



**TRAFFIC IMPACT ASSESSMENT OF
THE PROPOSED CHANGE OF ZONING
AT WARRA WARRA ROAD, SOUTH NOWRA**



**Address: Shop 7, 720 Old Princes Highway Sutherland NSW 2232
Postal: P.O Box 66 Sutherland NSW 1499**

**Telephone: +61 2 9521 7199
Web: www.mclarentraffic.com.au
Email: admin@mclarentraffic.com.au**

Division of RAMTRANS Australia ABN: 45067491678 RPEQ: 19457

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

Development Type: Change of Zoning

Site Address: Warra Warra Road, South Nowra

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1 INTRODUCTION

McLaren Traffic Engineering was commissioned by *CivPlan* to provide a traffic impact assessment of the proposed Change of Zoning at Warra Warra Road, South Nowra as depicted in **Annexure A**.

1.1 *Description and Scale of Development*

The proposed development has the following characteristics relevant to traffic and parking as summarised in **Table 1**:

TABLE 1: SCALE OF DEVELOPMENT

Land Use	Existing Zoning	Future Zoning
Zoning	162,000m ² (E3)	162,000m ² (R1)
Productivity Support (E3) Zoning Site Area	162,000m ² (E3)	0m ²
General Residential (R1) Zoning Site Area	0m ²	162,00m ² (R1)
Residential (Lots)	0	207 lots

As shown above, the proposed change of zoning relates to changing a portion of the current zoning on the subject lots from *E3 - Productivity Support* to *R1 - General Residential* resulting in a future residential yield of some 207 residential lots in a proposed future subdivision.

The analysis within this report has considered a 207 lot subdivision, however the applicant has advised they are also exploring a slightly larger lot yield of 215 residential lots, with no change to the proposed road layout or subdivision design.

As part of this proposal, there will be no through-link connection via Warra Warra Road. The residential precinct will have access directly via Old Southern Road to the north.

1.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

The proposed site has frontage to a classified road and therefore qualifies as such with reference to *Clause 2.119 of SEPP (Transport and Infrastructure) 2021*. The development therefore must satisfy that:

(a) where practicable and safe, vehicular access to the land is provided by a road other than the classified road, and

(b) the safety, efficiency, and ongoing operation of the classified road will not be adversely affected by the development as a result of:

(i) the design of the vehicular access to the land.

(ii) the emission of smoke or dust from the development

(iii) the nature, volume or frequency of vehicles using the classified road to gain access to the land.

The site has frontage to Princes Highway, a TfNSW Classified State Road (No. 1) and accordingly, Shoalhaven City Council must be satisfied that the development meets the above criteria. Further assessment in relation to *Clause 2.119* of the SEPP is detailed in **Section 4.5** of this report.

1.3 Site Description

The subject site includes two (2) lots legally identified as Lot 2 DP1126288 and Lot 224 DP755952 which are currently zoned *E3 – Productivity Support* under the *Shoalhaven Local Environmental Plan 2014* and are currently unoccupied. The site has frontages to Warra Warra Road to the south and Princes Highway to the west. The site connects to Old Southern Road and Kookaburra Way along the site's northern boundary. The site is bounded by residential subdivision developments to the north and Browns Creek separates the eastern and western portions of the site. The site is generally surrounded by industrial development to the north-west and rural bush landscape in all other directions of the site. Worrigee Nature Reserve is located to the north-east of the site.

1.4 Site Context

The location of the site is shown on an aerial photo and a street map in **Figure 1**, **Figure 2** and **Figure 3** respectively.

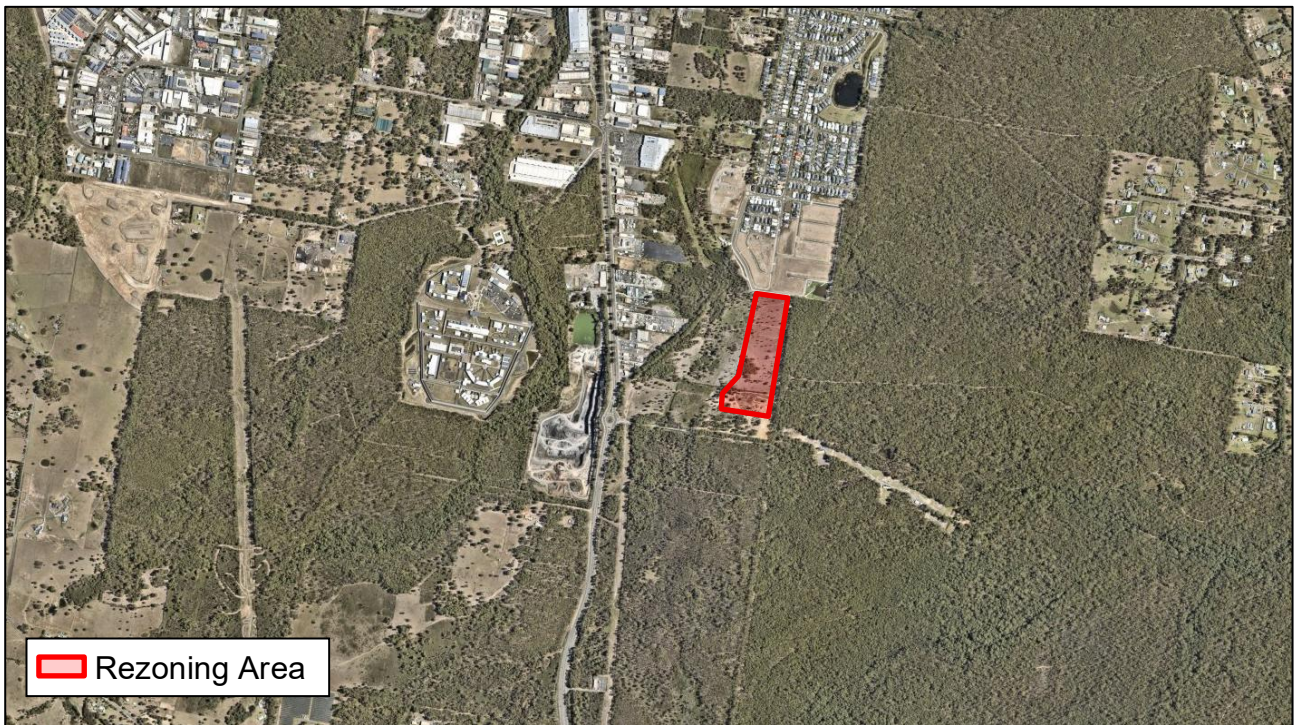


FIGURE 1: SITE CONTEXT – AERIAL PHOTO

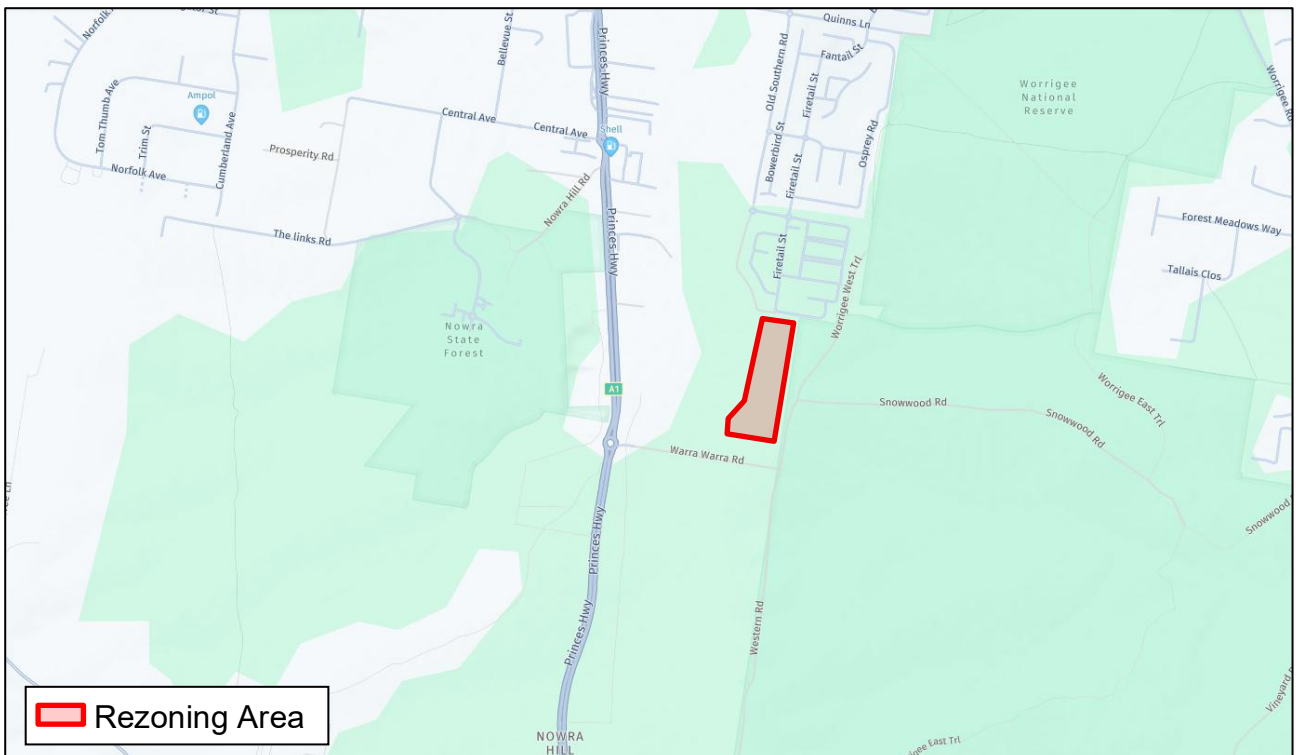


FIGURE 2: SITE CONTEXT – STREET MAP

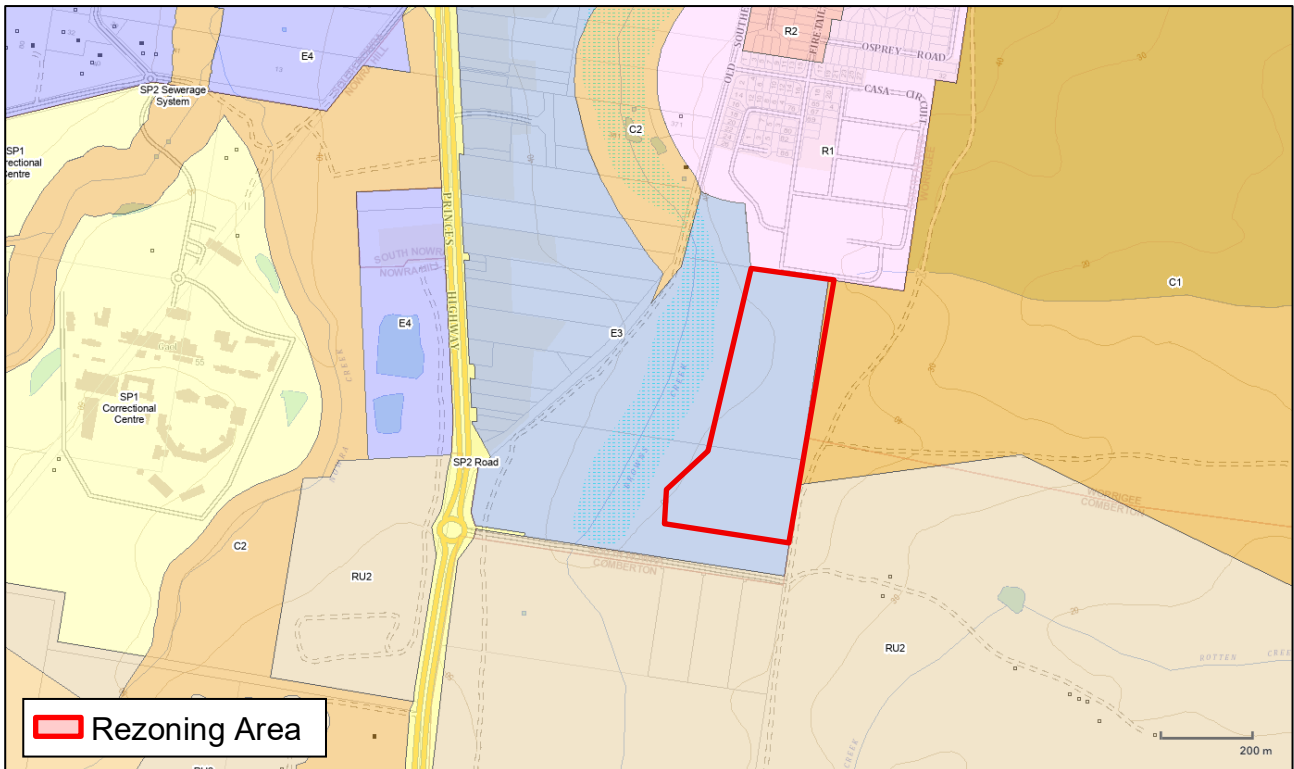


FIGURE 3: SITE CONTEXT - LAND ZONING MAP

2 EXISTING TRAFFIC AND PARKING CONDITIONS

2.1 *Road Hierarchy*

The road network servicing the site has characteristics as described in the following sub-sections.

2.1.1 Warra Warra Road

- Unclassified LOCAL Road;
- Approximately 7m wide unsealed carriageway facilitating two-way traffic flow;
- Default 50km/h speed limit applies;
- No formal kerbside parking permitted along both sides of the road.

2.1.2 Princes Highway

- TfNSW Classified STATE HIGHWAY (No. 1);
- Approximately 27m wide dual carriageway separated by a 11m wide central median facilitating two (2) traffic flow lanes in each direction;
- Signposted 70km/h speed limit at Warra Warra Road and north into Nowra;
- Signposted 100km/h speed limit approximately 250m south of Warra Warra Road;
- 'No Stopping' restrictions on both sides of the road.

2.1.3 Old Southern Road

- Unclassified LOCAL Road;
- Approximately 12m wide carriageway facilitating one (1) traffic flow lane in each direction;
- Signposted 50km/h speed limit;
- Yellow linemarked '*No stopping*' restrictions on both sides of the road between Casa Circuit and the site.

2.1.4 Kookaburra Way

- Unclassified LOCAL Road (constructed and opening in 2026);
- Approximately 9m wide carriageway facilitating two-way traffic flow;
- Default 50km/h speed limit applies.

2.1.5 Casa Circuit

- Unclassified LOCAL Road;
- Approximately 9m wide carriageway facilitating one (1) traffic flow lane in each direction and occasional kerbside parking;
- Default 50km/h speed limit applies;
- Linemarked '*No stopping*' restrictions on both sides of the road.

2.1.6 Wattlebird Road

- Unclassified LOCAL Road;
- Approximately 8m wide carriageway facilitating one (1) traffic flow lane in each direction;
- Default 50km/h speed limit applies.

2.1.7 Quinns Lane

- Unclassified LOCAL Road;
- Approximately 11m wide carriageway west of Old Southern Road, facilitating one (1) traffic flow lane in each direction and kerbside parking;
- Approximately 8m wide carriageway east of Old Southern Road, facilitating two-way traffic flow;
- Default 50km/h speed limit applies.

2.1.8 Hillcrest Avenue

- Unclassified LOCAL Road;
- Approximately 11m wide carriageway facilitating one (1) traffic flow lane in each direction and kerbside parking;
- Signposted 60km/h speed limit.

2.1.9 Isa Road

- Unclassified LOCAL Road;
- Approximately 11m wide carriageway, facilitating one (1) traffic flow lane in each direction and kerbside parking;
- Default 50km/h speed limit applies.

2.2 *Existing Traffic Management*

- Roundabout controlled intersection of Princes Highway / Warra Warra Road.
- Old Southern Road becomes Kookaburra Way at the north-western corner bordering the site.
- Roundabout controlled intersection of Old Southern Road / Casa Circuit;
- Roundabout controlled intersection of Old Southern Road / Quinns Lane;
- Roundabout controlled intersection of Old Southern Road / Hillcrest Avenue / Isa Road.

2.3 Existing Traffic Environment

Turning movement count traffic surveys were conducted at the of Old Southern Road / Casa Circuit, Old Southern Road / Wattlebird Road, Old Southern Road / Quinns Lane and Old Southern Road / Hillcrest Avenue / Isa Road from 6:30am to 9:30am and 2:00pm to 6:00pm on Thursday 4 September 2025 and Saturday 6 September 2025 representing a typical operating weekday and weekend day. The full survey results are shown in **Annexure B** for reference.

2.3.1 Existing Road Performance

The performance of the surrounding intersections under the existing traffic conditions has been assessed using SIDRA INTERSECTION 10, **Table 2** summarises the resultant intersection performance data, with full SIDRA results reproduced in **Annexure C**.

**TABLE 2: EXISTING 2025 INTERSECTION PERFORMANCES
(SIDRA INTERSECTION 10)**

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 2025 PERFORMANCE							
Old Southern Road / Casa Circuit	AM	0.01	5.5 (Worst: 8.8)	LOS A (Worst: A)	Roundabout	UT from Old Southern Road (S)	0.1 veh (0.4m) Casa Circuit (E)
	PM	0.02	4.9 (Worst: 8.8)	LOS A (Worst: A)		UT from Old Southern Road (S)	0.1 veh (0.7m) Casa Circuit (E)
	SAT	0.02	5.2 (Worst: 8.7)	LOS A (Worst: A)		UT from Old Southern Road (S)	0.1 veh (0.5m) Old Southern Road (N)
Old Southern Road / Wattlebird Road	AM	0.10	6 (Worst: 9.3)	LOS A (Worst: A)	Roundabout	UT from Old Southern Road (S)	0.5 veh (3.6m) Wattlebird Road (E)
	PM	0.09	4.5 (Worst: 8.9)	LOS A (Worst: A)		UT from Old Southern Road (S)	0.4 veh (3.1m) Old Southern Road (N)
	SAT	0.05	4.9 (Worst: 8.9)	LOS A (Worst: A)		UT from Old Southern Road (S)	0.3 veh (1.8m) Old Southern Road (N)
Old Southern Road / Quinns Lane	AM	0.25	6 (Worst: 11)	LOS A (Worst: A)	Roundabout	UT from Quinns Lane (W)	1.1 veh (8.1m) Old Southern Road (N)
	PM	0.33	5.8 (Worst: 10.4)	LOS A (Worst: A)		UT from Quinns Lane (E)	1.7 veh (12.3m) Quinns Lane (W)
	SAT	0.24	5.6 (Worst: 10.2)	LOS A (Worst: A)		UT from Quinns Lane (W)	1.1 veh (8.1m) Quinns Lane (W)
Old Southern Road / Isa Road / Hillcrest Avenue	AM	0.63	9.3 (Worst: 15.5)	LOS A (Worst: B)	Roundabout	UT from Old Southern Road (S)	5.8 veh (41.4m) Isa Road (E)
	PM	0.48	7.2 (Worst: 12.8)	LOS A (Worst: A)		UT from Old Southern Road (N)	3.2 veh (22.7m) Hillcrest Avenue (W)
	SAT	0.34	6.4 (Worst: 11.6)	LOS A (Worst: A)		UT from Old Southern Road (N)	2 veh (14.4m) Isa Road (E)

Notes:

- The Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
- The average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
- 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.
- 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 relevant intersections are currently performing at a high level of efficiency, with an overall or worst movement Level of Service “A” and “B” conditions in both the AM & PM peak hour periods. The Level of Service “A” and “B” performance is characterised by low approach delays and spare capacity.

2.3.2 Existing + Twin Nowra Estate Part 2 (162 lots)

At the time of the traffic surveys conducted in September 2025 the Twin Nowra Estate (Part 2) subdivision was under construction, however no residential lots were occupied within this estate. This estate is situated immediately north of the subject site, with direct access to Old Southern Road and Casa Circuit. It is understood the Twin Nowra Estate will consist of 162 residential lots on *R1- General Residential zoning*, which have been considered as part of the base traffic modelling.

The traffic generation related to the Twin Nowra estate is outlined below in **Table 3**, which is based upon the same trip generation rates adopted for the purposed subdivision site as outlined in **Section 4.1** below.

TABLE 3: ESTIMATED TRAFFIC GENERATION –TWIN NOWRA ESTATE (PART 2)

Use	Scale	Peak	Generation Rate	Trips
R1 – General Residential	162 lots	Weekday AM ⁽¹⁾	1 trip per lot	162 (49 in, 113 out)
		Weekday PM ⁽¹⁾	1 trip per lot	162 (113 in, 49 out)
		Weekend Peak ⁽²⁾⁽³⁾	1 trip per lot	162 (81 in, 81 out)
		Daily	7.53 trips per lot	1,220 (610 in, 610 out)

Notes:

- (1) Assumes 30% inbound & 70% outbound during AM peak Vice versa for PM.
- (2) Assumes 50% inbound & 50% outbound during peak.
- (3) The weekday AM peak period traffic generation has been adopted for the purpose of the weekend peak period, as a conservative assessment.

For this assessment, it is assumed that the traffic generation associated with the Twin Nowra Estate will utilise Old Southern Road (25%) and Casa Circuit (75%) to access the site at the Old Southern Road Casa Circuit roundabout. Beyond this, given the residential nature of the traffic generation it is assumed the traffic distribution will follow the same distribution as the subject proposal, which is outlined in **Section 4.2**.

The performance of the surrounding intersections under the 2025 traffic conditions including the future traffic generation of the Twin Nowra Estate has been assessed using SIDRA INTERSECTION 10, **Table 4** summarises the resultant intersection performance data, with full SIDRA results reproduced in **Annexure C**.

**TABLE 4: EXISTING + TWIN ESTATE 2025 INTERSECTION PERFORMANCES
(SIDRA INTERSECTION 10)**

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 + Twin Nowra Estate 2025 PERFORMANCE							
Old Southern Road / Casa Circuit	AM	0.08	5.4 (Worst: 9.2)	LOS A (Worst: A)	Roundabout	UT from Old Southern Road (S)	0.4 veh (2.5m) Casa Circuit (E)
	PM	0.09	4.4 (Worst: 9)	LOS A (Worst: A)		UT from Old Southern Road (S)	0.5 veh (3.3m) Old Southern Road (N)
	SAT	0.07	4.8 (Worst: 9)	LOS A (Worst: A)		UT from Old Southern Road (S)	0.3 veh (2.3m) Old Southern Road (N)
Old Southern Road / Wattlebird Road	AM	0.12	5.2 (Worst: 9.5)	LOS A (Worst: A)	Roundabout	UT from Old Southern Road (S)	0.6 veh (4.4m) Old Southern Road (S)
	PM	0.16	4.1 (Worst: 9.4)	LOS A (Worst: A)		UT from Wattlebird Road (E)	0.8 veh (5.9m) Old Southern Road (N)
	SAT	0.11	4.2 (Worst: 9.1)	LOS A (Worst: A)		UT from Wattlebird Road (E)	0.5 veh (3.8m) Old Southern Road (N)
Old Southern Road / Quinns Lane	AM	0.29	6.2 (Worst: 11.2)	LOS A (Worst: A)	Roundabout	UT from Quinns Lane (W)	1.5 veh (10.5m) Old Southern Road (S)
	PM	0.40	6.1 (Worst: 11.1)	LOS A (Worst: A)		UT from Quinns Lane (E)	2.3 veh (16.3m) Quinns Lane (W)
	SAT	0.29	5.8 (Worst: 10.5)	LOS A (Worst: A)		UT from Quinns Lane (E)	1.5 veh (10.7m) Quinns Lane (W)
Old Southern Road / Isa Road / Hillcrest Avenue	AM	0.63	9.6 (Worst: 16.2)	LOS A (Worst: B)	Roundabout	UT from Old Southern Road (S)	6 veh (42.7m) Isa Road (E)
	PM	0.49	7.3 (Worst: 12.9)	LOS A (Worst: A)		UT from Old Southern Road (N)	3.3 veh (23.7m) Hillcrest Avenue (W)
	SAT	0.35	6.5 (Worst: 11.7)	LOS A (Worst: A)		UT from Old Southern Road (N)	2.1 veh (14.9m) Isa Road (E)

Notes: Refer to Table 2.

As shown, the relevant intersections are still performing at a high level of efficiency, with an overall Level of Service “A” conditions in both the AM & PM peak hour periods as a result of the addition of the approved Twin Nowra Estate. The Level of Service “A” and “B” performance is characterised by low approach delays and spare capacity. It is however noted increased 95th percentile queues are exhibited on Isa Road east.

2.3.3 Future 2035 Performance (No Development)

As preliminary approach to review the performance of intersections within 10 years, a conservative growth rate factor of 2% p.a. has been applied to all existing volumes along all approaches of the above four (4) local road intersections.

This has 2% p.a. growth has been used as a preliminary review of the future performance of the intersections in 2035 and is likely higher than the actual growth rate expectations, especially considering the only growth along Old Southern Road south of Quinns Lane will be associated with the subdivisions that are already being accounted for in the added traffic generation.

During the formal development application, a more refined growth rate (expected to be lower than 2%) can be adopted based on real data collection or upon the advice of Council. The traffic generation associated with the Twin Nowra Estate has also been included within this model; however, no growth factor has been applied to this residential traffic generation, as it has a known yield and traffic generation that won't substantially change within the 10-year modelling horizon.

The performance of the surrounding intersections under the 2035 traffic conditions (with 2% p.a. traffic growth of existing volumes) and including the future traffic generation of the Twin Nowra Estate has been assessed using SIDRA INTERSECTION 10, **Table 5** Table 4 summarises the resultant intersection performance data, with full SIDRA results reproduced in **Annexure C**.

During the AM peak, the southern approach from Old Southern Road / Isa Road / Hillcrest Avenue has a Level of Service "C", with a 95th percentile queue lengths of 14.4 vehicles. This is an outcome regardless of the proposed development and is due to the background traffic growth which has been conservatively estimated at 2% p.a. for 10-years (20% background traffic growth). An upgrade of the Old Southern Road / Isa Road / Hillcrest Avenue intersection should already be a consideration for Council as part of their ongoing investment in road infrastructure. The need for an upgrade by 2035 is regardless of the proposed development and is based purely on existing approvals and assumed 2% p.a. growth rates.

It should be reiterated that the intersection is operating at an overall level of service of "B" representing some spare capacity, however the 95th percentile queues experienced are long and some approach delays are on average above 30-seconds (Old Southern Road (S)).

**TABLE 5: FUTURE 2035 + TWIN ESTATE INTERSECTION PERFORMANCES
(SIDRA INTERSECTION 10)**

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/veh)	Level of Service ⁽³⁾⁽⁴⁾	Control Type	Worst Movement	95th Percentile Queue
<i>FUTURE 2035 (2% p.a. growth rate applied) + Twin Nowra Estate PERFORMANCE</i>							
Old Southern Road / Casa Circuit	AM	0.08	5.4 (Worst: 9.2)	LOS A (Worst: A)	Roundabout	UT from Old Southern Road (S)	0.4 veh (2.6m) Casa Circuit (E)
	PM	0.10	4.4 (Worst: 9)	LOS A (Worst: A)		UT from Old Southern Road (S)	0.5 veh (3.5m) Old Southern Road (N)
	SAT	0.07	4.8 (Worst: 9)	LOS A (Worst: A)		UT from Old Southern Road (S)	0.3 veh (2.3m) Old Southern Road (N)
Old Southern Road / Wattlebird Road	AM	0.14	5.4 (Worst: 9.6)	LOS A (Worst: A)	Roundabout	UT from Old Southern Road (S)	0.7 veh (5m) Old Southern Road (S)
	PM	0.17	4.2 (Worst: 9.5)	LOS A (Worst: A)		UT from Wattlebird Road (E)	1 veh (6.7m) Old Southern Road (N)
	SAT	0.12	4.3 (Worst: 9.2)	LOS A (Worst: A)		UT from Wattlebird Road (E)	0.6 veh (4.2m) Old Southern Road (N)
Old Southern Road / Quinns Lane	AM	0.35	6.6 (Worst: 11.5)	LOS A (Worst: A)	Roundabout	UT from Quinns Lane (W)	1.9 veh (13.4m) Old Southern Road (S)
	PM	0.47	6.3 (Worst: 11.7)	LOS A (Worst: A)		UT from Quinns Lane (E)	3 veh (21.3m) Quinns Lane (W)
	SAT	0.35	6 (Worst: 10.8)	LOS A (Worst: A)		UT from Quinns Lane (E)	1.9 veh (13.5m) Quinns Lane (W)
Old Southern Road / Isa Road / Hillcrest Avenue	AM	0.87	17.2 (Worst: 32.6)	LOS B (Worst: C)	Roundabout	UT from Old Southern Road (S)	14.4 veh (106.2m) Old Southern Road (S)
	PM	0.62	9 (Worst: 15.4)	LOS A (Worst: B)		UT from Old Southern Road (N)	5.8 veh (41.6m) Hillcrest Avenue (W)
	SAT	0.44	7 (Worst: 12.2)	LOS A (Worst: A)		UT from Old Southern Road (N)	2.9 veh (20.6m) Isa Road (E)

Notes: Refer to Table 2.

2.4 Public Transport

The closest bus stop to the north of the site is on Wattlebird Road (Stop ID: 2541318) which is served by the 101 bus route (East Nowra & Worrigee to Nowra – Loop Service). Services are provided hourly Monday to Saturday (6am-6pm) and three times on Sunday & Public Holidays.

With the extension of the South Nowra subdivisions, it is anticipated that the 101 bus route will continue to be extended further south, to service the new residential areas including this proposed subdivision. The detailed design of the subdivision will enable a bus to service the new residential areas.

The location of the site subject to the surrounding public transport network is shown in **Figure 4**.

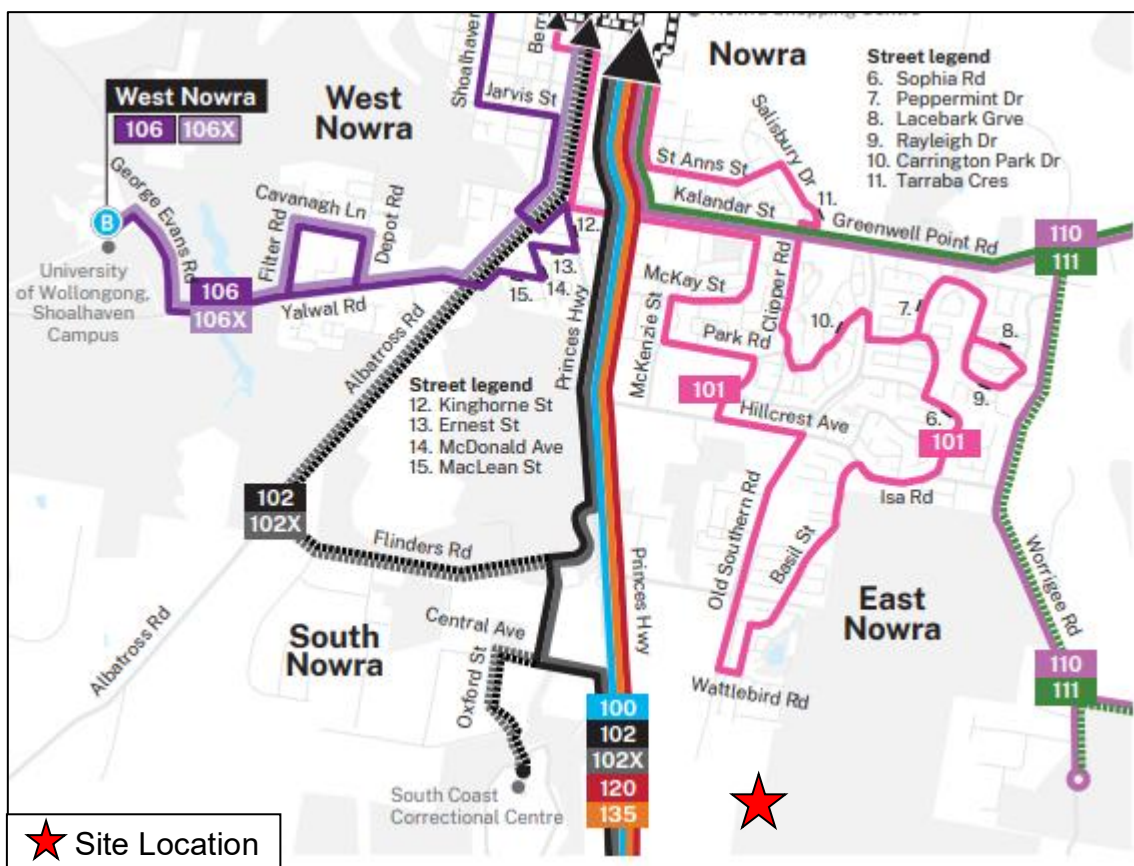


FIGURE 4: PUBLIC TRANSPORT NETWORK MAP

2.5 Future Road and Infrastructure Upgrades

From Shoalhaven City Council Major Projects website, it appears that there are plans for an East Nowra Sub Arterial (ENSA) Road Project to provide an alternative connection between the Princes Highway and Greenwell Point Road. The ENSA would reduce congestion along the Princes Highway to the north of the site however with no southern connection, will have limited impact on traffic volumes through the subject site.

From TfNSW Current Project website, it appears that there are plans for a Nowra Bypass as part of the Princes Highway upgrade program which aims to provide improved safety, better connected communities, eased traffic congestion and support regional economies through the NSW South Coast.

The Nowra Bypass is currently in the consultation phase however if implemented, it is likely that a large percentage of vehicles travelling along the Princes Highway will be redistributed to the Bypass and therefore reducing the traffic load on the Princes Highway / Warra Warra Road intersection. An extract of the ENSA indicative alignment plan is presented within **Figure 5** below.

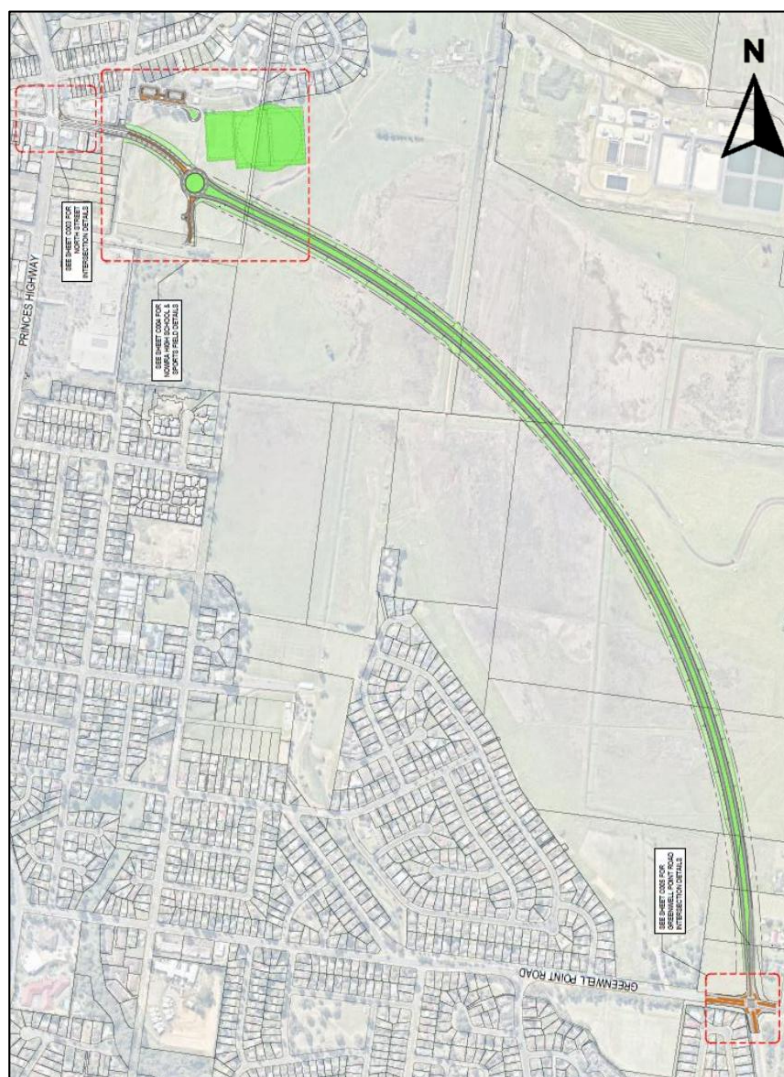


FIGURE 5: ENSA INDICATIVE ALIGNMENT PLAN

3 SUBDIVISION DESIGN CONSIDERATIONS

3.1 Street Design Standards

Reference is made to the *Shoalhaven Development Control Plan 2014* (SDCP 2014), Chapter 11: Subdivision, Supporting Document 1: Subdivision Technical Guidelines which provides the classification of streets in **Table 6** and the recommended design principles for residential subdivisions as summarised in **Table 7** below:

TABLE 6: CLASSIFICATION OF STREETS (SDCP 2014, CHAPTER 11)

<i>Road Typology</i>	<i>Speed km/h ¹</i>	<i>AADT²</i>	<i>Carriageway Widths³ (m)</i>
<i>Collector Road (Tier 1)</i>	60	7,500 – 19,999	14 ⁴
<i>Collector Road (Tier 2)</i>	50	3,000 – 7,499	13 ⁵
<i>Local and Retail Streets</i>	50	1,500 – 4,999	11.6
<i>Local (Riparian)</i>	50	1,500 – 2,999	10
<i>Access Street (Tier 1)⁶</i>	40	750 to 1,999	9.5
<i>Access Street (Tier 2)⁷</i>	30	300 to 749	7.5
<i>Access Place</i>	30	<299	7
<i>Laneways</i>	10	<150	6 ⁸

¹ Streets shall be designed to achieve the target street speed and sight distances to accord with design speed.

² For single dwellings, apply a traffic generation rate of 10 vehicles per day per dwelling. For multi-unit dwellings apply a rate of 6 vehicles per day per dwelling unless a different rate can be demonstrated

³ The carriageway width is measured from invert to invert. Widening may be required at bends to allow for wider vehicle paths (subject to review using AUSTROADS Turning Templates).

⁴ Local distributor roads must be line marked.

⁵ Collector roads must be line marked.

⁶ Includes traditional cul-de-sac type streets.

⁷ Includes traditional cul-de-sac type streets.

⁸ Laneways are generally used when smaller lot layouts justify access to garages at the rear, and where alternative vehicle access is needed for lots fronting major streets or parklands (i.e., rear loaded lots). Laneways are to only be considered in strategic circumstances, for example. When part of a master plan and are to be designed as self-enforcing shared zones. (Source: SDGP 2014, Chapter 11)

TABLE 7: SUBDIVISION GEOMETRIC ROAD DESIGN REQUIREMENTS

<i>Street Type</i>	<i>Road Reserve</i>	<i>Carriageway Width</i>	<i>Verge Width</i>	<i>Kerb Type</i>	<i>Footpath Requirement</i>	<i>Parking Provision within Road Reserve</i>
<i>Collector Road (Tier 1)</i>	23.5	14	4.5 – 5	<i>Barrier</i>	<i>Yes, both sides</i>	<i>Carriageway – able to be converted in future to No Parking/Clearway</i>
<i>Collector Road (Tier 2)</i>	22.5	13	4.5 – 5	<i>Barrier</i>	<i>Yes, both sides</i>	<i>Carriageway</i>
<i>Local and Retail Street</i>	20.6 – 21.6	11.6	4.5 – 5.5	<i>Barrier</i>	<i>Yes, both sides</i>	<i>Carriageway</i>
<i>Local Street (Riparian)</i>	17	10	2.5 – 4.5	<i>Layback</i>	<i>Yes, riparian side</i>	<i>Carriageway</i>
<i>Access Street (Tier 1)</i>	17.5 – 18.5	9.5	4 – 5	<i>Layback</i>	<i>Yes, both sides</i>	<i>No</i>
<i>Access Street (Tier 2)</i>	16 - 17	7.5	4 – 5	<i>Layback</i>	<i>Yes, both sides</i>	<i>No</i>
<i>Access Place</i>	15.5 – 16.5	7	4 – 5	<i>Layback</i>	<i>Yes, both sides</i>	<i>No</i>
<i>Laneways</i>	11	6	2.5	<i>Barrier, or concrete V-drain</i>	<i>No</i>	<i>No</i>

The spine roads within the subject proposal should adhere to a “Local and Retail Street” whilst the internal roads should adhere to an “Access Street (Tier 2)” noting that it has been advised that the Eastern Precinct is proposed to be largely residential lots. **Figure 6** details the adopted road names used for the purposes of the identifying the roads within the assessment whilst **Table 8** outlines the proposed geometric design of each type within the residential subdivision.

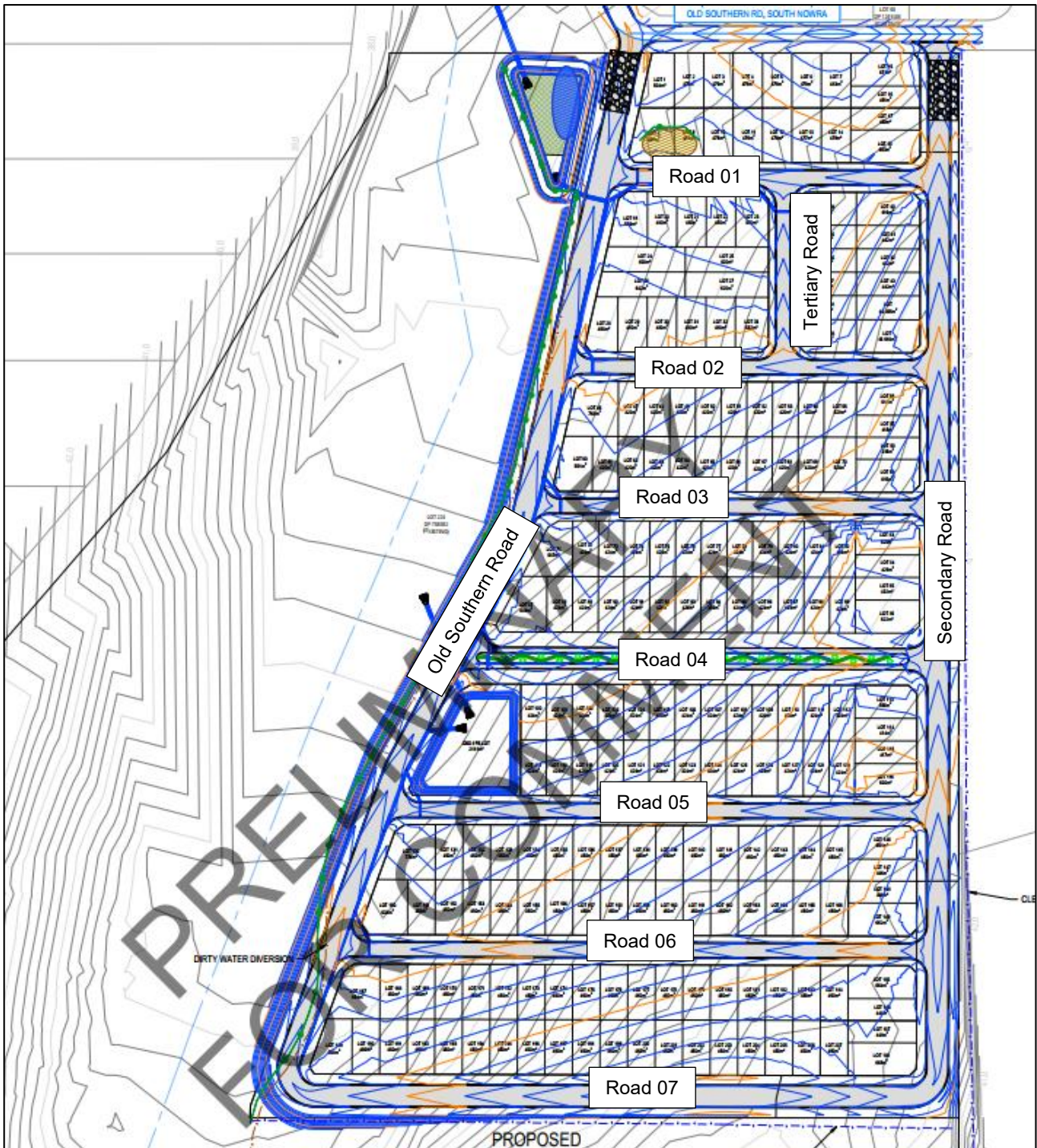


FIGURE 6: ROAD IDENTIFICATION NAMES

TABLE 8: PROPOSED SUBDIVISION ROAD DESIGN

Road	Required Road Reserve	Proposed Carriageway Width	Proposed Verge Width	Proposed Road Reserve	Comments
Old Southern Road	20.6m – 21.6m	11.8m	5.5m + 5.7m	23.0m	Compliant with SDCP 2014 requirements
Secondary Road	20.6m – 21.6m	11.8m	4.2m + 5m	21m	Compliant with SDCP 2014 requirements
Tertiary Road	16m – 17m	7.5m	4.25m + 4.25m	16.0m	Compliant with SDCP 2014 requirements
Roads 01 - 07	16m – 17m	7.5m	4.25m + 4.25m	16.0m	Compliant with SDCP 2014 requirements

As shown above, all internal roads, as depicted in **Annexure A**, have been assessed in accordance with the SDCP 2014 design guidelines.

Old Southern Road has been assessed to be of compliant carriageway width but above the required road reserve for a “Local and Retail Street”.

All other roads were assessed to be fully compliant with Council’s DCP requirements.

3.2 Road Alignment and Sight Line Review

As part of the review of the residential subdivision, sight line checks at intersection have been made, specifically compliance with AUSTROADs Safe Intersection Sight Distance (SISD) requirements. Each intersection has been reviewed with a summary of the relevant intersections provided in **Table 9** below.

TABLE 9: SIGHTLINE ASSESSMENT (HORIZONTAL ONLY)

Intersection	Design Speed	SISD Requirement	Sightline Provided	Comments
Old Southern Road / Road 01	50km/h	90m	71m to the north (end of the road) >200m to the south	Operating speed will be lower than the design speed due to nearby intersection and hence the sightlines are satisfactory. The maximum speed to satisfy SIDS for a 71m sightline is 41km/h which the operating speed will be significantly below to the south.
Old Southern Road / Road 02	50km/h	90m	175m to the north >200m to the south	Sightlines are satisfactory.
Old Southern Road / Road 03 & OSR / Road 04	50km/h	90m	>200m to the north >200m to the south	Sightlines are satisfactory.
Old Southern Road / Road 05	50km/h	90m	>200m to the north 163m the south (end of the road)	Sightlines are satisfactory
Old Southern Road / Road 06	50km/h	90m	>200m to the north 83m the south (end of the road)	Operating speed will be lower than the design speed due to nearby intersection and hence the sightlines are satisfactory. The maximum speed to satisfy SISD for an 83m sightline is 47km/h which the operating speed will be significantly below to the south.
Secondary Road / Road 01	50km/h	90m	65m to the north (end of the road) >200m to the south	Operating speed will be lower than the design speed due to nearby intersection and hence the sightlines are satisfactory. The maximum speed to satisfy SISD for a 65m sightline is 39km/h which the operating speed will be significantly below to the south.
Secondary Road / Road 02	50km/h	90m	168m to the north >200m to the south	Sightlines are satisfactory
Secondary Road / Road 03 & SR / Road 04	50km/h	90m	>200m to the north >200m to the south	Sightlines are satisfactory
Secondary Road / Road 05	50km/h	90m	>200m to the north 158m to the south (end of the road)	Sightlines are satisfactory
Secondary Road / Road 06	50km/h	90m	>200m to the north 83m to the south (end of the road)	Operating speed will be lower than the design speed due to nearby intersection and hence the sightlines are satisfactory. The maximum speed to satisfy SISD for an 83m sightline is 47km/h which the operating speed will be significantly below to the south.

TABLE 7 CONTINUED

Intersection	Design Speed	SISD Requirement	Sightline Provided	Comments
Tertiary Road / Road 01	50km/h	90m	90m to the west (end of the road) 81m to the east (end of the road)	Operating speed will be lower than the design speed due to nearby intersection and hence the sightlines are satisfactory. The maximum speed to satisfy SISD for a 81m sightline is 46km/h which the operating speed will be significantly below to the south.
Tertiary Road / Road 02	50km/h	90m	116m to the west (end of the road) 75m to the east (end of the road)	Operating speed will be lower than the design speed due to nearby intersection and hence the sightlines are satisfactory. The maximum speed to satisfy SISD for a 75m sightline is 43km/h which the operating speed will be significantly below to the south.

Notes: (1) Horizontal geometry has been checked only as part of the preparation of this TPIA.

Based upon the above, it is considered that the sightlines at all intersections are acceptable due to the operating speed being lower than the design speed at bends and at adjacent intersections.

4 TRAFFIC ASSESSMENT

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

4.1 **Traffic Generation**

4.1.1 Vehicle Trip Generation – TfNSW Guide

Traffic generation rates for the relevant land uses are provided in the *Transport for NSW Guide to Transport Impact Assessment (2024)* 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 / dwelling</i>
<i>PM peak hour</i>	<i>0.84 vehicle trips / dwelling</i>
<i>Daily</i>	<i>7.53 vehicle trips / dwelling</i>

While it is anticipated that most lots will be occupied by low density residential dwellings, it is acknowledged that the *R1 – General Residential* zoning allows a broader range of permitted uses. As such additional allowance has been made for dual occupancies, group homes and other land uses that might generate a slightly higher traffic generation. A peak traffic hour generation rate of **1 vehicle trip per lot** has been adopted, which is consistent with the recommendations for assessment of subdivisions within the superseded *TfNSW Guide to Traffic Generating Developments (2002)*.

The resulting AM and PM peak hourly traffic generation for the eastern precinct future development is summarised in **Table 10**.

**TABLE 10: ESTIMATED TRAFFIC GENERATION – EASTERN PRECINCT
(PROPOSAL)**

Use	Scale	Peak	Generation Rate	Trips
R1 – General Residential	207 lots	Weekday AM ⁽¹⁾	1 trip per lot	207 (62 in, 145 out)
		Weekday PM ⁽¹⁾	1 trip per lot	207 (145 in, 62 out)
		Weekend Peak ⁽²⁾⁽³⁾	1 trip per lot	207 (104 in, 103 out)
		Daily	7.53 trips per lot	1,559 (779 in, 780 out)

Notes:

- (1) Assumes 30% inbound & 70% outbound during AM peak Vice versa for PM.
- (2) Assumes 50% inbound & 50% outbound during peak.
- (3) The weekday AM peak period traffic generation has been adopted for the purpose of the weekend peak period, as a conservative assessment.

As shown above, the estimated traffic generation of the proposed precinct is **207** vehicle trips in the AM peak period (62 in, 145 out), **207** vehicle trips in the PM peak period (145 in, 62 out) and **207** in the weekend peak period (104 in, 103 out). The daily traffic generation is estimated to be 1,559 vehicle trips (779 in, 780 out).

The precinct has a total land area of 162,000m². With consideration to the traffic generated by the 207 lots proposed, the peak hour traffic generation would be approximately 0.13 peak hour vehicle trips per 100m² site area with a daily peak generation of 0.96 daily vehicles per 100m² site area.

It is noted that the applicant is also exploring a slightly higher yield of 215 lots, which according to the above analysis would generate a further 8 vehicle trips, assuming the already conservative 1 trip per lot traffic generation rate. This would result in a peak traffic generation of **215** vehicle trips in the AM peak period (65 in, 150 out), **215** vehicle trips in the PM peak period (150 in, 65 out) and **215** in the weekend peak period (107 in, 108 out). This minor amount of additional traffic under the possible higher 215 lot yield will not result in a material difference to the results of the analysis within this report based on a 207 lot yield for the future subdivision.

4.1.2 Net Change in Traffic Generation

Whilst it is acknowledged that the density of traffic generation from the western precinct may not be replicated in the eastern precinct if developed under current business zoning, it provides a good comparison point.

It is estimated based upon the potential development yield of the business zoning that the site could generate between 0.71 – 1.4 peak hour vehicle trips per 100m² site area, whereas the residential zoning is estimated to generate approximately 0.13 peak hour vehicle trips per 100m² site area. This is a significant reduction in peak hour traffic generation per 100m² of land area, even if taking the lowest rate. The change in zoning will substantially reduce the peak hour traffic generation of the subject land.

4.1.3 Requirement for Impact Assessment

Reference is made to *Austroads Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments Figure 5.1* which states the following regarding peak hour vehicle trips:

Likely impact of development:

Low Impact (<10 Trips): No Detailed Assessment Required Moderate Impact (10-100 Trips): Traffic Impact Statement Required

High Impact (>100 Trips): Traffic Impact Assessment Required

Accordingly, the proposal is a high impact development, and a Traffic Impact Assessment is required.

4.2 Traffic Assignment

A review of the *Compass IOT* [*Compass IOT* is a connected vehicle data company using vehicle telematics that enables the establishment of accurate origin destination travel behaviour for connected vehicles within the road network] has helped establish a representative traffic assignment across the surrounding road network.

The following traffic assignment has been assumed for all traffic travelling to and from the site:

- 75% of traffic to/from the Princes Highway via Quinns Lane;
- 10% of traffic to/from the Princes Highway via Hillcrest Avenue;
- 10% of traffic to/from the north via Old Southern Road (north of Hillcrest Avenue).
- 5% of traffic to/from the north-east from Isa Road;

4.3 Traffic Impact

The performance of these intersections under the post-development traffic conditions (with an additional 207 lots) has been assessed using SIDRA INTERSECTION 10. **Table 11** summarises the resultant intersection performance data, with full SIDRA results provided in **Annexure D**.

**TABLE 11: EXISTING + TWIN NOWRA ESTATE + DEVELOPMENT 2025
INTERSECTION PERFORMANCES (SIDRA INTERSECTION 10)**

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 + Twin Nowra Estate + 207 Lot Development 2025 PERFORMANCE							
Old Southern Road / Casa Circuit	AM	0.15	4.6 (Worst: 9.3)	LOS A (Worst: A)	Roundabout	UT from Old Southern Road (S)	0.8 veh (5.8m) Old Southern Road (S)
	PM	0.18	3.9 (Worst: 9.7)	LOS A (Worst: A)		UT from Casa Circuit (E)	1 veh (7m) Old Southern Road (N)
	SAT	0.14	4.2 (Worst: 9.4)	LOS A (Worst: A)		UT from Casa Circuit (E)	0.7 veh (5.1m) Old Southern Road (N)
Old Southern Road / Wattlebird Road	AM	0.25	4.8 (Worst: 9.5)	LOS A (Worst: A)	Roundabout	UT from Old Southern Road (S)	1.5 veh (10.3m) Old Southern Road (S)
	PM	0.25	3.9 (Worst: 10.2)	LOS A (Worst: A)		UT from Wattlebird Road (E)	1.5 veh (10.2m) Old Southern Road (N)
	SAT	0.17	3.9 (Worst: 9.7)	LOS A (Worst: A)		UT from Wattlebird Road (E)	0.9 veh (6.5m) Old Southern Road (S)
Old Southern Road / Quinns Lane	AM	0.45	6.5 (Worst: 11.5)	LOS A (Worst: A)	Roundabout	UT from Quinns Lane (W)	2.6 veh (18.5m) Old Southern Road (S)
	PM	0.49	6.5 (Worst: 12.3)	LOS A (Worst: A)		UT from Quinns Lane (E)	3.2 veh (22.7m) Quinns Lane (W)
	SAT	0.37	6.1 (Worst: 11.2)	LOS A (Worst: A)		UT from Quinns Lane (E)	2.1 veh (14.5m) Quinns Lane (W)
Old Southern Road / Isa Road / Hillcrest Avenue	AM	0.66	10.2 (Worst: 17.5)	LOS A (Worst: B)	Roundabout	UT from Old Southern Road (S)	6.9 veh (50.6m) Old Southern Road (S)
	PM	0.51	7.6 (Worst: 13.3)	LOS A (Worst: A)		UT from Old Southern Road (N)	3.6 veh (26m) Hillcrest Avenue (W)
	SAT	0.36	6.6 (Worst: 11.8)	LOS A (Worst: A)		UT from Old Southern Road (N)	2.2 veh (15.6m) Isa Road (E)

Notes: Refer to Table 2.

As shown above, the two critical intersections still operate with a Level of Service “A” and a worst movement Level of Service “B” in one instance (Old Southern Road / Isa Road / Hillcrest Avenue, AM peak period) thereby indicating acceptable future performance.

4.3.1 2035 Performance (10-Year Growth)

As preliminary approach to review the performance of intersections within 10 years, a conservative growth rate factor of 2% p.a. has been applied to all approaches of the above local road intersections. This has enabled a preliminary review of the future performance of the intersections in 2035. During the revised development application, a more refined growth rate (lower than 2%) will likely be adopted based on real data collection. This approach is conservative.

The performance of these intersections under the future traffic conditions (with an additional 207 lots) has been assessed using SIDRA INTERSECTION 10. **Table 12** summarises the resultant intersection performance data, with full SIDRA results provided in **Annexure D**. It should be noted that this initial analysis does consider the approved but yet-to-be-constructed dwellings associated with the Twin Nowra Estate.

As shown, the intersection of Old Southern Road / Casa Circuit, Old Southern Road / Wattlebird Road Old and Southern Road / Quinns Lane all retain a Level of Service “A” in the 10-year growth scenario. The intersection of Old Southern Road / Isa Road / Hillcrest Avenue retains an overall Level of Service “A” or “B”.

As identified in the base 2035 model within **Section 2.3.3** during the AM peak, the southern approach from Old Southern Road / Isa Road / Hillcrest Avenue has a Level of Service “C”, with extensive 95th percentile queue lengths of 14.4 vehicles without the development. As a result of the proposed 207 lot development, the performance of this approach retains Level of Service “C” with an increase in the 95th percentile queue to 19.3 vehicles. However, the average delay experienced by this worst movement, only experiences a slight increase from 32.6 seconds to 42.4 seconds, an increase in delay of 9.8 seconds, due to the proposed development.

There is a natural decline in the intersection's performance due to existing background growth within Nowra, to the point where the Old Southern Road / Isa Road / Hillcrest Avenue intersection will already require upgrade works by 2035, regardless of the development. Peak hour queues are marginally increased by the presence of the proposed additional 207 lot residential subdivision. This reduction in performance would occur regardless of the proposed development and will be impacted more-so by Council's projects such as the ENSA, then it would be by the proposed development. It is estimated that only 25% of the projects traffic generation will utilise this intersection.

Minor upgrades, such as a slip lane at the Hillcrest Avenue intersection, could be considered; however, it would be argued that any enhancements or work required here due to the proposed residential subdivision would only require a minor contribution to the works, rather than fully funding the works. The reduced performance of the intersection is not only

due to the presence of the proposed residential subdivision, but due to the general background traffic growth within Nowra, which the Council should accommodate for. The change of land-use from Business to Residential, will have resulted in a reduced traffic impact on the subject intersection then what was originally permitted.

**TABLE 12: FUTURE 2035 + TWIN NOWRA ESTATE + DEVELOPMENT
INTERSECTION PERFORMANCES (SIDRA INTERSECTION 10)**

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 2035 + Twin Nowra Estate + 207 Lot Development PERFORMANCE							
Old Southern Road / Casa Circuit	AM	0.16	4.6 (Worst: 9.3)	LOS A (Worst: A)	Roundabout	UT from Old Southern Road (S)	0.8 veh (5.8m) Old Southern Road (S)
	PM	0.19	4 (Worst: 9.8)	LOS A (Worst: A)		UT from Casa Circuit (E)	1 veh (7.3m) Old Southern Road (N)
	SAT	0.14	4.2 (Worst: 9.4)	LOS A (Worst: A)		UT from Casa Circuit (E)	0.7 veh (5.1m) Old Southern Road (N)
Old Southern Road / Wattlebird Road	AM	0.26	5.1 (Worst: 9.8)	LOS A (Worst: A)	Roundabout	UT from Old Southern Road (S)	1.6 veh (11m) Old Southern Road (S)
	PM	0.26	4 (Worst: 10.3)	LOS A (Worst: A)		UT from Wattlebird Road (E)	1.6 veh (11.2m) Old Southern Road (N)
	SAT	0.18	4 (Worst: 9.7)	LOS A (Worst: A)		UT from Wattlebird Road (E)	1 veh (7m) Old Southern Road (N)
Old Southern Road / Quinns Lane	AM	0.52	7.1 (Worst: 12.5)	LOS A (Worst: A)	Roundabout	UT from Old Southern Road (S)	3.6 veh (25.5m) Old Southern Road (S)
	PM	0.56	6.8 (Worst: 12.9)	LOS A (Worst: A)		UT from Quinns Lane (E)	4.1 veh (29.3m) Quinns Lane (W)
	SAT	0.42	6.3 (Worst: 11.6)	LOS A (Worst: A)		UT from Quinns Lane (E)	2.5 veh (18m) Quinns Lane (W)
Old Southern Road / Isa Road / Hillcrest Avenue	AM	0.93	20.5 (Worst: 42.4)	LOS B (Worst: C)	Roundabout	UT from Old Southern Road (S)	19.6 veh (144.3m) Old Southern Road (S)
	PM	0.65	9.4 (Worst: 16.2)	LOS A (Worst: B)		UT from Old Southern Road (N)	6.3 veh (45.3m) Hillcrest Avenue (W)
	SAT	0.46	7.2 (Worst: 12.4)	LOS A (Worst: A)		UT from Old Southern Road (N)	3 veh (21.5m) Isa Road (E)

Notes: Refer to Table 2.

It is noted that some sections of Old Southern Road between Quinns Lane and the site do not have kerb and guttering on the western side of the road. An initial review of the road corridor indicates there is sufficient width to accommodate two-way traffic flows, and therefore no widening or kerb and guttering on the western side is likely to be required as a result of the subject residential proposal.

It is separately noted that Council has indicated that they would like to extend Old Southern Road to the Princes Highway. This would result in a portion of vehicle trips re-routing from the Princes Highway onto Old Southern Road, increasing north-south traffic movements. This will likely reduce the performance of these intersections further. This outcome is unrelated to the subject development and therefore is not the responsibility of the subject proposal to fund or complete upgrade works that are unrelated to the development. If Council wishes to formalise this connection to the Princes Highway, it is Council's responsibility to manage the impacts and fund any necessary upgrades associated with creating an eastern north-south major collector road within Nowra.

4.4 Traffic Impacts of Rezoning

As shown above, the proposal to rezone the precinct to achieve low-density residential development will have a positive outcome for the local traffic environment surrounding Nowra for the following reasons:

- a) The existing business zoning is estimated to generate 0.71 – 1.4 peak hour vehicle trips per 100m² site area, where the residential zoning is estimated to generate approximately 0.13 peak hour vehicle trips per 100m² of site area. This is a significant reduction in peak hour traffic generation per 100m² of land area, even if taking the lowest rate. The change in zoning will substantially reduce the peak hour traffic generation of the subject land.
- b) The adjustment such that access to the precinct is only to the north via Old Southern Road will provide a net benefit to the Princes Highway. With a connection via Warra Warra Road to the Princes Highway from the precinct, there would be an increase in turning traffic at the Warra Warra Road leg of the Princes Highway / Warra Warra Road roundabout. Further the connection is likely to induce additional traffic along Warra Warra Road and Old Southern Road unrelated to the development that will further degrade the performance of the intersection.
- c) Review of the impacts along Old Southern Road north of the site, indicate that all key intersections north of the site operate at a satisfactory level of service, with spare capacity. There is sufficient capacity in the network north of the site to accommodate the additional residential traffic generation.

For these reasons, the rezoning and removal of the Warra Warra Road connection will result in a net positive outcome for the surrounding road network, reducing the impacts of the site on the Princes Highway (a TfNSW Classified Road) and not having significant impact on the operation of Old Southern Road, with sufficient capacity remaining in the network.

4.5 SEPP (Transport and Infrastructure) 2021 Clause 2.119

The proposed development has frontage to Princes Highway, a classified road (No. 1) and as such an assessment against the criteria in *Clause 2.119 of SEPP (Transport and Infrastructure)* is presented below. The relevant items raised in Clause 2.119 are presented below (italicised) with MTE response thereafter.

(a) where practicable and safe, vehicular access to the land is provided by a road other than the classified road, and

MTE Response: The relevant precinct will not connect to the Princes Highway and no vehicular connection will be provided to Warra Warra Road.

(b) the safety, efficiency, and ongoing operation of the classified road will not be adversely affected by the development as a result of:

i. the design of the vehicular access to the land.

MTE Response: Section 4.4 demonstrates the proposed rezoning of the eastern precinct will have a net traffic benefit to the Princes Highway in comparison to the approved land zoning and Warra Warra Road connection.

ii. the emission of smoke or dust from the development

MTE Response: For others to address.

iii. the nature, volume or frequency of vehicles using the classified road to gain access to the land.

MTE Response: Section 4.1 and Section 4.4 outlines the expected peak hour traffic generation and impact on the surrounding intersections. The traffic generation of the site will not impact the Princess Highway as no direct link via Warra Warra Road is proposed to be provided.

5 RESPONSE TO COUNCIL COMMENTS

This section is in response to Shoalhaven City Council's comments within a letter for the purposes of Scoping Proposal Feedback. The comments made by Council relevant to traffic and parking are shown below (*italicised*) with M^CLaren Traffic Engineering's (MTE) response thereafter.

The proposed cul-de-sac construction in the indicative plans do not achieve Planning for Bushfire Protection 2019 requirements. Cul-de-sacs should be avoided within industrial and commercial areas and instead should be designed to connect to the contribution project 01ROAD3104 – Quinns/Old Southern Link (internal service road). Council may accept a cul-de-sac termination under an interim arrangement.

MTE Response: The plans provided are indicative for the purposes of rezoning the eastern portion of the land, this comment can be addressed at the DA stage. The revised plans do not include any cul-de-sac terminations.

Proposed APZ on public land is not supported. This includes on the hazard side of the road reserve outside of the external kerb line, public reserves and drainage reserves. APZs are required to be located within the future private land and be maintained by the future occupiers of the site who benefits from the APZs. This is a clear objective of PFBP2019.

MTE Response: This comment is for others to address.

The proposed roads may also be subject to widening or additional parking bays to meet RFS requirements for perimeter and non-perimeter roads without impacting on on-street parking.

MTE Response: The RFS Planning for Bush Fire Protection 2019 states that an 8m kerb to kerb width is required for perimeter roads and 5.5m kerb to kerb width is required for non-perimeter roads. The proposed plans meet these requirements. As this is a rezoning proposal, this can be resolved during detailed design prior to a DA lodgement.

There is discrepancy regarding the level of the bridge across the different documents submitted. This needs to be reviewed and consolidated across the documents.

MTE Response: This comment is for others to address.

Some of the internal roads appear to be spaced too closely together to meet Council and AUSTROADS requirements for intersection spacing and sight distance. This should be reviewed.

MTE Response: The plans have been updated, and this comment has been addressed in **Section 3.2** of this report.

The number of proposed 4-way uncontrolled intersections within the internal roads are not supported. These intersections should instead be staggered and take either an east-west or north-south alignment preference rather than a grid layout.

MTE Response: The plans have been updated, and there are no longer any 4-way intersections proposed.

It is likely that a roundabout will be required to be constructed at the Warra Warra Road / Old Southern Road intersection as this is an intersection of two arterial roads. Thus, at a minimum, the priority of the intersection needs to be amended such that the western leg facilitating traffic from Old Southern Road to Warra Warra Road west and through to the Princes Highway, and vice-versa, is prioritised.

MTE Response: This road connection is no longer proposed for this development application. The eastern and western precincts of the site will not be connected. The residential portion of the site will not be connected via Warra Warra Road to the Princes Highway.

Depending on the anticipated traffic volumes, further intersection upgrades (ie. roundabout / turning treatments) may be required at the intersection of Warra Warra Road west and Proposed Road 02.

MTE Response: The plans provided are indicative for the purposes of rezoning the eastern portion of the land, this comment can be addressed at the DA stage.

The submitted traffic impact assessment (TIA) only draws a comparison between the current zoning and the proposed zoning. It does not account for the overall impact of the development as current proposed. There is also no consideration of the background traffic movements and future through traffic associated with the overall strategy for the Old Southern Road link providing a connection between the Princes Highway and the Nowra CBD once ENSA has been connected.

MTE Response: The SIDRA models within **Section 4** consider the traffic generated by the development as proposed. Within the context of the impacts of the proposed development site, the development does not need to provide a Warra Warra Road connection (linking to the Princes Highway). It is recommended that all residential uses are accessed solely via the Old Southern Road to the north of the site.

The traffic impacts associated with Council's planned strategy for the Old Southern Road link to extend to the Princes Highway is a matter for Council, not the applicant. The applicant has demonstrated that the subject site can operate satisfactorily without the Old Southern Road link extension. If Council wishes to proceed with their project, they shall have consideration to the traffic impacts of their proposal associated with through-traffic related to the link road.

It is not the responsibility of the applicant to assess and build infrastructure above and beyond the immediate impacts of the subject development (i.e nexus). Council does not appear to have committed any funding to the provision of the Old Southern Road link to the Princes Highway adjacent (or through) the subject site, so the timing of this link is uncertain and thus may not eventuate.

Council would need to undertake significant upgrades on Old Southern Road should the aforementioned link be installed sooner than the Council has planned or budgeted for.

The proposed alignment of Old Southern Road, to the immediate west of the southern boundary of the proposed "Parkland" should be carefully reviewed to ensure no adverse safety issues arise as a consequence of the proposal road alignment.

MTE Response: The plans have been updated, and the "Parkland" has been removed. The road alignment at this section has been updated and contains improved sightlines.

Dual lanes are likely to be required on the approach to the western development precinct intersection on Warra Warra Road (in the form of a dedicated left turn lane) to reduce impact to the Princes Highway.

MTE Response: This application does not provide any connection to the roundabout and therefore dual lanes will not be required on the Warra Warra Road approach as part of this application.

The submitted TIA net benefit calculations seem reliant on assumptions that do not appear to have robust evidence to support them. The TIA assumes that the "eastern" development precinct (present zoning) would have had the same rate of traffic generation as the current proposals "western" traffic generation. Accordingly, the traffic generation for the eastern precinct (based on the current zoning) may be overstated in the TIA leading to the current high "net benefit" calculation which is not accepted. Realistic assumptions should be considered in an amended TIA.

MTE Response: It is agreed that the eastern development precinct (under the current Business Zoning) may not have the same rate of traffic generation as the current proposal western traffic generation, however this is only for the purpose of anecdotal comparisons, based on limited available information.

In any case, it is clear that the proposed change in zoning will result in a net benefit to the surrounding road network. The extent of the benefit is not of great significance as the SIDRA models compare the existing surveyed traffic volumes and the proposed traffic volumes, without any reduction based upon the benefit. The purpose of the previously submitted TIA's net benefit calculations was to demonstrate that a benefit would occur based upon the rezoning of the land, which is the basis of this proposal. This TIA assesses the net benefit based upon the estimated traffic generation per 100m² of site area.

Public transport requirements for the development have not been addressed. The TIA indicates that the walking distance would be 150m however from the northernmost part of the site, this could potentially be 1.3km.

MTE Response: The plans provided are indicative for the purposes of rezoning the land, this comment can be addressed at the DA stage, where detailed design of the subdivision will be completed. A bus route is able to be provided along Old Southern Road and bus stops should be located such that the majority of properties are less than 400m walking distance from a bus stop. The existing 101 bus route (which extends to Wattlebird Road) can possibly be extended through the proposed site, subject to consultation with the bus service provider. It is not envisaged that the residential component will access any bus stop on the Princes Highway. They are best serviced by the 101-bus route, which can be extended into the site (subject to discussions with the bus operator).

The bus services along the Princes Highway are infrequent, and it is not considered feasible for the bus operators to provide a direct service that would travel to the western precinct of the site.

There is no pathway connection to the Princes Highway, which is at odds with the TIA claiming this is a suitable public transport provision.

MTE Response: The TIA does not rely upon public transport access along the Princes Highway. The bus route that runs along the Princes Highway is not relied upon, nor considered safe for use, given its location on the Princes Highway and the infrequent regional services.

The proposal has not provided vehicle swept paths to accommodate the proposed design and check vehicles for the development.

MTE Response: The plans provided are indicative for the purposes of rezoning the land, this comment can be addressed at the DA stage when detailed subdivision design is completed.

The TIA has not assessed pedestrian/cyclist connectivity requirements, and it is noted that footpaths / shared user paths have not currently been provided on the engineering plans for many of the proposed roads, which are required by Council's DCP.

MTE Response: The plans provided are indicative for the purposes of rezoning the land, this comment can be addressed at the DA stage when detailed subdivision plans are developed. There is sufficient space within the road reserves to provide footpaths or shared paths where considered necessary as per Council's DCP requirements.

There is no pedestrian or cyclist connectivity between the eastern and western precincts of the development, and this is a lost opportunity. This should be considered as it would facilitate future residents to walk or ride to the future supermarkets, shops and pub rather than relying on vehicles.

MTE Response: This comment is for others to address and can be addressed at the DA stage.

There is a substantial amount of car parking proposed within the future road reserve along the easternmost road and the road fronting the floating wetland which appears to offer no public benefit. This should be removed and placed within the lots if it is to serve the future developments within the site.

MTE Response: These car parking spaces have been removed.

Future road designs need to demonstrate consistency with the Shoalhaven Development Control Plan 2014, particularly proposed road typologies, controlling speeds and traffic management, minimum boundary splays and roundabout requirements.

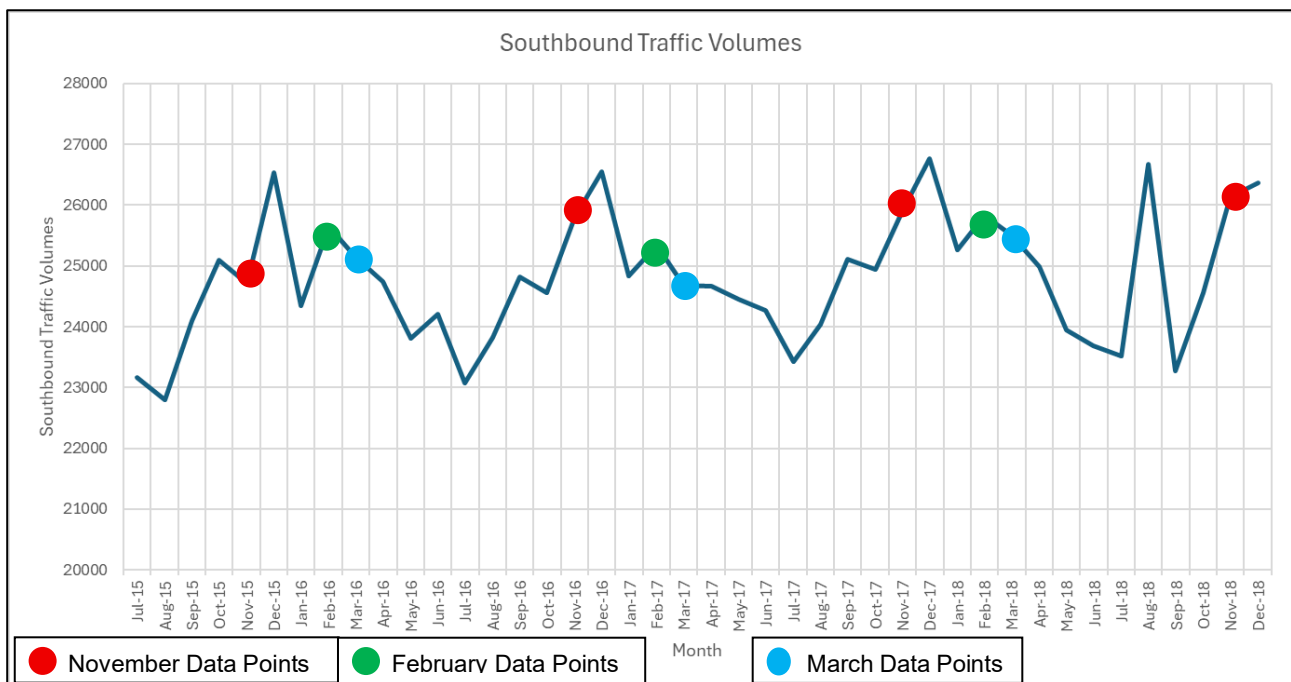
MTE Response: The roads have been assessed comply with Shoalhaven DCP 2014 requirements, refer to **Section 3.1** for further details.

An amended TIA is required that demonstrates thorough appraisal of the likely impacts of the proposal in terms of traffic, parking, consistency with the Citywide DCP in terms of road typologies and traffic management-traffic calming, proposed servicing, and importantly also addresses public and active transport (including assessment of likely pedestrian/cycling impacts), and the study should further recommend appropriate measures to address any adverse impacts, and identify appropriate solutions that further encourages and supports an increase in public and active transport, i.e. the study should not be solely based on “traffic”. This should be supported by adequate plans with clear road labelling to enable interpretation of current Table 7.

MTE Response: A thorough TIA considering these items shall be undertaken at the DA stage for the subdivision of land. This level of detail is not considered necessary for the change of zoning planning proposal stage.

The TIA should seek to ensure that the traffic analysis caters for two scenarios, namely – a demonstration of LOS C or better in average conditions (AAST), and a demonstration of LOS D or better in higher seasonal conditions (80-120th HH) to account for seasonal differences in traffic volume. The current traffic data has been collected in November 2024, which could be accepted as equivalent to AAST conditions, but there has not been an 80-120th HH assessment undertaken (typically – February-March conditions), accordingly, seasonal adjustment has not been considered or addressed in the TIA.

MTE Response: As stated, the traffic data along Princes Highway was collected in November 2024. Reference is made to the TfNSW Traffic Volume Viewer Station ID: 07051 (located along the Princes Highway, 190m South of Illaroo Road, Bomaderry) which provides average daily traffic volumes per month. The southbound monthly volumes comparing November to February and March from 2016-2018 are presented below.



**FIGURE 7: TFNSW VOLUME VIEWER (STATION ID: 07051)
PRINCES HIGHWAY, BOMADERRY**

As shown in **Figure 7**, November is busier than both February and March when considering southbound traffic along the Princes Highway in Nowra and therefore the SIDRA models accompanying this report are equivalent to seasonally high conditions. In view of Council's above position, it can be considered that the traffic counts underpinning the submitted SIDRA models are more than appropriate for the purpose of this Planning Proposal as the traffic counts represent above average conditions and being generally above February and March conditions since 2016.

The assumption of “linked trips” of approximately 20-30% is not accepted as the western development is practically remote from the residential area, which will minimise the extent to which linked trips can be applied. The geographical spread of the proposal makes it unsupportable to apply the full extent of linked trips. The approach needs to be reconsidered, and with a more reasonable argument of what extent of linked trips might be more reasonable to apply to the different portions of the development.

MTE Response: The linked trips assumption has been removed from this report.

6 RESPONSE TO TfNSW COMMENTS

This section is in response to Transport for NSW (TfNSW) comments within a letter dated 8 May 2025 for planning proposal reference number 78409E/1. The comments made by TfNSW relevant to traffic and parking are shown below (*italicised*) with M^CLaren Traffic Engineering's (MTE) response thereafter.

- a) *The existing intersection of the Princes Highway and Warra Warra Road should be further investigated to consider future traffic volumes and the impact to the Princes Highway (state road). This investigation should identify any potential mitigation measures.*

MTE Response: The proposed residential rezoning no longer proposes any access to Warra Warra Road and hence no access to the Princes Highway. This has been addressed within **Section 4**.

- b) *SIDRA analysis should be undertaken for the proposed local road intersections to demonstrate their performance, capacity and potential impact on the state road connection.*

Electronic SIDRA files need to be provided for TfNSW review.

MTE Response: SIDRA analysis has been undertaken for the local road intersections and demonstrates that there is no adverse impact to the performance and capacity of the classified road (Princes Highway). The electronic SIDRA files can be provided to TfNSW on request.

- c) *The traffic assessment should be undertaken in accordance with the Guide to Transport Impact Assessment 2024.*

MTE Response: The traffic assessment within this report has been undertaken in accordance with the guidelines outlined within the GTIA 2024.

- d) *Base the trip generation rates as recommended in the Guide to Transport Impact Assessment 2024.*

MTE Response: The trip generation rates have been based upon those recommended in the GTIA 2024 where appropriate, as a conservative approach considering the R1 – General Residential zoning, a slightly higher traffic generation rate of 1 peak hour trip per lot has been adopted, which is higher than the GTIA 2024 trip generation rates.

- e) *Detail appropriate arrangements to support public transport (including school buses). All stages of the development complies with the TfNSW Guidelines for Public Transport Capable Infrastructure in Greenfield Sites. These guidelines highlight the requirements for bus infrastructure in new development areas that should be included in the design as it is important to ensure that future occupants will have access to bus infrastructure for their transportation needs.*

MTE Response: The plans provided are indicative for the purposes of rezoning the land, this comment can be addressed at the DA stage. It is agreed that future occupants require access to bus infrastructure and Old Southern Road should be able to facilitate bus stops and a bus route once detailed design of the roads has been undertaken.

f) The proposal does not consider how vehicle trips will be reduced. TfNSW believes measures to reduce vehicular trip generation need to be included by identifying opportunities to make public transport and active transport attractive and accessible

i. Detail how sustainable modes of travel, such as cycling and walking will be incorporated into the design of any future development application that is lodged for subdivision.

MTE Response: The plans provided are indicative for the purposes of rezoning the land, this comment can be addressed at the DA stage. It is likely that shared paths will be made available along the spine roads, in line with Council's DCP requirements, and therefore cycling and walking facilities will be made available to all lots.

g) Provide a strategic design for any identified road upgrades. These designs shall address the requirements detailed in the TfNSW Strategic Design Requirements fact sheet which is accessible through the following link - Strategic Design Fact Sheet. For works that require the concurrence/approval of TfNSW, the strategic design should be approved by the relevant road authority before the finalisation of the PP

MTE Response: This comment is for others to address and is not necessary at this planning proposal stage, which is only focusing on a rezoning of a portion of the site to a lower traffic generating land-use. The application is no longer providing access to Warra Warra Road and hence will not result in an impact on the Princes Highway.

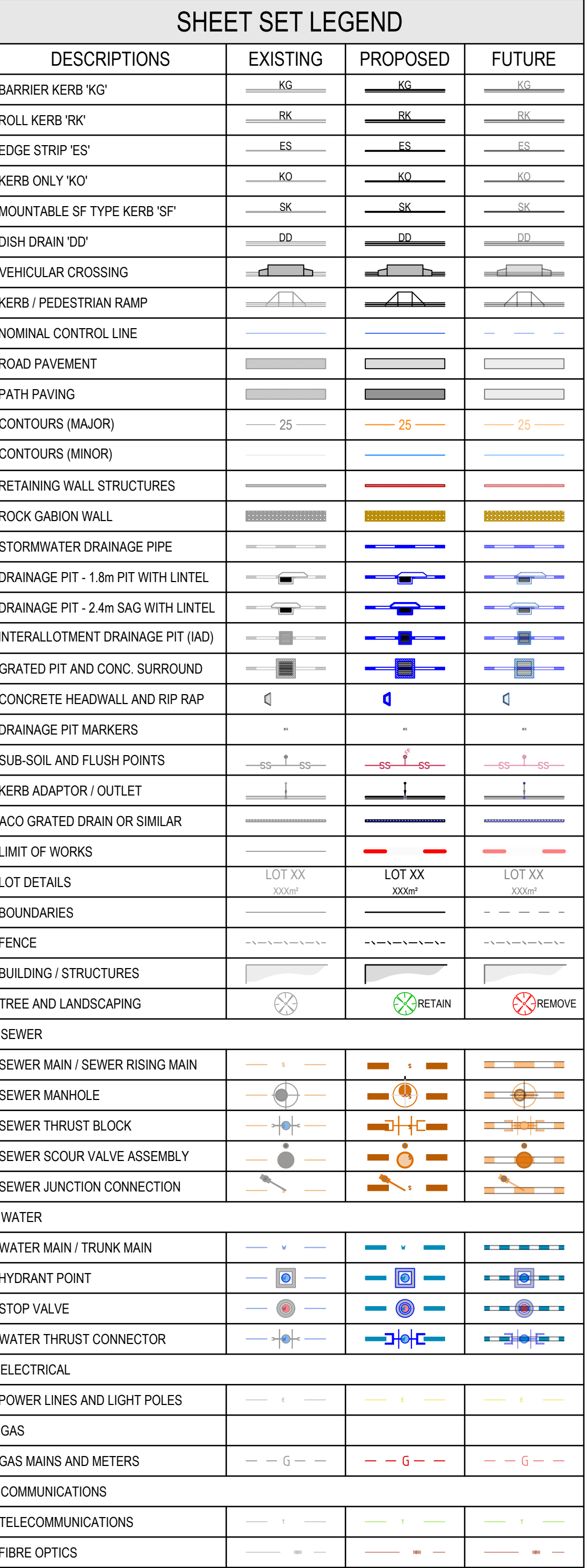
7 CONCLUSIONS

In view of the foregoing, the subject change of zoning proposal at Warra Warra Road, South Nowra (as depicted in **Annexure A**) is fully supportable in terms of its traffic, parking and road safety impacts as well as the ability of the proposed road network serving the subject development to incorporate alternative travel modes such as bus routes, bus stops, shared bike / pedestrian paths and footpaths. The following outcomes of this traffic and parking impact assessment are relevant to note:

- a) The traffic generation for the eastern precinct of the proposed development has been estimated to be some **207** trips in the weekday AM peak period (62 in, 145 out), **207** trips in the weekday PM and weekend peak period (145 in, 62 out) and **207** trips in the weekend peak period (103 in, 103 out).
- b) The applicant is also exploring a slightly higher yield of 215 lots, such that the traffic generation for the eastern precinct of the under this yeild has been estimated to be some **215** trips in the weekday AM peak period (65 in, 150 out), **215** trips in the weekday PM and weekend peak period (150 in, 65 out) and **215** trips in the weekend peak period (107 in, 108 out). The outcomes of this assessment will not be materially different due to the additional eight (8) lots being explored and the outcomes of this report are still valid for a 215 lot yield.
- c) There will be fewer trips in the respective peak hour periods as a result of the proposed land rezoning for the eastern precinct from Business to Residential use, significantly reducing from an estimate 0.7-1.4 peak hour vehicle trips per 100m² to 0.13 peak hour vehicle trips per 100m² of site area as residential land.
- d) The impacts of the traffic generation have been modelled using SIDRA INTERSECTION 10, indicating that there will be no adverse impact to the performance of the intersections along Old Southern Road as a result of the proposed rezoning to R1-Genearl Residential with all access to the residential land via Old Southern Road. Full results are provided in **Annexure C** and **Annexure D** for reference.
- e) The proposed removal of a road connection between western (business) and eastern (residential) precincts will reduce traffic that will directly access the Princes Highway at Warra Warra Road. This will have a net benefit on the Classified Road compared to what was originally intended by the zoning and intended road network.
- f) The traffic associated with the proposed rezoned lane can be fully accommodated within the capacity of Old Southern Road, now and 10-years into the future.
- g) If the proposed development does not provide a connection between Warra Warra Road and Old Southern Road, then the Old Southern Road has sufficient capacity to accommodate a 207-lot subdivision.

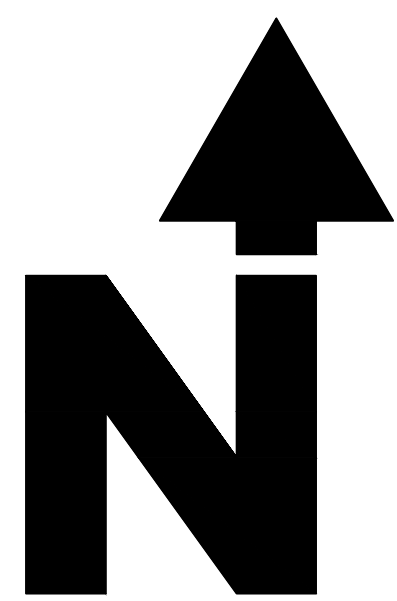


**ANNEXURE A: PROPOSED PLANS
(6 SHEETS)**



0 10 20 30 40 50

SCALE:- 1:1500



REVISION		BY	DATE
WARRA WARRA ROAD SOUTH NOWRA PLANNING PROPOSAL EXISTING ZONES TEXI PTY LTD LOT 2 DP 1126288 & LOT 224 DP 755952			
RATIO: 1:500			
DATE: 13/02/2026			
REF: TEXI			



This plan was prepared to accompany a development application only and is not for construction.

The information on this plan is not suitable for any other purpose.

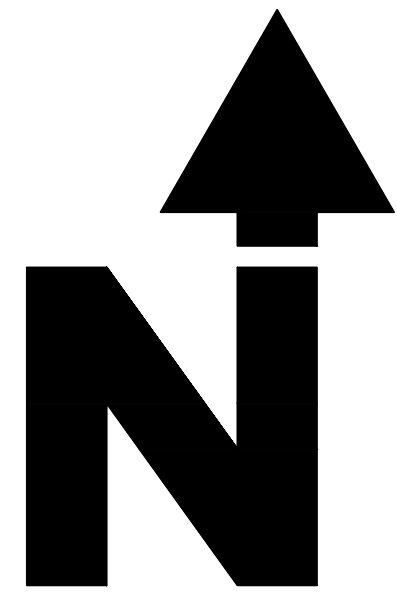
The property dimensions, contours and other physical features have been compiled from existing information and have not been verified by field survey. Dimensions & areas shown on this plan are subject to survey, further detailed design and also to the requirements of the relevant Consent Authority and any other authority which may have requirements under any relevant legislation.

In particular, no reliance should be placed on the information on this plan for detailed design purposes or for any financial dealings involving the land.

Jervis Bay Town Planning therefore disclaims any liability for any loss or damage whatsoever incurred, arising from any party using this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application made to the Consent Authority which may be subject to alteration for reasons beyond the control of Jervis Bay Town Planning.

Unless stamped by the Consent Authority, this plan is not approved.

This note is an integral part of this plan.



REVISION		BY	DATE
WARRA WARRA ROAD SOUTH NOWRA PLANNING PROPOSAL ZONES PROPOSED TEXI PTY LTD LOT 2 DP 1126288 & LOT 224 DP 755952			
RATIO: 1:500			
DATE: 13/02/2026			
REF: TEXI			



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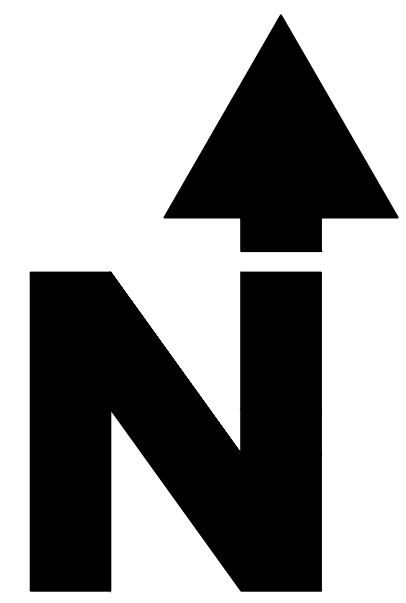
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PRINCES HIGHWAY

PRINCES HIGHWAY



C2 ENVIRONMENT
CONSERVATION
ZONE
(NPWS)

RU2
RURAL LANDSCAPE
ZONE
(RIFLE RANGE)

RU2
(VACANT LAND)
LOT 3 DP1126288

RU2
(VACANT LAND)
LOT 2 DP1108043

RU2
(VACANT LAND)
LOT 3 DP1108043

RU2
(VACANT LAND)
LOT 4 DP1108043

REVISION	BY	DATE
WARRA WARRA ROAD SOUTH NOWRA PLANNING PROPOSAL PROSED LAND USES TEXI PTY LTD LOT 2 DP 1126288 & LOT 224 DP 755952	RATIO: 1:500 DATE: 13/02/2026 REF: TEXI	



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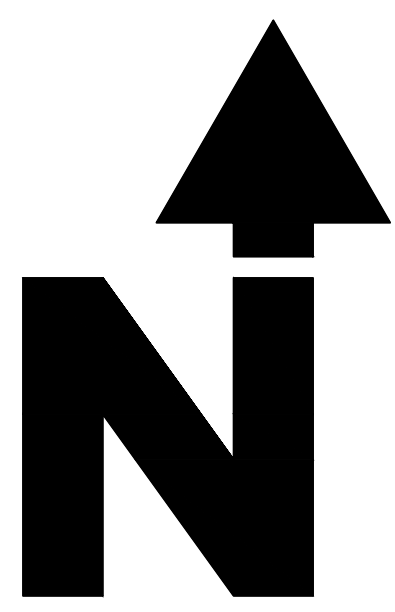
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RESIDENTIAL
LOT LAYOUT
OPTION 1

DENOTES ASSET PROTECTION ZONE

PRINCES HIGHWAY

PRINCES HIGHWAY

OLD SOUTHERN ROAD

WARRA WARRA ROAD

RU2
(VACANT LAND)
LOT 3 DP1126288

RU2
(VACANT LAND)
LOT 2 DP1108043

RU2
(VACANT LAND)
LOT 3 DP1108043

RU2
(VACANT LAND)
LOT 4 DP1108043

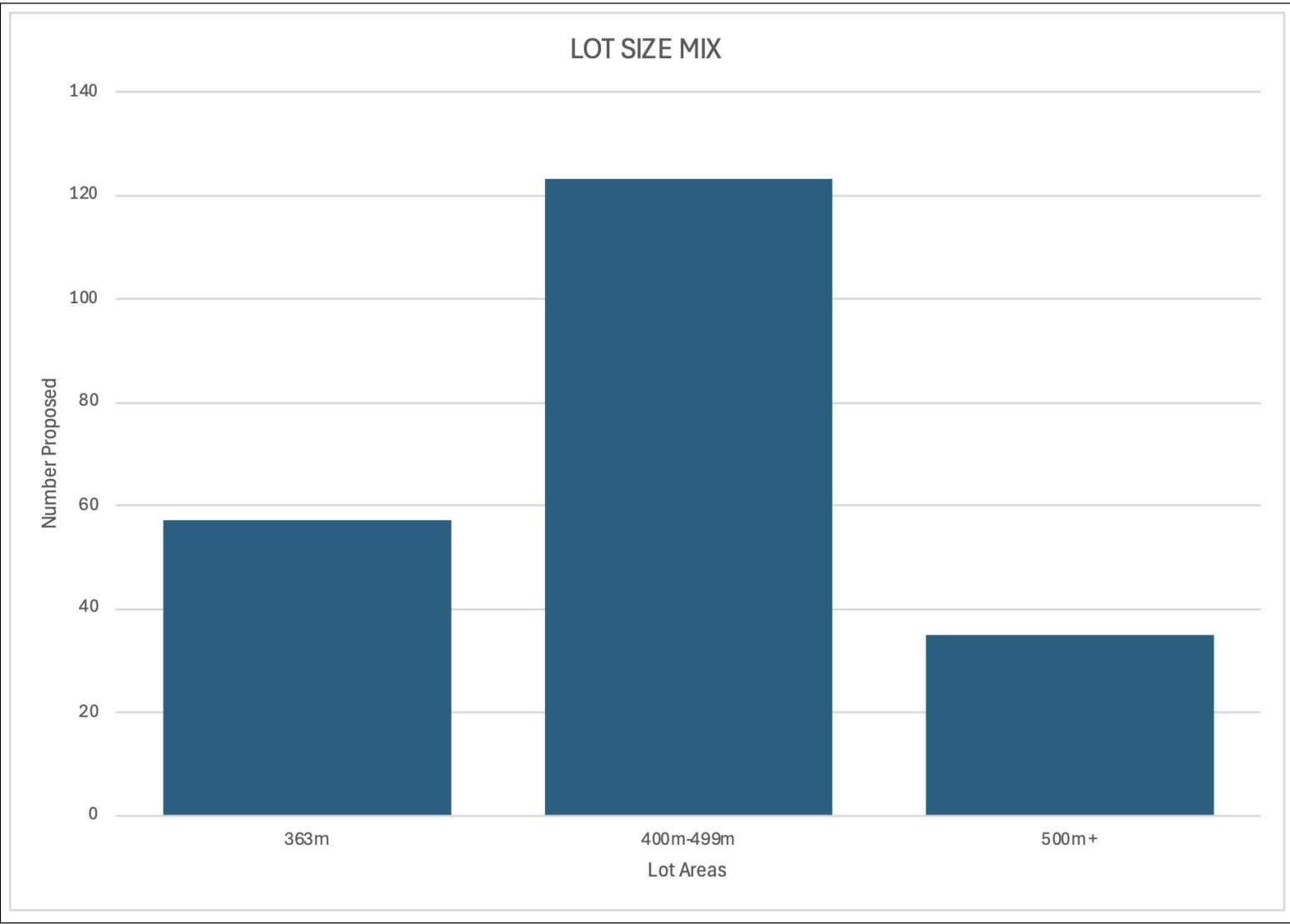
OSD

OSD

PROPOSED
CONSERVATION
ZONE (C2)
9.3HA

EXISTING
BUSINESS ZONE
6.7HA

C2 ENVIRONMENT
CONSERVATION
ZONE
(NPWS)



LOT YIELD

LOT SIZE AREA	NO. OF LOTS
363M2	57
400M2 - 450M2	101
451M2 - 499M2	22
500M2 - 599M2	13
600M2 +	22
TOTAL	215 LOTS
LOTS PER HA	13.7

RU2
RURAL LANDSCAPE
ZONE
(RIFLE RANGE)



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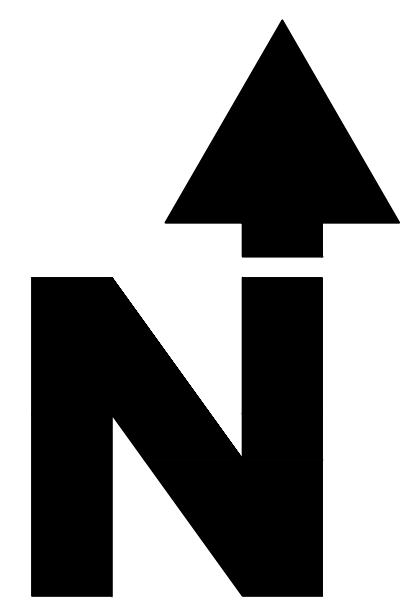
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REVISION	BY	DATE
WARRA WARRA ROAD SOUTH NOWRA PLANNING PROPOSAL CONCEPT SKETCH 1 TEXTI PTY LTD LOT 2 DP 1126288 & LOT 224 DP 755952		
	RATIO: 1:500	
	DATE: 13/02/2026	
	REF: TEXTI	



RESIDENTIAL
LOT LAYOUT
OPTION 2

DENOTES ASSET PROTECTION ZONE

PRINCES HIGHWAY

PRINCES HIGHWAY

OLD SOUTHERN ROAD

WARRA WARRA ROAD

RU2
(VACANT LAND)
LOT 3 DP1126288

RU2
(VACANT LAND)
LOT 2 DP1108043

RU2
(VACANT LAND)
LOT 3 DP1108043

RU2
(VACANT LAND)
LOT 4 DP1108043

OSD

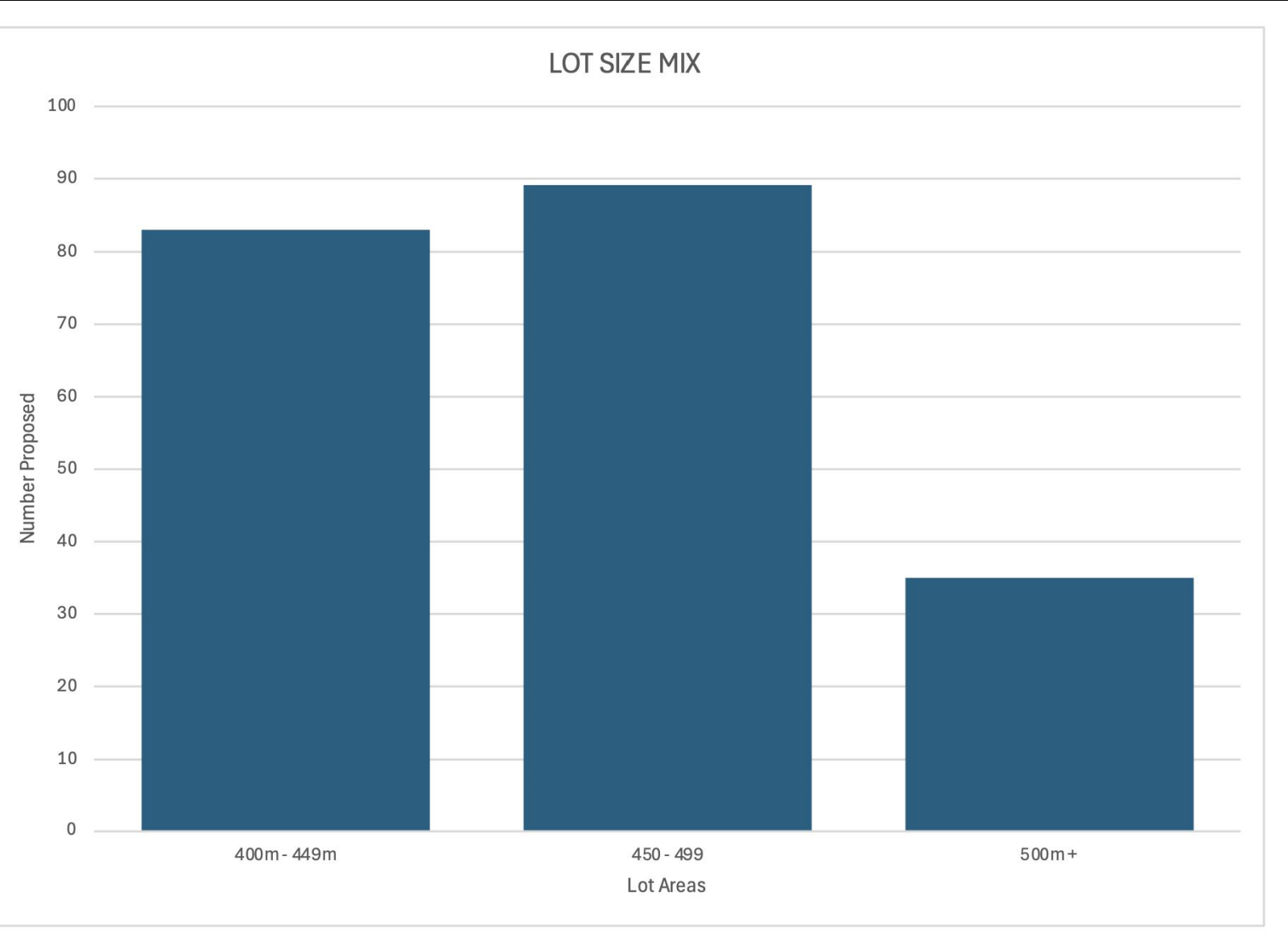
OSD

EXISTING
BUSINESS ZONE
6.7HA

PROPOSED
CONSERVATION
ZONE (C2)
9.3HA

PROPOSED
CONSERVATION
ZONE

C2 ENVIRONMENT
CONSERVATION
ZONE
(NPWS)



LOT YIELD

LOT SIZE AREA	NO. OF LOTS
400M2 - 449M2	83
450M2-499M2	89
500M2-599M2	12
600M2 +	23
TOTAL	207
LOTS PER HA	12.7

RU2
RURAL LANDSCAPE
ZONE
(RIFLE RANGE)



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REVISION	BY	DATE
WARRA WARRA ROAD SOUTH NOWRA PLANNING PROPOSAL CONCEPT SKETCH 2 TEXI PTY LTD LOT 2 DP 1126288 & LOT 224 DP 755952	RATIO: 1:500 DATE: 13/02/2026 REF: TEXI	



**ANNEXURE B: TRAFFIC SURVEY DATA
(8 SHEETS)**

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY



Intersection of Old Southern Rd and Casa Cct, South N

GPS -34.917149, 150.610265

Date: Thu 04/09/25
Weather: Fine
Suburban: South Nowra
Customer: McLaren

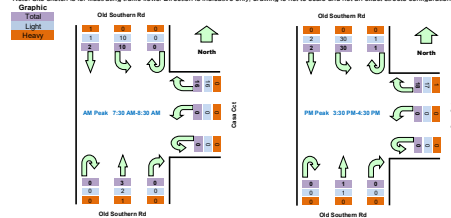
North: Old Southern Rd
East: Casa Cct
South: Old Southern Rd
West: N/A

Survey Period: 6:30 AM-6:30 AM
Traffic Peak: 1:30 PM-4:30 PM

All Vehicles		Time	Jth Approach Old Southern			East Approach Casa Cct			Jth Approach Old Southern			Hourly Total
Period Start	Period End		U	SB	L	U	R	L	U	R	NB	Peak
6:30	6:45		0	0	1	0	5	0	0	0	0	22
6:45	7:00		0	4	2	0	1	1	0	0	0	20
7:00	7:15		0	1	0	0	3	0	0	0	0	20
7:15	7:30		0	0	1	0	3	0	0	0	0	27
7:30	7:45		0	1	0	0	2	0	0	0	1	31
7:45	8:00		0	0	2	0	5	0	0	0	1	30
8:00	8:15		0	1	5	0	4	0	0	0	1	26
8:15	8:30		0	0	3	0	5	0	0	0	0	21
8:30	8:45		0	0	2	0	1	0	0	0	0	20
8:45	9:00		2	0	1	0	0	0	0	0	1	
9:00	9:15		0	0	3	0	1	2	0	0	0	
9:15	9:30		0	1	1	0	4	0	0	0	1	
14:00	14:15		1	0	3	0	4	0	0	0	0	33
14:15	14:30		0	0	1	0	4	0	0	0	0	44
14:30	14:45		0	0	6	0	5	0	0	0	1	45
14:45	15:00		1	0	4	0	3	0	0	0	0	47
15:00	15:15		1	4	4	0	8	0	2	0	0	49
15:15	15:30		0	1	2	0	1	1	0	1	0	44
15:30	15:45		0	1	7	0	6	0	0	0	0	52
15:45	16:00		1	1	7	0	1	0	0	0	0	43
16:00	16:15		0	0	7	0	6	0	0	0	1	40
16:15	16:30		0	0	9	0	5	0	0	0	0	44
16:30	16:45		0	0	4	0	1	0	0	0	0	35
16:45	17:00		0	0	3	0	2	0	0	0	2	33
17:00	17:15		0	0	3	1	10	0	0	1	3	28
17:15	17:30		0	0	4	0	0	0	0	0	1	
17:30	17:45		0	0	1	0	2	0	0	0	0	
17:45	18:00		0	0	0	0	2	0	0	0	0	

Peak Time		Jth Approach Old Southern			East Approach Casa Cct			Jth Approach Old Southern			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
7:30	8:30	0	2	10	0	16	0	0	0	3	31
15:30	16:30	1	2	30	0	16	0	0	0	1	52

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehicles		Time	Jth Approach Old Southern			East Approach Casa Cct			Jth Approach Old Southern			Hourly Total
Period Start	Period End		U	SB	L	U	R	L	U	R	NB	Peak
6:30	6:45		0	0	1	0	5	0	0	0	0	
6:45	7:00		0	2	2	0	1	0	0	0	0	
7:00	7:15		0	0	0	0	3	0	0	0	0	
7:15	7:30		0	0	1	0	3	0	0	0	0	
7:30	7:45		0	1	0	0	2	0	0	0	1	
7:45	8:00		0	0	2	0	5	0	0	0	1	
8:00	8:15		0	0	5	0	4	0	0	0	0	
8:15	8:30		0	0	3	0	5	0	0	0	0	
8:30	8:45		0	0	2	0	1	0	0	0	0	
8:45	9:00		2	0	0	0	0	0	0	0	0	
9:00	9:15		0	0	2	0	1	1	0	0	0	
9:15	9:30		0	0	1	0	4	0	0	0	0	
14:00	14:15		1	0	3	0	4	0	0	0	0	
14:15	14:30		0	0	1	0	4	0	0	0	0	
14:30	14:45		0	0	6	0	5	0	0	0	1	
14:45	15:00		1	0	4	0	3	0	0	0	0	
15:00	15:15		1	4	4	0	8	0	2	0	0	
15:15	15:30		0	1	2	0	1	1	0	1	0	
15:30	15:45		0	1	7	0	5	0	0	0	0	
15:45	16:00		1	1	7	0	1	0	0	0	0	
16:00	16:15		0	0	7	0	6	0	0	0	1	
16:15	16:30		0	0	9	0	5	0	0	0	0	
16:30	16:45		0	0	4	0	1	0	0	0	0	
16:45	17:00		0	0	3	0	2	0	0	0	0	
17:00	17:15		0	0	3	1	10	0	0	1	2	
17:15	17:30		0	0	4	0	0	0	0	0	1	
17:30	17:45		0	0	1	0	2	0	0	0	0	
17:45	18:00		0	0	0	0	2	0	0	0	0	

Peak Time		Jth Approach Old Southern			East Approach Casa Cct			Jth Approach Old Southern			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
7:30	8:30	0	1	10	0	16	0	0	0	2	29
15:30	16:30	1	2	30	0	17	0	0	0	1	51

Heavy Vehicles		Time	Jth Approach Old Southern			East Approach Casa Cct			Jth Approach Old Southern			Hourly Total
Period Start	Period End		U	SB	L	U	R	L	U	R	NB	Peak
6:30	6:45		0	0	0	0	0	0	0	0	0	
6:45	7:00		0	2	0	0	0	1	0	0	0	
7:00	7:15		0	1	0	0	0	0	0	0	0	
7:15	7:30		0	0	0	0	0	0	0	0	0	
7:30	7:45		0	0	0	0	0	0	0	0	0	
7:45	8:00		0	0	0	0	0	0	0	0	0	
8:00	8:15		0	1	0	0	0	0	0	0	1	
8:15	8:30		0	0	0	0	0	0	0	0	0	
8:30	8:45		0	0	0	0	0	0	0	0	0	
8:45	9:00		0	0	1	0	0	0	0	0	1	
9:00	9:15		0	0	1	0	0	1	0	0	0	
9:15	9:30		0	1	0	0	0	0	0	0	1	
14:00	14:15		0	0	0	0	0	0	0	0	0	
14:15	14:30		0	0	0	0	0	0	0	0	0	
14:30	14:45		0	0	0	0	0	0	0	0	0	
14:45	15:00		0	0	0	0	0	0	0	0	0	
15:00	15:15		0	0	0	0	0	0	0	0	0	
15:15	15:30		0	0	0	0	0	0	0	0	0	
15:30	15:45		0	0	0	1	0	0	0	0	0	
15:45	16:00		0	0	0	0	0	0	0	0	0	
16:00	16:15		0	0	0	0	0	0	0	0	0	
16:15	16:30		0	0	0	0	0	0	0	0	0	
16:30	16:45		0	0	0	0	0	0	0	0	0	
16:45	17:00		0	0	0	0	0	0	0	0	2	
17:00	17:15		0	0	0	0	0	0	0	0	1	
17:15	17:30		0	0	0	0	0	0	0	0	0	
17:30	17:45		0	0	0	0	0	0	0	0	0	
17:45	18:00		0	0	0	0	0	0	0	0	0	

Peak Time		Jth Approach Old Southern			East Approach Casa Cct			Jth Approach Old Southern			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
7:30	8:30	0	1	0	0	0	0	0	0	1	2
15:30	16:30	0	0	0	1	0	0	0	0	0	1

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY



Intersection of Old Southern Rd and Wattiebird Rd, Sou

GPS -34.914146, 150.611147

Date: Thu 9/4/2025

Weather: Fine

Suburban: South Nowra

Customer: McLaren

North: Old Southern Rd

East: Wattiebird Rd

South: Old Southern Rd

West: N/A

Survey AM 6:30 AM-9:30 AM

PM 12:30 PM-4:30 PM

Traffic AM 7:30 AM-9:30 AM

PM 1:30 PM-4:30 PM

All Vehicles													
Time		1st Approach Old Southern		2nd Approach Wattiebird		3rd Approach Old Southern		Hourly Total					
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak	
6:30	6:45	0	0	0	0	0	0	17	1	0	1	5	110
6:45	7:00	0	0	0	0	0	0	12	1	0	0	1	124
7:00	7:15	0	1	4	0	0	0	19	0	0	0	3	158
7:15	7:30	0	1	5	0	0	0	23	0	0	0	3	193
7:30	7:45	0	2	10	0	0	0	29	0	0	0	3	214
7:45	8:00	1	1	11	0	0	0	36	0	0	0	6	209
8:00	8:15	1	5	6	1	45	0	1	0	0	3	189	
8:15	8:30	3	4	9	0	31	0	0	0	1	5	159	
8:30	8:45	2	3	13	0	19	0	0	0	0	2	143	
8:45	9:00	2	2	18	0	9	1	0	0	0	3		
9:00	9:15	3	3	12	0	13	0	0	0	0	1		
9:15	9:30	0	3	13	0	15	0	0	0	0	6		
14:00	14:15	1	4	14	0	13	0	0	0	0	5	155	
14:15	14:30	0	1	9	0	15	0	0	0	0	4	166	
14:30	14:45	2	6	6	0	14	1	0	0	0	7	179	
14:45	15:00	0	5	28	0	17	0	0	0	0	3	203	
15:00	15:15	1	9	15	0	13	0	0	0	0	10	198	
15:15	15:30	1	3	26	0	11	0	0	0	0	1	198	
15:30	15:45	1	8	29	0	16	1	0	0	0	5	209	
15:45	16:00	2	8	17	0	18	0	0	0	0	3	189	
16:00	16:15	1	8	25	0	7	0	0	0	0	7	188	
16:15	16:30	0	8	26	0	14	0	0	0	0	5	203	
16:30	16:45	1	4	22	0	12	0	0	0	0	1	192	
16:45	17:00	0	3	26	0	14	0	0	0	0	4	197	
17:00	17:15	2	3	36	0	9	0	0	0	0	13	192	
17:15	17:30	1	4	24	0	12	0	0	0	0	1		
17:30	17:45	0	1	29	0	13	0	0	0	0	2		
17:45	18:00	0	0	23	0	17	0	0	0	0	2		

Peak Time	1st Approach Old Southern	2nd Approach Wattiebird	3rd Approach Old Southern	Peak
7:30	5	12	36	1
15:30	4	32	97	0

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehicles		Time		1st Approach Old Southern			2nd Approach Wattiebird			3rd Approach Old Southern			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak		
6:30	6:45	0	0	0	0	0	0	17	1	0	1	5	110	
6:45	7:00	0	0	3	2	0	0	12	1	0	0	1	124	
7:00	7:15	0	0	3	0	0	0	19	0	0	0	3	158	
7:15	7:30	0	1	5	0	0	0	23	0	0	0	3	193	
7:30	7:45	0	2	7	0	28	0	0	0	0	3			
7:45	8:00	1	1	10	0	36	0	0	0	0	6			
8:00	8:15	1	5	5	1	45	0	0	0	0	3			
8:15	8:30	3	4	8	0	31	0	0	0	1	5			
8:30	8:45	2	3	12	0	17	0	0	0	0	2			
8:45	9:00	2	1	17	0	9	1	0	0	0	2			
9:00	9:15	2	2	12	0	13	0	0	0	0	1			
9:15	9:30	0	1	13	0	14	0	0	0	0	5			
14:00	14:15	1	4	14	0	13	0	0	0	0	5			
14:15	14:30	0	1	9	0	14	0	0	0	0	4			
14:30	14:45	2	6	6	0	14	1	0	0	0	7			
14:45	15:00	0	5	28	0	17	0	0	0	0	3			
15:00	15:15	1	9	14	0	13	0	0	0	0	10			
15:15	15:30	1	3	26	0	10	0	0	0	0	1			
15:30	15:45	1	8	27	0	16	1	0	0	0	4			
15:45	16:00	2	8	17	0	16	0	0	0	0	3			
16:00	16:15	1	8	25	0	6	0	0	0	0	7			
16:15	16:30	0	8	26	0	12	0	0	0	0	5			
16:30	16:45	1	4	22	0	12	0	0	0	0	1			
16:45	17:00	0	3	26	0	14	0	0	0	0	2			
17:00	17:15	2	3	36	0	9	0	0	0	0	12			
17:15	17:30	1	4	24	0	11	0	0	0	0	1			
17:30	17:45	0	1	29	0	12	0	0	0	0	2			
17:45	18:00	0	0	23	0	17	0	0	0	0	2			

Peak Time	1st Approach Old Southern	2nd Approach Wattiebird	3rd Approach Old Southern	Peak
7:30	5	12	30	1
15:30	4	32	95	0

Time		1st Approach Old Southern			2nd Approach Wattiebird			3rd Approach Old Southern			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
6:30	6:45	0	0	0	0	0	0	0	0	0	0	0
6:45	7:00	0	2	0	0	0	0	0	0	0	0	0
7:00	7:15	0	1	1	0	0	0	0	0	0	0	0
7:15	7:30	0	0	0	0	0	0	0	0	0	0	0
7:30	7:45	0	0	3	0	1	0	0	0	0	0	0
7:45	8:00	0	0	1	0	0	0	0	0	0	0	0
8:00	8:15	0	0	1	0	0	0	0	1	0	0	0
8:15	8:30	0	0	1	0	0	0	0	0	0	0	0
8:30	8:45	0	0	1	0	2	0	0	0	0	0	0
8:45	9:00	0	1	1	0	0	0	0	0	0	1	0
9:00	9:15	1	1	0	0	0	0	0	0	0	0	0
9:15	9:30	0	2	0	0	1	0	0	0	0	1	0
14:00	14:15	0	0	0	0	0	0	0	0	0	0	0
14:15	14:30	0	0	0	0	1	0	0	0	0	0	0
14:30	14:45	0	0	0	0	0	0	0	0	0	0	0
14:45	15:00	0	0	0	0	0	0	0	0	0	0	0
15:00	15:15	0	0	1	0	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	1	0	0	0	0	0	0
15:30	15:45	0	0	2	0	0	0	0	0	0	0	1
15:45	16:00	0	0	0	0	2	0	0	0	0	0	0
16:00	16:15	0	0	0	0	1	0	0	0	0	0	0
16:15	16:30	0	0	0	0	2	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	0	2	0
17:00	17:15	0	0	0	0	0	0	0	0	0	1	0
17:15	17:30	0	0	0	0	1	0	0	0	0	0	0
17:30	17:45	0	0	0	0	1	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0	0	0

Peak Time	1st Approach Old Southern	2nd Approach Wattiebird	3rd Approach Old Southern	Peak
7:30	0	0	6	0
15:30	0	0	2	0

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Quinns Ln and Old Southern Rd, South Nowra

GPS -34.90979, 150.612179

Date: Thu 04/09/25
Weather: Fine
Suburban: South Nowra
Customer: McLaren

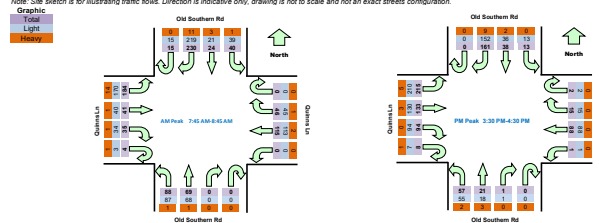
North: Old Southern Rd
East: Quinns Ln
South: Old Southern Rd
West: Quinns Ln

Survey Period: AM: 6:30 AM-8:30 AM
PM: 2:30 PM-4:30 PM
Traffic Peak: AM: 7:45 AM-9:15 AM
PM: 3:30 PM-4:30 PM

All Vehicles		North Approach Old Southern Rd				East Approach Quinns Ln				South Approach Old Southern Rd				West Approach Quinns Ln				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
6:30	6:45	0	41	0	0	0	1	16	0	0	2	19	0	7	5	12	499		
6:45	7:00	0	42	4	0	0	2	24	0	0	0	2	12	0	4	8	20	524	
7:00	7:15	1	40	0	0	0	2	22	0	0	0	5	16	0	4	8	15	612	
7:15	7:30	0	39	3	0	0	2	24	0	0	0	6	21	1	2	9	17	737	
7:30	7:45	0	50	5	1	0	3	30	0	0	0	7	26	0	8	11	28	854	
7:45	8:00	0	46	3	3	0	9	32	0	0	0	18	27	0	9	14	45	891	Peak
8:00	8:15	1	65	4	6	0	9	33	0	0	0	24	23	3	9	8	53	867	
8:15	8:30	10	55	8	17	0	20	28	0	0	0	20	21	1	7	10	44	787	
8:30	8:45	4	64	9	14	0	8	22	0	0	0	7	17	0	10	9	42	684	
8:45	9:00	0	59	5	4	0	1	21	2	0	0	2	13	5	16	21	33		
9:00	9:15	1	41	6	3	0	5	21	0	0	0	3	15	1	13	19	36		
9:15	9:30	0	33	3	1	0	2	19	1	0	0	7	15	4	13	13	27		
14:00	14:15	0	28	6	2	0	2	16	0	0	0	10	10	4	14	20	36	670	
14:15	14:30	0	28	2	1	0	4	17	1	0	1	5	14	1	6	15	31	713	
14:30	14:45	1	24	3	2	0	5	12	1	0	1	9	13	2	11	21	33	753	
14:45	15:00	20	71	18	25	0	3	16	0	0	0	8	13	0	16	19	49	812	
15:00	15:15	2	41	6	9	0	5	13	1	0	0	6	19	1	19	26	43	776	
15:15	15:30	0	37	8	3	0	4	12	0	0	0	4	8	2	21	18	49	806	
15:30	15:45	0	29	13	5	0	3	24	0	0	1	5	17	1	25	33	41	847	Peak
15:45	16:00	0	57	3	2	1	3	19	1	0	0	4	17	1	23	26	65	844	
16:00	16:15	0	45	11	5	1	5	23	0	0	5	11	4	23	38	50	802		
16:15	16:30	0	30	11	1	0	4	22	0	0	0	7	12	2	23	36	59	811	
16:30	16:45	0	34	8	3	0	2	14	0	0	1	6	8	1	20	31	66	750	
16:45	17:00	0	28	12	4	0	1	21	0	0	0	6	11	0	18	27	52	767	
17:00	17:15	1	38	10	6	0	2	11	0	0	0	9	17	0	29	43	64	753	
17:15	17:30	1	50	9	5	0	0	17	0	0	0	5	8	2	21	29	39		
17:30	17:45	0	28	3	2	0	2	17	0	0	1	9	6	0	27	29	47		
17:45	18:00	0	31	5	2	0	3	18	0	0	0	6	14	0	19	28	40		

Peak Time		North Approach Old Southern Rd				East Approach Quinns Ln				South Approach Old Southern Rd				West Approach Quinns Ln				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
7:45	8:45	15	230	24	40	0	46	115	0	0	0	69	88	4	35	41	184	891
15:30	16:30	0	161	38	13	2	15	88	1	0	1	21	57	8	94	133	215	847

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehicles		North Approach Old Southern Rd				East Approach Quinns Ln				South Approach Old Southern Rd				West Approach Quinns Ln				Peak total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L		
6:30	6:45	0	41	0	0	0	1	16	0	0	2	19	0	7	5	12	4		
6:45	7:00	0	37	2	0	0	2	23	0	0	0	2	12	0	4	7	19		
7:00	7:15	1	38	0	0	0	2	22	0	0	0	5	16	0	2	8	13		
7:15	7:30	0	36	3	0	0	2	23	0	0	0	6	21	1	2	8	16		
7:30	7:45	0	47	3	1	0	3	30	0	0	0	6	26	0	7	10	25		
7:45	8:00	0	44	3	2	0	8	32	0	0	0	18	27	0	8	14	40		
8:00	8:15	1	62	3	6	0	9	32	0	0	0	24	23	2	9	7	48		
8:15	8:30	10	51	7	17	0	20	28	0	0	0	20	21	1	7	10	43		
8:30	8:45	4	62	8	14	0	8	21	0	0	0	6	16	0	16	9	29		
8:45	9:00	0	55	4	3	0	1	20	2	0	2	12	5	15	20	29			
9:00	9:15	1	39	5	3	0	5	21	0	0	0	3	14	0	12	19	28		
9:15	9:30	0	32	2	1	0	2	19	1	0	0	6	14	4	12	12	25		
14:00	14:15	0	26	6	2	0	2	16	0	0	0	10	10	4	14	19	35		
14:15	14:30	0	27	2	1	0	4	15	1	0	1	4	14	1	6	15	29		
14:30	14:45	1	23	3	2	0	5	12	1	0	1	9	13	2	11	21	32		
14:45	15:00	20	69	18	25	0	3	16	0	0	0	8	13	0	16	18	47		
15:00	15:15	2	34	6	9	0	5	13	1	0	0	6	19	1	18	25	42		
15:15	15:30	0	35	8	3	0	4	12	0	0	0	3	8	2	21	17	46		
15:30	15:45	0	28	11	5	0	3	24	0	0	1	5	16	1	25	32	41		
15:45	16:00	0	54	3	2	1	3	19	1	0	0	4	16	1	23	26	63		
16:00	16:15	0	42	11	5	1	5	23	0	0	4	11	3	23	36	48			
16:15	16:30	0	28	11	1	0	4	22	0	0	5	12	2	23	36	58			
16:30	16:45	0	32	8	3	0	2	14	0	0	1	6	8	1	20	31	66		
16:45	17:00	0	28	12	4	0	1	21	0	0	5	11	0	18	27	52			
17:00	17:15	1	38	10	6	0	2	11	0	0	7	17	0	29	43	63			
17:15	17:30	1	48	9	5	0	0	17	0	0	4	8	2	21	29	39			
17:30	17:45	0	28	3	2	0	2	17	0	0	1	9	5	0	27	27	47		
17:45	18:00	0	31	5	2	0	3	18	0	0	0	6	14	0	19	28	40		

Heavy Vehicles		North Approach Old Southern Rd				East Approach Quinns Ln				South Approach Old Southern Rd				West Approach Quinns Ln					
Period	Start Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L		
6:30	6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	
6:45	7:00	0	5	2	0	0	0	1	0	0	0	0	0	0	0	0	1	1	
7:00	7:15	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	
7:15	7:30	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	
7:30	7:45	0	3	2	0	0	0	0	0	0	0	1	0	0	1	0	1	3	
7:45	8:00	0	2	0	1	0	1	0	0	0	0	0	0	0	0	1	0	5	
8:00	8:15	0	3	1	0	0	0	1	0	0	0	0	0	0	0	1	0	5	
8:15	8:30	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
8:30	8:45	0	2	1	0	0	0	1	0	0	0	1	1	0	0	0	0	3	
8:45	9:00	0	4	1	1	0	0	1	0	0	0	0	1	0	1	1	1	4	
9:00	9:15	0	2	1	0	0	0	0	0	0	0	0	1	1	1	1	0	2	
9:15	9:30	0	1	1	0	0	0	0	0	0	0	1	1	0	1	1	1	2	
14:00	14:15	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
14:15	14:30	0	1	0	0	0	0	2	0	0	0	1	0	0	0	0	0	2	
14:30	14:45	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
14:45	15:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
15:00	15:15	0	7	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
15:15	15:30	0	2	0	0	0	0	0	0	0	0	1	0	0	0	1	0	3	
15:30	15:45	0	1	2	0	0	0	0	0	0	0	0	1	0	0	1	0	1	
15:45	16:00	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	
16:00	16:15	0	3	0	0	0	0	0	0	0	0	1	0	1	0	1	0	2	
16:15	16:30	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	
16:30	16:45	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16:45	17:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
17:00	17:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	
17:15	17:30	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	
17:30	17:45	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	2	
17:45	18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Peak Time		North Approach Old Southern Rd				East Approach Quinns Ln				South Approach Old Southern Rd				West Approach Quinns Ln				Peak total	
7:45	8:45	0	11	3	1	0	0	1	2	0	0	1	1	1	1	1	1	14	37

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Isa Rd and Old Southern Rd, South Nowra

GPS: -34.900513, 150.617026

Date: Thu 04/09/25
Weather: Fine
Suburban: South Nowra
Customer: McLaren

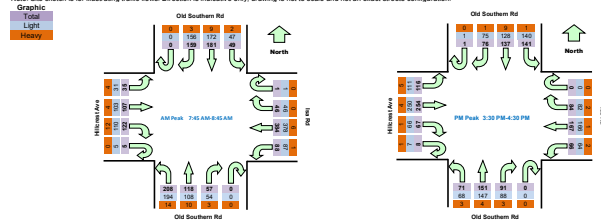
North: Old Southern Rd
East: Isa Rd
South: Old Southern Rd
West: Hillcrest Ave

Survey Period: AM: 6:30 AM-8:30 AM
PM: 2:30 PM-4:30 PM
Traffic Peak: AM: 7:45 AM-8:45 AM
PM: 3:30 PM-4:30 PM

All Vehicles		Time		North Approach Old Southern Rd				East Approach Isa Rd				South Approach Old Southern Rd				West Approach Hillcrest Ave				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak		
6:30	6:45	0	24	19	4	0	5	40	16	0	3	7	11	0	3	9	4	7:28			
6:45	7:00	0	29	33	5	0	5	48	13	1	5	17	15	2	8	16	12	8:28			
7:00	7:15	0	31	23	6	0	9	40	16	0	5	15	16	1	6	9	11	9:61			
7:15	7:30	1	25	25	6	0	4	48	14	0	6	16	15	1	7	11	7	12:01			
7:30	7:45	0	25	34	11	0	10	63	14	0	5	18	23	2	15	16	10	14:51			
7:45	8:00	0	48	42	12	0	11	92	17	0	9	21	38	1	26	19	5	15:60	Peak		
8:00	8:15	0	41	44	11	1	8	106	24	0	12	25	75	0	37	31	13	15:24			
8:15	8:30	0	32	52	14	0	13	99	28	0	16	37	69	3	38	30	5	13:50			
8:30	8:45	0	38	43	12	0	14	87	19	0	20	35	26	1	21	27	12	11:47			
8:45	9:00	2	29	43	15	0	16	54	17	0	9	26	23	0	15	40	16				
9:00	9:15	0	18	40	21	0	19	39	10	0	7	22	6	0	11	42	19				
9:15	9:30	0	28	24	19	0	17	38	10	0	8	24	12	1	6	31	15				
14:00	14:15	0	15	25	27	0	16	30	17	0	16	26	14	2	10	45	22	12:08			
14:15	14:30	0	8	24	25	0	19	55	20	1	10	15	15	0	24	37	16	13:05			
14:30	14:45	0	23	27	22	0	15	55	19	0	11	24	22	1	28	52	12	13:68			
14:45	15:00	0	11	44	14	0	21	51	16	0	22	50	32	0	35	47	20	14:26			
15:00	15:15	0	26	24	32	0	19	39	11	0	17	39	27	3	23	80	22	14:17			
15:15	15:30	0	24	42	30	0	17	38	9	0	20	19	22	0	20	64	27	14:14			
15:30	15:45	0	22	41	39	0	22	44	18	0	17	37	15	1	13	72	28	14:30	Peak		
15:45	16:00	0	17	37	36	0	25	44	23	0	22	35	20	3	21	48	23	14:01			
16:00	16:15	0	21	35	36	0	20	33	15	0	29	35	17	4	19	61	34	13:85			
16:15	16:30	1	16	24	30	0	17	46	10	0	23	44	19	0	14	73	31	13:78			
16:30	16:45	0	9	24	18	0	22	49	22	0	30	37	10	2	21	72	24	13:72			
16:45	17:00	1	15	26	28	1	18	44	14	0	14	40	23	1	22	74	17	13:34			
17:00	17:15	0	21	41	33	1	19	33	13	0	21	40	23	0	14	64	29	12:67			
17:15	17:30	0	11	34	29	0	21	49	17	0	19	33	13	0	24	70	22				
17:30	17:45	2	10	23	27	0	12	41	14	0	20	22	23	0	15	76	17				
17:45	18:00	0	20	18	22	0	17	51	12	0	20	23	8	0	9	52	19				

Peak Time		North Approach Old Southern Rd				East Approach Isa Rd				South Approach Old Southern Rd				West Approach Hillcrest Ave				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
7:45	8:45	0	159	181	49	1	46	384	88	0	57	118	208	5	122	107	35	1560
15:30	16:30	1	76	137	141	0	84	167	66	0	91	151	71	8	67	254	116	1430

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehicles		Time		North Approach Old Southern Rd				East Approach Isa Rd				South Approach Old Southern Rd				West Approach Hillcrest Ave				Peak total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak		
6:30	6:45	0	24	19	4	0	5	40	16	0	3	7	11	0	3	9	4	7:28			
6:45	7:00	0	27	28	5	0	4	45	10	1	4	16	15	2	7	15	10	8:28			
7:00	7:15	0	31	23	5	0	9	39	13	0	5	12	16	1	6	9	8	9:61			
7:15	7:30	0	24	24	5	0	4	45	14	0	5	16	15	0	7	9	6	12:01			
7:30	7:45	0	25	31	10	0	10	61	14	0	5	15	22	1	13	14	9	14:51			
7:45	8:00	0	47	41	12	0	11	90	16	0	9	18	36	1	24	16	4	15:60	Peak		
8:00	8:15	0	41	40	9	1	8	106	24	0	10	23	66	0	31	30	11	15:24			
8:15	8:30	0	32	50	14	0	13	97	28	0	16	34	66	3	35	30	5	13:50			
8:30	8:45	0	36	41	12	0	14	85	19	0	19	33	26	1	26	27	11	11:47			
8:45	9:00	1	28	40	15	0	16	52	17	0	8	25	22	0	13	40	15				
9:00	9:15	0	17	34	20	0	18	37	10	0	7	20	6	0	11	39	19				
9:15	9:30	0	28	22	19	0	17	38	10	0	7	22	11	0	6	29	15				
14:00	14:15	0	15	23	26	0	15	28	17	0	15	25	13	2	10	44	22	12:08			
14:15	14:30	0	8	23	25	0	18	54	20	1	10	14	14	0	24	36	14	13:05			
14:30	14:45	0	23	26	22	0	15	54	19	0	11	24	21	1	27	51	12	13:68			
14:45	15:00	0	11	44	14	0	21	51	16	0	22	48	25	0	29	45	20	14:26			
15:00	15:15	0	25	22	32	0	18	38	11	0	16	39	26	3	17	79	22	14:17			
15:15	15:30	0	23	41	30	0	16	37	9	0	20	19	21	0	18	62	26	14:14			
15:30	15:45	0	22	39	38	0	22	44	18	0	16	36	15	0	12	72	26				
15:45	16:00	0	17	35	36	0	25	43	22	0	20	35	20	3	21	45	21				
16:00	16:15	0	20	32	36	0	18	33	15	0	29	33	16	4	19	61	33				
16:15	16:30	1	16	22	30	0	17	46	9	0	23	43	17	0	14	72	31				
16:30	16:45	0	9	24	18	0	22	49	22	0	30	37	10	2	21	70	24				
16:45	17:00	1	15	26	28	1	18	44	14	0	14	40	23	1	22	73	16				
17:00	17:15	0	21	40	33	1	19	33	13	0	20	39	22	0	14	64	29				
17:15	17:30	0	10	32	28	0	21	48	17	0	19	32	12	0	24	70	22				
17:30	17:45	2	10	23	27	0	12	41	14	0	20	22	23	0	15	76	17				
17:45	18:00	0	19	18	22	0	16	50	12	0	20	22	8	0	9	52	19				

Heavy Vehicles		Time		North Approach Old Southern Rd				East Approach Isa Rd				South Approach Old Southern Rd				West Approach Hillcrest Ave			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L		
6:30	6:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	
6:45	7:00	0	2	5	0	0	1	3	3	0	1	1	0	0	0	1	1	2	
7:00	7:15	0	0	0	1	0	0	1	3	0	0	0	3	0	0	0	0	3	
7:15	7:30	1	1	1	1	0	0	3	0	0	1	0	0	1	0	2	1		
7:30	7:45	0	0	3	1	0	0	2	0	0	0	3	1	1	2	2	1		
7:45	8:00	0	1	1	0	0	0	2	1	0	0	3	2	0	2	3	1		
8:00	8:15	0	0	4	2	0	0	0	0	0	2	2	9	0	6	1	2		
8:15	8:30	0	0	2	0	0	0	0	2	0	0	0	3	3	0	3	0	0	
8:30	8:45	0	2	2	0	0	0	2	0	0	1	2	0	0	1	0	1	0	
8:45	9:00	1	1	3	0	0	0	2	0	0	1	1	1	0	2	0	1		
9:00	9:15	0	1	6	1	0	1	2	0	0	0	2	0	0	0	3	0		
9:15	9:30	0	0	2	0	0	0	0	0	0	1	2	1	1	1	0	2	0	
14:00	14:15	0	0	2	1	0	1	2	0	0	1	1	1	0	0	1	0	1	
14:15	14:30	0	0	1	0	0	1	1	0	0	0	1	1	0	0	1	1	2	
14:30	14:45	0	0	1	0	0	0	1	0	0	0	0	1	0	1	1	1	0	
14:45	15:00	0	0	0	0	0	0	0	0	0	0	2	7	0	6	2	0		
15:00	15:15	0	1	2	0	0	1	1	0	0	1	0	6	1	1	0	1	2	
15:15	15:30	0	1	1	0	0	0	0	0	0	0	0	1	0	2	2	2	1	
15:30	15:45	0	0	2	1	0	0	0	0	0	0	1	1	0	1	1	0	2	
15:45	16:00	0	0	2	0	0	0	1	1	0	2	0	0	0	0	3	2		
16:00	16:15	0	1	3	0	0	2	0	0	0	0	2	1	0	0	0	1	0	
16:15	16:30	0	0	2	0	0	0	0	0	0	0	1	2	0	0	0	1	0	
16:30	16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0		
16:45	17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
17:00	17:15	0	0	1	1	0	0	0	0	0	1	1	1	0	0	0	0	0	
17:15	17:30	0	1	2	1	0	0	0	0	0	0	1	1	0	0	0	0	0	
17:30	17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17:45	18:00	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	
Peak Time	North Approach Old Southern Rd	East Approach Isa Rd	South Approach Old Southern Rd	West Approach Hillcrest Ave	Peak total														
7:45 - 8:45	0	3	9	2	0	0	6	1	0	0	3	10	14	0	12	4	4	68	

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

trafficsurvey.com.au



Intersection of Old Southern Rd and Wattlebird Rd, Sou

GPS -34.914146, 150.611147

Date: Sat 06/09/25
Weather: Fine
Suburban: South Nowra
Customer: McLaren

North: Old Southern Rd
East: Wattlebird Rd
South: Old Southern Rd
West: N/A

Survey AM: 10:00 AM-12:00 PM
Period PM: 12:00 PM-2:00 PM
Traffic AM: 10:30 AM-11:30 AM
Peak PM: 12:30 PM-1:30 PM

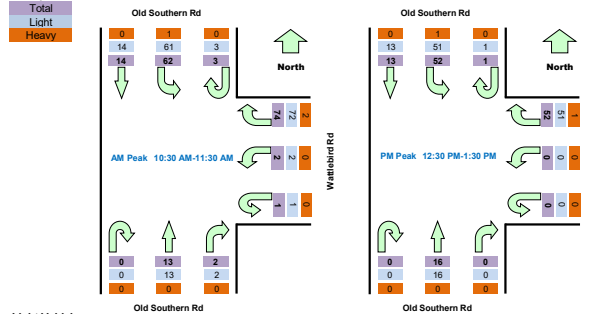
All Vehicles

Time											Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
10:00	10:15	1	4	14	0	22	0	0	0	6	170	
10:15	10:30	0	2	10	0	15	0	0	0	5	166	
10:30	10:45	1	7	21	0	20	0	0	0	5	171	Peak
10:45	11:00	1	2	14	1	16	0	0	0	3	159	
11:00	11:15	1	4	11	0	22	1	0	1	3	161	
11:15	11:30	0	1	16	0	16	1	0	1	2		
11:30	11:45	0	6	11	0	22	0	0	0	3		
11:45	12:00	0	6	12	0	18	0	0	0	3		
12:00	12:15	0	3	13	0	10	1	0	0	2	123	
12:15	12:30	0	3	9	0	8	0	0	0	4	126	
12:30	12:45	0	2	9	0	13	0	0	0	5	134	Peak
12:45	13:00	1	3	18	0	15	0	0	0	4	130	
13:00	13:15	0	5	13	0	10	0	0	0	4	126	
13:15	13:30	0	3	12	0	14	0	0	0	3		
13:30	13:45	0	4	12	0	8	0	0	0	1		
13:45	14:00	0	5	15	0	14	0	0	0	3		

Peak Time		Rth Approach Old Southern			East Approach Wattlebird			Rth Approach Old Southern			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
10:30	11:30	3	14	62	1	74	2	0	2	13	171
12:30	13:30	1	13	52	0	52	0	0	0	16	134

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic



Light Vehicles

Time		rth Approach Old SouthernEast Approach Wattlebird Ruth Approach Old Southern									
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
10:00	10:15	1	4	14	0	22	0	0	0	6	
10:15	10:30	0	2	10	0	14	0	0	0	5	
10:30	10:45	1	7	21	0	20	0	0	0	5	
10:45	11:00	1	2	14	1	16	0	0	0	3	
11:00	11:15	1	4	10	0	22	1	0	1	3	
11:15	11:30	0	1	16	0	14	1	0	1	2	
11:30	11:45	0	6	11	0	22	0	0	0	3	
11:45	12:00	0	6	12	0	18	0	0	0	3	
12:00	12:15	0	3	13	0	10	1	0	0	2	
12:15	12:30	0	3	9	0	7	0	0	0	4	
12:30	12:45	0	2	9	0	13	0	0	0	5	
12:45	13:00	1	3	17	0	15	0	0	0	4	
13:00	13:15	0	5	13	0	10	0	0	0	4	
13:15	13:30	0	3	12	0	13	0	0	0	3	
13:30	13:45	0	4	12	0	8	0	0	0	1	
13:45	14:00	0	5	15	0	14	0	0	0	3	

Peak Time		Rth Approach Old Southern			East Approach Wattlebird			Rth Approach Old Southern			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
10:30	11:30	3	14	61	1	72	2	0	2	13	168
12:30	13:30	1	13	51	0	51	0	0	0	16	132

Heavy Vehicles

Time		Rth Approach Old SouthernEast Approach Wattlebird Rth Approach Old Southern									
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
10:00	10:15	0	0	0	0	0	0	0	0	0	
10:15	10:30	0	0	0	0	1	0	0	0	0	
10:30	10:45	0	0	0	0	0	0	0	0	0	
10:45	11:00	0	0	0	0	0	0	0	0	0	
11:00	11:15	0	0	1	0	0	0	0	0	0	
11:15	11:30	0	0	0	0	2	0	0	0	0	
11:30	11:45	0	0	0	0	0	0	0	0	0	
11:45	12:00	0	0	0	0	0	0	0	0	0	
12:00	12:15	0	0	0	0	0	0	0	0	0	
12:15	12:30	0	0	0	0	1	0	0	0	0	
12:30	12:45	0	0	0	0	0	0	0	0	0	
12:45	13:00	0	0	1	0	0	0	0	0	0	
13:00	13:15	0	0	0	0	0	0	0	0	0	
13:15	13:30	0	0	0	0	1	0	0	0	0	
13:30	13:45	0	0	0	0	0	0	0	0	0	
13:45	14:00	0	0	0	0	0	0	0	0	0	

Peak Time		Rth Approach Old Southern			East Approach Wattlebird			Rth Approach Old Southern			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
10:30	11:30	0	0	1	0	2	0	0	0	0	3
12:30	13:30	0	0	1	0	1	0	0	0	0	2

Intersection of Quinns Ln and Old Southern Rd, South Nowra

GPS -34.909679, 150.612139

Date: Sat 06/09/25
Weather: Fine
Suburban: South Nowra
Customer: McLaren

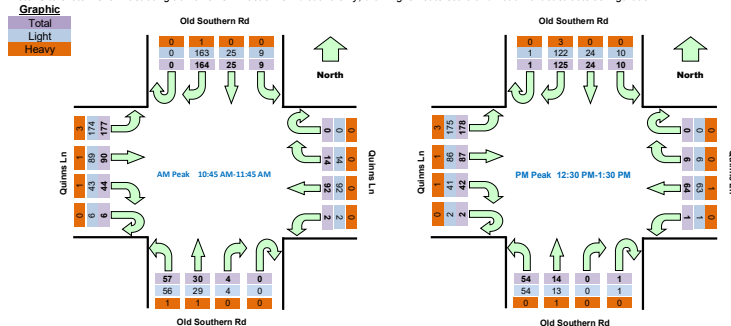
North: Old Southern Rd
East: Quinns Ln
South: Old Southern Rd
West: Quinns Ln

Survey AM: 10:00 AM-12:00 PM
Period PM: 12:00 PM-2:00 PM
Traffic AM: 10:45 AM-11:45 AM
Peak PM: 12:30 PM-1:30 PM

All Vehicles																				
Time			North Approach Old Southern Rd				East Approach Quinns Ln				South Approach Old Southern Rd				West Approach Quinns Ln				Hourly Total	
Period Start	Period End		U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
10:00	10:15		0	41	4	1	0	1	16	1	0	0	8	21	1	15	20	50	700	
10:15	10:30		0	38	5	5	0	2	23	0	0	1	9	10	3	8	21	33	697	
10:30	10:45		0	46	9	4	0	1	17	1	0	0	7	20	2	19	19	38	705	
10:45	11:00		0	54	3	2	0	2	30	0	0	2	4	15	0	15	20	33	714	Peak
11:00	11:15		0	41	7	3	0	5	16	0	0	2	11	14	1	10	27	39	704	
11:15	11:30		0	41	7	1	0	5	19	1	0	0	5	12	2	10	15	48		
11:30	11:45		0	28	8	3	0	2	27	1	0	0	10	16	3	9	28	57		
11:45	12:00		0	47	2	3	0	2	13	1	0	0	6	16	1	15	21	43		
12:00	12:15		0	46	1	1	0	1	11	0	0	0	4	9	0	16	22	51	586	
12:15	12:30		0	37	1	4	0	2	14	0	0	0	6	7	0	12	14	40	580	
12:30	12:45		0	31	6	2	0	1	15	0	1	0	5	12	0	5	21	33	609	Peak
12:45	13:00		0	34	8	2	0	1	10	1	0	0	3	16	0	14	18	48	609	Peak
13:00	13:15		0	24	4	4	0	4	15	0	0	0	2	13	2	13	21	54	588	
13:15	13:30		1	36	6	2	0	0	24	0	0	0	4	13	0	10	27	43		
13:30	13:45		0	34	4	1	0	2	10	0	0	0	3	6	1	13	23	35		
13:45	14:00		1	29	7	2	0	1	14	0	0	0	6	10	0	14	18	32		

Peak Time		North Approach Old Southern Rd				East Approach Quinns Ln				South Approach Old Southern Rd				West Approach Quinns Ln				Peak total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L		
10:45	11:45	0	164	25	9	0	14	92	2	0	4	30	57	6	44	90	177	714	
12:30	13:30	1	125	24	10	0	6	64	1	1	0	14	54	2	42	87	178	609	

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehicles		Old Southern Rd										Old Southern Rd									
Time		North Approach Old Southern Rd					East Approach Quinns Ln					South Approach Old Southern Rd					West Approach Quinns Ln				
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L				
10:00	10:15	0	41	4	1	0	1	16	1	0	0	8	21	1	15	20	50				
10:15	10:30	0	37	5	5	0	2	23	0	0	1	8	10	3	7	21	33				
10:30	10:45	0	45	9	4	0	1	17	1	0	0	7	20	2	19	19	38				
10:45	11:00	0	54	3	2	0	2	30	0	0	2	4	15	0	15	20	32				
11:00	11:15	0	40	7	3	0	5	16	0	0	2	11	14	1	9	27	39				
11:15	11:30	0	41	7	1	0	5	19	1	0	0	4	11	2	10	14	47				
11:30	11:45	0	28	8	3	0	2	27	1	0	0	10	16	3	9	28	56				
11:45	12:00	0	46	2	3	0	2	13	1	0	0	6	16	1	15	21	41				
12:00	12:15	0	45	1	1	0	1	11	0	0	0	4	9	0	16	22	50				
12:15	12:30	0	36	1	4	0	2	14	0	0	0	5	7	0	12	14	39				
12:30	12:45	0	31	6	2	0	1	15	0	1	0	5	12	0	5	20	32				
12:45	13:00	0	33	8	2	0	1	10	1	0	0	3	16	0	13	18	48				
13:00	13:15	0	22	4	4	0	4	14	0	0	0	2	13	2	13	21	54				
13:15	13:30	1	36	6	2	0	0	24	0	0	0	3	13	0	10	27	41				
13:30	13:45	0	33	4	1	0	2	10	0	0	0	3	6	1	13	23	35				
13:45	14:00	1	28	7	2	0	1	14	0	0	0	6	10	0	14	18	32				

Peak Time		North Approach Old Southern Rd				East Approach Quinns Ln				South Approach Old Southern Rd				West Approach Quinns Ln				Peak total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L		
10:45	11:45	0	163	25	9	0	14	92	2	0	4	29	56	6	43	89	174	706	
12:30	13:30	1	122	24	10	0	6	63	1	1	0	13	54	2	41	86	175	599	

Heavy Vehicles		North Approach Old Southern Rd				East Approach Quinns Ln				South Approach Old Southern Rd				West Approach Quinns Ln			
Time		U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
Period Start	Period End																
10:00	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	10:30	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0
10:30	10:45	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:00	11:15	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
11:15	11:30	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1
11:30	11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:45	12:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
12:00	12:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:15	12:30	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1
12:30	12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
12:45	13:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
13:00	13:15	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
13:30	13:45	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	14:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Time		North Approach Old Southern Rd				East Approach Quinns Ln				South Approach Old Southern Rd				West Approach Quinns Ln				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
10:45	11:45	0	1	0	0	0	0	0	0	0	0	1	1	0	1	1	3	8
12:30	13:30	0	3	0	0	0	0	1	0	0	0	1	0	0	1	1	3	10

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

trafficsurvey.com.au



Intersection of Isa Rd and Old Southern Rd, South Nowra

GPS: -34.900513, 150.617026
 Date: Sat 06/09/25
 Weather: Fine
 Suburban: South Nowra
 Customer: McLaren

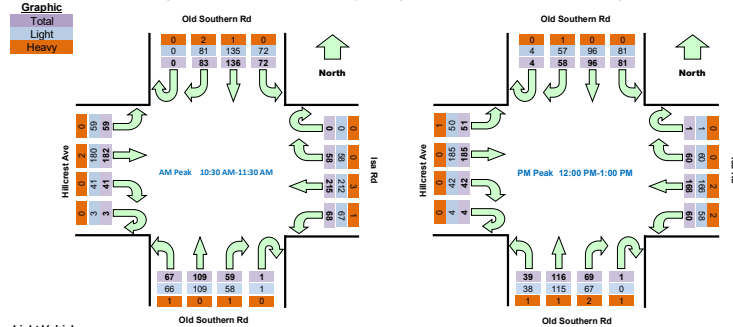
North: Old Southern Rd
 East: Isa Rd
 South: Old Southern Rd
 West: Hillcrest Ave

Survey AM: 10:00 AM-12:00 PM
 Period PM: 12:00 PM-2:00 PM
 Traffic AM: 10:30 AM-11:30 AM
 Peak PM: 12:00 PM-1:00 PM

All Vehicles		Time		North Approach Old Southern Rd				East Approach Isa Rd				South Approach Old Southern Rd				West Approach Hillcrest Ave				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak		
10:00	10:15	0	18	29	16	0	9	41	15	1	21	36	8	2	11	44	11	1122			
10:15	10:30	0	20	20	17	1	16	59	19	1	12	22	19	0	9	41	21	1151			
10:30	10:45	0	19	38	15	0	15	60	22	1	9	27	18	1	12	46	15	1153	Peak		
10:45	11:00	0	20	34	26	0	15	51	15	0	17	22	13	0	12	44	16	1120			
11:00	11:15	0	25	28	13	0	16	57	15	0	21	24	14	0	9	53	16	1116			
11:15	11:30	0	19	36	18	0	12	47	16	0	12	36	22	2	8	39	12				
11:30	11:45	0	16	28	19	0	12	47	10	0	16	40	16	2	10	35	14				
11:45	12:00	0	18	30	25	0	12	44	17	0	16	32	11	1	9	58	8				
12:00	12:15	0	15	28	25	1	19	50	16	1	20	35	9	2	9	36	16	1035	Peak		
12:15	12:30	0	14	24	14	0	12	45	19	0	15	29	14	0	9	42	10	1026			
12:30	12:45	3	12	17	19	0	12	36	16	0	19	26	6	1	8	52	12	1026			
12:45	13:00	1	17	27	23	0	17	37	9	0	15	26	10	1	16	55	13	1025			
13:00	13:15	0	23	22	25	0	11	57	11	0	17	33	13	1	10	38	12	985			
13:15	13:30	0	15	23	27	0	11	43	19	0	13	30	13	1	7	37	8				
13:30	13:45	0	16	28	15	0	23	39	18	0	17	16	7	0	9	39	11				
13:45	14:00	0	16	31	18	0	10	36	14	0	15	21	6	0	14	41	5				

Peak Time		North Approach Old Southern Rd				East Approach Isa Rd				South Approach Old Southern Rd				West Approach Hillcrest Ave				Peak total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L		
10:30	11:30	0	83	136	72	0	58	215	68	1	59	109	67	3	41	182	59	1153	
12:00	13:00	4	58	96	81	1	60	166	60	1	69	116	39	4	42	185	51	1035	

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehicles		Old Southern Rd										Old Southern Rd									
		North Approach Old Southern Rd					East Approach Isa Rd					South Approach Old Southern Rd					West Approach Hillcrest Ave				
Time	Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L			
	10:00	10:15	0	17	29	16	0	9	41	14	1	21	36	8	2	11	43	11			
	10:15	10:30	0	19	20	17	1	16	57	19	1	12	22	19	0	9	40	21			
	10:30	10:45	0	18	37	15	0	15	59	22	1	9	27	18	1	12	46	15			
	10:45	11:00	0	19	34	26	0	15	50	15	0	17	22	13	0	12	44	16			
	11:00	11:15	0	25	28	13	0	16	57	14	0	20	24	14	0	9	51	16			
	11:15	11:30	0	19	36	18	0	12	46	16	0	12	36	21	2	8	39	12			
	11:30	11:45	0	16	28	19	0	12	47	10	0	16	40	16	2	10	35	14			
	11:45	12:00	0	18	29	25	0	11	44	17	0	16	32	11	1	9	58	8			
	12:00	12:15	0	14	28	25	1	19	49	15	0	19	34	9	2	9	36	16			
	12:15	12:30	0	14	24	14	0	12	44	19	0	15	29	13	0	9	42	9			
	12:30	12:45	3	12	17	19	0	12	36	16	0	18	26	6	1	8	52	12			
	12:45	13:00	1	17	27	23	0	17	37	8	0	15	26	10	1	16	55	13			
	13:00	13:15	0	23	22	25	0	11	57	10	0	17	33	13	1	10	38	12			
	13:15	13:30	0	15	23	27	0	11	43	19	0	13	29	12	1	7	37	8			
	13:30	13:45	0	16	27	15	0	23	39	18	0	17	16	7	0	9	39	11			
	13:45	14:00	0	16	31	18	0	10	36	14	0	15	21	6	0	14	40	5			

Peak Time		North Approach Old Southern Rd				East Approach Isa Rd				South Approach Old Southern Rd				West Approach Hillcrest Ave				Peak total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L		
10:30	11:30	0	81	135	72	0	58	212	67	1	58	109	66	3	41	180	59	1142	
12:00	13:00	4	57	96	81	1	60	166	58	0	67	115	38	4	42	185	50	1024	

Heavy Vehicles		North Approach Old Southern Rd				East Approach Isa Rd				South Approach Old Southern Rd				West Approach Hillcrest Ave			
Time		U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
Period Start	Period End																
10:00	10:15	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0
10:15	10:30	0	1	0	0	0	0	2	0	0	0	0	0	0	0	1	0
10:30	10:45	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
10:45	11:00	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
11:00	11:15	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2	0
11:15	11:30	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	12:00	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
12:00	12:15	0	1	0	0	0	0	1	1	1	1	1	0	0	0	0	0
12:15	12:30	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1
12:30	12:45	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
13:30	13:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

Peak Time		North Approach Old Southern Rd				East Approach Isa Rd				South Approach Old Southern Rd				West Approach Hillcrest Ave				Peak total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L		
10:30	11:30	0	2	1	0	0	0	3	1	0	1	0	1	0	0	2	0	11	
12:00	13:00	0	1	0	0	0	0	2	2	1	2	1	1	0	0	0	1	11	



**ANNEXURE C: PRE-DEVELOPMENT SIDRA RESULTS
(2025; 2025+TWINS ESTATE; 2035+TWINS ESTATE)
(36 SHEETS)**

MOVEMENT SUMMARY

 **Site: [01EXAM] 01EXAM(2025) - Old Southern Rd / Casa Cct**
(Existing (2025))

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Existing 2025 AM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[%]	[Total HV]	[%]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	3	33.3	3	33.3	0.004	3.5	LOS A	0.0	0.2	0.09	0.49	0.09	45.6
3	R2	All MCs	1	0.0	1	0.0	0.004	7.1	LOS A	0.0	0.2	0.09	0.49	0.09	45.3
3u	U	All MCs	1	0.0	1	0.0	0.004	8.8	LOS A	0.0	0.2	0.09	0.49	0.09	45.3
Approach			5	20.0	5	20.0	0.004	5.3	LOS A	0.0	0.2	0.09	0.49	0.09	45.5
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.013	3.2	LOS A	0.1	0.4	0.04	0.61	0.04	44.9
6	R2	All MCs	17	0.0	17	0.0	0.013	7.1	LOS A	0.1	0.4	0.04	0.61	0.04	44.6
6u	U	All MCs	1	0.0	1	0.0	0.013	8.7	LOS A	0.1	0.4	0.04	0.61	0.04	44.6
Approach			19	0.0	19	0.0	0.013	6.9	LOS A	0.1	0.4	0.04	0.61	0.04	44.7
North: Old Southern Road (N)															
7	L2	All MCs	11	0.0	11	0.0	0.010	3.2	LOS A	0.0	0.3	0.03	0.46	0.03	46.7
8	T1	All MCs	2	50.0	2	50.0	0.010	3.5	LOS A	0.0	0.3	0.03	0.46	0.03	46.6
9u	U	All MCs	1	0.0	1	0.0	0.010	8.7	LOS A	0.0	0.3	0.03	0.46	0.03	46.4
Approach			14	7.7	14	7.7	0.010	3.7	LOS A	0.0	0.3	0.03	0.46	0.03	46.7
All Vehicles			38	5.6	38	5.6	0.013	5.5	LOS A	0.1	0.4	0.04	0.54	0.04	45.5

Site Level of Service (LOS) Method: Delay (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: [01EXPM] 01EXPM(2025) - Old Southern Rd / Casa Cct**
(Existing (2025))

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Existing 2025 PM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand		Arrival		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			Flows		Flows					[Veh. Dist]					
			[Total HV]	[Total HV]	[Veh.	Dist]									
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	1	0.0	1	0.0	0.002	3.3	LOS A	0.0	0.1	0.10	0.56	0.10	45.4
3	R2	All MCs	1	0.0	1	0.0	0.002	7.1	LOS A	0.0	0.1	0.10	0.56	0.10	44.9
3u	U	All MCs	1	0.0	1	0.0	0.002	8.8	LOS A	0.0	0.1	0.10	0.56	0.10	44.9
Approach			3	0.0	3	0.0	0.002	6.4	LOS A	0.0	0.1	0.10	0.56	0.10	45.0
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.017	3.3	LOS A	0.1	0.5	0.13	0.58	0.13	44.7
6	R2	All MCs	19	5.6	19	5.6	0.017	7.3	LOS A	0.1	0.5	0.13	0.58	0.13	44.4
6u	U	All MCs	1	0.0	1	0.0	0.017	8.8	LOS A	0.1	0.5	0.13	0.58	0.13	44.5
Approach			21	5.0	21	5.0	0.017	7.1	LOS A	0.1	0.5	0.13	0.58	0.13	44.4
North: Old Southern Road (N)															
7	L2	All MCs	2	0.0	2	0.0	0.023	3.2	LOS A	0.1	0.7	0.03	0.39	0.03	46.9
8	T1	All MCs	32	0.0	32	0.0	0.023	3.2	LOS A	0.1	0.7	0.03	0.39	0.03	47.2
9u	U	All MCs	1	0.0	1	0.0	0.023	8.7	LOS A	0.1	0.7	0.03	0.39	0.03	46.6
Approach			35	0.0	35	0.0	0.023	3.4	LOS A	0.1	0.7	0.03	0.39	0.03	47.1
All Vehicles			59	1.8	59	1.8	0.023	4.9	LOS A	0.1	0.7	0.07	0.46	0.07	46.0

Site Level of Service (LOS) Method: Delay (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: [01EXSAT] 01EXSAT(2025) - Old Southern Rd / Casa**

Cct (Existing (2025))

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Existing 2025 SAT
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	2	0.0	2	0.0	0.003	3.2	LOS A	0.0	0.1	0.06	0.53	0.06	45.9
3	R2	All MCs	1	0.0	1	0.0	0.003	7.1	LOS A	0.0	0.1	0.06	0.53	0.06	45.3
3u	U	All MCs	1	0.0	1	0.0	0.003	8.7	LOS A	0.0	0.1	0.06	0.53	0.06	45.3
Approach			4	0.0	4	0.0	0.003	5.6	LOS A	0.0	0.1	0.06	0.53	0.06	45.6
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.006	3.2	LOS A	0.0	0.2	0.05	0.63	0.05	44.5
6	R2	All MCs	1	0.0	1	0.0	0.006	7.1	LOS A	0.0	0.2	0.05	0.63	0.05	44.2
6u	U	All MCs	6	0.0	6	0.0	0.006	8.7	LOS A	0.0	0.2	0.05	0.63	0.05	44.2
Approach			8	0.0	8	0.0	0.006	7.8	LOS A	0.0	0.2	0.05	0.63	0.05	44.2
North: Old Southern Road (N)															
7	L2	All MCs	15	0.0	15	0.0	0.015	3.2	LOS A	0.1	0.5	0.05	0.48	0.05	46.5
8	T1	All MCs	2	0.0	2	0.0	0.015	3.2	LOS A	0.1	0.5	0.05	0.48	0.05	46.7
9u	U	All MCs	3	0.0	3	0.0	0.015	8.7	LOS A	0.1	0.5	0.05	0.48	0.05	46.1
Approach			20	0.0	20	0.0	0.015	4.1	LOS A	0.1	0.5	0.05	0.48	0.05	46.4
All Vehicles			33	0.0	33	0.0	0.015	5.2	LOS A	0.1	0.5	0.05	0.53	0.05	45.7

Site Level of Service (LOS) Method: Delay (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: [02EXAM] 02EXAM(2025) - Old Southern Rd / Wattlebird Rd (Existing (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Existing 2025 AM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	Dist]				km/h
South: Old Southern Road (S)															
2	T1	All MCs	18	0.0	18	0.0	0.018	3.9	LOS A	0.1	0.6	0.30	0.43	0.30	46.2
3	R2	All MCs	1	0.0	1	0.0	0.018	7.7	LOS A	0.1	0.6	0.30	0.43	0.30	45.6
3u	U	All MCs	1	0.0	1	0.0	0.018	9.3	LOS A	0.1	0.6	0.30	0.43	0.30	45.6
Approach			20	0.0	20	0.0	0.018	4.4	LOS A	0.1	0.6	0.30	0.43	0.30	46.1
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.104	3.3	LOS A	0.5	3.6	0.09	0.60	0.09	44.8
6	R2	All MCs	148	0.7	148	0.7	0.104	7.1	LOS A	0.5	3.6	0.09	0.60	0.09	44.5
6u	U	All MCs	1	0.0	1	0.0	0.104	8.7	LOS A	0.5	3.6	0.09	0.60	0.09	44.5
Approach			151	0.7	151	0.7	0.104	7.1	LOS A	0.5	3.6	0.09	0.60	0.09	44.5
North: Old Southern Road (N)															
7	L2	All MCs	38	16.7	38	16.7	0.038	3.4	LOS A	0.2	1.4	0.03	0.47	0.03	46.4
8	T1	All MCs	13	0.0	13	0.0	0.038	3.2	LOS A	0.2	1.4	0.03	0.47	0.03	46.9
9u	U	All MCs	5	0.0	5	0.0	0.038	8.6	LOS A	0.2	1.4	0.03	0.47	0.03	46.3
Approach			56	11.3	56	11.3	0.038	3.8	LOS A	0.2	1.4	0.03	0.47	0.03	46.5
All Vehicles			226	3.3	226	3.3	0.104	6.0	LOS A	0.5	3.6	0.10	0.55	0.10	45.1

Site Level of Service (LOS) Method: Delay (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: [02EXPM] 02EXPM(2025) - Old Southern Rd / Wattlebird Rd (Existing (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Existing 2025 PM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand		Arrival		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			Flows		Flows					[Veh.]	Dist]				
			[Total HV] veh/h	[%]	[Total HV] veh/h	[%]									v/c
South: Old Southern Road (S)															
2	T1	All MCs	21	5.0	21	5.0	0.019	3.6	LOS A	0.1	0.6	0.19	0.40	0.19	46.5
3	R2	All MCs	1	0.0	1	0.0	0.019	7.3	LOS A	0.1	0.6	0.19	0.40	0.19	45.9
3u	U	All MCs	1	0.0	1	0.0	0.019	8.9	LOS A	0.1	0.6	0.19	0.40	0.19	45.9
Approach			23	4.5	23	4.5	0.019	4.0	LOS A	0.1	0.6	0.19	0.40	0.19	46.4
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.049	3.4	LOS A	0.2	1.7	0.14	0.58	0.14	44.7
6	R2	All MCs	58	9.1	58	9.1	0.049	7.3	LOS A	0.2	1.7	0.14	0.58	0.14	44.3
6u	U	All MCs	1	0.0	1	0.0	0.049	8.8	LOS A	0.2	1.7	0.14	0.58	0.14	44.4
Approach			60	8.8	60	8.8	0.049	7.2	LOS A	0.2	1.7	0.14	0.58	0.14	44.3
North: Old Southern Road (N)															
7	L2	All MCs	102	2.1	102	2.1	0.087	3.3	LOS A	0.4	3.1	0.03	0.45	0.03	46.8
8	T1	All MCs	34	0.0	34	0.0	0.087	3.2	LOS A	0.4	3.1	0.03	0.45	0.03	47.1
9u	U	All MCs	4	0.0	4	0.0	0.087	8.6	LOS A	0.4	3.1	0.03	0.45	0.03	46.5
Approach			140	1.5	140	1.5	0.087	3.4	LOS A	0.4	3.1	0.03	0.45	0.03	46.9
All Vehicles			223	3.8	223	3.8	0.087	4.5	LOS A	0.4	3.1	0.08	0.48	0.08	46.1

Site Level of Service (LOS) Method: Delay (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: [02EXSAT] 02EXSAT(2025) - Old Southern Rd / Wattlebird Rd (Existing (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Existing 2025 AT
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec							
South: Old Southern Road (S)															
2	T1	All MCs	14	0.0	14	0.0	0.014	3.5	LOS A	0.1	0.4	0.18	0.43	0.18	46.4
3	R2	All MCs	2	0.0	2	0.0	0.014	7.3	LOS A	0.1	0.4	0.18	0.43	0.18	45.8
3u	U	All MCs	1	0.0	1	0.0	0.014	8.9	LOS A	0.1	0.4	0.18	0.43	0.18	45.8
Approach			17	0.0	17	0.0	0.014	4.3	LOS A	0.1	0.4	0.18	0.43	0.18	46.3
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.042	3.3	LOS A	0.2	1.4	0.09	0.60	0.09	44.8
6	R2	All MCs	55	1.9	55	1.9	0.042	7.1	LOS A	0.2	1.4	0.09	0.60	0.09	44.5
6u	U	All MCs	1	0.0	1	0.0	0.042	8.7	LOS A	0.2	1.4	0.09	0.60	0.09	44.5
Approach			57	1.9	57	1.9	0.042	7.1	LOS A	0.2	1.4	0.09	0.60	0.09	44.5
North: Old Southern Road (N)															
7	L2	All MCs	65	1.6	65	1.6	0.054	3.3	LOS A	0.3	1.8	0.04	0.45	0.04	46.8
8	T1	All MCs	15	0.0	15	0.0	0.054	3.2	LOS A	0.3	1.8	0.04	0.45	0.04	47.1
9u	U	All MCs	3	0.0	3	0.0	0.054	8.6	LOS A	0.3	1.8	0.04	0.45	0.04	46.5
Approach			83	1.3	83	1.3	0.054	3.5	LOS A	0.3	1.8	0.04	0.45	0.04	46.8
All Vehicles			157	1.3	157	1.3	0.054	4.9	LOS A	0.3	1.8	0.07	0.50	0.07	45.9

Site Level of Service (LOS) Method: Delay (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: [03EXAM] 03EXAM(2025) - Old Southern Rd / Quinns Ln**
(Existing (2025))

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
South Nowra, NSW - MTE Project No. 250613
Existing 2025 AM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[%]	[Total HV]	[%]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	93	1.1	93	1.1	0.172	5.2	LOS A	0.8	5.6	0.48	0.57	0.48	48.8
2	T1	All MCs	73	1.4	73	1.4	0.172	5.1	LOS A	0.8	5.6	0.48	0.57	0.48	45.9
3	R2	All MCs	1	0.0	1	0.0	0.172	8.9	LOS A	0.8	5.6	0.48	0.57	0.48	45.4
3u	U	All MCs	1	0.0	1	0.0	0.172	10.5	LOS A	0.8	5.6	0.48	0.57	0.48	45.4
Approach			167	1.3	167	1.3	0.172	5.2	LOS A	0.8	5.6	0.48	0.57	0.48	47.5
East: Quinns Lane (E)															
4	L2	All MCs	1	0.0	1	0.0	0.177	5.2	LOS A	0.9	6.7	0.50	0.57	0.50	45.1
5	T1	All MCs	121	1.7	121	1.7	0.177	5.2	LOS A	0.9	6.7	0.50	0.57	0.50	48.4
6	R2	All MCs	48	2.2	48	2.2	0.177	9.0	LOS A	0.9	6.7	0.50	0.57	0.50	44.7
6u	U	All MCs	1	0.0	1	0.0	0.177	10.5	LOS A	0.9	6.7	0.50	0.57	0.50	44.8
Approach			172	1.8	172	1.8	0.177	6.3	LOS A	0.9	6.7	0.50	0.57	0.50	47.3
North: Old Southern Road (N)															
7	L2	All MCs	42	2.5	42	2.5	0.250	3.7	LOS A	1.1	7.7	0.20	0.57	0.20	44.8
8	T1	All MCs	25	12.5	25	12.5	0.250	3.6	LOS A	1.1	7.7	0.20	0.57	0.20	45.0
9	R2	All MCs	242	4.8	242	4.8	0.250	7.3	LOS A	1.1	7.7	0.20	0.57	0.20	47.4
9u	U	All MCs	16	0.0	16	0.0	0.250	8.9	LOS A	1.1	7.7	0.20	0.57	0.20	44.6
Approach			325	4.9	325	4.9	0.250	6.7	LOS A	1.1	7.7	0.20	0.57	0.20	46.7
West: Quinns Lane (W)															
10	L2	All MCs	194	7.6	194	7.6	0.235	5.0	LOS A	1.1	8.1	0.29	0.54	0.29	49.0
11	T1	All MCs	43	2.4	43	2.4	0.235	5.0	LOS A	1.1	8.1	0.29	0.54	0.29	49.5
12	R2	All MCs	37	2.9	37	2.9	0.235	8.8	LOS A	1.1	8.1	0.29	0.54	0.29	48.8
12u	U	All MCs	4	25.0	4	25.0	0.235	11.0	LOS A	1.1	8.1	0.29	0.54	0.29	51.5
Approach			278	6.4	278	6.4	0.235	5.6	LOS A	1.1	8.1	0.29	0.54	0.29	49.1
All Vehicles			942	4.1	942	4.1	0.250	6.0	LOS A	1.1	8.1	0.33	0.56	0.33	47.6

Site Level of Service (LOS) Method: Delay (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: [03EXPM] 03EXPM(2025) - Old Southern Rd / Quinns Ln**
(Existing (2025))
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
South Nowra, NSW - MTE Project No. 250613
Existing 2025 PM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[%]	[Total HV]	[%]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	60	3.5	60	3.5	0.081	4.5	LOS A	0.3	2.5	0.37	0.52	0.37	49.1
2	T1	All MCs	22	14.3	22	14.3	0.081	4.5	LOS A	0.3	2.5	0.37	0.52	0.37	46.2
3	R2	All MCs	1	0.0	1	0.0	0.081	8.1	LOS A	0.3	2.5	0.37	0.52	0.37	45.7
3u	U	All MCs	1	0.0	1	0.0	0.081	9.7	LOS A	0.3	2.5	0.37	0.52	0.37	45.7
Approach			84	6.2	84	6.2	0.081	4.6	LOS A	0.3	2.5	0.37	0.52	0.37	48.2
East: Quinns Lane (E)															
4	L2	All MCs	1	0.0	1	0.0	0.113	5.0	LOS A	0.6	4.1	0.48	0.54	0.48	45.3
5	T1	All MCs	93	0.0	93	0.0	0.113	5.0	LOS A	0.6	4.1	0.48	0.54	0.48	48.8
6	R2	All MCs	16	0.0	16	0.0	0.113	8.8	LOS A	0.6	4.1	0.48	0.54	0.48	45.0
6u	U	All MCs	2	0.0	2	0.0	0.113	10.4	LOS A	0.6	4.1	0.48	0.54	0.48	45.0
Approach			112	0.0	112	0.0	0.113	5.6	LOS A	0.6	4.1	0.48	0.54	0.48	48.1
North: Old Southern Road (N)															
7	L2	All MCs	14	0.0	14	0.0	0.203	4.3	LOS A	0.8	5.9	0.33	0.61	0.33	44.7
8	T1	All MCs	40	5.3	40	5.3	0.203	4.2	LOS A	0.8	5.9	0.33	0.61	0.33	44.9
9	R2	All MCs	169	5.6	169	5.6	0.203	8.0	LOS A	0.8	5.9	0.33	0.61	0.33	47.2
9u	U	All MCs	1	0.0	1	0.0	0.203	9.5	LOS A	0.8	5.9	0.33	0.61	0.33	44.4
Approach			224	5.2	224	5.2	0.203	7.1	LOS A	0.8	5.9	0.33	0.61	0.33	46.6
West: Quinns Lane (W)															
10	L2	All MCs	226	2.3	226	2.3	0.331	4.5	LOS A	1.7	12.3	0.16	0.52	0.16	49.2
11	T1	All MCs	143	2.2	143	2.2	0.331	4.6	LOS A	1.7	12.3	0.16	0.52	0.16	49.6
12	R2	All MCs	99	0.0	99	0.0	0.331	8.4	LOS A	1.7	12.3	0.16	0.52	0.16	49.0
12u	U	All MCs	8	12.5	8	12.5	0.331	10.4	LOS A	1.7	12.3	0.16	0.52	0.16	52.1
Approach			477	2.0	477	2.0	0.331	5.4	LOS A	1.7	12.3	0.16	0.52	0.16	49.3
All Vehicles			897	2.9	897	2.9	0.331	5.8	LOS A	1.7	12.3	0.26	0.54	0.26	48.4

Site Level of Service (LOS) Method: Delay (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: [03EXSAT] 03EXSAT(2025) - Old Southern Rd / Quinns Ln (Existing (2025))

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
South Nowra, NSW - MTE Project No. 250613
Existing 2025 SAT
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Veh.]	Dist]									
			veh/h	%	veh/h	%				v/c	sec				veh
South: Old Southern Road (S)															
1	L2	All MCs	60	1.8	60	1.8	0.091	4.5	LOS A	0.4	2.7	0.37	0.52	0.37	49.1
2	T1	All MCs	32	3.3	32	3.3	0.091	4.4	LOS A	0.4	2.7	0.37	0.52	0.37	46.2
3	R2	All MCs	4	0.0	4	0.0	0.091	8.1	LOS A	0.4	2.7	0.37	0.52	0.37	45.7
3u	U	All MCs	1	0.0	1	0.0	0.091	9.7	LOS A	0.4	2.7	0.37	0.52	0.37	45.7
Approach			97	2.2	97	2.2	0.091	4.6	LOS A	0.4	2.7	0.37	0.52	0.37	47.9
East: Quinns Lane (E)															
4	L2	All MCs	2	0.0	2	0.0	0.110	4.6	LOS A	0.6	3.9	0.42	0.50	0.42	45.6
5	T1	All MCs	97	0.0	97	0.0	0.110	4.6	LOS A	0.6	3.9	0.42	0.50	0.42	49.0
6	R2	All MCs	15	0.0	15	0.0	0.110	8.4	LOS A	0.6	3.9	0.42	0.50	0.42	45.3
6u	U	All MCs	1	0.0	1	0.0	0.110	10.0	LOS A	0.6	3.9	0.42	0.50	0.42	45.3
Approach			115	0.0	115	0.0	0.110	5.1	LOS A	0.6	3.9	0.42	0.50	0.42	48.4
North: Old Southern Road (N)															
7	L2	All MCs	9	0.0	9	0.0	0.173	3.9	LOS A	0.6	4.6	0.24	0.59	0.24	44.7
8	T1	All MCs	26	0.0	26	0.0	0.173	3.7	LOS A	0.6	4.6	0.24	0.59	0.24	45.0
9	R2	All MCs	173	0.6	173	0.6	0.173	7.5	LOS A	0.6	4.6	0.24	0.59	0.24	47.4
9u	U	All MCs	1	0.0	1	0.0	0.173	9.1	LOS A	0.6	4.6	0.24	0.59	0.24	44.5
Approach			209	0.5	209	0.5	0.173	6.9	LOS A	0.6	4.6	0.24	0.59	0.24	47.0
West: Quinns Lane (W)															
10	L2	All MCs	186	1.7	186	1.7	0.241	4.5	LOS A	1.1	8.1	0.17	0.51	0.17	49.4
11	T1	All MCs	95	1.1	95	1.1	0.241	4.6	LOS A	1.1	8.1	0.17	0.51	0.17	49.8
12	R2	All MCs	46	2.3	46	2.3	0.241	8.4	LOS A	1.1	8.1	0.17	0.51	0.17	49.1
12u	U	All MCs	6	0.0	6	0.0	0.241	10.2	LOS A	1.1	8.1	0.17	0.51	0.17	52.8
Approach			334	1.6	334	1.6	0.241	5.2	LOS A	1.1	8.1	0.17	0.51	0.17	49.5
All Vehicles			755	1.1	755	1.1	0.241	5.6	LOS A	1.1	8.1	0.25	0.53	0.25	48.4

Site Level of Service (LOS) Method: Delay (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: [04EXAM] 04EXAM(2025) - Old Southern Rd / Hillcrest Ave / Isa Rd (Existing (2025))**

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Existing 2025 AM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[%]	[Total HV]	[%]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	219	6.7	219	6.7	0.570	10.6	LOS A	5.0	37.1	0.87	0.85	1.06	45.3
2	T1	All MCs	124	8.5	124	8.5	0.570	10.6	LOS A	5.0	37.1	0.87	0.85	1.06	45.6
3	R2	All MCs	60	5.3	60	5.3	0.570	14.2	LOS A	5.0	37.1	0.87	0.85	1.06	42.4
3u	U	All MCs	1	0.0	1	0.0	0.570	15.5	LOS B	5.0	37.1	0.87	0.85	1.06	42.4
Approach			404	7.0	404	7.0	0.570	11.2	LOS A	5.0	37.1	0.87	0.85	1.06	44.9
East: Isa Road (E)															
4	L2	All MCs	93	1.1	93	1.1	0.625	9.2	LOS A	5.8	41.4	0.81	0.80	0.99	43.3
5	T1	All MCs	404	1.6	404	1.6	0.625	9.2	LOS A	5.8	41.4	0.81	0.80	0.99	46.5
6	R2	All MCs	48	0.0	48	0.0	0.625	12.7	LOS A	5.8	41.4	0.81	0.80	0.99	45.9
6u	U	All MCs	1	0.0	1	0.0	0.625	14.3	LOS A	5.8	41.4	0.81	0.80	0.99	43.1
Approach			546	1.3	546	1.3	0.625	9.5	LOS A	5.8	41.4	0.81	0.80	0.99	45.9
North: Old Southern Road (N)															
7	L2	All MCs	52	4.1	52	4.1	0.408	6.4	LOS A	2.5	18.3	0.57	0.63	0.57	47.6
8	T1	All MCs	191	5.0	191	5.0	0.408	6.7	LOS A	2.5	18.3	0.57	0.63	0.57	47.9
9	R2	All MCs	167	1.9	167	1.9	0.408	10.2	LOS A	2.5	18.3	0.57	0.63	0.57	50.6
9u	U	All MCs	1	0.0	1	0.0	0.408	11.9	LOS A	2.5	18.3	0.57	0.63	0.57	50.7
Approach			411	3.6	411	3.6	0.408	8.1	LOS A	2.5	18.3	0.57	0.63	0.57	48.9
West: Hillcrest Avenue (W)															
10	L2	All MCs	37	11.4	37	11.4	0.278	5.8	LOS A	1.6	12.1	0.48	0.60	0.48	51.0
11	T1	All MCs	113	3.7	113	3.7	0.278	5.9	LOS A	1.6	12.1	0.48	0.60	0.48	48.1
12	R2	All MCs	128	9.8	128	9.8	0.278	9.7	LOS A	1.6	12.1	0.48	0.60	0.48	47.4
12u	U	All MCs	5	0.0	5	0.0	0.278	11.2	LOS A	1.6	12.1	0.48	0.60	0.48	51.0
Approach			283	7.4	283	7.4	0.278	7.7	LOS A	1.6	12.1	0.48	0.60	0.48	48.2
All Vehicles			1644	4.4	1644	4.4	0.625	9.3	LOS A	5.8	41.4	0.71	0.74	0.81	46.7

Site Level of Service (LOS) Method: Delay (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: [04EXPM] 04EXPM(2025) - Old Southern Rd / Hillcrest Ave / Isa Rd (Existing (2025))**

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Existing 2025 PM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	75	4.2	75	4.2	0.346	5.7	LOS A	2.1	15.1	0.58	0.61	0.58	47.7
2	T1	All MCs	159	2.6	159	2.6	0.346	5.6	LOS A	2.1	15.1	0.58	0.61	0.58	48.1
3	R2	All MCs	96	3.3	96	3.3	0.346	9.3	LOS A	2.1	15.1	0.58	0.61	0.58	44.5
3u	U	All MCs	1	0.0	1	0.0	0.346	10.8	LOS A	2.1	15.1	0.58	0.61	0.58	44.6
Approach			331	3.2	331	3.2	0.346	6.7	LOS A	2.1	15.1	0.58	0.61	0.58	46.9
East: Isa Road (E)															
4	L2	All MCs	69	3.0	69	3.0	0.331	5.3	LOS A	2.0	14.0	0.54	0.58	0.54	44.9
5	T1	All MCs	176	0.6	176	0.6	0.331	5.2	LOS A	2.0	14.0	0.54	0.58	0.54	48.3
6	R2	All MCs	88	2.4	88	2.4	0.331	8.8	LOS A	2.0	14.0	0.54	0.58	0.54	47.6
6u	U	All MCs	1	0.0	1	0.0	0.331	10.3	LOS A	2.0	14.0	0.54	0.58	0.54	44.7
Approach			335	1.6	335	1.6	0.331	6.2	LOS A	2.0	14.0	0.54	0.58	0.54	47.4
North: Old Southern Road (N)															
7	L2	All MCs	148	0.7	148	0.7	0.418	7.2	LOS A	2.7	19.2	0.67	0.67	0.67	47.6
8	T1	All MCs	144	6.6	144	6.6	0.418	7.6	LOS A	2.7	19.2	0.67	0.67	0.67	47.9
9	R2	All MCs	80	1.3	80	1.3	0.418	11.0	LOS A	2.7	19.2	0.67	0.67	0.67	50.7
9u	U	All MCs	1	0.0	1	0.0	0.418	12.8	LOS A	2.7	19.2	0.67	0.67	0.67	50.8
Approach			374	3.1	374	3.1	0.418	8.2	LOS A	2.7	19.2	0.67	0.67	0.67	48.4
West: Hillcrest Avenue (W)															
10	L2	All MCs	122	4.3	122	4.3	0.475	6.7	LOS A	3.2	22.7	0.63	0.63	0.63	51.3
11	T1	All MCs	267	1.6	267	1.6	0.475	6.9	LOS A	3.2	22.7	0.63	0.63	0.63	48.2
12	R2	All MCs	71	1.5	71	1.5	0.475	10.5	LOS A	3.2	22.7	0.63	0.63	0.63	47.6
12u	U	All MCs	8	12.5	8	12.5	0.475	12.7	LOS A	3.2	22.7	0.63	0.63	0.63	50.6
Approach			468	2.5	468	2.5	0.475	7.5	LOS A	3.2	22.7	0.63	0.63	0.63	48.9
All Vehicles			1507	2.6	1507	2.6	0.475	7.2	LOS A	3.2	22.7	0.61	0.63	0.61	48.0

Site Level of Service (LOS) Method: Delay (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: [04EXSAT] 04EXSAT(2025) - Old Southern Rd / Hillcrest Ave / Isa Rd (Existing (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Existing 2025 SAT
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[%]	[Total HV]	[%]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	71	1.5	71	1.5	0.260	5.6	LOS A	1.5	10.5	0.56	0.60	0.56	48.0
2	T1	All MCs	115	0.0	115	0.0	0.260	5.5	LOS A	1.5	10.5	0.56	0.60	0.56	48.4
3	R2	All MCs	62	1.7	62	1.7	0.260	9.2	LOS A	1.5	10.5	0.56	0.60	0.56	44.7
3u	U	All MCs	1	0.0	1	0.0	0.260	10.8	LOS A	1.5	10.5	0.56	0.60	0.56	44.7
Approach			248	0.8	248	0.8	0.260	6.5	LOS A	1.5	10.5	0.56	0.60	0.56	47.3
East: Isa Road (E)															
4	L2	All MCs	72	1.5	72	1.5	0.343	5.1	LOS A	2.0	14.4	0.51	0.55	0.51	45.1
5	T1	All MCs	226	1.4	226	1.4	0.343	5.0	LOS A	2.0	14.4	0.51	0.55	0.51	48.6
6	R2	All MCs	61	0.0	61	0.0	0.343	8.6	LOS A	2.0	14.4	0.51	0.55	0.51	48.0
6u	U	All MCs	1	0.0	1	0.0	0.343	10.2	LOS A	2.0	14.4	0.51	0.55	0.51	44.9
Approach			360	1.2	360	1.2	0.343	5.7	LOS A	2.0	14.4	0.51	0.55	0.51	47.7
North: Old Southern Road (N)															
7	L2	All MCs	76	0.0	76	0.0	0.299	6.0	LOS A	1.7	11.9	0.50	0.61	0.50	48.1
8	T1	All MCs	143	0.7	143	0.7	0.299	6.3	LOS A	1.7	11.9	0.50	0.61	0.50	48.4
9	R2	All MCs	87	2.4	87	2.4	0.299	9.9	LOS A	1.7	11.9	0.50	0.61	0.50	51.2
9u	U	All MCs	1	0.0	1	0.0	0.299	11.6	LOS A	1.7	11.9	0.50	0.61	0.50	51.3
Approach			307	1.0	307	1.0	0.299	7.3	LOS A	1.7	11.9	0.50	0.61	0.50	49.1
West: Hillcrest Avenue (W)															
10	L2	All MCs	62	0.0	62	0.0	0.277	5.5	LOS A	1.6	10.9	0.45	0.56	0.45	52.1
11	T1	All MCs	192	1.1	192	1.1	0.277	5.8	LOS A	1.6	10.9	0.45	0.56	0.45	48.8
12	R2	All MCs	43	0.0	43	0.0	0.277	9.5	LOS A	1.6	10.9	0.45	0.56	0.45	48.2
12u	U	All MCs	3	0.0	3	0.0	0.277	11.2	LOS A	1.6	10.9	0.45	0.56	0.45	51.7
Approach			300	0.7	300	0.7	0.277	6.3	LOS A	1.6	10.9	0.45	0.56	0.45	49.4
All Vehicles			1216	1.0	1216	1.0	0.343	6.4	LOS A	2.0	14.4	0.50	0.58	0.50	48.4

Site Level of Service (LOS) Method: Delay (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: [01EX-T-AM] 01EX+TwinAM(2025) - Old Southern Rd / Casa Cct (Existing + Twin Estate 2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate 2025 AM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	33	3.2	33	3.2	0.029	3.7	LOS A	0.1	1.0	0.25	0.41	0.25	46.4
3	R2	All MCs	1	0.0	1	0.0	0.029	7.5	LOS A	0.1	1.0	0.25	0.41	0.25	45.9
3u	U	All MCs	1	0.0	1	0.0	0.029	9.2	LOS A	0.1	1.0	0.25	0.41	0.25	45.9
Approach			35	3.0	35	3.0	0.029	4.0	LOS A	0.1	1.0	0.25	0.41	0.25	46.4
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.075	3.3	LOS A	0.4	2.5	0.09	0.60	0.09	44.8
6	R2	All MCs	106	0.0	106	0.0	0.075	7.1	LOS A	0.4	2.5	0.09	0.60	0.09	44.5
6u	U	All MCs	1	0.0	1	0.0	0.075	8.8	LOS A	0.4	2.5	0.09	0.60	0.09	44.5
Approach			108	0.0	108	0.0	0.075	7.1	LOS A	0.4	2.5	0.09	0.60	0.09	44.5
North: Old Southern Road (N)															
7	L2	All MCs	49	0.0	49	0.0	0.042	3.2	LOS A	0.2	1.4	0.03	0.44	0.03	46.9
8	T1	All MCs	15	7.1	15	7.1	0.042	3.2	LOS A	0.2	1.4	0.03	0.44	0.03	47.2
9u	U	All MCs	1	0.0	1	0.0	0.042	8.7	LOS A	0.2	1.4	0.03	0.44	0.03	46.6
Approach			65	1.6	65	1.6	0.042	3.3	LOS A	0.2	1.4	0.03	0.44	0.03	47.0
All Vehicles			208	1.0	208	1.0	0.075	5.4	LOS A	0.4	2.5	0.10	0.52	0.10	45.6

Site Level of Service (LOS) Method: Delay (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: [01EX-T-PM] 01Ex+TwinPM(2025) - Old Southern Rd / Casa Cct (Existing + Twin Estate (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate 2025 PM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	14	0.0	14	0.0	0.013	3.5	LOS A	0.1	0.4	0.18	0.41	0.18	46.5
3	R2	All MCs	1	0.0	1	0.0	0.013	7.3	LOS A	0.1	0.4	0.18	0.41	0.18	45.9
3u	U	All MCs	1	0.0	1	0.0	0.013	9.0	LOS A	0.1	0.4	0.18	0.41	0.18	45.9
Approach			16	0.0	16	0.0	0.013	4.1	LOS A	0.1	0.4	0.18	0.41	0.18	46.4
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.048	3.5	LOS A	0.2	1.6	0.19	0.58	0.19	44.6
6	R2	All MCs	58	1.8	58	1.8	0.048	7.4	LOS A	0.2	1.6	0.19	0.58	0.19	44.3
6u	U	All MCs	1	0.0	1	0.0	0.048	9.0	LOS A	0.2	1.6	0.19	0.58	0.19	44.3
Approach			60	1.8	60	1.8	0.048	7.3	LOS A	0.2	1.6	0.19	0.58	0.19	44.3
North: Old Southern Road (N)															
7	L2	All MCs	92	0.0	92	0.0	0.094	3.2	LOS A	0.5	3.3	0.03	0.42	0.03	47.0
8	T1	All MCs	61	0.0	61	0.0	0.094	3.2	LOS A	0.5	3.3	0.03	0.42	0.03	47.2
9u	U	All MCs	1	0.0	1	0.0	0.094	8.7	LOS A	0.5	3.3	0.03	0.42	0.03	46.7
Approach			154	0.0	154	0.0	0.094	3.2	LOS A	0.5	3.3	0.03	0.42	0.03	47.1
All Vehicles			229	0.5	229	0.5	0.094	4.4	LOS A	0.5	3.3	0.08	0.46	0.08	46.3

Site Level of Service (LOS) Method: Delay (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: [01EX-T-SA] 01EX+TwinSAT(2025) - Old Southern Rd / Casa Cct (Existing + Twin Estate 2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate 2025 SAT
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	23	0.0	23	0.0	0.020	3.5	LOS A	0.1	0.7	0.20	0.40	0.20	46.5
3	R2	All MCs	1	0.0	1	0.0	0.020	7.4	LOS A	0.1	0.7	0.20	0.40	0.20	46.0
3u	U	All MCs	1	0.0	1	0.0	0.020	9.0	LOS A	0.1	0.7	0.20	0.40	0.20	46.0
Approach			25	0.0	25	0.0	0.020	3.9	LOS A	0.1	0.7	0.20	0.40	0.20	46.5
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.053	3.3	LOS A	0.2	1.7	0.11	0.60	0.11	44.7
6	R2	All MCs	65	0.0	65	0.0	0.053	7.2	LOS A	0.2	1.7	0.11	0.60	0.11	44.4
6u	U	All MCs	6	0.0	6	0.0	0.053	8.8	LOS A	0.2	1.7	0.11	0.60	0.11	44.4
Approach			73	0.0	73	0.0	0.053	7.2	LOS A	0.2	1.7	0.11	0.60	0.11	44.4
North: Old Southern Road (N)															
7	L2	All MCs	79	0.0	79	0.0	0.069	3.2	LOS A	0.3	2.3	0.05	0.44	0.05	46.8
8	T1	All MCs	23	0.0	23	0.0	0.069	3.2	LOS A	0.3	2.3	0.05	0.44	0.05	47.1
9u	U	All MCs	3	0.0	3	0.0	0.069	8.7	LOS A	0.3	2.3	0.05	0.44	0.05	46.5
Approach			105	0.0	105	0.0	0.069	3.4	LOS A	0.3	2.3	0.05	0.44	0.05	46.9
All Vehicles			203	0.0	203	0.0	0.069	4.8	LOS A	0.3	2.3	0.09	0.49	0.09	45.9

Site Level of Service (LOS) Method: Delay (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: [02EX-T-AM] 02EX+TwinAM(2025) - Old Southern Rd / Wattlebird Rd (Existing + Twin Estate 2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate 2025 AM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	137	0.0	137	0.0	0.122	4.0	LOS A	0.6	4.4	0.33	0.43	0.33	46.3
3	R2	All MCs	1	0.0	1	0.0	0.122	7.8	LOS A	0.6	4.4	0.33	0.43	0.33	45.7
3u	U	All MCs	1	0.0	1	0.0	0.122	9.5	LOS A	0.6	4.4	0.33	0.43	0.33	45.7
Approach			139	0.0	139	0.0	0.122	4.1	LOS A	0.6	4.4	0.33	0.43	0.33	46.3
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.118	3.6	LOS A	0.6	4.1	0.21	0.58	0.21	44.5
6	R2	All MCs	148	0.7	148	0.7	0.118	7.4	LOS A	0.6	4.1	0.21	0.58	0.21	44.2
6u	U	All MCs	1	0.0	1	0.0	0.118	9.0	LOS A	0.6	4.1	0.21	0.58	0.21	44.2
Approach			151	0.7	151	0.7	0.118	7.3	LOS A	0.6	4.1	0.21	0.58	0.21	44.2
North: Old Southern Road (N)															
7	L2	All MCs	38	16.7	38	16.7	0.069	3.4	LOS A	0.3	2.6	0.03	0.42	0.03	46.6
8	T1	All MCs	64	0.0	64	0.0	0.069	3.2	LOS A	0.3	2.6	0.03	0.42	0.03	47.1
9u	U	All MCs	5	0.0	5	0.0	0.069	8.6	LOS A	0.3	2.6	0.03	0.42	0.03	46.5
Approach			107	5.9	107	5.9	0.069	3.5	LOS A	0.3	2.6	0.03	0.42	0.03	46.9
All Vehicles			397	1.9	397	1.9	0.122	5.2	LOS A	0.6	4.4	0.20	0.49	0.20	45.6

Site Level of Service (LOS) Method: Delay (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: [02EX-T-PM] 02EX+TwinPM(2025) - Old Southern Rd / Wattlebird Rd (Existing + Twin Estate 2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate 2025 PM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand		Arrival		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			Flows		Flows					[Veh. veh	Dist] m				
			[Total HV] veh/h	[Total HV] %	[Total HV] veh/h	[Total HV] %									km/h
South: Old Southern Road (S)															
2	T1	All MCs	73	1.4	73	1.4	0.061	3.5	LOS A	0.3	2.2	0.21	0.39	0.21	46.6
3	R2	All MCs	1	0.0	1	0.0	0.061	7.3	LOS A	0.3	2.2	0.21	0.39	0.21	46.0
3u	U	All MCs	1	0.0	1	0.0	0.061	8.9	LOS A	0.3	2.2	0.21	0.39	0.21	46.0
Approach			75	1.4	75	1.4	0.061	3.7	LOS A	0.3	2.2	0.21	0.39	0.21	46.6
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.055	4.0	LOS A	0.3	1.9	0.31	0.60	0.31	44.3
6	R2	All MCs	58	9.1	58	9.1	0.055	7.9	LOS A	0.3	1.9	0.31	0.60	0.31	43.9
6u	U	All MCs	1	0.0	1	0.0	0.055	9.4	LOS A	0.3	1.9	0.31	0.60	0.31	44.0
Approach			60	8.8	60	8.8	0.055	7.9	LOS A	0.3	1.9	0.31	0.60	0.31	43.9
North: Old Southern Road (N)															
7	L2	All MCs	102	2.1	102	2.1	0.157	3.3	LOS A	0.8	5.9	0.03	0.41	0.03	46.9
8	T1	All MCs	153	0.0	153	0.0	0.157	3.2	LOS A	0.8	5.9	0.03	0.41	0.03	47.2
9u	U	All MCs	4	0.0	4	0.0	0.157	8.6	LOS A	0.8	5.9	0.03	0.41	0.03	46.6
Approach			259	0.8	259	0.8	0.157	3.3	LOS A	0.8	5.9	0.03	0.41	0.03	47.0
All Vehicles			394	2.1	394	2.1	0.157	4.1	LOS A	0.8	5.9	0.11	0.44	0.11	46.4

Site Level of Service (LOS) Method: Delay (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: [02EX-T-SA] 02EX+TwinSAT(2025) - Old Southern Rd / Wattlebird Rd (Existing + Twin Estate 2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate 2025 SAT
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	99	0.0	99	0.0	0.080	3.5	LOS A	0.4	2.8	0.19	0.39	0.19	46.7
3	R2	All MCs	2	0.0	2	0.0	0.080	7.3	LOS A	0.4	2.8	0.19	0.39	0.19	46.1
3u	U	All MCs	1	0.0	1	0.0	0.080	8.9	LOS A	0.4	2.8	0.19	0.39	0.19	46.1
Approach			102	0.0	102	0.0	0.080	3.6	LOS A	0.4	2.8	0.19	0.39	0.19	46.6
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.048	3.8	LOS A	0.2	1.6	0.25	0.59	0.25	44.4
6	R2	All MCs	55	1.9	55	1.9	0.048	7.5	LOS A	0.2	1.6	0.25	0.59	0.25	44.1
6u	U	All MCs	1	0.0	1	0.0	0.048	9.1	LOS A	0.2	1.6	0.25	0.59	0.25	44.2
Approach			57	1.9	57	1.9	0.048	7.5	LOS A	0.2	1.6	0.25	0.59	0.25	44.1
North: Old Southern Road (N)															
7	L2	All MCs	65	1.6	65	1.6	0.105	3.3	LOS A	0.5	3.8	0.04	0.41	0.04	46.9
8	T1	All MCs	100	0.0	100	0.0	0.105	3.2	LOS A	0.5	3.8	0.04	0.41	0.04	47.1
9u	U	All MCs	3	0.0	3	0.0	0.105	8.6	LOS A	0.5	3.8	0.04	0.41	0.04	46.6
Approach			168	0.6	168	0.6	0.105	3.3	LOS A	0.5	3.8	0.04	0.41	0.04	47.0
All Vehicles			327	0.6	327	0.6	0.105	4.2	LOS A	0.5	3.8	0.12	0.43	0.12	46.4

Site Level of Service (LOS) Method: Delay (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: [03EX-T-AM] 03EX+TwinAM(2025) - Old Southern Rd / Quinns Ln (Existing + Twin Estate (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate 2025 AM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	182	0.6	182	0.6	0.294	5.5	LOS A	1.5	10.5	0.53	0.59	0.53	48.7
2	T1	All MCs	102	1.0	102	1.0	0.294	5.4	LOS A	1.5	10.5	0.53	0.59	0.53	45.8
3	R2	All MCs	1	0.0	1	0.0	0.294	9.1	LOS A	1.5	10.5	0.53	0.59	0.53	45.3
3u	U	All MCs	1	0.0	1	0.0	0.294	10.7	LOS A	1.5	10.5	0.53	0.59	0.53	45.3
Approach			286	0.7	286	0.7	0.294	5.5	LOS A	1.5	10.5	0.53	0.59	0.53	47.6
East: Quinns Lane (E)															
4	L2	All MCs	1	0.0	1	0.0	0.184	5.5	LOS A	1.0	7.1	0.54	0.59	0.54	44.9
5	T1	All MCs	121	1.7	121	1.7	0.184	5.5	LOS A	1.0	7.1	0.54	0.59	0.54	48.3
6	R2	All MCs	48	2.2	48	2.2	0.184	9.3	LOS A	1.0	7.1	0.54	0.59	0.54	44.6
6u	U	All MCs	1	0.0	1	0.0	0.184	10.9	LOS A	1.0	7.1	0.54	0.59	0.54	44.6
Approach			172	1.8	172	1.8	0.184	6.6	LOS A	1.0	7.1	0.54	0.59	0.54	47.1
North: Old Southern Road (N)															
7	L2	All MCs	42	2.5	42	2.5	0.272	3.8	LOS A	1.2	8.6	0.25	0.58	0.25	44.8
8	T1	All MCs	38	8.3	38	8.3	0.272	3.7	LOS A	1.2	8.6	0.25	0.58	0.25	45.0
9	R2	All MCs	242	4.8	242	4.8	0.272	7.5	LOS A	1.2	8.6	0.25	0.58	0.25	47.4
9u	U	All MCs	16	0.0	16	0.0	0.272	9.0	LOS A	1.2	8.6	0.25	0.58	0.25	44.5
Approach			338	4.7	338	4.7	0.272	6.7	LOS A	1.2	8.6	0.25	0.58	0.25	46.6
West: Quinns Lane (W)															
10	L2	All MCs	194	7.6	194	7.6	0.274	5.2	LOS A	1.4	9.9	0.34	0.56	0.34	48.7
11	T1	All MCs	43	2.4	43	2.4	0.274	5.1	LOS A	1.4	9.9	0.34	0.56	0.34	49.1
12	R2	All MCs	76	1.4	76	1.4	0.274	9.0	LOS A	1.4	9.9	0.34	0.56	0.34	48.5
12u	U	All MCs	4	25.0	4	25.0	0.274	11.2	LOS A	1.4	9.9	0.34	0.56	0.34	51.0
Approach			317	5.6	317	5.6	0.274	6.2	LOS A	1.4	9.9	0.34	0.56	0.34	48.7
All Vehicles			1113	3.5	1113	3.5	0.294	6.2	LOS A	1.5	10.5	0.39	0.58	0.39	47.5

Site Level of Service (LOS) Method: Delay (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: [03EX-T-PM] 03EX+TwinPM(2025) - Old Southern Rd / Quinns Ln (Existing + Twin Estate (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate 2025 PM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[%]	[Total HV]	[%]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	99	2.1	99	2.1	0.130	4.5	LOS A	0.6	4.0	0.39	0.53	0.39	49.2
2	T1	All MCs	35	9.1	35	9.1	0.130	4.5	LOS A	0.6	4.0	0.39	0.53	0.39	46.2
3	R2	All MCs	1	0.0	1	0.0	0.130	8.1	LOS A	0.6	4.0	0.39	0.53	0.39	45.7
3u	U	All MCs	1	0.0	1	0.0	0.130	9.8	LOS A	0.6	4.0	0.39	0.53	0.39	45.7
Approach			136	3.9	136	3.9	0.130	4.6	LOS A	0.6	4.0	0.39	0.53	0.39	48.3
East: Quinns Lane (E)															
4	L2	All MCs	1	0.0	1	0.0	0.124	5.8	LOS A	0.7	4.6	0.56	0.59	0.56	45.1
5	T1	All MCs	93	0.0	93	0.0	0.124	5.7	LOS A	0.7	4.6	0.56	0.59	0.56	48.5
6	R2	All MCs	16	0.0	16	0.0	0.124	9.5	LOS A	0.7	4.6	0.56	0.59	0.56	44.8
6u	U	All MCs	2	0.0	2	0.0	0.124	11.1	LOS A	0.7	4.6	0.56	0.59	0.56	44.8
Approach			112	0.0	112	0.0	0.124	6.4	LOS A	0.7	4.6	0.56	0.59	0.56	47.8
North: Old Southern Road (N)															
7	L2	All MCs	14	0.0	14	0.0	0.242	4.7	LOS A	1.0	7.5	0.41	0.62	0.41	44.7
8	T1	All MCs	69	3.0	69	3.0	0.242	4.5	LOS A	1.0	7.5	0.41	0.62	0.41	45.0
9	R2	All MCs	169	5.6	169	5.6	0.242	8.4	LOS A	1.0	7.5	0.41	0.62	0.41	47.2
9u	U	All MCs	1	0.0	1	0.0	0.242	9.9	LOS A	1.0	7.5	0.41	0.62	0.41	44.5
Approach			254	4.6	254	4.6	0.242	7.1	LOS A	1.0	7.5	0.41	0.62	0.41	46.4
West: Quinns Lane (W)															
10	L2	All MCs	226	2.3	226	2.3	0.398	4.6	LOS A	2.3	16.3	0.20	0.54	0.20	48.9
11	T1	All MCs	143	2.2	143	2.2	0.398	4.6	LOS A	2.3	16.3	0.20	0.54	0.20	49.2
12	R2	All MCs	188	0.0	188	0.0	0.398	8.5	LOS A	2.3	16.3	0.20	0.54	0.20	48.6
12u	U	All MCs	8	12.5	8	12.5	0.398	10.4	LOS A	2.3	16.3	0.20	0.54	0.20	51.7
Approach			566	1.7	566	1.7	0.398	6.0	LOS A	2.3	16.3	0.20	0.54	0.20	48.9
All Vehicles			1067	2.5	1067	2.5	0.398	6.1	LOS A	2.3	16.3	0.31	0.56	0.31	48.1

Site Level of Service (LOS) Method: Delay (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: [03EX-T-SA] 03EX+TwinSAT(2025) - Old Southern Rd / Quinns Ln (Existing + Twin Estate (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate 2025 SAT
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	124	0.8	124	0.8	0.170	4.5	LOS A	0.8	5.3	0.39	0.53	0.39	49.1
2	T1	All MCs	53	2.0	53	2.0	0.170	4.4	LOS A	0.8	5.3	0.39	0.53	0.39	46.2
3	R2	All MCs	4	0.0	4	0.0	0.170	8.2	LOS A	0.8	5.3	0.39	0.53	0.39	45.7
3u	U	All MCs	1	0.0	1	0.0	0.170	9.8	LOS A	0.8	5.3	0.39	0.53	0.39	45.7
Approach			182	1.2	182	1.2	0.170	4.6	LOS A	0.8	5.3	0.39	0.53	0.39	48.2
East: Quinns Lane (E)															
4	L2	All MCs	2	0.0	2	0.0	0.117	5.1	LOS A	0.6	4.3	0.49	0.54	0.49	45.4
5	T1	All MCs	97	0.0	97	0.0	0.117	5.1	LOS A	0.6	4.3	0.49	0.54	0.49	48.8
6	R2	All MCs	15	0.0	15	0.0	0.117	8.9	LOS A	0.6	4.3	0.49	0.54	0.49	45.1
6u	U	All MCs	1	0.0	1	0.0	0.117	10.5	LOS A	0.6	4.3	0.49	0.54	0.49	45.1
Approach			115	0.0	115	0.0	0.117	5.6	LOS A	0.6	4.3	0.49	0.54	0.49	48.2
North: Old Southern Road (N)															
7	L2	All MCs	9	0.0	9	0.0	0.200	4.1	LOS A	0.8	5.6	0.31	0.59	0.31	44.7
8	T1	All MCs	47	0.0	47	0.0	0.200	3.9	LOS A	0.8	5.6	0.31	0.59	0.31	45.0
9	R2	All MCs	173	0.6	173	0.6	0.200	7.7	LOS A	0.8	5.6	0.31	0.59	0.31	47.4
9u	U	All MCs	1	0.0	1	0.0	0.200	9.4	LOS A	0.8	5.6	0.31	0.59	0.31	44.5
Approach			231	0.5	231	0.5	0.200	6.8	LOS A	0.8	5.6	0.31	0.59	0.31	46.8
West: Quinns Lane (W)															
10	L2	All MCs	186	1.7	186	1.7	0.294	4.6	LOS A	1.5	10.7	0.22	0.54	0.22	49.0
11	T1	All MCs	95	1.1	95	1.1	0.294	4.7	LOS A	1.5	10.7	0.22	0.54	0.22	49.3
12	R2	All MCs	111	1.0	111	1.0	0.294	8.5	LOS A	1.5	10.7	0.22	0.54	0.22	48.7
12u	U	All MCs	6	0.0	6	0.0	0.294	10.3	LOS A	1.5	10.7	0.22	0.54	0.22	52.3
Approach			398	1.3	398	1.3	0.294	5.8	LOS A	1.5	10.7	0.22	0.54	0.22	49.0
All Vehicles			925	0.9	925	0.9	0.294	5.8	LOS A	1.5	10.7	0.31	0.55	0.31	48.2

Site Level of Service (LOS) Method: Delay (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: [04EX-T-AM] 04EX+TwinAM(2025) - Old Southern Rd / Hillcrest Ave / Isa Rd (Existing + Twin Estate (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate 2025 AM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	231	6.4	231	6.4	0.611	11.4	LOS A	5.7	42.4	0.89	0.88	1.13	44.9
2	T1	All MCs	136	7.8	136	7.8	0.611	11.4	LOS A	5.7	42.4	0.89	0.88	1.13	45.2
3	R2	All MCs	66	4.8	66	4.8	0.611	14.9	LOS B	5.7	42.4	0.89	0.88	1.13	42.0
3u	U	All MCs	1	0.0	1	0.0	0.611	16.2	LOS B	5.7	42.4	0.89	0.88	1.13	42.1
Approach			434	6.6	434	6.6	0.611	11.9	LOS A	5.7	42.4	0.89	0.88	1.13	44.5
East: Isa Road (E)															
4	L2	All MCs	95	1.1	95	1.1	0.633	9.5	LOS A	6.0	42.7	0.82	0.81	1.02	43.2
5	T1	All MCs	404	1.6	404	1.6	0.633	9.5	LOS A	6.0	42.7	0.82	0.81	1.02	46.4
6	R2	All MCs	48	0.0	48	0.0	0.633	13.0	LOS A	6.0	42.7	0.82	0.81	1.02	45.8
6u	U	All MCs	1	0.0	1	0.0	0.633	14.6	LOS B	6.0	42.7	0.82	0.81	1.02	43.0
Approach			548	1.3	548	1.3	0.633	9.8	LOS A	6.0	42.7	0.82	0.81	1.02	45.7
North: Old Southern Road (N)															
7	L2	All MCs	52	4.1	52	4.1	0.418	6.5	LOS A	2.6	19.0	0.58	0.64	0.58	47.5
8	T1	All MCs	196	4.8	196	4.8	0.418	6.8	LOS A	2.6	19.0	0.58	0.64	0.58	47.8
9	R2	All MCs	167	1.9	167	1.9	0.418	10.3	LOS A	2.6	19.0	0.58	0.64	0.58	50.6
9u	U	All MCs	1	0.0	1	0.0	0.418	12.0	LOS A	2.6	19.0	0.58	0.64	0.58	50.7
Approach			416	3.5	416	3.5	0.418	8.2	LOS A	2.6	19.0	0.58	0.64	0.58	48.9
West: Hillcrest Avenue (W)															
10	L2	All MCs	37	11.4	37	11.4	0.288	6.0	LOS A	1.7	12.7	0.50	0.61	0.50	50.9
11	T1	All MCs	113	3.7	113	3.7	0.288	6.0	LOS A	1.7	12.7	0.50	0.61	0.50	48.1
12	R2	All MCs	134	9.4	134	9.4	0.288	9.8	LOS A	1.7	12.7	0.50	0.61	0.50	47.3
12u	U	All MCs	5	0.0	5	0.0	0.288	11.4	LOS A	1.7	12.7	0.50	0.61	0.50	50.9
Approach			288	7.3	288	7.3	0.288	7.9	LOS A	1.7	12.7	0.50	0.61	0.50	48.1
All Vehicles			1686	4.2	1686	4.2	0.633	9.6	LOS A	6.0	42.7	0.72	0.75	0.85	46.5

Site Level of Service (LOS) Method: Delay (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: [04EX-T-PM] 04EX+TwinPM(2025) - Old Southern Rd / Hillcrest Ave / Isa Rd (Existing + Twin Estate (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate 2025 PM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	80	3.9	80	3.9	0.359	5.7	LOS A	2.2	15.9	0.59	0.61	0.59	47.7
2	T1	All MCs	164	2.6	164	2.6	0.359	5.6	LOS A	2.2	15.9	0.59	0.61	0.59	48.1
3	R2	All MCs	98	3.2	98	3.2	0.359	9.3	LOS A	2.2	15.9	0.59	0.61	0.59	44.5
3u	U	All MCs	1	0.0	1	0.0	0.359	10.8	LOS A	2.2	15.9	0.59	0.61	0.59	44.5
Approach			343	3.1	343	3.1	0.359	6.7	LOS A	2.2	15.9	0.59	0.61	0.59	46.9
East: Isa Road (E)															
4	L2	All MCs	76	2.8	76	2.8	0.344	5.5	LOS A	2.1	14.7	0.56	0.59	0.56	44.9
5	T1	All MCs	176	0.6	176	0.6	0.344	5.3	LOS A	2.1	14.7	0.56	0.59	0.56	48.3
6	R2	All MCs	88	2.4	88	2.4	0.344	9.0	LOS A	2.1	14.7	0.56	0.59	0.56	47.6
6u	U	All MCs	1	0.0	1	0.0	0.344	10.5	LOS A	2.1	14.7	0.56	0.59	0.56	44.7
Approach			341	1.5	341	1.5	0.344	6.3	LOS A	2.1	14.7	0.56	0.59	0.56	47.3
North: Old Southern Road (N)															
7	L2	All MCs	148	0.7	148	0.7	0.436	7.3	LOS A	2.8	20.4	0.69	0.68	0.69	47.6
8	T1	All MCs	156	6.1	156	6.1	0.436	7.8	LOS A	2.8	20.4	0.69	0.68	0.69	47.8
9	R2	All MCs	80	1.3	80	1.3	0.436	11.2	LOS A	2.8	20.4	0.69	0.68	0.69	50.6
9u	U	All MCs	1	0.0	1	0.0	0.436	12.9	LOS A	2.8	20.4	0.69	0.68	0.69	50.7
Approach			385	3.0	385	3.0	0.436	8.3	LOS A	2.8	20.4	0.69	0.68	0.69	48.3
West: Hillcrest Avenue (W)															
10	L2	All MCs	122	4.3	122	4.3	0.490	6.8	LOS A	3.3	23.7	0.64	0.64	0.64	51.2
11	T1	All MCs	267	1.6	267	1.6	0.490	6.9	LOS A	3.3	23.7	0.64	0.64	0.64	48.1
12	R2	All MCs	82	1.3	82	1.3	0.490	10.6	LOS A	3.3	23.7	0.64	0.64	0.64	47.5
12u	U	All MCs	8	12.5	8	12.5	0.490	12.8	LOS A	3.3	23.7	0.64	0.64	0.64	50.5
Approach			480	2.4	480	2.4	0.490	7.6	LOS A	3.3	23.7	0.64	0.64	0.64	48.8
All Vehicles			1549	2.5	1549	2.5	0.490	7.3	LOS A	3.3	23.7	0.62	0.63	0.62	47.9

Site Level of Service (LOS) Method: Delay (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: [04EX-T-SA] 04EX+TwinSAT(2025) - Old Southern Rd / Hillcrest Ave / Isa Rd (Existing + Twin Estate (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate 2025 SAT
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	79	1.3	79	1.3	0.283	5.6	LOS A	1.6	11.6	0.57	0.60	0.57	48.0
2	T1	All MCs	123	0.0	123	0.0	0.283	5.5	LOS A	1.6	11.6	0.57	0.60	0.57	48.3
3	R2	All MCs	66	1.6	66	1.6	0.283	9.3	LOS A	1.6	11.6	0.57	0.60	0.57	44.7
3u	U	All MCs	1	0.0	1	0.0	0.283	10.8	LOS A	1.6	11.6	0.57	0.60	0.57	44.7
Approach			269	0.8	269	0.8	0.283	6.5	LOS A	1.6	11.6	0.57	0.60	0.57	47.3
East: Isa Road (E)															
4	L2	All MCs	76	1.4	76	1.4	0.352	5.2	LOS A	2.1	14.9	0.53	0.56	0.53	45.1
5	T1	All MCs	226	1.4	226	1.4	0.352	5.2	LOS A	2.1	14.9	0.53	0.56	0.53	48.5
6	R2	All MCs	61	0.0	61	0.0	0.352	8.7	LOS A	2.1	14.9	0.53	0.56	0.53	47.9
6u	U	All MCs	1	0.0	1	0.0	0.352	10.3	LOS A	2.1	14.9	0.53	0.56	0.53	44.9
Approach			364	1.2	364	1.2	0.352	5.8	LOS A	2.1	14.9	0.53	0.56	0.53	47.6
North: Old Southern Road (N)															
7	L2	All MCs	76	0.0	76	0.0	0.310	6.1	LOS A	1.8	12.5	0.52	0.61	0.52	48.0
8	T1	All MCs	152	0.7	152	0.7	0.310	6.4	LOS A	1.8	12.5	0.52	0.61	0.52	48.3
9	R2	All MCs	87	2.4	87	2.4	0.310	10.0	LOS A	1.8	12.5	0.52	0.61	0.52	51.1
9u	U	All MCs	1	0.0	1	0.0	0.310	11.7	LOS A	1.8	12.5	0.52	0.61	0.52	51.2
Approach			316	1.0	316	1.0	0.310	7.3	LOS A	1.8	12.5	0.52	0.61	0.52	49.0
West: Hillcrest Avenue (W)															
10	L2	All MCs	62	0.0	62	0.0	0.288	5.6	LOS A	1.6	11.5	0.47	0.57	0.47	52.0
11	T1	All MCs	192	1.1	192	1.1	0.288	5.9	LOS A	1.6	11.5	0.47	0.57	0.47	48.7
12	R2	All MCs	52	0.0	52	0.0	0.288	9.5	LOS A	1.6	11.5	0.47	0.57	0.47	48.1
12u	U	All MCs	3	0.0	3	0.0	0.288	11.3	LOS A	1.6	11.5	0.47	0.57	0.47	51.6
Approach			308	0.7	308	0.7	0.288	6.5	LOS A	1.6	11.5	0.47	0.57	0.47	49.2
All Vehicles			1258	0.9	1258	0.9	0.352	6.5	LOS A	2.1	14.9	0.52	0.58	0.52	48.3

Site Level of Service (LOS) Method: Delay (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: [01FUAM] 01FUAM(2035) - Old Southern Rd / Casa Cct**
(Future (2035) - 10Yr 2% Growth)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Future 2035 AM + Twins Estate
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycle Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]		[Total HV]					[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	33	3.8	33	3.8	0.031	3.8	LOS A	0.1	1.0	0.26	0.41	0.26	46.4
3	R2	All MCs	1	0.0	1	0.0	0.031	7.6	LOS A	0.1	1.0	0.26	0.41	0.26	45.8
3u	U	All MCs	1	0.0	1	0.0	0.031	9.2	LOS A	0.1	1.0	0.26	0.41	0.26	45.8
Approach			36	3.5	36	3.5	0.031	4.1	LOS A	0.1	1.0	0.26	0.41	0.26	46.3
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.078	3.3	LOS A	0.4	2.6	0.09	0.60	0.09	44.8
6	R2	All MCs	110	0.0	110	0.0	0.078	7.1	LOS A	0.4	2.6	0.09	0.60	0.09	44.5
6u	U	All MCs	1	0.0	1	0.0	0.078	8.8	LOS A	0.4	2.6	0.09	0.60	0.09	44.5
Approach			112	0.0	112	0.0	0.078	7.1	LOS A	0.4	2.6	0.09	0.60	0.09	44.5
North: Old Southern Road (N)															
7	L2	All MCs	52	0.0	52	0.0	0.044	3.2	LOS A	0.2	1.5	0.03	0.44	0.03	46.9
8	T1	All MCs	15	8.3	15	8.3	0.044	3.2	LOS A	0.2	1.5	0.03	0.44	0.03	47.1
9u	U	All MCs	1	0.0	1	0.0	0.044	8.7	LOS A	0.2	1.5	0.03	0.44	0.03	46.6
Approach			68	1.9	68	1.9	0.044	3.3	LOS A	0.2	1.5	0.03	0.44	0.03	47.0
All Vehicles			216	1.2	216	1.2	0.078	5.4	LOS A	0.4	2.6	0.10	0.52	0.10	45.5

Site Level of Service (LOS) Method: Delay (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: [01FUPM] 01FUPM(2035) - Old Southern Rd / Casa Cct**
(Future (2035) - 10Yr 2% Growth)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Future 2035 PM + Twins Estate
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec							
South: Old Southern Road (S)															
2	T1	All MCs	14	0.0	14	0.0	0.013	3.5	LOS A	0.1	0.4	0.19	0.41	0.19	46.4
3	R2	All MCs	1	0.0	1	0.0	0.013	7.3	LOS A	0.1	0.4	0.19	0.41	0.19	45.8
3u	U	All MCs	1	0.0	1	0.0	0.013	9.0	LOS A	0.1	0.4	0.19	0.41	0.19	45.8
Approach			16	0.0	16	0.0	0.013	4.2	LOS A	0.1	0.4	0.19	0.41	0.19	46.3
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.052	3.5	LOS A	0.2	1.7	0.20	0.58	0.20	44.6
6	R2	All MCs	62	2.0	62	2.0	0.052	7.4	LOS A	0.2	1.7	0.20	0.58	0.20	44.2
6u	U	All MCs	1	0.0	1	0.0	0.052	9.0	LOS A	0.2	1.7	0.20	0.58	0.20	44.3
Approach			64	2.0	64	2.0	0.052	7.4	LOS A	0.2	1.7	0.20	0.58	0.20	44.2
North: Old Southern Road (N)															
7	L2	All MCs	92	0.0	92	0.0	0.099	3.2	LOS A	0.5	3.5	0.03	0.42	0.03	47.0
8	T1	All MCs	67	0.0	67	0.0	0.099	3.2	LOS A	0.5	3.5	0.03	0.42	0.03	47.2
9u	U	All MCs	1	0.0	1	0.0	0.099	8.7	LOS A	0.5	3.5	0.03	0.42	0.03	46.6
Approach			161	0.0	161	0.0	0.099	3.2	LOS A	0.5	3.5	0.03	0.42	0.03	47.1
All Vehicles			241	0.5	241	0.5	0.099	4.4	LOS A	0.5	3.5	0.09	0.46	0.09	46.2

Site Level of Service (LOS) Method: Delay (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: [01FUSA] 01FUSAT(2035) - Old Southern Rd / Casa Cct**
(Future (2035) - 10Yr 2% Growth)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Future 2035 SAT + Twins Estate
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec							
South: Old Southern Road (S)															
2	T1	All MCs	24	0.0	24	0.0	0.021	3.5	LOS A	0.1	0.7	0.20	0.40	0.20	46.5
3	R2	All MCs	1	0.0	1	0.0	0.021	7.4	LOS A	0.1	0.7	0.20	0.40	0.20	45.9
3u	U	All MCs	1	0.0	1	0.0	0.021	9.0	LOS A	0.1	0.7	0.20	0.40	0.20	45.9
Approach			26	0.0	26	0.0	0.021	4.0	LOS A	0.1	0.7	0.20	0.40	0.20	46.4
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.053	3.3	LOS A	0.2	1.7	0.11	0.60	0.11	44.7
6	R2	All MCs	65	0.0	65	0.0	0.053	7.2	LOS A	0.2	1.7	0.11	0.60	0.11	44.4
6u	U	All MCs	6	0.0	6	0.0	0.053	8.8	LOS A	0.2	1.7	0.11	0.60	0.11	44.4
Approach			73	0.0	73	0.0	0.053	7.3	LOS A	0.2	1.7	0.11	0.60	0.11	44.4
North: Old Southern Road (N)															
7	L2	All MCs	79	0.0	79	0.0	0.070	3.2	LOS A	0.3	2.3	0.06	0.44	0.06	46.8
8	T1	All MCs	23	0.0	23	0.0	0.070	3.2	LOS A	0.3	2.3	0.06	0.44	0.06	47.1
9u	U	All MCs	3	0.0	3	0.0	0.070	8.7	LOS A	0.3	2.3	0.06	0.44	0.06	46.5
Approach			105	0.0	105	0.0	0.070	3.4	LOS A	0.3	2.3	0.06	0.44	0.06	46.9
All Vehicles			204	0.0	204	0.0	0.070	4.8	LOS A	0.3	2.3	0.10	0.49	0.10	45.9

Site Level of Service (LOS) Method: Delay (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: [02FUAM] 02FUAM(2035) - Old Southern Rd / Wattlebird Rd (Future (2035) - 10Yr 2% Growth)**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Future 2035 AM + Twins Estate
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	[Dist]				km/h
South: Old Southern Road (S)															
2	T1	All MCs	140	0.0	140	0.0	0.129	4.2	LOS A	0.7	4.7	0.37	0.45	0.37	46.2
3	R2	All MCs	1	0.0	1	0.0	0.129	8.0	LOS A	0.7	4.7	0.37	0.45	0.37	45.6
3u	U	All MCs	1	0.0	1	0.0	0.129	9.6	LOS A	0.7	4.7	0.37	0.45	0.37	45.6
Approach			143	0.0	143	0.0	0.129	4.3	LOS A	0.7	4.7	0.37	0.45	0.37	46.2
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.141	3.6	LOS A	0.7	5.0	0.22	0.58	0.22	44.5
6	R2	All MCs	178	0.7	178	0.7	0.141	7.4	LOS A	0.7	5.0	0.22	0.58	0.22	44.2
6u	U	All MCs	1	0.0	1	0.0	0.141	9.0	LOS A	0.7	5.0	0.22	0.58	0.22	44.2
Approach			181	0.7	181	0.7	0.141	7.4	LOS A	0.7	5.0	0.22	0.58	0.22	44.2
North: Old Southern Road (N)															
7	L2	All MCs	45	16.7	45	16.7	0.076	3.4	LOS A	0.4	2.9	0.03	0.43	0.03	46.6
8	T1	All MCs	67	0.0	67	0.0	0.076	3.2	LOS A	0.4	2.9	0.03	0.43	0.03	47.0
9u	U	All MCs	6	0.0	6	0.0	0.076	8.6	LOS A	0.4	2.9	0.03	0.43	0.03	46.5
Approach			119	6.4	119	6.4	0.076	3.6	LOS A	0.4	2.9	0.03	0.43	0.03	46.8
All Vehicles			442	2.0	442	2.0	0.141	5.4	LOS A	0.7	5.0	0.22	0.50	0.22	45.5

Site Level of Service (LOS) Method: Delay (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: [02FUPM] 02FUPM(2035) - Old Southern Rd / Wattlebird Rd (Future (2035) - 10Yr 2% Growth)**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Future 2035 PM + Twins Estate
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh.]	[Dist]				
			veh/h		veh/h		v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	77	1.6	77	1.6	0.066	3.6	LOS A	0.3	2.4	0.23	0.40	0.23	46.5
3	R2	All MCs	1	0.0	1	0.0	0.066	7.4	LOS A	0.3	2.4	0.23	0.40	0.23	46.0
3u	U	All MCs	1	0.0	1	0.0	0.066	9.0	LOS A	0.3	2.4	0.23	0.40	0.23	46.0
Approach			79	1.6	79	1.6	0.066	3.8	LOS A	0.3	2.4	0.23	0.40	0.23	46.5
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.067	4.1	LOS A	0.3	2.4	0.33	0.60	0.33	44.3
6	R2	All MCs	69	9.1	69	9.1	0.067	8.0	LOS A	0.3	2.4	0.33	0.60	0.33	43.9
6u	U	All MCs	1	0.0	1	0.0	0.067	9.5	LOS A	0.3	2.4	0.33	0.60	0.33	44.0
Approach			72	8.8	72	8.8	0.067	8.0	LOS A	0.3	2.4	0.33	0.60	0.33	43.9
North: Old Southern Road (N)															
7	L2	All MCs	123	2.1	123	2.1	0.174	3.3	LOS A	1.0	6.7	0.04	0.42	0.04	46.9
8	T1	All MCs	159	0.0	159	0.0	0.174	3.2	LOS A	1.0	6.7	0.04	0.42	0.04	47.2
9u	U	All MCs	5	0.0	5	0.0	0.174	8.6	LOS A	1.0	6.7	0.04	0.42	0.04	46.6
Approach			287	0.9	287	0.9	0.174	3.3	LOS A	1.0	6.7	0.04	0.42	0.04	47.0
All Vehicles			438	2.3	438	2.3	0.174	4.2	LOS A	1.0	6.7	0.12	0.44	0.12	46.4

Site Level of Service (LOS) Method: Delay (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: [02FUSA] 02FUSAT(2035) - Old Southern Rd / Wattlebird Rd (Future (2035) - 10Yr 2% Growth)**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Future 2035 SAT + Twins Estate
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec							
South: Old Southern Road (S)															
2	T1	All MCs	102	0.0	102	0.0	0.085	3.6	LOS A	0.4	3.0	0.22	0.39	0.22	46.6
3	R2	All MCs	3	0.0	3	0.0	0.085	7.4	LOS A	0.4	3.0	0.22	0.39	0.22	46.0
3u	U	All MCs	1	0.0	1	0.0	0.085	9.0	LOS A	0.4	3.0	0.22	0.39	0.22	46.0
Approach			105	0.0	105	0.0	0.085	3.7	LOS A	0.4	3.0	0.22	0.39	0.22	46.6
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.058	3.8	LOS A	0.3	1.9	0.25	0.59	0.25	44.4
6	R2	All MCs	66	1.9	66	1.9	0.058	7.6	LOS A	0.3	1.9	0.25	0.59	0.25	44.1
6u	U	All MCs	1	0.0	1	0.0	0.058	9.2	LOS A	0.3	1.9	0.25	0.59	0.25	44.1
Approach			68	1.9	68	1.9	0.058	7.5	LOS A	0.3	1.9	0.25	0.59	0.25	44.1
North: Old Southern Road (N)															
7	L2	All MCs	78	1.6	78	1.6	0.116	3.3	LOS A	0.6	4.2	0.04	0.41	0.04	46.8
8	T1	All MCs	103	0.0	103	0.0	0.116	3.2	LOS A	0.6	4.2	0.04	0.41	0.04	47.1
9u	U	All MCs	4	0.0	4	0.0	0.116	8.6	LOS A	0.6	4.2	0.04	0.41	0.04	46.5
Approach			185	0.7	185	0.7	0.116	3.4	LOS A	0.6	4.2	0.04	0.41	0.04	47.0
All Vehicles			359	0.7	359	0.7	0.116	4.3	LOS A	0.6	4.2	0.13	0.44	0.13	46.3

Site Level of Service (LOS) Method: Delay (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: [03FUAM] 03FUAM(2035) - Old Southern Rd / Quinns Ln**
 (Future (2035) - 10Yr 2% Growth)
 Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
 South Nowra, NSW - MTE Project No. 250613
 Future 2035 AM + Twins Estate
 Site Category: (None)
 Roundabout
 Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	201	0.6	201	0.6	0.350	6.1	LOS A	1.9	13.4	0.60	0.63	0.60	48.4
2	T1	All MCs	117	1.1	117	1.1	0.350	6.0	LOS A	1.9	13.4	0.60	0.63	0.60	45.5
3	R2	All MCs	1	0.0	1	0.0	0.350	9.8	LOS A	1.9	13.4	0.60	0.63	0.60	45.0
3u	U	All MCs	1	0.0	1	0.0	0.350	11.4	LOS A	1.9	13.4	0.60	0.63	0.60	45.0
Approach			320	0.8	320	0.8	0.350	6.1	LOS A	1.9	13.4	0.60	0.63	0.60	47.3
East: Quinns Lane (E)															
4	L2	All MCs	1	0.0	1	0.0	0.234	6.1	LOS A	1.3	9.5	0.60	0.62	0.60	44.7
5	T1	All MCs	145	1.7	145	1.7	0.234	6.1	LOS A	1.3	9.5	0.60	0.62	0.60	48.0
6	R2	All MCs	58	2.2	58	2.2	0.234	9.9	LOS A	1.3	9.5	0.60	0.62	0.60	44.4
6u	U	All MCs	1	0.0	1	0.0	0.234	11.4	LOS A	1.3	9.5	0.60	0.62	0.60	44.4
Approach			206	1.8	206	1.8	0.234	7.2	LOS A	1.3	9.5	0.60	0.62	0.60	46.9
North: Old Southern Road (N)															
7	L2	All MCs	51	2.5	51	2.5	0.327	3.9	LOS A	1.5	11.3	0.29	0.58	0.29	44.7
8	T1	All MCs	43	8.8	43	8.8	0.327	3.8	LOS A	1.5	11.3	0.29	0.58	0.29	44.9
9	R2	All MCs	291	4.8	291	4.8	0.327	7.6	LOS A	1.5	11.3	0.29	0.58	0.29	47.3
9u	U	All MCs	19	0.0	19	0.0	0.327	9.1	LOS A	1.5	11.3	0.29	0.58	0.29	44.5
Approach			403	4.7	403	4.7	0.327	6.8	LOS A	1.5	11.3	0.29	0.58	0.29	46.5
West: Quinns Lane (W)															
10	L2	All MCs	232	7.6	232	7.6	0.329	5.4	LOS A	1.7	12.7	0.39	0.57	0.39	48.6
11	T1	All MCs	52	2.4	52	2.4	0.329	5.3	LOS A	1.7	12.7	0.39	0.57	0.39	49.0
12	R2	All MCs	83	1.5	83	1.5	0.329	9.2	LOS A	1.7	12.7	0.39	0.57	0.39	48.4
12u	U	All MCs	5	25.0	5	25.0	0.329	11.5	LOS A	1.7	12.7	0.39	0.57	0.39	51.0
Approach			372	5.8	372	5.8	0.329	6.3	LOS A	1.7	12.7	0.39	0.57	0.39	48.6
All Vehicles			1301	3.6	1301	3.6	0.350	6.6	LOS A	1.9	13.4	0.44	0.60	0.44	47.3

Site Level of Service (LOS) Method: Delay (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: [03FUPM] 03FUPM(2035) - Old Southern Rd / Quinns Ln**
 (Future (2035) - 10Yr 2% Growth)
 Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
 South Nowra, NSW - MTE Project No. 250613
 Future 2035 PM + Twins Estate
 Site Category: (None)
 Roundabout
 Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	111	2.3	111	2.3	0.152	4.8	LOS A	0.7	5.0	0.43	0.55	0.43	49.0
2	T1	All MCs	39	9.7	39	9.7	0.152	4.8	LOS A	0.7	5.0	0.43	0.55	0.43	46.1
3	R2	All MCs	1	0.0	1	0.0	0.152	8.4	LOS A	0.7	5.0	0.43	0.55	0.43	45.6
3u	U	All MCs	1	0.0	1	0.0	0.152	10.0	LOS A	0.7	5.0	0.43	0.55	0.43	45.6
Approach			153	4.1	153	4.1	0.152	4.9	LOS A	0.7	5.0	0.43	0.55	0.43	48.2
East: Quinns Lane (E)															
4	L2	All MCs	1	0.0	1	0.0	0.158	6.3	LOS A	0.9	6.1	0.61	0.62	0.61	44.9
5	T1	All MCs	111	0.0	111	0.0	0.158	6.2	LOS A	0.9	6.1	0.61	0.62	0.61	48.3
6	R2	All MCs	19	0.0	19	0.0	0.158	10.0	LOS A	0.9	6.1	0.61	0.62	0.61	44.6
6u	U	All MCs	3	0.0	3	0.0	0.158	11.7	LOS A	0.9	6.1	0.61	0.62	0.61	44.6
Approach			134	0.0	134	0.0	0.158	6.9	LOS A	0.9	6.1	0.61	0.62	0.61	47.6
North: Old Southern Road (N)															
7	L2	All MCs	16	0.0	16	0.0	0.295	5.0	LOS A	1.3	9.8	0.46	0.64	0.46	44.5
8	T1	All MCs	77	3.3	77	3.3	0.295	4.9	LOS A	1.3	9.8	0.46	0.64	0.46	44.8
9	R2	All MCs	203	5.6	203	5.6	0.295	8.7	LOS A	1.3	9.8	0.46	0.64	0.46	47.0
9u	U	All MCs	1	0.0	1	0.0	0.295	10.2	LOS A	1.3	9.8	0.46	0.64	0.46	44.3
Approach			299	4.7	299	4.7	0.295	7.5	LOS A	1.3	9.8	0.46	0.64	0.46	46.3
West: Quinns Lane (W)															
10	L2	All MCs	272	2.3	272	2.3	0.468	4.6	LOS A	3.0	21.3	0.24	0.53	0.24	48.8
11	T1	All MCs	172	2.2	172	2.2	0.468	4.7	LOS A	3.0	21.3	0.24	0.53	0.24	49.1
12	R2	All MCs	208	0.0	208	0.0	0.468	8.5	LOS A	3.0	21.3	0.24	0.53	0.24	48.5
12u	U	All MCs	10	12.5	10	12.5	0.468	10.5	LOS A	3.0	21.3	0.24	0.53	0.24	51.6
Approach			662	1.7	662	1.7	0.468	6.0	LOS A	3.0	21.3	0.24	0.53	0.24	48.8
All Vehicles			1247	2.5	1247	2.5	0.468	6.3	LOS A	3.0	21.3	0.36	0.57	0.36	48.0

Site Level of Service (LOS) Method: Delay (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: [03FUSA] 03FUSAT(2035) - Old Southern Rd / Quinns

Ln (Future (2035) - 10Yr 2% Growth)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
South Nowra, NSW - MTE Project No. 250613
Future 2035 SAT + Twins Estate
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	136	0.9	136	0.9	0.196	4.8	LOS A	0.9	6.4	0.44	0.55	0.44	49.0
2	T1	All MCs	59	2.1	59	2.1	0.196	4.7	LOS A	0.9	6.4	0.44	0.55	0.44	46.1
3	R2	All MCs	5	0.0	5	0.0	0.196	8.5	LOS A	0.9	6.4	0.44	0.55	0.44	45.5
3u	U	All MCs	1	0.0	1	0.0	0.196	10.1	LOS A	0.9	6.4	0.44	0.55	0.44	45.5
Approach			201	1.3	201	1.3	0.196	4.9	LOS A	0.9	6.4	0.44	0.55	0.44	48.0
East: Quinns Lane (E)															
4	L2	All MCs	3	0.0	3	0.0	0.147	5.5	LOS A	0.8	5.5	0.53	0.57	0.53	45.2
5	T1	All MCs	116	0.0	116	0.0	0.147	5.4	LOS A	0.8	5.5	0.53	0.57	0.53	48.6
6	R2	All MCs	18	0.0	18	0.0	0.147	9.2	LOS A	0.8	5.5	0.53	0.57	0.53	44.9
6u	U	All MCs	1	0.0	1	0.0	0.147	10.8	LOS A	0.8	5.5	0.53	0.57	0.53	44.9
Approach			138	0.0	138	0.0	0.147	6.0	LOS A	0.8	5.5	0.53	0.57	0.53	48.0
North: Old Southern Road (N)															
7	L2	All MCs	11	0.0	11	0.0	0.240	4.3	LOS A	1.0	7.1	0.34	0.61	0.34	44.6
8	T1	All MCs	53	0.0	53	0.0	0.240	4.1	LOS A	1.0	7.1	0.34	0.61	0.34	44.9
9	R2	All MCs	207	0.6	207	0.6	0.240	7.9	LOS A	1.0	7.1	0.34	0.61	0.34	47.3
9u	U	All MCs	1	0.0	1	0.0	0.240	9.5	LOS A	1.0	7.1	0.34	0.61	0.34	44.4
Approach			272	0.5	272	0.5	0.240	7.0	LOS A	1.0	7.1	0.34	0.61	0.34	46.7
West: Quinns Lane (W)															
10	L2	All MCs	224	1.7	224	1.7	0.346	4.7	LOS A	1.9	13.5	0.25	0.53	0.25	48.9
11	T1	All MCs	114	1.1	114	1.1	0.346	4.8	LOS A	1.9	13.5	0.25	0.53	0.25	49.3
12	R2	All MCs	120	1.1	120	1.1	0.346	8.6	LOS A	1.9	13.5	0.25	0.53	0.25	48.6
12u	U	All MCs	8	0.0	8	0.0	0.346	10.4	LOS A	1.9	13.5	0.25	0.53	0.25	52.2
Approach			465	1.4	465	1.4	0.346	5.8	LOS A	1.9	13.5	0.25	0.53	0.25	49.0
All Vehicles			1076	0.9	1076	0.9	0.346	6.0	LOS A	1.9	13.5	0.34	0.56	0.34	48.1

Site Level of Service (LOS) Method: Delay (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: [04FUAM] 04FUAM(2035) - Old Southern Rd / Hillcrest Ave / Isa Rd (Future (2035)) - 10Yr 2% Growth)**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Future 2035 AM + Twins Estate
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	274	6.4	274	6.4	0.868	27.8	LOS B	14.4	106.2	1.00	1.39	2.04	37.3
2	T1	All MCs	161	7.9	161	7.9	0.868	27.9	LOS B	14.4	106.2	1.00	1.39	2.04	37.5
3	R2	All MCs	78	4.8	78	4.8	0.868	31.3	LOS C	14.4	106.2	1.00	1.39	2.04	35.4
3u	U	All MCs	1	0.0	1	0.0	0.868	32.6	LOS C	14.4	106.2	1.00	1.39	2.04	35.4
Approach			515	6.6	515	6.6	0.868	28.4	LOS B	14.4	106.2	1.00	1.39	2.04	37.1
East: Isa Road (E)															
4	L2	All MCs	113	1.1	113	1.1	0.843	18.8	LOS B	13.5	95.9	1.00	1.20	1.75	39.1
5	T1	All MCs	485	1.6	485	1.6	0.843	18.7	LOS B	13.5	95.9	1.00	1.20	1.75	41.6
6	R2	All MCs	58	0.0	58	0.0	0.843	22.2	LOS B	13.5	95.9	1.00	1.20	1.75	41.2
6u	U	All MCs	1	0.0	1	0.0	0.843	23.8	LOS B	13.5	95.9	1.00	1.20	1.75	38.9
Approach			658	1.3	658	1.3	0.843	19.1	LOS B	13.5	95.9	1.00	1.20	1.75	41.1
North: Old Southern Road (N)															
7	L2	All MCs	62	4.1	62	4.1	0.530	7.7	LOS A	4.0	28.9	0.70	0.70	0.74	46.9
8	T1	All MCs	234	4.9	234	4.9	0.530	7.9	LOS A	4.0	28.9	0.70	0.70	0.74	47.2
9	R2	All MCs	201	1.9	201	1.9	0.530	11.4	LOS A	4.0	28.9	0.70	0.70	0.74	49.8
9u	U	All MCs	1	0.0	1	0.0	0.530	13.1	LOS A	4.0	28.9	0.70	0.70	0.74	49.9
Approach			498	3.6	498	3.6	0.530	9.3	LOS A	4.0	28.9	0.70	0.70	0.74	48.2
West: Hillcrest Avenue (W)															
10	L2	All MCs	44	11.4	44	11.4	0.363	6.4	LOS A	2.3	17.3	0.59	0.63	0.59	50.6
11	T1	All MCs	135	3.7	135	3.7	0.363	6.4	LOS A	2.3	17.3	0.59	0.63	0.59	47.8
12	R2	All MCs	159	9.5	159	9.5	0.363	10.3	LOS A	2.3	17.3	0.59	0.63	0.59	47.1
12u	U	All MCs	6	0.0	6	0.0	0.363	11.7	LOS A	2.3	17.3	0.59	0.63	0.59	50.6
Approach			345	7.3	345	7.3	0.363	8.3	LOS A	2.3	17.3	0.59	0.63	0.59	47.9
All Vehicles			2015	4.3	2015	4.3	0.868	17.2	LOS B	14.4	106.2	0.85	1.03	1.37	42.5

Site Level of Service (LOS) Method: Delay (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: [04FUPM] 04FUPM(2035) - Old Southern Rd / Hillcrest Ave / Isa Rd (Future (2035)) - 10Yr 2% Growth)**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Future 2035 PM + Twins Estate
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]		[Total HV]					[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	95	4.0	95	4.0	0.457	6.5	LOS A	3.1	22.3	0.69	0.66	0.70	47.3
2	T1	All MCs	196	2.6	196	2.6	0.457	6.4	LOS A	3.1	22.3	0.69	0.66	0.70	47.7
3	R2	All MCs	117	3.2	117	3.2	0.457	10.1	LOS A	3.1	22.3	0.69	0.66	0.70	44.1
3u	U	All MCs	1	0.0	1	0.0	0.457	11.6	LOS A	3.1	22.3	0.69	0.66	0.70	44.2
Approach			409	3.1	409	3.1	0.457	7.5	LOS A	3.1	22.3	0.69	0.66	0.70	46.5
East: Isa Road (E)															
4	L2	All MCs	90	2.8	90	2.8	0.436	6.1	LOS A	2.9	20.5	0.66	0.64	0.66	44.6
5	T1	All MCs	211	0.6	211	0.6	0.436	5.9	LOS A	2.9	20.5	0.66	0.64	0.66	48.0
6	R2	All MCs	106	2.4	106	2.4	0.436	9.6	LOS A	2.9	20.5	0.66	0.64	0.66	47.3
6u	U	All MCs	1	0.0	1	0.0	0.436	11.1	LOS A	2.9	20.5	0.66	0.64	0.66	44.4
Approach			408	1.5	408	1.5	0.436	6.9	LOS A	2.9	20.5	0.66	0.64	0.66	47.0
North: Old Southern Road (N)															
7	L2	All MCs	178	0.7	178	0.7	0.572	9.8	LOS A	5.0	35.6	0.82	0.80	0.97	46.1
8	T1	All MCs	185	6.2	185	6.2	0.572	10.3	LOS A	5.0	35.6	0.82	0.80	0.97	46.3
9	R2	All MCs	96	1.3	96	1.3	0.572	13.7	LOS A	5.0	35.6	0.82	0.80	0.97	49.0
9u	U	All MCs	1	0.0	1	0.0	0.572	15.4	LOS B	5.0	35.6	0.82	0.80	0.97	49.0
Approach			460	3.0	460	3.0	0.572	10.9	LOS A	5.0	35.6	0.82	0.80	0.97	46.8
West: Hillcrest Avenue (W)															
10	L2	All MCs	147	4.3	147	4.3	0.624	9.1	LOS A	5.8	41.6	0.78	0.76	0.92	49.7
11	T1	All MCs	321	1.6	321	1.6	0.624	9.3	LOS A	5.8	41.6	0.78	0.76	0.92	46.8
12	R2	All MCs	96	1.3	96	1.3	0.624	12.9	LOS A	5.8	41.6	0.78	0.76	0.92	46.2
12u	U	All MCs	10	12.5	10	12.5	0.624	15.2	LOS B	5.8	41.6	0.78	0.76	0.92	49.0
Approach			574	2.4	574	2.4	0.624	9.9	LOS A	5.8	41.6	0.78	0.76	0.92	47.4
All Vehicles			1851	2.5	1851	2.5	0.624	9.0	LOS A	5.8	41.6	0.75	0.72	0.82	47.0

Site Level of Service (LOS) Method: Delay (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: [04FUSA] 04FUSAT(2035) - Old Southern Rd / Hillcrest Ave / Isa Rd (Future (2035) - 10Yr 2% Growth)**

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Future 2035 SAT + Twins Estate
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	93	1.4	93	1.4	0.359	6.3	LOS A	2.3	15.9	0.66	0.65	0.66	47.6
2	T1	All MCs	146	0.0	146	0.0	0.359	6.2	LOS A	2.3	15.9	0.66	0.65	0.66	48.0
3	R2	All MCs	79	1.6	79	1.6	0.359	9.9	LOS A	2.3	15.9	0.66	0.65	0.66	44.3
3u	U	All MCs	1	0.0	1	0.0	0.359	11.5	LOS A	2.3	15.9	0.66	0.65	0.66	44.4
Approach			319	0.8	319	0.8	0.359	7.2	LOS A	2.3	15.9	0.66	0.65	0.66	46.9
East: Isa Road (E)															
4	L2	All MCs	90	1.4	90	1.4	0.443	5.8	LOS A	2.9	20.6	0.62	0.61	0.62	44.8
5	T1	All MCs	272	1.4	272	1.4	0.443	5.7	LOS A	2.9	20.6	0.62	0.61	0.62	48.2
6	R2	All MCs	73	0.0	73	0.0	0.443	9.2	LOS A	2.9	20.6	0.62	0.61	0.62	47.6
6u	U	All MCs	1	0.0	1	0.0	0.443	10.8	LOS A	2.9	20.6	0.62	0.61	0.62	44.6
Approach			436	1.2	436	1.2	0.443	6.3	LOS A	2.9	20.6	0.62	0.61	0.62	47.4
North: Old Southern Road (N)															
7	L2	All MCs	91	0.0	91	0.0	0.390	6.6	LOS A	2.4	17.0	0.60	0.64	0.60	47.8
8	T1	All MCs	180	0.7	180	0.7	0.390	6.9	LOS A	2.4	17.0	0.60	0.64	0.60	48.0
9	R2	All MCs	105	2.4	105	2.4	0.390	10.5	LOS A	2.4	17.0	0.60	0.64	0.60	50.8
9u	U	All MCs	1	0.0	1	0.0	0.390	12.2	LOS A	2.4	17.0	0.60	0.64	0.60	50.9
Approach			377	1.0	377	1.0	0.390	7.9	LOS A	2.4	17.0	0.60	0.64	0.60	48.7
West: Hillcrest Avenue (W)															
10	L2	All MCs	75	0.0	75	0.0	0.359	6.0	LOS A	2.2	15.5	0.54	0.59	0.54	51.7
11	T1	All MCs	230	1.1	230	1.1	0.359	6.3	LOS A	2.2	15.5	0.54	0.59	0.54	48.5
12	R2	All MCs	60	0.0	60	0.0	0.359	9.9	LOS A	2.2	15.5	0.54	0.59	0.54	47.9
12u	U	All MCs	4	0.0	4	0.0	0.359	11.7	LOS A	2.2	15.5	0.54	0.59	0.54	51.3
Approach			368	0.7	368	0.7	0.359	6.9	LOS A	2.2	15.5	0.54	0.59	0.54	49.0
All Vehicles			1501	0.9	1501	0.9	0.443	7.0	LOS A	2.9	20.6	0.60	0.62	0.60	48.0

Site Level of Service (LOS) Method: Delay (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.



**ANNEXURE D: POST-DEVELOPMENT SIDRA RESULTS
(2025+TWINS ESTATE+DEV;
2035+TWINS ESTATE+DEV)
(24 SHEETS)**

MOVEMENT SUMMARY

 **Site: [01EXTD-AM] 01EX+Twin+DevAM(2025) - Old Southern Rd / Casa Cct (Existing + Twin Estate+Dev (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate + Development 2025 AM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	185	0.6	185	0.6	0.153	3.8	LOS A	0.8	5.8	0.28	0.40	0.28	46.4
3	R2	All MCs	1	0.0	1	0.0	0.153	7.6	LOS A	0.8	5.8	0.28	0.40	0.28	45.9
3u	U	All MCs	1	0.0	1	0.0	0.153	9.3	LOS A	0.8	5.8	0.28	0.40	0.28	45.9
Approach			187	0.6	187	0.6	0.153	3.8	LOS A	0.8	5.8	0.28	0.40	0.28	46.4
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.087	3.6	LOS A	0.4	2.9	0.22	0.59	0.22	44.5
6	R2	All MCs	106	0.0	106	0.0	0.087	7.5	LOS A	0.4	2.9	0.22	0.59	0.22	44.2
6u	U	All MCs	1	0.0	1	0.0	0.087	9.1	LOS A	0.4	2.9	0.22	0.59	0.22	44.2
Approach			108	0.0	108	0.0	0.087	7.4	LOS A	0.4	2.9	0.22	0.59	0.22	44.2
North: Old Southern Road (N)															
7	L2	All MCs	49	0.0	49	0.0	0.081	3.2	LOS A	0.4	2.9	0.03	0.40	0.03	47.0
8	T1	All MCs	80	1.3	80	1.3	0.081	3.2	LOS A	0.4	2.9	0.03	0.40	0.03	47.2
9u	U	All MCs	1	0.0	1	0.0	0.081	8.7	LOS A	0.4	2.9	0.03	0.40	0.03	46.7
Approach			131	0.8	131	0.8	0.081	3.2	LOS A	0.4	2.9	0.03	0.40	0.03	47.1
All Vehicles			426	0.5	426	0.5	0.153	4.6	LOS A	0.8	5.8	0.19	0.45	0.19	46.0

Site Level of Service (LOS) Method: Delay (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: [01EXTDPM] 01Ex+Twin+DevPM(2025) - Old Southern Rd / Casa Cct (Existing + Twin Estate+Dev (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate + Development 2025 PM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	79	0.0	79	0.0	0.064	3.5	LOS A	0.3	2.3	0.20	0.38	0.20	46.7
3	R2	All MCs	1	0.0	1	0.0	0.064	7.3	LOS A	0.3	2.3	0.20	0.38	0.20	46.1
3u	U	All MCs	1	0.0	1	0.0	0.064	9.0	LOS A	0.3	2.3	0.20	0.38	0.20	46.1
Approach			81	0.0	81	0.0	0.064	3.6	LOS A	0.3	2.3	0.20	0.38	0.20	46.7
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.055	4.2	LOS A	0.3	1.8	0.36	0.61	0.36	44.2
6	R2	All MCs	58	1.8	58	1.8	0.055	8.1	LOS A	0.3	1.8	0.36	0.61	0.36	43.9
6u	U	All MCs	1	0.0	1	0.0	0.055	9.7	LOS A	0.3	1.8	0.36	0.61	0.36	43.9
Approach			60	1.8	60	1.8	0.055	8.1	LOS A	0.3	1.8	0.36	0.61	0.36	43.9
North: Old Southern Road (N)															
7	L2	All MCs	92	0.0	92	0.0	0.183	3.2	LOS A	1.0	7.0	0.03	0.39	0.03	47.0
8	T1	All MCs	214	0.0	214	0.0	0.183	3.2	LOS A	1.0	7.0	0.03	0.39	0.03	47.3
9u	U	All MCs	1	0.0	1	0.0	0.183	8.7	LOS A	1.0	7.0	0.03	0.39	0.03	46.7
Approach			306	0.0	306	0.0	0.183	3.2	LOS A	1.0	7.0	0.03	0.39	0.03	47.2
All Vehicles			447	0.2	447	0.2	0.183	3.9	LOS A	1.0	7.0	0.11	0.42	0.11	46.6

Site Level of Service (LOS) Method: Delay (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: [01EXTDSAT] 01EX+Twin+DevSAT(2025) - Old Southern Rd / Casa Cct (Existing + Twin Estate+Dev (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate + Development 2025 SAT
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand		Arrival		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			Flows		Flows					Queue					
			[Total HV]	[Total HV]	[Veh.	Dist]				veh	m				
			veh/h	%	veh/h	%	v/c	sec							
South: Old Southern Road (S)															
2	T1	All MCs	133	0.0	133	0.0	0.106	3.6	LOS A	0.6	3.9	0.23	0.38	0.23	46.6
3	R2	All MCs	1	0.0	1	0.0	0.106	7.4	LOS A	0.6	3.9	0.23	0.38	0.23	46.0
3u	U	All MCs	1	0.0	1	0.0	0.106	9.1	LOS A	0.6	3.9	0.23	0.38	0.23	46.0
Approach			135	0.0	135	0.0	0.106	3.6	LOS A	0.6	3.9	0.23	0.38	0.23	46.6
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.062	3.9	LOS A	0.3	2.0	0.29	0.60	0.29	44.3
6	R2	All MCs	65	0.0	65	0.0	0.062	7.7	LOS A	0.3	2.0	0.29	0.60	0.29	44.0
6u	U	All MCs	6	0.0	6	0.0	0.062	9.4	LOS A	0.3	2.0	0.29	0.60	0.29	44.0
Approach			73	0.0	73	0.0	0.062	7.8	LOS A	0.3	2.0	0.29	0.60	0.29	44.0
North: Old Southern Road (N)															
7	L2	All MCs	79	0.0	79	0.0	0.136	3.2	LOS A	0.7	5.1	0.06	0.40	0.06	46.9
8	T1	All MCs	133	0.0	133	0.0	0.136	3.2	LOS A	0.7	5.1	0.06	0.40	0.06	47.1
9u	U	All MCs	3	0.0	3	0.0	0.136	8.7	LOS A	0.7	5.1	0.06	0.40	0.06	46.6
Approach			215	0.0	215	0.0	0.136	3.3	LOS A	0.7	5.1	0.06	0.40	0.06	47.0
All Vehicles			422	0.0	422	0.0	0.136	4.2	LOS A	0.7	5.1	0.15	0.43	0.15	46.3

Site Level of Service (LOS) Method: Delay (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: [02EXTDAM] 02EX+Twin+DebAM(2025) - Old Southern Rd / Wattlebird Rd (Existing + Twin Estate+Dev (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate + Development 2025 AM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]		[Total HV]					[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	289	0.0	289	0.0	0.250	4.1	LOS A	1.5	10.3	0.38	0.44	0.38	46.2
3	R2	All MCs	1	0.0	1	0.0	0.250	7.9	LOS A	1.5	10.3	0.38	0.44	0.38	45.6
3u	U	All MCs	1	0.0	1	0.0	0.250	9.5	LOS A	1.5	10.3	0.38	0.44	0.38	45.6
Approach			292	0.0	292	0.0	0.250	4.2	LOS A	1.5	10.3	0.38	0.44	0.38	46.2
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.130	4.0	LOS A	0.6	4.5	0.30	0.59	0.30	44.3
6	R2	All MCs	148	0.7	148	0.7	0.130	7.7	LOS A	0.6	4.5	0.30	0.59	0.30	44.0
6u	U	All MCs	1	0.0	1	0.0	0.130	9.4	LOS A	0.6	4.5	0.30	0.59	0.30	44.0
Approach			151	0.7	151	0.7	0.130	7.7	LOS A	0.6	4.5	0.30	0.59	0.30	44.0
North: Old Southern Road (N)															
7	L2	All MCs	38	16.7	38	16.7	0.108	3.4	LOS A	0.6	4.1	0.03	0.40	0.03	46.7
8	T1	All MCs	129	0.0	129	0.0	0.108	3.2	LOS A	0.6	4.1	0.03	0.40	0.03	47.1
9u	U	All MCs	5	0.0	5	0.0	0.108	8.6	LOS A	0.6	4.1	0.03	0.40	0.03	46.5
Approach			173	3.7	173	3.7	0.108	3.4	LOS A	0.6	4.1	0.03	0.40	0.03	47.0
All Vehicles			615	1.2	615	1.2	0.250	4.8	LOS A	1.5	10.3	0.26	0.47	0.26	45.8

Site Level of Service (LOS) Method: Delay (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: [02EXTDPM] 02EX+Twin+DevPM(2025) - Old Southern Rd / Wattlebird Rd (Existing + Twin Estate+Dev (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate + Development 2025 PM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand		Arrival		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			Flows		Flows					[Veh. Dist]					
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				veh	m				
			veh/h	%	veh/h	%	v/c	sec							km/h
South: Old Southern Road (S)															
2	T1	All MCs	138	0.8	138	0.8	0.110	3.5	LOS A	0.6	4.2	0.22	0.39	0.22	46.6
3	R2	All MCs	1	0.0	1	0.0	0.110	7.3	LOS A	0.6	4.2	0.22	0.39	0.22	46.0
3u	U	All MCs	1	0.0	1	0.0	0.110	8.9	LOS A	0.6	4.2	0.22	0.39	0.22	46.0
Approach			140	0.8	140	0.8	0.110	3.6	LOS A	0.6	4.2	0.22	0.39	0.22	46.6
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.063	4.8	LOS A	0.3	2.2	0.44	0.64	0.44	44.0
6	R2	All MCs	58	9.1	58	9.1	0.063	8.8	LOS A	0.3	2.2	0.44	0.64	0.44	43.6
6u	U	All MCs	1	0.0	1	0.0	0.063	10.2	LOS A	0.3	2.2	0.44	0.64	0.44	43.8
Approach			60	8.8	60	8.8	0.063	8.8	LOS A	0.3	2.2	0.44	0.64	0.44	43.7
North: Old Southern Road (N)															
7	L2	All MCs	102	2.1	102	2.1	0.246	3.3	LOS A	1.5	10.2	0.04	0.40	0.04	46.9
8	T1	All MCs	305	0.0	305	0.0	0.246	3.2	LOS A	1.5	10.2	0.04	0.40	0.04	47.2
9u	U	All MCs	4	0.0	4	0.0	0.246	8.6	LOS A	1.5	10.2	0.04	0.40	0.04	46.6
Approach			412	0.5	412	0.5	0.246	3.3	LOS A	1.5	10.2	0.04	0.40	0.04	47.1
All Vehicles			612	1.4	612	1.4	0.246	3.9	LOS A	1.5	10.2	0.12	0.42	0.12	46.6

Site Level of Service (LOS) Method: Delay (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: [02EXTDSAT] 02EX+Twin+DevSAT(2025) - Old Southern Rd / Wattlebird Rd (Existing + Twin Estate+Dev (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate + Development 2025 SAT
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec							
South: Old Southern Road (S)															
2	T1	All MCs	208	0.0	208	0.0	0.160	3.5	LOS A	0.9	6.3	0.21	0.38	0.21	46.6
3	R2	All MCs	2	0.0	2	0.0	0.160	7.3	LOS A	0.9	6.3	0.21	0.38	0.21	46.1
3u	U	All MCs	1	0.0	1	0.0	0.160	8.9	LOS A	0.9	6.3	0.21	0.38	0.21	46.1
Approach			212	0.0	212	0.0	0.160	3.6	LOS A	0.9	6.3	0.21	0.38	0.21	46.6
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.053	4.3	LOS A	0.2	1.8	0.36	0.61	0.36	44.2
6	R2	All MCs	55	1.9	55	1.9	0.053	8.1	LOS A	0.2	1.8	0.36	0.61	0.36	43.9
6u	U	All MCs	1	0.0	1	0.0	0.053	9.7	LOS A	0.2	1.8	0.36	0.61	0.36	43.9
Approach			57	1.9	57	1.9	0.053	8.1	LOS A	0.2	1.8	0.36	0.61	0.36	43.9
North: Old Southern Road (N)															
7	L2	All MCs	65	1.6	65	1.6	0.169	3.3	LOS A	0.9	6.5	0.04	0.40	0.04	46.9
8	T1	All MCs	209	0.0	209	0.0	0.169	3.2	LOS A	0.9	6.5	0.04	0.40	0.04	47.2
9u	U	All MCs	3	0.0	3	0.0	0.169	8.6	LOS A	0.9	6.5	0.04	0.40	0.04	46.6
Approach			278	0.4	278	0.4	0.169	3.3	LOS A	0.9	6.5	0.04	0.40	0.04	47.1
All Vehicles			546	0.4	546	0.4	0.169	3.9	LOS A	0.9	6.5	0.14	0.41	0.14	46.6

Site Level of Service (LOS) Method: Delay (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: [03EXTDAM] 03EX+Twin+DevAM(2025) - Old Southern Rd / Quinns Ln (Existing + Twin Estate+Dev (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate + Development 2025 AM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	297	0.4	297	0.4	0.452	5.9	LOS A	2.6	18.5	0.60	0.62	0.60	48.5
2	T1	All MCs	141	0.7	141	0.7	0.452	5.7	LOS A	2.6	18.5	0.60	0.62	0.60	45.6
3	R2	All MCs	1	0.0	1	0.0	0.452	9.5	LOS A	2.6	18.5	0.60	0.62	0.60	45.1
3u	U	All MCs	1	0.0	1	0.0	0.452	11.1	LOS A	2.6	18.5	0.60	0.62	0.60	45.1
Approach			440	0.5	440	0.5	0.452	5.8	LOS A	2.6	18.5	0.60	0.62	0.60	47.5
East: Quinns Lane (E)															
4	L2	All MCs	1	0.0	1	0.0	0.195	6.0	LOS A	1.1	7.7	0.58	0.62	0.58	44.8
5	T1	All MCs	121	1.7	121	1.7	0.195	6.0	LOS A	1.1	7.7	0.58	0.62	0.58	48.1
6	R2	All MCs	48	2.2	48	2.2	0.195	9.8	LOS A	1.1	7.7	0.58	0.62	0.58	44.4
6u	U	All MCs	1	0.0	1	0.0	0.195	11.3	LOS A	1.1	7.7	0.58	0.62	0.58	44.5
Approach			172	1.8	172	1.8	0.195	7.1	LOS A	1.1	7.7	0.58	0.62	0.58	46.9
North: Old Southern Road (N)															
7	L2	All MCs	42	2.5	42	2.5	0.299	4.1	LOS A	1.4	10.0	0.32	0.58	0.32	44.7
8	T1	All MCs	54	5.9	54	5.9	0.299	3.9	LOS A	1.4	10.0	0.32	0.58	0.32	45.0
9	R2	All MCs	242	4.8	242	4.8	0.299	7.7	LOS A	1.4	10.0	0.32	0.58	0.32	47.3
9u	U	All MCs	16	0.0	16	0.0	0.299	9.3	LOS A	1.4	10.0	0.32	0.58	0.32	44.5
Approach			354	4.5	354	4.5	0.299	6.8	LOS A	1.4	10.0	0.32	0.58	0.32	46.5
West: Quinns Lane (W)															
10	L2	All MCs	194	7.6	194	7.6	0.327	5.4	LOS A	1.7	12.7	0.40	0.59	0.40	48.3
11	T1	All MCs	43	2.4	43	2.4	0.327	5.4	LOS A	1.7	12.7	0.40	0.59	0.40	48.7
12	R2	All MCs	125	0.8	125	0.8	0.327	9.2	LOS A	1.7	12.7	0.40	0.59	0.40	48.1
12u	U	All MCs	4	25.0	4	25.0	0.327	11.5	LOS A	1.7	12.7	0.40	0.59	0.40	50.6
Approach			366	4.9	366	4.9	0.327	6.8	LOS A	1.7	12.7	0.40	0.59	0.40	48.3
All Vehicles			1332	2.9	1332	2.9	0.452	6.5	LOS A	2.6	18.5	0.47	0.60	0.47	47.4

Site Level of Service (LOS) Method: Delay (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: [03EXTDPM] 03EX+Twin+DevPM(2025) - Old Southern Rd / Quinns Ln (Existing + Twin Estate+Dev (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate + Development 2025 PM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	148	1.4	148	1.4	0.191	4.6	LOS A	0.9	6.3	0.41	0.53	0.41	49.1
2	T1	All MCs	51	6.3	51	6.3	0.191	4.5	LOS A	0.9	6.3	0.41	0.53	0.41	46.2
3	R2	All MCs	1	0.0	1	0.0	0.191	8.2	LOS A	0.9	6.3	0.41	0.53	0.41	45.7
3u	U	All MCs	1	0.0	1	0.0	0.191	9.8	LOS A	0.9	6.3	0.41	0.53	0.41	45.7
Approach			201	2.6	201	2.6	0.191	4.6	LOS A	0.9	6.3	0.41	0.53	0.41	48.3
East: Quinns Lane (E)															
4	L2	All MCs	1	0.0	1	0.0	0.141	6.9	LOS A	0.8	5.5	0.64	0.64	0.64	44.6
5	T1	All MCs	93	0.0	93	0.0	0.141	6.9	LOS A	0.8	5.5	0.64	0.64	0.64	48.0
6	R2	All MCs	16	0.0	16	0.0	0.141	10.7	LOS A	0.8	5.5	0.64	0.64	0.64	44.3
6u	U	All MCs	2	0.0	2	0.0	0.141	12.3	LOS A	0.8	5.5	0.64	0.64	0.64	44.3
Approach			112	0.0	112	0.0	0.141	7.5	LOS A	0.8	5.5	0.64	0.64	0.64	47.3
North: Old Southern Road (N)															
7	L2	All MCs	14	0.0	14	0.0	0.299	5.3	LOS A	1.4	10.2	0.50	0.65	0.50	44.5
8	T1	All MCs	108	1.9	108	1.9	0.299	5.1	LOS A	1.4	10.2	0.50	0.65	0.50	44.8
9	R2	All MCs	169	5.6	169	5.6	0.299	9.0	LOS A	1.4	10.2	0.50	0.65	0.50	47.1
9u	U	All MCs	1	0.0	1	0.0	0.299	10.5	LOS A	1.4	10.2	0.50	0.65	0.50	44.3
Approach			293	4.0	293	4.0	0.299	7.4	LOS A	1.4	10.2	0.50	0.65	0.50	46.1
West: Quinns Lane (W)															
10	L2	All MCs	226	2.3	226	2.3	0.486	4.7	LOS A	3.2	22.7	0.27	0.55	0.27	48.5
11	T1	All MCs	143	2.2	143	2.2	0.486	4.8	LOS A	3.2	22.7	0.27	0.55	0.27	48.8
12	R2	All MCs	303	0.0	303	0.0	0.486	8.6	LOS A	3.2	22.7	0.27	0.55	0.27	48.2
12u	U	All MCs	8	12.5	8	12.5	0.486	10.6	LOS A	3.2	22.7	0.27	0.55	0.27	51.2
Approach			681	1.4	681	1.4	0.486	6.5	LOS A	3.2	22.7	0.27	0.55	0.27	48.4
All Vehicles			1286	2.0	1286	2.0	0.486	6.5	LOS A	3.2	22.7	0.38	0.58	0.38	47.8

Site Level of Service (LOS) Method: Delay (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: [03EXTDSAT] 03EX+Twin+DevSAT(2025) - Old Southern Rd / Quinns Ln (Existing + Twin Estate+Dev (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate + Development 2025 SAT
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	206	0.5	206	0.5	0.272	4.7	LOS A	1.3	9.3	0.43	0.54	0.43	49.1
2	T1	All MCs	80	1.3	80	1.3	0.272	4.6	LOS A	1.3	9.3	0.43	0.54	0.43	46.2
3	R2	All MCs	4	0.0	4	0.0	0.272	8.3	LOS A	1.3	9.3	0.43	0.54	0.43	45.6
3u	U	All MCs	1	0.0	1	0.0	0.272	9.9	LOS A	1.3	9.3	0.43	0.54	0.43	45.6
Approach			292	0.7	292	0.7	0.272	4.7	LOS A	1.3	9.3	0.43	0.54	0.43	48.2
East: Quinns Lane (E)															
4	L2	All MCs	2	0.0	2	0.0	0.128	5.8	LOS A	0.7	4.8	0.56	0.59	0.56	45.1
5	T1	All MCs	97	0.0	97	0.0	0.128	5.8	LOS A	0.7	4.8	0.56	0.59	0.56	48.5
6	R2	All MCs	15	0.0	15	0.0	0.128	9.5	LOS A	0.7	4.8	0.56	0.59	0.56	44.8
6u	U	All MCs	1	0.0	1	0.0	0.128	11.2	LOS A	0.7	4.8	0.56	0.59	0.56	44.8
Approach			115	0.0	115	0.0	0.128	6.3	LOS A	0.7	4.8	0.56	0.59	0.56	47.9
North: Old Southern Road (N)															
7	L2	All MCs	9	0.0	9	0.0	0.235	4.5	LOS A	1.0	7.1	0.38	0.61	0.38	44.7
8	T1	All MCs	75	0.0	75	0.0	0.235	4.3	LOS A	1.0	7.1	0.38	0.61	0.38	45.0
9	R2	All MCs	173	0.6	173	0.6	0.235	8.1	LOS A	1.0	7.1	0.38	0.61	0.38	47.4
9u	U	All MCs	1	0.0	1	0.0	0.235	9.7	LOS A	1.0	7.1	0.38	0.61	0.38	44.5
Approach			258	0.4	258	0.4	0.235	6.9	LOS A	1.0	7.1	0.38	0.61	0.38	46.6
West: Quinns Lane (W)															
10	L2	All MCs	186	1.7	186	1.7	0.365	4.8	LOS A	2.1	14.5	0.28	0.56	0.28	48.5
11	T1	All MCs	95	1.1	95	1.1	0.365	4.8	LOS A	2.1	14.5	0.28	0.56	0.28	48.9
12	R2	All MCs	193	0.5	193	0.5	0.365	8.7	LOS A	2.1	14.5	0.28	0.56	0.28	48.2
12u	U	All MCs	6	0.0	6	0.0	0.365	10.5	LOS A	2.1	14.5	0.28	0.56	0.28	51.8
Approach			480	1.1	480	1.1	0.365	6.4	LOS A	2.1	14.5	0.28	0.56	0.28	48.5
All Vehicles			1144	0.7	1144	0.7	0.365	6.1	LOS A	2.1	14.5	0.37	0.57	0.37	47.9

Site Level of Service (LOS) Method: Delay (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: [04EXTDAM] 04EX+Twin+DevAM(2025) - Old Southern Rd / Hillcrest Ave / Isa Rd (Existing + Twin Estate+Dev (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate + Development 2025 AM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec							
South: Old Southern Road (S)															
1	L2	All MCs	246	6.0	246	6.0	0.664	12.6	LOS A	6.9	50.6	0.92	0.93	1.24	44.2
2	T1	All MCs	152	6.9	152	6.9	0.664	12.6	LOS A	6.9	50.6	0.92	0.93	1.24	44.5
3	R2	All MCs	74	4.3	74	4.3	0.664	16.1	LOS B	6.9	50.6	0.92	0.93	1.24	41.5
3u	U	All MCs	1	0.0	1	0.0	0.664	17.5	LOS B	6.9	50.6	0.92	0.93	1.24	41.5
Approach			473	6.0	473	6.0	0.664	13.1	LOS A	6.9	50.6	0.92	0.93	1.24	43.8
East: Isa Road (E)															
4	L2	All MCs	98	1.1	98	1.1	0.645	9.9	LOS A	6.3	44.6	0.83	0.83	1.05	43.1
5	T1	All MCs	404	1.6	404	1.6	0.645	9.8	LOS A	6.3	44.6	0.83	0.83	1.05	46.2
6	R2	All MCs	48	0.0	48	0.0	0.645	13.3	LOS A	6.3	44.6	0.83	0.83	1.05	45.6
6u	U	All MCs	1	0.0	1	0.0	0.645	15.0	LOS B	6.3	44.6	0.83	0.83	1.05	42.9
Approach			552	1.3	552	1.3	0.645	10.2	LOS A	6.3	44.6	0.83	0.83	1.05	45.5
North: Old Southern Road (N)															
7	L2	All MCs	52	4.1	52	4.1	0.430	6.6	LOS A	2.7	19.7	0.60	0.64	0.60	47.5
8	T1	All MCs	202	4.7	202	4.7	0.430	6.9	LOS A	2.7	19.7	0.60	0.64	0.60	47.8
9	R2	All MCs	167	1.9	167	1.9	0.430	10.4	LOS A	2.7	19.7	0.60	0.64	0.60	50.5
9u	U	All MCs	1	0.0	1	0.0	0.430	12.1	LOS A	2.7	19.7	0.60	0.64	0.60	50.6
Approach			422	3.5	422	3.5	0.430	8.3	LOS A	2.7	19.7	0.60	0.64	0.60	48.8
West: Hillcrest Avenue (W)															
10	L2	All MCs	37	11.4	37	11.4	0.301	6.1	LOS A	1.8	13.5	0.53	0.62	0.53	50.8
11	T1	All MCs	113	3.7	113	3.7	0.301	6.1	LOS A	1.8	13.5	0.53	0.62	0.53	48.0
12	R2	All MCs	140	9.0	140	9.0	0.301	10.0	LOS A	1.8	13.5	0.53	0.62	0.53	47.3
12u	U	All MCs	5	0.0	5	0.0	0.301	11.5	LOS A	1.8	13.5	0.53	0.62	0.53	50.8
Approach			295	7.1	295	7.1	0.301	8.1	LOS A	1.8	13.5	0.53	0.62	0.53	48.0
All Vehicles			1741	4.1	1741	4.1	0.664	10.2	LOS A	6.9	50.6	0.75	0.78	0.90	46.2

Site Level of Service (LOS) Method: Delay (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: [04EXTDPM] 04EX+Twin+DevPM(2025) - Old Southern Rd / Hillcrest Ave / Isa Rd (Existing + Twin Estate+Dev (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate + Development 2025 PM
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	86	3.7	86	3.7	0.376	5.7	LOS A	2.4	16.9	0.60	0.61	0.60	47.7
2	T1	All MCs	171	2.5	171	2.5	0.376	5.7	LOS A	2.4	16.9	0.60	0.61	0.60	48.1
3	R2	All MCs	101	3.1	101	3.1	0.376	9.4	LOS A	2.4	16.9	0.60	0.61	0.60	44.5
3u	U	All MCs	1	0.0	1	0.0	0.376	10.8	LOS A	2.4	16.9	0.60	0.61	0.60	44.5
Approach			359	2.9	359	2.9	0.376	6.7	LOS A	2.4	16.9	0.60	0.61	0.60	46.9
East: Isa Road (E)															
4	L2	All MCs	83	2.5	83	2.5	0.360	5.7	LOS A	2.2	15.6	0.59	0.61	0.59	44.8
5	T1	All MCs	176	0.6	176	0.6	0.360	5.6	LOS A	2.2	15.6	0.59	0.61	0.59	48.2
6	R2	All MCs	88	2.4	88	2.4	0.360	9.2	LOS A	2.2	15.6	0.59	0.61	0.59	47.5
6u	U	All MCs	1	0.0	1	0.0	0.360	10.7	LOS A	2.2	15.6	0.59	0.61	0.59	44.6
Approach			348	1.5	348	1.5	0.360	6.5	LOS A	2.2	15.6	0.59	0.61	0.59	47.2
North: Old Southern Road (N)															
7	L2	All MCs	148	0.7	148	0.7	0.462	7.7	LOS A	3.2	22.8	0.71	0.70	0.74	47.3
8	T1	All MCs	172	5.5	172	5.5	0.462	8.2	LOS A	3.2	22.8	0.71	0.70	0.74	47.6
9	R2	All MCs	80	1.3	80	1.3	0.462	11.6	LOS A	3.2	22.8	0.71	0.70	0.74	50.4
9u	U	All MCs	1	0.0	1	0.0	0.462	13.3	LOS A	3.2	22.8	0.71	0.70	0.74	50.4
Approach			401	2.9	401	2.9	0.462	8.7	LOS A	3.2	22.8	0.71	0.70	0.74	48.0
West: Hillcrest Avenue (W)															
10	L2	All MCs	122	4.3	122	4.3	0.510	7.1	LOS A	3.6	26.0	0.66	0.66	0.68	50.9
11	T1	All MCs	267	1.6	267	1.6	0.510	7.2	LOS A	3.6	26.0	0.66	0.66	0.68	47.9
12	R2	All MCs	98	1.1	98	1.1	0.510	10.9	LOS A	3.6	26.0	0.66	0.66	0.68	47.3
12u	U	All MCs	8	12.5	8	12.5	0.510	13.1	LOS A	3.6	26.0	0.66	0.66	0.68	50.2
Approach			496	2.3	496	2.3	0.510	8.0	LOS A	3.6	26.0	0.66	0.66	0.68	48.5
All Vehicles			1604	2.4	1604	2.4	0.510	7.6	LOS A	3.6	26.0	0.65	0.65	0.66	47.7

Site Level of Service (LOS) Method: Delay (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: [04EXTDSAT] 04EX+Twin+DevSAT(2025) - Old Southern Rd / Hillcrest Ave / Isa Rd (Existing + Twin Estate+Dev (2025))**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Existing + Twin Estate + Development 2025 SAT
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	89	1.2	89	1.2	0.311	5.7	LOS A	1.9	13.1	0.58	0.61	0.58	47.9
2	T1	All MCs	134	0.0	134	0.0	0.311	5.6	LOS A	1.9	13.1	0.58	0.61	0.58	48.3
3	R2	All MCs	72	1.5	72	1.5	0.311	9.3	LOS A	1.9	13.1	0.58	0.61	0.58	44.6
3u	U	All MCs	1	0.0	1	0.0	0.311	10.9	LOS A	1.9	13.1	0.58	0.61	0.58	44.6
Approach			296	0.7	296	0.7	0.311	6.5	LOS A	1.9	13.1	0.58	0.61	0.58	47.2
East: Isa Road (E)															
4	L2	All MCs	81	1.3	81	1.3	0.364	5.4	LOS A	2.2	15.6	0.55	0.57	0.55	45.0
5	T1	All MCs	226	1.4	226	1.4	0.364	5.3	LOS A	2.2	15.6	0.55	0.57	0.55	48.4
6	R2	All MCs	61	0.0	61	0.0	0.364	8.8	LOS A	2.2	15.6	0.55	0.57	0.55	47.8
6u	U	All MCs	1	0.0	1	0.0	0.364	10.4	LOS A	2.2	15.6	0.55	0.57	0.55	44.8
Approach			369	1.1	369	1.1	0.364	5.9	LOS A	2.2	15.6	0.55	0.57	0.55	47.5
North: Old Southern Road (N)															
7	L2	All MCs	76	0.0	76	0.0	0.324	6.2	LOS A	1.9	13.3	0.54	0.62	0.54	48.0
8	T1	All MCs	162	0.6	162	0.6	0.324	6.5	LOS A	1.9	13.3	0.54	0.62	0.54	48.3
9	R2	All MCs	87	2.4	87	2.4	0.324	10.1	LOS A	1.9	13.3	0.54	0.62	0.54	51.1
9u	U	All MCs	1	0.0	1	0.0	0.324	11.8	LOS A	1.9	13.3	0.54	0.62	0.54	51.2
Approach			326	1.0	326	1.0	0.324	7.4	LOS A	1.9	13.3	0.54	0.62	0.54	48.9
West: Hillcrest Avenue (W)															
10	L2	All MCs	62	0.0	62	0.0	0.302	5.7	LOS A	1.7	12.3	0.49	0.58	0.49	51.9
11	T1	All MCs	192	1.1	192	1.1	0.302	6.0	LOS A	1.7	12.3	0.49	0.58	0.49	48.6
12	R2	All MCs	62	0.0	62	0.0	0.302	9.7	LOS A	1.7	12.3	0.49	0.58	0.49	48.0
12u	U	All MCs	3	0.0	3	0.0	0.302	11.4	LOS A	1.7	12.3	0.49	0.58	0.49	51.5
Approach			319	0.7	319	0.7	0.302	6.7	LOS A	1.7	12.3	0.49	0.58	0.49	49.1
All Vehicles			1311	0.9	1311	0.9	0.364	6.6	LOS A	2.2	15.6	0.54	0.59	0.54	48.2

Site Level of Service (LOS) Method: Delay (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: [01FUAM+D] 01FU+DevAM(2035) - Old Southern Rd / Casa Cct** (Future + Development (2035) - 10Yr 2% Growth)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Future 2035 AM + Twins Estate + Development
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec							
South: Old Southern Road (S)															
2	T1	All MCs	186	0.7	186	0.7	0.155	3.8	LOS A	0.8	5.8	0.29	0.40	0.29	46.4
3	R2	All MCs	1	0.0	1	0.0	0.155	7.6	LOS A	0.8	5.8	0.29	0.40	0.29	45.9
3u	U	All MCs	1	0.0	1	0.0	0.155	9.3	LOS A	0.8	5.8	0.29	0.40	0.29	45.9
Approach			188	0.7	188	0.7	0.155	3.9	LOS A	0.8	5.8	0.29	0.40	0.29	46.4
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.090	3.6	LOS A	0.4	3.0	0.22	0.58	0.22	44.5
6	R2	All MCs	110	0.0	110	0.0	0.090	7.5	LOS A	0.4	3.0	0.22	0.58	0.22	44.2
6u	U	All MCs	1	0.0	1	0.0	0.090	9.1	LOS A	0.4	3.0	0.22	0.58	0.22	44.2
Approach			112	0.0	112	0.0	0.090	7.4	LOS A	0.4	3.0	0.22	0.58	0.22	44.2
North: Old Southern Road (N)															
7	L2	All MCs	52	0.0	52	0.0	0.083	3.2	LOS A	0.4	3.0	0.03	0.40	0.03	47.0
8	T1	All MCs	80	1.6	80	1.6	0.083	3.2	LOS A	0.4	3.0	0.03	0.40	0.03	47.2
9u	U	All MCs	1	0.0	1	0.0	0.083	8.7	LOS A	0.4	3.0	0.03	0.40	0.03	46.6
Approach			133	0.9	133	0.9	0.083	3.3	LOS A	0.4	3.0	0.03	0.40	0.03	47.1
All Vehicles			434	0.6	434	0.6	0.155	4.6	LOS A	0.8	5.8	0.19	0.45	0.19	46.0

Site Level of Service (LOS) Method: Delay (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: [01FUPM+D] 01FU+DevPM(2035) - Old Southern Rd / Casa Cct** (Future + Development (2035) - 10Yr 2% Growth)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Future 2035 PM + Twins Estate + Development
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%		sec							
South: Old Southern Road (S)															
2	T1	All MCs	79	0.0	79	0.0	0.065	3.5	LOS A	0.3	2.3	0.21	0.38	0.21	46.6
3	R2	All MCs	1	0.0	1	0.0	0.065	7.4	LOS A	0.3	2.3	0.21	0.38	0.21	46.1
3u	U	All MCs	1	0.0	1	0.0	0.065	9.0	LOS A	0.3	2.3	0.21	0.38	0.21	46.1
Approach			82	0.0	82	0.0	0.065	3.6	LOS A	0.3	2.3	0.21	0.38	0.21	46.6
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.059	4.3	LOS A	0.3	2.0	0.37	0.61	0.37	44.2
6	R2	All MCs	62	2.0	62	2.0	0.059	8.2	LOS A	0.3	2.0	0.37	0.61	0.37	43.9
6u	U	All MCs	1	0.0	1	0.0	0.059	9.8	LOS A	0.3	2.0	0.37	0.61	0.37	43.9
Approach			64	2.0	64	2.0	0.059	8.1	LOS A	0.3	2.0	0.37	0.61	0.37	43.9
North: Old Southern Road (N)															
7	L2	All MCs	92	0.0	92	0.0	0.188	3.2	LOS A	1.0	7.3	0.04	0.39	0.04	47.0
8	T1	All MCs	220	0.0	220	0.0	0.188	3.2	LOS A	1.0	7.3	0.04	0.39	0.04	47.2
9u	U	All MCs	1	0.0	1	0.0	0.188	8.7	LOS A	1.0	7.3	0.04	0.39	0.04	46.7
Approach			313	0.0	313	0.0	0.188	3.2	LOS A	1.0	7.3	0.04	0.39	0.04	47.2
All Vehicles			459	0.3	459	0.3	0.188	4.0	LOS A	1.0	7.3	0.11	0.42	0.11	46.6

Site Level of Service (LOS) Method: Delay (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: [01FUSA+D] 01FU+DevSAT(2035) - Old Southern Rd / Casa Cct** (Future + Development (2035) - 10Yr 2% Growth)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Casa Circuit
South Nowra, NSW - MTE Project No. 250613
Future 2035 SAT + Twins Estate + Development
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycle Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec							
South: Old Southern Road (S)															
2	T1	All MCs	133	0.0	133	0.0	0.107	3.6	LOS A	0.6	3.9	0.23	0.38	0.23	46.6
3	R2	All MCs	1	0.0	1	0.0	0.107	7.4	LOS A	0.6	3.9	0.23	0.38	0.23	46.0
3u	U	All MCs	1	0.0	1	0.0	0.107	9.1	LOS A	0.6	3.9	0.23	0.38	0.23	46.0
Approach			136	0.0	136	0.0	0.107	3.6	LOS A	0.6	3.9	0.23	0.38	0.23	46.6
East: Casa Circuit (E)															
4	L2	All MCs	1	0.0	1	0.0	0.062	3.9	LOS A	0.3	2.0	0.29	0.60	0.29	44.3
6	R2	All MCs	65	0.0	65	0.0	0.062	7.7	LOS A	0.3	2.0	0.29	0.60	0.29	44.0
6u	U	All MCs	6	0.0	6	0.0	0.062	9.4	LOS A	0.3	2.0	0.29	0.60	0.29	44.0
Approach			73	0.0	73	0.0	0.062	7.8	LOS A	0.3	2.0	0.29	0.60	0.29	44.0
North: Old Southern Road (N)															
7	L2	All MCs	79	0.0	79	0.0	0.137	3.2	LOS A	0.7	5.1	0.06	0.40	0.06	46.9
8	T1	All MCs	133	0.0	133	0.0	0.137	3.2	LOS A	0.7	5.1	0.06	0.40	0.06	47.1
9u	U	All MCs	3	0.0	3	0.0	0.137	8.7	LOS A	0.7	5.1	0.06	0.40	0.06	46.6
Approach			215	0.0	215	0.0	0.137	3.3	LOS A	0.7	5.1	0.06	0.40	0.06	47.0
All Vehicles			423	0.0	423	0.0	0.137	4.2	LOS A	0.7	5.1	0.15	0.43	0.15	46.3

Site Level of Service (LOS) Method: Delay (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: [02FUAM+D] 02FU+DevAM(2035) - Old Southern Rd / Wattlebird Rd (Future + Development (2035) - 10Yr 2% Growth)**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Future 2035 AM + Twins Estate + Development
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	293	0.0	293	0.0	0.263	4.4	LOS A	1.6	11.0	0.42	0.46	0.42	46.0
3	R2	All MCs	1	0.0	1	0.0	0.263	8.1	LOS A	1.6	11.0	0.42	0.46	0.42	45.5
3u	U	All MCs	1	0.0	1	0.0	0.263	9.8	LOS A	1.6	11.0	0.42	0.46	0.42	45.5
Approach			296	0.0	296	0.0	0.263	4.4	LOS A	1.6	11.0	0.42	0.46	0.42	46.0
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.155	4.0	LOS A	0.8	5.6	0.31	0.59	0.31	44.3
6	R2	All MCs	178	0.7	178	0.7	0.155	7.8	LOS A	0.8	5.6	0.31	0.59	0.31	44.0
6u	U	All MCs	1	0.0	1	0.0	0.155	9.4	LOS A	0.8	5.6	0.31	0.59	0.31	44.0
Approach			181	0.7	181	0.7	0.155	7.8	LOS A	0.8	5.6	0.31	0.59	0.31	44.0
North: Old Southern Road (N)															
7	L2	All MCs	45	16.7	45	16.7	0.115	3.4	LOS A	0.6	4.5	0.04	0.41	0.04	46.6
8	T1	All MCs	132	0.0	132	0.0	0.115	3.2	LOS A	0.6	4.5	0.04	0.41	0.04	47.1
9u	U	All MCs	6	0.0	6	0.0	0.115	8.6	LOS A	0.6	4.5	0.04	0.41	0.04	46.5
Approach			184	4.1	184	4.1	0.115	3.4	LOS A	0.6	4.5	0.04	0.41	0.04	47.0
All Vehicles			660	1.3	660	1.3	0.263	5.1	LOS A	1.6	11.0	0.28	0.48	0.28	45.7

Site Level of Service (LOS) Method: Delay (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: [02FUPM+D] 02FU+DevPM(2035) - Old Southern Rd / Wattlebird Rd (Future + Development (2035) - 10Yr 2% Growth)**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Future 2035 PM + Twins Estate + Development
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]		[Total HV]					[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
2	T1	All MCs	142	0.9	142	0.9	0.117	3.6	LOS A	0.6	4.5	0.25	0.39	0.25	46.5
3	R2	All MCs	1	0.0	1	0.0	0.117	7.4	LOS A	0.6	4.5	0.25	0.39	0.25	46.0
3u	U	All MCs	1	0.0	1	0.0	0.117	9.0	LOS A	0.6	4.5	0.25	0.39	0.25	46.0
Approach			145	0.9	145	0.9	0.117	3.7	LOS A	0.6	4.5	0.25	0.39	0.25	46.5
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.076	4.9	LOS A	0.4	2.7	0.45	0.64	0.45	44.0
6	R2	All MCs	69	9.1	69	9.1	0.076	8.9	LOS A	0.4	2.7	0.45	0.64	0.45	43.6
6u	U	All MCs	1	0.0	1	0.0	0.076	10.3	LOS A	0.4	2.7	0.45	0.64	0.45	43.7
Approach			72	8.8	72	8.8	0.076	8.9	LOS A	0.4	2.7	0.45	0.64	0.45	43.6
North: Old Southern Road (N)															
7	L2	All MCs	123	2.1	123	2.1	0.264	3.3	LOS A	1.6	11.2	0.04	0.40	0.04	46.9
8	T1	All MCs	312	0.0	312	0.0	0.264	3.2	LOS A	1.6	11.2	0.04	0.40	0.04	47.2
9u	U	All MCs	5	0.0	5	0.0	0.264	8.6	LOS A	1.6	11.2	0.04	0.40	0.04	46.6
Approach			440	0.6	440	0.6	0.264	3.3	LOS A	1.6	11.2	0.04	0.40	0.04	47.1
All Vehicles			656	1.5	656	1.5	0.264	4.0	LOS A	1.6	11.2	0.13	0.42	0.13	46.5

Site Level of Service (LOS) Method: Delay (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: [02FUSA+D] 02FU+DevSAT(2035) - Old Southern Rd / Wattlebird Rd (Future + Development (2035) - 10Yr 2% Growth)**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Wattlebird Road
South Nowra, NSW - MTE Project No. 250613
Future 2035 SAT + Twins Estate + Development
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec							
South: Old Southern Road (S)															
2	T1	All MCs	211	0.0	211	0.0	0.166	3.6	LOS A	0.9	6.5	0.24	0.39	0.24	46.6
3	R2	All MCs	3	0.0	3	0.0	0.166	7.4	LOS A	0.9	6.5	0.24	0.39	0.24	46.0
3u	U	All MCs	1	0.0	1	0.0	0.166	9.0	LOS A	0.9	6.5	0.24	0.39	0.24	46.0
Approach			215	0.0	215	0.0	0.166	3.7	LOS A	0.9	6.5	0.24	0.39	0.24	46.6
East: Wattlebird Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.063	4.3	LOS A	0.3	2.1	0.37	0.61	0.37	44.2
6	R2	All MCs	66	1.9	66	1.9	0.063	8.1	LOS A	0.3	2.1	0.37	0.61	0.37	43.9
6u	U	All MCs	1	0.0	1	0.0	0.063	9.7	LOS A	0.3	2.1	0.37	0.61	0.37	43.9
Approach			68	1.9	68	1.9	0.063	8.1	LOS A	0.3	2.1	0.37	0.61	0.37	43.9
North: Old Southern Road (N)															
7	L2	All MCs	78	1.6	78	1.6	0.181	3.3	LOS A	1.0	7.0	0.04	0.40	0.04	46.9
8	T1	All MCs	212	0.0	212	0.0	0.181	3.2	LOS A	1.0	7.0	0.04	0.40	0.04	47.1
9u	U	All MCs	4	0.0	4	0.0	0.181	8.6	LOS A	1.0	7.0	0.04	0.40	0.04	46.6
Approach			295	0.4	295	0.4	0.181	3.3	LOS A	1.0	7.0	0.04	0.40	0.04	47.1
All Vehicles			578	0.4	578	0.4	0.181	4.0	LOS A	1.0	7.0	0.15	0.42	0.15	46.5

Site Level of Service (LOS) Method: Delay (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: [03FUAM+D] 03FU+DevAM(2035) - Old Southern Rd / Quinns Ln (Future + Development (2035) - 10Yr 2% Growth)**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
South Nowra, NSW - MTE Project No. 250613
Future 2035 AM + Twins Estate + Development
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	315	0.4	315	0.4	0.518	7.3	LOS A	3.6	25.5	0.69	0.71	0.77	47.7
2	T1	All MCs	156	0.8	156	0.8	0.518	7.1	LOS A	3.6	25.5	0.69	0.71	0.77	44.9
3	R2	All MCs	1	0.0	1	0.0	0.518	10.9	LOS A	3.6	25.5	0.69	0.71	0.77	44.4
3u	U	All MCs	1	0.0	1	0.0	0.518	12.5	LOS A	3.6	25.5	0.69	0.71	0.77	44.4
Approach			473	0.5	473	0.5	0.518	7.3	LOS A	3.6	25.5	0.69	0.71	0.77	46.7
East: Quinns Lane (E)															
4	L2	All MCs	1	0.0	1	0.0	0.248	6.6	LOS A	1.4	10.2	0.64	0.65	0.64	44.5
5	T1	All MCs	145	1.7	145	1.7	0.248	6.6	LOS A	1.4	10.2	0.64	0.65	0.64	47.8
6	R2	All MCs	58	2.2	58	2.2	0.248	10.4	LOS A	1.4	10.2	0.64	0.65	0.64	44.2
6u	U	All MCs	1	0.0	1	0.0	0.248	11.9	LOS A	1.4	10.2	0.64	0.65	0.64	44.2
Approach			206	1.8	206	1.8	0.248	7.7	LOS A	1.4	10.2	0.64	0.65	0.64	46.7
North: Old Southern Road (N)															
7	L2	All MCs	51	2.5	51	2.5	0.357	4.2	LOS A	1.8	12.9	0.36	0.59	0.36	44.6
8	T1	All MCs	59	6.5	59	6.5	0.357	4.1	LOS A	1.8	12.9	0.36	0.59	0.36	44.9
9	R2	All MCs	291	4.8	291	4.8	0.357	7.8	LOS A	1.8	12.9	0.36	0.59	0.36	47.2
9u	U	All MCs	19	0.0	19	0.0	0.357	9.4	LOS A	1.8	12.9	0.36	0.59	0.36	44.4
Approach			419	4.5	419	4.5	0.357	6.9	LOS A	1.8	12.9	0.36	0.59	0.36	46.4
West: Quinns Lane (W)															
10	L2	All MCs	232	7.6	232	7.6	0.385	5.6	LOS A	2.2	16.1	0.46	0.60	0.46	48.2
11	T1	All MCs	52	2.4	52	2.4	0.385	5.6	LOS A	2.2	16.1	0.46	0.60	0.46	48.6
12	R2	All MCs	133	1.0	133	1.0	0.385	9.4	LOS A	2.2	16.1	0.46	0.60	0.46	48.0
12u	U	All MCs	5	25.0	5	25.0	0.385	11.8	LOS A	2.2	16.1	0.46	0.60	0.46	50.5
Approach			422	5.1	422	5.1	0.385	6.9	LOS A	2.2	16.1	0.46	0.60	0.46	48.2
All Vehicles			1520	3.1	1520	3.1	0.518	7.1	LOS A	3.6	25.5	0.53	0.64	0.55	47.0

Site Level of Service (LOS) Method: Delay (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: [03FUPM+D] 03FU+DevPM(2035) - Old Southern Rd / Quinns Ln (Future + Development (2035) - 10Yr 2% Growth)**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
South Nowra, NSW - MTE Project No. 250613
Future 2035 PM + Twins Estate + Development
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	160	1.6	160	1.6	0.217	4.9	LOS A	1.0	7.5	0.46	0.56	0.46	49.0
2	T1	All MCs	55	6.9	55	6.9	0.217	4.9	LOS A	1.0	7.5	0.46	0.56	0.46	46.0
3	R2	All MCs	1	0.0	1	0.0	0.217	8.5	LOS A	1.0	7.5	0.46	0.56	0.46	45.5
3u	U	All MCs	1	0.0	1	0.0	0.217	10.1	LOS A	1.0	7.5	0.46	0.56	0.46	45.5
Approach			218	2.9	218	2.9	0.217	4.9	LOS A	1.0	7.5	0.46	0.56	0.46	48.2
East: Quinns Lane (E)															
4	L2	All MCs	1	0.0	1	0.0	0.180	7.6	LOS A	1.0	7.3	0.70	0.67	0.70	44.3
5	T1	All MCs	111	0.0	111	0.0	0.180	7.5	LOS A	1.0	7.3	0.70	0.67	0.70	47.5
6	R2	All MCs	19	0.0	19	0.0	0.180	11.3	LOS A	1.0	7.3	0.70	0.67	0.70	44.0
6u	U	All MCs	3	0.0	3	0.0	0.180	12.9	LOS A	1.0	7.3	0.70	0.67	0.70	44.0
Approach			134	0.0	134	0.0	0.180	8.2	LOS A	1.0	7.3	0.70	0.67	0.70	46.9
North: Old Southern Road (N)															
7	L2	All MCs	16	0.0	16	0.0	0.360	5.7	LOS A	1.8	13.3	0.57	0.67	0.57	44.3
8	T1	All MCs	116	2.2	116	2.2	0.360	5.5	LOS A	1.8	13.3	0.57	0.67	0.57	44.6
9	R2	All MCs	203	5.6	203	5.6	0.360	9.4	LOS A	1.8	13.3	0.57	0.67	0.57	46.8
9u	U	All MCs	1	0.0	1	0.0	0.360	10.9	LOS A	1.8	13.3	0.57	0.67	0.57	44.1
Approach			337	4.1	337	4.1	0.360	7.9	LOS A	1.8	13.3	0.57	0.67	0.57	45.9
West: Quinns Lane (W)															
10	L2	All MCs	272	2.3	272	2.3	0.558	4.8	LOS A	4.1	29.3	0.32	0.55	0.32	48.4
11	T1	All MCs	172	2.2	172	2.2	0.558	4.9	LOS A	4.1	29.3	0.32	0.55	0.32	48.7
12	R2	All MCs	323	0.0	323	0.0	0.558	8.7	LOS A	4.1	29.3	0.32	0.55	0.32	48.1
12u	U	All MCs	10	12.5	10	12.5	0.558	10.7	LOS A	4.1	29.3	0.32	0.55	0.32	51.1
Approach			776	1.5	776	1.5	0.558	6.5	LOS A	4.1	29.3	0.32	0.55	0.32	48.4
All Vehicles			1466	2.2	1466	2.2	0.558	6.8	LOS A	4.1	29.3	0.43	0.59	0.43	47.6

Site Level of Service (LOS) Method: Delay (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: [03FUSA+D] 03FU+DevSAT(2035) - Old Southern Rd / Quinns Ln (Future + Development (2035) - 10Yr 2% Growth)**
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Quinns Lane
South Nowra, NSW - MTE Project No. 250613
Future 2035 SAT + Twins Estate + Development
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]						[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	218	0.6	218	0.6	0.302	5.0	LOS A	1.5	10.8	0.48	0.56	0.48	48.9
2	T1	All MCs	86	1.5	86	1.5	0.302	4.9	LOS A	1.5	10.8	0.48	0.56	0.48	46.0
3	R2	All MCs	5	0.0	5	0.0	0.302	8.7	LOS A	1.5	10.8	0.48	0.56	0.48	45.5
3u	U	All MCs	1	0.0	1	0.0	0.302	10.3	LOS A	1.5	10.8	0.48	0.56	0.48	45.5
Approach			311	0.8	311	0.8	0.302	5.1	LOS A	1.5	10.8	0.48	0.56	0.48	48.0
East: Quinns Lane (E)															
4	L2	All MCs	3	0.0	3	0.0	0.161	6.2	LOS A	0.9	6.2	0.60	0.61	0.60	45.0
5	T1	All MCs	116	0.0	116	0.0	0.161	6.2	LOS A	0.9	6.2	0.60	0.61	0.60	48.4
6	R2	All MCs	18	0.0	18	0.0	0.161	10.0	LOS A	0.9	6.2	0.60	0.61	0.60	44.7
6u	U	All MCs	1	0.0	1	0.0	0.161	11.6	LOS A	0.9	6.2	0.60	0.61	0.60	44.7
Approach			138	0.0	138	0.0	0.161	6.7	LOS A	0.9	6.2	0.60	0.61	0.60	47.8
North: Old Southern Road (N)															
7	L2	All MCs	11	0.0	11	0.0	0.279	4.6	LOS A	1.3	8.9	0.42	0.62	0.42	44.6
8	T1	All MCs	80	0.0	80	0.0	0.279	4.5	LOS A	1.3	8.9	0.42	0.62	0.42	44.9
9	R2	All MCs	207	0.6	207	0.6	0.279	8.3	LOS A	1.3	8.9	0.42	0.62	0.42	47.3
9u	U	All MCs	1	0.0	1	0.0	0.279	9.9	LOS A	1.3	8.9	0.42	0.62	0.42	44.4
Approach			300	0.4	300	0.4	0.279	7.1	LOS A	1.3	8.9	0.42	0.62	0.42	46.5
West: Quinns Lane (W)															
10	L2	All MCs	224	1.7	224	1.7	0.419	4.9	LOS A	2.5	18.0	0.32	0.55	0.32	48.5
11	T1	All MCs	114	1.1	114	1.1	0.419	4.9	LOS A	2.5	18.0	0.32	0.55	0.32	48.8
12	R2	All MCs	202	0.6	202	0.6	0.419	8.8	LOS A	2.5	18.0	0.32	0.55	0.32	48.2
12u	U	All MCs	8	0.0	8	0.0	0.419	10.6	LOS A	2.5	18.0	0.32	0.55	0.32	51.8
Approach			547	1.2	547	1.2	0.419	6.4	LOS A	2.5	18.0	0.32	0.55	0.32	48.5
All Vehicles			1295	0.8	1295	0.8	0.419	6.3	LOS A	2.5	18.0	0.41	0.58	0.41	47.8

Site Level of Service (LOS) Method: Delay (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: [04FUAM+D] 04FU+DevAM(2035) - Old Southern Rd / Hillcrest Ave / Isa Rd (Future + Development (2035) - 10Yr 2% Growth)**

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Future 2035 AM + Twins Estate + Development
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	290	6.1	290	6.1	0.927	37.6	LOS C	19.6	144.3	1.00	1.65	2.54	34.0
2	T1	All MCs	176	7.2	176	7.2	0.927	37.6	LOS C	19.6	144.3	1.00	1.65	2.54	34.1
3	R2	All MCs	86	4.4	86	4.4	0.927	41.1	LOS C	19.6	144.3	1.00	1.65	2.54	32.3
3u	U	All MCs	1	0.0	1	0.0	0.927	42.4	LOS C	19.6	144.3	1.00	1.65	2.54	32.3
Approach			553	6.2	553	6.2	0.927	38.2	LOS C	19.6	144.3	1.00	1.65	2.54	33.7
East: Isa Road (E)															
4	L2	All MCs	116	1.1	116	1.1	0.856	20.2	LOS B	14.4	102.1	1.00	1.25	1.83	38.5
5	T1	All MCs	485	1.6	485	1.6	0.856	20.1	LOS B	14.4	102.1	1.00	1.25	1.83	41.0
6	R2	All MCs	58	0.0	58	0.0	0.856	23.6	LOS B	14.4	102.1	1.00	1.25	1.83	40.5
6u	U	All MCs	1	0.0	1	0.0	0.856	25.2	LOS B	14.4	102.1	1.00	1.25	1.83	38.3
Approach			661	1.3	661	1.3	0.856	20.5	LOS B	14.4	102.1	1.00	1.25	1.83	40.5
North: Old Southern Road (N)															
7	L2	All MCs	62	4.1	62	4.1	0.543	8.0	LOS A	4.2	30.6	0.71	0.71	0.77	46.7
8	T1	All MCs	240	4.7	240	4.7	0.543	8.2	LOS A	4.2	30.6	0.71	0.71	0.77	47.0
9	R2	All MCs	201	1.9	201	1.9	0.543	11.7	LOS A	4.2	30.6	0.71	0.71	0.77	49.7
9u	U	All MCs	1	0.0	1	0.0	0.543	13.4	LOS A	4.2	30.6	0.71	0.71	0.77	49.8
Approach			504	3.5	504	3.5	0.543	9.6	LOS A	4.2	30.6	0.71	0.71	0.77	48.0
West: Hillcrest Avenue (W)															
10	L2	All MCs	44	11.4	44	11.4	0.378	6.6	LOS A	2.5	18.3	0.61	0.65	0.61	50.5
11	T1	All MCs	135	3.7	135	3.7	0.378	6.6	LOS A	2.5	18.3	0.61	0.65	0.61	47.7
12	R2	All MCs	166	9.1	166	9.1	0.378	10.4	LOS A	2.5	18.3	0.61	0.65	0.61	47.0
12u	U	All MCs	6	0.0	6	0.0	0.378	11.9	LOS A	2.5	18.3	0.61	0.65	0.61	50.5
Approach			351	7.2	351	7.2	0.378	8.5	LOS A	2.5	18.3	0.61	0.65	0.61	47.8
All Vehicles			2070	4.1	2070	4.1	0.927	20.5	LOS B	19.6	144.3	0.86	1.12	1.55	40.9

Site Level of Service (LOS) Method: Delay (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.

MOVEMENT SUMMARY

 **Site: [04FUPM+D] 04FU+DevPM(2035) - Old Southern Rd / Hillcrest Ave / Isa Rd (Future + Development (2035) - 10Yr 2% Growth)**

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Future 2035 PM + Twins Estate + Development
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Southern Road (S)															
1	L2	All MCs	101	3.7	101	3.7	0.476	6.7	LOS A	3.4	24.1	0.71	0.67	0.72	47.2
2	T1	All MCs	202	2.5	202	2.5	0.476	6.6	LOS A	3.4	24.1	0.71	0.67	0.72	47.6
3	R2	All MCs	120	3.2	120	3.2	0.476	10.3	LOS A	3.4	24.1	0.71	0.67	0.72	44.0
3u	U	All MCs	1	0.0	1	0.0	0.476	11.7	LOS A	3.4	24.1	0.71	0.67	0.72	44.1
Approach			425	3.0	425	3.0	0.476	7.7	LOS A	3.4	24.1	0.71	0.67	0.72	46.4
East: Isa Road (E)															
4	L2	All MCs	97	2.6	97	2.6	0.456	6.3	LOS A	3.1	21.9	0.69	0.65	0.69	44.5
5	T1	All MCs	211	0.6	211	0.6	0.456	6.2	LOS A	3.1	21.9	0.69	0.65	0.69	47.8
6	R2	All MCs	106	2.4	106	2.4	0.456	9.8	LOS A	3.1	21.9	0.69	0.65	0.69	47.2
6u	U	All MCs	1	0.0	1	0.0	0.456	11.3	LOS A	3.1	21.9	0.69	0.65	0.69	44.3
Approach			415	1.5	415	1.5	0.456	7.2	LOS A	3.1	21.9	0.69	0.65	0.69	46.8
North: Old Southern Road (N)															
7	L2	All MCs	178	0.7	178	0.7	0.604	10.6	LOS A	5.6	39.9	0.85	0.83	1.04	45.7
8	T1	All MCs	200	5.7	200	5.7	0.604	11.1	LOS A	5.6	39.9	0.85	0.83	1.04	46.0
9	R2	All MCs	96	1.3	96	1.3	0.604	14.4	LOS A	5.6	39.9	0.85	0.83	1.04	48.5
9u	U	All MCs	1	0.0	1	0.0	0.604	16.2	LOS B	5.6	39.9	0.85	0.83	1.04	48.6
Approach			476	2.9	476	2.9	0.604	11.6	LOS A	5.6	39.9	0.85	0.83	1.04	46.4
West: Hillcrest Avenue (W)															
10	L2	All MCs	147	4.3	147	4.3	0.647	9.6	LOS A	6.3	45.3	0.81	0.78	0.97	49.3
11	T1	All MCs	321	1.6	321	1.6	0.647	9.7	LOS A	6.3	45.3	0.81	0.78	0.97	46.5
12	R2	All MCs	112	1.1	112	1.1	0.647	13.4	LOS A	6.3	45.3	0.81	0.78	0.97	45.9
12u	U	All MCs	10	12.5	10	12.5	0.647	15.7	LOS B	6.3	45.3	0.81	0.78	0.97	48.6
Approach			589	2.4	589	2.4	0.647	10.5	LOS A	6.3	45.3	0.81	0.78	0.97	47.1
All Vehicles			1906	2.5	1906	2.5	0.647	9.4	LOS A	6.3	45.3	0.77	0.74	0.87	46.7

Site Level of Service (LOS) Method: Delay (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.

MOVEMENT SUMMARY

 **Site: [04FUSA+D] 04FU+DevSAT(2035) - Old Southern Rd / Hillcrest Ave / Isa Rd (Future + Development (2035) - 10Yr 2% Growth)**

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

Old Southern Road / Hillcrest Avenue / Isa Road
South Nowra, NSW - MTE Project No. 250613
Future 2035 SAT + Twins Estate + Development
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	Dist]				km/h
South: Old Southern Road (S)															
1	L2	All MCs	104	1.2	104	1.2	0.389	6.4	LOS A	2.5	17.7	0.68	0.65	0.68	47.6
2	T1	All MCs	157	0.0	157	0.0	0.389	6.3	LOS A	2.5	17.7	0.68	0.65	0.68	47.9
3	R2	All MCs	84	1.5	84	1.5	0.389	10.0	LOS A	2.5	17.7	0.68	0.65	0.68	44.3
3u	U	All MCs	1	0.0	1	0.0	0.389	11.6	LOS A	2.5	17.7	0.68	0.65	0.68	44.3
Approach			345	0.7	345	0.7	0.389	7.2	LOS A	2.5	17.7	0.68	0.65	0.68	46.9
East: Isa Road (E)															
4	L2	All MCs	95	1.3	95	1.3	0.457	5.9	LOS A	3.0	21.5	0.64	0.62	0.64	44.8
5	T1	All MCs	272	1.4	272	1.4	0.457	5.9	LOS A	3.0	21.5	0.64	0.62	0.64	48.1
6	R2	All MCs	73	0.0	73	0.0	0.457	9.4	LOS A	3.0	21.5	0.64	0.62	0.64	47.5
6u	U	All MCs	1	0.0	1	0.0	0.457	11.0	LOS A	3.0	21.5	0.64	0.62	0.64	44.5
Approach			441	1.1	441	1.1	0.457	6.5	LOS A	3.0	21.5	0.64	0.62	0.64	47.3
North: Old Southern Road (N)															
7	L2	All MCs	91	0.0	91	0.0	0.406	6.8	LOS A	2.6	18.0	0.62	0.65	0.62	47.7
8	T1	All MCs	191	0.7	191	0.7	0.406	7.0	LOS A	2.6	18.0	0.62	0.65	0.62	48.0
9	R2	All MCs	105	2.4	105	2.4	0.406	10.7	LOS A	2.6	18.0	0.62	0.65	0.62	50.7
9u	U	All MCs	1	0.0	1	0.0	0.406	12.4	LOS A	2.6	18.0	0.62	0.65	0.62	50.8
Approach			388	1.0	388	1.0	0.406	8.0	LOS A	2.6	18.0	0.62	0.65	0.62	48.6
West: Hillcrest Avenue (W)															
10	L2	All MCs	75	0.0	75	0.0	0.374	6.1	LOS A	2.3	16.4	0.56	0.61	0.56	51.6
11	T1	All MCs	230	1.1	230	1.1	0.374	6.4	LOS A	2.3	16.4	0.56	0.61	0.56	48.4
12	R2	All MCs	71	0.0	71	0.0	0.374	10.1	LOS A	2.3	16.4	0.56	0.61	0.56	47.8
12u	U	All MCs	4	0.0	4	0.0	0.374	11.8	LOS A	2.3	16.4	0.56	0.61	0.56	51.2
Approach			379	0.7	379	0.7	0.374	7.1	LOS A	2.3	16.4	0.56	0.61	0.56	48.9
All Vehicles			1554	0.9	1554	0.9	0.457	7.2	LOS A	3.0	21.5	0.62	0.63	0.62	47.9

Site Level of Service (LOS) Method: Delay (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.