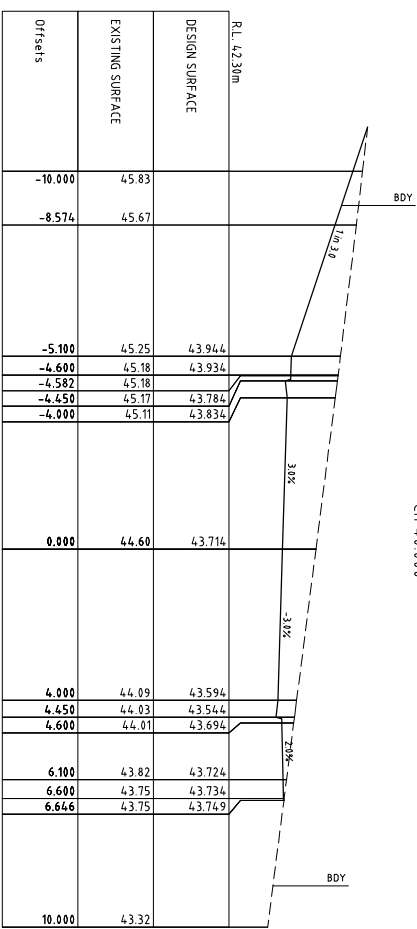
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VERT 1:100 (A1)



CROSS SECTIONS

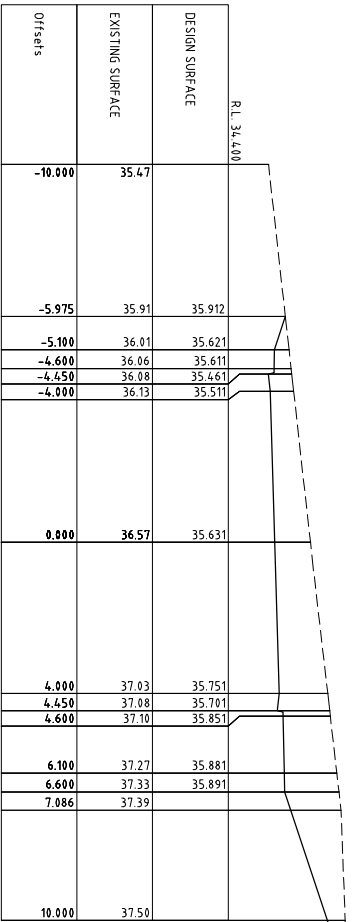
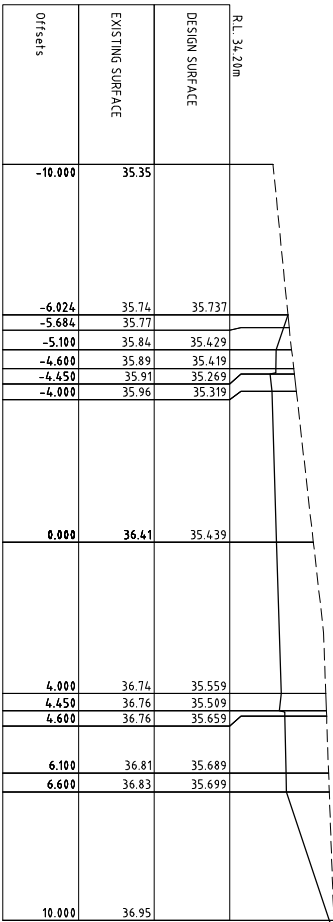
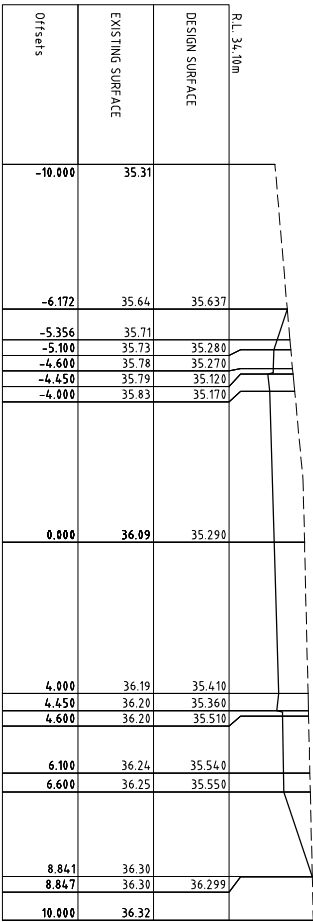
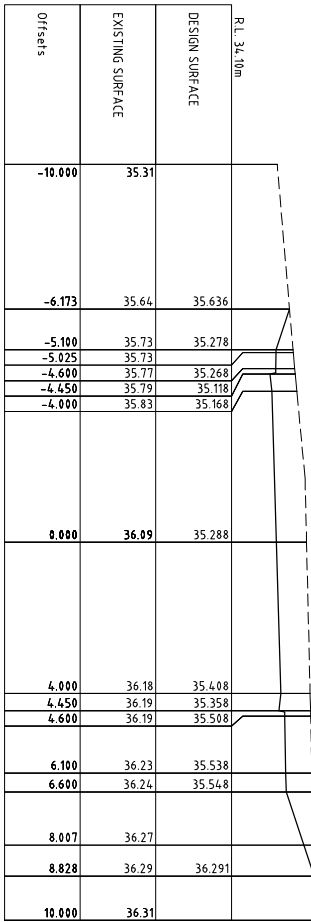
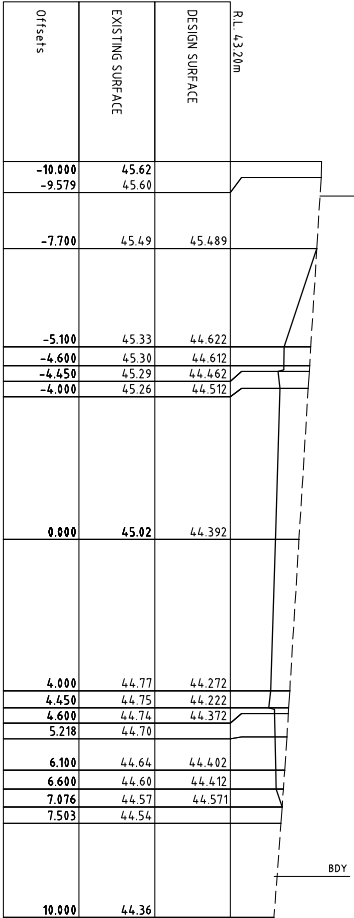
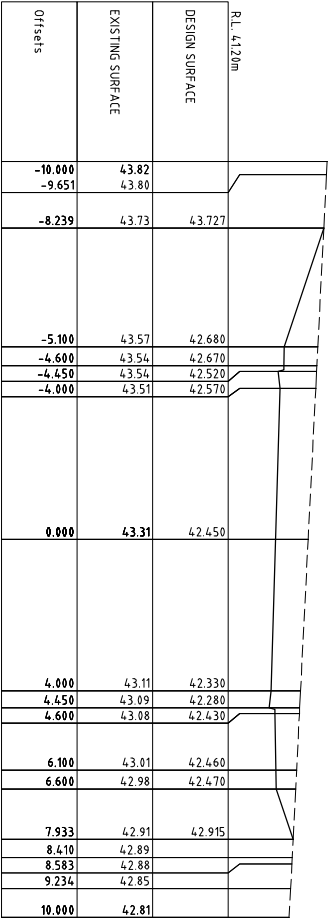
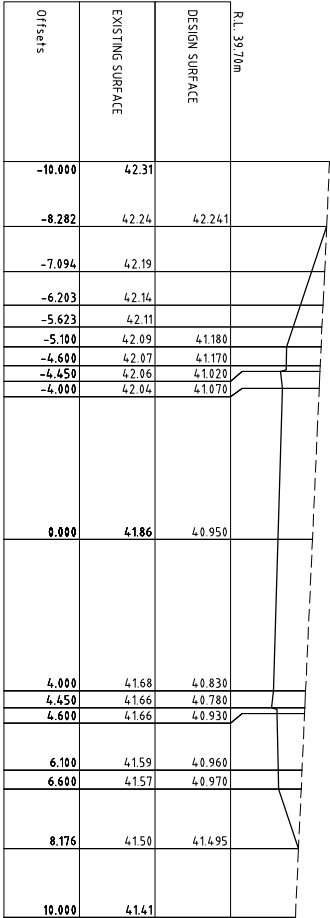
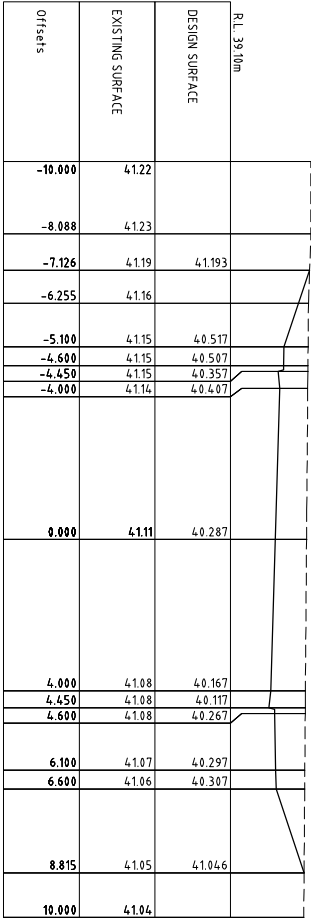
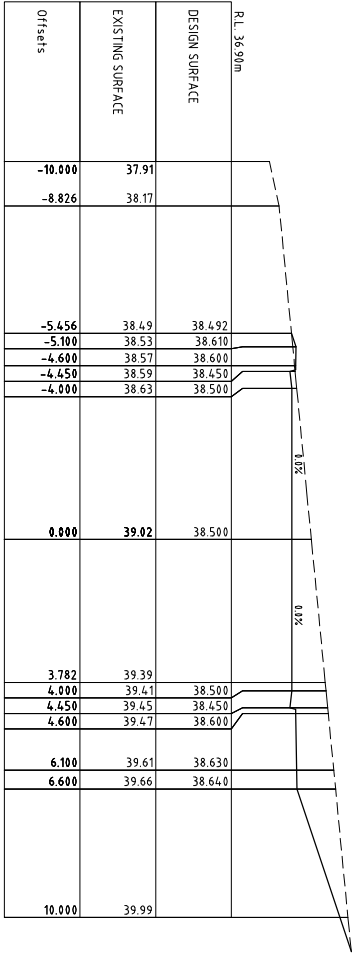
ROAD 2

SCALES 1:100 (A1)



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CLIENT:			
STAGE C DEVELOPMENTS PTY LTD			
			
HUTCHINGS SPURR PTY. LTD. 23 ANTILL STREET, HOBART, 7000, A.C.N. 009508525 PHONE (03) 6223 5020 FAX (03) 6223 5347			
80 LOT SUBDIVISION 22 GOODWINS ROAD, CLARENDON VALE ROAD 2 LONG & CROSS SECTIONS			
No.		AMENDMENT	
A		ISSUED FOR DA	
DATE		27.05.2024	
Dwg No.			
REFERENCE			
SCALE		1:500 (A1) 1:1000 (A3)	
DRAWN		B. STANFORD	
DATE		FEB 23	
APPROVED			
DRAWING No.		24140/08	
REVISION		(A)	
No. OF SHEETS			



CROSS SECTIONS
ROAD 2
SCALE 1:100 (A1)

Ch 163.586 T.P.

Ch 180.000

Ch 200.000

Ch 240.000

Ch 259.739 T.P.

Ch 260.000

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CLIENT:

STAGE C DEVELOPMENTS PTY LTD

80 LOT SUBDIVISION
22 GOODWINS ROAD, CLARENDON VALE
ROAD 2 CROSS SECTIONS 2
SCALE 1:500 (A1) 1:1000 (A3)
DRAWN B. STANFORD DATE FEB 23
APPROVED

HUTCHINGS SPURR PTY. LTD.
CONSULTING ENGINEERS
23 ANTILL STREET, HOBART, 7000, A.C.N. 009080525
PHONE (03) 6223 5020 FAX (03) 6223 5347

STRUCTURAL
CIVIL
MARINE
ELECTRICAL

No. OF SHEETS

24140/09

A

Ch 286.099 T.P.Ch 280.000

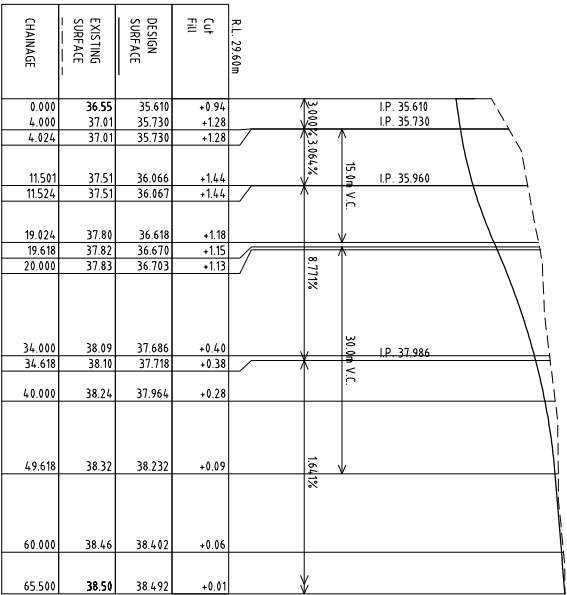
ROAD 2
SCALES: 1:100 (A1)

SCALES: 1: 100 (A1)

SCALES: 1: 100 (A1)

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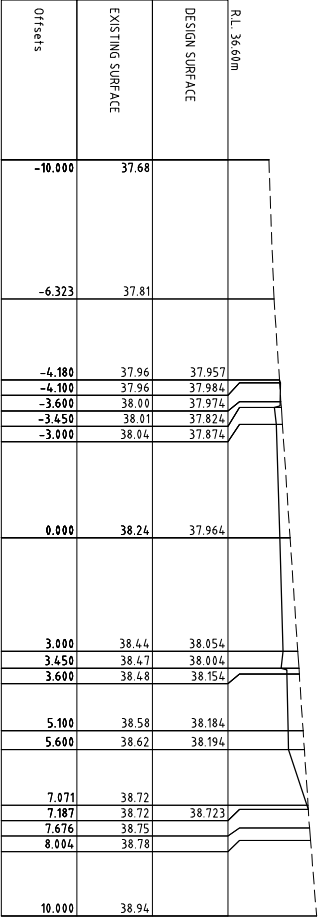
CLIENT:	HUTCHINGS SPURR PTY. LTD. CONSULTING ENGINEERS 23 ANTILL STREET, HOBART, 7000, A.C.N. 008508525 PHONE (03) 6223 5020 FAX (03) 6223 5347 ▲ STRUCTURAL ▲ CIVIL ▲ MECHANICAL ▲ ELECTRICAL ▲ MARINE			
	STAGE C DEVELOPMENTS PTY LTD			
No.	AMENDMENT	DATE	DRG No.	REFERENCE
A	ISSUED FOR DA	27.05.2024		80 LOT SUBDIVISION 22 GOODWIN ROAD, CLARENDON VALE ROAD 2 CROSS SECTIONS. 3
				SCALE 1:500 (A1) 1:1000 (A3)
				DRAWN B. STANFORD DATE FEB '23
				APPROVED
				DRAWING No. 24140/10
				REVISION (A)
				No. OF SHEETS



LONGITUDINAL SECTION

ROAD 3

SCALE: HORIZ 1:500 (A1)
VERT 1:100 (A1)

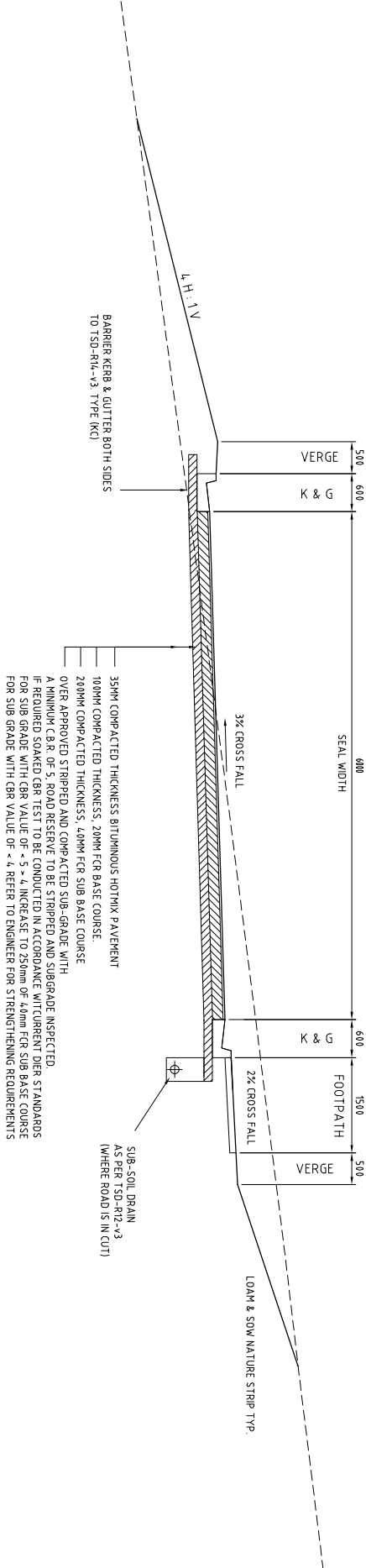


Ch 40.000

CROSS SECTIONS

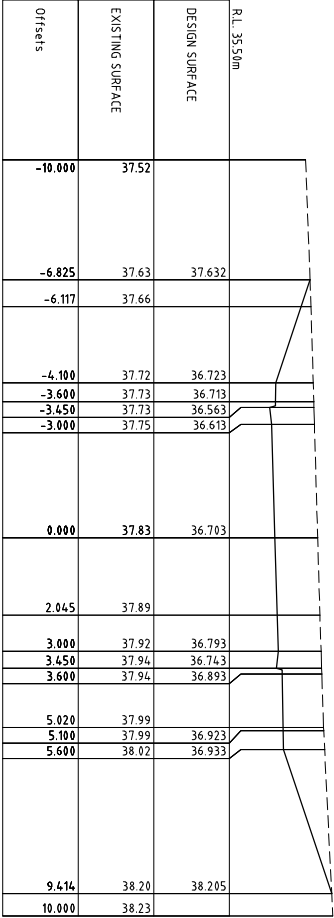
ROAD 3

SCALE: 1:100 (A1)



TYPICAL CROSS SECTION

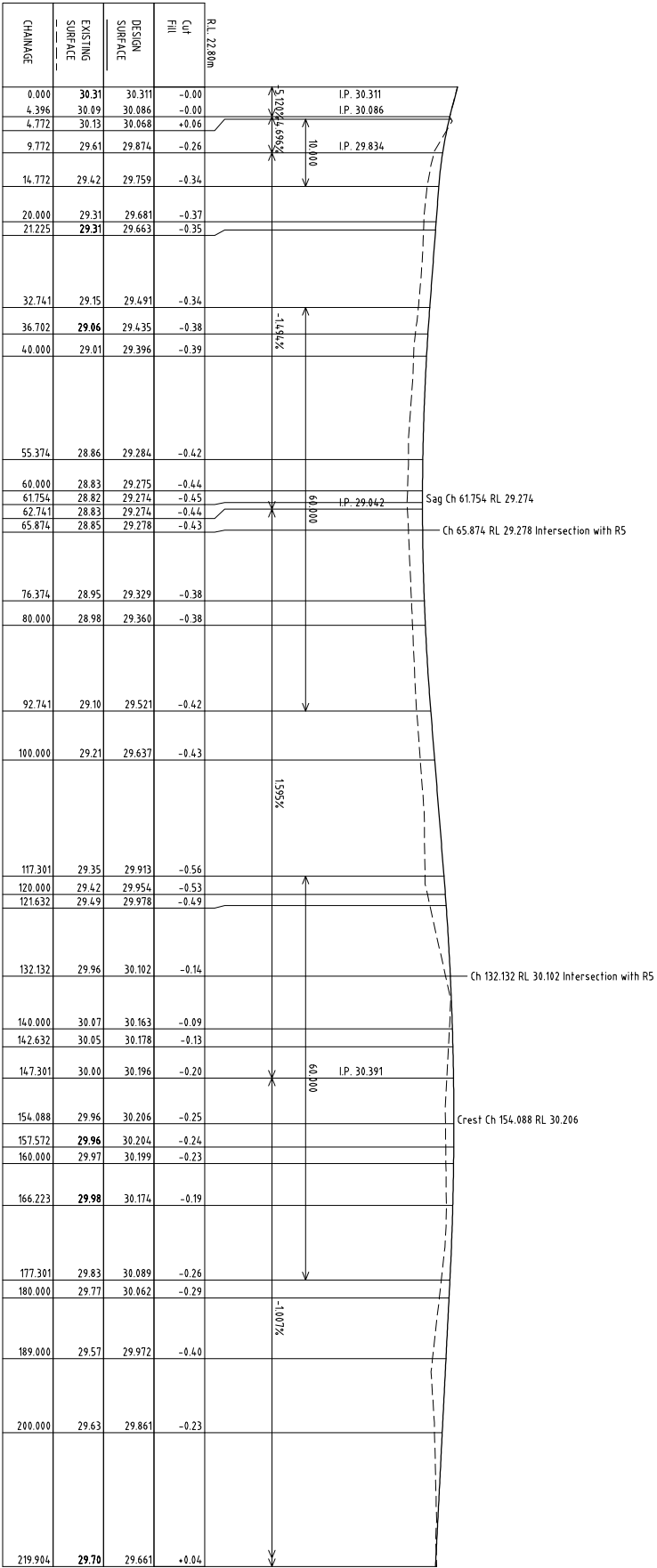
ROAD 3
NOT TO SCALE



Ch 20.000

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AMENDMENT				REFERENCE				80 LOT SUBDIVISION				DRAWING No.			
A				27.05.2024				22 GOODWINS ROAD, CLARENDON VALE				1:500 (A1) 1:1000 (A3)			
								ROAD 2 LONG & CROSS SECTIONS				DRAWN B. STANFORD			
												DATE FEB 23			
												APPROVED			
												24140/11			
												No. OF SHEETS			
												(A)			

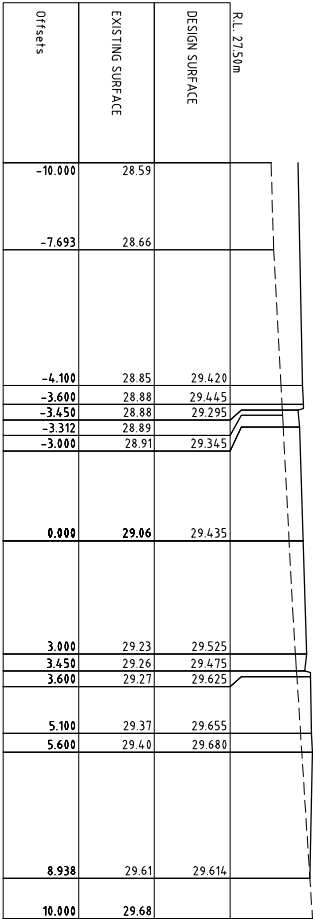


LONGITUDINAL SECTION

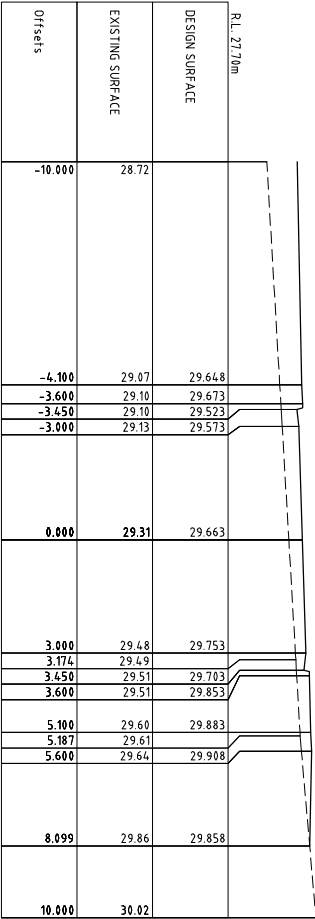
ROAD 4

SCALE: HORIZ 1:500 (A1)

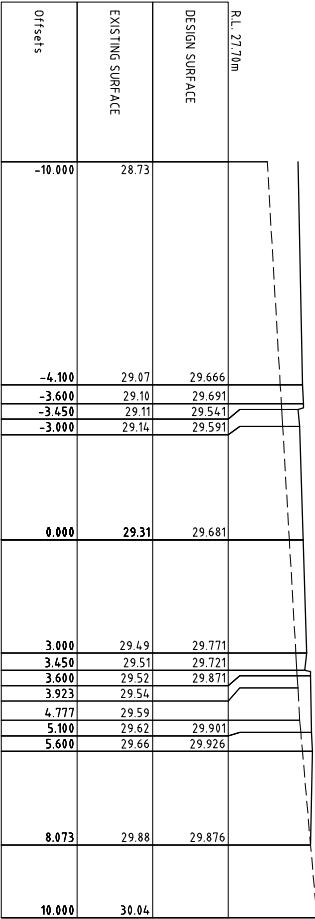
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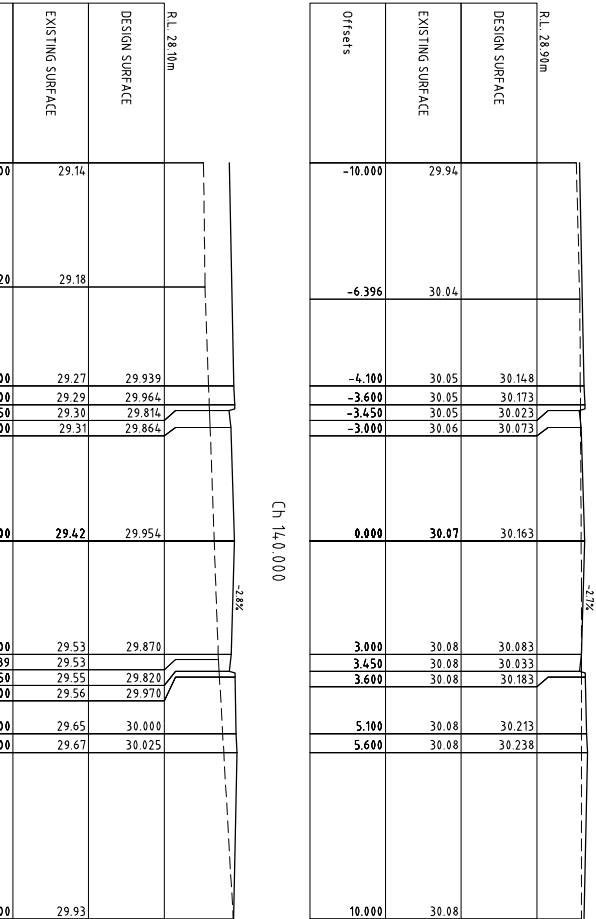
Ch 36.702 I.P.



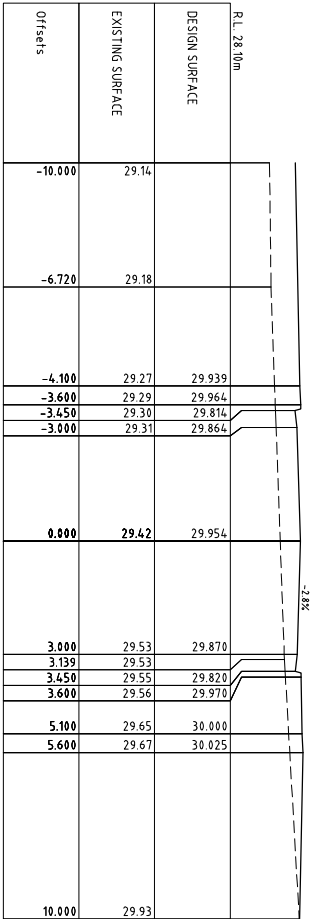
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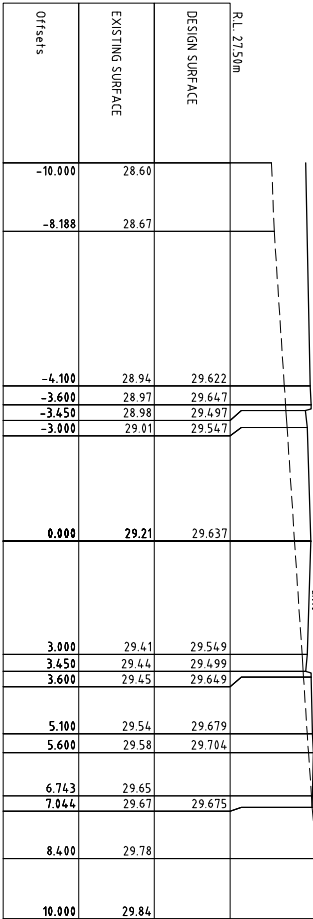
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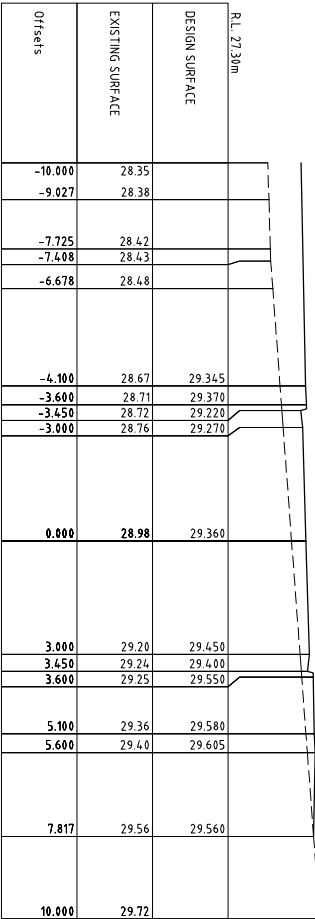
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Ch 120.000



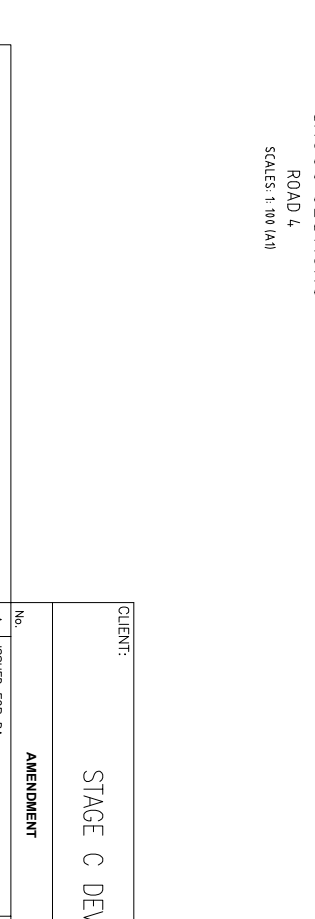
Ch 100.000



Ch 80.000

CROSS SECTIONS
ROAD 4

SCALE: 1:100 (A1)

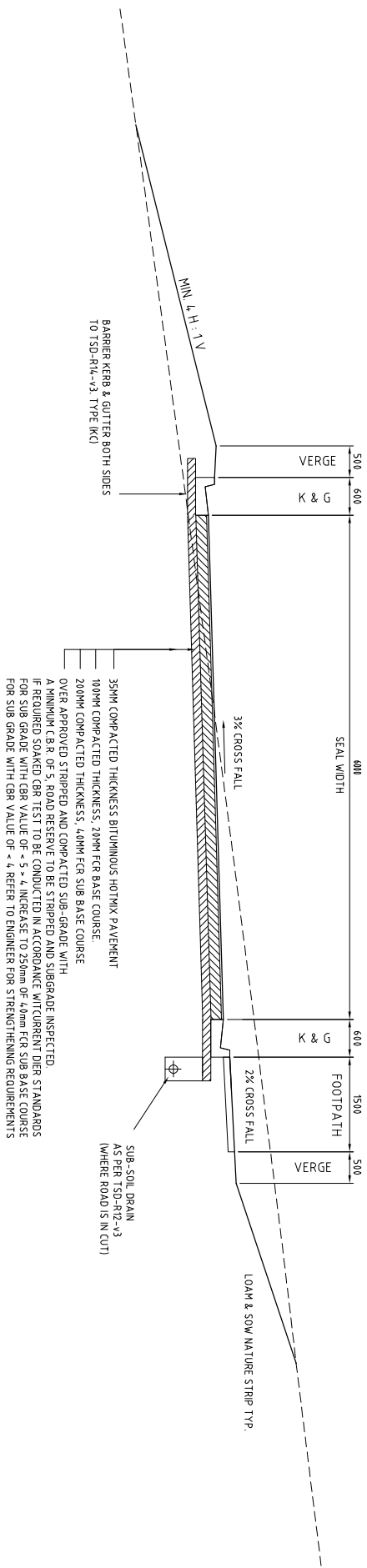


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CLIENT:			
STAGE C DEVELOPMENTS PTY LTD			
80 LOT SUBDIVISION			
22 GOODOWNS ROAD, CLARENDON VALE			
ROAD 4 LONG & CROSS SECTIONS			
SCALE 1:500 (A1) 1:1000 (A3)			
DRAWN B. STANFORD DATE FEB 23			
APPROVED			
DRAWING No. 24140/12			
REVISION			
No. OF SHEETS			

HUTCHINGS SPURR PTY. LTD.
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PHONE (03) 6223 5020 FAX (03) 6223 5347

STRUCTURAL
CIVIL
MUNICIPAL
MARINE
ELECTRICAL



TYPICAL CROSS SECTION

ROAD 4
NOT TO SCALE

Offsets	EXISTING SURFACE	DESIGN SURFACE	RL 28.80m
-10.000	29.88		
-6.306	29.97		
-4.100	29.97	30.159	
-3.600	29.97	30.184	
-3.450	29.97	30.034	
-3.000	29.97	30.084	
0.000	29.98	30.174	
3.000	29.97	30.099	
3.450	29.97	30.049	
3.600	29.97	30.199	
5.100	29.97	30.229	
5.600	29.96	30.254	
10.000	29.95		

Ch 166.223 T.P.

Offsets	EXISTING SURFACE	DESIGN SURFACE	R. L. 28.90m
-10.000	29.93		
-9.500	29.94		
-4.100	29.96	30.184	
-3.600	29.96	30.209	
-3.450	29.96	30.059	
-3.000	29.96	30.109	
0.000	29.97	30.199	
3.000	29.98	30.123	
3.450	29.98	30.073	
3.600	29.98	30.223	
5.100	29.99	30.253	
5.600	29.99	30.278	
5.991	29.99		
10.000	29.98		

CROSS SECTIONS

ROAD 4

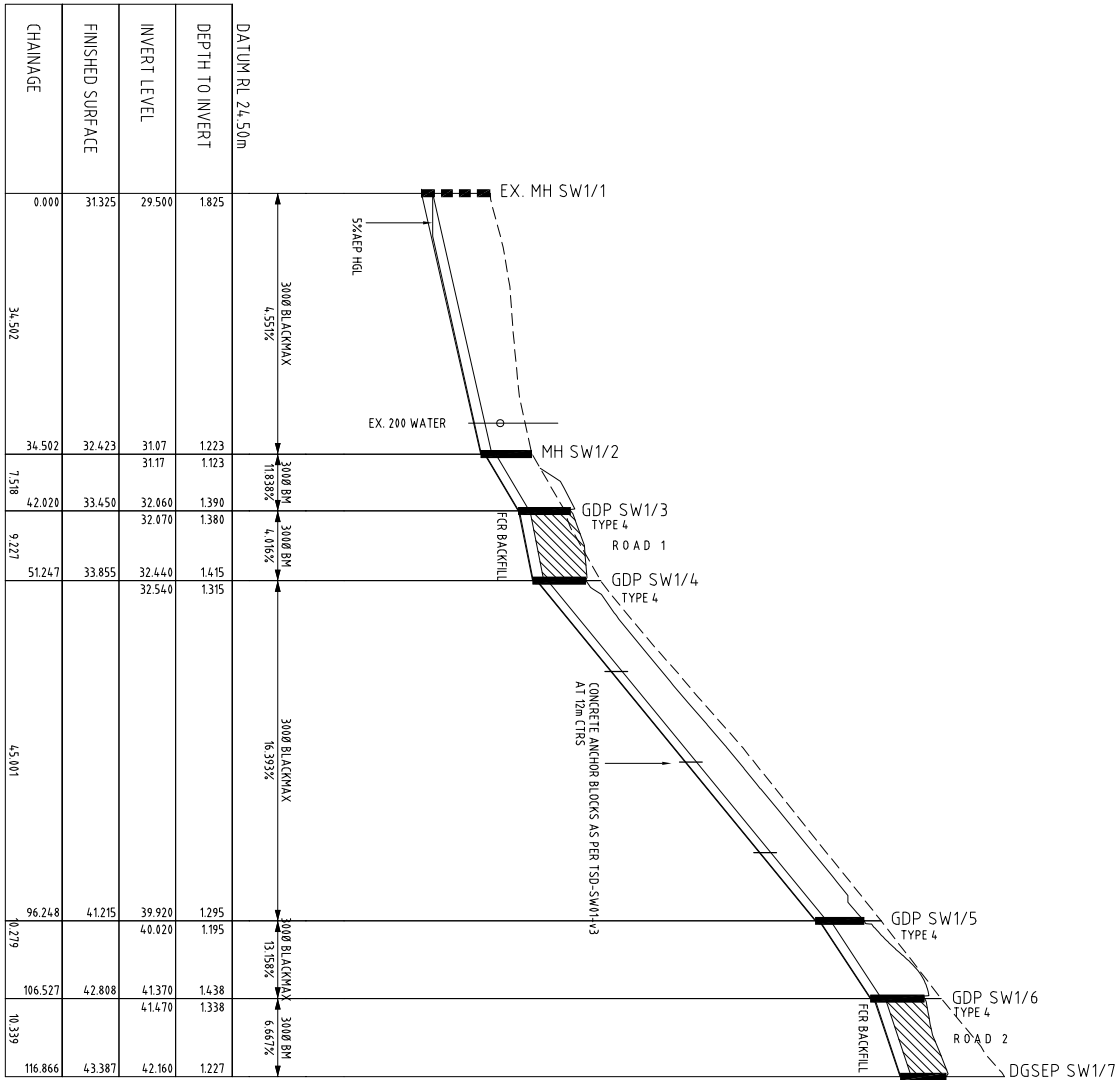
SCALES: 1: 100 (A1)

Offsets	EXISTING SURFACE	DESIGN SURFACE	RL - 28.50m
-10.000	29.57		
-5.377	29.63		
-4.100	29.66	30.047	
-3.600	29.68	30.072	
-3.450	29.68	29.922	
-3.000	29.69	29.972	
0.000	29.77	30.062	
3.000	29.85	29.990	
3.100	29.86		
3.450	29.85	29.940	
3.600	29.85	30.090	
5.100	29.85	30.120	
5.600	29.85	30.145	
10.000	29.85		

Offsets	EXISTING SURFACE	DESIGN SURFACE	RL 28.90m
-10.000	29.93		
-4.100	29.95	30.189	
-3.600	29.95	30.214	
-3.450	29.95	30.064	
-3.000	29.95	30.114	
0.000	29.96	30.204	
3.800	29.97	30.127	
3.450	29.98	30.077	
3.600	29.98	30.227	
5.100	29.98	30.257	
5.600	29.98	30.282	
8.783	29.99		
10.000	29.99		

Ch 157.572

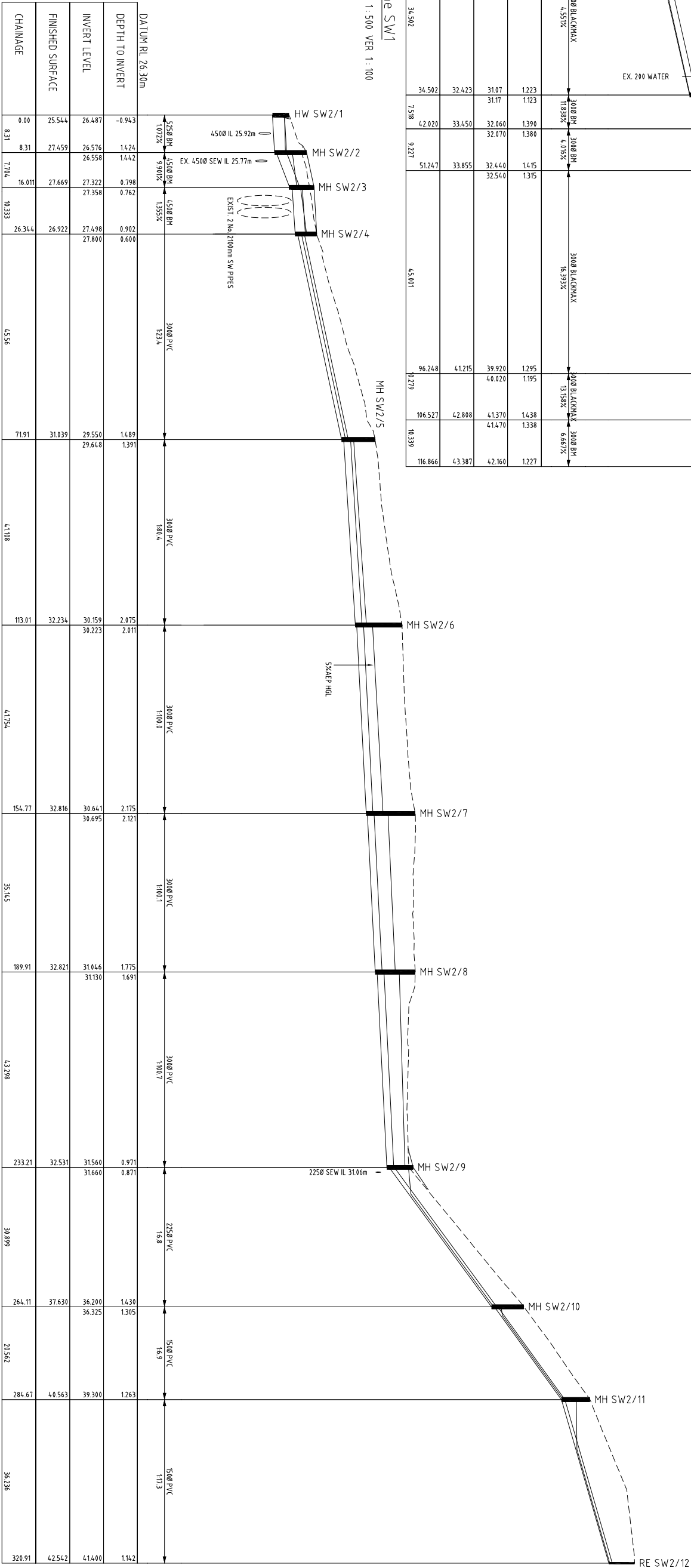
CLIENT:				 HUTCHINGS SPURR PTY. LTD. CONSULTING ENGINEERS 23 ANTILL STREET, HOBART, 7000. A.C.N. 009308525 PHONE (03) 8223 5020 FAX (03) 8223 5347			
STAGE C DEVELOPMENTS PTY LTD							
No.	AMENDMENT	DATE	DRG No.	REFERENCE			80 LOT SUBDIVISION
A	ISSUED FOR DA	27.05.2024		22 GOODWINS ROAD, CLARENDON VALE			
				ROAD 4 CROSS SECTIONS 2			
				SCALE 1:500 (A1) 1:1000 (A3)			
				DRAWN B. STANFORD DATE FEB '23			
				APPROVED			
				DRAWING No.			24140/13
				No. OF SHEETS			REVISION (A)



DATUM RL 24.50m	1.825	1.223	1.390	1.315	1.295	1.195	1.438	1.338	1.227
DEPTH TO INVERT	29.500	31.07	32.060	32.070	32.440	32.540	41.370	41.470	42.160
INVERT LEVEL	31.325	31.17	32.060	32.070	32.440	32.540	41.370	41.470	42.160
FINISHED SURFACE	34.502	34.502	34.502	34.502	34.502	34.502	34.502	34.502	34.502
CHAINAGE	0.000	34.502	42.020	51.247	96.248	106.527	116.866		

Line SW1

SCALES HOR 1:500 VER 1:100



DATUM RL 26.30m	-0.943	1.424	0.798	0.762	0.902	0.600	1.489	1.391	2.075	2.011	2.175	2.121	1.775	1.691	0.971	0.871	1.430	1.305	1.263	1.142
DEPTH TO INVERT	26.487	26.576	27.322	27.358	27.498	27.800	29.550	29.648	30.159	30.223	30.641	30.695	31.046	31.130	31.560	31.660	36.200	36.325	39.300	41.400
INVERT LEVEL	25.544	27.459	27.669	27.669	26.922	27.800	29.550	29.648	30.159	30.223	30.641	30.695	31.046	31.130	31.560	31.660	36.200	36.325	39.300	41.400
FINISHED SURFACE	8.31	8.31	16.011	16.011	26.344	27.800	29.550	29.648	30.159	30.223	30.641	30.695	31.046	31.130	31.560	31.660	36.200	36.325	39.300	41.400
CHAINAGE	0.00	8.31	16.011	16.011	26.344	27.800	29.550	29.648	30.159	30.223	30.641	30.695	31.046	31.130	31.560	31.660	36.200	36.325	39.300	41.400

Line SW2

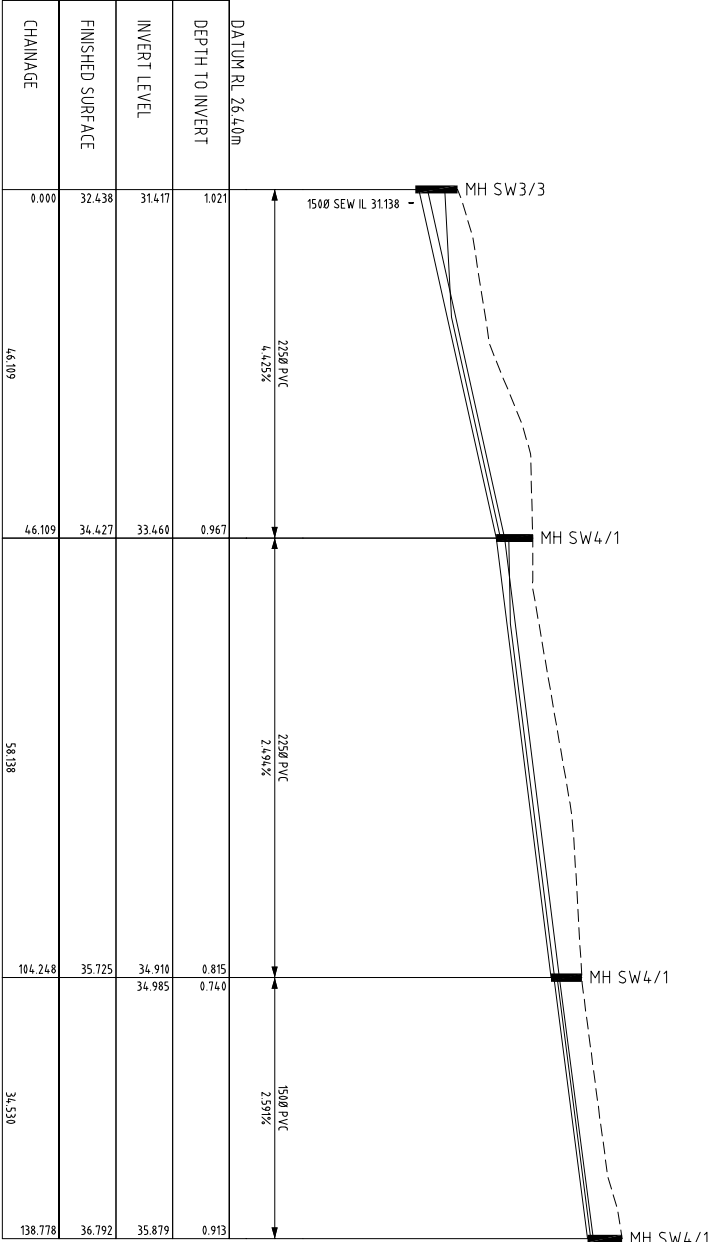
SCALES HOR 1:500 VER 1:100

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AMENDMENT				REFERENCE			
No.	ISSUED FOR DA	DATE	DRG No.	80 LOT SUBDIVISION			
A	27.05.2024			22 GOODWINS ROAD, CLARENDON VALE			
SCALE				STORMWATER LONG SECTIONS 1			
DRAWN				AS SHOWN			
APPROVED				DATE JUNE '24			
No. OF SHEETS				DRAWING No. 24140/16			
				REVISION (A)			

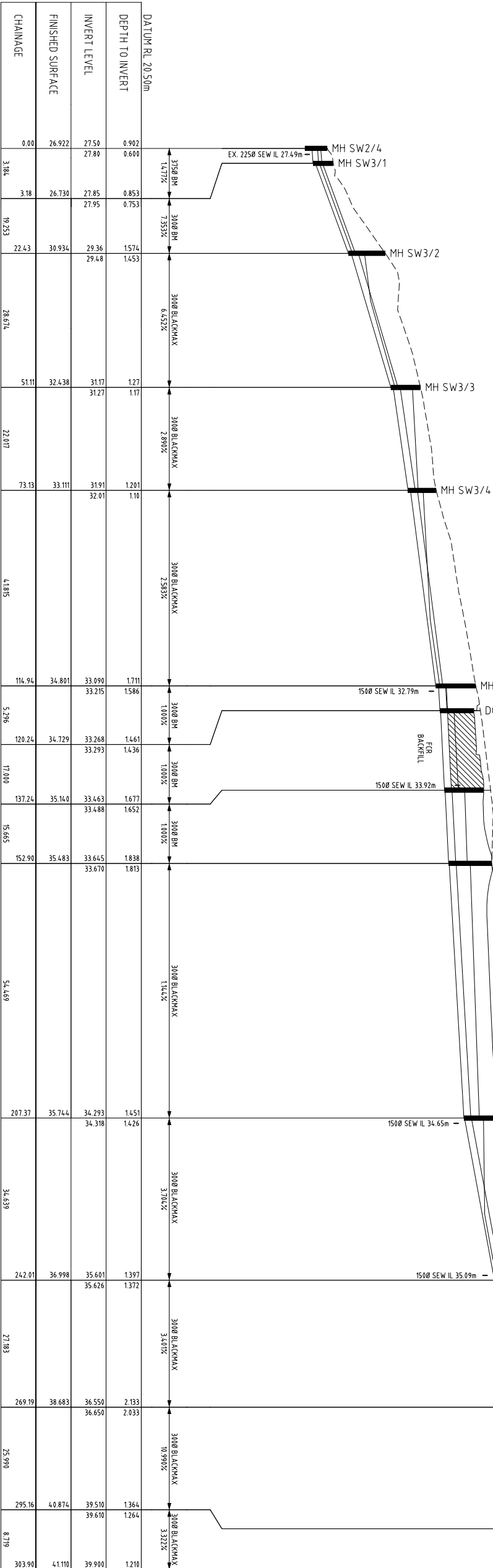
HUTCHINGS SPURR PTY. LTD.
CONSULTING ENGINEERS
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PHONE (03) 6223 5020 FAX (03) 6223 5347

▲ STRUCTURAL
▲ CIVIL
▲ MUNICIPAL
▲ MARINE
▲ ELECTRICAL



Line SW/4

SCALES HOR 1:500 VER 1:100



Line SW/3

SCALES HOR 1:500 VER 1:100

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CLIENT:

STAGE C DEVELOPMENTS PTY LTD

No.

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AMENDMENT

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DATE

27.05.2024

DWG No.

REFERENCE

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CONSULTING ENGINEERS

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80 LOT SUBDIVISION

22 GOODWINS ROAD, CLARENDON VALE

STORMWATER LONG SECTIONS 2

AS SHOWN

SCALE

DRAWN

B. STANFORD

DATE

JUNE '24

DRAWING No.

24140/17

REVISION

A

STRUCTURAL

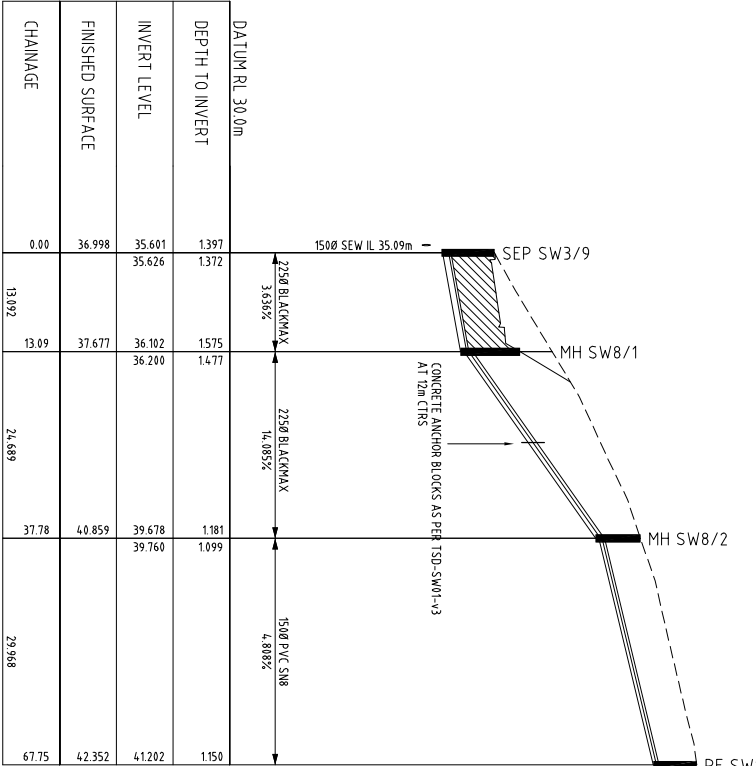
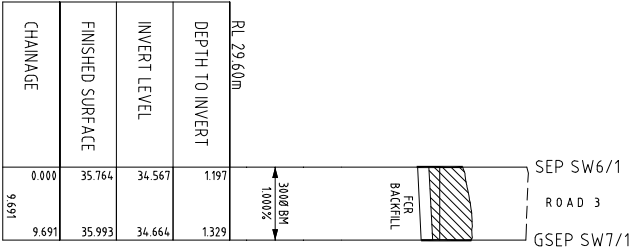
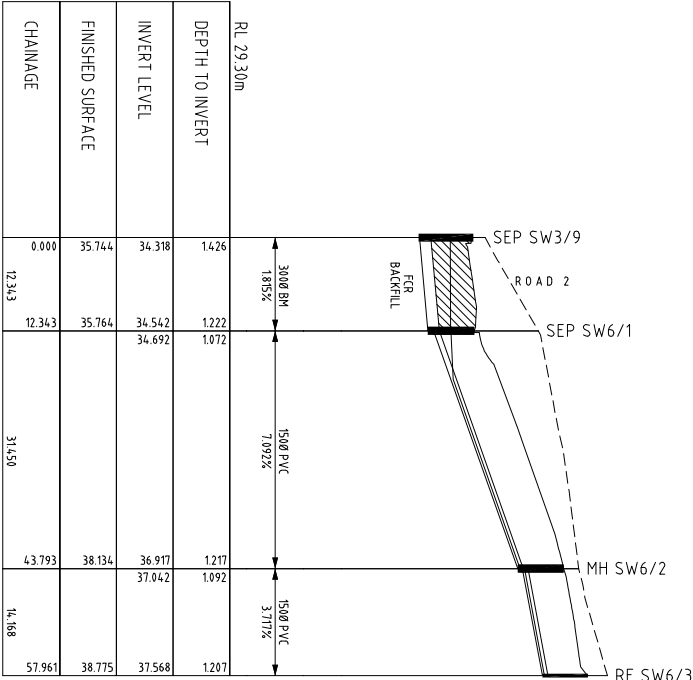
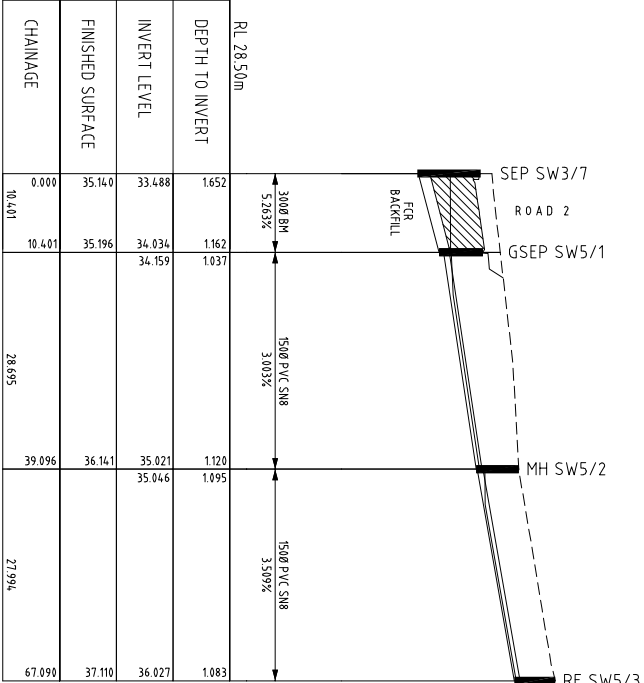
CIVIL

MUNICIPAL

MARINE

ELECTRICAL

No. OF SHEETS



Line SW5

SCALES HOR 1:500 VER 1:100

Line SW6

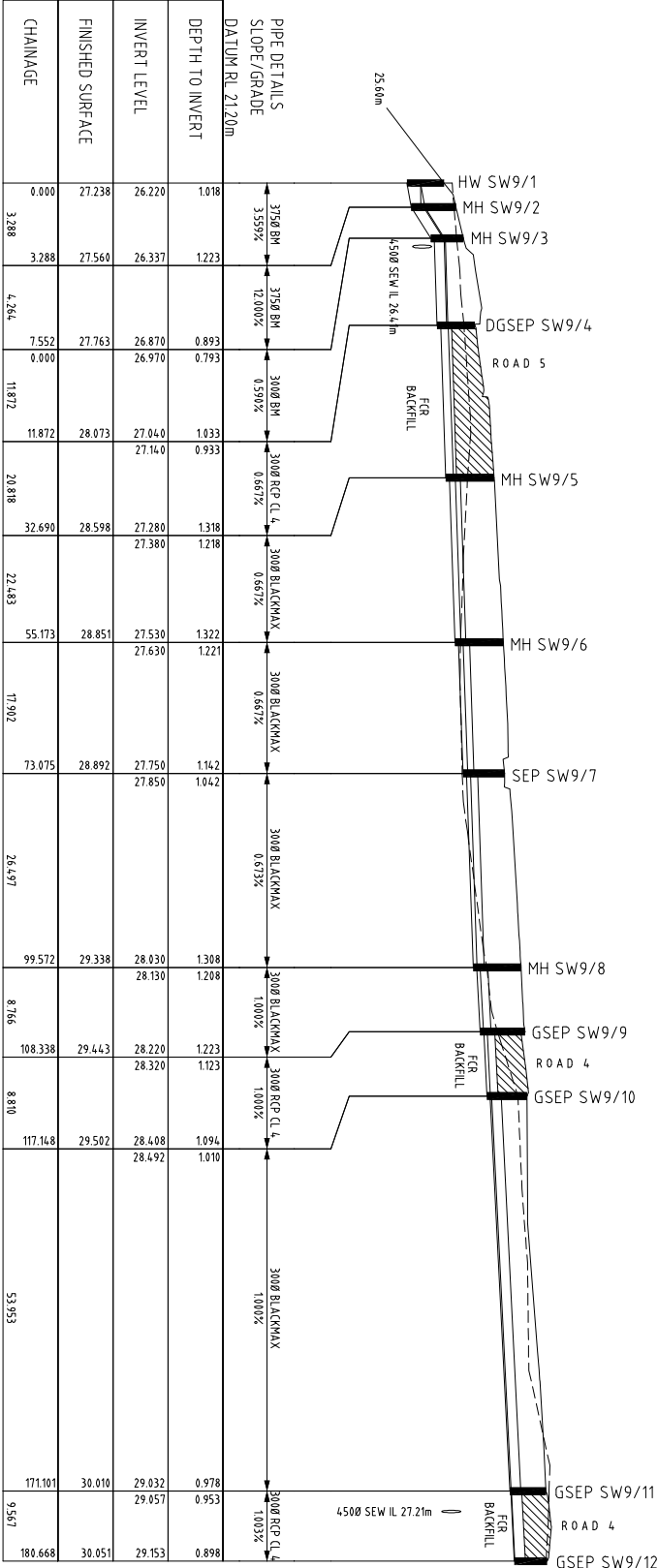
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Line SW7

SCALES HOR 1:500 VER 1:100

Line SW8

SCALES HOR 1:500 VER 1:100



Line SW9

SCALES HOR 1:500 VER 1:100

CLIENT:

STAGE C DEVELOPMENTS PTY LTD

No.

AMENDMENT

DATE

DWG No.

REFERENCE

A

ISSUED FOR DA

27.05.2024

80 LOT SUBDIVISION

22 GOODWINS ROAD, CLARENDON VALE

STORMWATER LONG SECTIONS 3

SCALE

DRAWN B. STAFFORD

DATE JUNE '24

DRAWING No.

24140/18

REVISION

A

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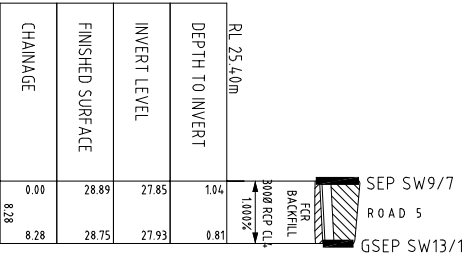
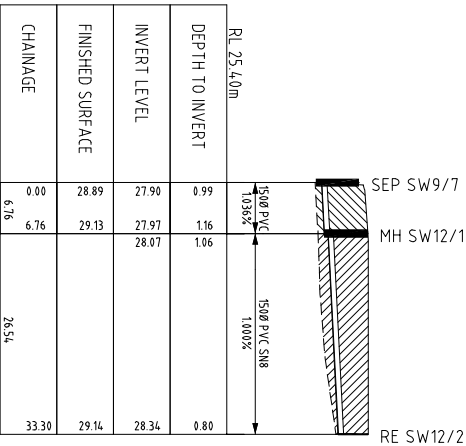
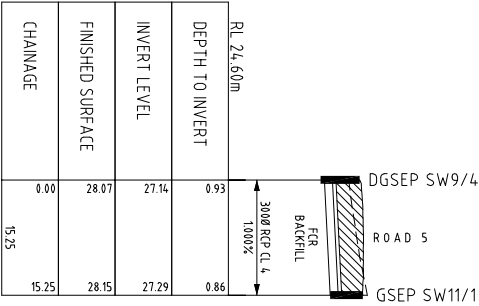
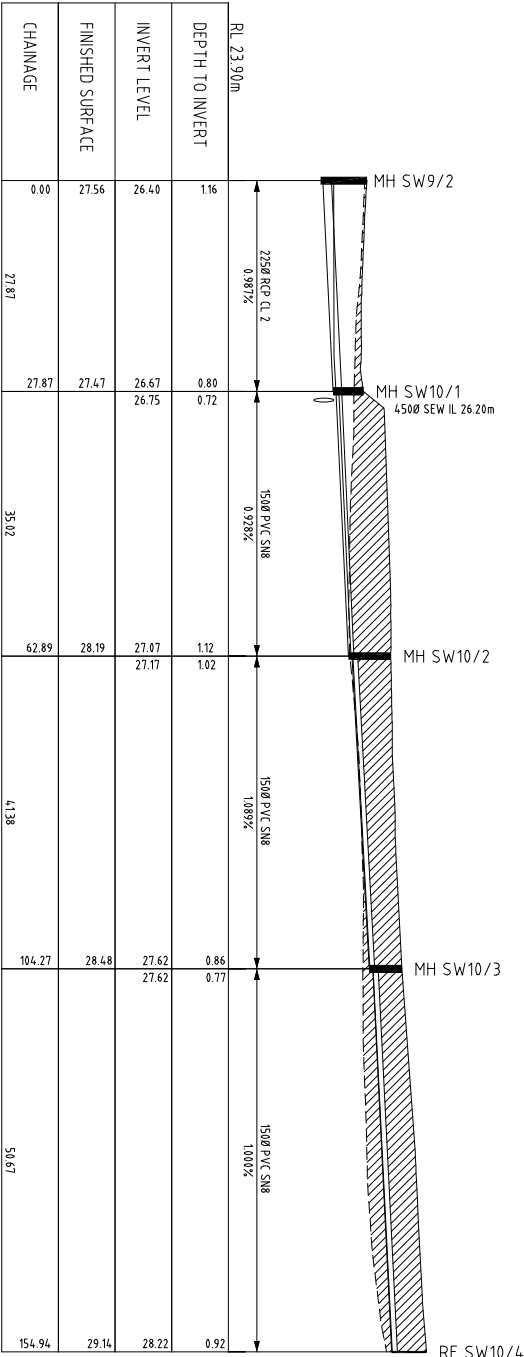
STRUCTURAL

CIVIL

MUNICIPAL

MECHANICAL

ELECTRICAL



Line SW10

SCALES HOR 1:500 VER 1:100

Line SW11

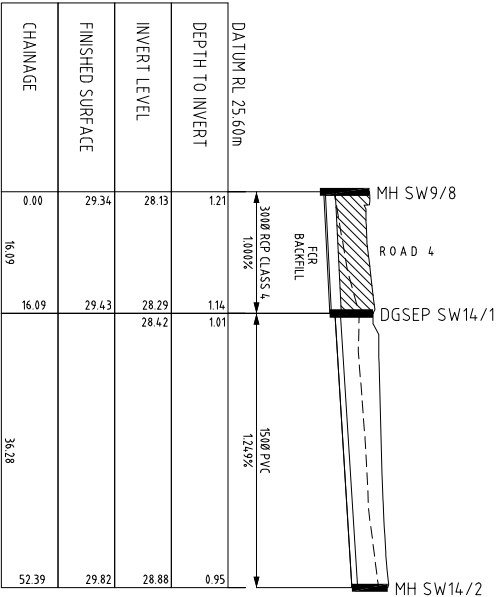
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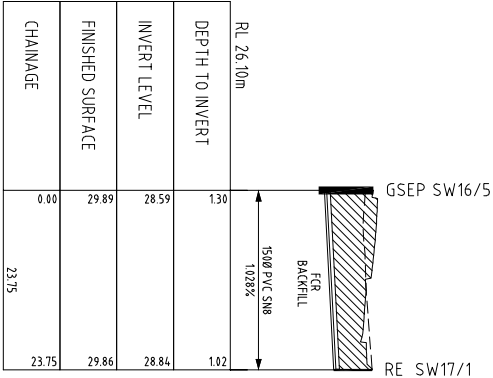
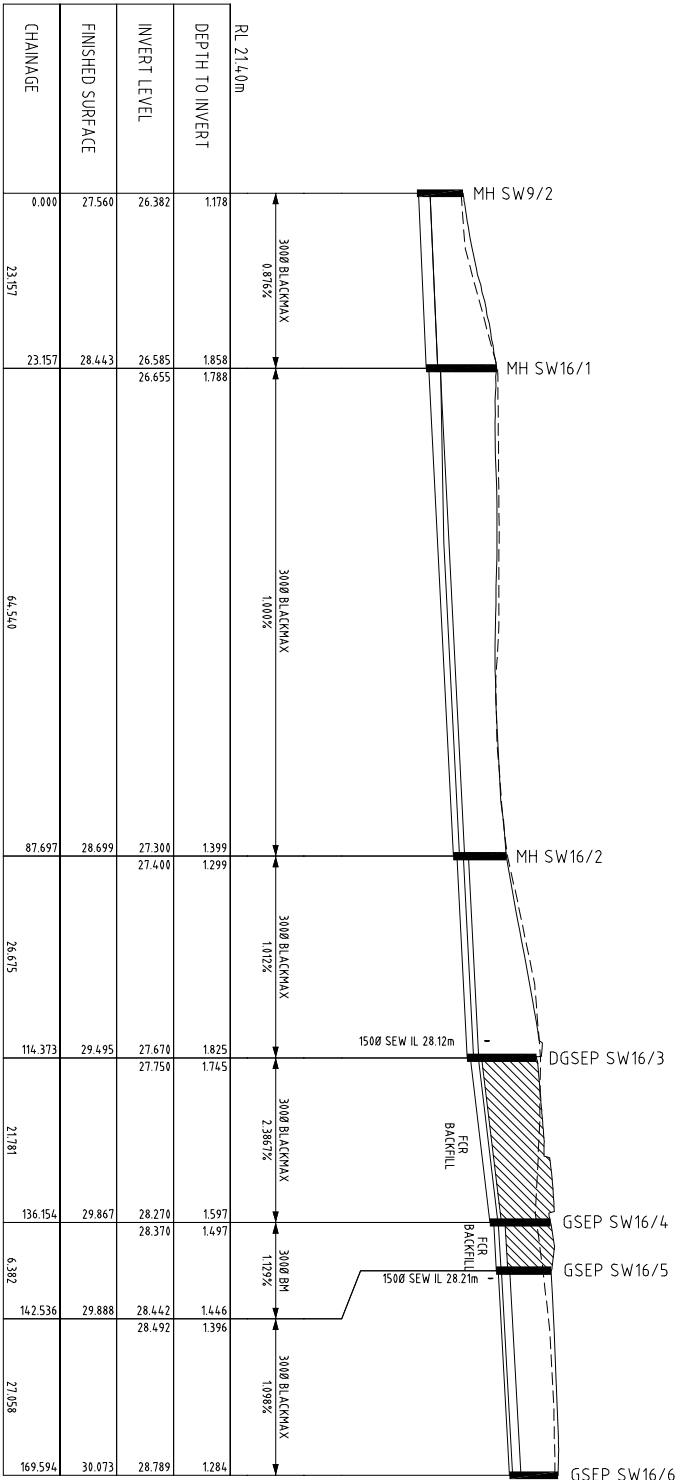
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SCALES HOR 1:500 VER 1:100



Line SW14

SCALES HOR 1:500 VER 1:100

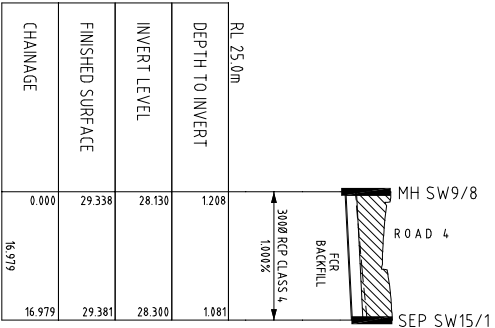


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SCALES HOR 1:500 VER 1:100

Line SW17

SCALES HOR 1:500 VER 1:100



Line SW15

SCALES HOR 1:500 VER 1:100

CLIENT:

STAGE C DEVELOPMENTS PTY LTD

AMENDMENT

No.

A

ISSUED FOR DA

DATE

27.05.2024

DWG No.

REFERENCE

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CONSULTING ENGINEERS

23 ANTILL STREET, HOBART, 7000, A.C.N. 00908525

PHONE (03) 6223 5020 FAX (03) 6223 5347

STRUCTURAL

CIVIL

MUNICIPAL

MARINE

ELECTRICAL

80 LOT SUBDIVISION

22 GOODOWNS ROAD, CLARENDON VALE

STORMWATER LONG SECTIONS 4

SCALE

AS SHOWN

DRAWN B. STANFORD

DATE JUNE '24

APPROVED

No. OF SHEETS

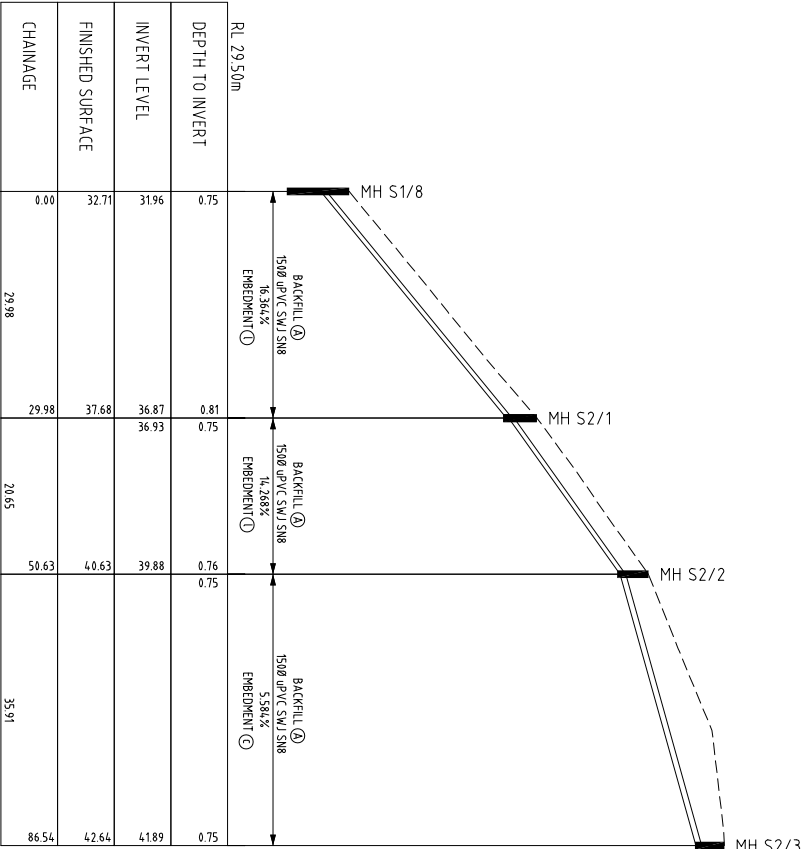
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24140/19

REVISION

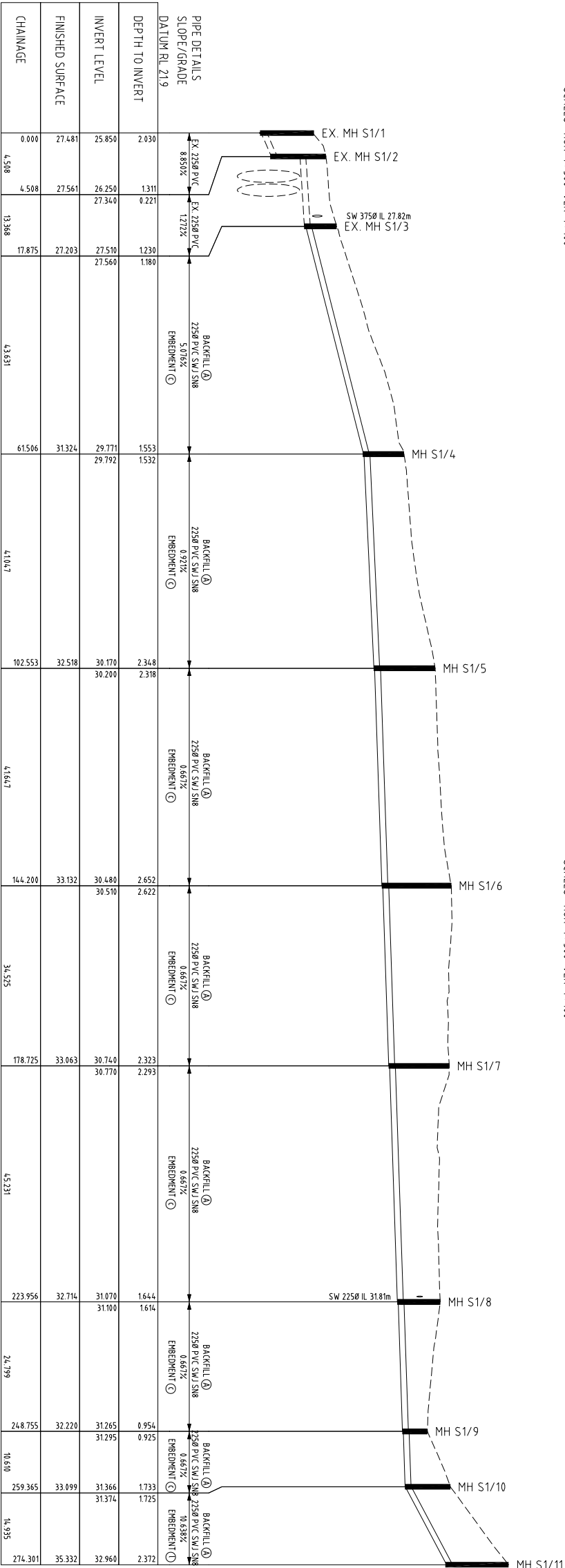
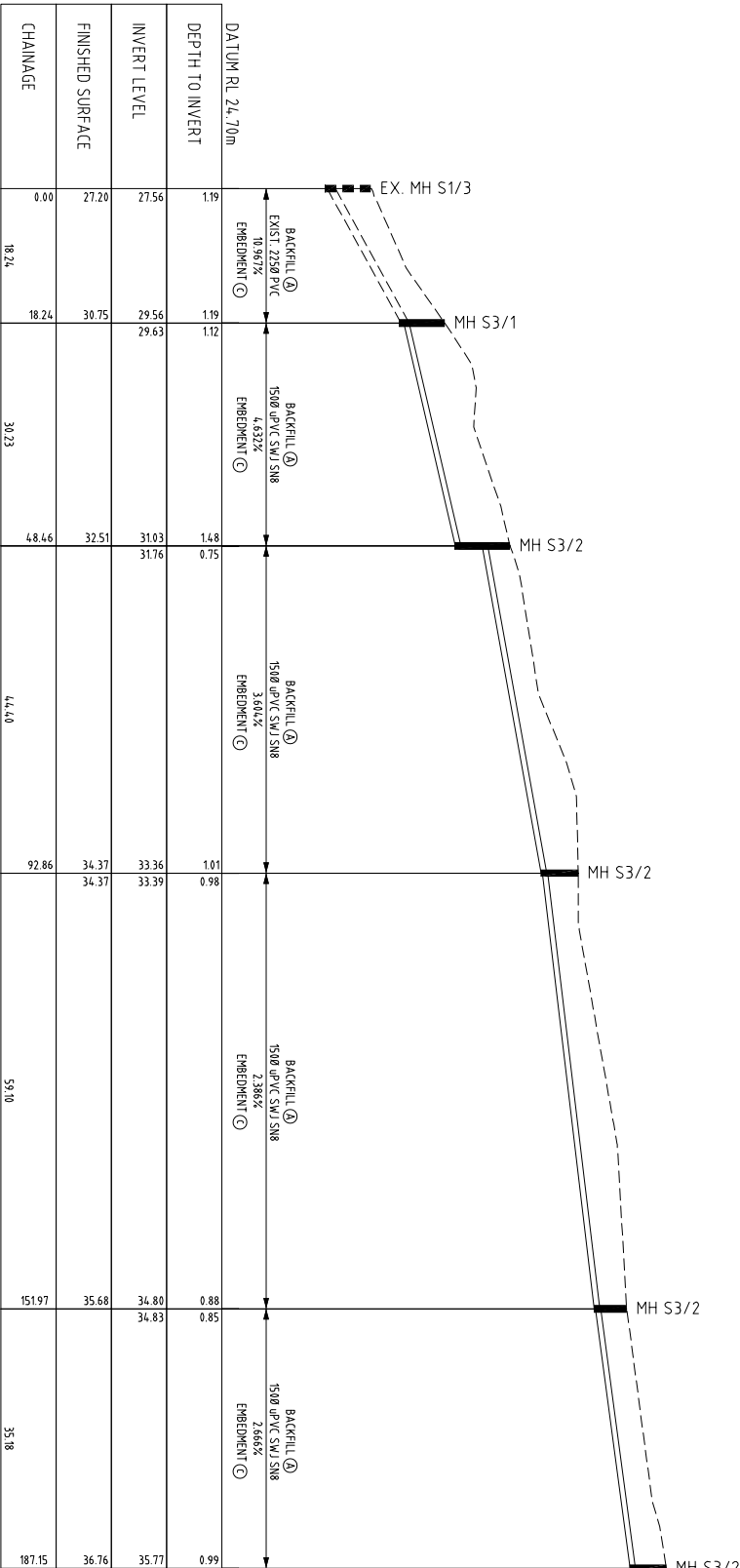
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Line S2

Line S3



Line S1

Line S1

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STAGE C DEVELOPMENTS PTY LTD

No.

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AMENDMENT

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STRUCTURAL

CIVIL

MUNICIPAL

MARINE

ELECTRICAL

80 LOT SUBDIVISION

22 GOODOWNS ROAD, CLARENDON VALE

SEWER LONG SECTIONS 1

SCALE

AS SHOWN

DRAWN B. STAFFORD

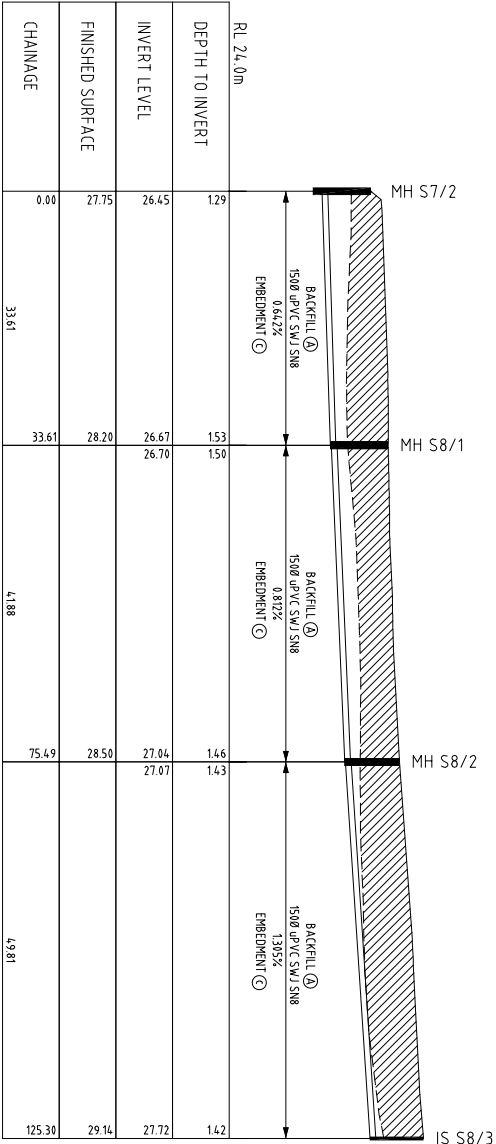
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APPROVED

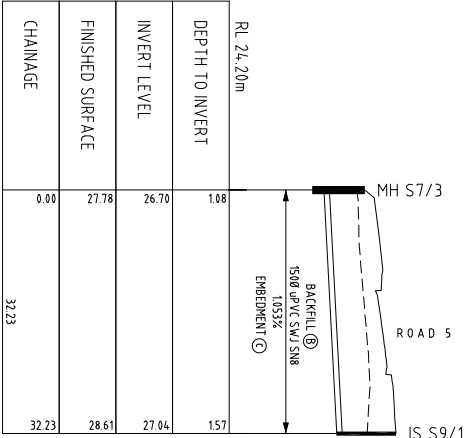
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REVISION

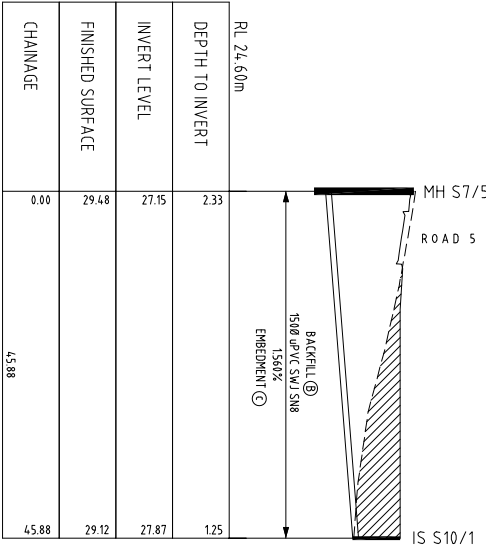
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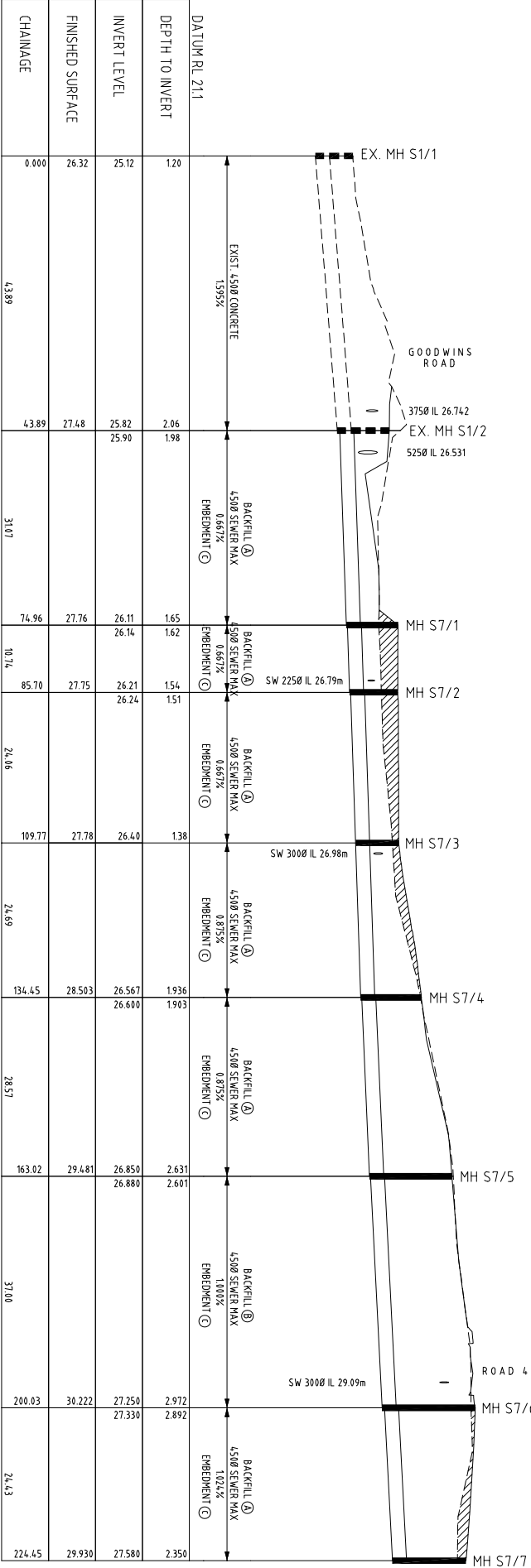
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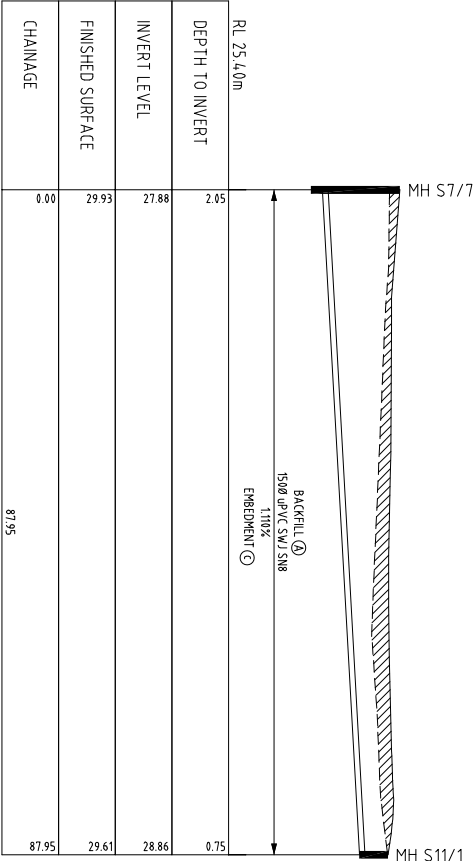
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SCALES HOR 1 : 500 VER 1 : 100



Line S9
SCALES HOR 1 : 500 VER 1 : 100



Line S7
SCALES HOR 1 : 500 VER 1 : 100



Line S11
SCALES HOR 1 : 500 VER 1 : 100

CLIENT:

STAGE C DEVELOPMENTS PTY LTD

No.

AMENDMENT

A

ISSUED FOR DA

DATE

27.05.2024

DWG No.

REFERENCE

80 LOT SUBDIVISION

22 GOODWINS ROAD, CLARENDON VALE

SEWER LONG SECTIONS 3

SCALE

AS SHOWN

DRAWN

B. STAFFORD

DATE

JUNE '24

APPROVED

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STRUCTURAL

CIVIL

MUNICIPAL

MARINE

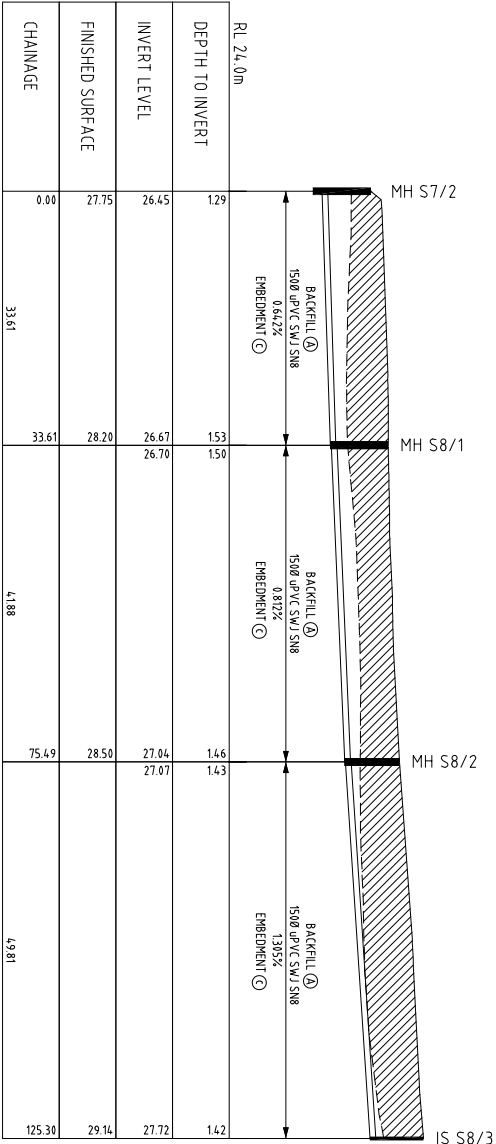
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DRAWING No.

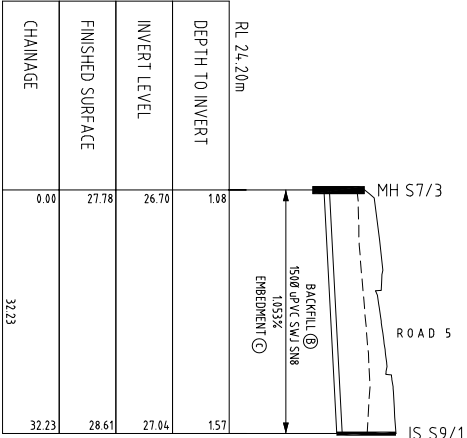
24140/22

REVISION

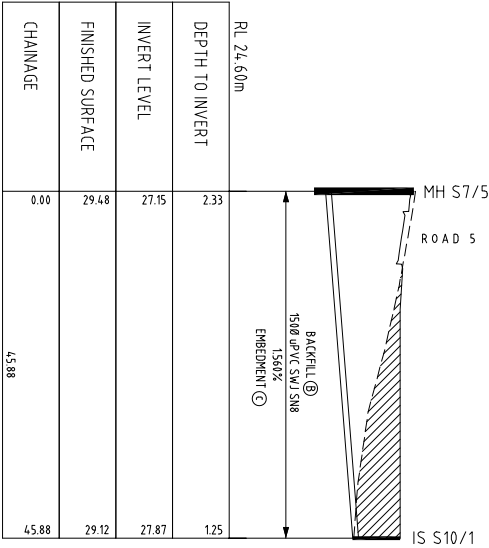
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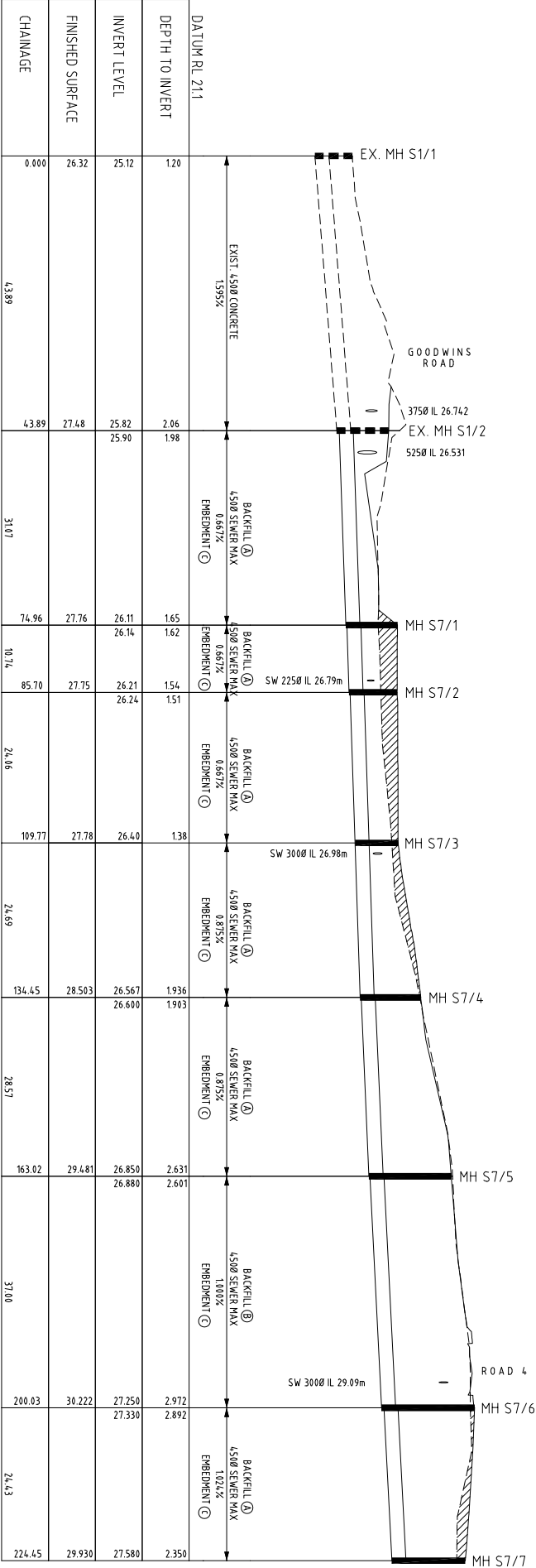
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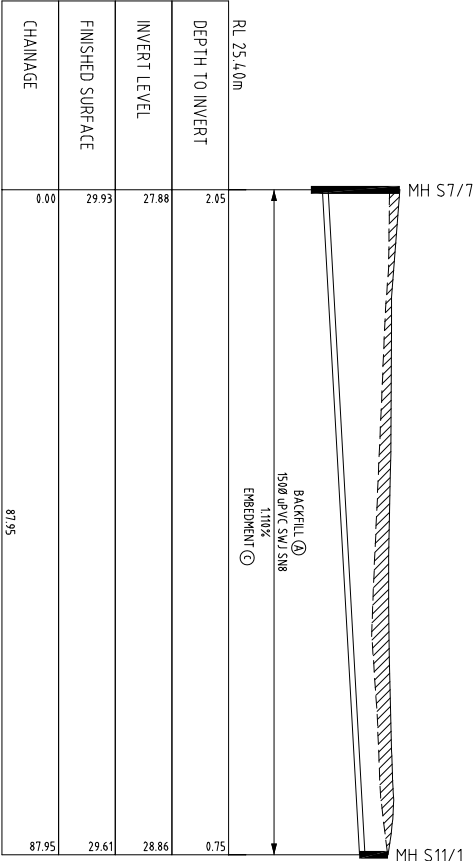
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SCALES HOR 1:500 VER 1:100



Line S9
SCALES HOR 1:500 VER 1:100



Line S7
SCALES HOR 1:500 VER 1:100



Line S11
SCALES HOR 1:500 VER 1:100

CLIENT:

STAGE C DEVELOPMENTS PTY LTD

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STRUCTURAL

MUNICIPAL

MARINE

ELECTRICAL

80 LOT SUBDIVISION

22 GOODWINS ROAD, CLARENDON VALE

SEWER LONG SECTIONS 4

SCALE

AS SHOWN

DRAWN B. STANFORD

DATE JUNE '24

APPROVED

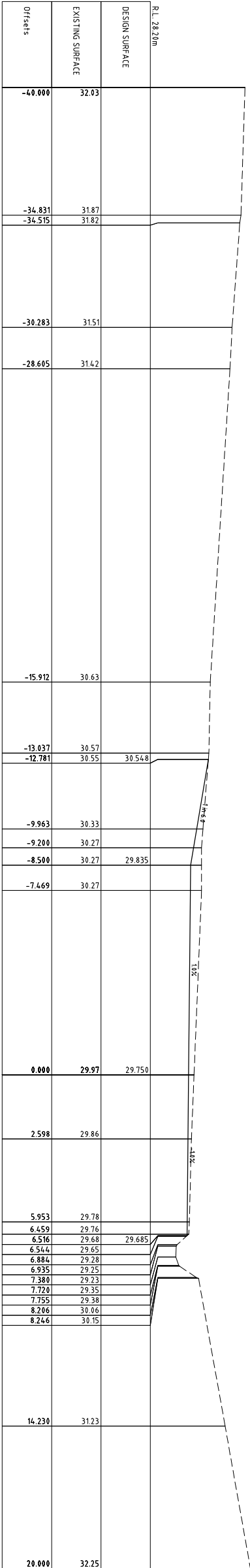
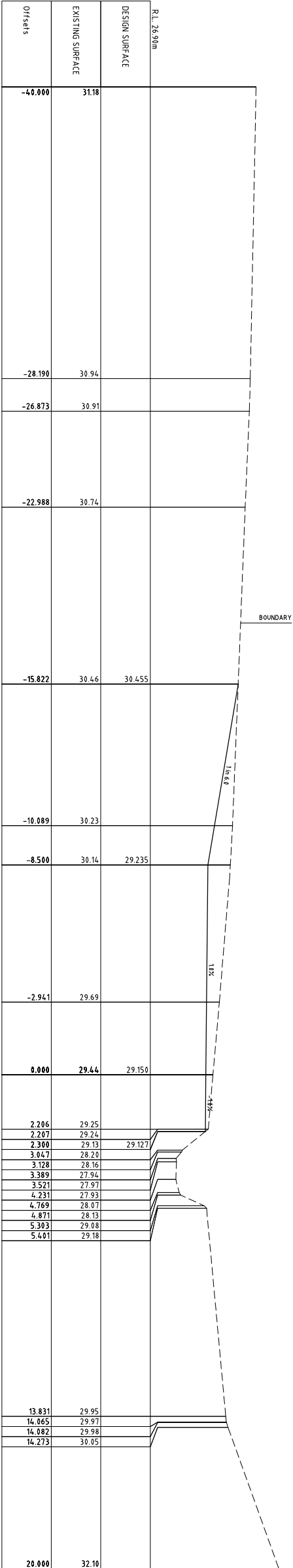
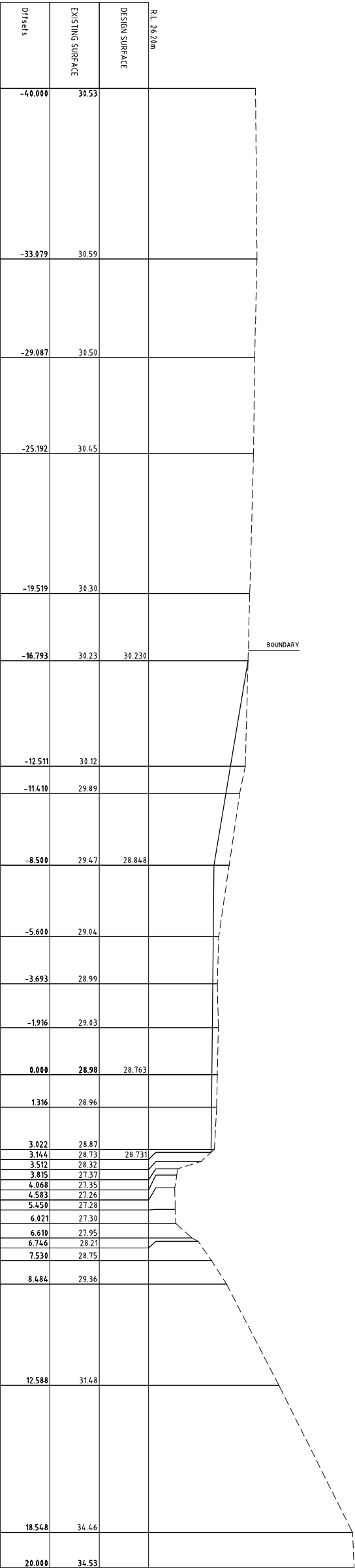
DRAWING No.

24140/23

REVISION

A

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No.		AMENDMENT		DATE		DRC No.		REFERENCE	
A		ISSUED FOR DA		27.05.2024				80 LOT SUBDIVISION 22 GOODWINS ROAD, CLARENDON VALE STOKELL CREEK STORMWATER WORKS CROSS SECTIONS 1	

SIDRA Intersection Modelling Outputs – Post Developments

Appendix C

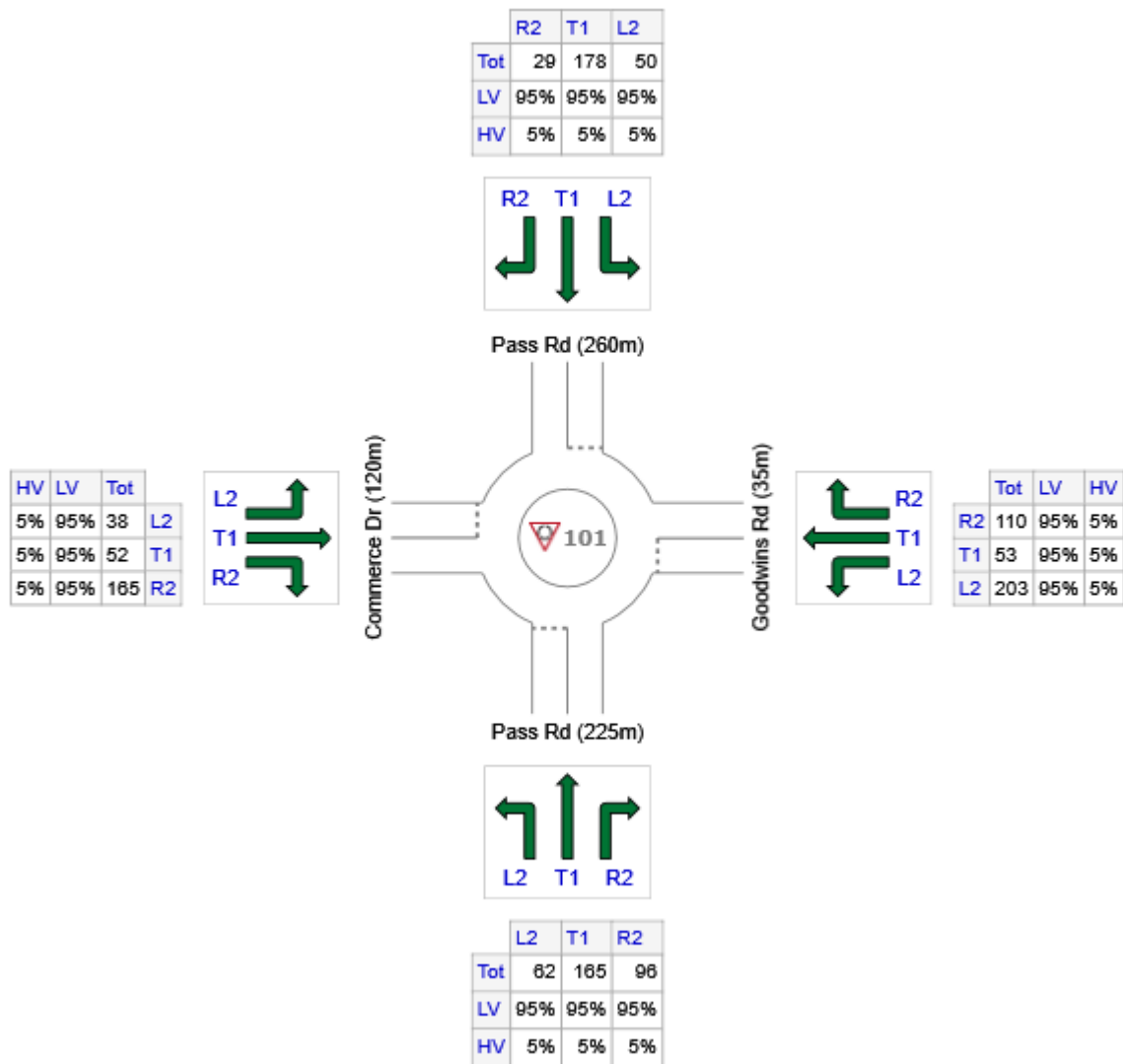
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: Post Development - AM Peak)]**

1-lane Roundabout
Site Category: Existing Design
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Pass Rd (225m)	323	307	16
E: Goodwins Rd (35m)	366	348	18
N: Pass Rd (260m)	257	244	13
W: Commerce Dr (120m)	255	242	13
Total	1201	1141	60

MOVEMENT SUMMARY

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: Post Development - AM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1-lane Roundabout
Site Category: Existing Design
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Pass Rd (225m)															
1	L2	All MCs	65	5.0	65	5.0	0.303	5.1	LOS A	2.1	15.2	0.50	0.54	0.50	42.5
2	T1	All MCs	174	5.0	174	5.0	0.303	5.2	LOS A	2.1	15.2	0.50	0.54	0.50	46.2
3	R2	All MCs	101	5.0	101	5.0	0.303	10.2	LOS B	2.1	15.2	0.50	0.54	0.50	39.2
Approach			340	5.0	340	5.0	0.303	6.7	LOS A	2.1	15.2	0.50	0.54	0.50	43.9
East: Goodwins Rd (35m)															
4	L2	All MCs	214	5.0	214	5.0	0.408	4.9	LOS A	2.8	20.6	0.68	0.64	0.68	40.1
5	T1	All MCs	56	5.0	56	5.0	0.408	5.3	LOS A	2.8	20.6	0.68	0.64	0.68	35.2
6	R2	All MCs	116	5.0	116	5.0	0.408	9.7	LOS A	2.8	20.6	0.68	0.64	0.68	40.3
Approach			385	5.0	385	5.0	0.408	6.4	LOS A	2.8	20.6	0.68	0.64	0.68	39.6
North: Pass Rd (260m)															
7	L2	All MCs	53	5.0	53	5.0	0.274	6.0	LOS A	1.8	12.8	0.58	0.57	0.58	31.4
8	T1	All MCs	187	5.0	187	5.0	0.274	6.0	LOS A	1.8	12.8	0.58	0.57	0.58	46.4
9	R2	All MCs	31	5.0	31	5.0	0.274	11.1	LOS B	1.8	12.8	0.58	0.57	0.58	33.9
Approach			271	5.0	271	5.0	0.274	6.6	LOS A	1.8	12.8	0.58	0.57	0.58	42.1
West: Commerce Dr (120m)															
10	L2	All MCs	40	5.0	40	5.0	0.284	6.4	LOS A	1.8	13.2	0.62	0.66	0.62	40.5
11	T1	All MCs	55	5.0	55	5.0	0.284	6.5	LOS A	1.8	13.2	0.62	0.66	0.62	23.1
12	R2	All MCs	174	5.0	174	5.0	0.284	11.5	LOS B	1.8	13.2	0.62	0.66	0.62	38.7
Approach			268	5.0	268	5.0	0.284	9.7	LOS A	1.8	13.2	0.62	0.66	0.62	36.2
All Vehicles			1264	5.0	1264	5.0	0.408	7.2	LOS A	2.8	20.6	0.60	0.60	0.60	40.7

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.

LEVEL OF SERVICE

Lane Level of Service

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: Post Development - AM Peak)]**

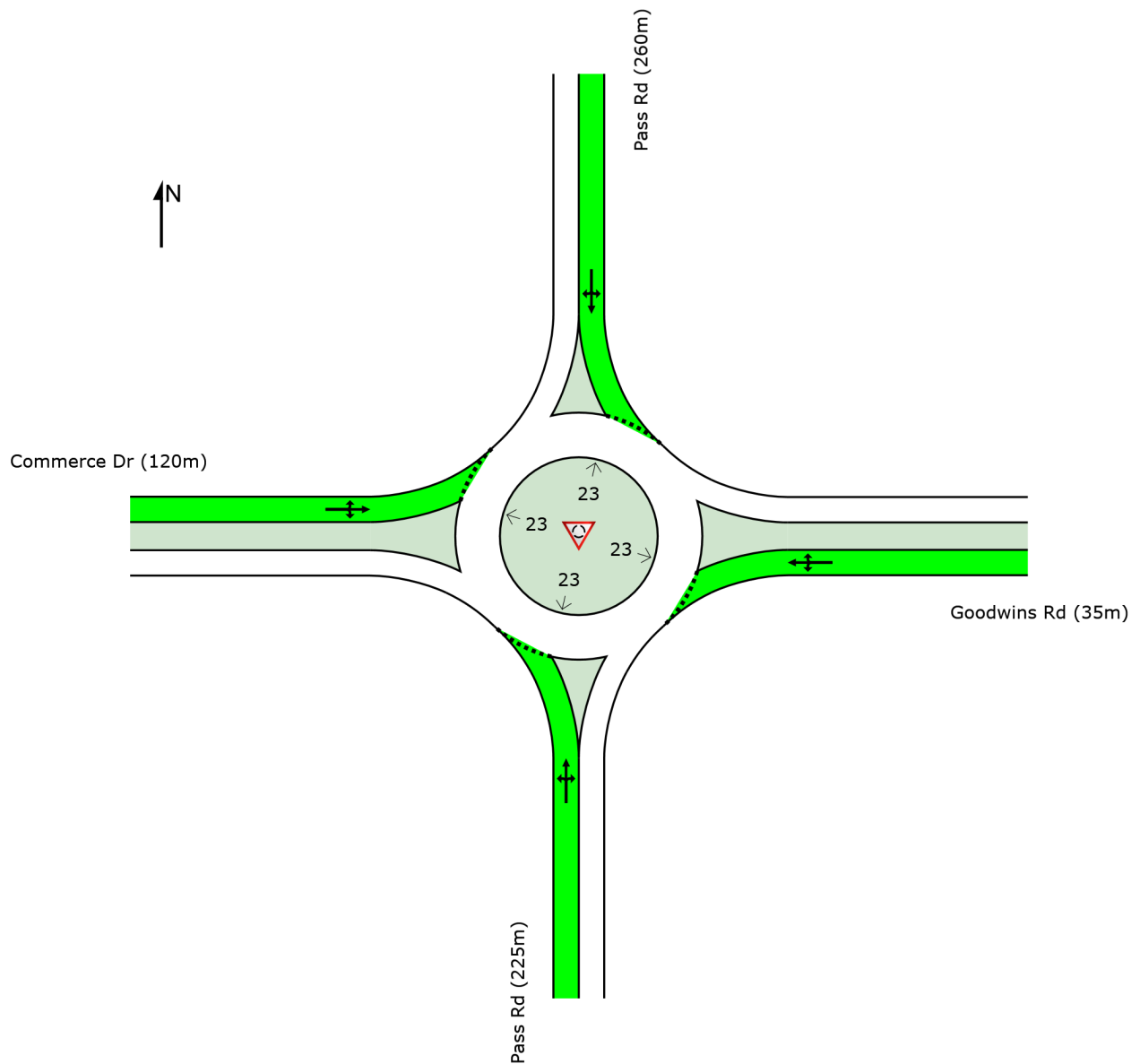
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1-lane Roundabout

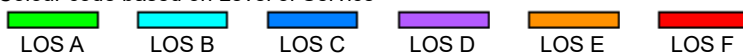
Site Category: Existing Design

Roundabout

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



Colour code based on Level of Service



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

Roundabout Level of Service Method: SIDRA Roundabout LOS

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

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Traffic modelling\SIDRA\GoodwinsRd project v2.sip9

MOVEMENT SUMMARY

Site: 105 [Goodwins x Site Access 1 (Site Folder: Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Goodwins Rd															
8	T1	All MCs	284	5.0	284	5.0	0.150	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	59.7
9	R2	All MCs	2	0.0	2	0.0	0.150	5.6	LOS A	0.0	0.1	0.00	0.00	0.00	47.6
Approach			286	5.0	286	5.0	0.150	0.0	NA	0.0	0.1	0.00	0.00	0.00	59.6
North: Site Access 1															
10	L2	All MCs	3	0.0	3	0.0	0.013	4.3	LOS A	0.0	0.2	0.26	0.56	0.26	34.4
12	R2	All MCs	14	0.0	14	0.0	0.013	4.6	LOS A	0.0	0.2	0.26	0.56	0.26	34.2
Approach			17	0.0	17	0.0	0.013	4.5	LOS A	0.0	0.2	0.26	0.56	0.26	34.2
West: Goodwins Rd															
1	L2	All MCs	9	0.0	9	0.0	0.091	5.5	LOS A	0.0	0.0	0.00	0.03	0.00	31.6
2	T1	All MCs	164	5.0	164	5.0	0.091	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	58.5
Approach			174	4.7	174	4.7	0.091	0.3	NA	0.0	0.0	0.00	0.03	0.00	56.5
All Vehicles			477	4.7	477	4.7	0.150	0.3	NA	0.0	0.2	0.01	0.03	0.01	57.3

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

LEVEL OF SERVICE

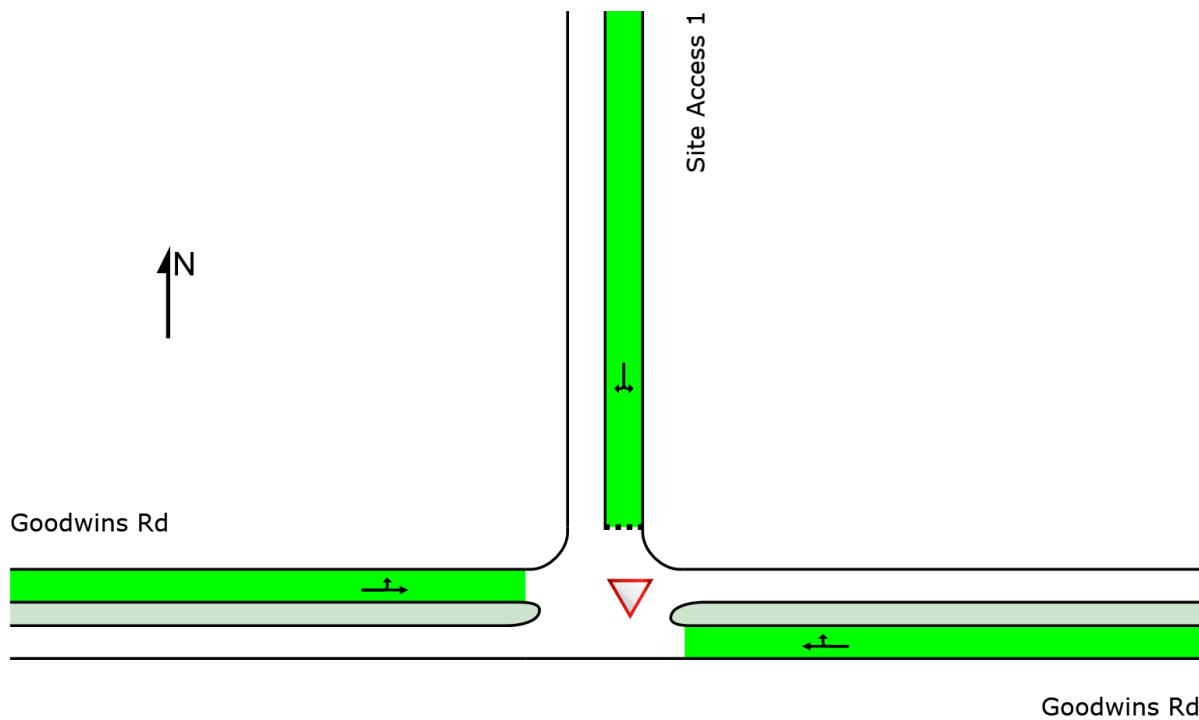
Lane Level of Service

▽ Site: 105 [Goodwins x Site Access 1 (Site Folder: Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

	Approaches			Intersection
	East	North	West	
LOS	NA (TWSC)	A	NA (TWSC)	NA (TWSC)



Colour code based on Level of Service



NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

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

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

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MOVEMENT SUMMARY

 **Site: 105v [Goodwins x Site Access 1 - Roundabout (Site Folder: Post Development - AM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout
Site Category: Proposed Design 2
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Goodwins Rd															
8	T1	All MCs	284	5.0	284	5.0	0.195	4.6	LOS A	1.3	9.2	0.10	0.47	0.10	38.8
9	R2	All MCs	2	0.0	2	0.0	0.195	7.8	LOS A	1.3	9.2	0.10	0.47	0.10	33.9
Approach			286	5.0	286	5.0	0.195	4.6	LOS A	1.3	9.2	0.10	0.47	0.10	38.7
North: Site Access 1															
10	L2	All MCs	3	0.0	3	0.0	0.016	4.0	LOS A	0.1	0.5	0.31	0.60	0.31	32.2
12	R2	All MCs	14	0.0	14	0.0	0.016	6.9	LOS A	0.1	0.5	0.31	0.60	0.31	30.4
Approach			17	0.0	17	0.0	0.016	6.4	LOS A	0.1	0.5	0.31	0.60	0.31	30.7
West: Goodwins Rd															
1	L2	All MCs	9	0.0	9	0.0	0.109	4.7	LOS A	0.6	4.4	0.03	0.49	0.03	35.4
2	T1	All MCs	164	5.0	164	5.0	0.109	4.6	LOS A	0.6	4.4	0.03	0.49	0.03	39.4
Approach			174	4.7	174	4.7	0.109	4.6	LOS A	0.6	4.4	0.03	0.49	0.03	39.2
All Vehicles			477	4.7	477	4.7	0.195	4.7	LOS A	1.3	9.2	0.08	0.48	0.08	38.6

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.

LEVEL OF SERVICE

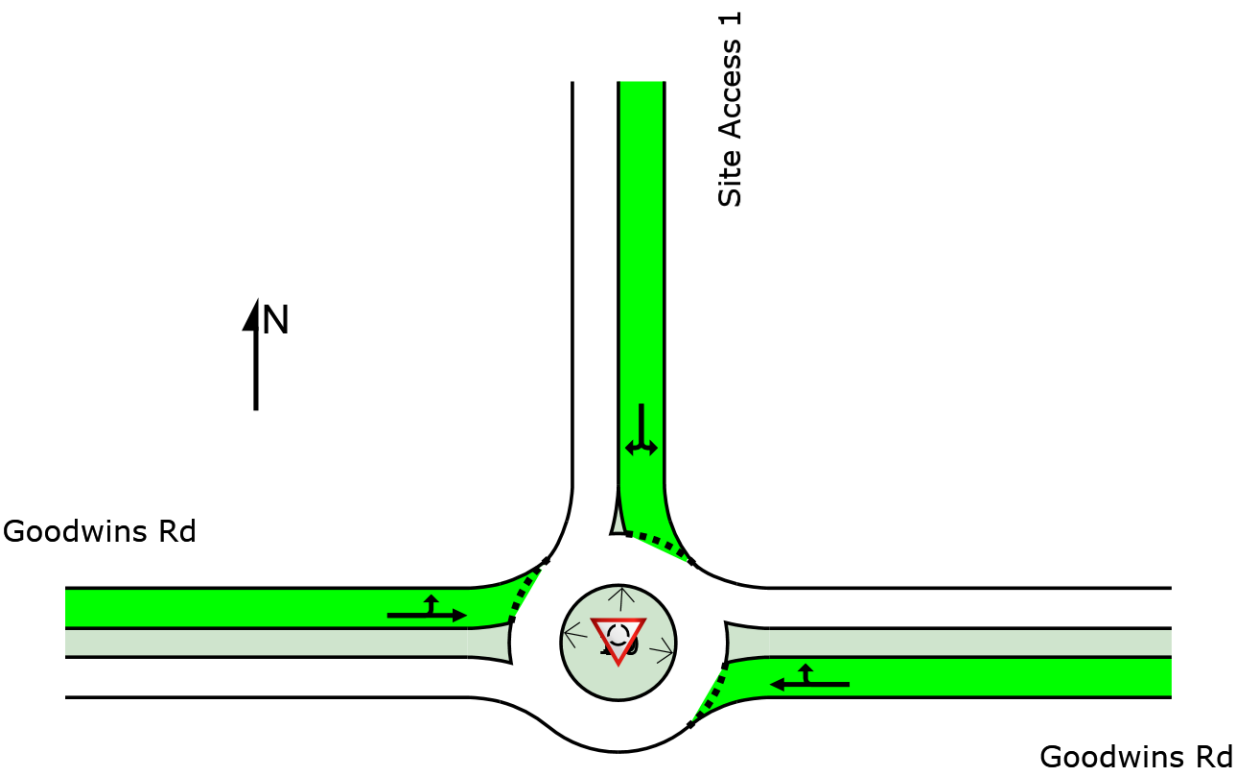
Lane Level of Service

 **Site: 105v [Goodwins x Site Access 1 - Roundabout (Site Folder: Post Development - AM Peak)]**

Output produced by **SIDRA INTERSECTION Version: 9.1.6.228**

Roundabout
Site Category: Proposed Design 2
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

 LOS A

 LOS B

 LOS C

 LOS D

 LOS E

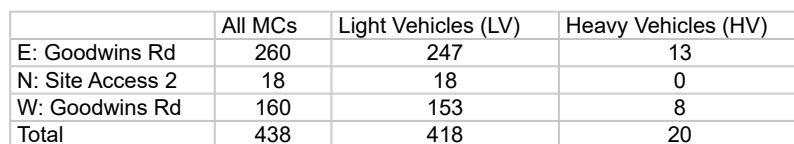
 LOS F

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Vehicles and pedestrians per 60 minutes

Giveaway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

Volume Display Method: Total and %



MOVEMENT SUMMARY

Site: 106 [Goodwins x Site Access 2 (Site Folder: Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Goodwins Rd															
8	T1	All MCs	272	5.0	272	5.0	0.143	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	59.7
9	R2	All MCs	2	0.0	2	0.0	0.143	5.5	LOS A	0.0	0.1	0.00	0.00	0.00	47.2
Approach			274	5.0	274	5.0	0.143	0.0	NA	0.0	0.1	0.00	0.00	0.00	59.6
North: Site Access 2															
10	L2	All MCs	4	0.0	4	0.0	0.014	4.3	LOS A	0.0	0.3	0.25	0.56	0.25	34.5
12	R2	All MCs	15	0.0	15	0.0	0.014	4.5	LOS A	0.0	0.3	0.25	0.56	0.25	34.1
Approach			19	0.0	19	0.0	0.014	4.5	LOS A	0.0	0.3	0.25	0.56	0.25	34.2
West: Goodwins Rd															
1	L2	All MCs	11	0.0	11	0.0	0.088	5.5	LOS A	0.0	0.0	0.00	0.04	0.00	31.5
2	T1	All MCs	158	5.0	158	5.0	0.088	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	58.3
Approach			168	4.7	168	4.7	0.088	0.4	NA	0.0	0.0	0.00	0.04	0.00	56.0
All Vehicles			461	4.7	461	4.7	0.143	0.3	NA	0.0	0.3	0.01	0.04	0.01	56.9

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

LEVEL OF SERVICE

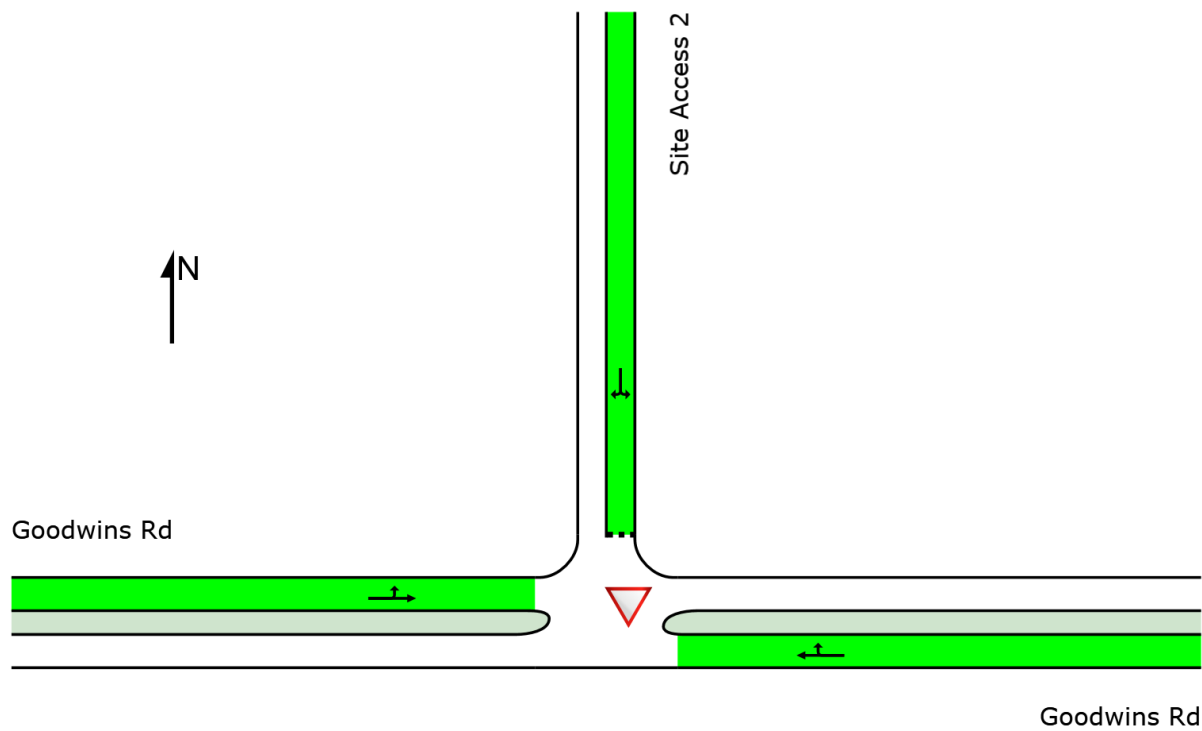
Lane Level of Service

▽ Site: 106 [Goodwins x Site Access 2 (Site Folder: Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

	Approaches			Intersection
	East	North	West	
LOS	NA (TWSC)	A	NA (TWSC)	NA (TWSC)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
-------	-------	-------	-------	-------	-------

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

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

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

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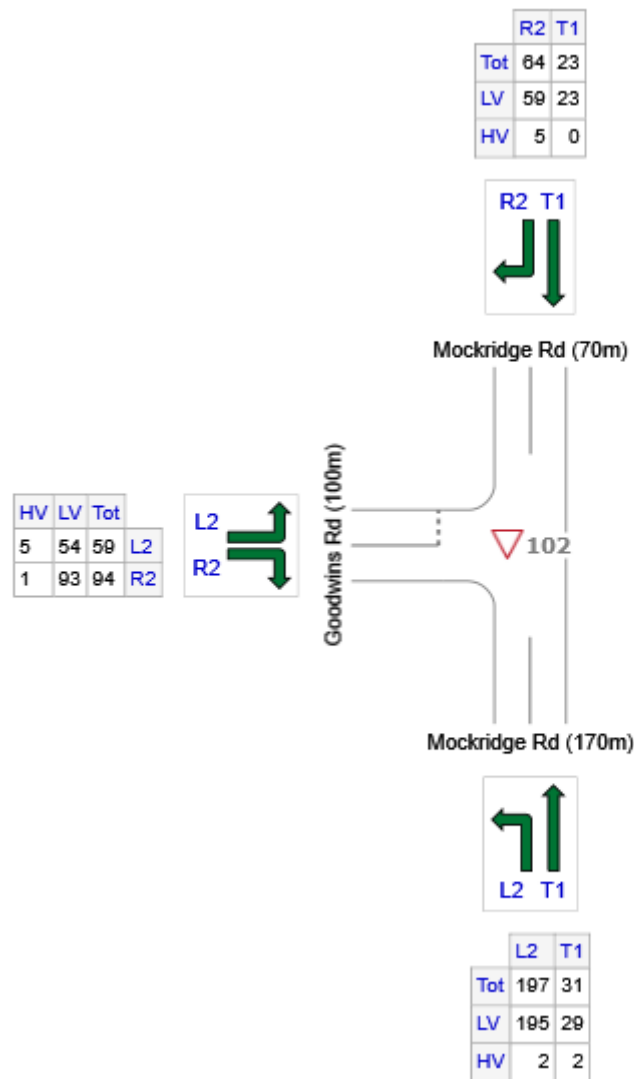
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▽ Site: 102 [Goodwins x Mockridge (Site Folder: Post Development - AM Peak)]

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Volume Display Method: Total and Veh



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Mockridge Rd (170m)	228	224	4
N: Mockridge Rd (70m)	87	82	5
W: Goodwins Rd (100m)	153	147	6
Total	468	453	15

MOVEMENT SUMMARY

Site: 102 [Goodwins x Mockridge (Site Folder: Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Mockridge Rd (170m)															
1	L2	All MCs	207	1.0	207	1.0	0.122	5.6	LOS A	0.0	0.0	0.00	0.50	0.00	35.7
2	T1	All MCs	33	6.5	33	6.5	0.122	0.0	LOS A	0.0	0.0	0.00	0.50	0.00	45.6
Approach			240	1.8	240	1.8	0.122	4.8	NA	0.0	0.0	0.00	0.50	0.00	36.7
North: Mockridge Rd (70m)															
8	T1	All MCs	24	0.0	24	0.0	0.049	0.6	LOS A	0.3	1.9	0.34	0.45	0.34	46.0
9	R2	All MCs	67	7.8	67	7.8	0.049	5.4	LOS A	0.3	1.9	0.34	0.45	0.34	23.4
Approach			92	5.7	92	5.7	0.049	4.1	NA	0.3	1.9	0.34	0.45	0.34	27.9
West: Goodwins Rd (100m)															
10	L2	All MCs	62	8.5	62	8.5	0.031	5.6	LOS A	0.1	1.1	0.10	0.54	0.10	33.6
12	R2	All MCs	99	1.1	99	1.1	0.071	5.9	LOS A	0.2	1.2	0.19	0.58	0.19	39.1
Approach			161	3.9	161	3.9	0.071	5.8	LOS A	0.2	1.2	0.15	0.57	0.15	37.3
All Vehicles			493	3.2	493	3.2	0.122	5.0	NA	0.3	1.9	0.11	0.51	0.11	35.2

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

LEVEL OF SERVICE

Lane Level of Service

▽ Site: 102 [Goodwins x Mockridge (Site Folder: Post Development - AM Peak)]

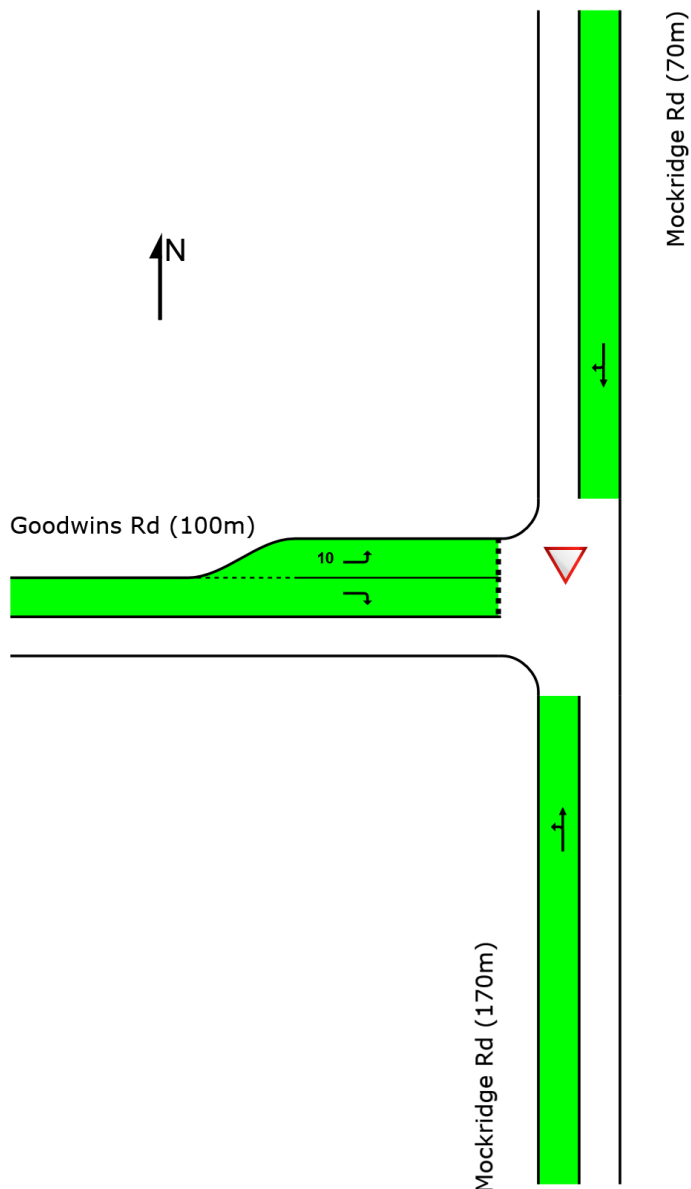
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction

Site Category: Existing Design

Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
LOS	NA (TWSC)	NA (TWSC)	A	NA (TWSC)



Colour code based on Level of Service



NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

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

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

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Traffic modelling\SIDRA\GoodwinsRd project v2.sip9

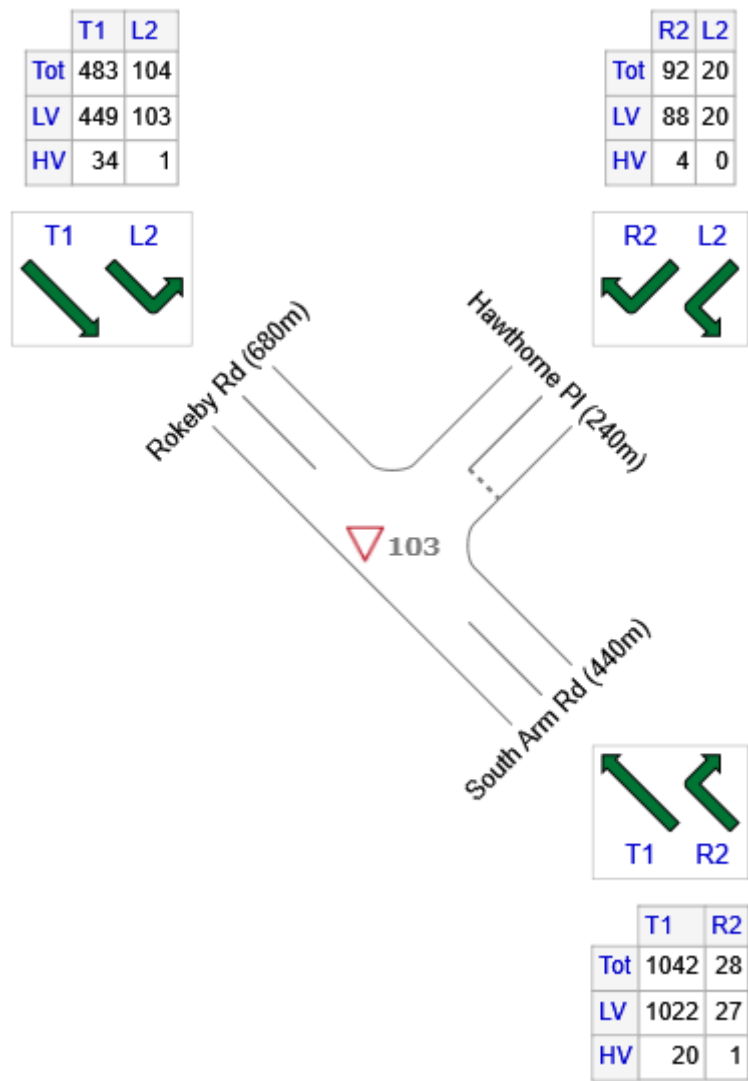
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▼ Site: 103 [Rokeby x Hawthorne (Site Folder: Post Development - AM Peak)]

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Volume Display Method: Total and Veh



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: South Arm Rd (440m)	1070	1049	21
NE: Hawthorne Pl (240m)	112	108	4
NW: Rokeby Rd (680m)	587	552	35
Total	1769	1709	60

MOVEMENT SUMMARY

Site: 103 [Rokeby x Hawthorne (Site Folder: Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: South Arm Rd (440m)															
22	T1	All MCs	1097	1.9	1097	1.9	0.579	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.4
23	R2	All MCs	29	3.6	29	3.6	0.024	7.7	LOS A	0.1	0.8	0.57	0.65	0.57	47.5
Approach			1126	2.0	1126	2.0	0.579	0.5	NA	0.1	0.8	0.01	0.02	0.01	59.2
NorthEast: Hawthorne PI (240m)															
24	L2	All MCs	21	0.0	21	0.0	0.016	7.0	LOS A	0.1	0.5	0.48	0.61	0.48	48.3
26	R2	All MCs	97	4.3	97	4.3	0.631	39.4	LOS E	2.0	14.9	0.95	1.09	1.43	34.2
Approach			118	3.6	118	3.6	0.631	33.6	LOS D	2.0	14.9	0.87	1.01	1.26	35.7
NorthWest: Rokeby Rd (680m)															
27	L2	All MCs	109	1.0	109	1.0	0.332	5.7	LOS A	0.0	0.0	0.00	0.11	0.00	56.0
28	T1	All MCs	508	7.0	508	7.0	0.332	0.1	LOS A	0.0	0.0	0.00	0.11	0.00	58.9
Approach			618	6.0	618	6.0	0.332	1.1	NA	0.0	0.0	0.00	0.11	0.00	58.4
All Vehicles			1862	3.4	1862	3.4	0.631	2.8	NA	2.0	14.9	0.06	0.11	0.09	57.0

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

LEVEL OF SERVICE

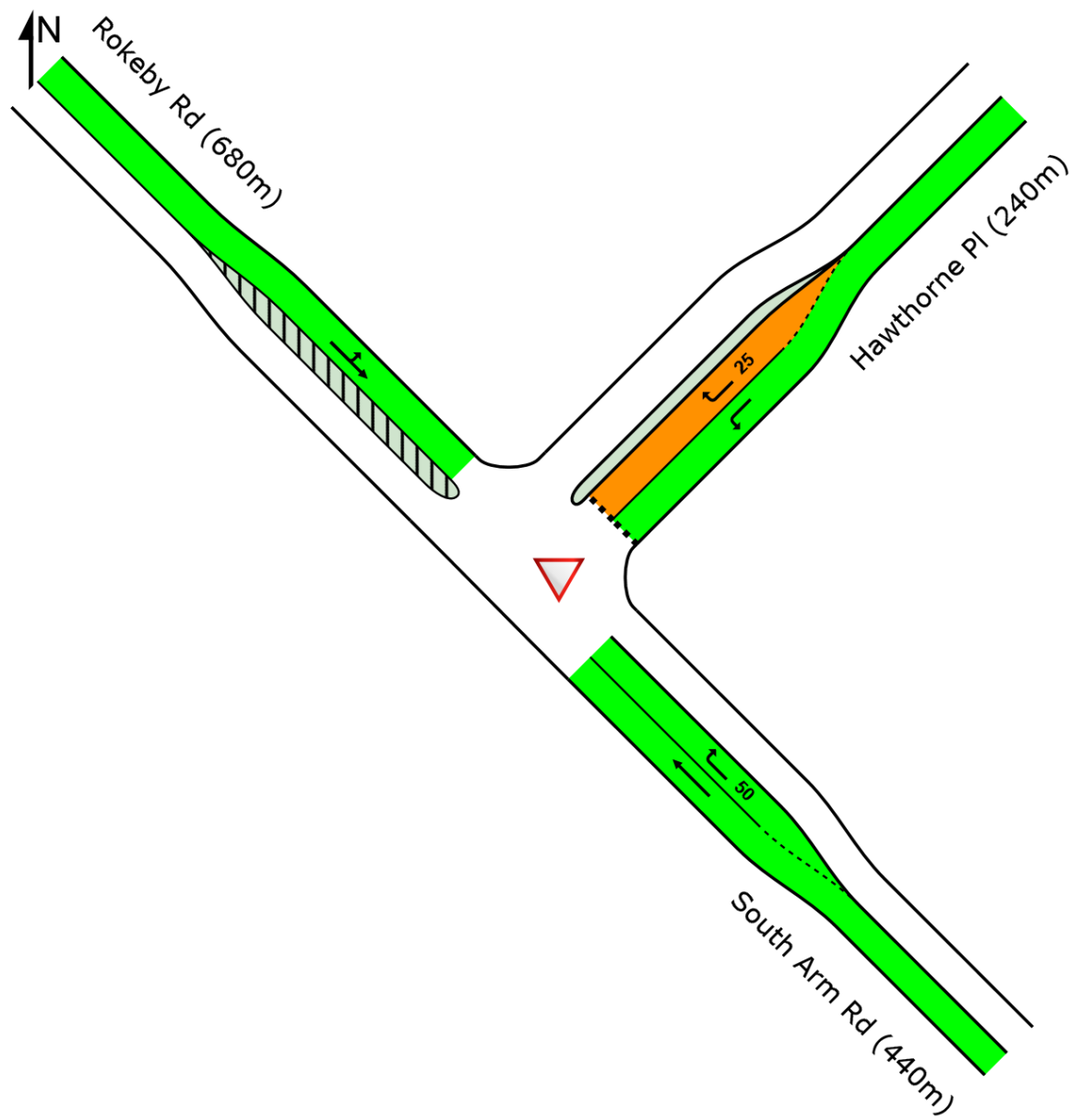
Lane Level of Service

▽ Site: 103 [Rokeby x Hawthorne (Site Folder: Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches			Intersection
	Southeast	Northeast	Northwest	
LOS	NA (TWSC)	D	NA (TWSC)	NA (TWSC)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
-------	-------	-------	-------	-------	-------

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

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

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

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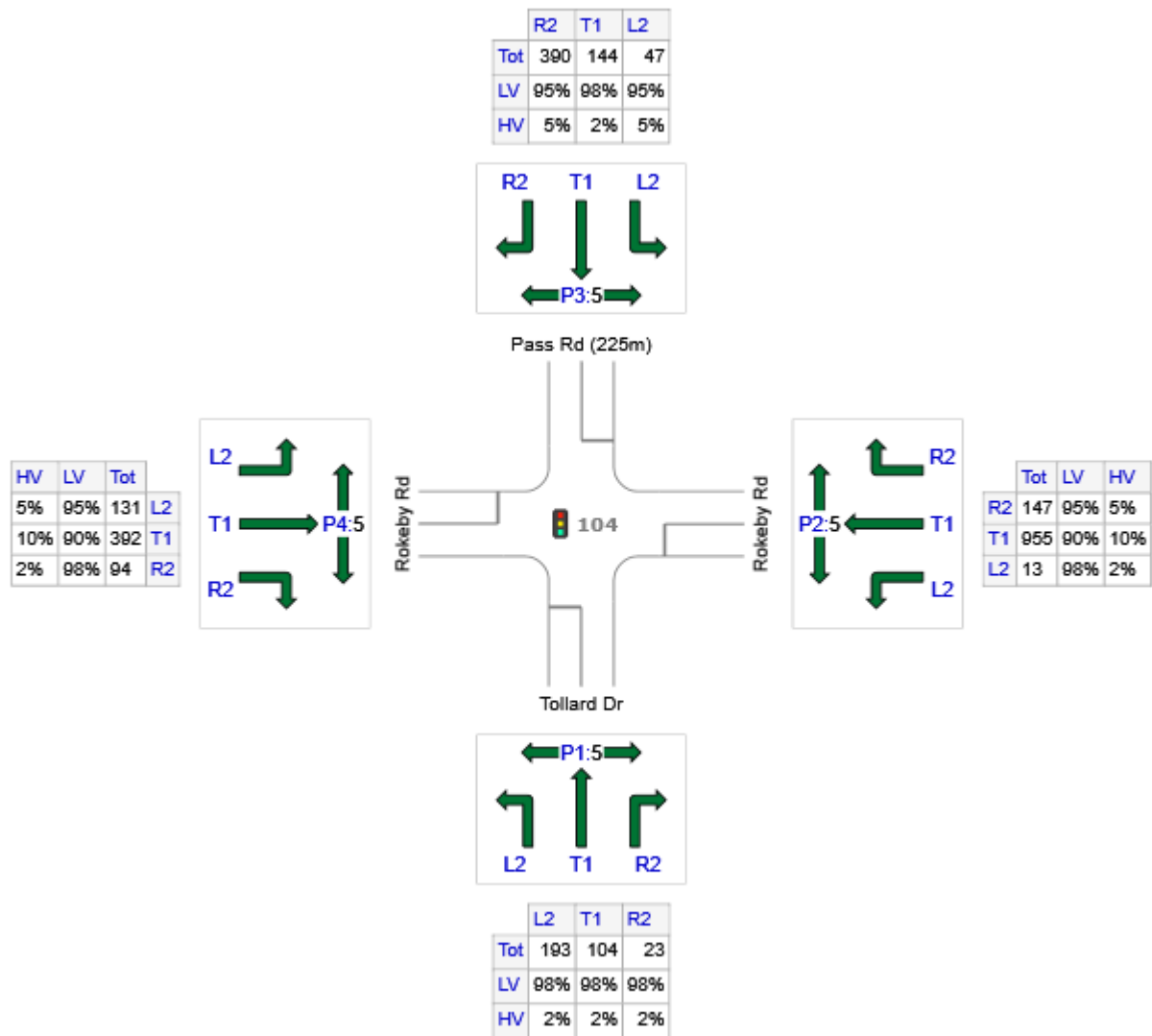
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 **Site: 104 [Rokeby x Pass x Tollard (Site Folder: Post Development - AM Peak)]**

Signalised 4way intersection
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Tollard Dr	320	314	6
E: Rokeby Rd	1115	1012	103
N: Pass Rd (225m)	581	556	25
W: Rokeby Rd	617	569	48
Total	2633	2451	182

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Tollard Dr												
P1	Full	5	5	41.7	LOS E	0.0	0.0	0.94	0.94	195.5	200.0	1.02
East: Rokeby Rd												

P2 Full	5	5	41.7	LOS E	0.0	0.0	0.94	0.94	195.5	200.0	1.02
North: Pass Rd (225m)											
P3 Full	5	5	41.7	LOS E	0.0	0.0	0.94	0.94	195.5	200.0	1.02
West: Rokeby Rd											
P4 Full	5	5	41.7	LOS E	0.0	0.0	0.94	0.94	195.5	200.0	1.02
All Pedestrians	20	21	41.7	LOS E	0.0	0.0	0.94	0.94	195.5	200.0	1.02

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.

LEVEL OF SERVICE

Lane Level of Service

 **Site: 104 [Rokeby x Pass x Tollard (Site Folder: Post Development - AM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

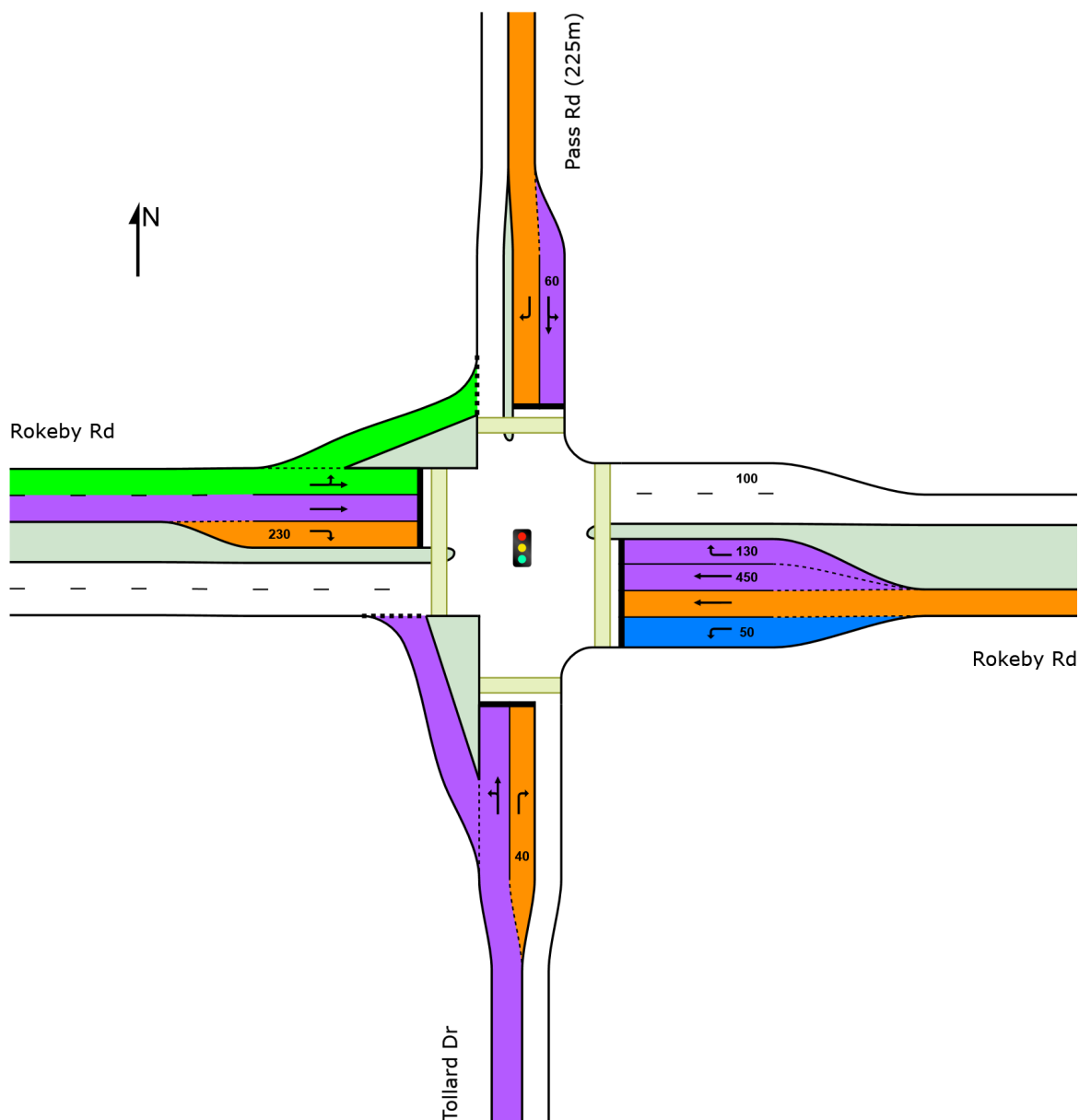
Signalised 4way intersection

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 95 seconds (Site Practical Cycle Time)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

	Approaches				Intersection
	South	East	North	West	
LOS	D	D	D	C	D



Colour code based on Level of Service



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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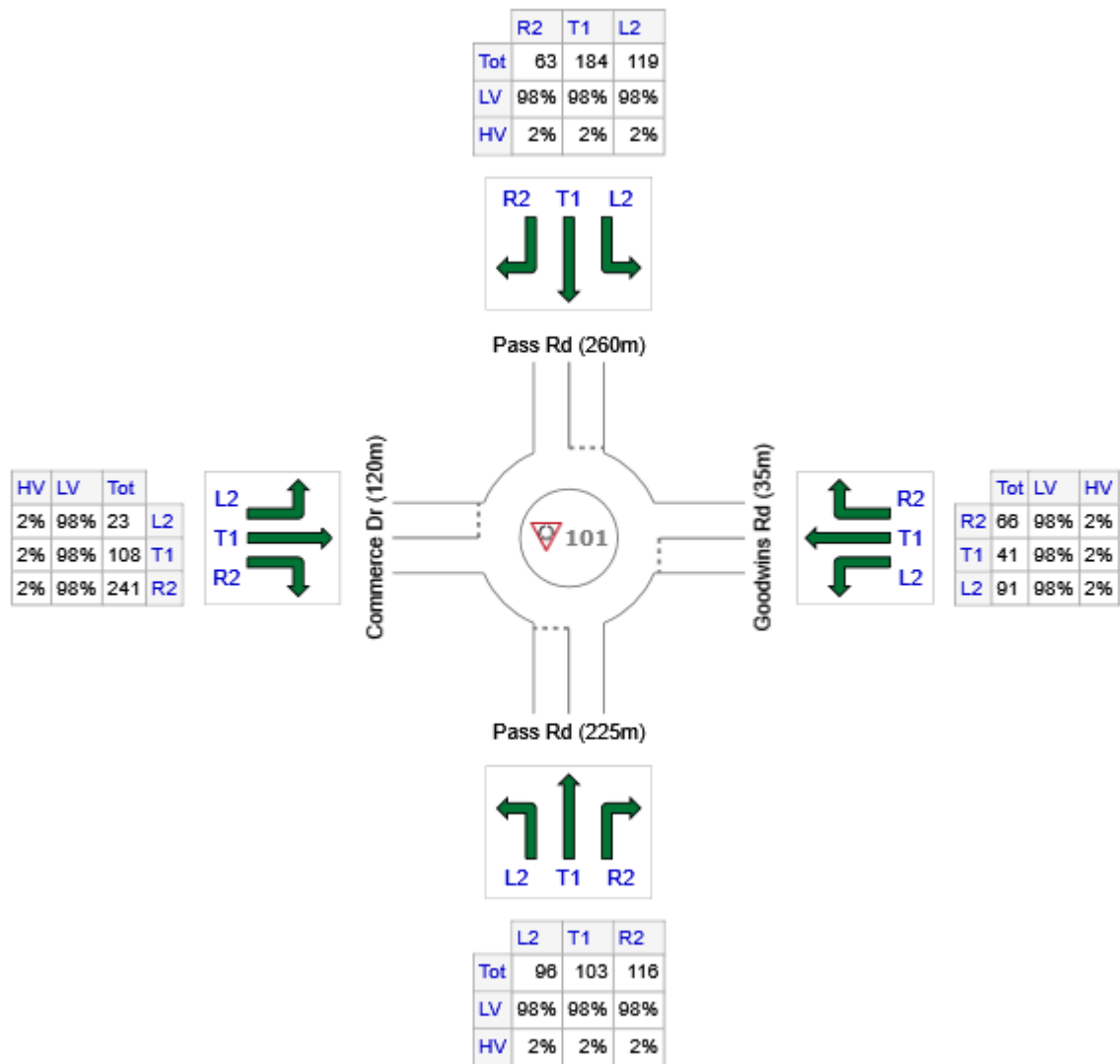
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

🚧 Site: 101 [Goodwins x Pass x Commerce (Site Folder: Post Development - PM Peak)]

1-lane Roundabout
Site Category: Existing Design
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Pass Rd (225m)	315	309	6
E: Goodwins Rd (35m)	198	194	4
N: Pass Rd (260m)	366	359	7
W: Commerce Dr (120m)	372	365	7
Total	1251	1226	25

MOVEMENT SUMMARY

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: Post Development - PM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1-lane Roundabout
Site Category: Existing Design
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Pass Rd (225m)															
1	L2	All MCs	101	2.0	101	2.0	0.281	4.8	LOS A	1.9	13.2	0.44	0.54	0.44	42.7
2	T1	All MCs	108	2.0	108	2.0	0.281	4.9	LOS A	1.9	13.2	0.44	0.54	0.44	46.7
3	R2	All MCs	122	2.0	122	2.0	0.281	9.9	LOS A	1.9	13.2	0.44	0.54	0.44	39.3
Approach			332	2.0	332	2.0	0.281	6.7	LOS A	1.9	13.2	0.44	0.54	0.44	43.3
East: Goodwins Rd (35m)															
4	L2	All MCs	96	2.0	96	2.0	0.241	5.2	LOS A	1.5	10.8	0.67	0.66	0.67	40.0
5	T1	All MCs	43	2.0	43	2.0	0.241	5.6	LOS A	1.5	10.8	0.67	0.66	0.67	34.8
6	R2	All MCs	69	2.0	69	2.0	0.241	10.0	LOS A	1.5	10.8	0.67	0.66	0.67	40.4
Approach			208	2.0	208	2.0	0.241	6.9	LOS A	1.5	10.8	0.67	0.66	0.67	39.3
North: Pass Rd (260m)															
7	L2	All MCs	125	2.0	125	2.0	0.439	7.4	LOS A	3.2	22.6	0.76	0.67	0.76	30.3
8	T1	All MCs	194	2.0	194	2.0	0.439	7.5	LOS A	3.2	22.6	0.76	0.67	0.76	45.3
9	R2	All MCs	66	2.0	66	2.0	0.439	12.5	LOS B	3.2	22.6	0.76	0.67	0.76	33.0
Approach			385	2.0	385	2.0	0.439	8.4	LOS A	3.2	22.6	0.76	0.67	0.76	38.4
West: Commerce Dr (120m)															
10	L2	All MCs	24	2.0	24	2.0	0.374	5.8	LOS A	2.6	18.3	0.59	0.63	0.59	41.4
11	T1	All MCs	114	2.0	114	2.0	0.374	5.9	LOS A	2.6	18.3	0.59	0.63	0.59	23.5
12	R2	All MCs	254	2.0	254	2.0	0.374	11.0	LOS B	2.6	18.3	0.59	0.63	0.59	39.5
Approach			392	2.0	392	2.0	0.374	9.2	LOS A	2.6	18.3	0.59	0.63	0.59	35.5
All Vehicles			1317	2.0	1317	2.0	0.439	8.0	LOS A	3.2	22.6	0.62	0.63	0.62	38.8

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.

LEVEL OF SERVICE

Lane Level of Service

 Site: 101 [Goodwins x Pass x Commerce (Site Folder: Post Development - PM Peak)]

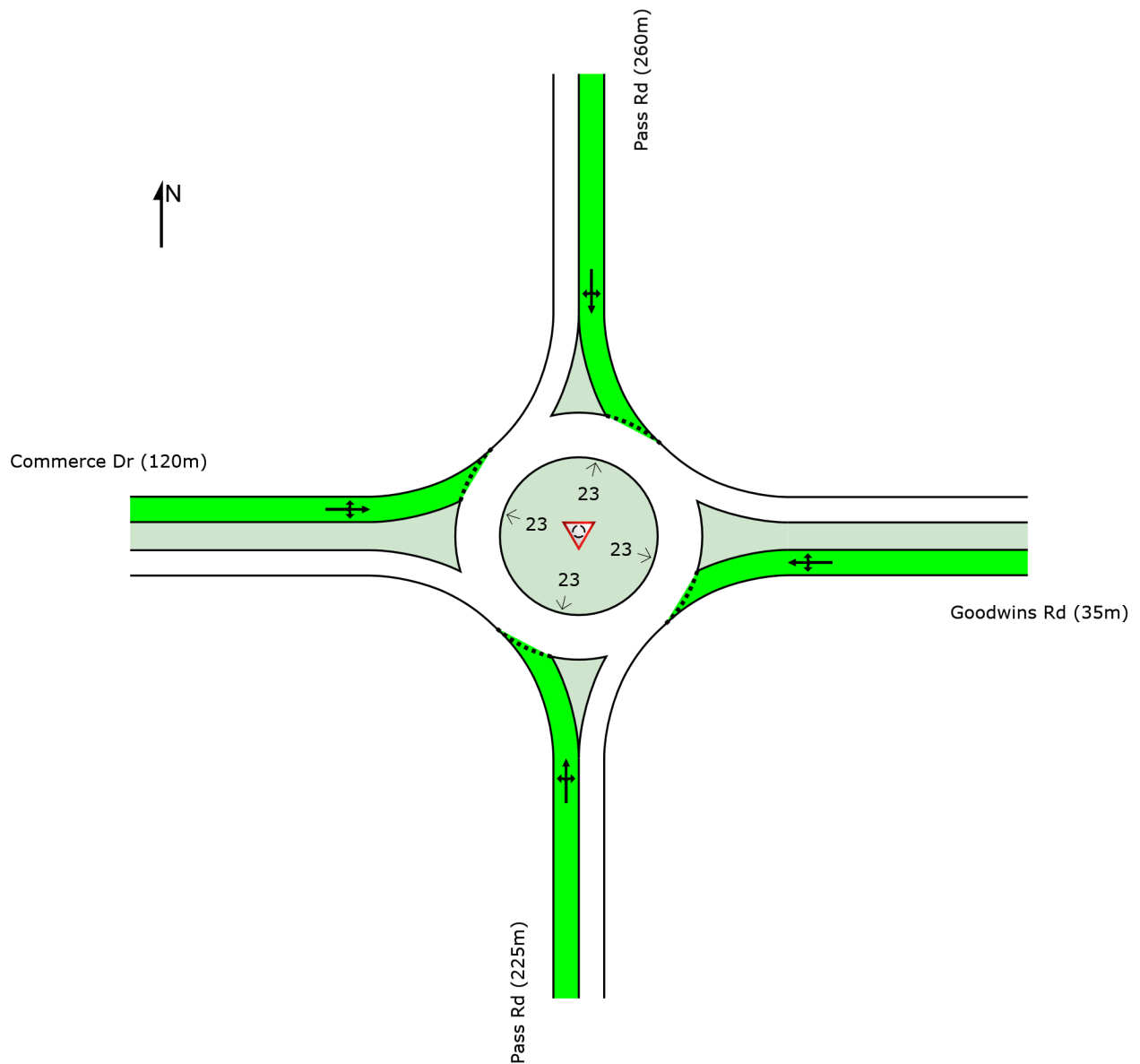
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1-lane Roundabout

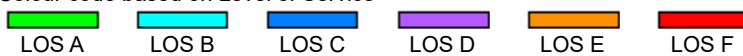
Site Category: Existing Design

Roundabout

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



Colour code based on Level of Service



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

Roundabout Level of Service Method: SIDRA Roundabout LOS

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

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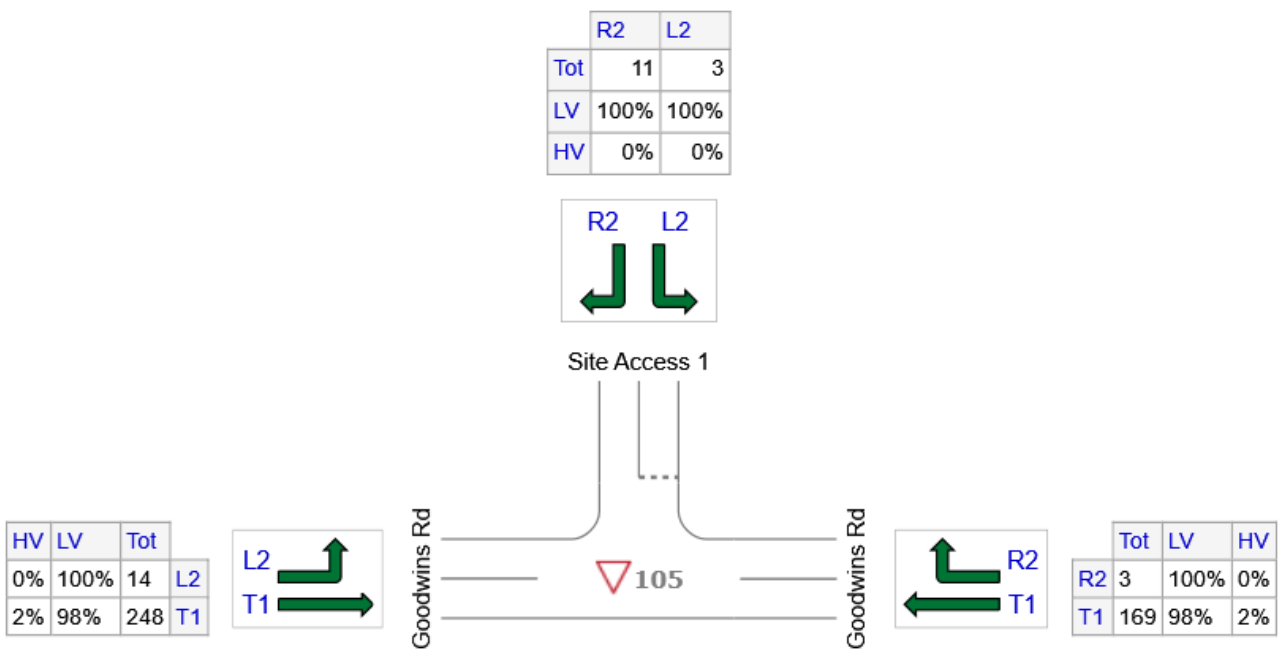
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▽ Site: 105 [Goodwins x Site Access 1 (Site Folder: Post Development - PM Peak)]

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
E: Goodwins Rd	172	169	3
N: Site Access 1	14	14	0
W: Goodwins Rd	262	257	5
Total	448	440	8

MOVEMENT SUMMARY

Site: 105 [Goodwins x Site Access 1 (Site Folder: Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Goodwins Rd															
8	T1	All MCs	178	2.0	178	2.0	0.093	0.0	LOS A	0.0	0.2	0.01	0.01	0.01	59.2
9	R2	All MCs	3	0.0	3	0.0	0.093	5.8	LOS A	0.0	0.2	0.01	0.01	0.01	47.2
Approach			181	2.0	181	2.0	0.093	0.1	NA	0.0	0.2	0.01	0.01	0.01	59.0
North: Site Access 1															
10	L2	All MCs	3	0.0	3	0.0	0.011	4.5	LOS A	0.0	0.2	0.28	0.56	0.28	34.3
12	R2	All MCs	12	0.0	12	0.0	0.011	4.6	LOS A	0.0	0.2	0.28	0.56	0.28	34.1
Approach			15	0.0	15	0.0	0.011	4.5	LOS A	0.0	0.2	0.28	0.56	0.28	34.1
West: Goodwins Rd															
1	L2	All MCs	15	0.0	15	0.0	0.142	5.5	LOS A	0.0	0.0	0.00	0.03	0.00	31.7
2	T1	All MCs	261	2.0	261	2.0	0.142	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	58.5
Approach			276	1.9	276	1.9	0.142	0.3	NA	0.0	0.0	0.00	0.03	0.00	56.6
All Vehicles			472	1.9	472	1.9	0.142	0.4	NA	0.0	0.2	0.01	0.04	0.01	56.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik 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.

LEVEL OF SERVICE

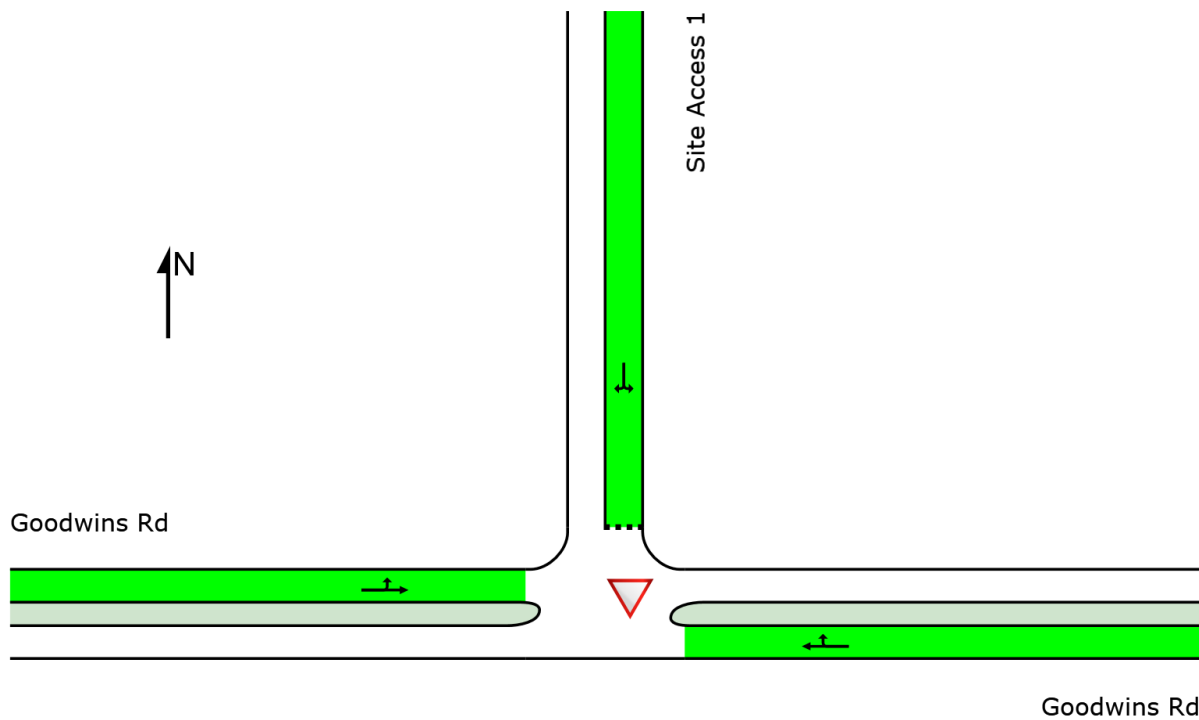
Lane Level of Service

▽ Site: 105 [Goodwins x Site Access 1 (Site Folder: Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

	Approaches			Intersection
	East	North	West	
LOS	NA (TWSC)	A	NA (TWSC)	NA (TWSC)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
-------	-------	-------	-------	-------	-------

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

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

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

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MOVEMENT SUMMARY

 **Site: 105v [Goodwins x Site Access 1 - Roundabout (Site Folder: Post Development - PM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout
Site Category: Proposed Design 2
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Goodwins Rd															
8	T1	All MCs	178	2.0	178	2.0	0.124	4.6	LOS A	0.8	5.4	0.09	0.48	0.09	39.0
9	R2	All MCs	3	0.0	3	0.0	0.124	7.8	LOS A	0.8	5.4	0.09	0.48	0.09	34.0
Approach			181	2.0	181	2.0	0.124	4.6	LOS A	0.8	5.4	0.09	0.48	0.09	38.9
North: Site Access 1															
10	L2	All MCs	3	0.0	3	0.0	0.015	4.5	LOS A	0.1	0.5	0.39	0.61	0.39	31.5
12	R2	All MCs	12	0.0	12	0.0	0.015	7.4	LOS A	0.1	0.5	0.39	0.61	0.39	29.8
Approach			15	0.0	15	0.0	0.015	6.8	LOS A	0.1	0.5	0.39	0.61	0.39	30.2
West: Goodwins Rd															
1	L2	All MCs	15	0.0	15	0.0	0.171	4.7	LOS A	1.0	7.2	0.04	0.49	0.04	35.3
2	T1	All MCs	261	2.0	261	2.0	0.171	4.6	LOS A	1.0	7.2	0.04	0.49	0.04	39.5
Approach			276	1.9	276	1.9	0.171	4.6	LOS A	1.0	7.2	0.04	0.49	0.04	39.3
All Vehicles			472	1.9	472	1.9	0.171	4.7	LOS A	1.0	7.2	0.07	0.49	0.07	38.9

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.

LEVEL OF SERVICE

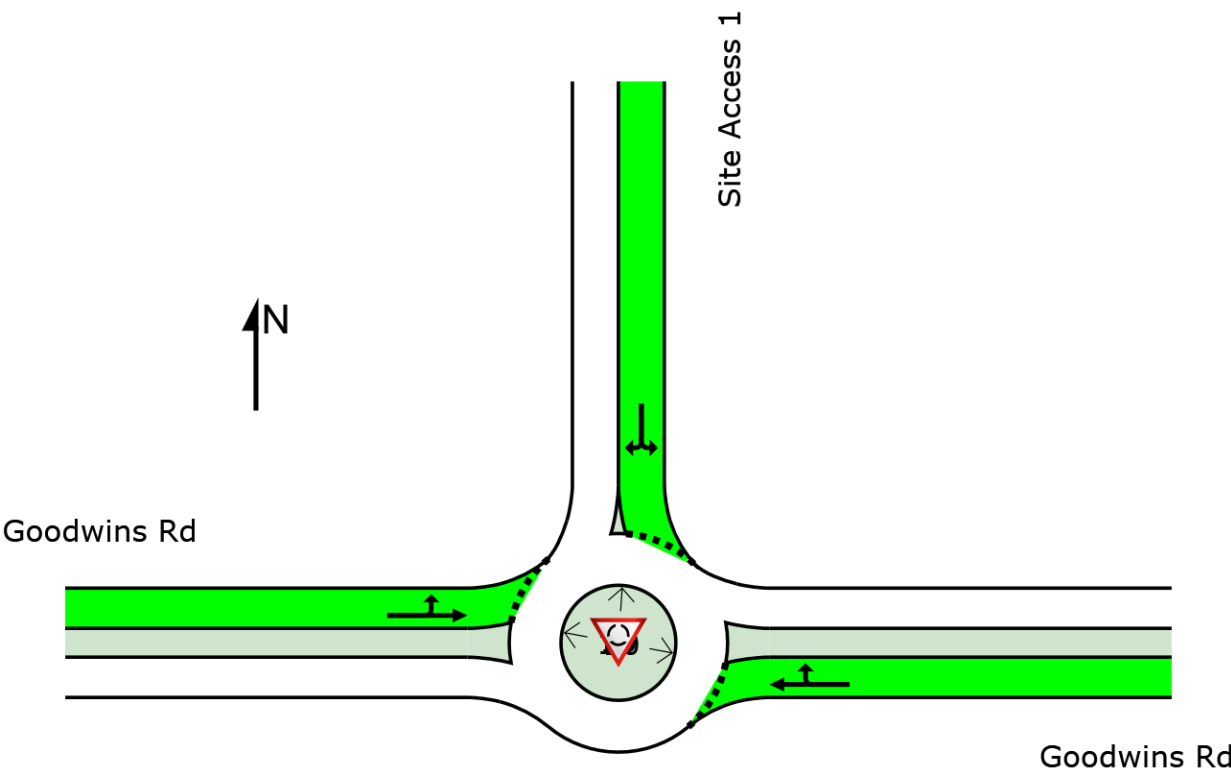
Lane Level of Service

 **Site: 105v [Goodwins x Site Access 1 - Roundabout (Site Folder: Post Development - PM Peak)]**

Output produced by **SIDRA INTERSECTION Version: 9.1.6.228**

Roundabout
Site Category: Proposed Design 2
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	A	A	A



Colour code based on Level of Service

 LOS A

 LOS B

 LOS C

 LOS D

 LOS E

 LOS F

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

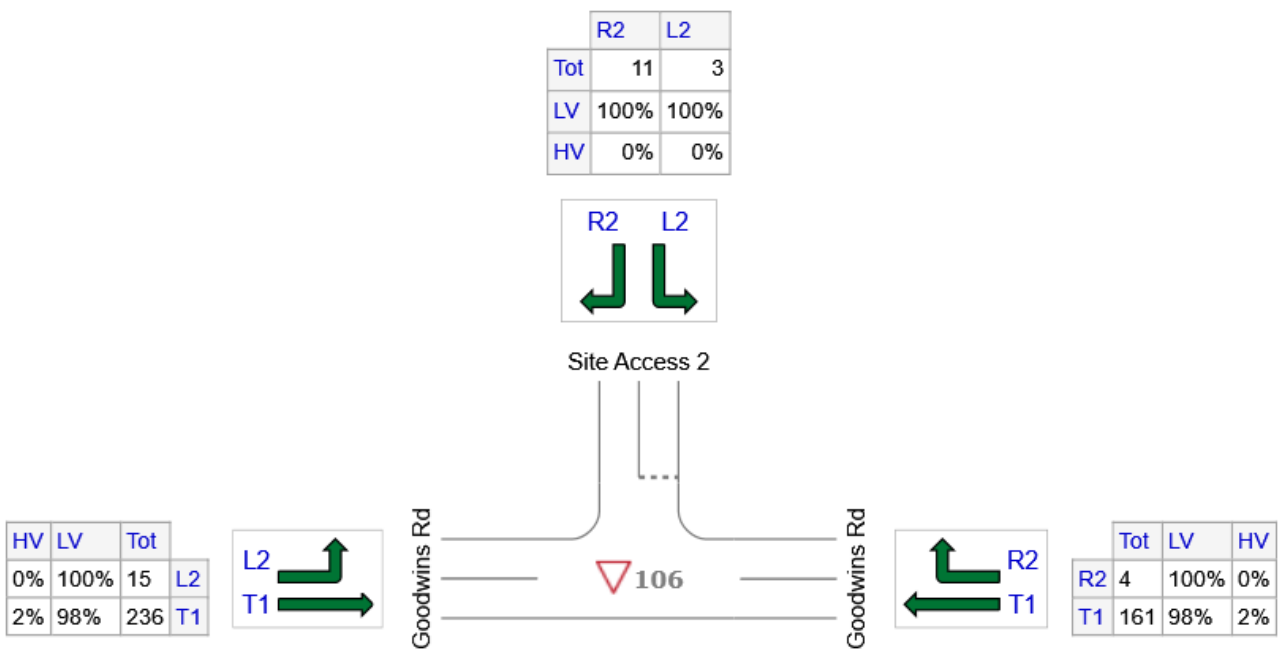
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▽ Site: 106 [Goodwins x Site Access 2 (Site Folder: Post Development - PM Peak)]

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
E: Goodwins Rd	165	162	3
N: Site Access 2	14	14	0
W: Goodwins Rd	251	246	5
Total	430	422	8

MOVEMENT SUMMARY

Site: 106 [Goodwins x Site Access 2 (Site Folder: Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Goodwins Rd															
8	T1	All MCs	169	2.0	169	2.0	0.089	0.0	LOS A	0.0	0.2	0.02	0.02	0.02	59.0
9	R2	All MCs	4	0.0	4	0.0	0.089	5.9	LOS A	0.0	0.2	0.02	0.02	0.02	46.6
Approach			174	2.0	174	2.0	0.089	0.2	NA	0.0	0.2	0.02	0.02	0.02	58.7
North: Site Access 2															
10	L2	All MCs	3	0.0	3	0.0	0.011	4.5	LOS A	0.0	0.2	0.27	0.56	0.27	34.4
12	R2	All MCs	12	0.0	12	0.0	0.011	4.5	LOS A	0.0	0.2	0.27	0.56	0.27	34.0
Approach			15	0.0	15	0.0	0.011	4.5	LOS A	0.0	0.2	0.27	0.56	0.27	34.1
West: Goodwins Rd															
1	L2	All MCs	16	0.0	16	0.0	0.136	5.5	LOS A	0.0	0.0	0.00	0.04	0.00	31.5
2	T1	All MCs	248	2.0	248	2.0	0.136	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	58.4
Approach			264	1.9	264	1.9	0.136	0.3	NA	0.0	0.0	0.00	0.04	0.00	56.2
All Vehicles			453	1.8	453	1.8	0.136	0.4	NA	0.0	0.2	0.02	0.05	0.02	56.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik 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.

LEVEL OF SERVICE

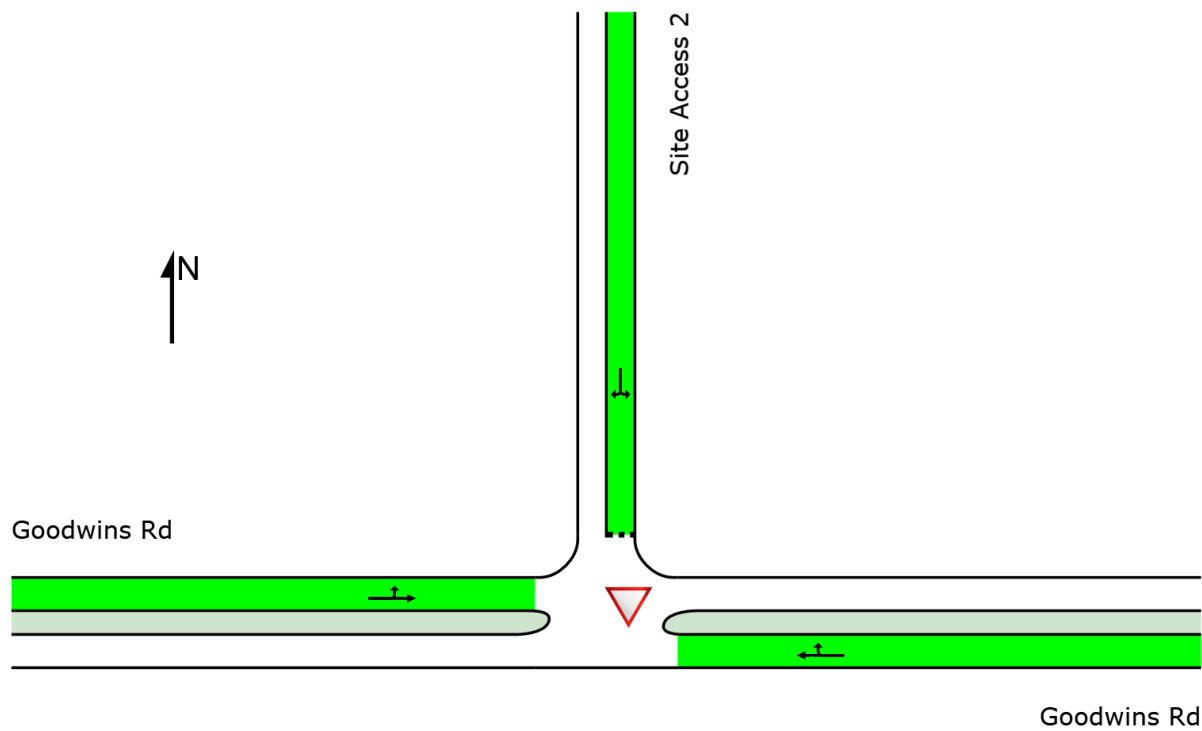
Lane Level of Service

▽ Site: 106 [Goodwins x Site Access 2 (Site Folder: Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

	Approaches			Intersection
	East	North	West	
LOS	NA (TWSC)	A	NA (TWSC)	NA (TWSC)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
-------	-------	-------	-------	-------	-------

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

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

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

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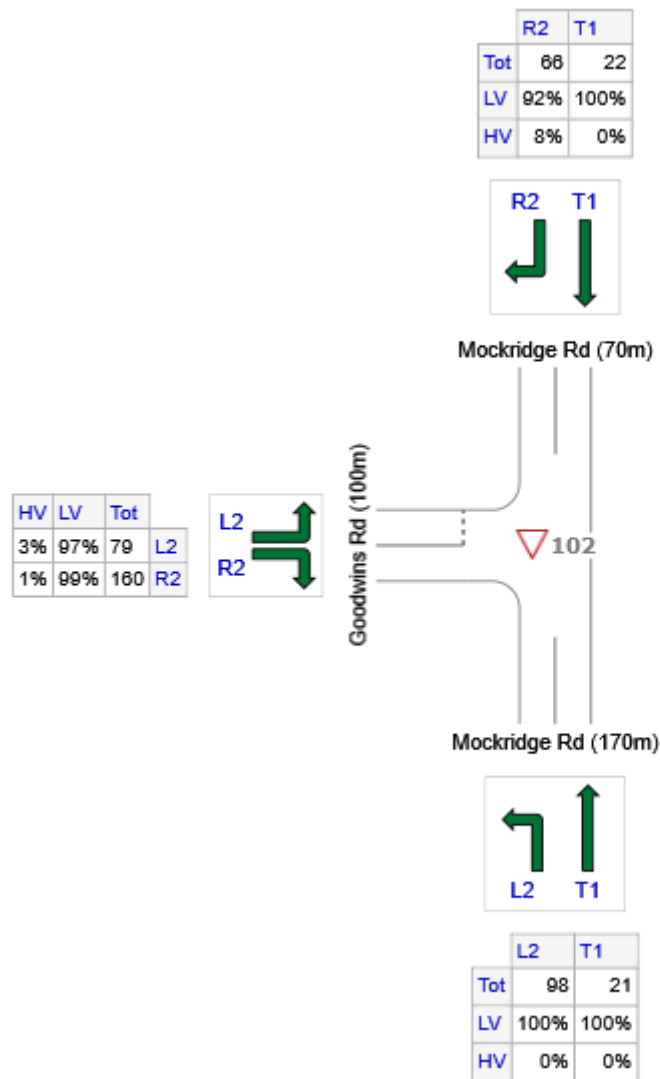
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▽ Site: 102 [Goodwins x Mockridge (Site Folder: Post Development - PM Peak)]

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Mockridge Rd (170m)	119	119	0
N: Mockridge Rd (70m)	88	83	5
W: Goodwins Rd (100m)	239	236	3
Total	446	438	8

MOVEMENT SUMMARY

Site: 102 [Goodwins x Mockridge (Site Folder: Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Mockridge Rd (170m)															
1	L2	All MCs	103	0.0	103	0.0	0.063	5.5	LOS A	0.0	0.0	0.00	0.48	0.00	36.1
2	T1	All MCs	22	0.0	22	0.0	0.063	0.0	LOS A	0.0	0.0	0.00	0.48	0.00	46.2
Approach			125	0.0	125	0.0	0.063	4.6	NA	0.0	0.0	0.00	0.48	0.00	37.4
North: Mockridge Rd (70m)															
8	T1	All MCs	23	0.0	23	0.0	0.045	0.3	LOS A	0.2	1.8	0.24	0.41	0.24	46.8
9	R2	All MCs	69	7.6	69	7.6	0.045	5.1	LOS A	0.2	1.8	0.24	0.41	0.24	23.6
Approach			93	5.7	93	5.7	0.045	3.9	NA	0.2	1.8	0.24	0.41	0.24	28.0
West: Goodwins Rd (100m)															
10	L2	All MCs	83	2.5	83	2.5	0.040	5.6	LOS A	0.2	1.4	0.08	0.55	0.08	34.0
12	R2	All MCs	168	0.6	168	0.6	0.117	5.8	LOS A	0.3	2.0	0.16	0.58	0.16	39.3
Approach			252	1.3	252	1.3	0.117	5.7	LOS A	0.3	2.0	0.13	0.57	0.13	37.9
All Vehicles			469	1.8	469	1.8	0.117	5.0	NA	0.3	2.0	0.12	0.51	0.12	35.7

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

LEVEL OF SERVICE

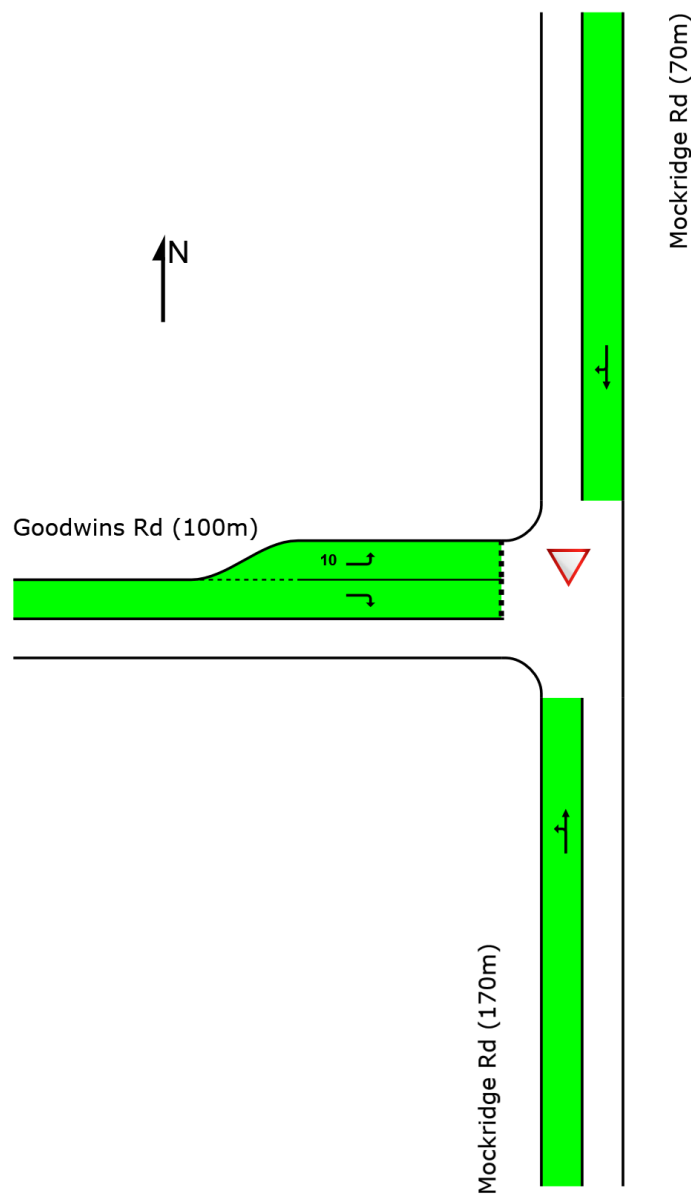
Lane Level of Service

▽ Site: 102 [Goodwins x Mockridge (Site Folder: Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
LOS	NA (TWSC)	NA (TWSC)	A	NA (TWSC)



Colour code based on Level of Service



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

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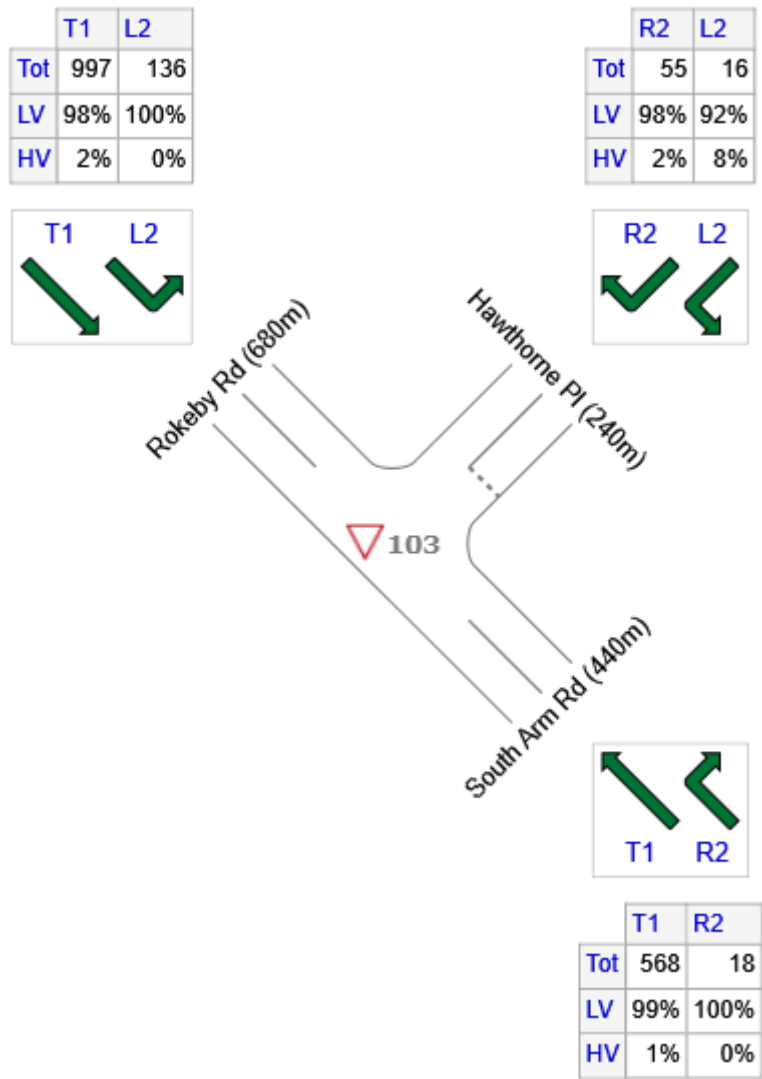
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▼ Site: 103 [Rokeby x Hawthorne (Site Folder: Post Development - PM Peak)]

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: South Arm Rd (440m)	586	578	8
NE: Hawthorne Pl (240m)	71	69	2
NW: Rokeby Rd (680m)	1133	1118	15
Total	1790	1765	25

MOVEMENT SUMMARY

Site: 103 [Rokeby x Hawthorne (Site Folder: Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: South Arm Rd (440m)															
22	T1	All MCs	598	1.4	598	1.4	0.314	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
23	R2	All MCs	19	0.0	19	0.0	0.040	13.3	LOS B	0.1	1.0	0.81	0.92	0.81	43.5
Approach			617	1.4	617	1.4	0.314	0.5	NA	0.1	1.0	0.02	0.03	0.02	59.4
NorthEast: Hawthorne PI (240m)															
24	L2	All MCs	17	8.3	17	8.3	0.033	12.1	LOS B	0.1	0.8	0.74	0.87	0.74	44.0
26	R2	All MCs	58	1.9	58	1.9	0.373	31.6	LOS D	1.1	7.7	0.93	1.01	1.10	37.2
Approach			75	3.3	75	3.3	0.373	27.2	LOS D	1.1	7.7	0.88	0.98	1.02	38.3
NorthWest: Rokeby Rd (680m)															
27	L2	All MCs	143	0.0	143	0.0	0.621	5.9	LOS A	0.0	0.0	0.00	0.07	0.00	56.1
28	T1	All MCs	1049	1.5	1049	1.5	0.621	0.5	LOS A	0.0	0.0	0.00	0.07	0.00	58.8
Approach			1193	1.3	1193	1.3	0.621	1.1	NA	0.0	0.0	0.00	0.07	0.00	58.5
All Vehicles			1884	1.4	1884	1.4	0.621	2.0	NA	1.1	7.7	0.04	0.09	0.05	57.8

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

LEVEL OF SERVICE

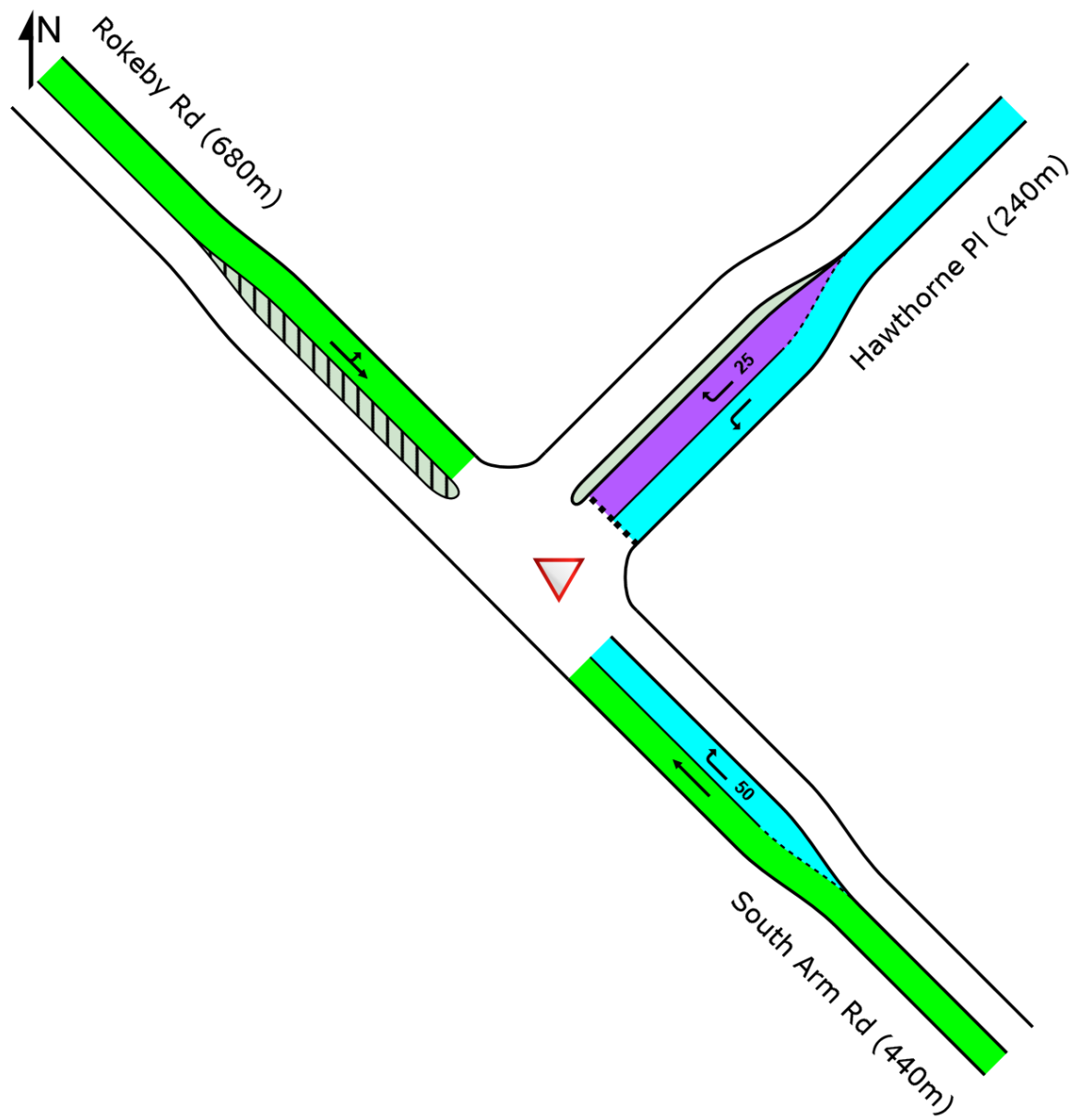
Lane Level of Service

▽ Site: 103 [Rokeby x Hawthorne (Site Folder: Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches			Intersection
	Southeast	Northeast	Northwest	
LOS	NA (TWSC)	D	NA (TWSC)	NA (TWSC)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
-------	-------	-------	-------	-------	-------

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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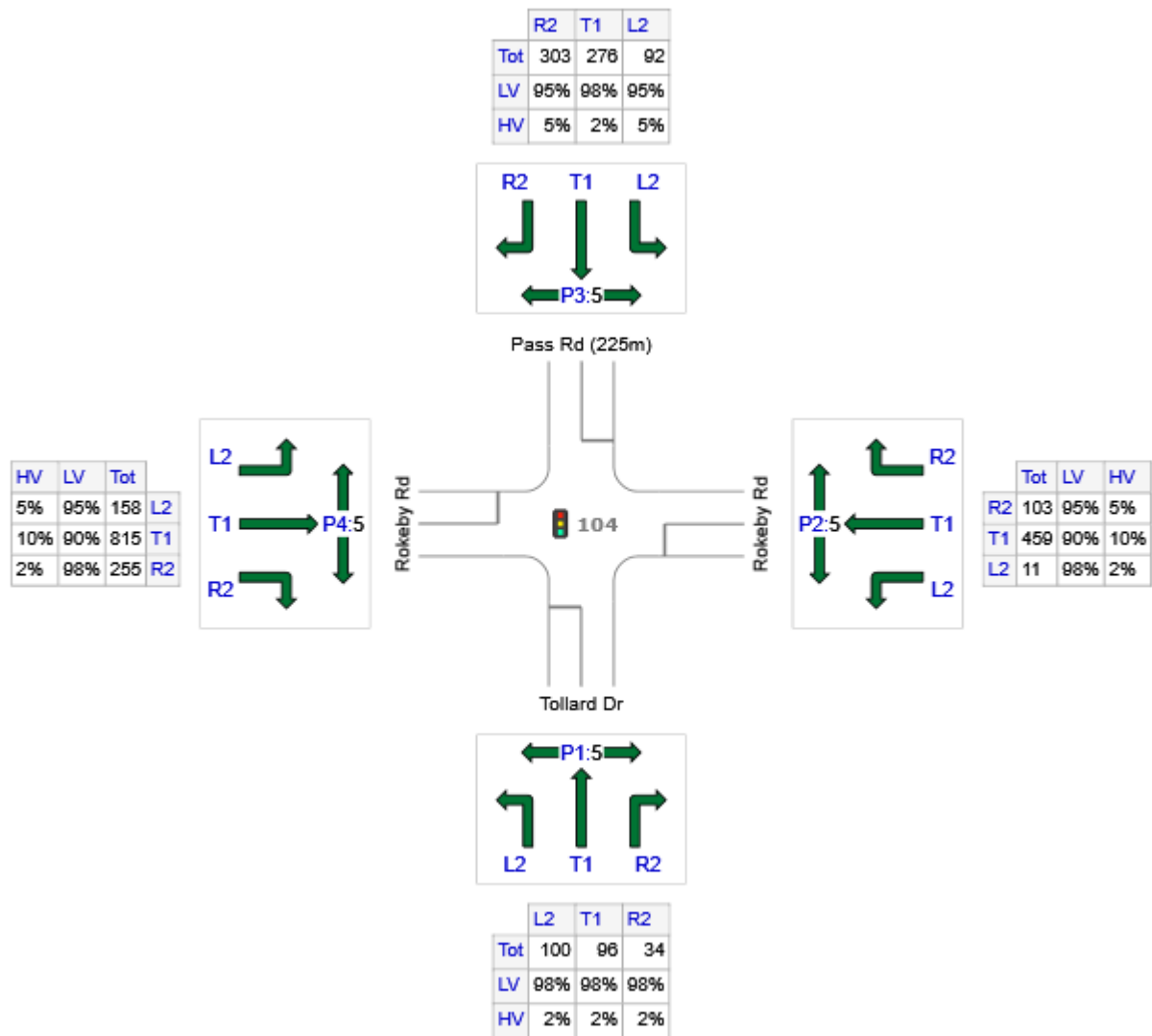
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 **Site: 104 [Rokeby x Pass x Tollard (Site Folder: Post Development - PM Peak)]**

Signalised 4way intersection
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Tollard Dr	230	225	5
E: Rokeby Rd	573	522	51
N: Pass Rd (225m)	671	646	25
W: Rokeby Rd	1228	1134	95
Total	2702	2526	176

Site: 104 [Rokeby x Pass x Tollard (Site Folder: Post Development - PM Peak)]

Signalised 4way intersection
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 105 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

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

- * Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	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	ped/h	sec		ped	m			sec	m	m/sec
South: Tollard Dr												
P1	Full	5	5	46.7	LOS E	0.0	0.0	0.94	0.94	200.5	200.0	1.00
East: Rokeby Rd												

P2 Full	5	5	46.7	LOS E	0.0	0.0	0.94	0.94	200.5	200.0	1.00
North: Pass Rd (225m)											
P3 Full	5	5	46.7	LOS E	0.0	0.0	0.94	0.94	200.5	200.0	1.00
West: Rokeby Rd											
P4 Full	5	5	46.7	LOS E	0.0	0.0	0.94	0.94	200.5	200.0	1.00
All Pedestrians	20	21	46.7	LOS E	0.0	0.0	0.94	0.94	200.5	200.0	1.00

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.

LEVEL OF SERVICE

Lane Level of Service

 **Site: 104 [Rokeby x Pass x Tollard (Site Folder: Post Development - PM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

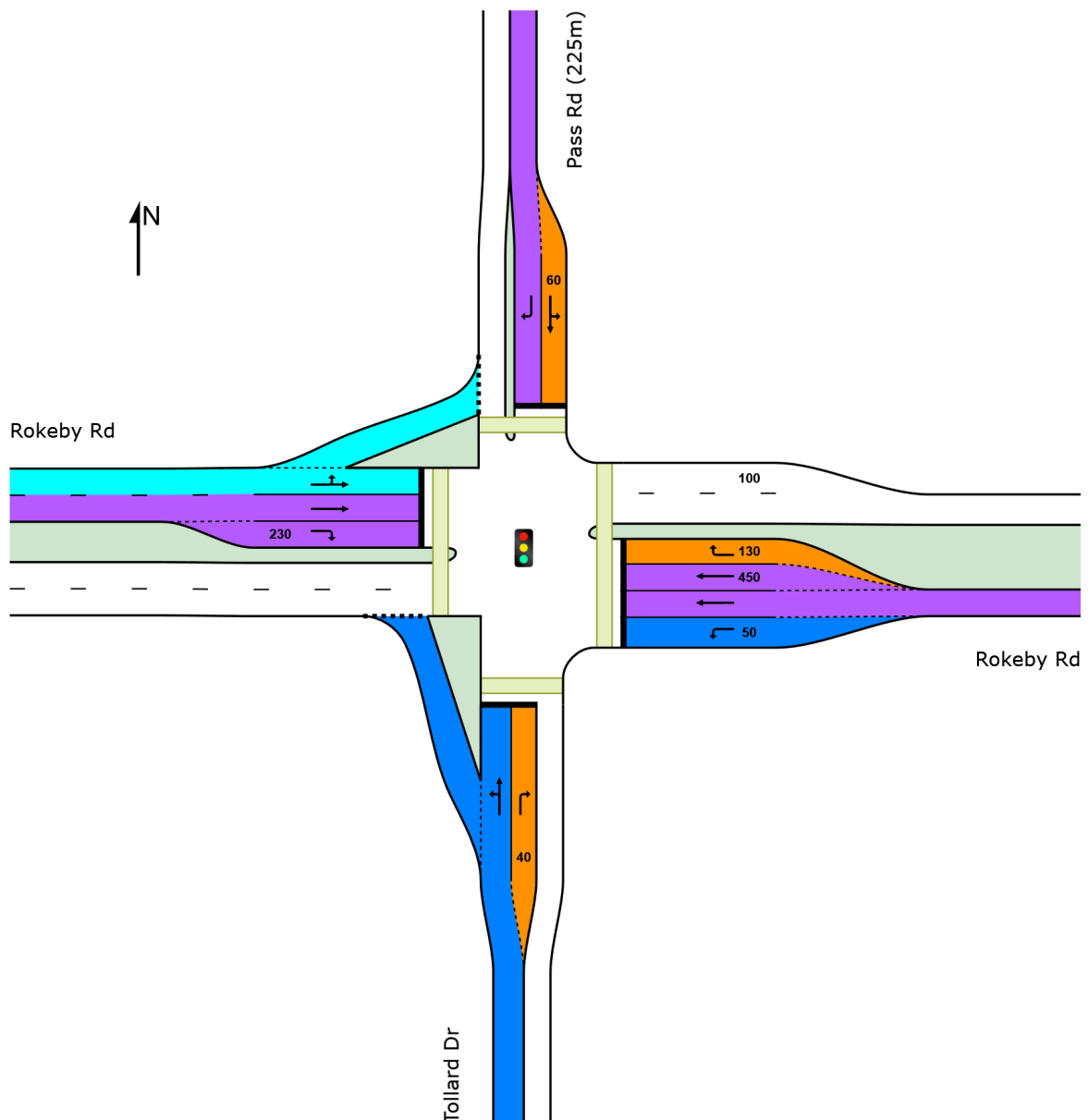
Signalised 4way intersection

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 105 seconds (Site Practical Cycle Time)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

	Approaches				Intersection
	South	East	North	West	
LOS	C	D	E	C	D



Colour code based on Level of Service



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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SIDRA Intersection Modelling Outputs – 10 Years Post Development

Appendix D

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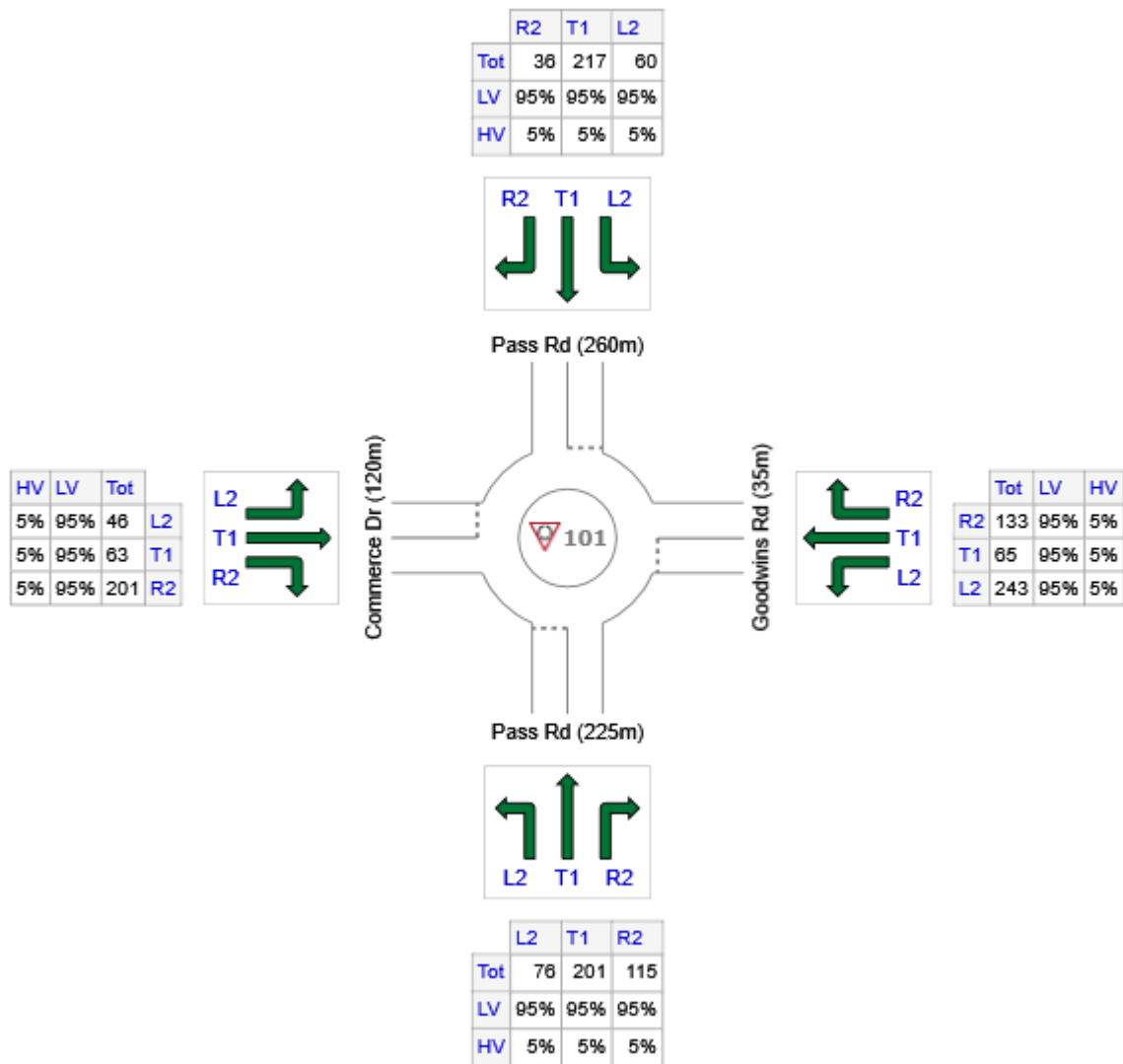
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: 10 Yrs Post Development - AM Peak)]**

1-lane Roundabout
Site Category: Existing Design
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Pass Rd (225m)	392	372	20
E: Goodwins Rd (35m)	441	419	22
N: Pass Rd (260m)	313	297	16
W: Commerce Dr (120m)	310	295	16
Total	1456	1383	73

MOVEMENT SUMMARY

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: 10 Yrs Post Development - AM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1-lane Roundabout
Site Category: Existing Design
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Pass Rd (225m)															
1	L2	All MCs	80	5.0	80	5.0	0.387	5.6	LOS A	2.9	21.0	0.59	0.57	0.59	41.9
2	T1	All MCs	212	5.0	212	5.0	0.387	5.6	LOS A	2.9	21.0	0.59	0.57	0.59	45.6
3	R2	All MCs	121	5.0	121	5.0	0.387	10.7	LOS B	2.9	21.0	0.59	0.57	0.59	38.6
Approach			413	5.0	413	5.0	0.387	7.1	LOS A	2.9	21.0	0.59	0.57	0.59	43.4
East: Goodwins Rd (35m)															
4	L2	All MCs	256	5.0	256	5.0	0.535	7.0	LOS A	4.6	33.5	0.80	0.74	0.89	37.1
5	T1	All MCs	68	5.0	68	5.0	0.535	7.3	LOS A	4.6	33.5	0.80	0.74	0.89	31.7
6	R2	All MCs	140	5.0	140	5.0	0.535	11.8	LOS B	4.6	33.5	0.80	0.74	0.89	37.6
Approach			464	5.0	464	5.0	0.535	8.5	LOS A	4.6	33.5	0.80	0.74	0.89	36.7
North: Pass Rd (260m)															
7	L2	All MCs	63	5.0	63	5.0	0.358	6.7	LOS A	2.5	17.9	0.68	0.62	0.68	30.9
8	T1	All MCs	228	5.0	228	5.0	0.358	6.7	LOS A	2.5	17.9	0.68	0.62	0.68	45.7
9	R2	All MCs	38	5.0	38	5.0	0.358	11.8	LOS B	2.5	17.9	0.68	0.62	0.68	33.5
Approach			329	5.0	329	5.0	0.358	7.3	LOS A	2.5	17.9	0.68	0.62	0.68	41.5
West: Commerce Dr (120m)															
10	L2	All MCs	48	5.0	48	5.0	0.376	7.3	LOS A	2.6	18.8	0.72	0.69	0.72	39.7
11	T1	All MCs	66	5.0	66	5.0	0.376	7.4	LOS A	2.6	18.8	0.72	0.69	0.72	22.5
12	R2	All MCs	212	5.0	212	5.0	0.376	12.4	LOS B	2.6	18.8	0.72	0.69	0.72	37.8
Approach			326	5.0	326	5.0	0.376	10.6	LOS B	2.6	18.8	0.72	0.69	0.72	35.4
All Vehicles			1533	5.0	1533	5.0	0.535	8.3	LOS A	4.6	33.5	0.70	0.66	0.73	39.5

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.

LEVEL OF SERVICE

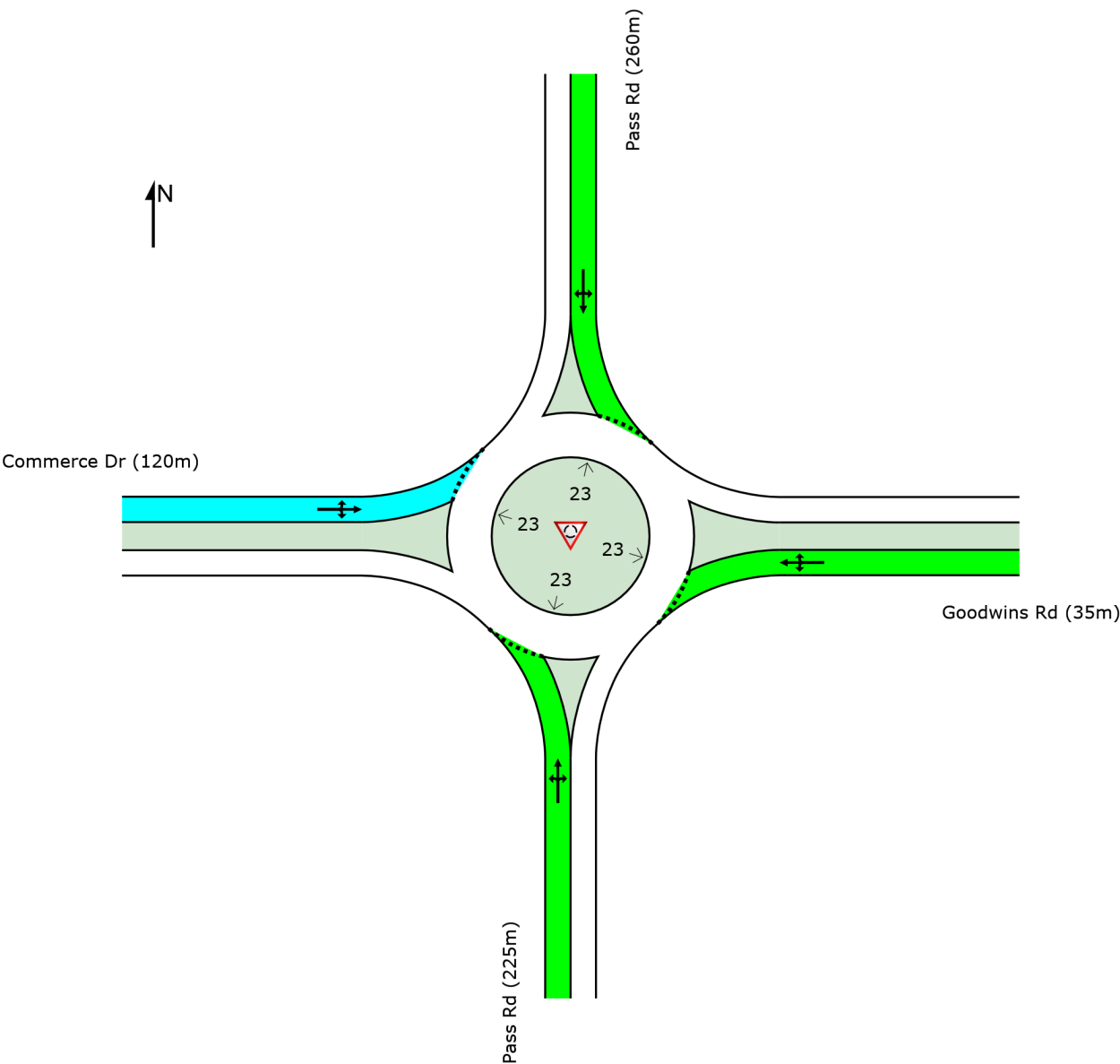
Lane Level of Service

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: 10 Yrs Post Development - AM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1-lane Roundabout
Site Category: Existing Design
Roundabout

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



Colour code based on Level of Service



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

Roundabout Level of Service Method: SIDRA Roundabout LOS

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

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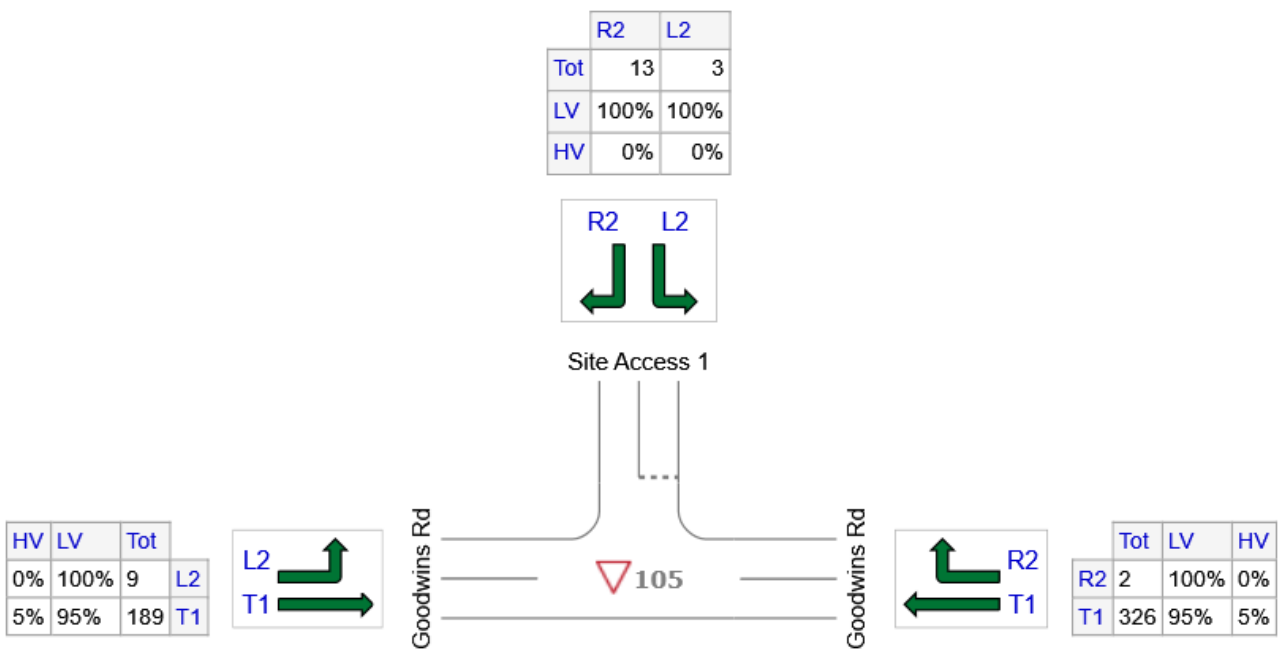
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▽ Site: 105 [Goodwins x Site Access 1 (Site Folder: 10 Yrs Post Development - AM Peak)]

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
E: Goodwins Rd	328	312	16
N: Site Access 1	16	16	0
W: Goodwins Rd	198	189	9
Total	542	516	26

MOVEMENT SUMMARY

▼ Site: 105 [Goodwins x Site Access 1 (Site Folder: 10 Yrs Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Goodwins Rd															
8	T1	All MCs	343	5.0	343	5.0	0.181	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	59.7
9	R2	All MCs	2	0.0	2	0.0	0.181	5.6	LOS A	0.0	0.1	0.00	0.00	0.00	47.6
Approach			345	5.0	345	5.0	0.181	0.0	NA	0.0	0.1	0.00	0.00	0.00	59.7
North: Site Access 1															
10	L2	All MCs	3	0.0	3	0.0	0.014	4.4	LOS A	0.0	0.2	0.30	0.57	0.30	34.2
12	R2	All MCs	14	0.0	14	0.0	0.014	4.8	LOS A	0.0	0.2	0.30	0.57	0.30	34.0
Approach			17	0.0	17	0.0	0.014	4.7	LOS A	0.0	0.2	0.30	0.57	0.30	34.0
West: Goodwins Rd															
1	L2	All MCs	9	0.0	9	0.0	0.109	5.5	LOS A	0.0	0.0	0.00	0.03	0.00	31.7
2	T1	All MCs	199	5.0	199	5.0	0.109	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	58.7
Approach			208	4.8	208	4.8	0.109	0.3	NA	0.0	0.0	0.00	0.03	0.00	57.0
All Vehicles			571	4.8	571	4.8	0.181	0.3	NA	0.0	0.2	0.01	0.03	0.01	57.7

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

LEVEL OF SERVICE

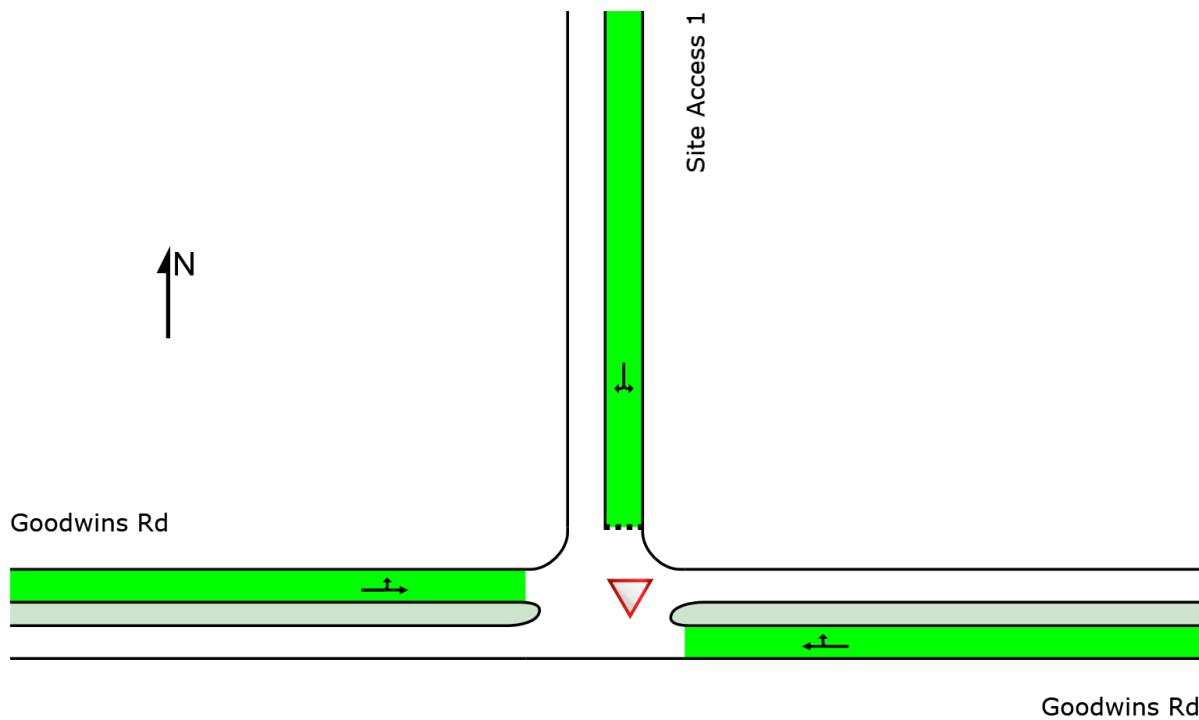
Lane Level of Service

▽ Site: 105 [Goodwins x Site Access 1 (Site Folder: 10 Yrs Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Give-way T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

LOS	Approaches			Intersection
	East	North	West	
	NA (TWSC)	A	NA (TWSC)	NA (TWSC)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
-------	-------	-------	-------	-------	-------

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

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

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

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Traffic modelling\SIDRA\GoodwinsRd project v2.sip9

MOVEMENT SUMMARY

 **Site: 105v [Goodwins x Site Access 1 - Roundabout (Site Folder: 10 Yrs Post Development - AM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout
Site Category: Proposed Design 2
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Goodwins Rd															
8	T1	All MCs	343	5.0	343	5.0	0.233	4.6	LOS A	1.6	11.6	0.10	0.47	0.10	38.7
9	R2	All MCs	2	0.0	2	0.0	0.233	7.8	LOS A	1.6	11.6	0.10	0.47	0.10	33.9
Approach			345	5.0	345	5.0	0.233	4.6	LOS A	1.6	11.6	0.10	0.47	0.10	38.7
North: Site Access 1															
10	L2	All MCs	3	0.0	3	0.0	0.016	4.2	LOS A	0.1	0.5	0.35	0.61	0.35	31.9
12	R2	All MCs	14	0.0	14	0.0	0.016	7.1	LOS A	0.1	0.5	0.35	0.61	0.35	30.2
Approach			17	0.0	17	0.0	0.016	6.6	LOS A	0.1	0.5	0.35	0.61	0.35	30.5
West: Goodwins Rd															
1	L2	All MCs	9	0.0	9	0.0	0.131	4.7	LOS A	0.7	5.4	0.03	0.49	0.03	35.4
2	T1	All MCs	199	5.0	199	5.0	0.131	4.6	LOS A	0.7	5.4	0.03	0.49	0.03	39.4
Approach			208	4.8	208	4.8	0.131	4.6	LOS A	0.7	5.4	0.03	0.49	0.03	39.3
All Vehicles			571	4.8	571	4.8	0.233	4.7	LOS A	1.6	11.6	0.08	0.48	0.08	38.7

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.

LEVEL OF SERVICE

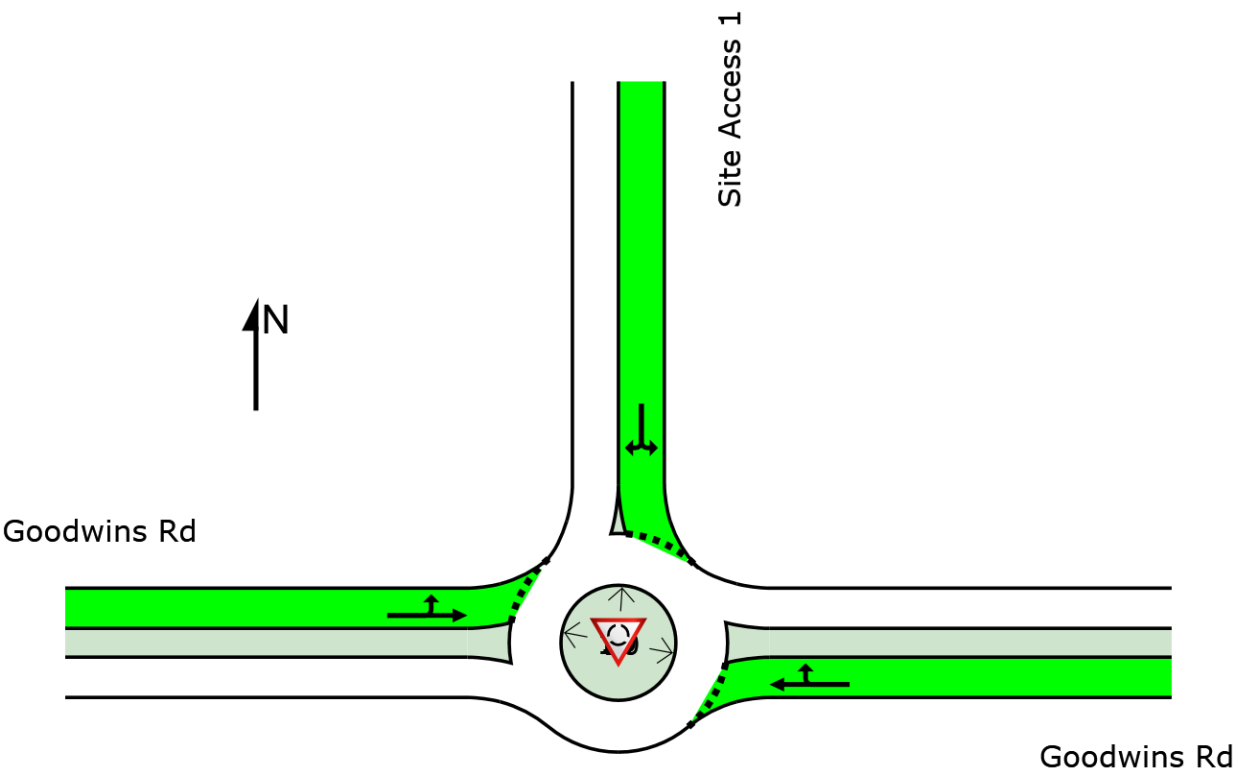
Lane Level of Service

 **Site: 105v [Goodwins x Site Access 1 - Roundabout (Site Folder: 10 Yrs Post Development - AM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout
Site Category: Proposed Design 2
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	A	A	A



Colour code based on Level of Service



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout Level of Service Method: SIDRA Roundabout LOS
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

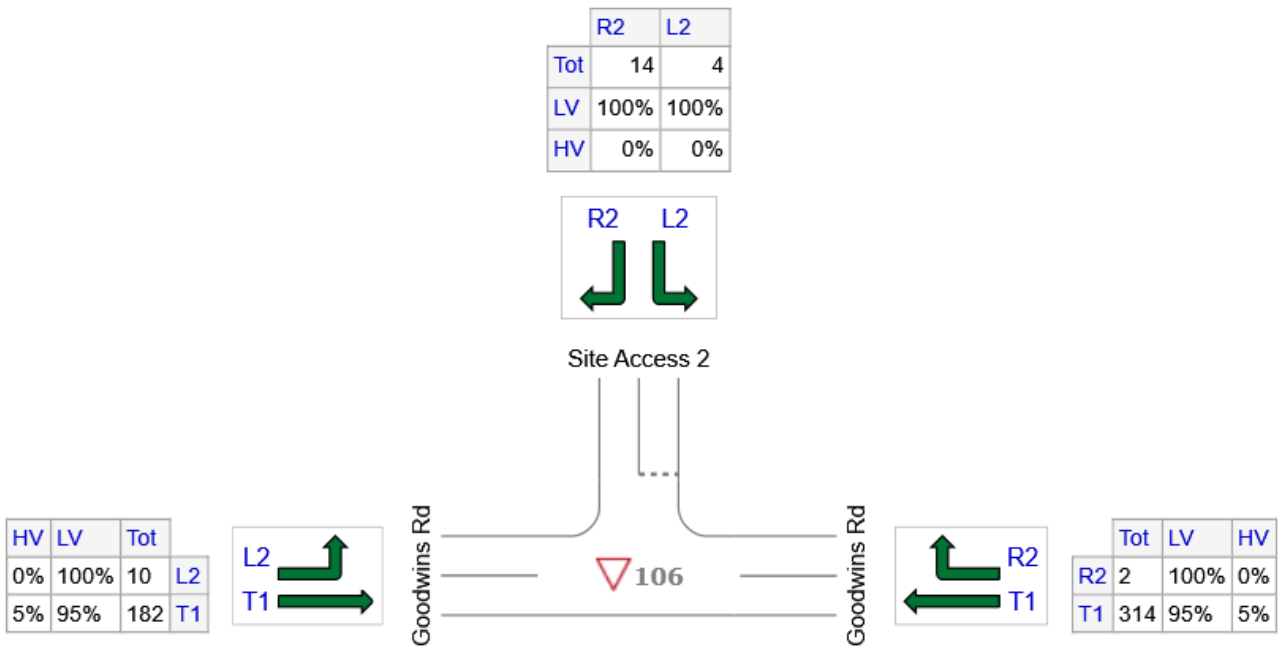
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▽ Site: 106 [Goodwins x Site Access 2 (Site Folder: 10 Yrs Post Development - AM Peak)]

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
E: Goodwins Rd	316	300	16
N: Site Access 2	18	18	0
W: Goodwins Rd	192	183	9
Total	526	501	25

MOVEMENT SUMMARY

▼ Site: 106 [Goodwins x Site Access 2 (Site Folder: 10 Yrs Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Goodwins Rd															
8	T1	All MCs	331	5.0	331	5.0	0.174	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	59.7
9	R2	All MCs	2	0.0	2	0.0	0.174	5.6	LOS A	0.0	0.1	0.00	0.00	0.00	47.2
Approach			333	5.0	333	5.0	0.174	0.0	NA	0.0	0.1	0.00	0.00	0.00	59.7
North: Site Access 2															
10	L2	All MCs	4	0.0	4	0.0	0.015	4.3	LOS A	0.0	0.3	0.29	0.57	0.29	34.3
12	R2	All MCs	15	0.0	15	0.0	0.015	4.7	LOS A	0.0	0.3	0.29	0.57	0.29	33.9
Approach			19	0.0	19	0.0	0.015	4.6	LOS A	0.0	0.3	0.29	0.57	0.29	34.0
West: Goodwins Rd															
1	L2	All MCs	11	0.0	11	0.0	0.106	5.5	LOS A	0.0	0.0	0.00	0.03	0.00	31.6
2	T1	All MCs	192	5.0	192	5.0	0.106	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	58.5
Approach			202	4.7	202	4.7	0.106	0.3	NA	0.0	0.0	0.00	0.03	0.00	56.6
All Vehicles			554	4.7	554	4.7	0.174	0.3	NA	0.0	0.3	0.01	0.03	0.01	57.4

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

LEVEL OF SERVICE

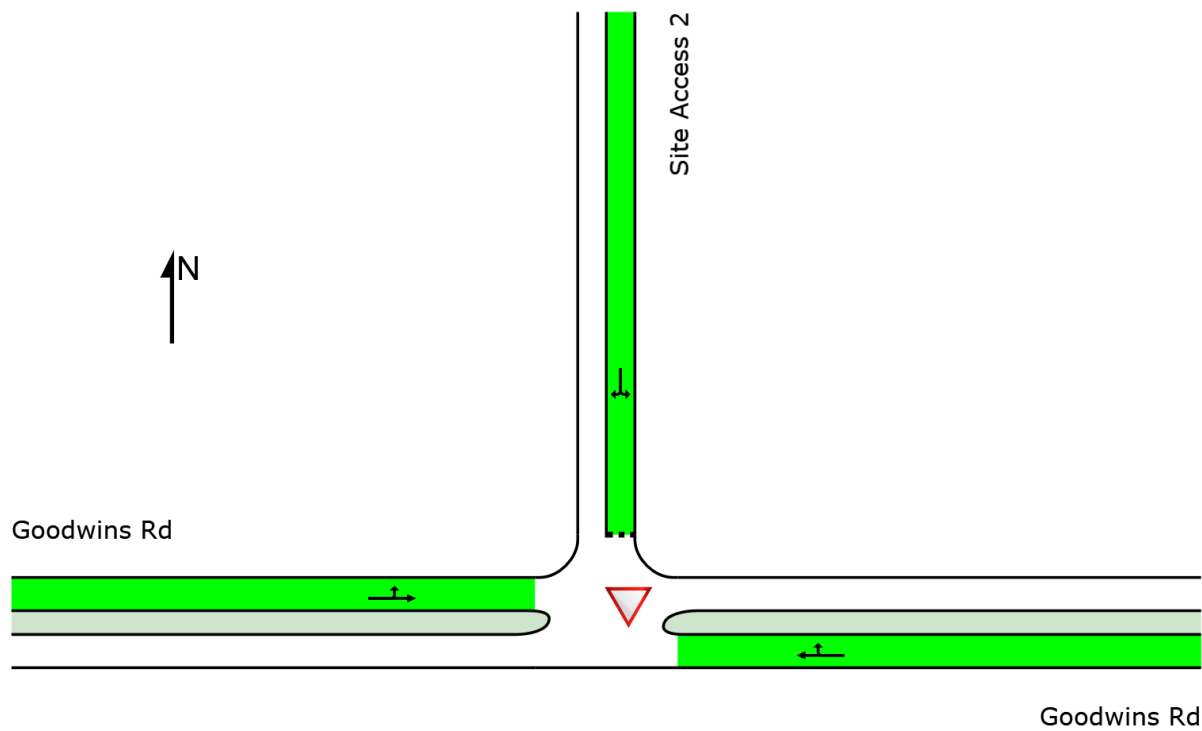
Lane Level of Service

▽ Site: 106 [Goodwins x Site Access 2 (Site Folder: 10 Yrs Post Development - AM Peak)]

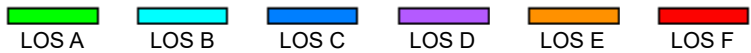
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

	Approaches			Intersection
	East	North	West	
LOS	NA (TWSC)	A	NA (TWSC)	NA (TWSC)



Colour code based on Level of Service



NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

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

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

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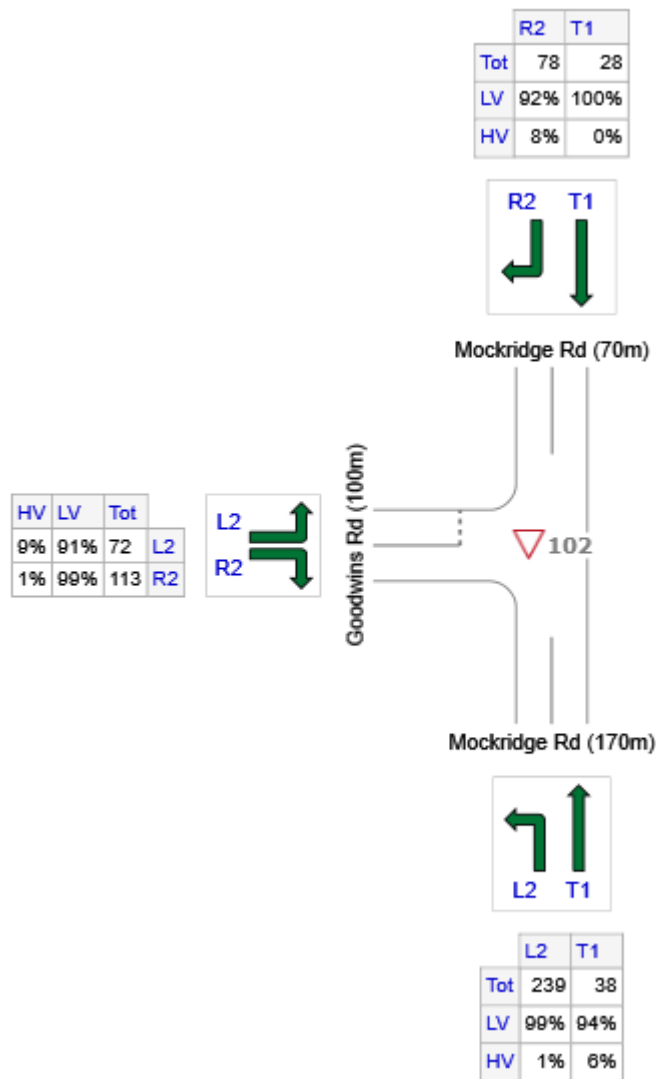
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▽ Site: 102 [Goodwins x Mockridge (Site Folder: 10 Yrs Post Development - AM Peak)]

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Mockridge Rd (170m)	277	272	5
N: Mockridge Rd (70m)	106	100	6
W: Goodwins Rd (100m)	185	178	7
Total	568	549	19

MOVEMENT SUMMARY

▼ Site: 102 [Goodwins x Mockridge (Site Folder: 10 Yrs Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Mockridge Rd (170m)															
1	L2	All MCs	252	1.0	252	1.0	0.148	5.6	LOS A	0.0	0.0	0.00	0.50	0.00	35.7
2	T1	All MCs	40	6.5	40	6.5	0.148	0.0	LOS A	0.0	0.0	0.00	0.50	0.00	45.6
Approach			292	1.8	292	1.8	0.148	4.8	NA	0.0	0.0	0.00	0.50	0.00	36.7
North: Mockridge Rd (70m)															
8	T1	All MCs	29	0.0	29	0.0	0.062	0.8	LOS A	0.3	2.4	0.38	0.47	0.38	45.7
9	R2	All MCs	82	7.9	82	7.9	0.062	5.6	LOS A	0.3	2.4	0.38	0.47	0.38	23.2
Approach			112	5.8	112	5.8	0.062	4.3	NA	0.3	2.4	0.38	0.47	0.38	27.7
West: Goodwins Rd (100m)															
10	L2	All MCs	76	8.6	76	8.6	0.039	5.7	LOS A	0.2	1.4	0.12	0.54	0.12	33.5
12	R2	All MCs	119	1.0	119	1.0	0.088	6.0	LOS A	0.2	1.5	0.21	0.60	0.21	39.0
Approach			195	4.0	195	4.0	0.088	5.9	LOS A	0.2	1.5	0.17	0.57	0.17	37.2
All Vehicles			598	3.3	598	3.3	0.148	5.1	NA	0.3	2.4	0.13	0.52	0.13	35.1

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

LEVEL OF SERVICE

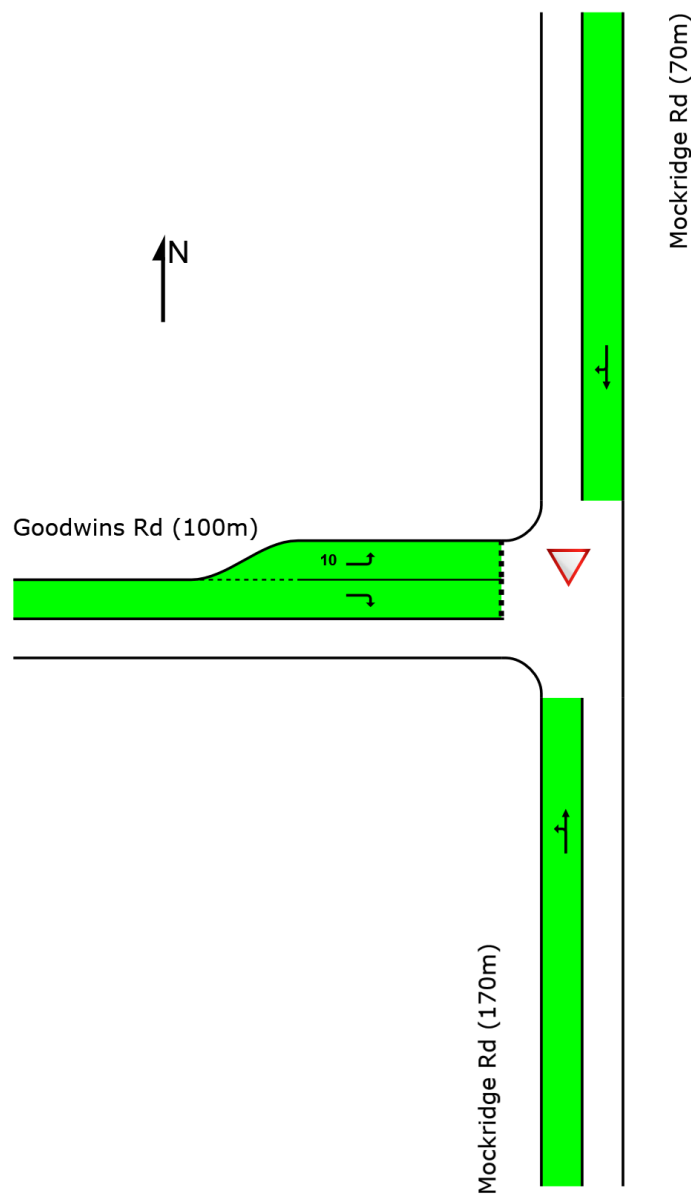
Lane Level of Service

▽ Site: 102 [Goodwins x Mockridge (Site Folder: 10 Yrs Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
LOS	NA (TWSC)	NA (TWSC)	A	NA (TWSC)



Colour code based on Level of Service



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

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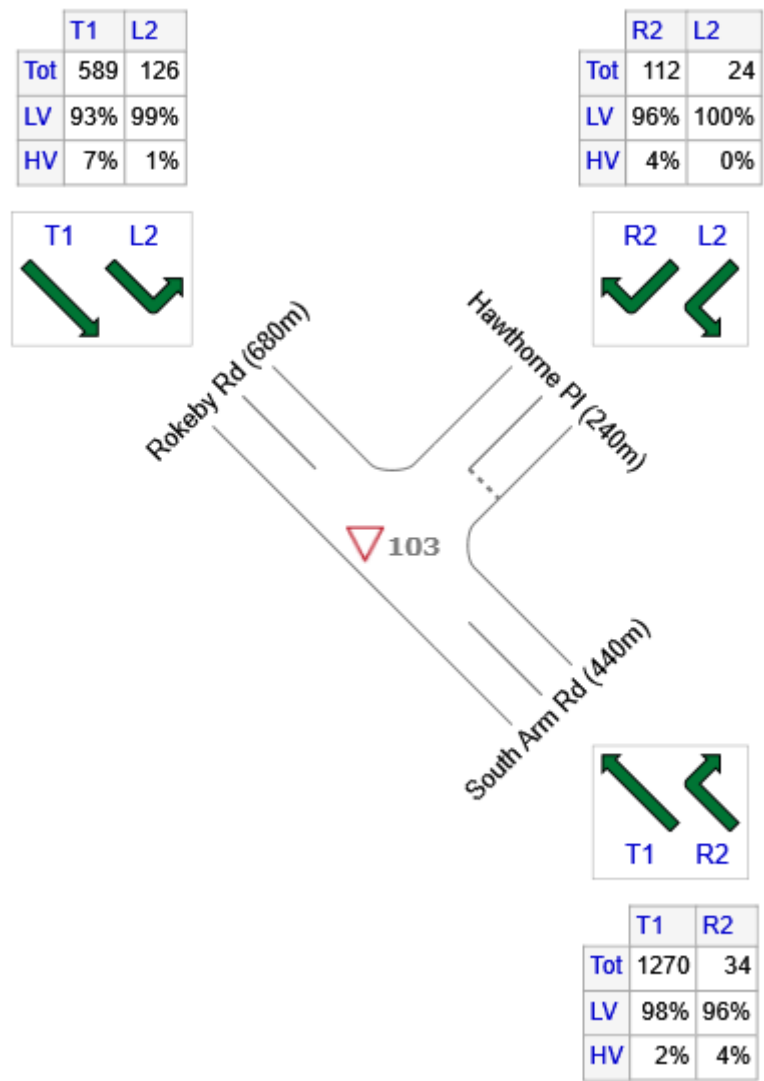
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▼ Site: 103 [Rokeby x Hawthorne (Site Folder: 10 Yrs Post Development - AM Peak)]

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: South Arm Rd (440m)	1304	1278	26
NE: Hawthorne Pl (240m)	136	131	5
NW: Rokeby Rd (680m)	715	672	43
Total	2155	2081	74

MOVEMENT SUMMARY

▼ Site: 103 [Rokeby x Hawthorne (Site Folder: 10 Yrs Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: South Arm Rd (440m)															
22	T1	All MCs	1337	1.9	1337	1.9	0.705	0.5	LOS A	0.0	0.0	0.00	0.00	0.00	59.0
23	R2	All MCs	36	3.7	36	3.7	0.035	8.5	LOS A	0.2	1.1	0.63	0.72	0.63	46.9
Approach			1373	2.0	1373	2.0	0.705	0.7	NA	0.2	1.1	0.02	0.02	0.02	58.8
NorthEast: Hawthorne PI (240m)															
24	L2	All MCs	25	0.0	25	0.0	0.022	7.5	LOS A	0.1	0.6	0.53	0.66	0.53	48.1
26	R2	All MCs	118	4.3	118	4.3	2.058	1028.3	LOS F	40.0	290.5	1.00	3.20	11.10	3.1
Approach			143	3.6	143	3.6	2.058	848.1	LOS F	40.0	290.5	0.92	2.76	9.24	3.6
NorthWest: Rokeby Rd (680m)															
27	L2	All MCs	133	1.0	133	1.0	0.405	5.7	LOS A	0.0	0.0	0.00	0.10	0.00	56.0
28	T1	All MCs	620	7.1	620	7.1	0.405	0.2	LOS A	0.0	0.0	0.00	0.10	0.00	58.8
Approach			753	6.1	753	6.1	0.405	1.2	NA	0.0	0.0	0.00	0.10	0.00	58.4
All Vehicles			2268	3.4	2268	3.4	2.058	54.3	NA	40.0	290.5	0.07	0.22	0.59	32.7

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

LEVEL OF SERVICE

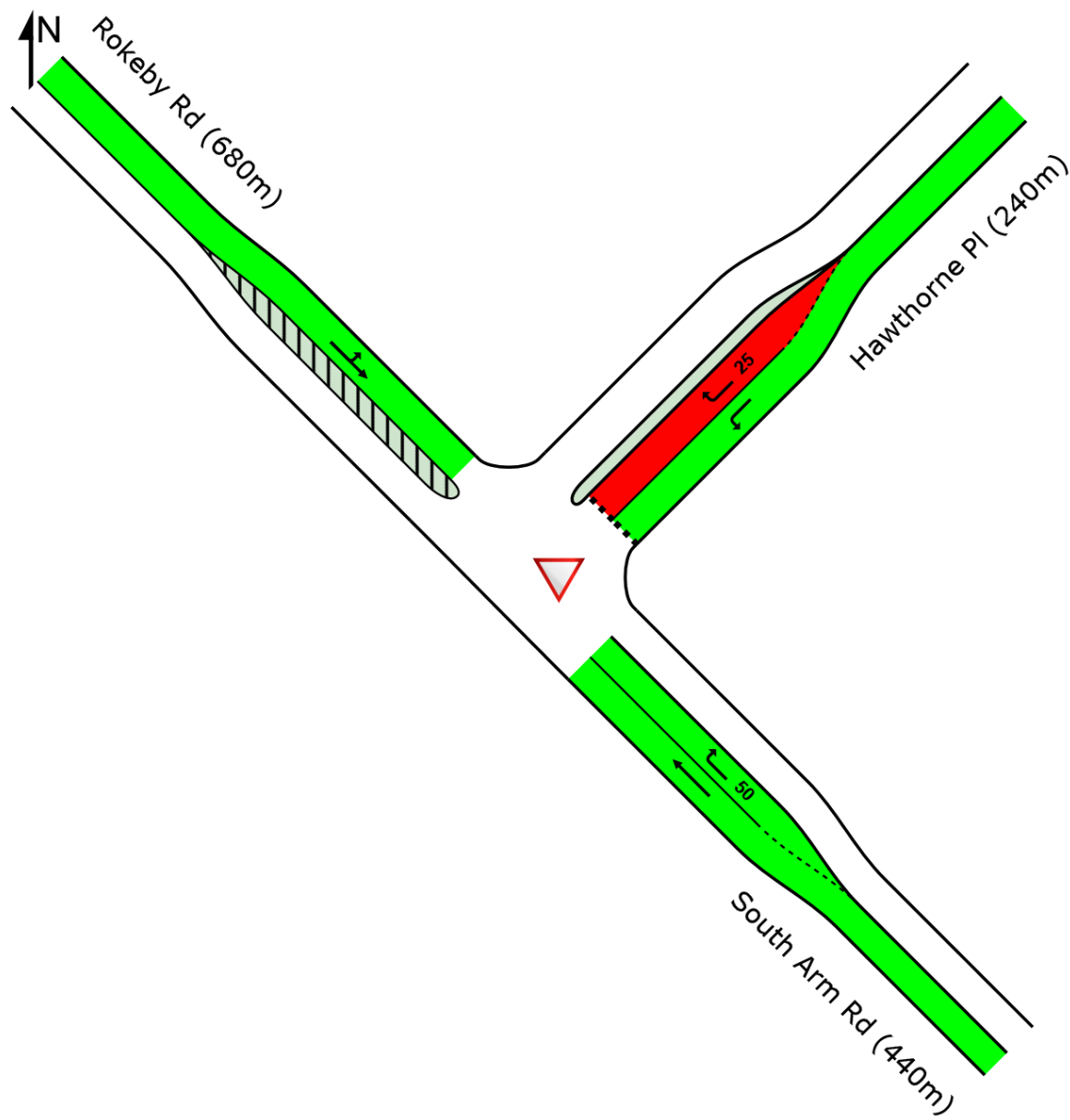
Lane Level of Service

▽ Site: 103 [Rokeby x Hawthorne (Site Folder: 10 Yrs Post Development - AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches			Intersection
	Southeast	Northeast	Northwest	
LOS	NA (TWSC)	F	NA (TWSC)	NA (TWSC)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
-------	-------	-------	-------	-------	-------

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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Traffic modelling\SIDRA\GoodwinsRd project v2.sip9

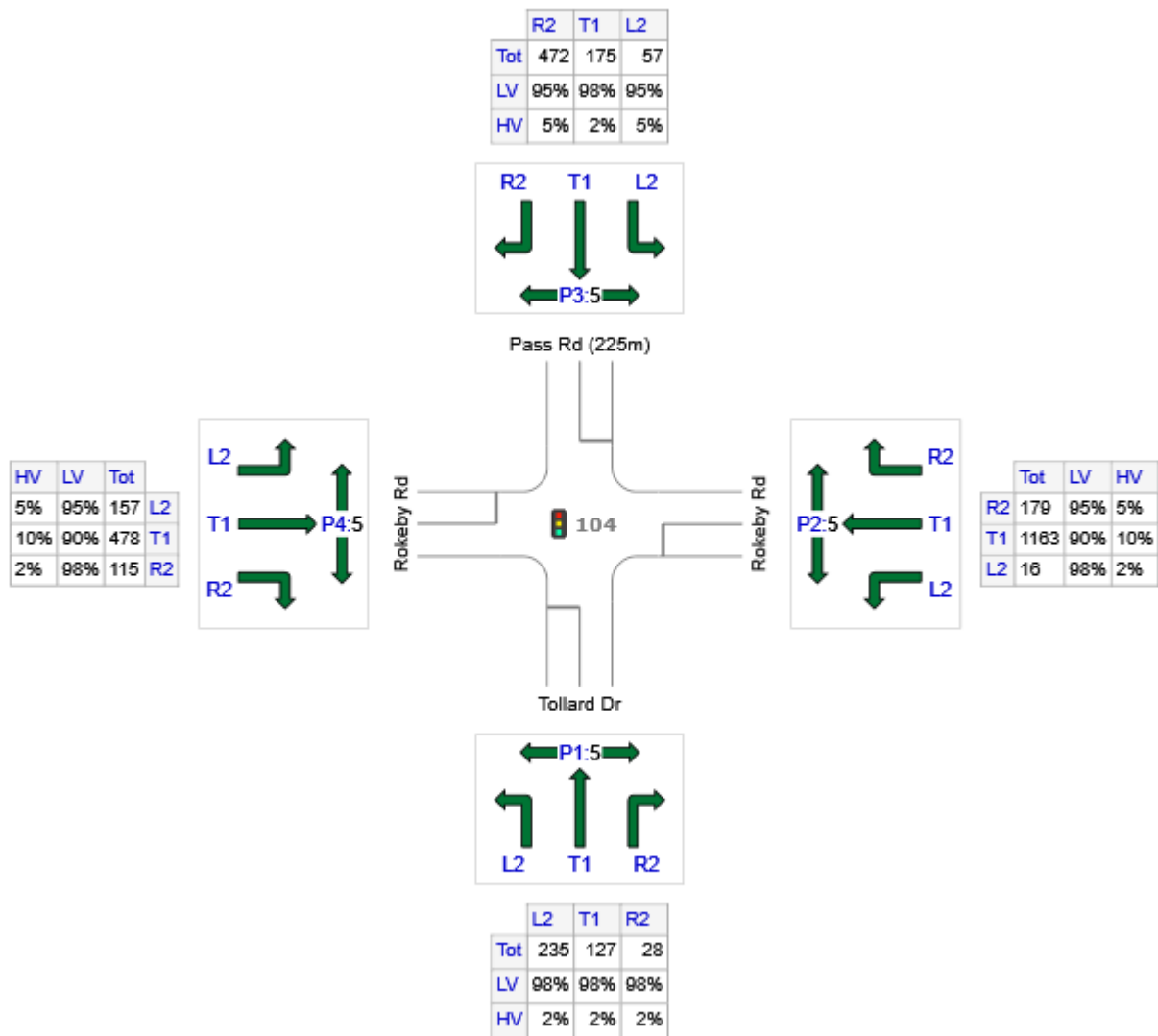
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 **Site: 104 [Rokeby x Pass x Tollard (Site Folder: 10 Yrs Post Development - AM Peak)]**

Signalised 4way intersection
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Tollard Dr	390	382	8
E: Rokeby Rd	1358	1232	126
N: Pass Rd (225m)	704	674	30
W: Rokeby Rd	750	692	58
Total	3202	2981	221

MOVEMENT SUMMARY

 **Site: 104 [Rokeby x Pass x Tollard (Site Folder: 10 Yrs Post Development - AM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Signalised 4way intersection

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 98 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: Tollard Dr															
1	L2	All MCs	247	2.0	247	2.0	0.826	53.6	LOS D	16.7	119.0	1.00	1.13	1.15	32.9
2	T1	All MCs	134	2.0	134	2.0	* 0.826	70.9	LOS E	16.7	119.0	1.00	1.13	1.15	27.3
3	R2	All MCs	29	2.0	29	2.0	0.197	64.4	LOS E	1.4	9.8	0.97	0.71	0.97	31.6
Approach			411	2.0	411	2.0	0.826	60.0	LOS E	16.7	119.0	1.00	1.10	1.14	28.0
East: Rokeby Rd															
4	L2	All MCs	17	2.0	17	2.0	0.022	38.9	LOS D	0.4	2.5	0.63	0.68	0.63	46.0
5	T1	All MCs	1224	10.0	1224	10.0	* 1.054	124.1	LOS F	51.2	388.8	1.00	1.48	1.87	22.9
6	R2	All MCs	188	5.0	188	5.0	0.736	54.4	LOS D	9.3	67.7	1.00	0.87	1.12	28.5
Approach			1429	9.2	1429	9.2	1.054	113.9	LOS F	51.2	388.8	1.00	1.39	1.75	22.2
North: Pass Rd (225m)															
7	L2	All MCs	60	5.0	60	5.0	0.436	48.8	LOS D	9.5	68.1	0.86	0.76	0.86	35.8
8	T1	All MCs	184	2.0	184	2.0	0.436	44.4	LOS D	9.5	68.1	0.86	0.76	0.86	32.3
9	R2	All MCs	497	5.0	497	5.0	* 1.077	152.1	LOS F	44.1	322.0	1.00	1.41	2.04	14.8
Approach			741	4.3	741	4.3	1.077	117.0	LOS F	44.1	322.0	0.95	1.19	1.65	16.6
West: Rokeby Rd															
10	L2	All MCs	165	5.0	165	5.0	0.355	7.8	LOS A	7.9	59.4	0.50	0.56	0.50	54.3
11	T1	All MCs	503	10.0	503	10.0	0.649	25.5	LOS C	12.4	94.2	0.76	0.70	0.76	51.7
12	R2	All MCs	121	2.0	121	2.0	* 1.069	137.9	LOS F	10.0	70.9	1.00	1.18	2.22	18.4
Approach			789	7.7	789	7.7	1.069	39.0	LOS D	12.4	94.2	0.74	0.74	0.93	40.2
All Vehicles			3371	6.9	3371	6.9	1.077	90.5	LOS F	51.2	388.8	0.93	1.16	1.46	24.0

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

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

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

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Tollard Dr												
P1	Full	5	5	43.2	LOS E	0.0	0.0	0.94	0.94	197.0	200.0	1.02

East: Rokeby Rd												
P2	Full	5	5	43.2	LOS E	0.0	0.0	0.94	0.94	197.0	200.0	1.02
North: Pass Rd (225m)												
P3	Full	5	5	43.2	LOS E	0.0	0.0	0.94	0.94	197.0	200.0	1.02
West: Rokeby Rd												
P4	Full	5	5	43.2	LOS E	0.0	0.0	0.94	0.94	197.0	200.0	1.02
All	Pedestrians	20	21	43.2	LOS E	0.0	0.0	0.94	0.94	197.0	200.0	1.02

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.

LEVEL OF SERVICE

Lane Level of Service

 **Site: 104 [Rokeby x Pass x Tollard (Site Folder: 10 Yrs Post Development - AM Peak)]**

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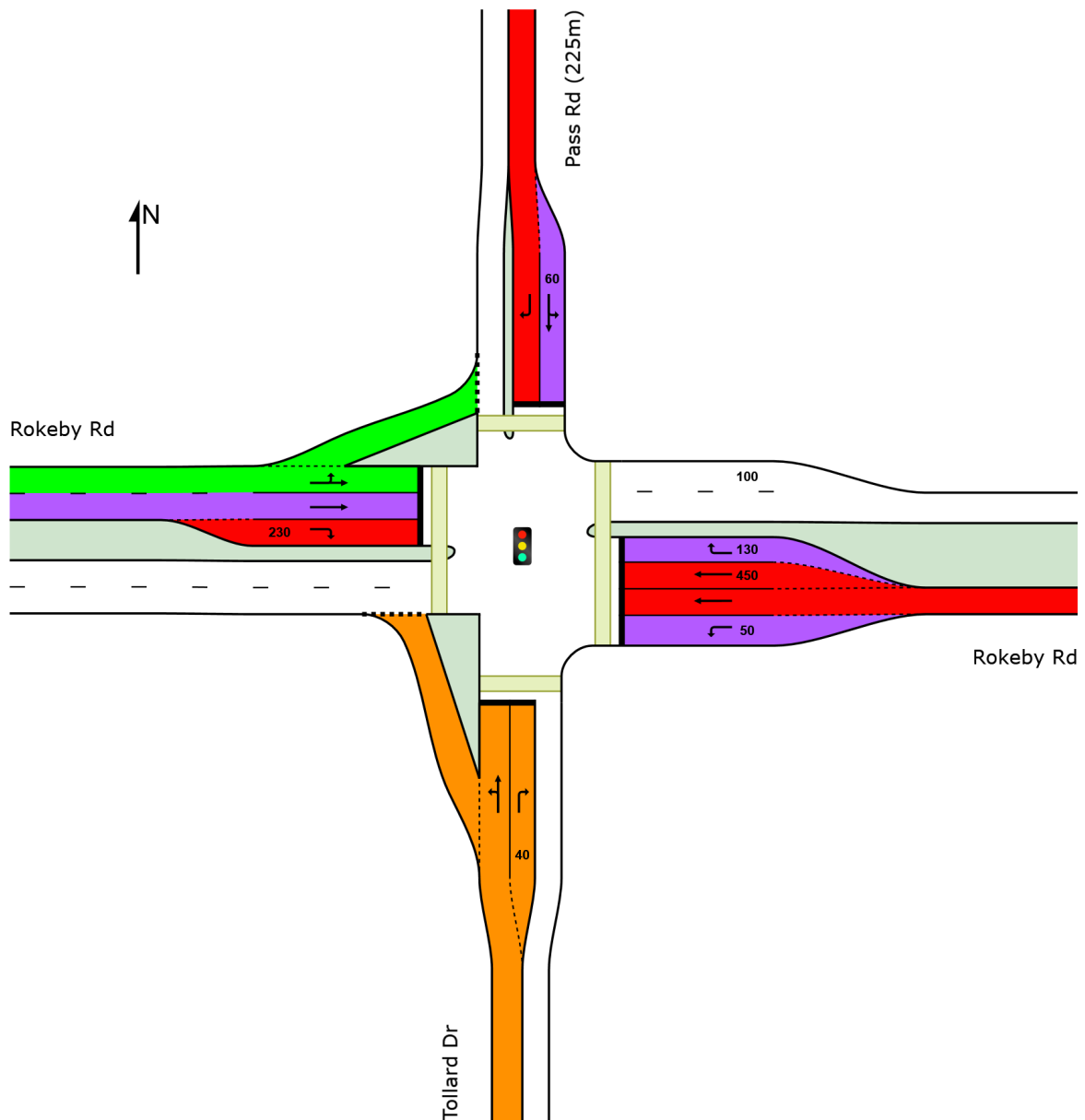
Signalised 4way intersection

Site Category: Existing Design

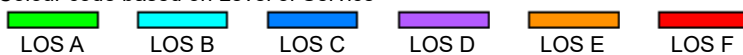
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 98 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

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



Colour code based on Level of Service



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab). Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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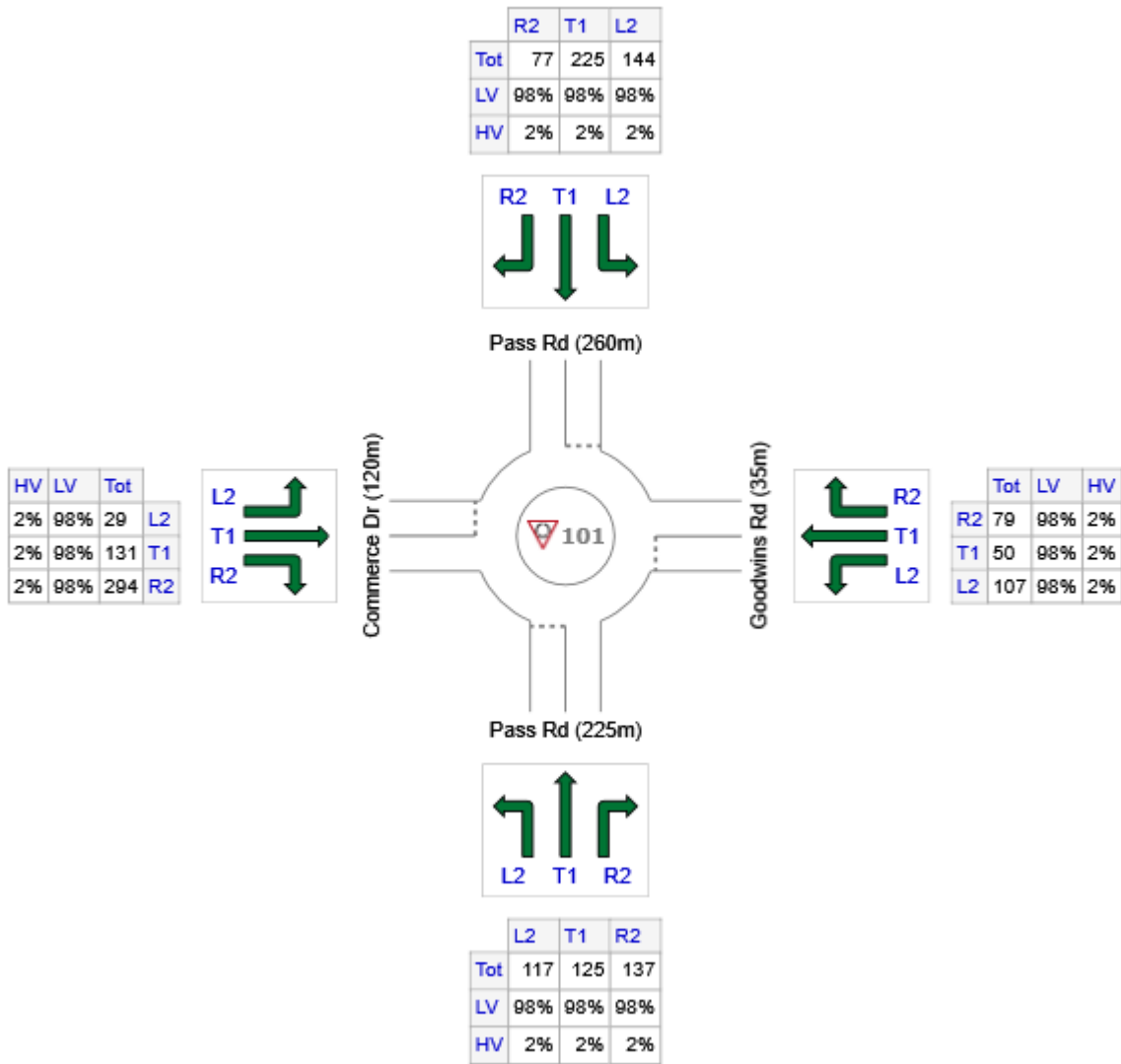
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: 10 Yrs Post Development - PM Peak)]**

1-lane Roundabout
Site Category: Existing Design
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Pass Rd (225m)	379	371	8
E: Goodwins Rd (35m)	236	231	5
N: Pass Rd (260m)	446	437	9
W: Commerce Dr (120m)	454	445	9
Total	1515	1485	30

MOVEMENT SUMMARY

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: 10 Yrs Post Development - PM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1-lane Roundabout
Site Category: Existing Design
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Pass Rd (225m)															
1	L2	All MCs	123	2.0	123	2.0	0.351	5.2	LOS A	2.5	17.6	0.52	0.56	0.52	42.3
2	T1	All MCs	132	2.0	132	2.0	0.351	5.3	LOS A	2.5	17.6	0.52	0.56	0.52	46.3
3	R2	All MCs	144	2.0	144	2.0	0.351	10.3	LOS B	2.5	17.6	0.52	0.56	0.52	38.9
Approach			399	2.0	399	2.0	0.351	7.1	LOS A	2.5	17.6	0.52	0.56	0.52	42.9
East: Goodwins Rd (35m)															
4	L2	All MCs	113	2.0	113	2.0	0.324	6.4	LOS A	2.2	15.7	0.78	0.71	0.78	38.3
5	T1	All MCs	53	2.0	53	2.0	0.324	6.8	LOS A	2.2	15.7	0.78	0.71	0.78	32.8
6	R2	All MCs	83	2.0	83	2.0	0.324	11.2	LOS B	2.2	15.7	0.78	0.71	0.78	38.8
Approach			248	2.0	248	2.0	0.324	8.1	LOS A	2.2	15.7	0.78	0.71	0.78	37.6
North: Pass Rd (260m)															
7	L2	All MCs	152	2.0	152	2.0	0.599	11.3	LOS B	6.0	42.7	0.90	0.84	1.12	27.8
8	T1	All MCs	237	2.0	237	2.0	0.599	11.3	LOS B	6.0	42.7	0.90	0.84	1.12	41.8
9	R2	All MCs	81	2.0	81	2.0	0.599	16.4	LOS B	6.0	42.7	0.90	0.84	1.12	30.6
Approach			469	2.0	469	2.0	0.599	12.2	LOS B	6.0	42.7	0.90	0.84	1.12	35.4
West: Commerce Dr (120m)															
10	L2	All MCs	31	2.0	31	2.0	0.483	6.6	LOS A	3.6	25.9	0.70	0.66	0.70	40.7
11	T1	All MCs	138	2.0	138	2.0	0.483	6.6	LOS A	3.6	25.9	0.70	0.66	0.70	23.0
12	R2	All MCs	309	2.0	309	2.0	0.483	11.7	LOS B	3.6	25.9	0.70	0.66	0.70	38.8
Approach			478	2.0	478	2.0	0.483	9.9	LOS A	3.6	25.9	0.70	0.66	0.70	34.8
All Vehicles			1595	2.0	1595	2.0	0.599	9.6	LOS A	6.0	42.7	0.72	0.70	0.79	37.2

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.

LEVEL OF SERVICE

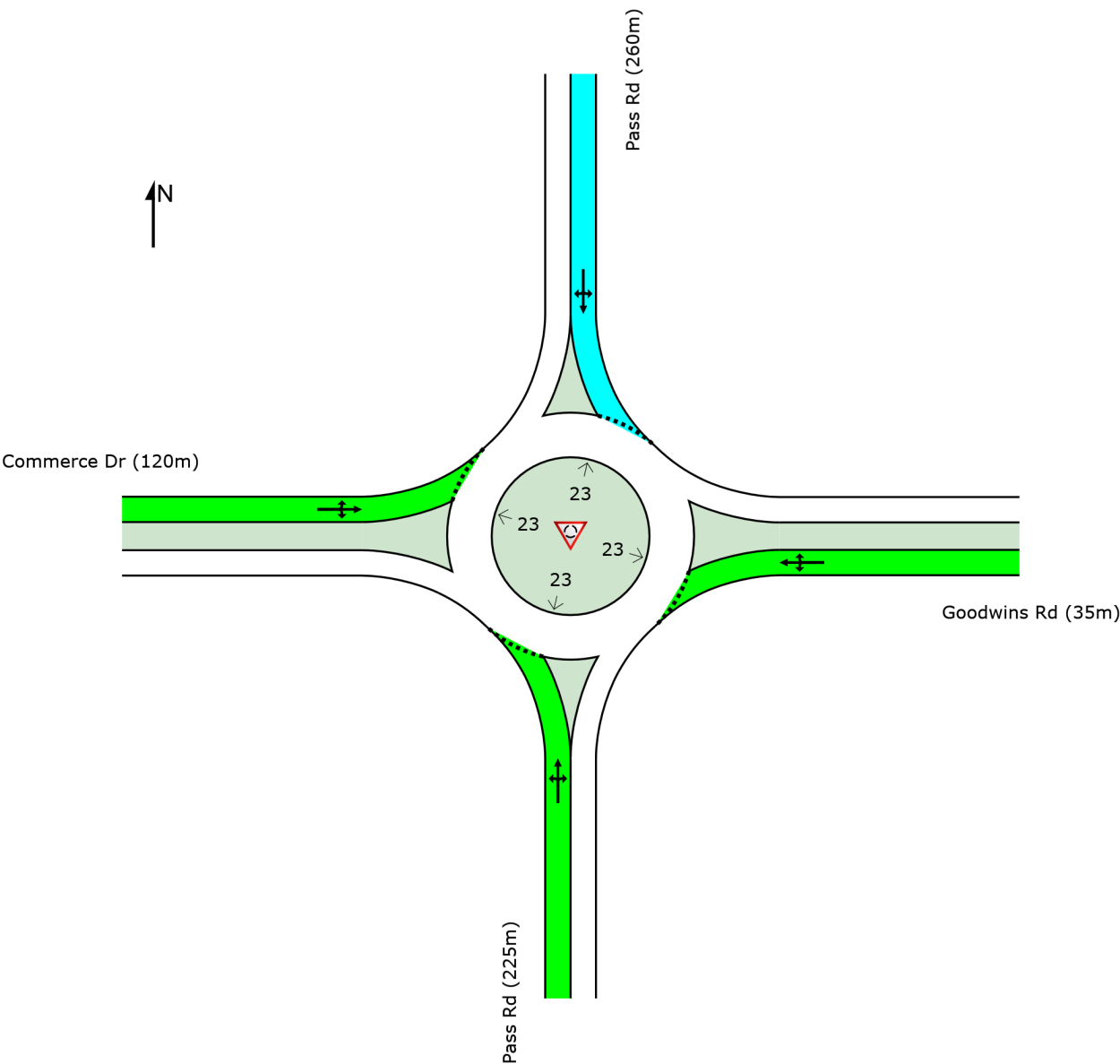
Lane Level of Service

 **Site: 101 [Goodwins x Pass x Commerce (Site Folder: 10 Yrs Post Development - PM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

1-lane Roundabout
Site Category: Existing Design
Roundabout

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



Colour code based on Level of Service



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

Roundabout Level of Service Method: SIDRA Roundabout LOS

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

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Traffic modelling\SIDRA\GoodwinsRd project v2.sip9

MOVEMENT SUMMARY

▼ Site: 105 [Goodwins x Site Access 1 (Site Folder: 10 Yrs Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Goodwins Rd															
8	T1	All MCs	214	2.0	214	2.0	0.112	0.0	LOS A	0.0	0.2	0.01	0.01	0.01	59.3
9	R2	All MCs	3	0.0	3	0.0	0.112	5.9	LOS A	0.0	0.2	0.01	0.01	0.01	47.3
Approach			217	2.0	217	2.0	0.112	0.1	NA	0.0	0.2	0.01	0.01	0.01	59.2
North: Site Access 1															
10	L2	All MCs	3	0.0	3	0.0	0.012	4.7	LOS A	0.0	0.2	0.31	0.58	0.31	34.1
12	R2	All MCs	12	0.0	12	0.0	0.012	4.7	LOS A	0.0	0.2	0.31	0.58	0.31	33.9
Approach			15	0.0	15	0.0	0.012	4.7	LOS A	0.0	0.2	0.31	0.58	0.31	33.9
West: Goodwins Rd															
1	L2	All MCs	15	0.0	15	0.0	0.170	5.5	LOS A	0.0	0.0	0.00	0.03	0.00	31.7
2	T1	All MCs	315	2.0	315	2.0	0.170	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	58.8
Approach			329	1.9	329	1.9	0.170	0.3	NA	0.0	0.0	0.00	0.03	0.00	57.1
All Vehicles			561	1.9	561	1.9	0.170	0.3	NA	0.0	0.2	0.01	0.04	0.01	57.1

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

LEVEL OF SERVICE

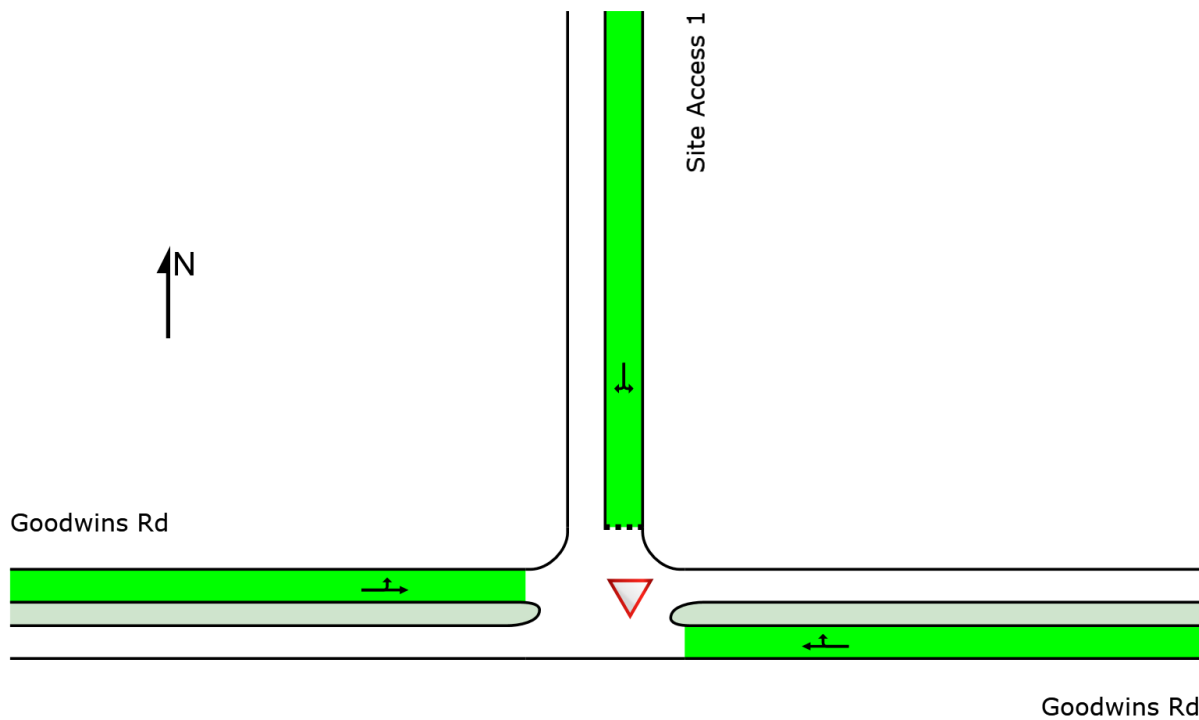
Lane Level of Service

▽ Site: 105 [Goodwins x Site Access 1 (Site Folder: 10 Yrs Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

LOS	Approaches			Intersection
	East	North	West	
	NA (TWSC)	A	NA (TWSC)	NA (TWSC)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
-------	-------	-------	-------	-------	-------

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

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

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

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MOVEMENT SUMMARY

 **Site: 105v [Goodwins x Site Access 1 - Roundabout (Site Folder: 10 Yrs Post Development - PM Peak)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roundabout
Site Category: Proposed Design 2
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Goodwins Rd															
8	T1	All MCs	214	2.0	214	2.0	0.146	4.6	LOS A	0.9	6.7	0.09	0.47	0.09	39.0
9	R2	All MCs	3	0.0	3	0.0	0.146	7.8	LOS A	0.9	6.7	0.09	0.47	0.09	34.0
Approach			217	2.0	217	2.0	0.146	4.6	LOS A	0.9	6.7	0.09	0.47	0.09	38.9
North: Site Access 1															
10	L2	All MCs	3	0.0	3	0.0	0.015	4.8	LOS A	0.1	0.5	0.43	0.62	0.43	31.0
12	R2	All MCs	12	0.0	12	0.0	0.015	7.7	LOS A	0.1	0.5	0.43	0.62	0.43	29.4
Approach			15	0.0	15	0.0	0.015	7.1	LOS A	0.1	0.5	0.43	0.62	0.43	29.7
West: Goodwins Rd															
1	L2	All MCs	15	0.0	15	0.0	0.203	4.7	LOS A	1.2	8.8	0.04	0.49	0.04	35.3
2	T1	All MCs	315	2.0	315	2.0	0.203	4.6	LOS A	1.2	8.8	0.04	0.49	0.04	39.5
Approach			329	1.9	329	1.9	0.203	4.6	LOS A	1.2	8.8	0.04	0.49	0.04	39.3
All Vehicles			561	1.9	561	1.9	0.203	4.7	LOS A	1.2	8.8	0.07	0.49	0.07	38.9

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.

LEVEL OF SERVICE

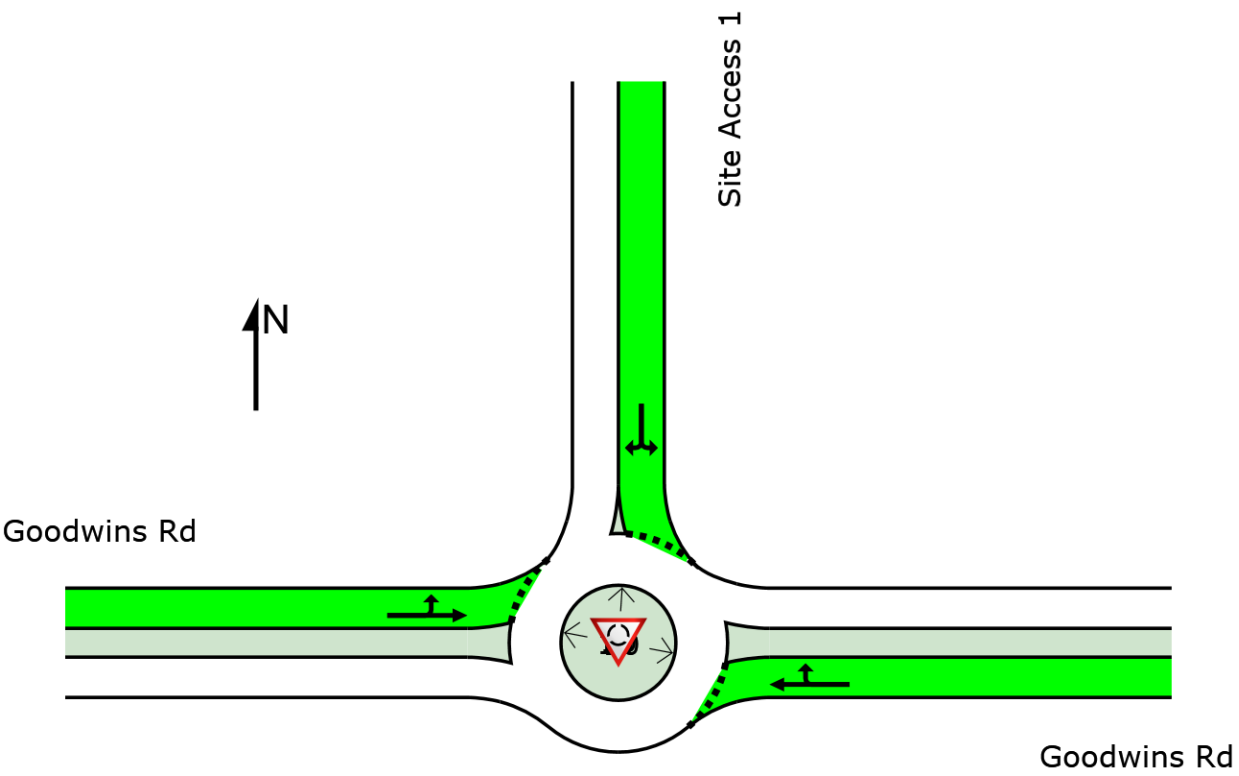
Lane Level of Service

 **Site: 105v [Goodwins x Site Access 1 - Roundabout (Site Folder: 10 Yrs Post Development - PM Peak)]**

Output produced by **SIDRA INTERSECTION Version: 9.1.6.228**

Roundabout
Site Category: Proposed Design 2
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	A	A	A



Colour code based on Level of Service



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

Roundabout Level of Service Method: SIDRA Roundabout LOS

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

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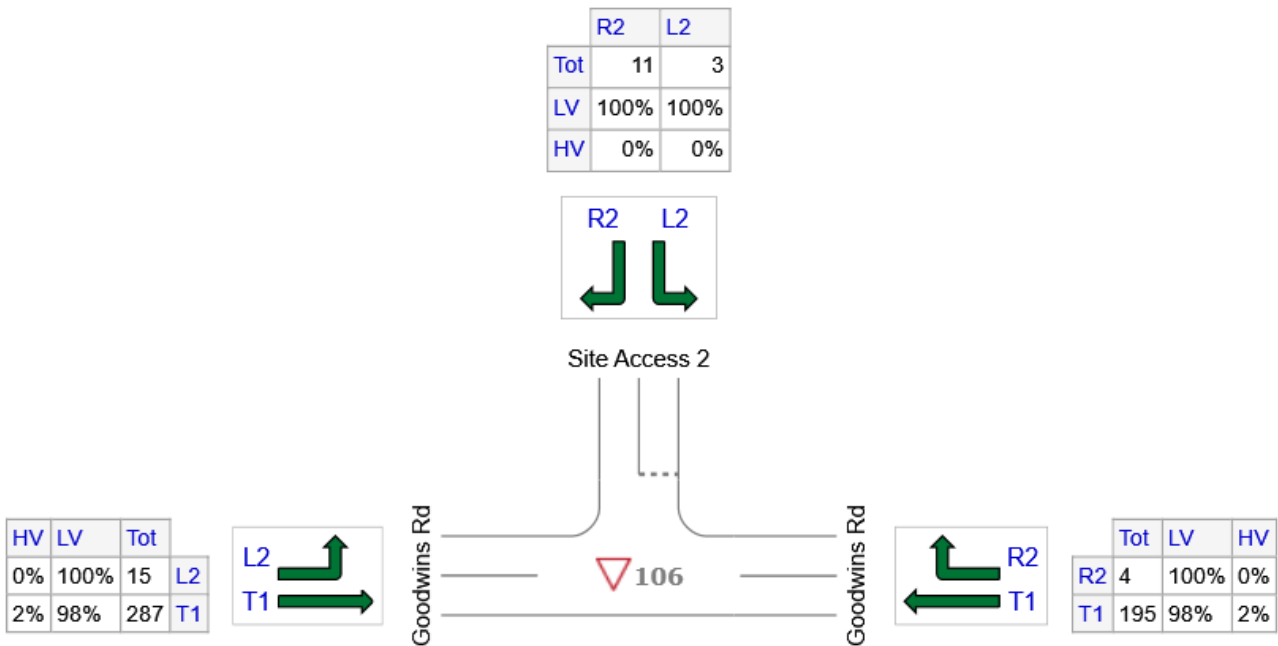
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▽ Site: 106 [Goodwins x Site Access 2 (Site Folder: 10 Yrs Post Development - PM Peak)]

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
E: Goodwins Rd	199	195	4
N: Site Access 2	14	14	0
W: Goodwins Rd	302	296	6
Total	515	505	10

MOVEMENT SUMMARY

Site: 106 [Goodwins x Site Access 2 (Site Folder: 10 Yrs Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Goodwins Rd															
8	T1	All MCs	205	2.0	205	2.0	0.108	0.0	LOS A	0.0	0.2	0.02	0.02	0.02	59.1
9	R2	All MCs	4	0.0	4	0.0	0.108	6.0	LOS A	0.0	0.2	0.02	0.02	0.02	46.7
Approach			209	2.0	209	2.0	0.108	0.1	NA	0.0	0.2	0.02	0.02	0.02	58.8
North: Site Access 2															
10	L2	All MCs	3	0.0	3	0.0	0.012	4.6	LOS A	0.0	0.2	0.30	0.58	0.30	34.2
12	R2	All MCs	12	0.0	12	0.0	0.012	4.7	LOS A	0.0	0.2	0.30	0.58	0.30	33.8
Approach			15	0.0	15	0.0	0.012	4.7	LOS A	0.0	0.2	0.30	0.58	0.30	33.9
West: Goodwins Rd															
1	L2	All MCs	16	0.0	16	0.0	0.164	5.5	LOS A	0.0	0.0	0.00	0.03	0.00	31.6
2	T1	All MCs	302	2.0	302	2.0	0.164	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	58.6
Approach			318	1.9	318	1.9	0.164	0.3	NA	0.0	0.0	0.00	0.03	0.00	56.8
All Vehicles			542	1.9	542	1.9	0.164	0.3	NA	0.0	0.2	0.02	0.04	0.02	56.7

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

LEVEL OF SERVICE

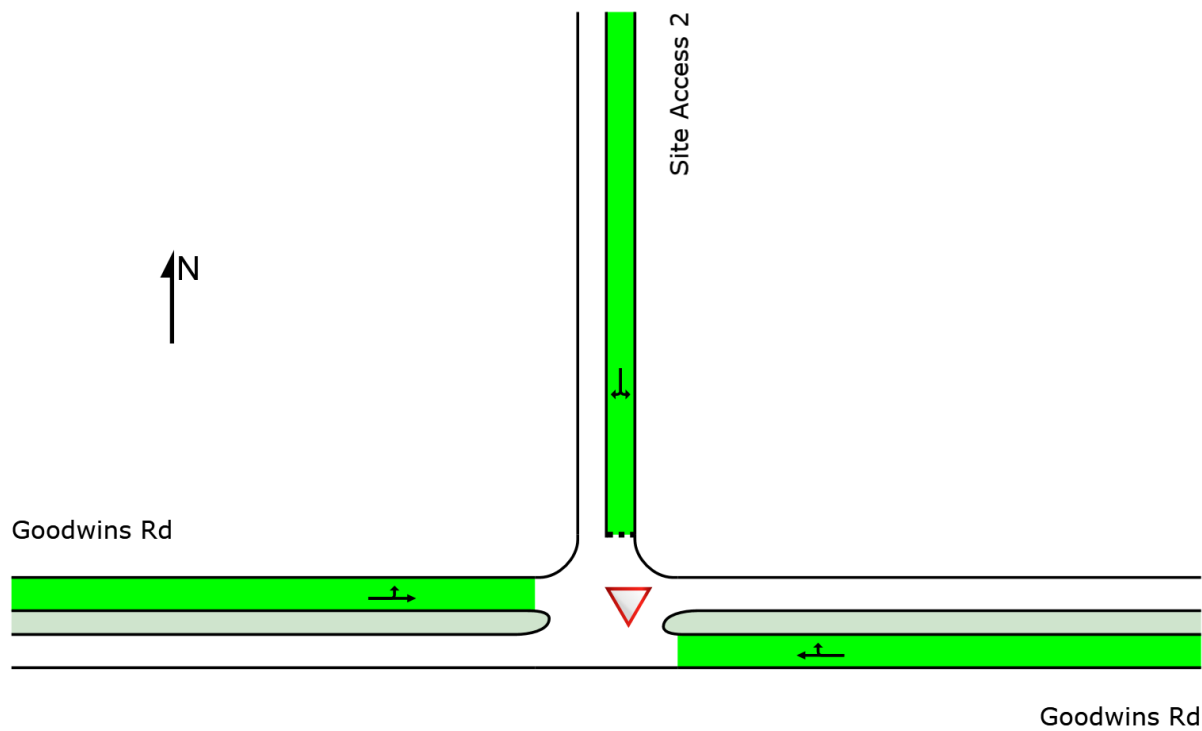
Lane Level of Service

▽ Site: 106 [Goodwins x Site Access 2 (Site Folder: 10 Yrs Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Proposed Design 1
Give-Way (Two-Way)

	Approaches			Intersection
	East	North	West	
LOS	NA (TWSC)	A	NA (TWSC)	NA (TWSC)



Colour code based on Level of Service



NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

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

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

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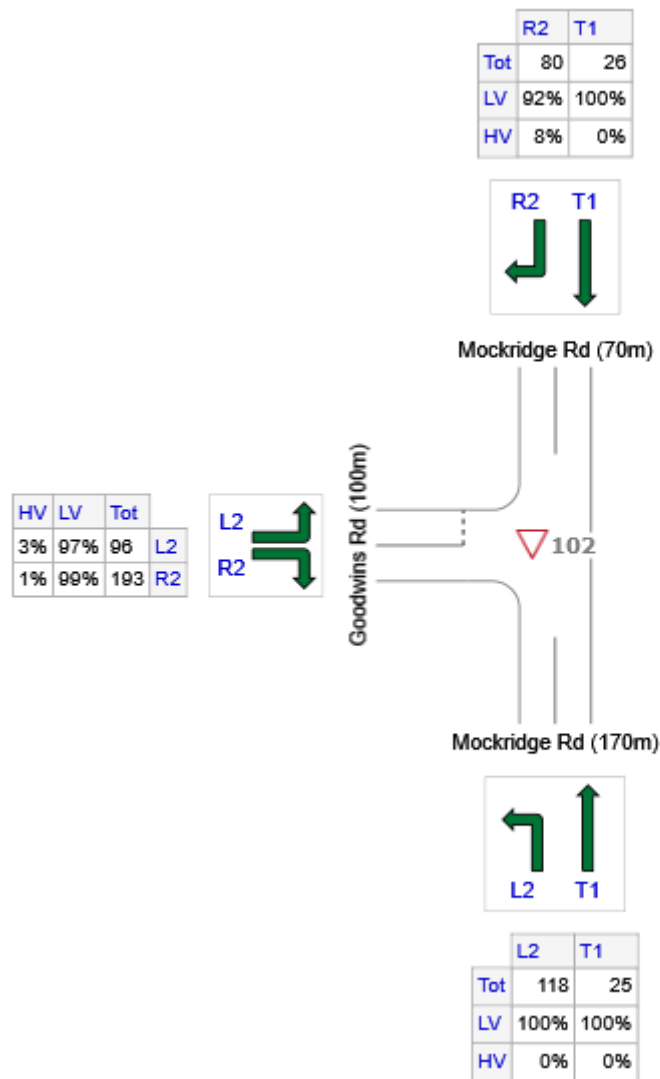
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▽ Site: 102 [Goodwins x Mockridge (Site Folder: 10 Yrs Post Development - PM Peak)]

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Mockridge Rd (170m)	143	143	0
N: Mockridge Rd (70m)	106	100	6
W: Goodwins Rd (100m)	289	285	4
Total	538	528	10

MOVEMENT SUMMARY

Site: 102 [Goodwins x Mockridge (Site Folder: 10 Yrs Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Mockridge Rd (170m)															
1	L2	All MCs	124	0.0	124	0.0	0.075	5.5	LOS A	0.0	0.0	0.00	0.48	0.00	36.0
2	T1	All MCs	26	0.0	26	0.0	0.075	0.0	LOS A	0.0	0.0	0.00	0.48	0.00	46.2
Approach			151	0.0	151	0.0	0.075	4.6	NA	0.0	0.0	0.00	0.48	0.00	37.3
North: Mockridge Rd (70m)															
8	T1	All MCs	27	0.0	27	0.0	0.056	0.4	LOS A	0.3	2.2	0.26	0.42	0.26	46.5
9	R2	All MCs	84	7.6	84	7.6	0.056	5.1	LOS A	0.3	2.2	0.26	0.42	0.26	23.5
Approach			112	5.7	112	5.7	0.056	4.0	NA	0.3	2.2	0.26	0.42	0.26	27.8
West: Goodwins Rd (100m)															
10	L2	All MCs	101	2.5	101	2.5	0.049	5.6	LOS A	0.2	1.7	0.09	0.54	0.09	34.0
12	R2	All MCs	203	0.6	203	0.6	0.144	5.9	LOS A	0.4	2.5	0.18	0.58	0.18	39.2
Approach			304	1.3	304	1.3	0.144	5.8	LOS A	0.4	2.5	0.15	0.57	0.15	37.8
All Vehicles			566	1.8	566	1.8	0.144	5.1	NA	0.4	2.5	0.13	0.52	0.13	35.6

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

LEVEL OF SERVICE

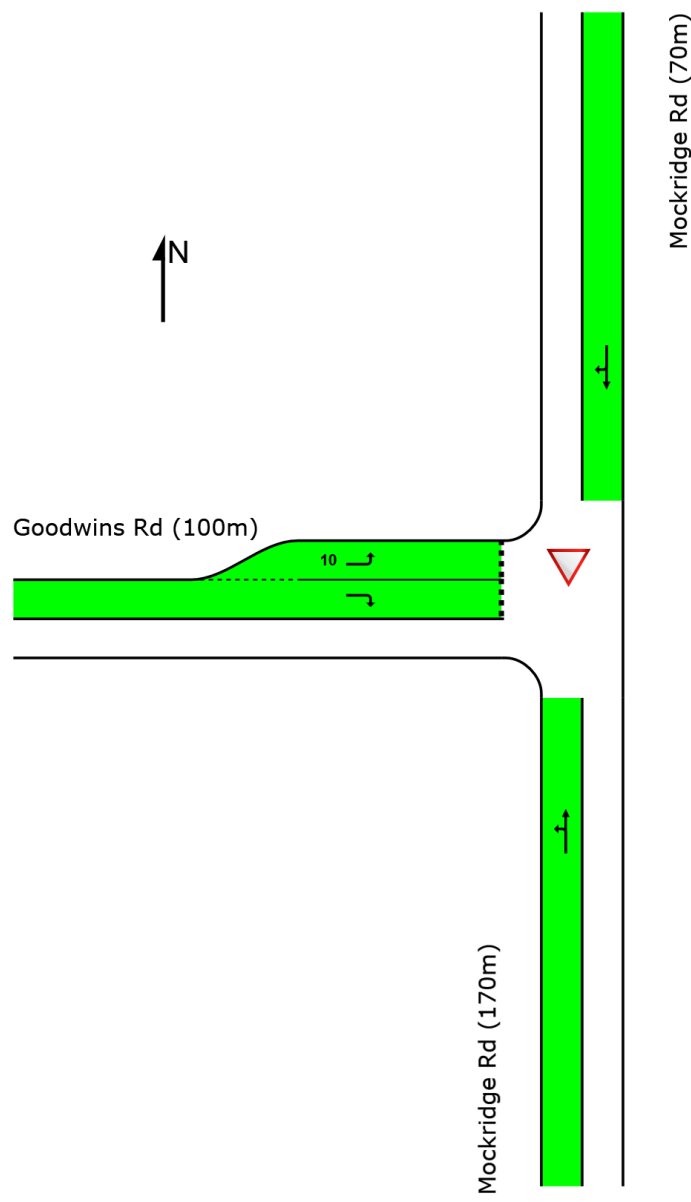
Lane Level of Service

▽ Site: 102 [Goodwins x Mockridge (Site Folder: 10 Yrs Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches			Intersection
	South	North	West	
LOS	NA (TWSC)	NA (TWSC)	A	NA (TWSC)



Colour code based on Level of Service



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

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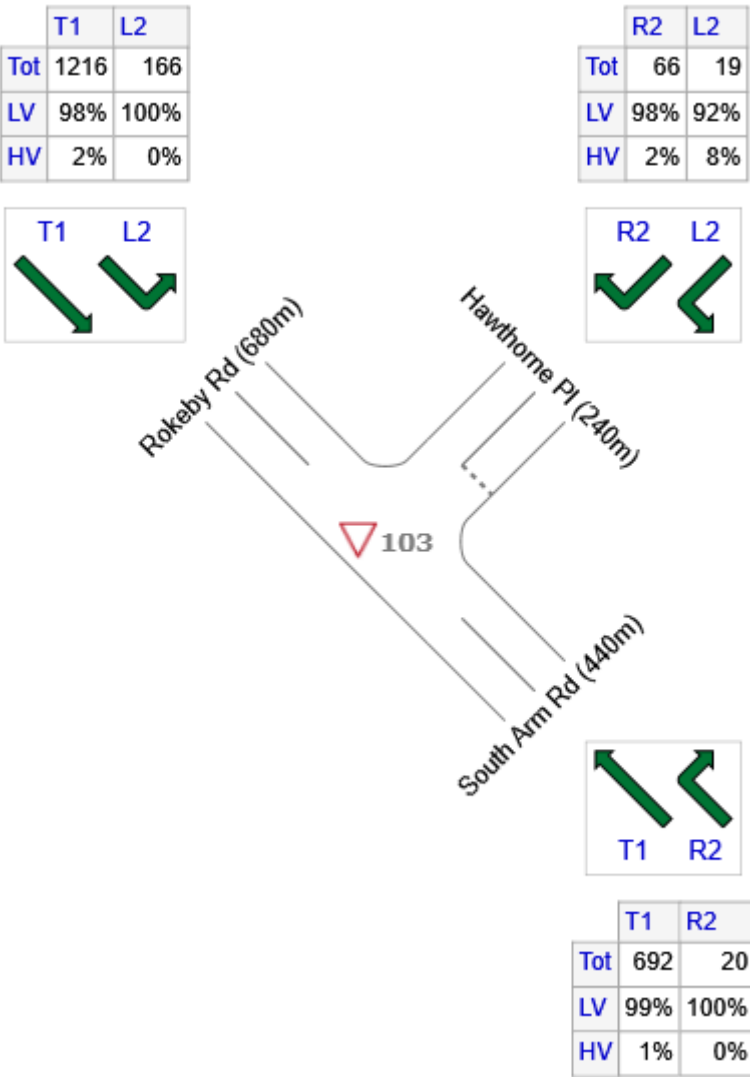
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

▽ Site: 103 [Rokeby x Hawthorne (Site Folder: 10 Yrs Post Development - PM Peak)]

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: South Arm Rd (440m)	712	702	10
NE: Hawthorne Pl (240m)	85	82	3
NW: Rokeby Rd (680m)	1382	1364	18
Total	2179	2148	31

MOVEMENT SUMMARY

▼ Site: 103 [Rokeby x Hawthorne (Site Folder: 10 Yrs Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: South Arm Rd (440m)															
22	T1	All MCs	728	1.4	728	1.4	0.383	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
23	R2	All MCs	21	0.0	21	0.0	0.100	23.6	LOS C	0.3	2.3	0.92	0.97	0.92	36.8
Approach			749	1.4	749	1.4	0.383	0.8	NA	0.3	2.3	0.03	0.03	0.03	59.1
NorthEast: Hawthorne PI (240m)															
24	L2	All MCs	20	8.3	20	8.3	0.075	18.9	LOS C	0.2	1.6	0.86	0.94	0.86	39.4
26	R2	All MCs	69	1.9	69	1.9	1.195	298.5	LOS F	10.1	71.9	1.00	1.77	4.57	9.4
Approach			89	3.3	89	3.3	1.195	236.0	LOS F	10.1	71.9	0.97	1.58	3.74	10.9
NorthWest: Rokeby Rd (680m)															
27	L2	All MCs	175	0.0	175	0.0	0.757	6.3	LOS A	0.0	0.0	0.00	0.07	0.00	55.6
28	T1	All MCs	1280	1.5	1280	1.5	0.757	0.9	LOS A	0.0	0.0	0.00	0.07	0.00	58.2
Approach			1455	1.3	1455	1.3	0.757	1.5	NA	0.0	0.0	0.00	0.07	0.00	57.9
All Vehicles			2294	1.4	2294	1.4	1.195	10.4	NA	10.1	71.9	0.05	0.12	0.15	51.4

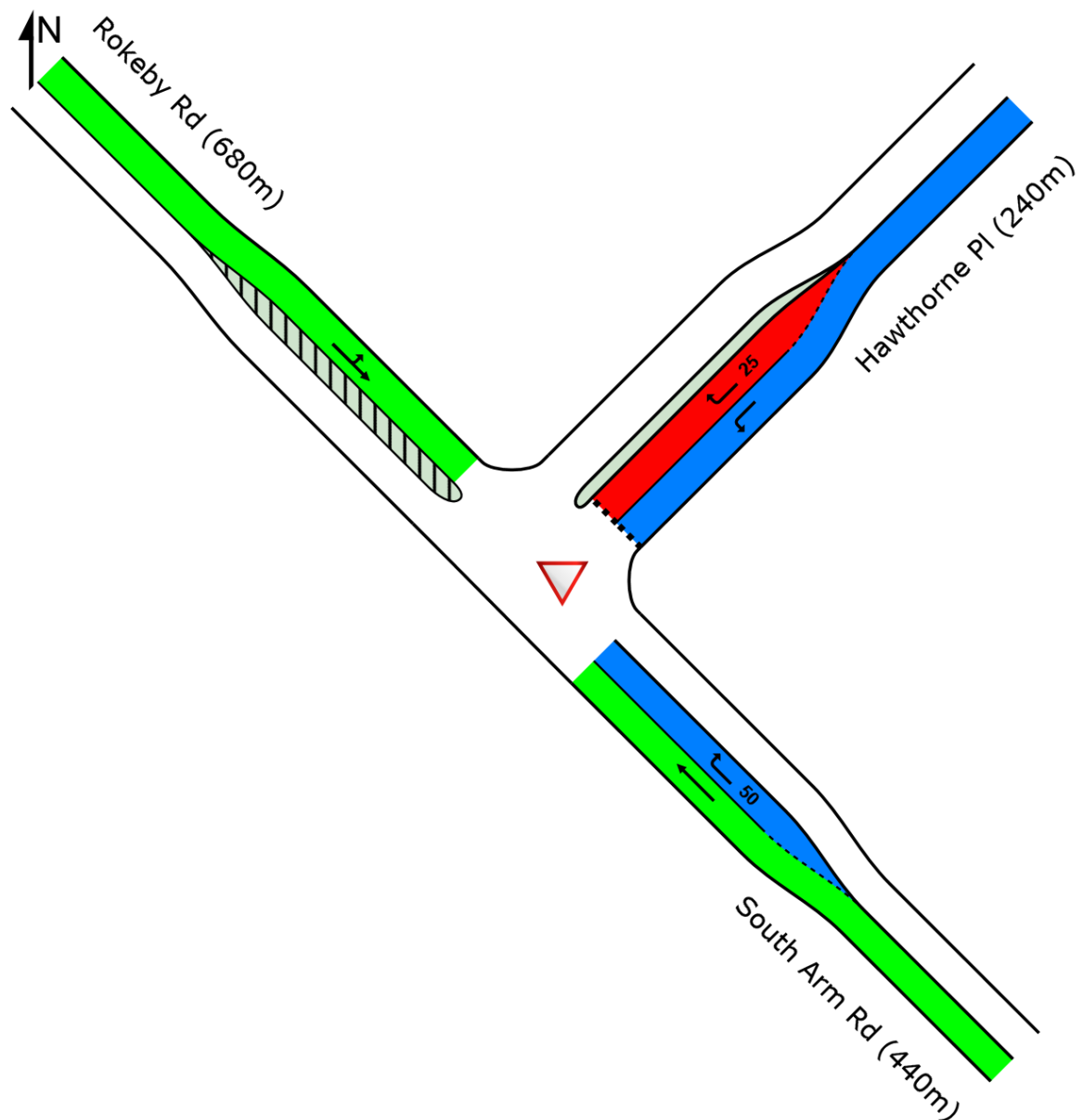
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of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

Lane Level of Service

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Giveaway T-junction
Site Category: Existing Design
Give-Way (Two-Way)

	Approaches			Intersection
	Southeast	Northeast	Northwest	
LOS	NA (TWSC)	F	NA (TWSC)	NA (TWSC)



Colour code based on Level of Service



NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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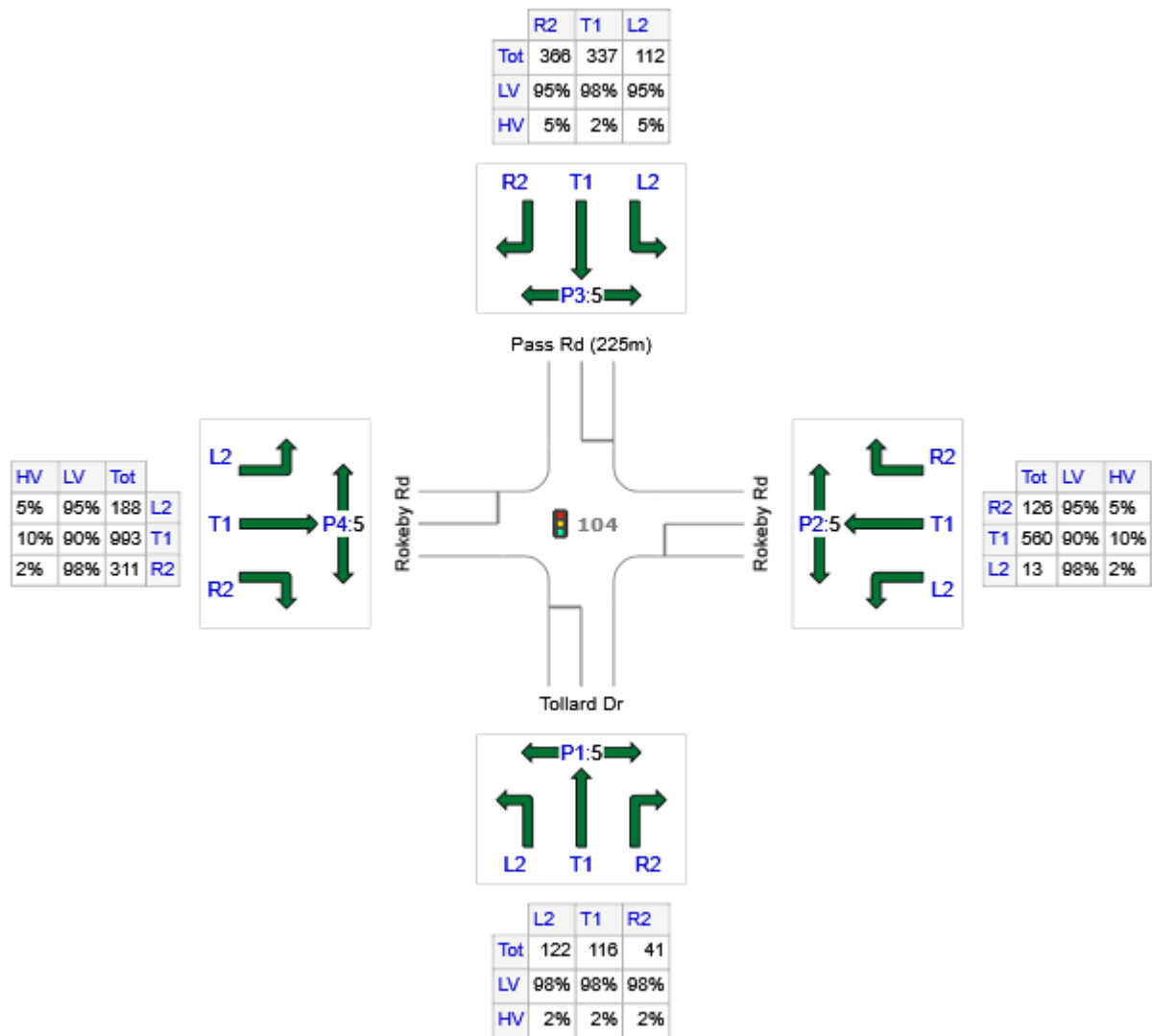
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

 **Site: 104 [Rokeby x Pass x Tollard (Site Folder: 10 Yrs Post Development - PM Peak)]**

Signalised 4way intersection
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Tollard Dr	279	273	6
E: Rokeby Rd	699	636	63
N: Pass Rd (225m)	815	784	31
W: Rokeby Rd	1492	1377	115
Total	3285	3071	214

MOVEMENT SUMMARY

 Site: 104 [Rokeby x Pass x Tollard (Site Folder: 10 Yrs Post Development - PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Signalised 4way intersection

Site Category: Existing Design

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: Tollard Dr															
1	L2	All MCs	128	2.0	128	2.0	0.469	14.5	LOS B	8.6	61.1	0.87	0.78	0.87	40.5
2	T1	All MCs	122	2.0	122	2.0	* 0.469	39.0	LOS D	8.6	61.1	0.87	0.78	0.87	34.7
3	R2	All MCs	43	2.0	43	2.0	0.265	48.4	LOS D	1.9	13.3	0.97	0.73	0.97	32.8
Approach			294	2.0	294	2.0	0.469	29.6	LOS C	8.6	61.1	0.88	0.77	0.88	36.9
East: Rokeby Rd															
4	L2	All MCs	14	2.0	14	2.0	0.026	22.7	LOS C	0.2	1.7	0.75	0.68	0.75	45.0
5	T1	All MCs	589	10.0	589	10.0	0.845	46.7	LOS D	14.3	108.5	1.00	0.98	1.24	40.1
6	R2	All MCs	133	5.0	133	5.0	* 1.109	166.3	LOS F	11.8	86.0	1.00	1.27	2.53	13.0
Approach			736	8.9	736	8.9	1.109	67.9	LOS E	14.3	108.5	1.00	1.02	1.47	30.8
North: Pass Rd (225m)															
7	L2	All MCs	118	5.0	118	5.0	1.139	194.9	LOS F	46.5	333.1	1.00	1.88	2.52	12.0
8	T1	All MCs	355	2.0	355	2.0	* 1.139	190.0	LOS F	46.5	333.1	1.00	1.88	2.52	11.6
9	R2	All MCs	385	5.0	385	5.0	0.966	81.9	LOS F	23.8	174.0	1.00	1.16	1.58	23.4
Approach			858	3.8	858	3.8	1.139	142.1	LOS F	46.5	333.1	1.00	1.56	2.10	14.3
West: Rokeby Rd															
10	L2	All MCs	198	5.0	198	5.0	0.564	7.7	LOS A	13.5	101.2	0.63	0.67	0.63	53.7
11	T1	All MCs	1045	10.0	1045	10.0	* 1.031	60.9	LOS E	45.7	347.0	0.85	1.11	1.32	34.6
12	R2	All MCs	327	2.0	327	2.0	0.885	55.9	LOS E	16.6	118.5	1.00	0.98	1.32	31.3
Approach			1571	7.7	1571	7.7	1.031	53.2	LOS D	45.7	347.0	0.85	1.03	1.23	35.0
All Vehicles			3458	6.5	3458	6.5	1.139	76.4	LOS E	46.5	347.0	0.92	1.14	1.47	26.5

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

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

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

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

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

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

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Tollard Dr												
P1	Full	5	5	39.2	LOS D	0.0	0.0	0.93	0.93	193.1	200.0	1.04

East: Rokeby Rd												
P2	Full	5	5	39.2	LOS D	0.0	0.0	0.93	0.93	193.1	200.0	1.04
North: Pass Rd (225m)												
P3	Full	5	5	39.2	LOS D	0.0	0.0	0.93	0.93	193.1	200.0	1.04
West: Rokeby Rd												
P4	Full	5	5	39.2	LOS D	0.0	0.0	0.93	0.93	193.1	200.0	1.04
All	Pedestrians	20	21	39.2	LOS D	0.0	0.0	0.93	0.93	193.1	200.0	1.04

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.

LEVEL OF SERVICE

Lane Level of Service

 **Site: 104 [Rokeby x Pass x Tollard (Site Folder: 10 Yrs Post Development - PM Peak)]**

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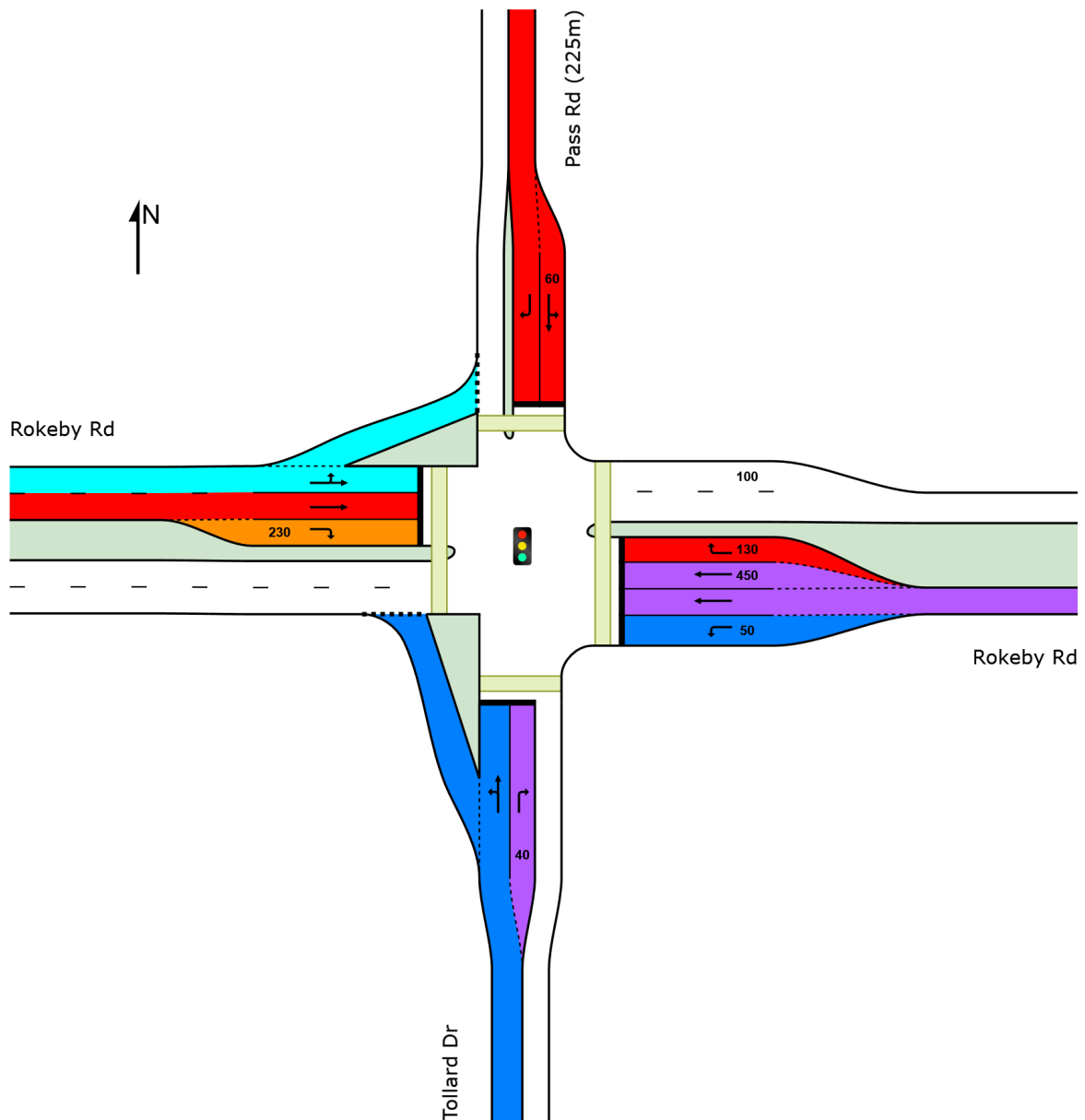
Signalised 4way intersection

Site Category: Existing Design

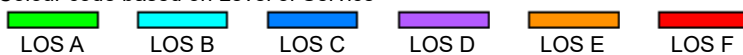
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

	Approaches				Intersection
	South	East	North	West	
LOS	C	E	F	D	E



Colour code based on Level of Service



Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab). Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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Goodwins Road Subdivision

Traffic Impact Assessment

**Pitt & Sherry
(Operations) Pty Ltd**
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