



M^CLAREN TRAFFIC ENGINEERING

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Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

11 February 2025

Reference: 231041.01FD

Archer Properties No.3 Pty Ltd
C/o LSW Surveyors
First Floor, 3 Wharf Street
FORSTER NSW 2428
Attention: Phillip Lidbury

LETTER OF ADVICE OF RESIDENTIAL SUBDIVISION AT FOREST LANE, OLD BAR

Dear Phillip,

Reference is made to your request to provide a Letter of Advice for the proposed residential subdivision at Forest Lane, Old Bar, with proposed plans depicted in **Annexure A** for reference. This letter addresses the potential to remove Conditions 14 and 15 within the Consent Conditions for 439/2014/DA dated 29 March 2023.

With reference to the Consent Conditions for 439/2014/DA, Condition 14 and 15 state the following:

ROADS

14. A single lane concrete roundabout at the intersection of Forest Lane and proposed Road 1 is to be constructed with Stage 6 of the development.

15. The extension of Forest Lane from the western boundary of the development site to Saltwater Road, as a rural collector road, and a single lane concrete roundabout at the Saltwater Road / Forest Lane intersection, is to be constructed with Stage 6 of the development.

1 Condition 14

1.1 Original Plans

The original plans titled *Proposed Subdivision of "Precinct 3" Forest Lane, Old Bar Staging Plan* by LSW Surveyors proposed a southern leg from the subject intersection of Forest Lane and Road 1 as a collector road. An extract of these plans is presented below in **Figure 1** for reference with the full set of plans reproduced within **Annexure B**. Road 1 is now named Driftwood Boulevard.

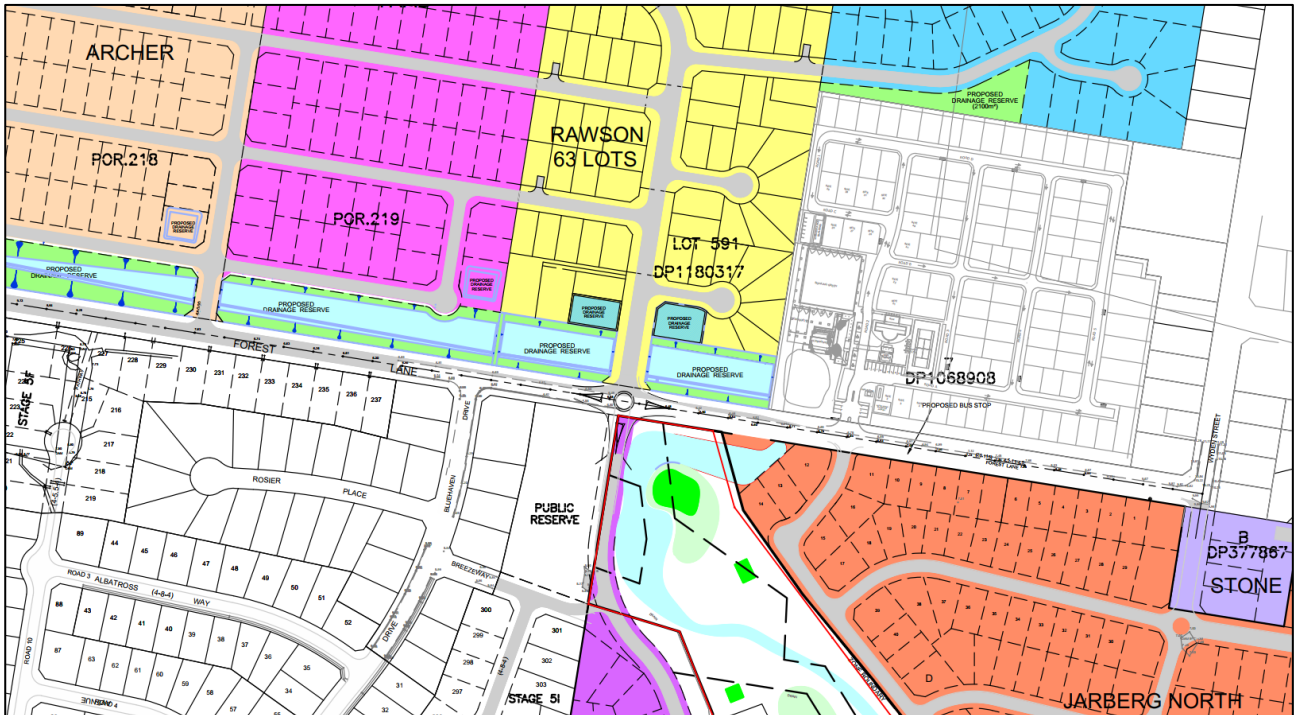


FIGURE 1: PRELIMINARY STAMPED PLANS FOR OLD BAR PRECINCT 3 (DECEMBER 2015)

In the scenario where a collector road adjoins the intersection to the south, it is agreed that a roundabout would be suitable for traffic flow and safety reasons. However, this leg has since been removed and the intersection is now proposed to be a 3-way intersection with no connection to the south. Without the southern leg of the intersection, a roundabout would be a significant overdesign and as such, there is no longer a nexus for Council to impose a roundabout at this intersection. The most recent set of plans are depicted in **Annexure A** which show that there is no longer a southern leg proposed at the subject intersection.

1.2 Traffic Counts

Turning movement count traffic surveys were conducted at the intersection of Forest Lane / Driftwood Boulevard from 6:30am to 9:30am and 3:00pm to 6:00pm on Monday 28 October 2024 (PM peak) and Tuesday 29 October 2024 (AM Peak) representing a typical operating weekday. The full survey results are presented in **Annexure C** for reference.

1.2.1 Existing Road Performance

The performance of the surrounding intersections under the existing traffic conditions has been assessed using SIDRA INTERSECTION 9.1, **Table 1** summarises the resultant intersection performance data, with full SIDRA results presented within **Annexure D**.

TABLE 1: EXISTING INTERSECTION PERFORMANCES (SIDRA INTERSECTION 9.1)

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/veh)	Level of Service ⁽³⁾⁽⁴⁾	Control Type	Worst Movement	95th Percentile Queue
EXISTING PERFORMANCE							
Driftwood Boulevard / Forest Lane	AM	0.06	0.7 (Worst: 5.4)	NA (Worst: A)	Give Way	RT from Driftwood Boulevard	0.1 veh (0.5m) Driftwood Boulevard
	PM	0.05	0.3 (Worst: 5.1)	NA (Worst: A)		RT from Driftwood Boulevard	0 veh (0.1m) Forest Lane

Notes:

- (1) The Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
- (2) The average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
- (3) The Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
- (4) No overall Level of Service is provided for Give Way and Stop controlled intersections as the low delays associated with the dominant movements skew the average delay of the intersection. The Level of Service of the worst approach is an indicator of the operation of the intersection, with a worse Level of Service corresponding to long delays and reduced safety outcomes for that approach.

As shown, the intersection is currently performing at a high level of efficiency, with worst movement Level of Service “A” conditions in both the AM & PM peak hour periods. The Level of Service “A” performance is characterised by low approach delays and spare capacity.

It is noted that only the Rawsons stage has dwellings at the time of these traffic surveys with the majority still under construction such that turning movements into and out of Driftwood Boulevard are likely construction workers and not permanent residents who will later utilise this intersection.

The Rawsons stage has a total of 63 lots, however none have been occupied yet. The fully developed precinct has vehicular access from a number of roads including Driftwood Boulevard.

The traffic in the network peak hour generated by the Manufactured Home Estate directly adjacent to the east of the site has been captured within the surveyed traffic volumes.

1.3 Traffic Assessment

The impact of the expected traffic generation levels associated with the subject proposal is discussed within the following sub-sections.

1.3.1 Vehicle Trip Generation

It is expected that the traffic generated by the residential lots in the Rawson, Taylor and Goodear Stages will use the intersection of Forest Lane / Driftwood Boulevard as residents and visitors to lots from the other stages are likely to use the Forest Lane / Whitewater Avenue intersection located to the west.

Traffic generation rates for the residential lots are provided in the *Transport for NSW Guide to Transport Impact Assessment* and are as follows:

5.6.2 Residential

Low density residential dwellings (2022)

<i>Weekday rates</i>	<i>Regional</i>
<i>AM peak hour</i>	<i>0.83 vehicle trips per dwelling</i>
<i>PM peak hour</i>	<i>0.84 vehicle trips per dwelling</i>

The resulting AM and PM peak hourly traffic generation is summarised in **Table 2**.

TABLE 2: ESTIMATED TRAFFIC GENERATION

Use	Scale	Peak	Generation Rate	Trips ⁽¹⁾
Low Density Residential	113 Lots (Rawson, Taylor and Goodear Stages)	AM	0.83 per lot	94 (19 in, 75 out)
		PM	0.84 per lot	95 (76 in, 19 out)

Notes:

(1) 20% inbound and 80% outbound assumed for the AM peak period, vice versa for the PM peak period.

As shown, the expected traffic generation associated with the proposed development (Rawson, Taylor and Goodear stages) is in the order of **94** vehicle trips in the AM peak period (19 in, 75 out) and **95** vehicle trips in the PM peak period (76 in, 19 out).

1.3.2 Traffic Assignment

The road network, traffic surveys and locations of residential areas surrounding the site have been assessed and the following traffic assignment has been assumed for all traffic to and from the site:

- 100% via the Forest Lane / Driftwood Boulevard intersection;
 - 70% to/from the west (Saltwater Road / Forest Lane intersection);
 - 35% to the north;
 - 35% to the south.
 - 30% to/from the east.

This traffic assignment is highly conservative as it assumes all traffic generated by the subject lots will utilise the Forest Lane / Driftwood Boulevard intersection only and does not consider future road connections to other local roads in the precinct to the north and the east.

1.3.3 Traffic Impact

The traffic generation and traffic assignment outlined in **Section 1.3.1 & 1.3.2** above has been added to the existing traffic volumes recorded. SIDRA INTERSECTION 9.1 was used to assess the intersections performance. The purpose of this assessment is to compare the existing intersection operations to the future scenario under the increased traffic load. The results of this assessment are shown in **Table 3** with the full SIDRA results presented within **Annexure D**.

TABLE 3: INTERSECTION PERFORMANCE OF TABLE 2 LOTS (SIDRA INTERSECTION 9.1)

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/veh)	Level of Service ⁽³⁾⁽⁴⁾	Control Type	Worst Movement	95th Percentile Queue
FUTURE (POST DEVELOPMENT) PERFORMANCE							
Driftwood Boulevard / Forest Lane	AM	0.08	2.4 (Worst: 6.2)	NA (Worst: A)	Give Way	RT from Driftwood Boulevard	0.3 veh (2.2m) Driftwood Boulevard
	PM	0.07	2.3 (Worst: 6)	NA (Worst: A)		RT from Driftwood Boulevard	0.2 veh (1.2m) Forest Lane

NOTES: Refer to **Table 1**.

By comparing the **Table 3** results to the **Table 1** results it is evident that the Forest Lane / Driftwood Boulevard intersection retains the same overall and “worst movement” level of service under future conditions with minimal delays and additional capacity, indicating that there will be no adverse impact on the existing road network as a result of the fully completed and occupied subdivision.

The subject key “T” intersection of Forest Lane / Driftwood Boulevard will continue to operate at level of service “A” which represents “Very Good” performance with the full impact of the 113 lots as a highly conservative assessment. Therefore, there is no nexus for Council to impose a roundabout at this intersection.

1.3.4 Sensitivity Testing

In order to further satisfy Council that the key intersection of Forest Lane / Driftwood Boulevard will perform at a high level of efficiency under a priority (Give-way controlled “T” junction), an extremely conservative sensitivity test has been conducted. The sensitivity test assumes all traffic generated by the entire subdivision with 1,018 lots will utilise the Forest Lane / Driftwood Boulevard intersection including the Trad, Archer, Sainisch-Plimer and Stage 9 lots that would otherwise seek to use the Forest Lane / Whitewater Avenue or Old Bar Road / Driftwood Boulevard intersections in reality.

The sensitivity test also adopts the peak hour trips and total number of residential lots from Table 5-2 of the Sinclair Knight Merz report along Forest Lane (585 vehicles in each peak hour period) as well as including the 282 residential lots (as part of Precinct 2B) to the south of Old Bar Road and to the north of Precinct 3.

It is reiterated that this is a highly conservative test and the trips generated by the precinct is likely to be significantly lower given the accessibility of the precinct to other roads such as Old Bar Road for the included 282 lots within part of Precinct 2B. It has also been advised that the client is anticipating that the Jarberg North and Stone stages will be proposed to be Manufactured Home Estates, which generate less trips than typical residential dwellings.

The AM and PM peak hourly traffic generation for the sensitivity test is summarised in **Table 4**.

TABLE 4: ESTIMATED TRAFFIC GENERATION (SENSITIVITY TEST)

Use	Scale	Peak	Generation Rate	Trips ⁽¹⁾
Low Density Residential	1,018 Lots	AM	Sinclair Knight Merz Report	585 (117 in, 468 out)
		PM		585 (468 in, 117 out)
	282 Lots	AM	0.83 per lot	234 (47 in, 187 out)
		PM	0.84 per lot	237 (190 in, 47 out)
Total				
Low Density Residential	1,300 Lots	AM	-	819 (164 in, 655 out)
		PM	-	822 (658 in, 164 out)

Notes:

- (1) 20% inbound and 80% outbound assumed for the AM peak period, vice versa for the PM peak period.
- (2) 131 lots (13%) travel through the assessed intersection along Forest Lane to reach the Jarberg North and Stone stages.

The SIDRA results for the sensitivity testing are summarised below in **Table 5** with the full SIDRA results presented within **Annexure D**.

TABLE 5: INTERSECTION PERFORMANCE OF TABLE 4 LOTS (SENSITIVITY TEST) – CUMULATIVE IMPACT*

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/veh)	Level of Service ⁽³⁾⁽⁴⁾	Control Type	Worst Movement	95th Percentile Queue
FUTURE (POST DEVELOPMENT) PERFORMANCE – SENSITIVITY TEST							
Driftwood Boulevard / Forest Lane	AM	0.71	7.3 (Worst: 10.8)	NA (Worst: A)	Give Way	RT from Driftwood Boulevard	7.7 veh (54.4m) Driftwood Boulevard
	PM	0.41	5.1 (Worst: 9.5)	NA (Worst: A)		RT from Forest Lane	0.8 veh (5.8m) Driftwood Boulevard

* Highly conservative as no discount for use of Old Bar Road is applied

Note: (1) Refer to **Table 1**.

As shown in **Table 5** above, the Forest Lane / Driftwood Boulevard “T” junction retains the same overall and “worst movement” level of service (LoS A) under the extremely conservative sensitivity testing. It is reiterated that this sensitivity test was conducted to demonstrate to Council that the intersection has additional capacity to maintain a high level of efficiency as a T-junction rather than a roundabout and that there is no nexus for Council to impose a roundabout at the intersection of Forest Lane / Driftwood Boulevard which is no longer being designed as a 4-way intersection.

Accordingly, the request to remove Condition 14 from Consent Condition 439/2014/DA is endorsed and supported by the foregoing analysis.

2 Condition 15

The intersection of Saltwater Road / Forest Lane has since been upgraded to incorporate both a CHR and an AUL along the Saltwater Road approaches to Forest Lane. A comparative assessment between a roundabout and the current CHR / AUL treatment of the “T” junction has been undertaken and is discussed within the following sub-sections.

2.1 Traffic Counts

Turning movement count traffic surveys were conducted at the intersection of Saltwater Road / Forest Lane from 6:30am to 9:30am and 3:00pm to 6:00pm on Monday 28 October 2024 (PM peak) and Tuesday 29 October 2024 (AM Peak) representing a typical operating weekday. The full survey results are presented in **Annexure C** for reference.

2.1.1 Existing Road Performance

The performance of the surrounding intersections under the existing traffic conditions has been assessed using SIDRA INTERSECTION 9.1, **Table 6** summarises the resultant intersection performance data, with full SIDRA results presented within **Annexure D**.

TABLE 6: EXISTING INTERSECTION PERFORMANCES (SIDRA INTERSECTION 9.1)

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/veh)	Level of Service ⁽³⁾⁽⁴⁾	Control Type	Worst Movement	95th Percentile Queue
EXISTING PERFORMANCE							
Forest Lane / Saltwater Road	AM	0.17	2.5 (Worst: 7.6)	NA (Worst: A)	CHR / AUL Give Way	LT from Saltwater Road	0.7 veh (4.8m) Forest Lane
	PM	0.08	3.2 (Worst: 8.2)	NA (Worst: A)		RT from Saltwater Road	0.2 veh (1.6m) Forest Lane

NOTES: Refer to **Table 1**.

As shown in **Table 6** above, the intersection of Forest Lane / Saltwater Road is currently performing at a high level of efficiency, with worst movement Level of Service “A” conditions in both the AM & PM peak hour periods. The Level of Service “A” performance is characterised by low approach delays and spare capacity.

2.2 Traffic Assessment

The impact of the expected traffic generation levels associated with the subject proposal is discussed within the following sub-sections.

2.2.1 Vehicle Trip Generation

Traffic generation rates for the residential lots are provided within the *Sinclair Knight Merz* report as adopted within **Section 1.3.4**, the estimated AM and PM peak hourly traffic generation is summarised in **Table 7**.

TABLE 7: ESTIMATED TRAFFIC GENERATION

Use	Scale	Peak	Generation Rate	Trips ⁽¹⁾
Low Density Residential	1,018 Lots	AM	Sinclair Knight Merz Report	585 (117 in, 468 out)
		PM		585 (468 in, 117 out)

Notes:

(1) 20% inbound and 80% outbound assumed for the AM peak period, vice versa for the PM peak period.

As shown, the expected traffic generation associated with the proposed development (All stages) is in the order of **585** vehicle trips in the AM peak period (117 in, 468 out) and **585** vehicle trips in the PM peak period (468 in, 117 out).

2.2.2 Traffic Assignment

The road network, traffic surveys and locations of residential areas surrounding the site have been assessed and the following traffic assignment has been assumed for all traffic to and from the site:

- 70% to/from the west (Saltwater Road / Forest Lane intersection);
 - 35% to the north;
 - 35% to the south.
- 30% to/from the east.

2.2.3 Traffic Impact

The traffic generation and traffic assignment outlined in **Section 2.2.1 & 2.2.2** above has been added to the existing traffic volumes recorded. SIDRA INTERSECTION 9.1 was used to assess the intersections performance under the current conditions as well as a roundabout as required by Condition 15. The purpose of this assessment is to compare the future intersection operations of the current intersection design to the design required by Condition 15 under the increased traffic load. The results of this assessment are shown in **Table 8** with the full SIDRA results presented within **Annexure D**.

TABLE 8: INTERSECTION PERFORMANCE COMPARISON (SIDRA INTERSECTION 9.1)

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/veh)	Level of Service ⁽³⁾⁽⁴⁾	Control Type	Worst Movement
FUTURE (POST DEVELOPMENT) PERFORMANCE – CURRENT DESIGN						
Forest Lane / Saltwater Road	AM	0.40	5.5 (Worst: 9)	NA (Worst: A)	CHR / AUL	RT from Forest Lane
	PM	0.22	4.9 (Worst: 8.2)	NA (Worst: A)	Give Way	RT from Saltwater Road
FUTURE (POST DEVELOPMENT) PERFORMANCE – ROUNDABOUT						
Forest Lane / Saltwater Road	AM	0.31	7.5 (Worst: 12.5)	A (Worst: A)	Roundabout	RT from Saltwater Road
	PM	0.33	7.7 (Worst: 10.3)	A (Worst: A)		RT from Saltwater Road

NOTES: Refer to **Table 1**.

As shown in **Table 8** above, the Saltwater Road / Forest Lane intersection retains the same overall and “worst movement” level of service under the forecast future scenarios with minimal delays and additional capacity, indicating that there will be minimal difference for traffic flow as a result of either the current CHR / AUL “Giveway Priority” control or roundabout control mode. There is no benefit in changing the current CHR / AUL “Giveway Priority” control mode to a roundabout.

In fact, the current design is preferable as it prioritises the through volumes along Saltwater Road whilst also providing compliant and safe auxiliary left and channelised right lanes for turning traffic into Forest Lane and as such, there is no nexus for Council to impose a roundabout at the intersection of Saltwater Road / Forest Lane.

Accordingly, the request to remove Condition 15 from Consent Condition 439/2014/DA is endorsed and supported by the foregoing analysis.

Finally, with regard to the width of travel lanes along the length of Forest Lane between Saltwater Road and the road length of Forest Lane where it directly serves residential lots (i.e. urban standard), it is reasonable and “fit for purpose” that a 7m rural standard apply, as currently constructed.

The additional 2m width, as required by the conditions of consent, relates to widening the road shoulders and no further capacity is gained through the required 9m wide carriageway. In fact, the Sinclair Knight Merz report suggests that Forest Lane should be a narrow road to assist with speed reduction. In any case, there is no need to further widen that 600m (approximate) section of the Forest Lane carriageway, east of Saltwater Road, as there is no fronting urban residential lots along this length, which is otherwise categorised as a rural road given the bushland frontage on both sides. The 7m road carriageway width along this length is deemed to be “fit-for-purpose”.

Please contact the undersigned on 9521 7199 should you require further information or assistance.

Yours faithfully,

McLaren Traffic Engineering



Craig McLaren
Director & Mentor

RPEQ 19457

BE Civil. Graduate Diploma (Transport Eng) MAITPM MITE [1985]

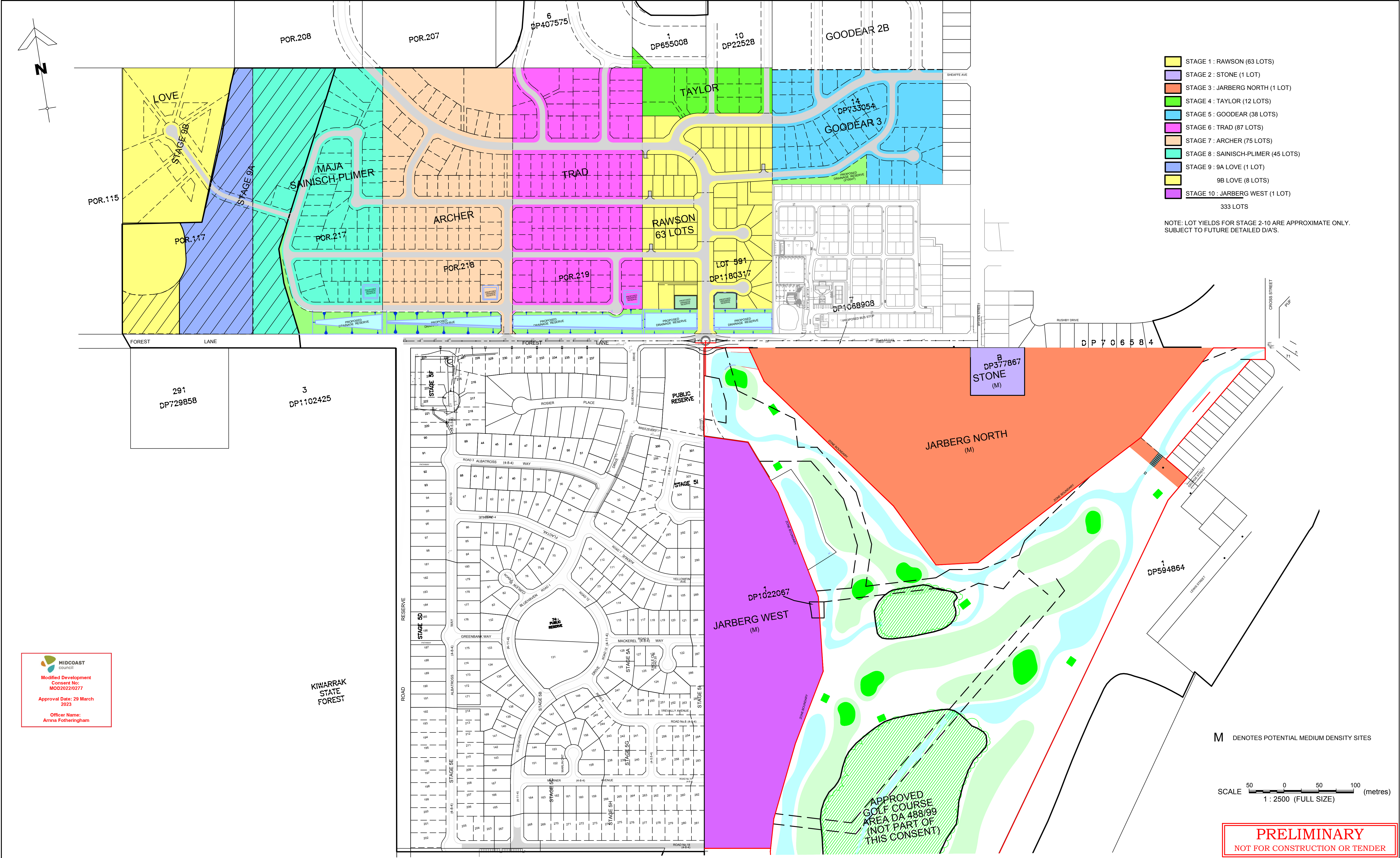
TfNSW Accredited Level 3 Road Safety Auditor [1998]

SafeWork NSW Traffic Control Work Training card, [Authorisation number TCT0015914 : Prepare Work Zone (PWZ)]

Expert Traffic Engineering & Road Safety Witness at NSW Land & Environment & NSW Supreme Court



**ANNEXURE A: PROPOSED PLANS
(1 SHEET)**

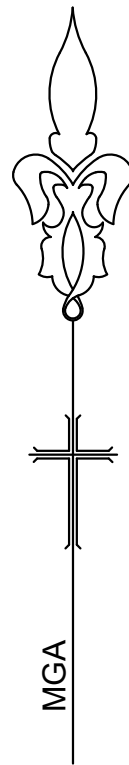


MIDCOAST council
Modified Development
Consent No: MOD2022/0277
Approval Date: 29 March 2023
Officer Name: Anna Fotheringham

FOREST LANE OLD BAR PRECINCT 3			COPYRIGHT © This drawing is copyright and the property of Burchills Engineering Solutions. It must not be retained, copied or used without the authority of Burchills Engineering Solutions.			 Gold Coast Brisbane Toowoomba Ipswich Moreton Bay Phone: +61 7 5509 6400 Fax: +61 7 5509 6411 Email: admin@burchills.com.au Coote Burchills Engineering Pty Ltd ABN 76 166 942 365	PROJECT: FOREST LANE OLD BAR PRECINCT 3	DRAWING TITLE : STAGING PLAN	DEVEL. APPLIC. No. :		DATE : 10.10.22			
FOR ---			DISCLAIMER This drawing and its contents are electronically generated, are confidential and may only be used for the purpose for which they were intended. Burchills Engineering Solutions will not accept responsibility for any consequences arising from the use of the drawing for other than its intended purpose or where the drawing has been altered, amended or changed either manually or electronically by any third party.						PROJECT LEADER : DEAN HARDWICK		DESIGNER : THO GIAN			
A1 ORIGINAL SIZE BEFORE REDUCTION			NOTE This is an uncontrolled document issued for information purposes only, unless the checked sections are signed or completed. Figured dimensions take precedence over scale. Do not scale reduced size drawings. Verify dimensions prior to commencing any on-site or off-site works or fabrication.						DRAFTSPERSON : THO GIAN		CHECKED : DEAN HARDWICK			
						APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365								
									RPEQ No. :					
									SCALE :		DATUM : AHD		FULL SIZE : A1	
									PROJECT No.:		DRAWING No.:		VERSION:	
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**ANNEXURE B: ORIGINAL PLANS
(1 SHEET)**



MIDCOAST
Council
Modified Development
Consent No:
MOD2021/0323
Approval Date: 7 July 2022
Officer Name:
Arna Fotheringham

KIWARRAK
STATE
FOREST

POR.208

POR.207

6
DP407575

1
DP655008

10
DP22528

GOODEAR 2B

POR.115

LOVE

STAGE 9B

POR.117

STAGE 9A

MAJA
SAINISCH-PLIMER

POR.217

ARCHER

POR.218

TRAD

POR.219

RAWSON
63 LOTS

LOT 591

DP1180317

PROPOSED
DRAINAGE RESERVE

PROPOSED
DRAINAGE RESERVE

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- STAGE 1 : RAWSON (63 LOTS)
- STAGE 2 : STONE (5 LOTS)
- STAGE 3 : JARBERG NORTH (126 LOTS)
- STAGE 4 : TAYLOR (12 LOTS)
- STAGE 5 : GOODEAR (38 LOTS)
- STAGE 6 : TRAD (87 LOTS)
- STAGE 7 : ARCHER (75 LOTS)
- STAGE 8 : SAINISCH-PLIMER (45 LOTS)
- STAGE 9 : 9A LOVE (1 LOT)
- 9B LOVE (8 LOTS)
- STAGE 10 : JARBERG WEST (64 LOTS)
- 524 LOTS

NOTE: LOT YIELDS FOR STAGE 2-10 ARE APPROXIMATE ONLY.
SUBJECT TO FUTURE DETAILED D/A'S.

DP377867

STONE

JARBERG NORTH

DP1022067

JARBERG WEST

DP594864

APPROVED
GOLF COURSE
AREA DA 488/99
(NOT PART OF
THIS CONSENT)

- C DENOTES POTENTIAL COTTAGE LOTS
- M DENOTES POTENTIAL MEDIUM DENSITY SITES
- D DENOTES POTENTIAL DUPLEX LOTS

0 10 20 40 60 80 100
SCALE 1:2500 AT A1
SCALE 1:5000 AT A3

PRELIMINARY
SUBJECT TO APPROVAL, FINAL SURVEY AND DESIGN

NOTE: The contractor shall check and verify all works on site (including works by others) before commencing any works. All discrepancies are to be reported to the Project Manager or LSW Surveyors prior to commencing work. Do not scale dimensions from the plan. All dimensions to be confirmed by dimensions from the plan. All dimensions to be confirmed by LSW Surveyors.

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HORIZONTAL
CO-ORDINATE SYSTEM: LOCAL (ISGMA AZIMUTH)
MARKS ADOPTED: SSM57145
EAST: 259588.091 NORTH: 1460809.687
PLOT FILE/DWG No.:
F:\D60606066 PRECINCT 3\ 6066JAR PRECINCT 3.DWG

VERTICAL
DATUM: AHD
BENCHMARK: SSM57145
R.L.: 6.18
DRAWN/CHECKED:
P.J.L

PROJECT

PROPOSED SUBDIVISION OF
"PRECINCT 3"
FOREST LANE, OLD BAR
STAGING PLAN



LSW SURVEYORS
1st FLOOR, 3 WHARF ST. FORSTER 2428
PO BOX 510 FORSTER NSW 2428
PH: (02) 6554 7988
EMAIL: consult@lswsurveyors.com.au
WEBSITE: www.lswsurveyors.com.au

SCALES
HORIZONTAL: 1:2500 AT A1
VERTICAL: N/A
SHEET SIZE: A1
FIELD SHEETS
Date of survey:

COUNCIL:
MID-COAST
DATE:
16/12/15

SHEET 1 OF 1
FILE No.:
6066 O/A
(COMP. JOB 6066JAR)

ISSUE	DATE	COMMENTS
B	02/02/16	DRAINAGE CORRIDOR AMENDED
C	18/02/16	GENERAL AMENDMENTS
D	30/06/16	TAYLORS/TRADS LAYOUT AMENDED
E	30/11/17	JARBERG NORTH LOTS AMENDED
F	11/01/18	GENERAL AMENDMENTS
G	11/10/21	AMEND NORTHERN LOTS



**ANNEXURE C: TRAFFIC COUNT DATA
(1 SHEETS)**



**ANNEXURE D: SIDRA RESULTS
(12 SHEETS)**

MOVEMENT SUMMARY

Site: 01 [EX AM Saltwater Rd / Forest Ln (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Saltwater Road / Forest Lane
Existing Conditions
AM Peak Period
Site Category: (None)
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]	%				[Veh. veh	Dist] m				
			veh/h		veh/h		v/c	sec							km/h
South: Saltwater Road (S)															
2	T1	All MCs	155	2.0	155	2.0	0.080	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	90.0
3	R2	All MCs	27	0.0	27	0.0	0.020	7.5	LOS A	0.1	0.6	0.17	0.60	0.17	54.9
Approach			182	1.7	182	1.7	0.080	1.1	NA	0.1	0.6	0.03	0.09	0.03	82.1
East: Forest Lane (E)															
4	L2	All MCs	17	6.3	17	6.3	0.166	4.7	LOS A	0.7	4.8	0.02	0.51	0.02	53.8
6	R2	All MCs	120	2.6	120	2.6	0.166	4.7	LOS A	0.7	4.8	0.02	0.51	0.02	54.7
Approach			137	3.1	137	3.1	0.166	4.7	LOS A	0.7	4.8	0.02	0.51	0.02	54.6
North: Saltwater Road (N)															
7	L2	All MCs	16	6.7	16	6.7	0.009	7.6	LOS A	0.0	0.0	0.00	0.65	0.00	67.3
8	T1	All MCs	58	1.8	58	1.8	0.030	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	90.0
Approach			74	2.9	74	2.9	0.030	1.6	NA	0.0	0.0	0.00	0.14	0.00	83.9
All Vehicles			393	2.4	393	2.4	0.166	2.5	NA	0.7	4.8	0.02	0.25	0.02	70.0

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

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

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.

MOVEMENT SUMMARY

▼ Site: 01 [EX PM Saltwater Rd / Forest Ln (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Saltwater Road / Forest Lane
Existing Conditions
PM Peak Period
Site Category: (None)
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]	[Veh. veh	Dist]									
			veh/h	%	veh/h	%	v/c	sec			m				km/h
South: Saltwater Road (S)															
2	T1	All MCs	78	4.1	78	4.1	0.041	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	90.0
3	R2	All MCs	33	0.0	33	0.0	0.029	8.2	LOS A	0.1	0.8	0.34	0.62	0.34	54.4
Approach			111	2.9	111	2.9	0.041	2.4	NA	0.1	0.8	0.10	0.18	0.10	75.4
East: Forest Lane (E)															
4	L2	All MCs	28	0.0	28	0.0	0.079	4.8	LOS A	0.2	1.6	0.01	0.52	0.01	55.3
6	R2	All MCs	40	7.9	40	7.9	0.079	4.7	LOS A	0.2	1.6	0.01	0.52	0.01	53.6
Approach			68	4.6	68	4.6	0.079	4.7	LOS A	0.2	1.6	0.01	0.52	0.01	54.3
North: Saltwater Road (N)															
7	L2	All MCs	103	2.0	103	2.0	0.056	7.5	LOS A	0.0	0.0	0.00	0.65	0.00	69.0
8	T1	All MCs	146	2.2	146	2.2	0.076	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	90.0
Approach			249	2.1	249	2.1	0.076	3.1	NA	0.0	0.0	0.00	0.27	0.00	79.9
All Vehicles			428	2.7	428	2.7	0.079	3.2	NA	0.2	1.6	0.03	0.29	0.03	73.2

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

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

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.

MOVEMENT SUMMARY

Site: 02 [EX AM Forest Ln / Driftwood Bvd (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Forest Lane / Driftwood Boulevard
Existing Conditions
AM Peak Period
Site Category: (None)
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]	%				[Veh. veh	Dist] m				
			veh/h		veh/h		v/c	sec							km/h
East: Forest Lane (E)															
5	T1	All MCs	86	2.4	86	2.4	0.047	0.0	LOS A	0.0	0.1	0.02	0.02	0.02	49.8
6	R2	All MCs	3	0.0	3	0.0	0.047	4.7	LOS A	0.0	0.1	0.02	0.02	0.02	48.4
Approach			89	2.4	89	2.4	0.047	0.2	NA	0.0	0.1	0.02	0.02	0.02	49.8
North: Driftwood Boulevard (N)															
7	L2	All MCs	9	22.2	9	22.2	0.017	5.1	LOS A	0.1	0.5	0.23	0.52	0.23	45.1
9	R2	All MCs	9	11.1	9	11.1	0.017	5.4	LOS A	0.1	0.5	0.23	0.52	0.23	45.1
Approach			19	16.7	19	16.7	0.017	5.3	LOS A	0.1	0.5	0.23	0.52	0.23	45.1
West: Forest Lane (W)															
10	L2	All MCs	8	12.5	8	12.5	0.060	4.7	LOS A	0.0	0.0	0.00	0.04	0.00	48.3
11	T1	All MCs	107	1.0	107	1.0	0.060	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.8
Approach			116	1.8	116	1.8	0.060	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles			224	3.3	224	3.3	0.060	0.7	NA	0.1	0.5	0.03	0.07	0.03	49.3

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

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

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.

MOVEMENT SUMMARY

Site: 02 [EX PM Forest Ln / Driftwood Bvd (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Forest Lane / Driftwood Boulevard
Existing Conditions
PM Peak Period
Site Category: (None)
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]	%				[Veh. veh	Dist] m				
			veh/h		veh/h		v/c	sec							km/h
East: Forest Lane (E)															
5	T1	All MCs	91	3.5	91	3.5	0.049	0.0	LOS A	0.0	0.1	0.01	0.02	0.01	49.8
6	R2	All MCs	3	0.0	3	0.0	0.049	4.6	LOS A	0.0	0.1	0.01	0.02	0.01	48.4
Approach			94	3.4	94	3.4	0.049	0.2	NA	0.0	0.1	0.01	0.02	0.01	49.8
North: Driftwood Boulevard (N)															
7	L2	All MCs	3	0.0	3	0.0	0.006	4.8	LOS A	0.0	0.1	0.20	0.51	0.20	45.5
9	R2	All MCs	4	0.0	4	0.0	0.006	5.1	LOS A	0.0	0.1	0.20	0.51	0.20	45.3
Approach			7	0.0	7	0.0	0.006	5.0	LOS A	0.0	0.1	0.20	0.51	0.20	45.4
West: Forest Lane (W)															
10	L2	All MCs	1	0.0	1	0.0	0.042	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	48.7
11	T1	All MCs	81	1.3	81	1.3	0.042	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach			82	1.3	82	1.3	0.042	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles			183	2.3	183	2.3	0.049	0.3	NA	0.0	0.1	0.02	0.03	0.02	49.7

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

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

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.

MOVEMENT SUMMARY

▼ Site: 02 [FU AM Forest Ln / Driftwood Bvd (Site Folder: Future)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Forest Lane / Driftwood Boulevard
Future Conditions
AM Peak Period
Site Category: (None)
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]	%				[Veh. veh	Dist] m				
East: Forest Lane (E)															
5	T1	All MCs	86	2.4	86	2.4	0.051	0.1	LOS A	0.1	0.4	0.05	0.08	0.05	49.8
6	R2	All MCs	9	0.0	9	0.0	0.051	5.5	LOS A	0.1	0.4	0.05	0.08	0.05	50.8
Approach			96	2.2	96	2.2	0.051	0.6	NA	0.1	0.4	0.05	0.08	0.05	49.9
North: Driftwood Road (N)															
7	L2	All MCs	33	6.5	33	6.5	0.084	5.7	LOS A	0.3	2.2	0.25	0.58	0.25	50.5
9	R2	All MCs	65	1.6	65	1.6	0.084	6.2	LOS A	0.3	2.2	0.25	0.58	0.25	50.8
Approach			98	3.2	98	3.2	0.084	6.0	LOS A	0.3	2.2	0.25	0.58	0.25	50.7
West: Forest Lane (W)															
10	L2	All MCs	22	4.8	22	4.8	0.068	4.7	LOS A	0.0	0.0	0.00	0.11	0.00	48.9
11	T1	All MCs	107	1.0	107	1.0	0.068	0.1	LOS A	0.0	0.0	0.00	0.11	0.00	50.3
Approach			129	1.6	129	1.6	0.068	0.9	NA	0.0	0.0	0.00	0.11	0.00	50.0
All Vehicles			323	2.3	323	2.3	0.084	2.4	NA	0.3	2.2	0.09	0.24	0.09	50.2

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

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

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.

MOVEMENT SUMMARY

▼ Site: 02 [FU PM Forest Ln / Driftwood Bvd (Site Folder: Future)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Forest Lane / Driftwood Boulevard
Future Conditions
PM Peak Period
Site Category: (None)
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]	%				[Veh. veh	Dist] m				
East: Forest Lane (E)															
5	T1	All MCs	91	3.5	91	3.5	0.065	0.1	LOS A	0.2	1.2	0.13	0.17	0.13	49.7
6	R2	All MCs	27	0.0	27	0.0	0.065	5.8	LOS A	0.2	1.2	0.13	0.17	0.13	51.4
Approach			118	2.7	118	2.7	0.065	1.4	NA	0.2	1.2	0.13	0.17	0.13	50.1
North: Driftwood Boulevard (N)															
7	L2	All MCs	9	0.0	9	0.0	0.023	5.5	LOS A	0.1	0.5	0.22	0.55	0.22	50.3
9	R2	All MCs	18	0.0	18	0.0	0.023	6.0	LOS A	0.1	0.5	0.22	0.55	0.22	50.4
Approach			27	0.0	27	0.0	0.023	5.8	LOS A	0.1	0.5	0.22	0.55	0.22	50.4
West: Forest Lane (W)															
10	L2	All MCs	57	0.0	57	0.0	0.073	4.9	LOS A	0.0	0.0	0.00	0.28	0.00	50.3
11	T1	All MCs	81	1.3	81	1.3	0.073	0.4	LOS A	0.0	0.0	0.00	0.28	0.00	51.8
Approach			138	0.8	138	0.8	0.073	2.3	NA	0.0	0.0	0.00	0.28	0.00	51.2
All Vehicles			283	1.5	283	1.5	0.073	2.3	NA	0.2	1.2	0.07	0.26	0.07	50.6

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

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

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.

MOVEMENT SUMMARY

▼ Site: 01 [FU AM Saltwater Rd / Forest Ln (Site Folder: Future)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Saltwater Road / Forest Lane
Future Conditions - Conservative
AM Peak Period
Site Category: (None)
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]	%				[Veh. veh	Dist] m				
			veh/h		veh/h		v/c	sec							km/h
South: Saltwater Road (S)															
2	T1	All MCs	155	2.0	155	2.0	0.080	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	90.0
3	R2	All MCs	71	0.0	71	0.0	0.055	6.9	LOS A	0.2	1.5	0.22	0.58	0.22	54.0
Approach			225	1.4	225	1.4	0.080	2.2	NA	0.2	1.5	0.07	0.18	0.07	74.4
East: Forest Lane (E)															
4	L2	All MCs	189	0.6	189	0.6	0.143	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.2
6	R2	All MCs	293	1.1	293	1.1	0.401	9.0	LOS A	2.4	16.8	0.55	0.74	0.66	51.5
Approach			482	0.9	482	0.9	0.401	7.6	LOS A	2.4	16.8	0.33	0.68	0.40	52.2
North: Saltwater Road (N)															
7	L2	All MCs	59	1.8	59	1.8	0.032	6.1	LOS A	0.0	0.0	0.00	0.60	0.00	56.4
8	T1	All MCs	58	1.8	58	1.8	0.030	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	90.0
Approach			117	1.8	117	1.8	0.032	3.1	NA	0.0	0.0	0.00	0.30	0.00	69.2
All Vehicles			824	1.1	824	1.1	0.401	5.5	NA	2.4	16.8	0.21	0.49	0.25	59.0

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

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

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.

MOVEMENT SUMMARY

▼ Site: 01 [FU PM Saltwater Rd / Forest Ln (Site Folder: Future)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Saltwater Road / Forest Lane
Future Conditions - Conservative
PM Peak Period
Site Category: (None)
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]	%				[Veh. veh	Dist] m				
			veh/h		veh/h		v/c	sec							km/h
South: Saltwater Road (S)															
2	T1	All MCs	78	4.1	78	4.1	0.041	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	90.0
3	R2	All MCs	205	0.0	205	0.0	0.220	8.2	LOS A	0.9	6.6	0.50	0.71	0.50	52.0
Approach			283	1.1	283	1.1	0.220	5.9	NA	0.9	6.6	0.36	0.52	0.36	58.8
East: Forest Lane (E)															
4	L2	All MCs	72	0.0	72	0.0	0.222	5.4	LOS A	0.7	5.3	0.01	0.55	0.01	54.4
6	R2	All MCs	83	3.8	83	3.8	0.222	5.2	LOS A	0.7	5.3	0.01	0.55	0.01	54.0
Approach			155	2.0	155	2.0	0.222	5.3	LOS A	0.7	5.3	0.01	0.55	0.01	54.2
North: Saltwater Road (N)															
7	L2	All MCs	276	0.8	276	0.8	0.149	6.3	LOS A	0.0	0.0	0.00	0.61	0.00	57.8
8	T1	All MCs	146	2.2	146	2.2	0.076	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	90.0
Approach			422	1.2	422	1.2	0.149	4.1	NA	0.0	0.0	0.00	0.40	0.00	66.0
All Vehicles			860	1.3	860	1.3	0.222	4.9	NA	0.9	6.6	0.12	0.46	0.12	61.1

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

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

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.

MOVEMENT SUMMARY

Site: 02 [ST AM Forest Ln / Driftwood Bvd (Site Folder: Sensitivity Test)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Forest Lane / Driftwood Boulevard
Sensitivity Test
AM Peak Period
Site Category: (None)
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]	%				[Veh. veh	Dist] m				
East: Forest Lane (E)															
5	T1	All MCs	151	1.4	151	1.4	0.085	0.1	LOS A	0.1	0.5	0.06	0.07	0.06	53.9
6	R2	All MCs	9	0.0	9	0.0	0.085	6.2	LOS A	0.1	0.5	0.06	0.07	0.06	52.9
Approach			160	1.3	160	1.3	0.085	0.5	NA	0.1	0.5	0.06	0.07	0.06	53.8
North: Driftwood Boulevard (N)															
7	L2	All MCs	33	6.5	33	6.5	0.710	8.4	LOS A	7.7	54.4	0.66	0.93	1.14	48.1
9	R2	All MCs	635	0.2	635	0.2	0.710	10.8	LOS A	7.7	54.4	0.66	0.93	1.14	48.8
Approach			667	0.5	667	0.5	0.710	10.7	LOS A	7.7	54.4	0.66	0.93	1.14	48.8
West: Forest Lane (W)															
10	L2	All MCs	165	0.6	165	0.6	0.153	5.2	LOS A	0.0	0.0	0.00	0.37	0.00	51.2
11	T1	All MCs	123	0.9	123	0.9	0.153	0.5	LOS A	0.0	0.0	0.00	0.37	0.00	52.9
Approach			288	0.7	288	0.7	0.153	3.2	NA	0.0	0.0	0.00	0.37	0.00	51.9
All Vehicles			1116	0.7	1116	0.7	0.710	7.3	NA	7.7	54.4	0.40	0.66	0.69	50.2

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

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

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.

MOVEMENT SUMMARY

Site: 02 [ST PM Forest Ln / Driftwood Bvd (Site Folder: Sensitivity Test)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Forest Lane / Driftwood Boulevard
Sensitivity Test
PM Peak Period
Site Category: (None)
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]	%				[Veh. veh	Dist] m				
East: Forest Lane (E)															
5	T1	All MCs	106	3.0	106	3.0	0.094	1.8	LOS A	0.4	2.7	0.34	0.41	0.34	49.8
6	R2	All MCs	27	0.0	27	0.0	0.094	9.5	LOS A	0.4	2.7	0.34	0.41	0.34	50.8
Approach			134	2.4	134	2.4	0.094	3.4	NA	0.4	2.7	0.34	0.41	0.34	50.0
North: Driftwood Boulevard (N)															
7	L2	All MCs	9	0.0	9	0.0	0.233	5.7	LOS A	0.8	5.8	0.52	0.76	0.52	49.5
9	R2	All MCs	161	0.0	161	0.0	0.233	8.7	LOS A	0.8	5.8	0.52	0.76	0.52	50.2
Approach			171	0.0	171	0.0	0.233	8.6	LOS A	0.8	5.8	0.52	0.76	0.52	50.1
West: Forest Lane (W)															
10	L2	All MCs	629	0.0	629	0.0	0.414	5.6	LOS A	0.0	0.0	0.00	0.49	0.00	52.6
11	T1	All MCs	145	0.7	145	0.7	0.414	0.6	LOS A	0.0	0.0	0.00	0.49	0.00	54.5
Approach			775	0.1	775	0.1	0.414	4.6	NA	0.0	0.0	0.00	0.49	0.00	52.9
All Vehicles			1079	0.4	1079	0.4	0.414	5.1	NA	0.8	5.8	0.12	0.52	0.12	52.1

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

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

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.

MOVEMENT SUMMARY

 Site: 01v [RO AM Saltwater Rd / Forest Ln (Site Folder: Roundabout Test)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Saltwater Road / Forest Lane
Future Conditions - Conservative
AM Peak Period
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				
South: Saltwater Road (S)															
2	T1	All MCs	155	2.0	155	2.0	0.195	8.7	LOS A	1.2	8.7	0.51	0.60	0.51	65.0
3	R2	All MCs	71	0.0	71	0.0	0.195	12.5	LOS A	1.2	8.7	0.51	0.60	0.51	55.1
Approach			225	1.4	225	1.4	0.195	9.9	LOS A	1.2	8.7	0.51	0.60	0.51	61.6
East: Forest Lane (E)															
4	L2	All MCs	189	0.6	189	0.6	0.313	3.6	LOS A	2.3	16.2	0.25	0.52	0.25	52.1
6	R2	All MCs	293	1.1	293	1.1	0.313	8.9	LOS A	2.3	16.2	0.25	0.52	0.25	53.7
Approach			482	0.9	482	0.9	0.313	6.8	LOS A	2.3	16.2	0.25	0.52	0.25	53.0
North: Saltwater Road (N)															
7	L2	All MCs	59	1.8	59	1.8	0.083	4.6	LOS A	0.5	3.7	0.25	0.46	0.25	58.0
8	T1	All MCs	58	1.8	58	1.8	0.083	7.3	LOS A	0.5	3.7	0.25	0.46	0.25	67.7
Approach			117	1.8	117	1.8	0.083	5.9	LOS A	0.5	3.7	0.25	0.46	0.25	62.5
All Vehicles			824	1.1	824	1.1	0.313	7.5	LOS A	2.3	16.2	0.32	0.53	0.32	56.4

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

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

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

Roundabout Capacity Model: SIDRA Standard.

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

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

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

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

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

MOVEMENT SUMMARY

 **Site: 01v [RO PM Saltwater Rd / Forest Ln (Site Folder: Roundabout Test)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Saltwater Road / Forest Lane
Future Conditions - Conservative
PM Peak Period
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	[Total HV]	[Veh. veh	Dist]									
			veh/h	%	veh/h	%	v/c	sec			m				km/h
South: Saltwater Road (S)															
2	T1	All MCs	78	4.1	78	4.1	0.196	7.5	LOS A	1.3	9.3	0.28	0.58	0.28	60.6
3	R2	All MCs	205	0.0	205	0.0	0.196	10.3	LOS A	1.3	9.3	0.28	0.58	0.28	53.1
Approach			283	1.1	283	1.1	0.196	9.5	LOS A	1.3	9.3	0.28	0.58	0.28	54.9
East: Forest Lane (E)															
4	L2	All MCs	72	0.0	72	0.0	0.132	4.3	LOS A	0.8	5.9	0.39	0.54	0.39	53.4
6	R2	All MCs	83	3.8	83	3.8	0.132	9.2	LOS A	0.8	5.9	0.39	0.54	0.39	52.5
Approach			155	2.0	155	2.0	0.132	7.0	LOS A	0.8	5.9	0.39	0.54	0.39	52.9
North: Saltwater Road (N)															
7	L2	All MCs	276	0.8	276	0.8	0.332	5.8	LOS A	2.4	16.9	0.49	0.53	0.49	56.4
8	T1	All MCs	146	2.2	146	2.2	0.332	8.4	LOS A	2.4	16.9	0.49	0.53	0.49	65.8
Approach			422	1.2	422	1.2	0.332	6.7	LOS A	2.4	16.9	0.49	0.53	0.49	59.3
All Vehicles			860	1.3	860	1.3	0.332	7.7	LOS A	2.4	16.9	0.40	0.55	0.40	56.6

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

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

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

Roundabout Capacity Model: SIDRA Standard.

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

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

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

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

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