TRAFFIC IMPACT ASSESSMENT

PROPOSED RESIDENTIAL PLANNING PROPOSAL

CALLALA BAY, NSW

PREPARED FOR ALLEN PRICE & SCARRATTS PTY LTD

27 January 2022

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6	19/01/22	Final v4 (Updates based on comments from Allen Price & Scarratts)	DA	KM	KM	KM

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CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

1. Introduction

Stantec has been asked by Allen Price & Scarratts Pty Ltd to examine and describe the traffic impacts of the proposed residential Planning Proposal on the north-eastern corner of the intersection of Callala Beach Road and Emmett Street in Callala Bay, NSW.

The scope of this traffic report is to assess the traffic impact of the subdivision on the local road network, and more specifically has been prepared to examine and describe the key traffic effects of the proposal relating to:

- The expected traffic volumes generated by the development;
- The ability of the surrounding road network to accommodate the increase in traffic based on expected traffic volumes, future road upgrades and base traffic growth; and
- The accessibility and mobility for bicycles and pedestrians.

These and other matters are considered in the assessment that follows. This assessment has been prepared in accordance with the following documents and chapters:

- Shoalhaven City Council DCP – Chapter G11: Subdivision of Land
- Shoalhaven City Council DCP – Chapter G21: Car Parking and Traffic
- Shoalhaven City Council Engineering Design Specifications – Supplement to DCP 100

By way of summary, the following conclusions are provided:

- The three intersections analysed as part of this assessment are all considered to have capacity to accommodate the proposed development and handle future growth in traffic;
- The future plus 10-year horizon model (2038) Average Annual School Term (AAST) scenario was analysed, and all intersections were found to remain operating at Level of Service 'A';
- The future year model (2038) 100th Highest Hour was analysed, and all intersections were found to remain operating at Level of Service 'A', with the exception of the Forest Road / Callala Beach Road intersection during the PM peak hour, which was found to operate at Level of Service 'B'.

The assessment documented in this report is based on on-site observations, aerial photography and surveys undertaken within the vicinity of the site.

2. Background

Allen Price & Scarratts Pty Ltd (on behalf of Sealark Pty Ltd) are preparing a proposal to develop the section of land bordered by Callala Beach Road, Emmett Street and the existing residential developments along Stott Crescent. The proposal is expected to yield up to 374 residential dwellings, with no commercial or industrial components.

The study area comprises the intersections of Callala Beach Road / Emmett Street, Callala Beach Road / Forest Road and Emmett Street / Lackersteen Street.

Transport and Accessibility Impact Assessments were prepared by GTA Consultants (GTA Report) in 2013 and 2020 to assess the impacts of two proposed subdivisions in West Culburra, which is located to the north-east of the subject site. The original development was proposed to comprise 685 residential dwellings and 28 industrial lots, and the revised proposal was 408 residential dwellings, 13 industrial lots and 3 commercial lots, with some traffic expected to utilise Forest Road and the Callala Beach Road / Forest Road intersection. The traffic expected to be generated as a result of the development has been considered in the assessment of both intersections within the study area and based on the 2013 larger development proposal.

The objectives of this study are to ensure the proposal:

- Does not result in unreasonable traffic levels and safety impacts on the local road network, including the existing intersections listed above;
- Provides the appropriate walking and cycling facilities within the development, and providing connectivity to the existing walking and cycle networks;
- Is provided with such infrastructure upgrades as may be necessary to mitigate traffic and safety issues that are likely to result from the proposal; and
- Is serviced by an efficient and safe road and transport network.

3. Existing Conditions

3.1 Site Location

The subject site is located on the north-eastern corner of the Callala Beach Road / Emmett Street intersection in Callala Bay, and comprises the following lots:

- Lot 20 DP 1263402;
- Lots 9,10,11,17, 18 DP 253793; and
- Lots 599-628 DP 11388.

Figure 1 below shows the location of the site in relation to the surrounding transport network.

Figure 1: Site Location (Source: Google maps)

The site is currently undeveloped, and the majority of the site is covered in native vegetation. There is currently no direct vehicle access to the site, however there is an unsealed off-road trail along the north of the site, which in its current state is not suitable for vehicular access. **Figure 2** overleaf provides an aerial photograph of the subject site and its surrounds.

Figure 2: Aerial Photograph (Source: Nearmap)

3.2 Land Use Zoning

Figure 3 overleaf shows the land use zoning of the subject site in the context of adjacent sites and the surrounding area.

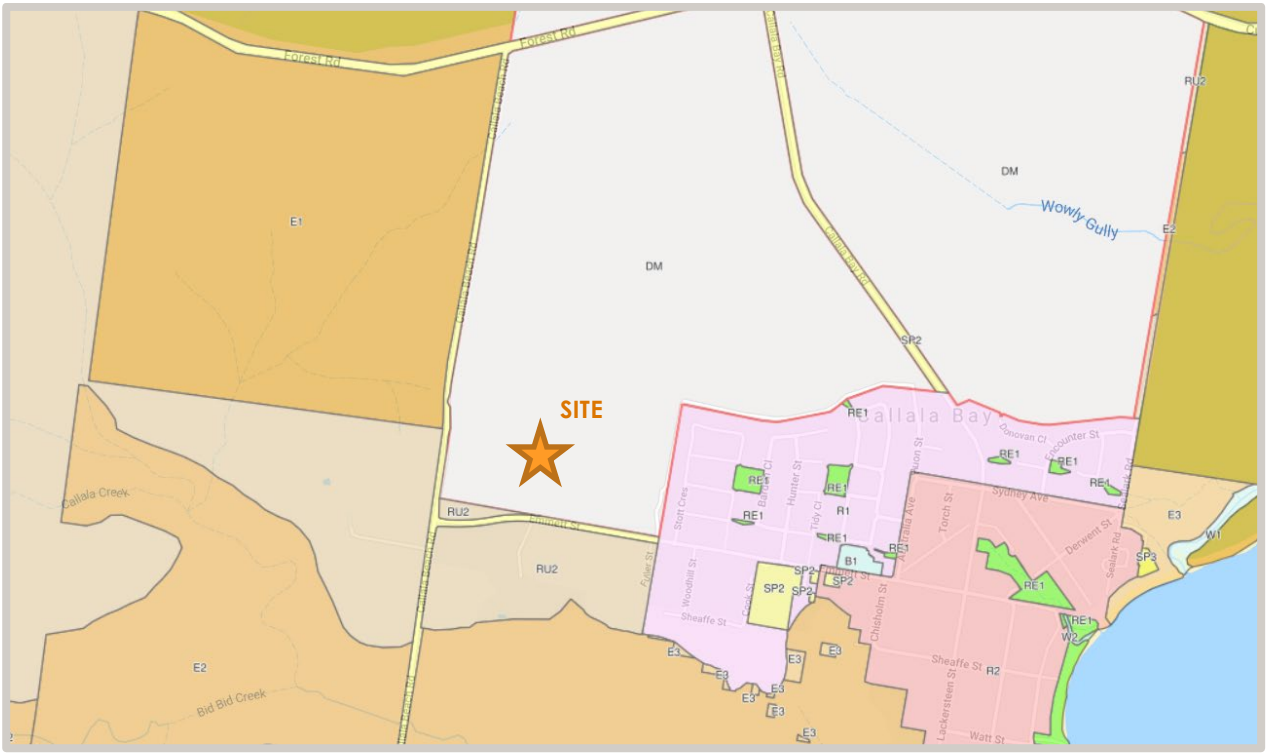


Figure 3: Land Use Zoning (Source: https://www.planningportal.nsw.gov.au)

The site is located within a Deferred Matter (DM) Zone, with the land uses in the immediate vicinity of the site varying as follows:

- The land to the east is zoned R1 General Residential and R2 Low Density Residential;
- The land to the south, and the small parcel of land between the site and Emmett Street in the south-western corner of the site is zoned RU2 Rural Landscape;
- The land to the north-west is zoned E1 National Parks and Nature Reserves; and
- A small zone to the east of the site is zoned B1 Neighbourhood Centre, which comprises the entirety of the commercial buildings for the Callala Bay area.

3.3 Road Network

Emmett Street is a local road under the care and management of Council, and runs in an east-west alignment from Callala Beach Road to the east of Lackersteen Street, where it merges into Chapman Street. In the vicinity of the site it has a sealed carriageway width of approximately 9.0 metres, accommodating one lane of traffic in each direction. Emmett Street has a posted speed limit of 80 km/h until just before Fuller Street, located at the eastern end of the subject site, where it reduces to 50 km/h.

Callala Beach Road is a collector road under the care and management of Council, and runs in a north-south alignment between Forest Road and its terminus at Callala Beach. It serves as the primary access road for the Callala Beach township, and has a posted speed limit of 80 km/h in the vicinity of the subject site. Callala Beach Road has an approximate sealed carriageway width varying between 6.0 – 9.0 metres, allowing for one lane of traffic in each direction.

Forest Road is a sub-arterial road under the care and management of Council, and runs in a general east-west alignment between Princes Highway and Coonemia Road, where it turns into Currarong Road. It has a posted speed limit of 90 km/h, reducing to 70 km/h in the vicinity of Callala Beach Road. It has an approximate sealed carriageway width of 9.5 metres.

Lackersteen Street is a local road which runs in a north-south alignment between its southern terminus at Silkwood Walk and Sydney Avenue, where it turns into Callala Bay Road. In the vicinity of Emmett Street, it has a carriageway width of approximately 13.0 metres, catering for one lane of traffic in each direction

and on-street parking on both sides of the road. It has a speed limit applicable to a built-up area of 50 km/h.

3.4 Sustainable Transport

3.4.1 Buses

A regional bus service currently provides a public transport alternative in the Callala Bay area. The services are operated by Stuart's Coaches (Route 730), and provide links between Callala Bay, Callala Beach and Nowra. **Figure 4** below shows the existing bus routes in the vicinity of the site.

Figure 4: Stuart's Coaches Bus Route 730 (Source: https://transitfeeds.com/p/transport-for-nsw/237/latest/route/8-730-sj2-1)

However, the services are currently infrequent with buses arriving/departing every 2-3 hours, about three (3) times a day on the weekdays.

3.4.2 Walking and Cycling

Towards the east of the site, there are paved footpaths along Emmett Street which run between the commercial centre and Hunter Street (northern side) / No. 22 Emmett Street (southern side). The verges at the front of each property along Emmett Street are generous in width and cater for the general nature of foot traffic that is present during the majority of the year (outside of peak periods).

There are no dedicated bicycle lanes or routes in Callala Bay. However given the low-speed nature of roads and the generally low daily volumes along the local road network, the area is considered to be relatively bicycle friendly.

3.5 Crash History Analysis

A search of Transport for New South Wales' (TfNSW) Crash and Casualty Statistics database has been undertaken for the most recent five-year period of available data, from 2015 to 2019. Crash statistics are confined to crashes that conform to the national guidelines for reporting and classifying road vehicle crashes. The guidelines include crashes that meet the following criteria:

- Were reported to the Police;

- Occurred on a road open to the general public;
- Involved at least on moving road vehicle; and
- Involved at least one person being injured, killed or at least one motor vehicle being towed away.

The search area for the proposed development includes the following roads:

- Callala Beach Road between Forest Road and Emmett Street, and for 100 metres to the south of Emmett Street; and
- Emmett Street from Callala Beach Road to Lackersteen Street.

The search area also included the following intersections:

- Forest Road / Callala Beach Road;
- Callala Beach Road / Emmett Street; and
- Emmett Street / Lackersteen Street.

Figure 5 below shows the crash study area.

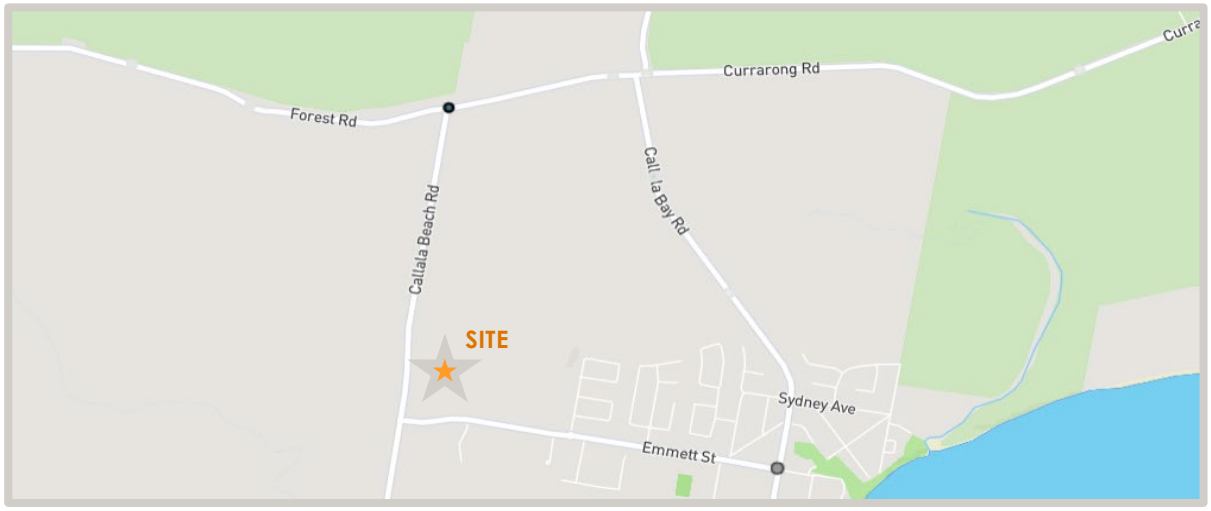


Figure 5: Crash History Analysis Study Area

A total of two crashes were recorded within the study area during the reporting period. These crashes are summarised as follows:

- A serious injury crash at the Forest Road / Callala Beach Road intersection, whereby a vehicle collided with the rear of another vehicle;
- A non-casualty crash at the Emmett Street / Lackersteen Road intersection, which is classified as an 'other adjacent' crash.

It is considered that the study area described above is much larger than generally needs to be considered for a development of this nature, and a total of two crashes over five years at two different locations does not raise any immediate road safety concerns.

Overall, there is no evidence of a recurrent, persistent or adverse road crash history that would raise a particular local road safety concern. It is therefore not considered that the crash history of the wider Callala Bay area should preclude the proposed development from proceeding.

4. Proposed Development

It is proposed to develop the subject site on the north-eastern corner of the Callala Beach Road / Emmett Street intersection into a residential subdivision. More specifically, the Planning Proposal comprises:

- 348 residential lots, with individual lot sizes of minimum 500m^2;
- 26 residential lots, with individual lot sizes of minimum 400m^2;
- A new internal road network, with road reserve widths ranging between 18m and 20m, typical to those of Local and Collector Streets as defined in Table 1 of Chapter G11 of Council's DCP;
- Public reserves with frontage to multiple roads;
- 2 new site access locations, as follows:
    - Approximately 340m east from the Intersection with Callala Beach Road and Emmett Street; and
    - Approximately 500m east from the Intersection with Callala Beach Road and Emmett Street.

The concept masterplan is provided for reference in **Appendix A.**

5. Concept Masterplan

5.1 Internal Road Network

The concept masterplan shown in **Appendix A** provides an indicative layout of the proposed subdivision and internal road network, all of which will be new roads and intersections. The concept plans have been assessed against Council's Engineering Design Specifications, which is a supplement to Shoalhaven DCP 2014.

It is considered that the outer road would be classified as an Access Street / Local Road, providing access to residential dwellings and allowing for two lanes of traffic, potentially with on-street parking available on one side of the road. The speed environment would be expected to be 50km/h, similar to that of a typical residential street.

Both north-south roads which connect the outer road with Emmett Street would act as Collector Streets, requiring all vehicles entering the subdivision to travel along them. The carriageways may be slightly wider than that of the outer road, allowing two lanes of traffic and on-street parking on one or both sides of the road. Direct vehicle access to dwellings would still be available.

All internal intersections are proposed to be unsignalised and spaced at the distances outlined in Table D.14.

5.2 Walking and Cycling

It is proposed to provide a footpath along at least one side of the outer road, in accordance with Council's EDS. Along the two Collector Roads, provision for footpaths along both sides of the roads will be allowed for, to encourage pedestrian safety along these roads.

There is scope to provide wider footpaths that can act as shared paths to also accommodate cycling along the Collector Roads, however due to the wider carriageway widths, cycling can also be accommodated along the roads.

An off-road shared path is proposed to be provided along the public reserve to the north of the site, which will accommodate both pedestrians and cyclists, and provide a link from Callala Beach Road through to the existing reserve which runs along the northern side of the residential development to the east of the site. This reserve runs all the way through to Callala Bay Road.

There are several bicycle route works identified in the *Shoalhaven Bike Plan* (December 2013), including widening of roads to accommodate cyclists toward Princes Highway, a Callala Bay to Callala Beach shared path, and a Callala Beach to Myola shared path.

5.3 Public Buses

As discussed in Section 3.4.1 of this report, there is an existing public bus route which travels along Emmett Street in front of the site, operated by Stuarts Coaches. The nearest bus stop is located to the east of Stott Crescent, which may be up to a 900-metre walk from the north-western corner of the subdivision. Although public transport is considered to be less relied upon in coastal areas such as Callala Bay, it is considered that with the introduction of a new residential subdivision in the area, there is an opportunity to introduce new bus stops adjacent the public reserve along Emmett Street.

6. Traffic Assessment

6.1 Council DCP

A traffic assessment of the proposed development has been undertaken to analyse the expected impacts on the surrounding road network, in accordance with the following clauses of Council's DCP:

- Chapter G11: Subdivision of Land – Performance Criteria P11:

  To design a street network that can accommodate the traffic volumes, including public transport, pedestrian and cyclist needs.

  Acceptable Solutions:

  A11.1 *A traffic study is provided as required by the relevant SEPP or in accordance with RMS guidelines.*

  A11.2 *A traffic statement is provided where the application falls outside SEPP requirements or where requested by Council.*

  A11.3 *A traffic study or statement is provided that has been prepared in accordance with RMS and AUSTROADS guidelines to the satisfaction of Council.*

- Chapter G21: Car Parking and Traffic - Clause 6.1.3 Traffic Studies:

  Where required, Traffic Impact Statements and/or Traffic Impact Studies must be prepared in accordance with RMS guidelines, and address minimum RMS, Australian Standards, and AUSTROADS requirements.

  Consultation should be undertaken in the first instance with Council (and RMS where relevant) in relation to the extent of the studies required and specific issues to be addressed. Given the nature of seasonally variable traffic and parking demands in the Shoalhaven, consistent with RMS guidelines and AUSTROADS, any surveys and assessments undertaken should be seasonally adjusted to recognised annual benchmarks for the purpose of the traffic analysis. In particular, annual average weekday conditions, 90-120th highest hour conditions, and for the purposes of parking analysis 85th percentile peak parking demands must be considered.

  Any traffic study must address the cumulative impacts of development and refer to RMS's 10% rule in the RMS Guide to Traffic Generating Developments. That is, where an individual stage of development comprises greater than 10% of the entire development, the entire development application (master plan) must be assessed in addition to each stage within the traffic impact study. This is primarily to ensure appropriate staged conditions which are complimentary to the ultimate development proposal.

Based on phone conversations with Council in October 2018, it was established that a 100th highest hour assessment of the background volumes plus the projected development volumes would be a sufficient assessment of the future scenario during the highest hour conditions, in addition to an annual average weekday condition assessment. As there is no detailed staging plans that form part of this assessment, the entire subdivision has been considered in its complete form for the future scenarios.

6.2 Existing Traffic Volumes

6.2.1 Surveyed Traffic Volumes

Traffic movement counts were commissioned by Stantec on Friday 2 November 2018 for the following intersections:

- Forest Road / Callala Beach Road;
- Callala Beach Road / Emmett Street; and
- Emmett Street / Lackersteen Street.

The results have been provided for reference in **Appendix B** for all three intersections, for both AM and PM peak hours.

When the recorded traffic volumes at all three intersections are taken into consideration, localised peak hours of 7:45am-8:45am and 3:45pm-4:45pm were found to be the AM and PM peak hours respectively. Accordingly, for the purposes of this assessment, these peak hours have been used in all traffic models.

Due to the timing of the surveys relative to the typical calendar year, it is considered that these volumes are a conservative representation of the Annual Average School Term (AAST) traffic volumes for both AM and PM weekday peak hours. Typically, the majority of Fridays throughout a year (inclusive of school and public holidays) have traffic volumes which exceed the AAST volumes.

Surveyed traffic volumes are shown in **Figure 6** and **Figure 7**.

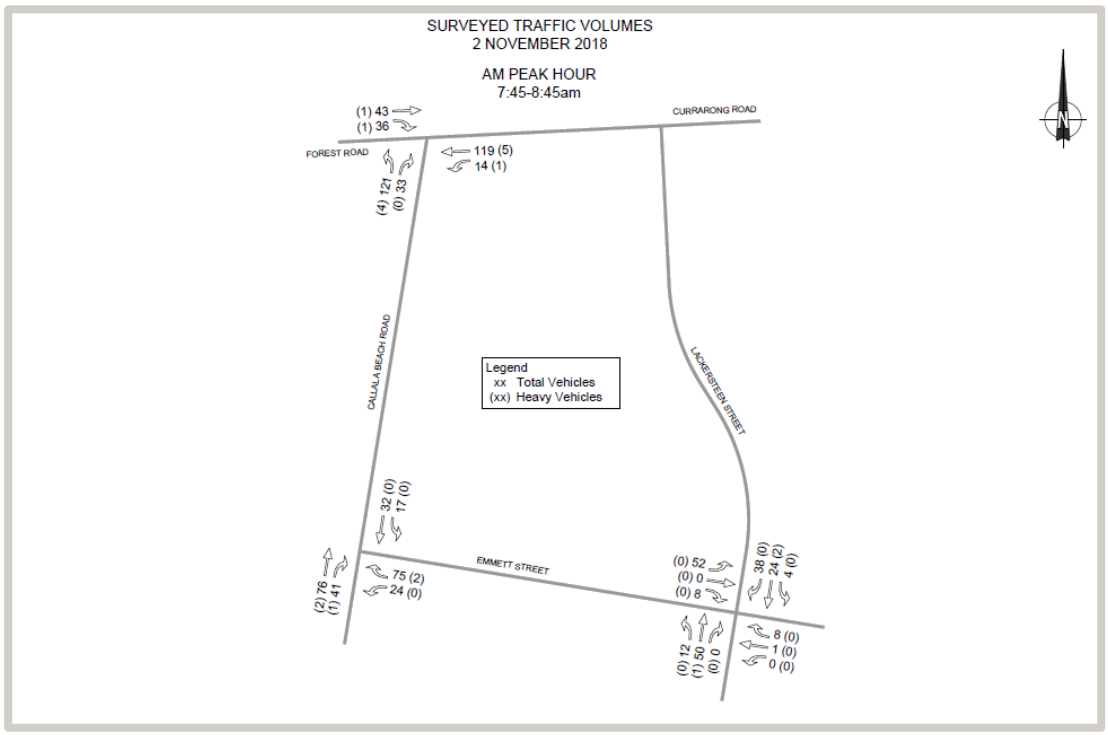


Figure 6: Surveyed Traffic Volumes AM Peak

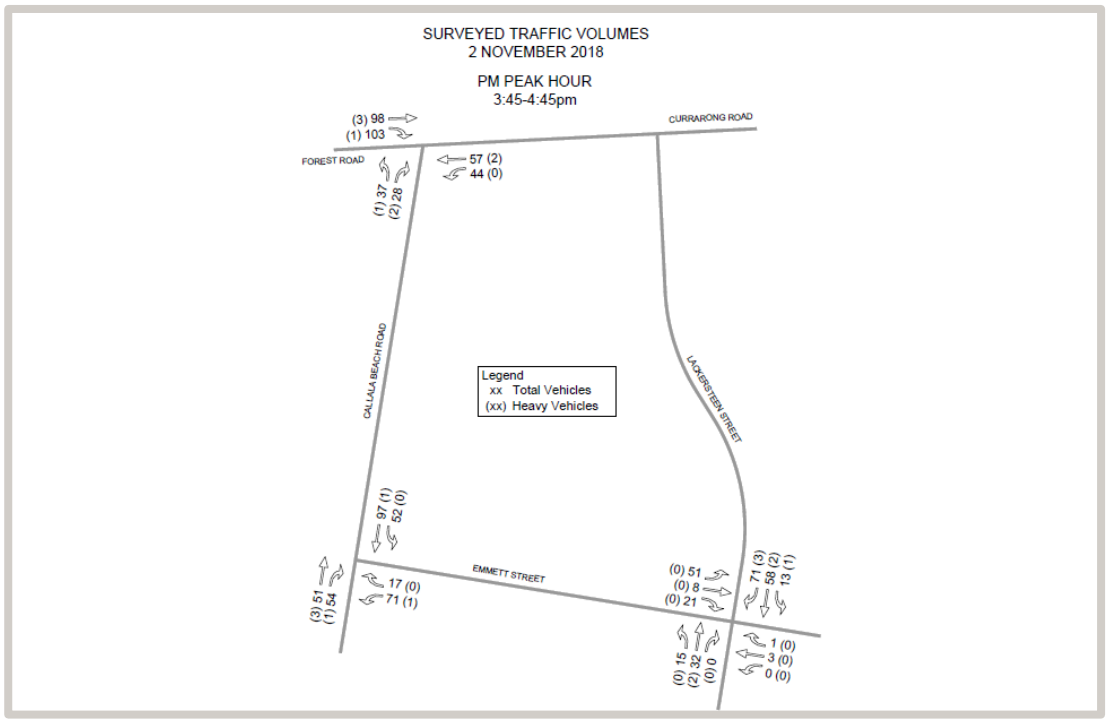


Figure 7: Surveyed Traffic Volumes PM Peak

6.2.2 100th Highest Hour Traffic Volume Approximation

The 100th Highest Hour (100 HH) represents a design factor that is considerate of the tidal nature of daily traffic flow throughout the year. For areas such as Callala Bay, which are popular holiday destinations in the summer (October/November to April/May), Fridays and weekends see a noticeable increase in the Annual Average Daily Traffic (AADT) volumes. Accordingly, it is appropriate to assess the expected traffic impacts of the proposed development during the 100 HH.

The peak hour volumes established above have been adopted as base AADT volumes for the estimation of the 100 HH volumes. Austroads' *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings* (Austroads Part 6) states the following:

"In rural areas, a design hourly volume is estimated from the traffic patterns peculiar to the given road and area. This can vary from the 30th highest hour to the 120th highest hour depending on the type of route. A guide to the most economical design hour can be gained from a plot of hourly volumes from a continuous count station, usually expressed as a percentage of AADT, against the number of hours with a volume greater than the ordinate."

Figure 8 shows Figure 6.29 of Austroads Part 6, which is used to determine the factors to be used for the purposes of this assessment.

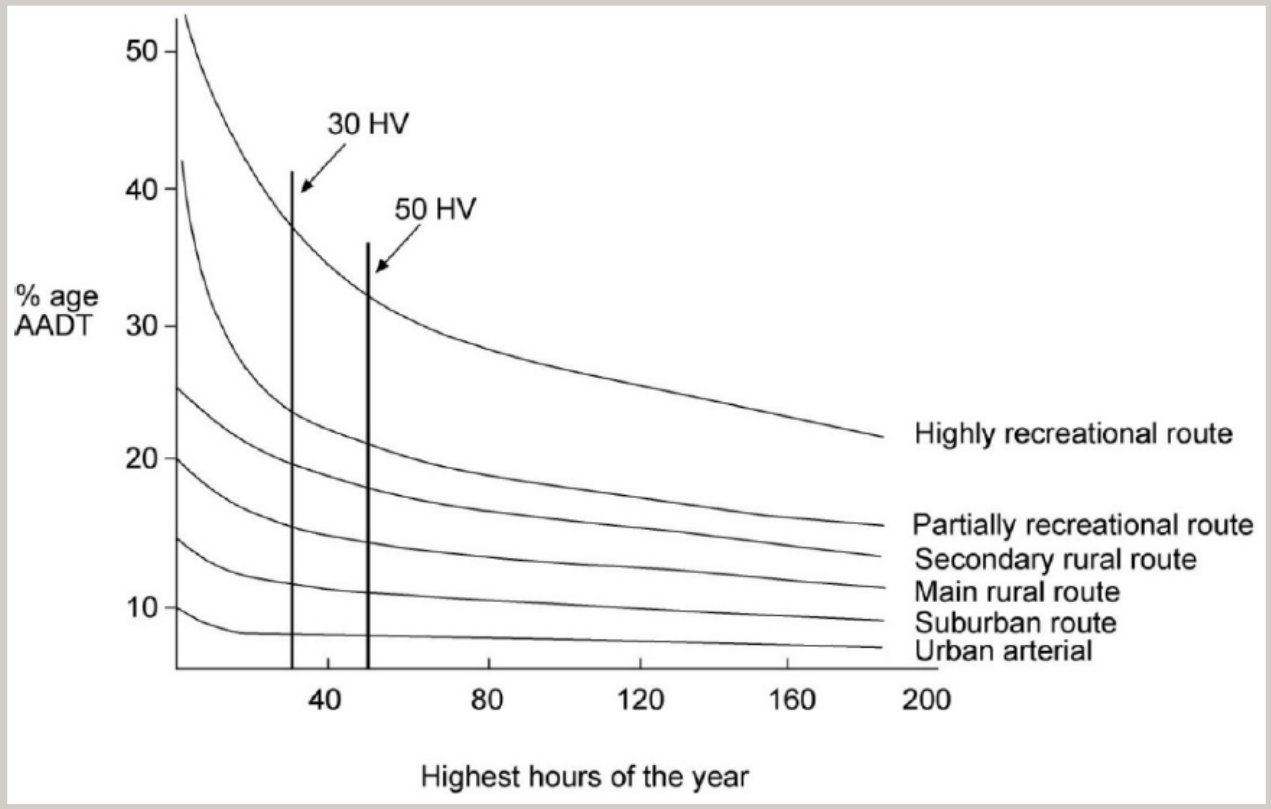


Figure 8: Figure 6.29 of Austroads Part 6 – Highest Hours of the Year

As four roads are being considered as part of this study, it is important to assign a classification for each road, as each road classification has a different percentage.

Table 6-1 below shows the adopted percentage and road classifications for each road for the 100 HH model scenario.

Table 6-1: Adopted Road Classifications and AADT/AAST Percentages

Road Name	Adopted Road Classification (as per Figure 8)	Adopted Percentage of AADT
Forest Road	Main rural route	15%
Callala Beach Road	Secondary rural route	18%
Emmett Street	Partially recreational route	20%
Lackersteen Street	Partially recreational route	20%

In order to estimate the 100 HH traffic volumes, the following calculations have been undertaken:

1. The existing volumes have been extrapolated to estimate the AADT volumes at each intersection. Clause 2.3.6 of Austroads Part 6 states that peak hour percentages can be assumed to be between 11% and 16% of AADT for rural situations.

   Accordingly, to represent the highest level of conservativeness, the surveyed peak hour volumes have been estimated as being 11% of the AADT.

2. Application of the percentages in Table 6-1 to the established AADT volumes gives an estimation of the 100th Highest Hour volumes for each movement.

It should be noted that the 15% factor was applied to through volumes on Forest Road only, while the 18% factor was applied to all turning movements at the Forest Road / Callala Beach Road intersection, as well as the through movements at the Callala Beach Road / Emmett Street intersection. This represents an additional level of conservativeness, by estimating higher percentages of AADT for each movement based on the highest percentage involved in each turning movement.

Adopted 100 HH volumes are shown in **Figure 9** and **Figure 10**.

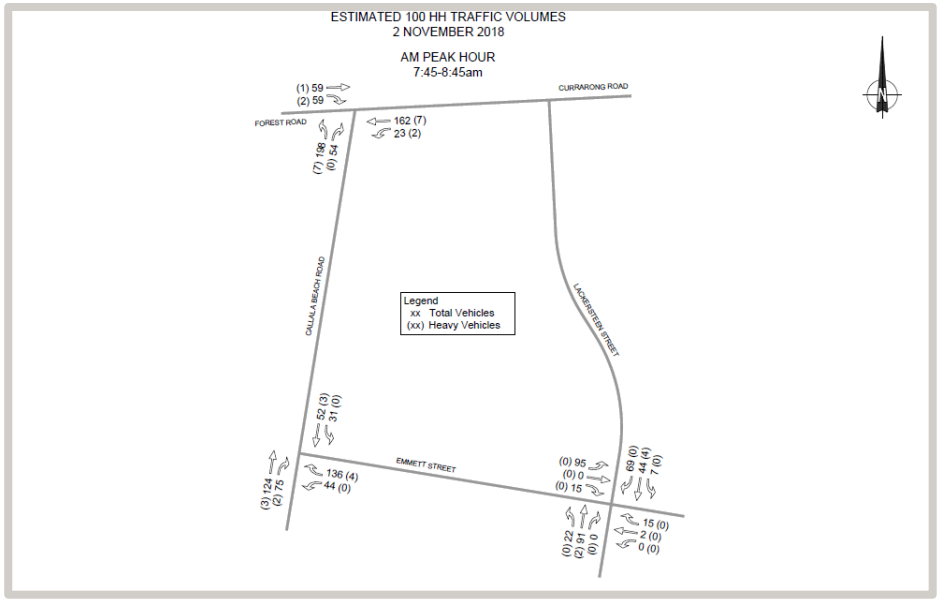


Figure 9: Adopted 100 HH Traffic Volumes (AM Peak)

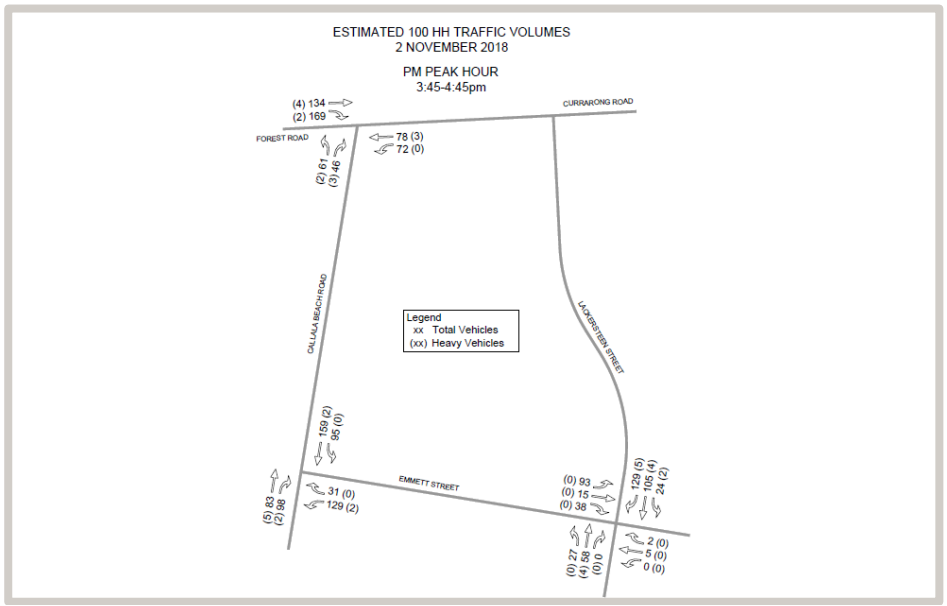


Figure 10: Adopted 100 HH Traffic Volumes (PM Peak)

6.3 Trip Generation

RMS' *Guide to Traffic Generation Developments – Technical Direction 2013 04a* (TDT 2013/04a) specifies traffic generation rates for different land uses. For low density residential dwellings in regional areas, as is being considered for the proposed subdivision, TDT 2013/04a recommends trip rates of 0.71 trips per dwelling per hour during the morning peak, and 0.78 trips per dwelling per hour during the evening peak. As such, the expected trip generation for the subdivision is shown below in **Table 6-2** based on an estimated 374 dwellings.

Table 6-2: Trip Generation for Proposed Subdivision

Proposed Development	Trip Generation Rate (vph per dwelling)		Estimated Subdivision Trip Generation (vph)	
	AM Peak	PM Peak	AM Peak	PM Peak
374 Low Density Residential Dwellings	0.71	0.78	266	292

As can be seen from above, a 374-dwelling residential subdivision could be expected to generate 266 vph and 292 vph in the AM and PM peak hours respectively.

6.4 Trip Distribution

6.4.1 Journey to Work Data

Australian Bureau of Statistics' (ABS) Journey to Work (JTW) data provides general origin and destination zones for residents of the area travelling to and from Callala Bay. The most recent year of available data is 2016, based on data collected in the 2016 Census. By way of summary, **Table 6-3** below represents the number of people travelling from Callala Bay to surrounding areas, grouped by general direction that each person would travel when leaving from / arriving to the site. It should be noted that the majority of locations, whilst located to the south, west and north of the site, have been labelled as north in the table below to indicate that the vehicles would be required to travel to/from the north along Callala Beach Road when accessing the site.

Table 6-3: Journey to Work Data To/From Callala Bay (2016 Census)

Origin / Destination	General Direction Relative to Site	Number of People	Percentage	Total Percentage
Callala Bay / Currarong	East	152	21.9%	21.9%
Berry / Kangaroo Valley	North	16	2.3%	78.1%
Culburra Beach		37	5.3%	
Ettrema / Sassafras		0	0.0%	
Huskisson / Vincentia		19	2.7%	
North Nowra / Bomaderry		84	12.1%	
Nowra		359	51.8%	
St. Georges Basin / Erowal		10	1.4%	
Sussex Inlet / Berrara		0	0.0%	
Tomerong / Wandandian		9	1.3%	
Ulladulla		7	1.0%	
Ulladulla Region		0	0.0%	
Total		**693**	**100%**	**100%**

It is considered that due to the proximity of the proposed subdivision to Callala Beach, a small proportion of trips (approximated at 5%) generated as a result of the subdivision would head south to Callala Beach. Accordingly, the following trip distribution percentage splits have been adopted for the purposes of this assessment, shown in **Table 6-4** overleaf.

Table 6-4: Adopted Trip Distribution

Origin / Destination	Direction To/From Site (Road)	Adopted Distribution Percentage
Callala Bay	East (Emmett Street / Forest Road)	20%
Callala Beach	South (Callala Beach Road)	5%
Nowra and other suburbs	North (Callala Beach Road)	75%

6.4.2 Inbound / Outbound Flow

Based on experience with similar developments, it has been assumed that trips generated by the proposed development will be split as follows:

- 80% outbound (213) and 20% inbound (53) during the AM peak hour; and
- 30% outbound (88) and 70% inbound (204) during the PM peak hour.

Accordingly, the development related traffic volumes shown in **Figure 11** and **Figure 12** have been adopted for the purposes of this assessment.

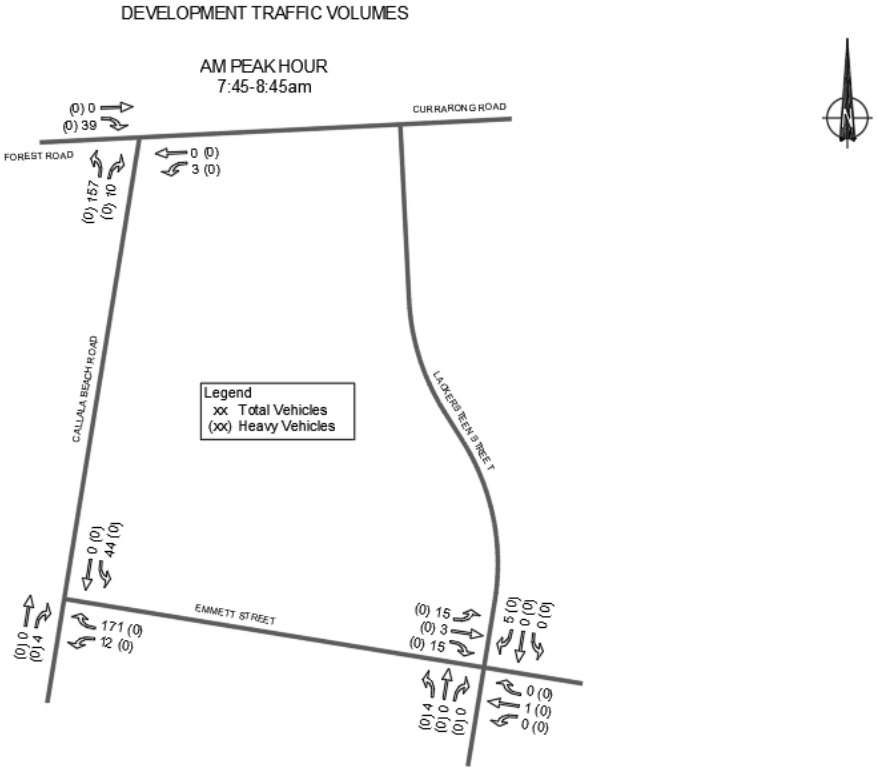


Figure 11: Development Traffic Volumes (AM Peak)

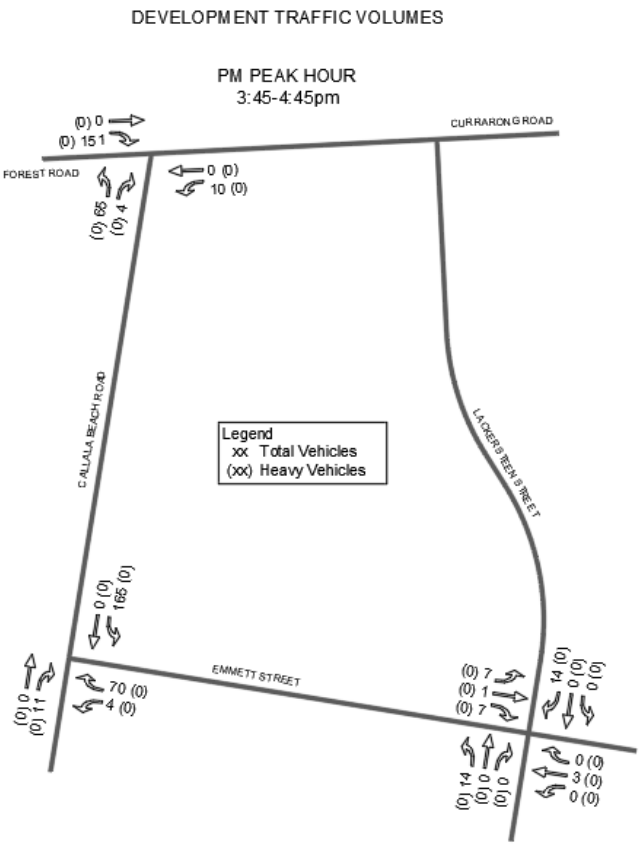


Figure 12: Development Traffic Volumes

6.5 Background Development Traffic

As discussed in Section 2 of this report, the GTA Report discusses the traffic impacts of the original and large Culburra Beach development with potential for 685 residential lots and 28 industrial lot subdivision in Culburra Beach, to the north of the proposed development. It is understood that at the time of writing of this report, the Development Application for this development had not been determined, however the anticipated timeframe for possible delivery is expected to be in the region of 8-10 years

Notwithstanding this, the additional traffic expected to be generated from this potential development that was assigned to Forest Road for the 100th highest annual hours have been applied to all Forest Road / Callala Beach Road intersection models for the 10-Year Post Development model, described further in Section 6.8.4 of this report. The additional volumes are as follows:

- Friday AM – 12 vph eastbound and 17 vph westbound; and
- Friday PM – 23 vph eastbound and 14 vph westbound.

6.6 Future Traffic Growth

A 2% annual growth rate has been adopted for future year traffic analysis, which is considered to be conservative given the rural nature of the area. It is estimated that a 374-lot residential subdivision would take approximately five years to construct (at an assumed construction rate of six dwellings per month), and for the purposes of this assessment has been assumed as commencing in 2022. Accordingly, 10 years of traffic growth have been applied to the existing (surveyed) volumes for the purposes of this assessment, which assumes the development is complete at the end of 2028.

A 2038 model scenario has also been analysed, which represents a 10-year period after the completion of the subdivision. Similarly, 20 years of traffic growth have been applied to the existing volumes for the 2038 model scenario.

6.7 Other Assumptions

The following modelling assumptions have been implemented for the intersection analysis:

- All traffic assigned to the east that travels along Emmett Street has been assumed to pass through the Emmett Street / Lackersteen intersection, in a 45:10:45 ratio to north:east:south movements.
- Of all traffic assigned east (20%), it is assumed that 15% of vehicles travel to Callala Bay via Emmett Street, and 5% of vehicles travel toward Currarong / Culburra via Callala Beach Road / Forest Road.
- All vehicles assigned to/from the north, west and south do so via the Emmett Street / Callala Beach Road / Forest Road intersection (west of the site).

6.8 SIDRA Analysis

Intersection analysis for all three intersections was undertaken for the following model scenarios:

- 2018 – Existing (based on surveyed Friday traffic volumes in November 2018);
- 2018 – 100th Highest Hour (estimated based on the process described in Section 5.1.2 of this report);
- 2028 – Typical Friday AAST (based on surveyed volumes plus 10 years growth);
- 2028 – 100th Highest Hour;
- 2038 – Typical Friday AAST (based on surveyed volumes plus 20 years growth); and
- 2038 – 100th Highest Hour.

The intersection analysis was undertaken using the software package SIDRA (Signalised and unsignalised Intersection Design and Research Aid).

The concepts of level of service and average vehicle delay are described further in **Appendix C**.

The full SIDRA movement summaries and modelled intersection layouts have been included for reference in **Appendix D**.

6.8.1 Existing Volumes - AAST (2018)

6.8.1.1 Callala Beach Road / Emmett Street

The intersection was analysed using the layout as shown in Appendix D. A 10-metre long short left-turn lane was modelled on the Emmett Street approach, to reflect the scenario whereby a left turning and right turning vehicle are turning from Emmett Street onto Callala Beach Road simultaneously.

The SIDRA results for the intersection under the existing scenario are shown below in **Table 6-5**.

Table 6-5: Callala Beach Road / Emmett Street SIDRA Analysis – Existing

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Callala Beach Road (South)	Through	A	0.042	0.0	A	0.029	0.0
	Right	A	0.025	0.8	A	0.037	1.2
Emmett Street	Left	A	0.016	0.4	A	0.050	1.4
	Right	A	0.080	2.3	A	0.020	0.5
Callala Beach Road (North)	Left	A	0.028	0.0	A	0.082	0.0
	Through	A	0.028	0.0	A	0.082	0.0

As can be seen from the table above, the intersection currently operates at Level of Service (LoS) 'A', with the all queue lengths being under one car length. No movements are above a vehicle / capacity ratio of 0.100, indicating that the intersection currently accommodates a very low level of traffic during the AM and PM peak hours.

6.8.1.2 Forest Road / Callala Beach Road

The intersection was analysed using the layout as shown in Appendix D. A 10-metre long short left-turn lane was modelled on the Callala Beach Road approach, to reflect the scenario whereby a left-turning and right turning vehicle are turning from Callala Beach Road onto Forest Road simultaneously.

The SIDRA results for the intersection under the existing scenario are shown overleaf in **Table 6-6**.

Table 6-6: Forest Road / Callala Beach Road SIDRA Analysis – Existing

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Callala Beach Road	Left	A	0.088	2.6	A	0.025	0.7
	Right	A	0.037	1.0	A	0.036	1.0
Forest Road (East)	Left	A	0.074	0.0	A	0.056	0.0
	Through	A	0.074	0.0	A	0.056	0.0
Forest Road (West)	Through	A	0.024	0.0	A	0.054	0.0
	Right	A	0.024	0.8	A	0.066	2.2

As can be seen from the table above, the intersection currently operates at a very good LoS 'A', with the all queue lengths being under one car length. No movements are above a vehicle / capacity ratio of 0.100, indicating that the intersection currently accommodates a very low level of traffic during the AM and PM peak hours.

6.8.1.3 Emmett Street / Lackersteen Street

The intersection was analysed using the layout as shown in Appendix D. The SIDRA results for the intersection under the existing scenario are shown below in **Table 6-7**.

Table 6-7: Emmett Street / Lackersteen Street SIDRA Analysis – Existing

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Lackersteen Street (South)	Left	A	0.035	0.1	A	0.027	0.1
	Through	A			A		
	Right	A			A		
Emmett Street (East)	Left	A	0.012	0.3	A	0.005	0.1
	Through	A			A		
	Right	A			A		
Lackersteen Street (North)	Left	A	0.039	1.3	A	0.085	2.8
	Through	A			A		
	Right	A			A		
Emmett Street (West)	Left	A	0.050	1.4	A	0.074	2.0
	Through	A			A		
	Right	A			A		

As can be seen from the table above, the intersection currently operates at LoS 'A', with the all queue lengths being under one car length. No movements are above a vehicle / capacity ratio of 0.100, indicating that the intersection currently accommodates a very low level of traffic during the AM and PM peak hours.

6.8.2 Existing Volumes – 100 HH (2018)

6.8.2.1 Callala Beach Road / Emmett Street

The SIDRA results for the intersection under the existing scenario (100 HH) are shown below in **Table 6-8**.

Table 6-8: Callala Beach Road / Emmett Street SIDRA Analysis – Existing 100 HH

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Callala Beach Road (South)	Through	A	0.068	0.0	A	0.047	0.0
	Right	A	0.048	1.6	A	0.074	2.4
Emmett Street	Left	A	0.030	0.8	A	0.097	2.8
	Right	A	0.168	5.0	A	0.044	1.2
Callala Beach Road (North)	Left	A	0.047	0.0	A	0.140	0.0
	Through	A	0.047	0.0	A	0.140	0.0

As can be seen from the table above, the intersection remains operating at LoS 'A' during the 100 HH scenario, with the all queue lengths being under one car length. All Degree of Saturation (DoS) values remain well within reasonable levels, indicating that the during the 100 HH, the intersection would still accommodate a very low level of traffic during the AM and PM peak hours.

6.8.2.2 Forest Road / Callala Beach Road

The SIDRA results for the intersection under the existing scenario are shown below in **Table 6-9**.

Table 6-9: Forest Road / Callala Beach Road SIDRA Analysis – Existing 100 HH

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Callala Beach Road	Left	A	0.151	4.7	A	0.043	1.2
	Right	A	0.068	1.8	A	0.071	2.0
Forest Road (East)	Left	A	0.104	0.0	A	0.084	0.0
	Through	A	0.104	0.0	A	0.084	0.0
Forest Road (West)	Through	A	0.032	0.0	A	0.074	0.0
	Right	A	0.042	1.3	A	0.115	3.8

As can be seen from the table above, the intersection remains operating at LoS 'A' during the 100 HH scenario, with the all queue lengths being under one car length. All DoS values remain well within reasonable levels, indicating that the during the 100 HH, the intersection would still accommodate a very low level of traffic during the AM and PM peak hours.

6.8.2.3 Emmett Street / Lackersteen Street

The SIDRA results for the intersection under the existing scenario are shown below in **Table 6-10** overleaf.

Table 6-10: Emmett Street / Lackersteen Street SIDRA Analysis – Existing 100 HH

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Lackersteen Street (South)	Left	A	0.063	0.1	A	0.049	0.1
	Through	A			A		
	Right	A			A		
Emmett Street (East)	Left	A	0.025	0.6	A	0.011	0.3
	Through	A			A		
	Right	A			A		
Lackersteen Street (North)	Left	A	0.074	2.5	A	0.157	5.5
	Through	A			A		
	Right	A			A		
Emmett Street (West)	Left	A	0.097	2.7	A	0.149	4.1
	Through	A			A		
	Right	A			A		

As can be seen from the table above, the intersection remains operating at LoS 'A' during the 100 HH scenario, with the all queue lengths being under one car length. All DoS values remain well within reasonable levels, indicating that the during the 100 HH, the intersection would still accommodate a very low level of traffic during the AM and PM peak hours.

6.8.3 Post Development Volumes – AAST (2028)

The calculated traffic volumes used for this scenario are shown in **Figure 13** and **Figure 14**.

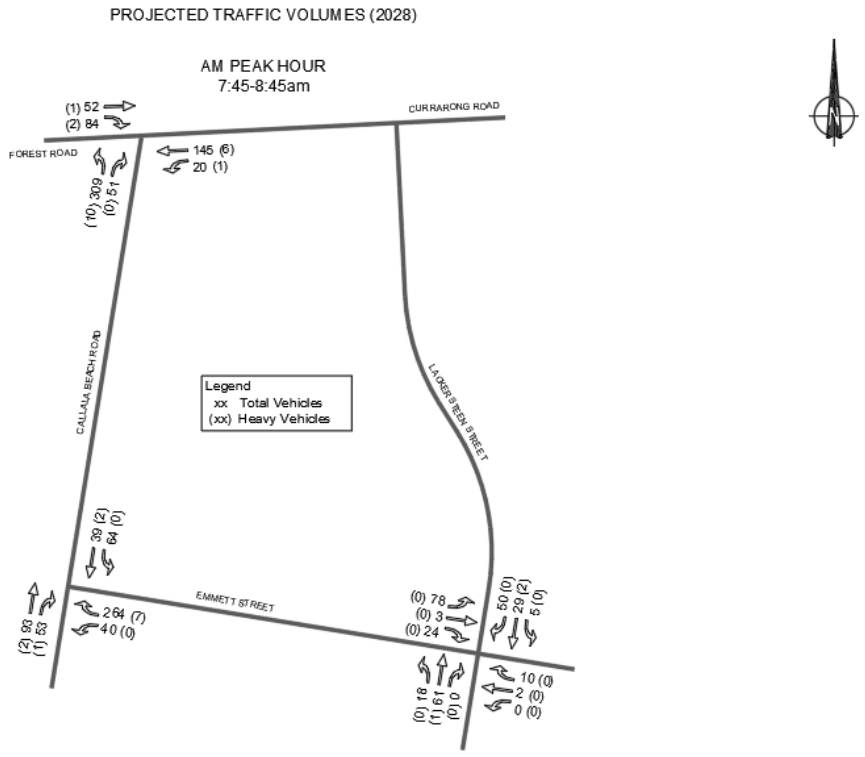


Figure 13: Post-Development Traffic Volumes (2028 AM Peak)

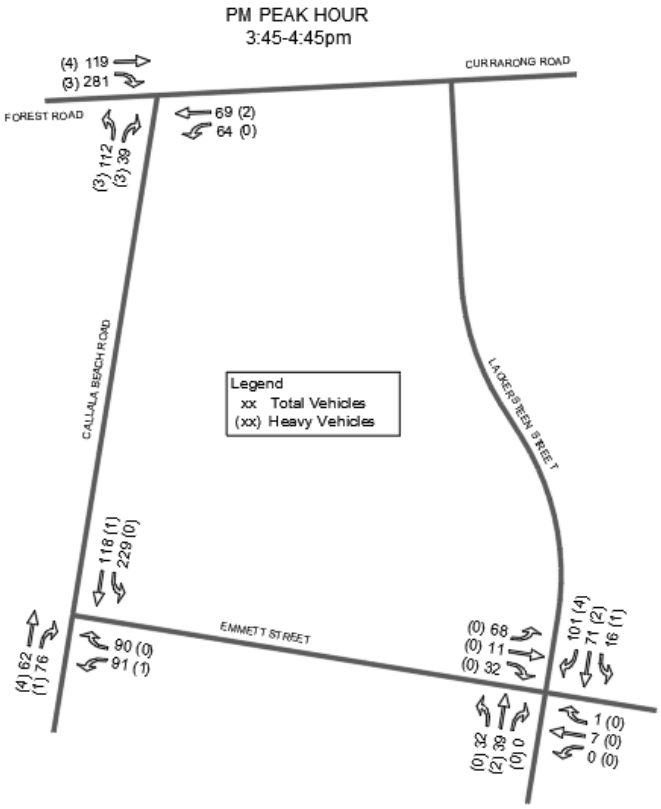


Figure 14: Post-Development Traffic Volumes (2028 PM Peak)

6.8.3.1 Callala Beach Road / Emmett Street

The SIDRA results for the intersection under the post-development (2028) scenario are shown below in **Table 6-11**.

Table 6-11: Callala Beach Road / Emmett Street SIDRA Analysis – 2028

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Callala Beach Road (South)	Through	A	0.051	0.0	A	0.035	0.0
	Right	A	0.034	1.1	A	0.063	1.9
Emmett Street	Left	A	0.027	0.7	A	0.065	1.9
	Right	A	0.297	10.0	A	0.125	3.4
Callala Beach Road (North)	Left	A	0.057	0.0	A	0.191	0.0
	Through	A	0.057	0.0	A	0.191	0.0

As can be seen from the table above, the intersection remains operating at LoS 'A' after development is assumed to completed. The Emmett Street right-turn movement during the AM peak experiences a large increase in traffic volume, however the delays remain minimal and the 95th percentile queue length is only one and a half vehicles. The low DoS values indicate that even with the addition of the proposed development, the intersection is still operating considerably under capacity.

6.8.3.2 Forest Road / Callala Beach Road

The SIDRA results for the intersection under the post-development (2028) scenario are shown below in **Table 6-12**.

Table 6-12: Forest Road / Callala Beach Road SIDRA Analysis – 2028

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Callala Beach Road	Left	A	0.228	7.6	A	0.076	2.3
	Right	A	0.064	1.7	A	0.067	1.9
Forest Road (East)	Left	A	0.092	0.0	A	0.074	0.0
	Through	A	0.092	0.0	A	0.074	0.0
Forest Road (West)	Through	A	0.028	0.0	A	0.066	0.0
	Right	A	0.058	1.9	A	0.184	6.6

As can be seen from the table above, the intersection remains operating at LoS 'A' after development is assumed to completed. The Callala Beach Road left-turn movement during the AM peak and the Forest Road (West) right-turn movement during the PM peak both experience a large increase in traffic volume, however the delays remain minimal. The low DoS values indicate that even with the addition of the proposed development, the intersection is still operating considerably under capacity.

6.8.3.3 Emmett Street / Lackersteen Street

The SIDRA results for the intersection under the post-development (2028) scenario are shown below in **Table 6-13**.

Table 6-13: Emmett Street / Lackersteen Street SIDRA Analysis - 2028

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Lackersteen Street (South)	Left	A	0.044	0.1	A	0.041	0.1
	Through	A			A		
	Right	A			A		
Emmett Street (East)	Left	A	0.016	0.4	A	0.010	0.3
	Through	A			A		
	Right	A			A		
Lackersteen Street (North)	Left	A	0.051	1.6	A	0.113	3.9
	Through	A			A		
	Right	A			A		
Emmett Street (West)	Left	A	0.092	2.5	A	0.107	2.9
	Through	A			A		
	Right	A			A		

As can be seen from the table above, the intersection remains operating at LoS 'A' after development is assumed to completed. The low DoS values indicate that even with the addition of the proposed development, the intersection is still operating considerably under capacity.

6.8.4 Post Development Volumes – 100 HH (2028)

6.8.4.1 Callala Beach Road / Emmett Street

The SIDRA results for the intersection under the post-development 100 HH (2028) scenario are shown below in **Table 6-14**.

Table 6-14: Callala Beach Road / Emmett Street SIDRA Analysis – 2028 100 HH

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Callala Beach Road (South)	Through	A	0.083	0.0	A	0.057	0.0
	Right	A	0.063	2.0	A	0.127	3.9
Emmett Street	Left	A	0.044	1.2	A	0.125	3.7
	Right	A	0.456	21.8	A	0.196	5.3
Callala Beach Road (North)	Left	A	0.081	0.0	A	0.261	0.0
	Through	A	0.081	0.0	A	0.261	0.0

As can be seen from the table above, the intersection remains operating at LoS 'A' in the 2028 model year during the 100 HH scenario. The Emmett Street right-turn movement during the AM peak can be expected to see a 95th percentile queue of approximately three vehicles, however the DoS remains under 0.500. The rest of the movements during both the AM and PM peak periods can be expected to remain operating at excellent levels.

6.8.4.2 Forest Road / Callala Beach Road

The SIDRA results for the intersection under the post-development 100 HH (2028) scenario are shown below in **Table 6-15**.

Table 6-15: Forest Road / Callala Beach Road SIDRA Analysis – 2028 100 HH

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Callala Beach Road	Left	A	0.314	11.2	A	0.098	3.0
	Right	A	0.109	3.0	A	0.135	3.7
Forest Road (East)	Left	A	0.128	0.0	A	0.108	0.0
	Through	A	0.128	0.0	A	0.108	0.0
Forest Road (West)	Through	A	0.039	0.0	A	0.090	0.0
	Right	A	0.083	2.7	A	0.252	9.3

As can be seen from the table above, the intersection also operates at LoS 'A' in the 2028 100 HH modelling scenario. The Callala Beach Road left-turn movement during the AM peak and the Forest Road (West) right-turn movement during the PM peak both experience a large increase in traffic volume, however the delays remain minimal. Low DoS values indicate that the intersection is still expected to operate considerably under capacity.

6.8.4.3 Emmett Street / Lackersteen Street

The SIDRA results for the intersection under the post-development 100 HH (2028) scenario are shown below in **Table 6-16**.

Table 6-16: Emmett Street / Lackersteen Street SIDRA Analysis – 2028 100 HH

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Lackersteen Street (South)	Left	A	0.078	0.1	A	0.067	0.1
	Through	A			A		
	Right	A			A		
Emmett Street (East)	Left	A	0.034	0.8	A	0.020	0.5
	Through	A			A		
	Right	A			A		
Lackersteen Street (North)	Left	A	0.094	3.2	A	0.205	7.6
	Through	A			A		
	Right	A			A		
Emmett Street (West)	Left	A	0.154	4.4	A	0.211	6.0
	Through	A			A		
	Right	A			A		

As can be seen from the table above, the intersection remains operating at LoS 'A' after the development is assumed to completed. The low DoS values indicate that in the 2028 100 HH modelling scenario, the development has a less than minor impact on the operation of the Emmett Street / Lackersteen Street intersection.

6.8.5 Post Development Volumes – AAST (2038)

The calculated traffic volumes used for this scenario are shown in **Figure 15** and **Figure 16**.

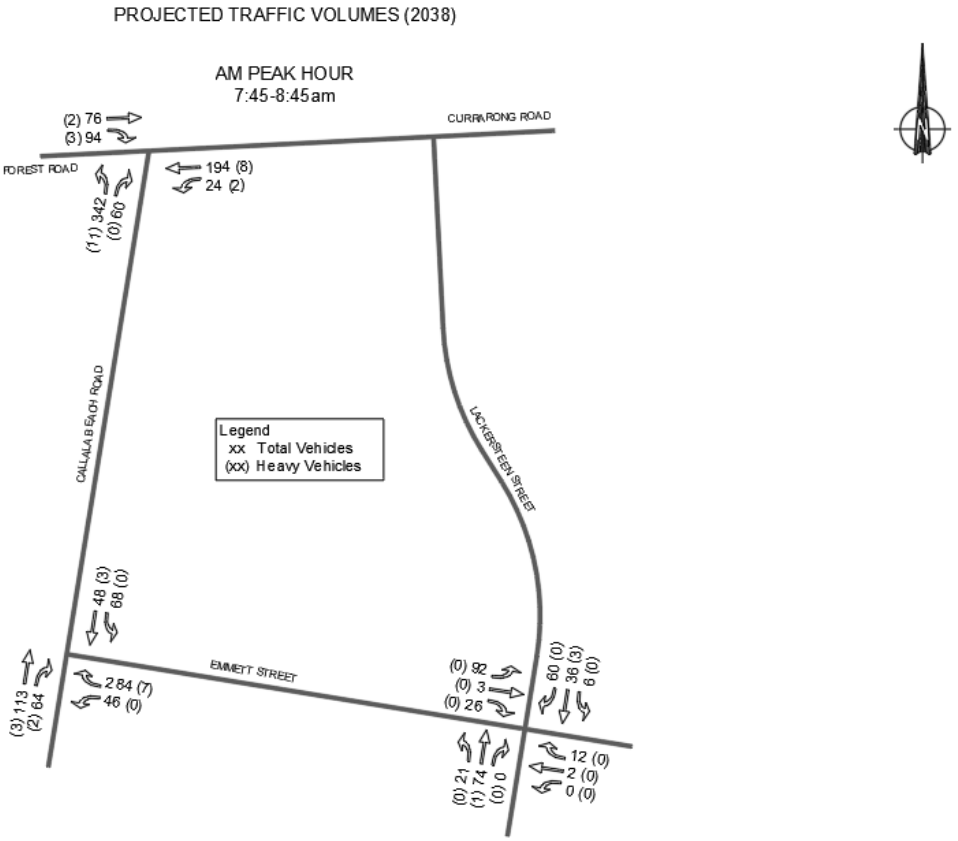


Figure 15: Post-Development Traffic Volumes (2038 AM Peak)

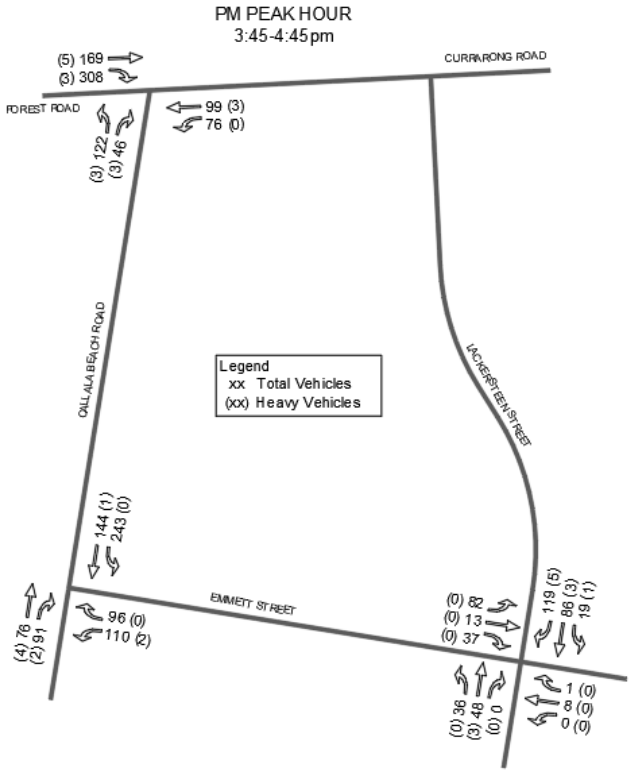


Figure 16: Post-Development Traffic Volumes (2038 PM Peak)

6.8.5.1 Callala Beach Road / Emmett Street

The SIDRA results for the intersection under the post-development plus 10-year (2038) scenario are shown below in **Table 6-17**.

Table 6-17: Callala Beach Road / Emmett Street SIDRA Analysis – 2038

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Callala Beach Road (South)	Through	A	0.062	0.0	A	0.042	0.0
	Right	A	0.042	1.4	A	0.079	2.4
Emmett Street	Left	A	0.031	0.9	A	0.081	2.4
	Right	A	0.338	12.0	A	0.142	3.9
Callala Beach Road (North)	Left	A	0.065	0.0	A	0.213	0.0
	Through	A	0.065	0.0	A	0.213	0.0

As can be seen from the table above, the intersection remains operating at LoS 'A' in the 2038 model year. The Emmett Street right-turn movement delays during the AM peak remain minimal and the 95th percentile queue length remains under two vehicles. The low DoS values indicate that even with the addition of the proposed development and 20 years of background traffic growth, the intersection is still operating considerably under capacity.

6.8.5.2 Forest Road / Callala Beach Road

The SIDRA results for the intersection under the post-development plus 10-year (2038) scenario are shown below in **Table 6-18**.

Table 6-18: Forest Road / Callala Beach Road SIDRA Analysis – 2038

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Callala Beach Road	Left	A	0.264	9.0	A	0.085	2.5
	Right	A	0.083	2.2	A	0.095	2.6
Forest Road (East)	Left	A	0.121	0.0	A	0.097	0.0
	Through	A	0.121	0.0	A	0.097	0.0
Forest Road (West)	Through	A	0.042	0.0	A	0.093	0.0
	Right	A	0.069	2.2	A	0.211	7.6

As can be seen from the table above, the intersection remains operating at LoS 'A' in the 2038 model year. The Callala Beach Road left-turn and Forest Road (west) right-turn movement delays during the AM peak remain minimal and the 95th percentile queue length remains under two vehicles for both movements. The low DoS values indicate that even with the addition of the proposed development and 20 years of background traffic growth, the intersection is still operating considerably under capacity.

6.8.5.3 Emmett Street / Lackersteen Street

The SIDRA results for the intersection under the post-development plus 10-year (2038) scenario are shown below in **Table 6-19**.

Table 6-19: Emmett Street / Lackersteen Street SIDRA Analysis – 2038

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Lackersteen Street (South)	Left	A	0.053	0.1	A	0.048	0.1
	Through	A			A		
	Right	A			A		
Emmett Street (East)	Left	A	0.020	0.5	A	0.011	0.3
	Through	A			A		
	Right	A			A		
Lackersteen Street (North)	Left	A	0.062	2.0	A	0.137	4.8
	Through	A			A		
	Right	A			A		
Emmett Street (West)	Left	A	0.108	3.0	A	0.132	3.6
	Through	A			A		
	Right	A			A		

As can be seen from the table above, the intersection is expected to remain operating at LoS 'A' in the 2038 modelling scenario. All 95th percentile queue lengths remain under one vehicle, and all DoS values indicate that the intersection remains well under capacity.

6.8.6 Post Development Volumes – 100 HH (2038)

6.8.6.1 Callala Beach Road / Emmett Street

The SIDRA results for the intersection under the post-development plus 10-year (2038) 100 HH scenario are shown below in **Table 6-20**.

Table 6-20: Callala Beach Road / Emmett Street SIDRA Analysis – 2038 100 HH

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Callala Beach Road (South)	Through	A	0.102	0.0	A	0.069	0.0
	Right	A	0.079	2.6	A	0.168	4.6
Emmett Street	Left	A	0.052	1.5	A	0.159	4.4
	Right	A	0.558	31.0	A	0.246	6.1
Callala Beach Road (North)	Left	A	0.094	0.0	A	0.299	0.0
	Through	A	0.094	0.0	A	0.299	0.0

As can be seen from the table above, the intersection remains operating at LoS 'A' in the 2038 100 HH model scenario. The Emmett Street right-turn movement delays during the AM peak remain within the limits of LoS 'A', and the 95th percentile queue length is expected to be under four vehicles. The low DoS values indicate that even with the addition of the proposed development and 20 years of background traffic growth, the intersection is still operating considerably under capacity.

6.8.6.2 Forest Road / Callala Beach Road

The SIDRA results for the intersection under the post-development plus 10-year (2038) scenario are shown below in **Table 6-21**.

Table 6-21: Forest Road / Callala Beach Road SIDRA Analysis – 2038 100 HH

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Callala Beach Road	Left	A	0.380	14.6	A	0.114	3.4
	Right	A	0.153	4.1	B	0.206	5.7
Forest Road (East)	Left	A	0.165	0.0	A	0.138	0.0
	Through	A	0.165	0.0	A	0.138	0.0
Forest Road (West)	Through	A	0.054	0.0	A	0.122	0.0
	Right	A	0.102	3.3	A	0.300	11.3

As can be seen from the table above, the intersection remains operating at LoS 'A' in the 2038 100 HH model scenario during the AM peak, while the PM peak hour LoS is 'B'. The Callala Beach Road left-turn and Forest Road (west) right-turn movement delays during the AM peak remain minimal and the 95th percentile queue length remains at two vehicles for both movements. The Callala Beach Road right turn movement sees an increase in delay during the model scenario due to increasing background traffic, however the 95th percentile queue length remains under one vehicle.

The low DoS values indicate that even with the addition of the proposed development and 20 years of background traffic growth, the intersection is still operating considerably under capacity, and a LoS 'B' is considered to be more than satisfactory for the future model 100 HH year.

6.8.6.3 Emmett Street / Lackersteen Street

The SIDRA results for the intersection under the post-development plus 10 year (2038) 100 HH scenario are shown below in **Table 6-22**.

Table 6-22: Emmett Street / Lackersteen Street SIDRA Analysis – 2038 100 HH

Approach Road	Turning Movement	AM Peak Hour			PM Peak Hour		
		Level of Service	Degree of Saturation	95%ile Queue (m)	Level of Service	Degree of Saturation	95%ile Queue (m)
Lackersteen Street (South)	Left	A	0.095	0.1	A	0.079	0.1
	Through	A			A		
	Right	A			A		
Emmett Street (East)	Left	A	0.045	1.0	A	0.027	0.6
	Through	A			A		
	Right	A			A		
Lackersteen Street (North)	Left	A	0.116	4.0	A	0.250	9.8
	Through	A			A		
	Right	A			A		
Emmett Street (West)	Left	A	0.189	5.6	A	0.277	8.1
	Through	A			A		
	Right	A			A		

As can be seen from the table above, the intersection is expected to remain operating at LoS 'A' in the 2038 modelling scenario during the 100 HH. All 95th percentile queue lengths aside from the Lackersteen Street (North) and Emmett Street approaches in the PM peak hour remain under one vehicle, and all DoS values indicate that the intersection remains well under capacity.

7. Conclusion

Stantec has been engaged by Allen Price & Scarratts Pty Ltd to undertake a traffic assessment of the proposed residential subdivision in Callala Bay, NSW.

Peak hour intersection counts were undertaken on Friday 2 November 2018 at the following intersections:

- Callala Beach Road / Emmett Street;
- Forest Road / Callala Beach Road; and
- Emmett Street / Lackersteen Street.

The results revealed that each intersection currently experiences a relatively low level of traffic during these peak hours, which were assumed as the Average Annual School Term (AAST) peak hours for the purposes of this assessment.

The proposed 374-lot residential subdivision is expected to generate in the order of 266 vph and 292 vph during the AM and PM peak hours, respectively.

With the addition of this traffic to the existing intersection operations, and allowing for an annual growth rate of 2% to a 2028 post-development model year, the SIDRA results indicate that all three intersections are expected to continue to operate at Level of Service 'A' following completion of the subdivision. This remained true in the 100th Highest Hour (100 HH) assessment, which considers the scenario of a busy period whereby volumes are considerably higher during peak periods, representative of a weekend holiday destination such as Callala Bay.

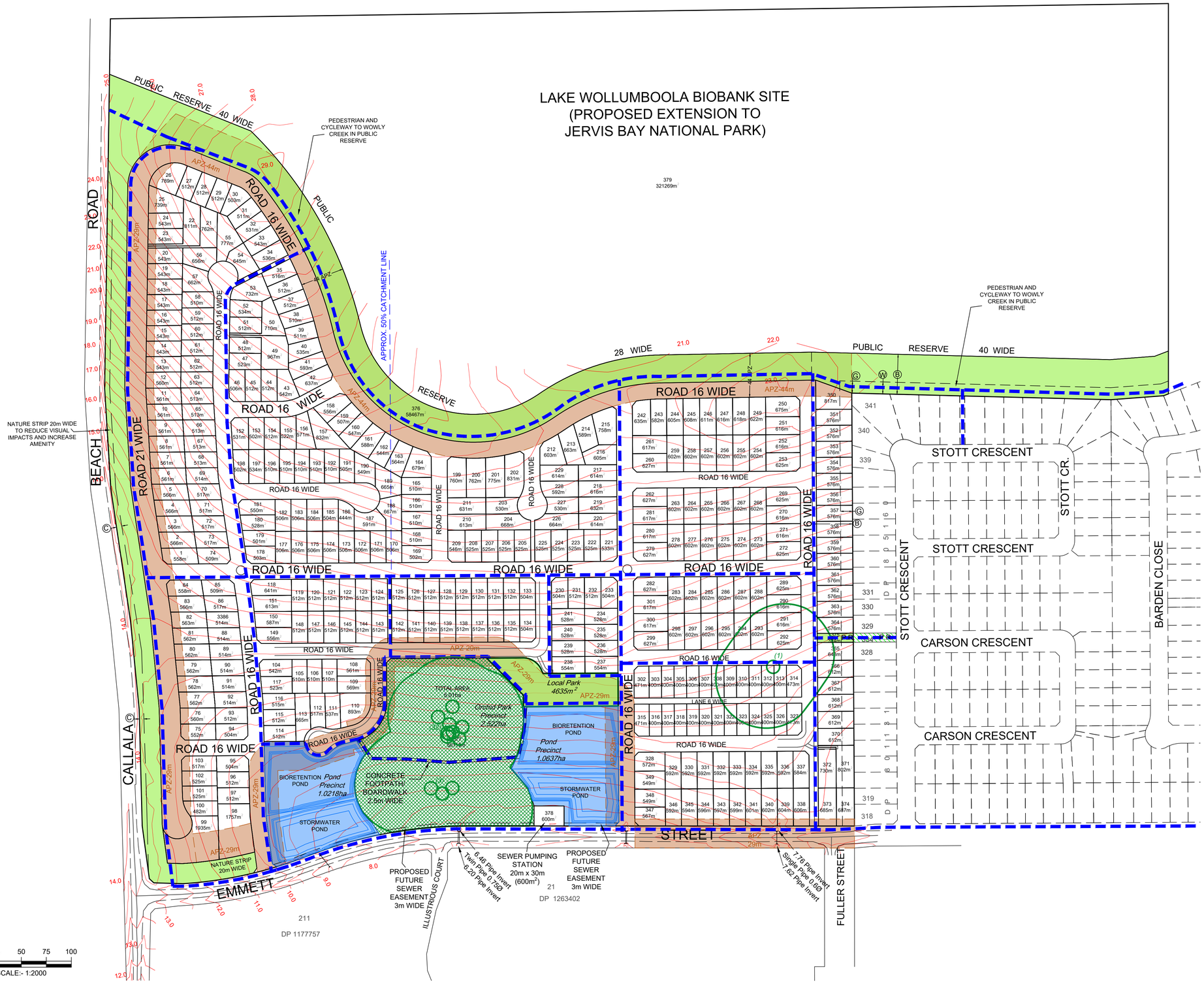
When analysing the plus 10-year modelling scenario, which considers the model scenario which takes place 10 years after the development is complete (2038), the intersections all remained at LoS 'A' for both modelling scenarios, AAST and 100 HH, with the exception of the Forest Road / Callala Beach Road intersection, which is projected to operate at an LoS 'B' during the 2038 100 HH modelling scenario.

It is therefore concluded that the proposed residential subdivision does not have any adverse traffic impacts on the surrounding road network, and that there are no traffic engineering reasons that would preclude the proposed development to proceed.

Appendices

Appendix A Concept Masterplan

SUBDIVISION MASTERPLAN



NOTE:

This plan was prepared for the client as an indicative subdivision design to accompany a planning application to Shoalhaven City Council.

The information shown 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.

The dimensions, areas and total number of lots shown on this plan are subject to field survey and also to the requirements of Council 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 subdivision design or for any financial dealings involving the land.

Allen Price & Scarratts Pty Ltd therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying an application to council for planning and which may be subject to alteration for reasons beyond the control of Allen Price & Scarratts Pty Ltd.

Unless stamped by Council, this plan is not a plan of an approved subdivision.

This note is an integral part of this plan.

NOTE:
CADASTRAL INFORMATION HAS BEEN OBTAINED FROM NSW LAND & PROPERTY INFORMATION (LPI) DIGITAL CADASTRAL DATA BASE (DCDB) AND IS SUBJECT TO SURVEY. IT SHOULD BE VIEWED AS APPROXIMATE ONLY.

PEDESTRIAN/ CYCLEWAY

GENOPLESIUM BAUERI -
(ECOLOGICAL REPORT 18.03.2019)

GENOPLESIUM BAUERI SPECIES POLYGON
(ECOLOGICAL REPORT 18.03.2019)

NOTE:

- ROADS 21 WIDE & 16 WIDE
- LOT YIELD

500m² LOTS		348
400m² LOTS (rear lane)		26
PUBLIC RESERVE		2
DRAINAGE RES./ORCHIDS (incl. Recreation Park)		1
SEWER PUMPING STATION		1
RESIDUE LOT		1

Ⓑ EASEMENT FOR BUSHFIRE FUEL REDUCTION 40 WIDE (DP 777916) (SCC)
TO BE EXPUNGED

Ⓒ EASEMENT FOR SEWER PIPELINE 5 WIDE & VARIABLE (VIDE DEALING AC196382 & DP 1065841)

Ⓖ RIGHT OF CARRIAGEWAY 12 WIDE (DP 777916) (SCC)
TO BE EXPUNGED

Ⓦ EASEMENT FOR WATER SUPPLY 12 WIDE (DP 789141) (SCC)
TO BE EXPUNGED

PROFESSIONAL STANDARDS SCHEME
Liability limited by a scheme approved under Professional Standards Legislation

RATIO: 1:2000 (AT A1 ORIGINAL)	DATUM: ORIGIN: SSM RL	SURVEY		REV	DESCRIPTION	BY	DATE
		DESIGN	MP/JH	P1	MAINTAINED PARK AREA CHANGED	DS	10.08.2021
		DRAWN	DS	P2	LOT LAYOUT REVISED	DS	02.12.2021
		CHECK'D	MP	P3	NOTES REVISED	DS	18.01.2022
	DATE OF PLAN: 29.09.2020			P4	APZs CLARIFIED. PED./CYCLEWAY REVISED.	DS	20.01.2022
				P5	POND AREA REVISED. LOT YIELD REDUCED.	DS	25.01.2022
				P6	APZs REVISED	DS	27.01.2022

allen price & scarratts pty ltd
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PLAN SHOWING PROPOSED RESIDENTIAL SUBDIVISION MASTERPLAN OVER LAND NORTH OF EMMETT STREET, WEST OF CALLALA BEACH ROAD AND LOT 20 DP 1263402 AT CALLALA BAY FOR SEALARK PTY LTD

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 25930-09 SHEET 1 OF 1 REVISION P6

M:\Projects\25000\25000s\25930 Drawings\N25930-09 SUBDIVISION MASTERPLAN.dwg

Appendix B Traffic Survey Results

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Emmett Street and Callala Beach Road, Callala Bay

GPS *-34.99379, 150.70236*

Date:	Fri 02/11/18
Weather:	Overcast
Suburban:	Callala Bay
Customer:	Stantec

North:	Callala Beach Road
East:	Emmett Street
South:	Callala Beach Road
West:	N/A

Survey Period	AM:	7:00 AM-10:00 AM
	PM:	3:00 PM-7:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	5:00 PM-6:00 PM

All Vehicles

Time		North Approach Callala Beach Road			East Approach Emmett Street			South Approach Callala Beach Road			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:00	7:15	0	2	4	0	5	4	0	0	17	188	
7:15	7:30	0	7	7	0	15	4	0	10	8	233	
7:30	7:45	0	4	0	0	8	7	0	5	25	247	
7:45	8:00	0	5	2	0	16	5	0	8	20	266	
8:00	8:15	0	9	3	0	25	5	0	9	26	281	Peak
8:15	8:30	1	7	7	0	15	6	0	9	20	249	
8:30	8:45	0	11	5	0	19	8	0	15	10	230	
8:45	9:00	0	13	5	0	12	11	0	12	18	214	
9:00	9:15	0	3	5	0	9	7	0	8	13	199	
9:15	9:30	0	9	6	0	8	4	0	4	15		
9:30	9:45	0	9	6	0	5	8	0	5	19		
9:45	10:00	0	13	1	0	9	5	0	6	22		
15:00	15:15	0	16	18	0	6	11	0	17	9	310	
15:15	15:30	0	26	6	0	6	10	0	13	16	317	
15:30	15:45	0	11	16	0	6	19	0	5	12	334	
15:45	16:00	0	18	16	0	5	18	0	14	16	342	
16:00	16:15	0	32	12	0	3	20	0	9	8	317	
16:15	16:30	0	25	17	0	3	20	0	16	13	327	
16:30	16:45	0	22	7	0	6	13	0	15	14	329	
16:45	17:00	0	16	7	0	4	14	0	11	10	347	
17:00	17:15	0	25	17	0	5	23	0	13	11	379	Peak
17:15	17:30	0	24	17	0	10	19	0	12	14	370	
17:30	17:45	0	27	15	0	4	22	0	15	12	347	
17:45	18:00	0	21	11	1	4	29	0	17	11	308	
18:00	18:15	0	23	15	0	3	18	0	16	10	271	
18:15	18:30	0	14	4	0	5	11	0	18	21		
18:30	18:45	0	24	7	0	3	8	0	9	5		
18:45	19:00	0	14	5	0	2	11	0	12	13		

Peak Time		North Approach Callala Beach Road			East Approach Emmett Street			South Approach Callala Beach Road			Peak total
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	
8:00	9:00	1	40	20	0	71	30	0	45	74	281
17:00	18:00	0	97	60	1	23	93	0	57	48	379

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Forest Rd and Callala Beach Rd, Callala Ba

GPS *-34.98016, 150.70485*

Date:	Fri 02/11/18
Weather:	Overcast
Suburban:	Callala Bay
Customer:	Stantec

North:	N/A
East:	Forest Rd
South:	Callala Beach Rd
West:	Forest Rd

Survey Period	AM:	7:00 AM-10:00 AM
	PM:	3:00 PM-7:00 PM
Traffic Peak	AM:	7:45 AM-8:45 AM
	PM:	3:45 PM-4:45 PM

All Vehicles

Time		East Approach Forest Rd			uth Approach Callala Beach			West Approach Forest Rd			Hourly Total	
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	Hour	Peak
7:00	7:15	0	10	2	0	5	17	0	2	5	276	
7:15	7:30	0	20	3	0	5	20	0	11	10	332	
7:30	7:45	0	28	2	0	4	21	0	2	10	350	
7:45	8:00	0	43	0	0	9	28	0	7	12	366	Peak
8:00	8:15	0	20	3	0	7	45	0	9	13	340	
8:15	8:30	0	23	4	0	10	29	0	11	10	305	
8:30	8:45	0	33	7	0	7	19	0	9	8	280	
8:45	9:00	0	14	5	0	12	17	0	13	12	282	
9:00	9:15	0	21	1	0	3	19	0	7	11	286	
9:15	9:30	0	12	4	1	6	17	0	10	12		
9:30	9:45	0	21	1	0	10	17	0	14	22		
9:45	10:00	0	13	9	0	11	21	0	5	18		
15:00	15:15	0	15	7	0	2	9	0	27	18	353	
15:15	15:30	0	15	10	0	8	16	0	22	28	365	
15:30	15:45	0	15	4	0	3	13	0	24	23	360	
15:45	16:00	0	15	7	0	11	7	0	27	27	368	Peak
16:00	16:15	0	14	19	0	5	13	0	22	17	274	
16:15	16:30	0	13	10	1	7	6	0	34	23	184	
16:30	16:45	0	15	8	0	5	11	0	20	31	188	
16:45	17:00	0	0	0	0	0	0	0	0	0	197	
17:00	17:15	0	0	0	0	0	0	0	0	0	268	
17:15	17:30	0	6	11	0	8	18	0	31	24	349	
17:30	17:45	0	9	11	0	5	10	0	32	32	320	
17:45	18:00	0	6	7	0	4	10	0	26	18	295	
18:00	18:15	0	13	6	0	7	4	0	31	20	286	
18:15	18:30	0	9	5	0	10	13	0	14	18		
18:30	18:45	0	11	9	0	5	9	0	21	19		
18:45	19:00	0	9	9	0	6	6	0	11	21		

Peak Time		East Approach Forest Rd			uth Approach Callala Beach			West Approach Forest Rd			Peak
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	total
7:45	8:45	0	119	14	0	33	121	0	36	43	366
15:45	16:45	0	57	44	1	28	37	0	103	98	368

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Emmett Street and Lackersteen Street, Callala Bay

GPS *-34.99588, 150.72108*

Date:	Fri 02/11/18
Weather:	Overcast
Suburban:	Callala Bay
Customer:	Stantec

North:	Lackersteen Street
East:	Emmett Street
South:	Lackersteen Street
West:	Emmett Street

Survey Period	AM:	7:00 AM-10:00 AM
	PM:	3:00 PM-7:00 PM
Traffic Peak	AM:	8:15 AM-9:15 AM
	PM:	3:30 PM-4:30 PM

All Vehicles

Time		North Approach Lackersteen Street				East Approach Emmett Street				South Approach Lackersteen Street				West Approach Emmett Street				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	0	4	4	0	0	0	1	2	0	0	8	1	0	0	2	2	141	
7:15	7:30	0	2	2	1	0	2	1	0	0	0	10	2	0	1	0	7	155	
7:30	7:45	0	7	3	0	0	2	0	0	0	0	16	2	0	2	0	11	182	
7:45	8:00	0	4	5	1	0	2	0	0	0	0	15	4	0	2	0	13	197	
8:00	8:15	0	4	5	2	0	2	0	0	0	0	14	3	0	0	0	8	202	
8:15	8:30	0	12	8	1	0	2	0	0	0	0	13	1	0	3	0	15	206	Peak
8:30	8:45	0	18	6	0	0	2	1	0	0	0	8	4	0	3	0	16	198	
8:45	9:00	0	15	7	0	0	1	1	0	0	0	9	1	0	3	3	11	180	
9:00	9:15	0	11	4	0	0	0	0	1	0	0	6	6	0	1	2	11	174	
9:15	9:30	0	11	3	0	0	0	3	0	0	0	9	4	0	3	2	12		
9:30	9:45	0	13	2	0	0	0	1	0	0	0	12	3	0	0	0	9		
9:45	10:00	0	6	9	2	0	4	0	0	0	0	4	2	0	4	3	11		
15:00	15:15	0	19	11	2	0	4	2	0	0	0	5	1	0	5	4	14	267	
15:15	15:30	0	14	14	2	0	0	0	0	0	0	8	4	0	4	3	22	273	
15:30	15:45	0	8	10	1	0	0	1	0	0	0	10	4	0	5	2	22	282	Peak
15:45	16:00	0	22	11	4	0	0	1	0	0	0	6	4	0	4	2	12	273	
16:00	16:15	0	17	18	5	0	0	0	0	0	0	5	3	0	6	4	15	261	
16:15	16:30	0	17	15	2	0	1	1	0	0	0	15	3	0	8	2	16	248	
16:30	16:45	0	15	14	2	0	0	1	0	0	0	6	5	0	3	0	8	233	
16:45	17:00	0	18	9	2	0	1	1	0	0	0	6	1	0	7	4	5	243	
17:00	17:15	0	14	11	3	0	0	1	0	0	0	10	5	0	1	5	10	250	
17:15	17:30	0	7	14	2	0	1	4	0	0	0	6	8	1	4	3	15	263	
17:30	17:45	0	17	8	1	0	0	0	0	0	0	9	7	0	4	6	12	235	
17:45	18:00	0	10	15	0	0	0	1	0	0	0	8	4	0	8	5	10	214	
18:00	18:15	0	13	17	1	0	2	1	0	0	0	7	7	0	5	8	12	191	
18:15	18:30	0	9	4	0	0	0	0	0	0	0	4	6	0	3	4	7		
18:30	18:45	0	9	9	1	0	0	1	0	0	0	2	6	0	5	5	5		
18:45	19:00	0	8	9	0	0	0	2	0	0	0	6	2	0	3	2	6		

Peak Time		North Approach Lackersteen Street				East Approach Emmett Street				South Approach Lackersteen Street				West Approach Emmett Street				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:15	9:15	0	56	25	1	0	5	2	1	0	0	36	12	0	10	5	53	206
15:30	16:30	0	64	54	12	0	1	3	0	0	0	36	14	0	23	10	65	282

Appendix C Concepts of Level of Service and Delay

Concepts of Carriageway Capacity and Level of Service

The capacity of major streets within an urban area can be based on an assessment of their operating Level of Service.

Level of service is defined within Austroads' *Guide to Traffic Management Part 3: Traffic Studies and Analysis* as:

'... a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A level of service definition generally describes these conditions in terms of factors such as speed and travel time, freedom to manoeuvre, traffic interruptions, comfort and convenience, and safety.'

Levels of service (LoS) are designated from 'A' to 'F' from best (free flow conditions) to worst (forced flow with stop start operation, long queues and delays) as follows:

LEVELS OF SERVICE

A - Free flow (almost no delays)

B - Stable flow (slight delays)

C - Stable flow (acceptable delays)

D - Approaching unstable flow (tolerable delays)

E - Unstable flow (congestion; intolerable delays), and

F - Forced flow (jammed)

A service volume, as defined by Austroads, is the maximum number of vehicles that can pass over a given section of roadway in one direction during one hour while operating conditions are maintained at a specified level of service. It is suggested that ideally arterial and sub-arterial roads should not exceed service volumes at LoS 'C'. At this level, whilst most drivers are restricted in their freedom to manoeuvre, operating speeds are still reasonable and acceptable delays experienced. However, in urban situations, arterial and sub-arterial roads operating at LoS 'D' are still considered adequate. Traffic volumes along urban roads with interrupted and uninterrupted flow conditions are included in **Table C1** and **Table C2** respectively.

Table C1: Level of Service of Interrupted Flow Conditions along Urban Roads (One Way Hourly Volumes)

Reference	Description	Level of Service					
		A	B	C	D	E	F
2U	2 Lane Undivided	540	630	720	810	900	-
4UP	4 Lane Undivided with two parking lanes	540	630	720	810	900	-
4U	4 Lane Undivided with some parking	900	1050	1200	1350	1500	-
4UC	4 Lane Undivided with clearways	1080	1260	1440	1620	1800	-
4D	4 Lane Divided with clearways	1140	1330	1520	1710	1900	-
6U	6 Lane Undivided	1440	1680	1920	2160	2400	-
6D	6 Lane Divided with clearways	1740	2030	2320	2610	2900	-

Table C2: Level of Service of Uninterrupted Flow Conditions along Urban Roads (One Way Hourly Volumes)

Reference	Description	Level of Service					
		A	B	C	D	E	F
2U	2 Lane Undivided	760	880	1000	1130	1260	-
4UP	4 Lane Undivided with two parking lanes	1260	1470	1680	1890	2100	-
4U	4 Lane Undivided with some parking	1510	1760	2010	2270	2520	-
4UC	4 Lane Undivided with clearways	1600	1860	2130	2400	2660	-
4D	4 Lane Divided with clearways	2250	2620	3000	3380	3740	-
6U	6 Lane Undivided	2440	2840	3250	3660	4060	-
6D	6 Lane Divided with clearways	760	880	1000	1130	1260	-

Guidelines for Evaluation of Intersection Operation

The *RTA Guide to Traffic Generating Developments (October 2002, Issue 2.2)*, details the assessment of intersections. The assessment of the level of service of an intersection is based on the evaluation of the following Measures of Effectiveness:

(a) Average delay (seconds/veh) (all forms of control)

(b) Delay to critical movement (seconds/veh) (all forms of control)

(c) Degree of saturation (traffic signals and roundabouts)

(d) Cycle length (traffic signals)

SIDRA was used to calculate the relevant intersection parameters. The SIDRA software is an advanced lane-based micro-analytical tool for design and evaluation of individual intersections and networks of intersections including modelling of separate movement classes (light vehicles, heavy vehicles, buses, cyclists, large trucks, light rail / trams and so on). It provides estimates of capacity, level of service and a wide range of performance measures, including; delay, queue length and stops for vehicles and pedestrians, as well as fuel consumption, pollution emissions and operating costs.

It can be used to analyse signalised intersections (fixed-time / pretimed and actuated), signalised and unsignalised pedestrian crossings, roundabouts (unsignalised), roundabouts with metering signals, fully-signalised roundabouts, two-way stop sign and give-way / yield sign control, all-way stop sign control, single point interchanges (signalised), freeway diamond interchanges (signalised, roundabout, sign control), diverging diamond interchanges and other alternative intersections and interchanges. It can also be used for uninterrupted traffic flow conditions and merge analysis.

The best indicator of the level of service at an intersection is the average delay experienced by vehicles at that intersection. For traffic signals, the average delay over all movements should be taken. For roundabouts and priority control intersections (with Stop and Give Way signs or operating under the T-junction rule) the critical movement for level of service assessment should be that with the highest average delay.

With traffic signals, delays per approach tend to be equalised, subject to any over-riding requirements of signal co-ordination as well as to variations within individual movements. With roundabouts and priority - control intersections, the critical criterion for assessment is the movement with the highest delay per vehicle. With this type of control the volume balance might be such that some movements suffer high levels of delay while other movements have minimal delay. An overall average delay for the intersection of 25 seconds might not be satisfactory if the average delay on one movement is 60 seconds.

The average delay for LoS 'E' should be no more than 70 seconds. The accepted maximum practical cycle length for traffic signals under saturated conditions is 120 - 140 seconds. Under these conditions 120 seconds is near maximum for two and three phase intersections and 140 seconds near maximum for more complex phase designs. Drivers and pedestrians expect cycle lengths of these magnitudes and their inherent delays in peak hours. A cycle length of 140 seconds for an intersection which is almost saturated has an average vehicle delay of about 70 seconds, although this can vary. If the average vehicle delay is more than 70 seconds, the intersection is assumed to be at LoS 'F'.

Table C3 sets out average delays for different levels of service. There is no consistent correlation between definitions of levels of service for road links as defined elsewhere in this section, and the ranges set out in Table C3. In assigning a level of service, the average delay to the motoring public needs to be considered, keeping in mind the location of the intersection. For example, drivers in inner urban areas of Sydney have a higher tolerance of delay than drivers in country areas. Table C3 provides a recommended baseline for assessment.

Table C3: Level of Service Criteria for Intersections

Level of Service	Average Delay per Vehicle (sec/veh)	Traffic Signals	Priority Controlled
A	0 < x < 14	Good operation	Good operation
B	14 < x < 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	28 < x < 42	Satisfactory	Satisfactory, but crash history study required
D	42 < x < 56	Operating near capacity	Operating near capacity and crash history study required
E	56 < x	At capacity, incidents will cause excessive delays	At capacity, requires other control mode

The figures in Table C3 are intended as a guide only. Any particular assessment should take into account site-specific factors including maximum queue lengths (and their effect on lane blocking), the influence of nearby intersections and the sensitivity of the location to delays. In many situations, a comparison of the current and future average delay provides a better appreciation of the impact of a proposal, and not simply the change in the level of service.

The intersection degree of saturation (DoS) can also be used to measure the performance of isolated intersections. The DoS value can be determined by computer based assessment programs. At intersections controlled by traffic signals, both queue length and delays increase rapidly as DoS approaches 1.0. An upper limit of 0.900 is appropriate, however when DoS exceeds 0.850, overflow queues start to become a problem. Satisfactory intersection operation is generally achieved with a DoS of about 0.700 - 0.800. (Note that these figures are based on isolated signalised intersections with cycle lengths of 120 seconds. In co-ordinated signal systems DoS might be actively maximised at key intersections).

Although in some situations additional traffic does not alter the level of service, particularly where the level of service is 'E' or 'F', additional capacity may still be required. This is particularly appropriate for LoS 'F', where small increases in flow can cause disproportionately greater increases in delay. In this situation, it is advisable to consider means of control to maintain the existing level of absolute delay. Suggested criteria for the evaluation of the capacity of signalised intersections based on the DoS are summarised below in **Table C4**.

Table C4: Criteria for Evaluating Capacity of Signalised Intersections

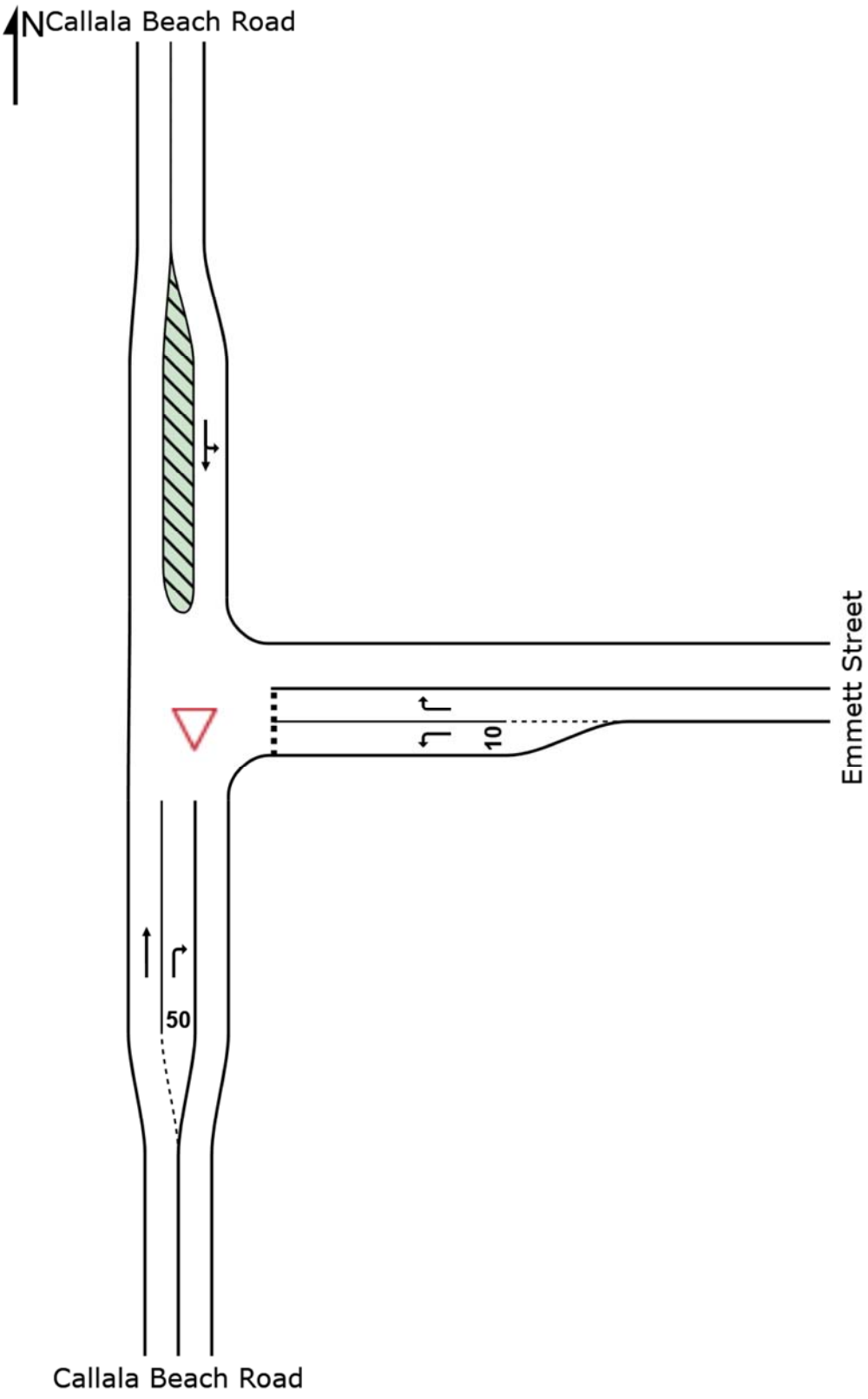
Level of Service	Optimum Cycle Length (seconds)	Movement Degree of Saturation (DoS)	Intersection Degree of Saturation (DoS)
A – Very good	< 90	< 0.70	< 0.70
B – Good	< 90	< 0.70	< 0.70
C – Satisfactory	90 – 120	0.70 – 0.80	0.70 – 0.85
D - Poor	120 – 140	0.80 – 0.85	0.85 – 0.90
E/F – Extra capacity required	> 140	> 0.85	> 0.90

Appendix D SIDRA Outputs

SITE LAYOUT

Site: 101 [Callala Beach Road - Emmett Street - AM Peak - Existing]

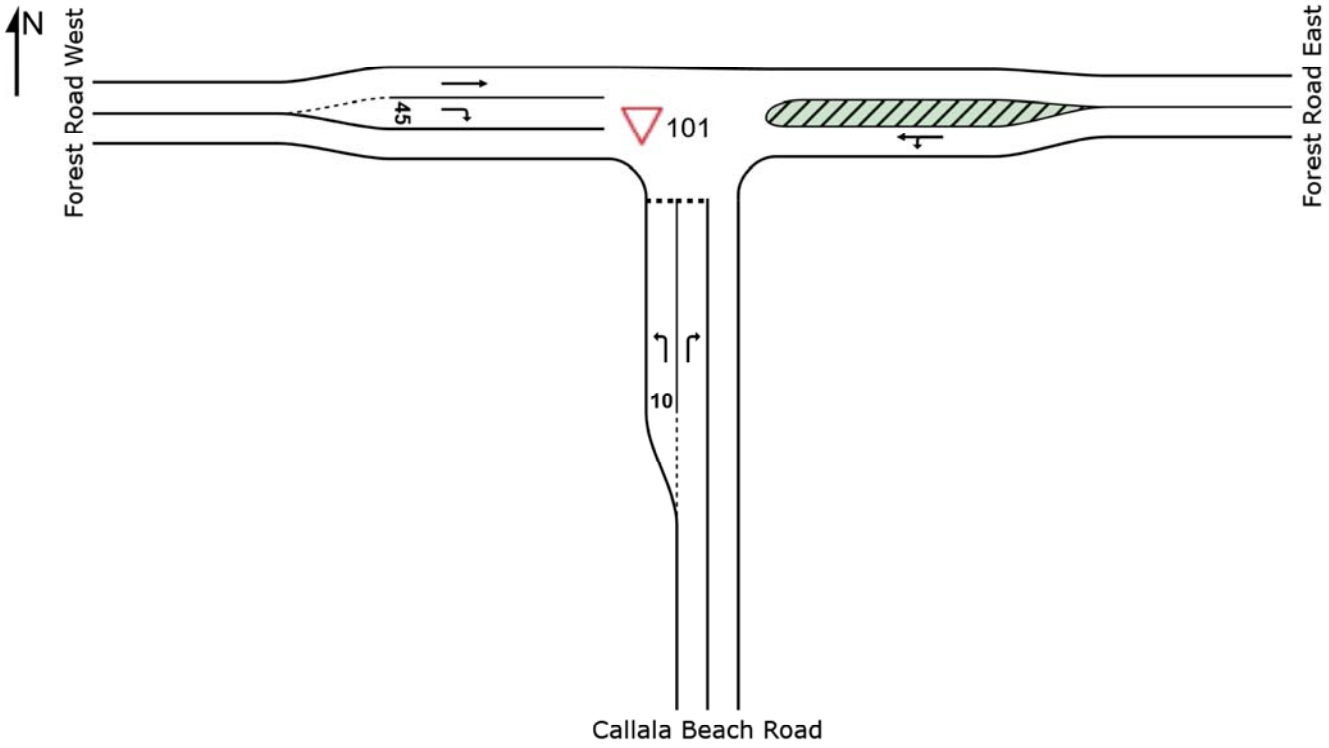
Callala Beach Road / Emmett Street Intersection
AM Peak Hour - Existing
7:45 am - 8:45 am
Giveway / Yield (Two-Way)



SITE LAYOUT

Site: 101 [Forest Road - Callala Beach Road - AM Peak - Existing]

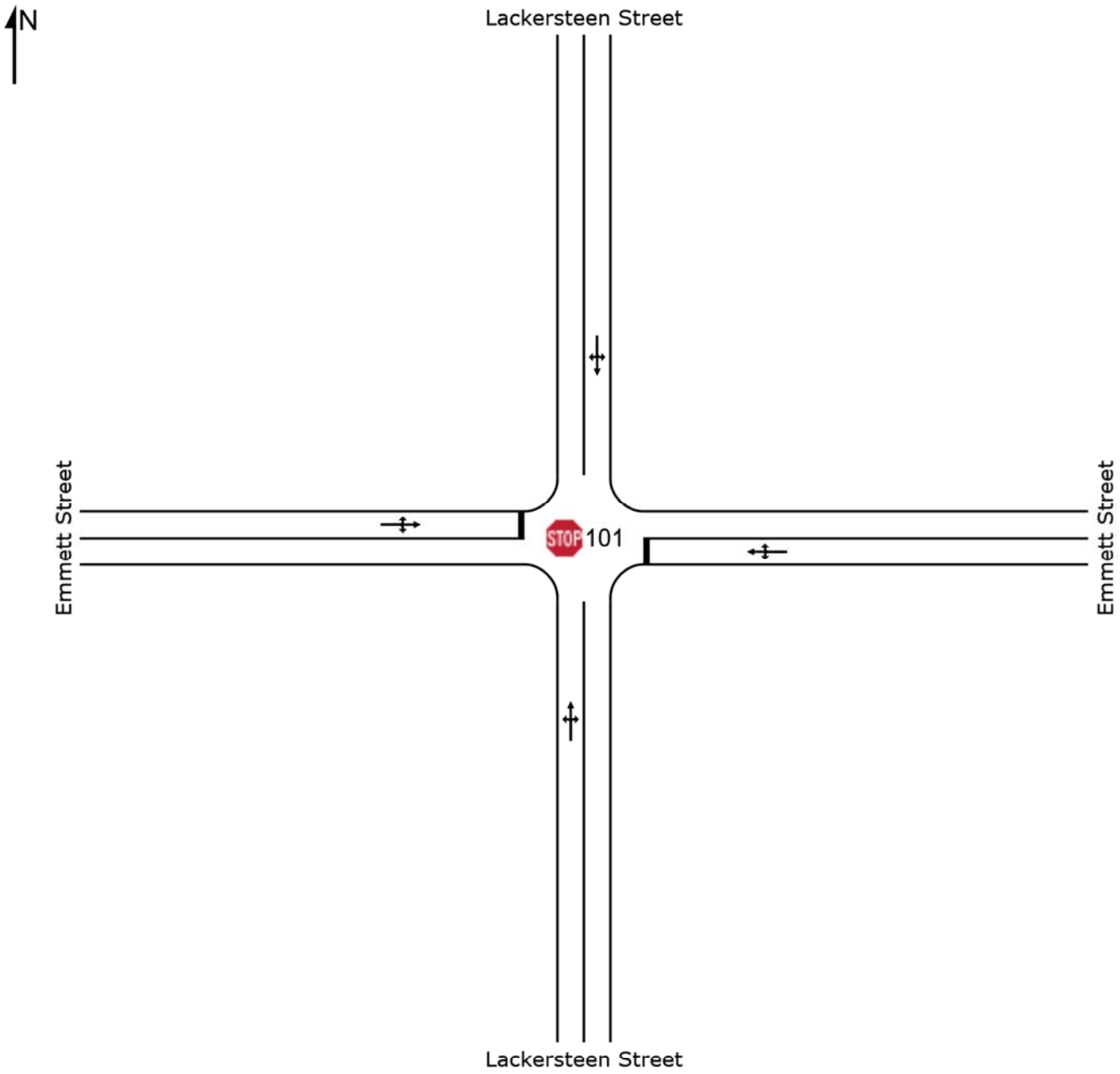
Forest Road / Callala Beach Road Intersection
AM Peak Hour - Existing
7:45 AM - 8:45 AM
Giveway / Yield (Two-Way)



SITE LAYOUT

Site: 101 [Emmett Street - Lackersteen Street - AM Peak - Existing]

Emmett Street / Lackersteen Street Intersection
AM Peak Hour - Existing
7:45 AM - 8:45 AM
Stop (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Callala Beach Road - Emmett Street - AM Peak - Existing]

Callala Beach Road / Emmett Street Intersection
AM Peak Hour - Existing
7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
2	T1	80	2.6	0.042	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	43	2.4	0.025	7.1	LOS A	0.1	0.8	0.14	0.58	58.4
Approach		123	2.6	0.042	2.5	NA	0.1	0.8	0.05	0.20	70.8
East: Emmett Street											
4	L2	25	0.0	0.016	5.6	LOS A	0.1	0.4	0.10	0.54	58.4
6	R2	79	2.7	0.080	6.5	LOS A	0.3	2.3	0.30	0.59	56.8
Approach		104	2.0	0.080	6.3	LOS A	0.3	2.3	0.25	0.58	57.1
North: Callala Beach Road											
7	L2	18	0.0	0.028	6.9	LOS A	0.0	0.0	0.00	0.23	71.0
8	T1	34	6.3	0.028	0.0	LOS A	0.0	0.0	0.00	0.23	75.8
Approach		52	4.1	0.028	2.4	NA	0.0	0.0	0.00	0.23	74.1
All Vehicles		279	2.6	0.080	3.9	NA	0.3	2.3	0.12	0.35	65.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Callala Beach Road - Emmett Street - PM Peak - Existing]

Callala Beach Road / Emmett Street Intersection
PM Peak Hour - Existing
3:45 pm - 4:45 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
2	T1	54	5.9	0.029	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	57	1.9	0.037	7.4	LOS A	0.2	1.2	0.26	0.59	57.9
Approach		111	3.8	0.037	3.8	NA	0.2	1.2	0.14	0.30	66.9
East: Emmett Street											
4	L2	75	1.4	0.050	5.9	LOS A	0.2	1.4	0.19	0.54	57.6
6	R2	18	0.0	0.020	6.8	LOS A	0.1	0.5	0.35	0.58	57.3
Approach		93	1.1	0.050	6.0	LOS A	0.2	1.4	0.22	0.55	57.6
North: Callala Beach Road											
7	L2	55	0.0	0.082	7.0	LOS A	0.0	0.0	0.00	0.23	71.1
8	T1	102	1.0	0.082	0.0	LOS A	0.0	0.0	0.00	0.23	75.9
Approach		157	0.7	0.082	2.4	NA	0.0	0.0	0.00	0.23	74.2
All Vehicles		360	1.8	0.082	3.8	NA	0.2	1.4	0.10	0.33	67.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Forest Road - Callala Beach Road - AM Peak - Existing]

Forest Road / Callala Beach Road Intersection
AM Peak Hour - Existing
7:45 AM - 8:45 AM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
1	L2	127	3.3	0.088	7.4	LOS A	0.4	2.6	0.23	0.59	60.5
3	R2	35	0.0	0.037	7.8	LOS A	0.1	1.0	0.34	0.63	61.0
Approach		162	2.6	0.088	7.5	LOS A	0.4	2.6	0.25	0.60	60.6
East: Forest Road East											
4	L2	15	7.1	0.074	6.5	LOS A	0.0	0.0	0.00	0.07	63.3
5	T1	125	4.2	0.074	0.0	LOS A	0.0	0.0	0.00	0.07	69.1
Approach		140	4.5	0.074	0.7	NA	0.0	0.0	0.00	0.07	68.5
West: Forest Road West											
11	T1	45	2.3	0.024	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
12	R2	38	2.8	0.024	6.7	LOS A	0.1	0.8	0.25	0.57	60.4
Approach		83	2.5	0.024	3.1	NA	0.1	0.8	0.11	0.26	65.3
All Vehicles		385	3.3	0.088	4.1	NA	0.4	2.6	0.13	0.33	64.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Forest Road - Callala Beach Road - PM Peak - Existing]

Forest Road / Callala Beach Road Intersection
PM Peak Hour - Existing
3:45 PM - 4:45 PM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
1	L2	39	2.7	0.025	7.2	LOS A	0.1	0.7	0.14	0.58	61.0
3	R2	29	7.1	0.036	8.5	LOS A	0.1	1.0	0.40	0.65	58.2
Approach		68	4.6	0.036	7.8	LOS A	0.1	1.0	0.25	0.61	59.8
East: Forest Road East											
4	L2	46	0.0	0.056	6.4	LOS A	0.0	0.0	0.00	0.27	63.4
5	T1	60	3.5	0.056	0.0	LOS A	0.0	0.0	0.00	0.27	66.4
Approach		106	2.0	0.056	2.8	NA	0.0	0.0	0.00	0.27	65.0
West: Forest Road West											
11	T1	103	3.1	0.054	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
12	R2	108	1.0	0.066	6.6	LOS A	0.3	2.2	0.22	0.57	61.1
Approach		212	2.0	0.066	3.4	NA	0.3	2.2	0.11	0.29	65.1
All Vehicles		386	2.5	0.066	4.0	NA	0.3	2.2	0.11	0.34	64.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Emmett Street - Lackersteen Street - AM Peak - Existing]

Emmett Street / Lackersteen Street Intersection
AM Peak Hour - Existing
7:45 AM - 8:45 AM
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lackersteen Street											
1	L2	13	0.0	0.035	5.5	LOS A	0.0	0.1	0.00	0.12	57.3
2	T1	53	2.0	0.035	0.0	LOS A	0.0	0.1	0.00	0.12	58.9
3	R2	1	0.0	0.035	5.5	LOS A	0.0	0.1	0.00	0.12	56.7
Approach		66	1.6	0.035	1.1	NA	0.0	0.1	0.00	0.12	58.5
East: Emmett Street											
4	L2	1	0.0	0.012	8.1	LOS A	0.0	0.3	0.19	0.91	51.7
5	T1	1	0.0	0.012	8.2	LOS A	0.0	0.3	0.19	0.91	51.5
6	R2	8	0.0	0.012	8.4	LOS A	0.0	0.3	0.19	0.91	51.2
Approach		11	0.0	0.012	8.4	LOS A	0.0	0.3	0.19	0.91	51.3
North: Lackersteen Street											
7	L2	4	0.0	0.039	5.7	LOS A	0.2	1.3	0.15	0.36	54.7
8	T1	25	8.3	0.039	0.2	LOS A	0.2	1.3	0.15	0.36	56.2
9	R2	40	0.0	0.039	5.6	LOS A	0.2	1.3	0.15	0.36	54.2
Approach		69	3.0	0.039	3.6	NA	0.2	1.3	0.15	0.36	54.9
West: Emmett Street											
10	L2	55	0.0	0.050	8.2	LOS A	0.2	1.4	0.14	0.91	51.8
11	T1	1	0.0	0.050	8.3	LOS A	0.2	1.4	0.14	0.91	51.5
12	R2	8	0.0	0.050	8.2	LOS A	0.2	1.4	0.14	0.91	51.3
Approach		64	0.0	0.050	8.2	LOS A	0.2	1.4	0.14	0.91	51.7
All Vehicles		211	1.5	0.050	4.5	NA	0.2	1.4	0.10	0.48	54.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Emmett Street - Lackersteen Street - PM Peak - Existing]

Emmett Street / Lackersteen Street Intersection
PM Peak Hour - Existing
3:45 PM - 4:45 PM
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lackersteen Street											
1	L2	16	0.0	0.027	5.6	LOS A	0.0	0.1	0.01	0.20	56.6
2	T1	34	6.3	0.027	0.0	LOS A	0.0	0.1	0.01	0.20	58.1
3	R2	1	0.0	0.027	5.7	LOS A	0.0	0.1	0.01	0.20	56.0
Approach		51	4.2	0.027	1.9	NA	0.0	0.1	0.01	0.20	57.6
East: Emmett Street											
4	L2	1	0.0	0.005	8.2	LOS A	0.0	0.1	0.23	0.92	51.7
5	T1	3	0.0	0.005	8.5	LOS A	0.0	0.1	0.23	0.92	51.4
6	R2	1	0.0	0.005	8.8	LOS A	0.0	0.1	0.23	0.92	51.2
Approach		5	0.0	0.005	8.5	LOS A	0.0	0.1	0.23	0.92	51.5
North: Lackersteen Street											
7	L2	14	7.7	0.085	5.8	LOS A	0.4	2.8	0.13	0.33	54.7
8	T1	61	3.4	0.085	0.1	LOS A	0.4	2.8	0.13	0.33	56.5
9	R2	75	4.2	0.085	5.7	LOS A	0.4	2.8	0.13	0.33	54.3
Approach		149	4.2	0.085	3.4	NA	0.4	2.8	0.13	0.33	55.2
West: Emmett Street											
10	L2	54	0.0	0.074	8.1	LOS A	0.3	2.0	0.11	0.94	51.7
11	T1	8	0.0	0.074	8.7	LOS A	0.3	2.0	0.11	0.94	51.4
12	R2	22	0.0	0.074	8.6	LOS A	0.3	2.0	0.11	0.94	51.2
Approach		84	0.0	0.074	8.3	LOS A	0.3	2.0	0.11	0.94	51.5
All Vehicles		289	2.9	0.085	4.7	NA	0.4	2.8	0.10	0.50	54.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Callala Beach Road - Emmett Street - AM Peak - Existing - 100HH]

Callala Beach Road / Emmett Street Intersection
AM Peak Hour - Existing - 100HH
7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
2	T1	131	2.4	0.068	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	79	2.7	0.048	7.2	LOS A	0.2	1.6	0.19	0.58	58.2
Approach		209	2.5	0.068	2.7	NA	0.2	1.6	0.07	0.22	70.1
East: Emmett Street											
4	L2	46	0.0	0.030	5.7	LOS A	0.1	0.8	0.13	0.54	58.2
6	R2	143	2.9	0.168	7.4	LOS A	0.7	5.0	0.42	0.66	56.1
Approach		189	2.2	0.168	7.0	LOS A	0.7	5.0	0.35	0.63	56.6
North: Callala Beach Road											
7	L2	33	0.0	0.047	6.9	LOS A	0.0	0.0	0.00	0.24	70.8
8	T1	55	5.8	0.047	0.0	LOS A	0.0	0.0	0.00	0.24	75.5
Approach		87	3.6	0.047	2.6	NA	0.0	0.0	0.00	0.24	73.7
All Vehicles		486	2.6	0.168	4.4	NA	0.7	5.0	0.17	0.38	64.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Callala Beach Road - Emmett Street - PM Peak - Existing - 100HH]

Callala Beach Road / Emmett Street Intersection
PM Peak Hour - Existing - 100 HH
3:45 pm - 4:45 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
2	T1	87	6.0	0.047	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	103	2.0	0.074	7.8	LOS A	0.3	2.4	0.37	0.62	57.6
Approach		191	3.9	0.074	4.2	NA	0.3	2.4	0.20	0.34	66.0
East: Emmett Street											
4	L2	136	1.6	0.097	6.1	LOS A	0.4	2.8	0.27	0.56	57.3
6	R2	33	0.0	0.044	8.0	LOS A	0.2	1.2	0.47	0.67	56.3
Approach		168	1.3	0.097	6.5	LOS A	0.4	2.8	0.31	0.58	57.1
North: Callala Beach Road											
7	L2	100	0.0	0.140	7.0	LOS A	0.0	0.0	0.00	0.24	70.8
8	T1	167	1.3	0.140	0.0	LOS A	0.0	0.0	0.00	0.24	75.6
Approach		267	0.8	0.140	2.6	NA	0.0	0.0	0.00	0.24	73.8
All Vehicles		626	1.8	0.140	4.1	NA	0.4	2.8	0.14	0.36	66.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Forest Road - Callala Beach Road - AM Peak - Existing - 100HH]

Forest Road / Callala Beach Road Intersection
AM Peak Hour - Existing - 100HH
7:45 AM - 8:45 AM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
1	L2	208	3.5	0.151	7.6	LOS A	0.7	4.7	0.29	0.61	60.2
3	R2	57	0.0	0.068	8.5	LOS A	0.3	1.8	0.41	0.68	60.3
Approach		265	2.8	0.151	7.8	LOS A	0.7	4.7	0.32	0.62	60.2
East: Forest Road East											
4	L2	24	8.7	0.104	6.5	LOS A	0.0	0.0	0.00	0.08	62.7
5	T1	171	4.3	0.104	0.0	LOS A	0.0	0.0	0.00	0.08	69.0
Approach		195	4.9	0.104	0.8	NA	0.0	0.0	0.00	0.08	68.1
West: Forest Road West											
11	T1	62	1.7	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
12	R2	62	3.4	0.042	6.9	LOS A	0.2	1.3	0.31	0.58	60.0
Approach		124	2.5	0.042	3.5	NA	0.2	1.3	0.15	0.29	64.6
All Vehicles		584	3.4	0.151	4.6	NA	0.7	4.7	0.18	0.37	63.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Forest Road - Callala Beach Road - PM Peak - Existing - 100HH]

Forest Road / Callala Beach Road Intersection
PM Peak Hour - Existing - 100HH
3:45 PM - 4:45 PM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
1	L2	64	3.3	0.043	7.3	LOS A	0.2	1.2	0.17	0.59	60.7
3	R2	48	6.5	0.071	9.8	LOS A	0.3	2.0	0.50	0.73	57.2
Approach		113	4.7	0.071	8.3	LOS A	0.3	2.0	0.31	0.65	59.2
East: Forest Road East											
4	L2	76	0.0	0.084	6.4	LOS A	0.0	0.0	0.00	0.30	63.1
5	T1	82	3.8	0.084	0.0	LOS A	0.0	0.0	0.00	0.30	66.0
Approach		158	2.0	0.084	3.1	NA	0.0	0.0	0.00	0.30	64.6
West: Forest Road West											
11	T1	141	3.0	0.074	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
12	R2	178	1.2	0.115	6.8	LOS A	0.5	3.8	0.28	0.59	60.8
Approach		319	2.0	0.115	3.8	NA	0.5	3.8	0.16	0.33	64.5
All Vehicles		589	2.5	0.115	4.5	NA	0.5	3.8	0.14	0.38	63.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Emmett Street - Lackersteen Street - AM Peak - Existing - 100HH]

Emmett Street / Lackersteen Street Intersection
AM Peak Hour - Existing - 100HH
7:45 AM - 8:45 AM
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lackersteen Street											
1	L2	23	0.0	0.063	5.5	LOS A	0.0	0.1	0.00	0.12	57.3
2	T1	96	2.2	0.063	0.0	LOS A	0.0	0.1	0.00	0.12	58.9
3	R2	1	0.0	0.063	5.6	LOS A	0.0	0.1	0.00	0.12	56.7
Approach		120	1.8	0.063	1.1	NA	0.0	0.1	0.00	0.12	58.5
East: Emmett Street											
4	L2	1	0.0	0.025	8.2	LOS A	0.1	0.6	0.32	0.90	51.2
5	T1	2	0.0	0.025	8.8	LOS A	0.1	0.6	0.32	0.90	51.0
6	R2	16	0.0	0.025	9.4	LOS A	0.1	0.6	0.32	0.90	50.8
Approach		19	0.0	0.025	9.3	LOS A	0.1	0.6	0.32	0.90	50.8
North: Lackersteen Street											
7	L2	7	0.0	0.074	5.9	LOS A	0.3	2.5	0.22	0.36	54.5
8	T1	46	9.1	0.074	0.3	LOS A	0.3	2.5	0.22	0.36	55.9
9	R2	73	0.0	0.074	5.8	LOS A	0.3	2.5	0.22	0.36	54.0
Approach		126	3.3	0.074	3.8	NA	0.3	2.5	0.22	0.36	54.7
West: Emmett Street											
10	L2	100	0.0	0.097	8.4	LOS A	0.4	2.7	0.21	0.89	51.7
11	T1	1	0.0	0.097	8.9	LOS A	0.4	2.7	0.21	0.89	51.5
12	R2	16	0.0	0.097	8.9	LOS A	0.4	2.7	0.21	0.89	51.2
Approach		117	0.0	0.097	8.5	LOS A	0.4	2.7	0.21	0.89	51.7
All Vehicles		382	1.7	0.097	4.7	NA	0.4	2.7	0.15	0.47	54.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Emmett Street - Lackersteen Street - PM Peak - Existing - 100HH]

Emmett Street / Lackersteen Street Intersection
PM Peak Hour - Existing - 100HH
3:45 PM - 4:45 PM
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lackersteen Street											
1	L2	28	0.0	0.049	5.6	LOS A	0.0	0.1	0.01	0.19	56.6
2	T1	61	6.9	0.049	0.0	LOS A	0.0	0.1	0.01	0.19	58.2
3	R2	1	0.0	0.049	5.9	LOS A	0.0	0.1	0.01	0.19	56.0
Approach		91	4.7	0.049	1.8	NA	0.0	0.1	0.01	0.19	57.6
East: Emmett Street											
4	L2	1	0.0	0.011	8.4	LOS A	0.0	0.3	0.36	0.90	51.2
5	T1	5	0.0	0.011	9.5	LOS A	0.0	0.3	0.36	0.90	50.9
6	R2	2	0.0	0.011	10.4	LOS A	0.0	0.3	0.36	0.90	50.7
Approach		8	0.0	0.011	9.6	LOS A	0.0	0.3	0.36	0.90	50.9
North: Lackersteen Street											
7	L2	25	8.3	0.157	5.9	LOS A	0.8	5.5	0.19	0.33	54.5
8	T1	111	3.8	0.157	0.2	LOS A	0.8	5.5	0.19	0.33	56.3
9	R2	136	3.9	0.157	5.8	LOS A	0.8	5.5	0.19	0.33	54.1
Approach		272	4.3	0.157	3.6	NA	0.8	5.5	0.19	0.33	55.0
West: Emmett Street											
10	L2	98	0.0	0.149	8.3	LOS A	0.6	4.1	0.17	0.93	51.4
11	T1	16	0.0	0.149	9.9	LOS A	0.6	4.1	0.17	0.93	51.1
12	R2	40	0.0	0.149	9.9	LOS A	0.6	4.1	0.17	0.93	50.9
Approach		154	0.0	0.149	8.9	LOS A	0.6	4.1	0.17	0.93	51.2
All Vehicles		524	3.0	0.157	4.9	NA	0.8	5.5	0.16	0.49	54.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Callala Beach Road - Emmett Street - AM Peak - Post Dev (2028)]

Callala Beach Road / Emmett Street Intersection
AM Peak Hour - Post Development (2028)
7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
2	T1	98	2.2	0.051	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	56	1.9	0.034	7.2	LOS A	0.2	1.1	0.21	0.58	58.1
Approach		154	2.1	0.051	2.6	NA	0.2	1.1	0.08	0.21	70.4
East: Emmett Street											
4	L2	42	0.0	0.027	5.7	LOS A	0.1	0.7	0.11	0.54	58.3
6	R2	272	2.7	0.297	7.2	LOS A	1.4	10.0	0.42	0.65	56.3
Approach		314	2.3	0.297	7.0	LOS A	1.4	10.0	0.38	0.64	56.5
North: Callala Beach Road											
7	L2	65	0.0	0.057	6.9	LOS A	0.0	0.0	0.00	0.40	68.6
8	T1	41	5.1	0.057	0.0	LOS A	0.0	0.0	0.00	0.40	73.0
Approach		106	2.0	0.057	4.3	NA	0.0	0.0	0.00	0.40	70.2
All Vehicles		574	2.2	0.297	5.3	NA	1.4	10.0	0.23	0.48	62.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Callala Beach Road - Emmett Street - PM Peak - Post Dev (2028)]

Callala Beach Road / Emmett Street Intersection
PM Peak Hour - Post Development (2028)
3:45 pm - 4:45 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
2	T1	65	6.5	0.035	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	80	1.3	0.063	8.2	LOS A	0.3	1.9	0.43	0.65	57.4
Approach		145	3.6	0.063	4.5	NA	0.3	1.9	0.23	0.36	65.7
East: Emmett Street											
4	L2	96	1.1	0.065	5.9	LOS A	0.3	1.9	0.22	0.55	57.6
6	R2	95	0.0	0.125	8.1	LOS A	0.5	3.4	0.48	0.70	56.2
Approach		191	0.6	0.125	7.0	LOS A	0.5	3.4	0.35	0.63	56.9
North: Callala Beach Road											
7	L2	236	0.0	0.191	7.0	LOS A	0.0	0.0	0.00	0.42	68.3
8	T1	124	0.8	0.191	0.0	LOS A	0.0	0.0	0.00	0.42	72.7
Approach		360	0.3	0.191	4.6	NA	0.0	0.0	0.00	0.42	69.7
All Vehicles		696	1.1	0.191	5.2	NA	0.5	3.4	0.14	0.46	64.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Forest Road - Callala Beach Road - AM Peak - Post Dev (2028)]

Forest Road / Callala Beach Road Intersection
AM Peak Hour - Post Development (2028)
7:45 AM - 8:45 AM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
1	L2	320	3.3	0.228	7.6	LOS A	1.1	7.6	0.29	0.61	60.3
3	R2	54	0.0	0.064	8.4	LOS A	0.2	1.7	0.41	0.67	60.4
Approach		374	2.8	0.228	7.7	LOS A	1.1	7.6	0.31	0.62	60.3
East: Forest Road East											
4	L2	21	5.0	0.092	6.4	LOS A	0.0	0.0	0.00	0.08	63.9
5	T1	153	4.1	0.092	0.0	LOS A	0.0	0.0	0.00	0.08	69.0
Approach		174	4.2	0.092	0.8	NA	0.0	0.0	0.00	0.08	68.3
West: Forest Road West											
11	T1	55	1.9	0.028	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
12	R2	87	2.4	0.058	6.8	LOS A	0.3	1.9	0.29	0.58	60.4
Approach		142	2.2	0.058	4.2	NA	0.3	1.9	0.18	0.36	63.7
All Vehicles		689	3.1	0.228	5.3	NA	1.1	7.6	0.20	0.43	62.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Forest Road - Callala Beach Road - PM Peak - Post Dev (2028)]

Forest Road / Callala Beach Road Intersection
PM Peak Hour - Post Development (2028)
3:45 PM - 4:45 PM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
1	L2	116	2.7	0.076	7.2	LOS A	0.3	2.3	0.16	0.59	60.9
3	R2	40	7.9	0.067	10.7	LOS A	0.2	1.9	0.54	0.77	56.0
Approach		156	4.1	0.076	8.1	LOS A	0.3	2.3	0.26	0.63	59.6
East: Forest Road East											
4	L2	67	0.0	0.074	6.4	LOS A	0.0	0.0	0.00	0.30	63.1
5	T1	73	2.9	0.074	0.0	LOS A	0.0	0.0	0.00	0.30	66.0
Approach		140	1.5	0.074	3.1	NA	0.0	0.0	0.00	0.30	64.6
West: Forest Road West											
11	T1	125	3.4	0.066	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
12	R2	291	1.1	0.184	6.8	LOS A	0.9	6.6	0.28	0.59	60.8
Approach		416	1.8	0.184	4.7	NA	0.9	6.6	0.19	0.41	63.3
All Vehicles		712	2.2	0.184	5.1	NA	0.9	6.6	0.17	0.44	62.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Emmett Street - Lackersteen Street - AM Peak - Post Dev (2028)]

Emmett Street / Lackersteen Street Intersection
AM Peak Hour - Post Development (2028)
7:45 AM - 8:45 AM
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lackersteen Street											
1	L2	19	0.0	0.044	5.5	LOS A	0.0	0.1	0.00	0.14	57.1
2	T1	64	1.6	0.044	0.0	LOS A	0.0	0.1	0.00	0.14	58.7
3	R2	1	0.0	0.044	5.5	LOS A	0.0	0.1	0.00	0.14	56.5
Approach		84	1.3	0.044	1.3	NA	0.0	0.1	0.00	0.14	58.3
East: Emmett Street											
4	L2	1	0.0	0.016	8.1	LOS A	0.1	0.4	0.24	0.90	51.6
5	T1	2	0.0	0.016	8.4	LOS A	0.1	0.4	0.24	0.90	51.3
6	R2	11	0.0	0.016	8.8	LOS A	0.1	0.4	0.24	0.90	51.1
Approach		14	0.0	0.016	8.7	LOS A	0.1	0.4	0.24	0.90	51.2
North: Lackersteen Street											
7	L2	5	0.0	0.051	5.8	LOS A	0.2	1.6	0.17	0.37	54.6
8	T1	31	6.9	0.051	0.2	LOS A	0.2	1.6	0.17	0.37	56.0
9	R2	53	0.0	0.051	5.7	LOS A	0.2	1.6	0.17	0.37	54.0
Approach		88	2.4	0.051	3.8	NA	0.2	1.6	0.17	0.37	54.7
West: Emmett Street											
10	L2	81	0.0	0.092	8.3	LOS A	0.4	2.5	0.17	0.91	51.8
11	T1	3	0.0	0.092	8.5	LOS A	0.4	2.5	0.17	0.91	51.5
12	R2	25	0.0	0.092	8.4	LOS A	0.4	2.5	0.17	0.91	51.3
Approach		109	0.0	0.092	8.3	LOS A	0.4	2.5	0.17	0.91	51.7
All Vehicles		296	1.1	0.092	5.0	NA	0.4	2.5	0.13	0.53	54.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Emmett Street - Lackersteen Street - PM Peak - Post Dev (2028)]

Emmett Street / Lackersteen Street Intersection
PM Peak Hour - Post Devevelopment (2028)
3:45 PM - 4:45 PM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lackersteen Street											
1	L2	34	0.0	0.041	5.6	LOS A	0.0	0.1	0.01	0.27	56.0
2	T1	41	5.1	0.041	0.0	LOS A	0.0	0.1	0.01	0.27	57.5
3	R2	1	0.0	0.041	5.7	LOS A	0.0	0.1	0.01	0.27	55.4
Approach		76	2.8	0.041	2.6	NA	0.0	0.1	0.01	0.27	56.8
East: Emmett Street											
4	L2	1	0.0	0.010	8.3	LOS A	0.0	0.3	0.30	0.92	51.6
5	T1	7	0.0	0.010	8.9	LOS A	0.0	0.3	0.30	0.92	51.3
6	R2	1	0.0	0.010	9.3	LOS A	0.0	0.3	0.30	0.92	51.1
Approach		9	0.0	0.010	8.9	LOS A	0.0	0.3	0.30	0.92	51.3
North: Lackersteen Street											
7	L2	17	6.3	0.113	5.8	LOS A	0.5	3.9	0.17	0.35	54.5
8	T1	75	2.8	0.113	0.2	LOS A	0.5	3.9	0.17	0.35	56.3
9	R2	105	4.0	0.113	5.7	LOS A	0.5	3.9	0.17	0.35	54.1
Approach		197	3.7	0.113	3.6	NA	0.5	3.9	0.17	0.35	54.9
West: Emmett Street											
10	L2	72	0.0	0.107	8.2	LOS A	0.4	2.9	0.13	0.94	51.5
11	T1	12	0.0	0.107	9.1	LOS A	0.4	2.9	0.13	0.94	51.3
12	R2	33	0.0	0.107	9.1	LOS A	0.4	2.9	0.13	0.94	51.1
Approach		116	0.0	0.107	8.5	LOS A	0.4	2.9	0.13	0.94	51.4
All Vehicles		398	2.4	0.113	5.0	NA	0.5	3.9	0.13	0.52	54.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Callala Beach Road - Emmett Street - AM Peak - Post Dev (2028) - 100HH]

Callala Beach Road / Emmett Street Intersection
AM Peak Hour - Post Development (2028) - 100HH
7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
2	T1	160	2.6	0.083	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	98	2.2	0.063	7.4	LOS A	0.3	2.0	0.26	0.59	57.9
Approach		258	2.4	0.083	2.8	NA	0.3	2.0	0.10	0.22	69.9
East: Emmett Street											
4	L2	67	0.0	0.044	5.7	LOS A	0.2	1.2	0.15	0.54	58.2
6	R2	351	2.7	0.456	9.9	LOS A	3.0	21.8	0.59	0.86	54.1
Approach		418	2.3	0.456	9.2	LOS A	3.0	21.8	0.52	0.81	54.7
North: Callala Beach Road											
7	L2	83	0.0	0.081	7.0	LOS A	0.0	0.0	0.00	0.36	69.1
8	T1	67	6.3	0.081	0.0	LOS A	0.0	0.0	0.00	0.36	73.6
Approach		151	2.8	0.081	3.8	NA	0.0	0.0	0.00	0.36	71.0
All Vehicles		826	2.4	0.456	6.2	NA	3.0	21.8	0.29	0.54	61.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Callala Beach Road - Emmett Street - PM Peak - Post Dev (2028) - 100HH]

Callala Beach Road / Emmett Street Intersection
PM Peak Hour - Post Development (2028) - 100 HH
3:45 pm - 4:45 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
2	T1	107	5.9	0.057	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	137	1.5	0.127	9.0	LOS A	0.5	3.9	0.52	0.73	57.0
Approach		244	3.4	0.127	5.0	NA	0.5	3.9	0.29	0.41	65.3
East: Emmett Street											
4	L2	171	1.2	0.125	6.3	LOS A	0.5	3.7	0.31	0.58	57.3
6	R2	113	0.0	0.196	10.3	LOS A	0.8	5.3	0.59	0.83	54.3
Approach		283	0.7	0.196	7.9	LOS A	0.8	5.3	0.42	0.68	56.1
North: Callala Beach Road											
7	L2	291	0.0	0.261	7.0	LOS A	0.0	0.0	0.00	0.38	68.8
8	T1	203	1.0	0.261	0.0	LOS A	0.0	0.0	0.00	0.38	73.3
Approach		494	0.4	0.261	4.1	NA	0.0	0.0	0.00	0.38	70.6
All Vehicles		1021	1.2	0.261	5.4	NA	0.8	5.3	0.19	0.47	64.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Forest Road - Callala Beach Road - AM Peak - Post Dev (2028) - 100HH]

Forest Road/ Callala Beach Road Intersection
AM Peak Hour - Post Development (2028) - 100HH
7:45 AM - 8:45 AM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
1	L2	419	3.3	0.314	7.9	LOS A	1.6	11.2	0.37	0.64	59.9
3	R2	80	0.0	0.109	9.4	LOS A	0.4	3.0	0.49	0.74	59.4
Approach		499	2.7	0.314	8.2	LOS A	1.6	11.2	0.39	0.66	59.9
East: Forest Road East											
4	L2	33	6.5	0.128	6.5	LOS A	0.0	0.0	0.00	0.09	63.3
5	T1	208	4.0	0.128	0.0	LOS A	0.0	0.0	0.00	0.09	68.9
Approach		241	4.4	0.128	0.9	NA	0.0	0.0	0.00	0.09	68.1
West: Forest Road West											
11	T1	75	2.8	0.039	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
12	R2	117	2.7	0.083	7.1	LOS A	0.4	2.7	0.35	0.61	60.0
Approach		192	2.7	0.083	4.3	NA	0.4	2.7	0.22	0.37	63.6
All Vehicles		932	3.2	0.314	5.5	NA	1.6	11.2	0.25	0.45	62.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Forest Road - Callala Beach Road - PM Peak - Post Dev (2028) - 100HH]

Forest Road/ Callala Beach Road Intersection
PM Peak Hour - Post Development (2028) - 100HH
3:45 PM - 4:45 PM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
1	L2	145	2.9	0.098	7.3	LOS A	0.4	3.0	0.20	0.59	60.7
3	R2	63	6.7	0.135	13.1	LOS A	0.5	3.7	0.63	0.87	54.4
Approach		208	4.0	0.135	9.1	LOS A	0.5	3.7	0.33	0.68	58.7
East: Forest Road East											
4	L2	103	0.0	0.108	6.4	LOS A	0.0	0.0	0.00	0.32	62.9
5	T1	100	3.2	0.108	0.0	LOS A	0.0	0.0	0.00	0.32	65.8
Approach		203	1.6	0.108	3.2	NA	0.0	0.0	0.00	0.32	64.3
West: Forest Road West											
11	T1	172	3.1	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
12	R2	375	0.8	0.252	7.1	LOS A	1.3	9.3	0.36	0.61	60.5
Approach		546	1.5	0.252	4.9	NA	1.3	9.3	0.25	0.42	63.2
All Vehicles		958	2.1	0.252	5.4	NA	1.3	9.3	0.21	0.45	62.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Emmett Street / Lackersteen Street - AM Peak - Post Dev (2028) - 100HH]

Emmett Street / Lackersteen Street Intersection
AM Peak Hour - Post Development (2028) - 100HH
7:45 AM - 8:45 AM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lackersteen Street											
1	L2	32	0.0	0.078	5.5	LOS A	0.0	0.1	0.00	0.13	57.2
2	T1	117	1.8	0.078	0.0	LOS A	0.0	0.1	0.00	0.13	58.8
3	R2	1	0.0	0.078	5.6	LOS A	0.0	0.1	0.00	0.13	56.6
Approach		149	1.4	0.078	1.2	NA	0.0	0.1	0.00	0.13	58.4
East: Emmett Street											
4	L2	1	0.0	0.034	8.2	LOS A	0.1	0.8	0.38	0.91	50.9
5	T1	3	0.0	0.034	9.2	LOS A	0.1	0.8	0.38	0.91	50.6
6	R2	19	0.0	0.034	10.1	LOS A	0.1	0.8	0.38	0.91	50.4
Approach		23	0.0	0.034	9.9	LOS A	0.1	0.8	0.38	0.91	50.4
North: Lackersteen Street											
7	L2	9	0.0	0.094	6.0	LOS A	0.4	3.2	0.25	0.37	54.4
8	T1	56	7.5	0.094	0.4	LOS A	0.4	3.2	0.25	0.37	55.8
9	R2	93	0.0	0.094	5.9	LOS A	0.4	3.2	0.25	0.37	53.8
Approach		158	2.7	0.094	4.0	NA	0.4	3.2	0.25	0.37	54.5
West: Emmett Street											
10	L2	136	0.0	0.154	8.5	LOS A	0.6	4.4	0.25	0.89	51.6
11	T1	3	0.0	0.154	9.4	LOS A	0.6	4.4	0.25	0.89	51.3
12	R2	34	0.0	0.154	9.5	LOS A	0.6	4.4	0.25	0.89	51.1
Approach		173	0.0	0.154	8.7	LOS A	0.6	4.4	0.25	0.89	51.5
All Vehicles		503	1.3	0.154	5.1	NA	0.6	4.4	0.18	0.50	54.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Emmett Street - Lackersteen Street - PM Peak - Post Dev (2028) - 100HH]

Emmett Street / Lackersteen Street Intersection
PM Peak Hour - Post Development (2028) - 100HH
3:45 PM - 4:45 PM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: RoadName											
1	L2	49	0.0	0.067	5.6	LOS A	0.0	0.1	0.01	0.24	56.3
2	T1	75	5.6	0.067	0.0	LOS A	0.0	0.1	0.01	0.24	57.8
3	R2	1	0.0	0.067	6.0	LOS A	0.0	0.1	0.01	0.24	55.7
Approach		125	3.4	0.067	2.2	NA	0.0	0.1	0.01	0.24	57.1
East: RoadName											
4	L2	1	0.0	0.020	8.5	LOS A	0.1	0.5	0.44	0.92	50.7
5	T1	11	0.0	0.020	10.3	LOS A	0.1	0.5	0.44	0.92	50.5
6	R2	2	0.0	0.020	11.6	LOS A	0.1	0.5	0.44	0.92	50.3
Approach		14	0.0	0.020	10.4	LOS A	0.1	0.5	0.44	0.92	50.5
North: RoadName											
7	L2	31	6.9	0.205	6.1	LOS A	1.1	7.6	0.25	0.34	54.3
8	T1	136	3.1	0.205	0.4	LOS A	1.1	7.6	0.25	0.34	56.1
9	R2	180	4.1	0.205	6.0	LOS A	1.1	7.6	0.25	0.34	53.9
Approach		346	4.0	0.205	3.8	NA	1.1	7.6	0.25	0.34	54.7
West: RoadName											
10	L2	125	0.0	0.211	8.3	LOS A	0.9	6.0	0.21	0.93	51.1
11	T1	20	0.0	0.211	10.9	LOS A	0.9	6.0	0.21	0.93	50.8
12	R2	55	0.0	0.211	11.2	LOS A	0.9	6.0	0.21	0.93	50.6
Approach		200	0.0	0.211	9.4	LOS A	0.9	6.0	0.21	0.93	50.9
All Vehicles		685	2.6	0.211	5.3	NA	1.1	7.6	0.20	0.51	53.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Callala Beach Road - Emmett Street - AM Peak - Post Dev (2038)]

Callala Beach Road / Emmett Street Intersection
AM Peak Hour - Post Development (2038)
7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
2	T1	119	2.7	0.062	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	67	3.1	0.042	7.3	LOS A	0.2	1.4	0.23	0.58	58.0
Approach		186	2.8	0.062	2.6	NA	0.2	1.4	0.08	0.21	70.3
East: Emmett Street											
4	L2	48	0.0	0.031	5.7	LOS A	0.1	0.9	0.13	0.54	58.3
6	R2	293	2.5	0.338	7.7	LOS A	1.7	12.0	0.48	0.70	55.9
Approach		341	2.2	0.338	7.5	LOS A	1.7	12.0	0.43	0.67	56.2
North: Callala Beach Road											
7	L2	71	0.0	0.065	7.0	LOS A	0.0	0.0	0.00	0.38	68.8
8	T1	51	6.3	0.065	0.0	LOS A	0.0	0.0	0.00	0.38	73.3
Approach		121	2.6	0.065	4.1	NA	0.0	0.0	0.00	0.38	70.6
All Vehicles		648	2.4	0.338	5.4	NA	1.7	12.0	0.25	0.49	62.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Callala Beach Road - Emmett Street - PM Peak - Post Dev (2038)]

Callala Beach Road / Emmett Street Intersection
PM Peak Hour - Post Development (2038)
3:45 pm - 4:45 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
2	T1	80	5.3	0.042	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	95	2.2	0.079	8.4	LOS A	0.3	2.4	0.46	0.67	57.2
Approach		175	3.6	0.079	4.6	NA	0.3	2.4	0.25	0.37	65.8
East: Emmett Street											
4	L2	116	1.8	0.081	6.0	LOS A	0.3	2.4	0.25	0.56	57.3
6	R2	99	0.0	0.142	8.7	LOS A	0.6	3.9	0.52	0.74	55.7
Approach		215	1.0	0.142	7.3	LOS A	0.6	3.9	0.37	0.64	56.5
North: Callala Beach Road											
7	L2	251	0.0	0.213	7.0	LOS A	0.0	0.0	0.00	0.40	68.5
8	T1	152	0.7	0.213	0.0	LOS A	0.0	0.0	0.00	0.40	73.0
Approach		402	0.3	0.213	4.3	NA	0.0	0.0	0.00	0.40	70.2
All Vehicles		792	1.2	0.213	5.2	NA	0.6	3.9	0.16	0.46	65.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Forest Road - Callala Beach Road - AM Peak - Post Dev (2038)]

Forest Road/ Callala Beach Road Intersection
AM Peak Hour - Post Development (2038)
7:45 AM - 8:45 AM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
1	L2	354	3.3	0.264	7.9	LOS A	1.2	9.0	0.35	0.63	60.0
3	R2	62	0.0	0.083	9.2	LOS A	0.3	2.2	0.47	0.72	59.6
Approach		416	2.8	0.264	8.1	LOS A	1.2	9.0	0.37	0.65	60.0
East: Forest Road East											
4	L2	24	8.7	0.121	6.5	LOS A	0.0	0.0	0.00	0.07	62.8
5	T1	204	4.1	0.121	0.0	LOS A	0.0	0.0	0.00	0.07	69.1
Approach		228	4.6	0.121	0.7	NA	0.0	0.0	0.00	0.07	68.4
West: Forest Road West											
11	T1	80	2.6	0.042	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
12	R2	98	3.2	0.069	7.1	LOS A	0.3	2.2	0.34	0.60	59.9
Approach		178	3.0	0.069	3.9	NA	0.3	2.2	0.19	0.33	64.1
All Vehicles		822	3.3	0.264	5.1	NA	1.2	9.0	0.23	0.42	63.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Forest Road - Callala Beach Road - PM Peak - Post Dev (2038)]

Forest Road/ Callala Beach Road Intersection
PM Peak Hour - Post Development (2038)
3:45 PM - 4:45 PM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
1	L2	126	2.5	0.085	7.3	LOS A	0.4	2.5	0.20	0.59	60.8
3	R2	48	6.5	0.095	12.1	LOS A	0.3	2.6	0.59	0.84	55.2
Approach		175	3.6	0.095	8.6	LOS A	0.4	2.6	0.31	0.66	59.2
East: Forest Road East											
4	L2	79	0.0	0.097	6.4	LOS A	0.0	0.0	0.00	0.27	63.4
5	T1	104	3.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.27	66.4
Approach		183	1.7	0.097	2.7	NA	0.0	0.0	0.00	0.27	65.1
West: Forest Road West											
11	T1	178	3.0	0.093	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
12	R2	320	1.0	0.211	7.0	LOS A	1.1	7.6	0.33	0.60	60.6
Approach		498	1.7	0.211	4.5	NA	1.1	7.6	0.21	0.39	63.7
All Vehicles		856	2.1	0.211	5.0	NA	1.1	7.6	0.19	0.42	63.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Emmett Street - Lackersteen Street - AM Peak - Post Dev (2038)]

Emmett Street / Lackersteen Street Intersection
AM Peak Hour - Post Development (2038)
7:45 AM - 8:45 AM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lackersteen Street											
1	L2	22	0.0	0.053	5.5	LOS A	0.0	0.1	0.00	0.14	57.2
2	T1	78	1.4	0.053	0.0	LOS A	0.0	0.1	0.00	0.14	58.7
3	R2	1	0.0	0.053	5.6	LOS A	0.0	0.1	0.00	0.14	56.6
Approach		101	1.0	0.053	1.3	NA	0.0	0.1	0.00	0.14	58.4
East: Emmett Street											
4	L2	1	0.0	0.020	8.1	LOS A	0.1	0.5	0.28	0.90	51.4
5	T1	2	0.0	0.020	8.6	LOS A	0.1	0.5	0.28	0.90	51.1
6	R2	13	0.0	0.020	9.1	LOS A	0.1	0.5	0.28	0.90	50.9
Approach		16	0.0	0.020	9.0	LOS A	0.1	0.5	0.28	0.90	51.0
North: Lackersteen Street											
7	L2	6	0.0	0.062	5.8	LOS A	0.3	2.0	0.20	0.36	54.5
8	T1	38	8.3	0.062	0.3	LOS A	0.3	2.0	0.20	0.36	55.9
9	R2	63	0.0	0.062	5.7	LOS A	0.3	2.0	0.20	0.36	54.0
Approach		107	2.9	0.062	3.8	NA	0.3	2.0	0.20	0.36	54.7
West: Emmett Street											
10	L2	96	0.0	0.108	8.3	LOS A	0.4	3.0	0.19	0.90	51.7
11	T1	3	0.0	0.108	8.7	LOS A	0.4	3.0	0.19	0.90	51.5
12	R2	27	0.0	0.108	8.7	LOS A	0.4	3.0	0.19	0.90	51.2
Approach		126	0.0	0.108	8.4	LOS A	0.4	3.0	0.19	0.90	51.6
All Vehicles		351	1.2	0.108	5.0	NA	0.4	3.0	0.14	0.52	54.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Emmett Street - Lackersteen Street - PM Peak - Post Dev (2038)]

Emmett Street / Lackersteen Street Intersection
PM Peak Hour - Post Development (2038)
3:45 PM - 4:45 PM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lackersteen Street											
1	L2	38	0.0	0.048	5.6	LOS A	0.0	0.1	0.01	0.26	56.1
2	T1	51	6.3	0.048	0.0	LOS A	0.0	0.1	0.01	0.26	57.6
3	R2	1	0.0	0.048	5.8	LOS A	0.0	0.1	0.01	0.26	55.5
Approach		89	3.5	0.048	2.4	NA	0.0	0.1	0.01	0.26	56.9
East: Emmett Street											
4	L2	1	0.0	0.011	8.3	LOS A	0.0	0.3	0.33	0.91	51.4
5	T1	7	0.0	0.011	9.3	LOS A	0.0	0.3	0.33	0.91	51.1
6	R2	1	0.0	0.011	9.9	LOS A	0.0	0.3	0.33	0.91	50.9
Approach		9	0.0	0.011	9.2	LOS A	0.0	0.3	0.33	0.91	51.1
North: Lackersteen Street											
7	L2	20	5.3	0.137	5.9	LOS A	0.7	4.8	0.19	0.34	54.5
8	T1	91	3.5	0.137	0.2	LOS A	0.7	4.8	0.19	0.34	56.2
9	R2	125	4.2	0.137	5.8	LOS A	0.7	4.8	0.19	0.34	54.0
Approach		236	4.0	0.137	3.7	NA	0.7	4.8	0.19	0.34	54.9
West: Emmett Street											
10	L2	86	0.0	0.132	8.2	LOS A	0.5	3.6	0.15	0.93	51.4
11	T1	14	0.0	0.132	9.5	LOS A	0.5	3.6	0.15	0.93	51.2
12	R2	39	0.0	0.132	9.6	LOS A	0.5	3.6	0.15	0.93	51.0
Approach		139	0.0	0.132	8.7	LOS A	0.5	3.6	0.15	0.93	51.3
All Vehicles		474	2.7	0.137	5.0	NA	0.7	4.8	0.15	0.51	54.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Callala Beach Road - Emmett Street - AM Peak - Post Dev (2038) - 100HH]

Callala Beach Road / Emmett Street Intersection
AM Peak Hour - Post Development (2038) - 100HH
7:45 am - 8:45 am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
2	T1	195	2.7	0.102	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	119	2.7	0.079	7.5	LOS A	0.4	2.6	0.29	0.60	57.8
Approach		314	2.7	0.102	2.8	NA	0.4	2.6	0.11	0.23	69.8
East: Emmett Street											
4	L2	79	0.0	0.052	5.8	LOS A	0.2	1.5	0.17	0.54	58.1
6	R2	389	2.7	0.558	12.0	LOS A	4.3	31.0	0.68	1.01	52.4
Approach		468	2.2	0.558	11.0	LOS A	4.3	31.0	0.59	0.93	53.3
North: Callala Beach Road											
7	L2	93	0.0	0.094	7.0	LOS A	0.0	0.0	0.00	0.34	69.3
8	T1	82	6.4	0.094	0.0	LOS A	0.0	0.0	0.00	0.34	73.8
Approach		175	3.0	0.094	3.7	NA	0.0	0.0	0.00	0.34	71.3
All Vehicles		957	2.5	0.558	7.0	NA	4.3	31.0	0.33	0.59	60.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Callala Beach Road - Emmett Street - PM Peak - Post Dev (2038) - 100HH]

Callala Beach Road / Emmett Street Intersection
PM Peak Hour - Post Development (2038) - 100HH
3:45 pm - 4:45 pm
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
2	T1	131	5.6	0.069	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
3	R2	164	1.9	0.168	9.5	LOS A	0.7	5.1	0.56	0.78	56.5
Approach		295	3.6	0.168	5.3	NA	0.7	5.1	0.31	0.44	65.0
East: Emmett Street											
4	L2	206	1.5	0.159	6.5	LOS A	0.7	4.8	0.35	0.60	57.0
6	R2	121	0.0	0.246	12.2	LOS A	1.0	7.0	0.66	0.88	52.9
Approach		327	1.0	0.246	8.6	LOS A	1.0	7.0	0.46	0.70	55.4
North: Callala Beach Road											
7	L2	317	0.0	0.299	7.0	LOS A	0.0	0.0	0.00	0.36	69.1
8	T1	248	0.8	0.299	0.0	LOS A	0.0	0.0	0.00	0.36	73.6
Approach		565	0.4	0.299	3.9	NA	0.0	0.0	0.00	0.36	71.0
All Vehicles		1187	1.3	0.299	5.6	NA	1.0	7.0	0.21	0.48	64.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Forest Road - Callala Beach Road - AM Peak - Post Dev (2038) - 100HH]

Forest Road/ Callala Beach Road Intersection
AM Peak Hour - Post Development (2038) - 100HH
7:45 AM - 8:45 AM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
1	L2	475	3.3	0.380	8.4	LOS A	2.0	14.6	0.45	0.69	59.6
3	R2	96	0.0	0.153	10.6	LOS A	0.6	4.1	0.56	0.81	58.2
Approach		571	2.8	0.380	8.8	LOS A	2.0	14.6	0.47	0.71	59.4
East: Forest Road East											
4	L2	39	8.1	0.165	6.5	LOS A	0.0	0.0	0.00	0.08	62.9
5	T1	272	4.3	0.165	0.0	LOS A	0.0	0.0	0.00	0.08	68.9
Approach		311	4.7	0.165	0.8	NA	0.0	0.0	0.00	0.08	68.1
West: Forest Road West											
11	T1	104	2.0	0.054	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
12	R2	134	3.1	0.102	7.5	LOS A	0.5	3.3	0.41	0.64	59.7
Approach		238	2.7	0.102	4.2	NA	0.5	3.3	0.23	0.36	63.8
All Vehicles		1119	3.3	0.380	5.6	NA	2.0	14.6	0.29	0.46	62.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Forest Road - Callala Beach Road - PM Peak - Post Dev (2038) - 100HH]

Forest Road/ Callala Beach Road Intersection
PM Peak Hour - Post Development (2038) - 100HH
3:45 PM - 4:45 PM
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Callala Beach Road											
1	L2	163	2.6	0.114	7.5	LOS A	0.5	3.4	0.24	0.60	60.7
3	R2	76	6.9	0.206	16.1	LOS B	0.8	5.7	0.73	0.91	52.0
Approach		239	4.0	0.206	10.2	LOS A	0.8	5.7	0.40	0.70	57.6
East: Forest Road East											
4	L2	123	0.0	0.138	6.4	LOS A	0.0	0.0	0.00	0.30	63.1
5	T1	136	3.9	0.138	0.0	LOS A	0.0	0.0	0.00	0.30	66.1
Approach		259	2.0	0.138	3.0	NA	0.0	0.0	0.00	0.30	64.6
West: Forest Road West											
11	T1	234	3.2	0.122	0.0	LOS A	0.0	0.0	0.00	0.00	70.0
12	R2	422	1.0	0.300	7.4	LOS A	1.6	11.3	0.43	0.65	60.2
Approach		656	1.8	0.300	4.8	NA	1.6	11.3	0.27	0.42	63.4
All Vehicles		1154	2.3	0.300	5.5	NA	1.6	11.3	0.24	0.45	62.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Emmett Street - Lackersteen Street - AM Peak - Post Dev (2038) - 100HH]

Emmett Street / Lackersteen Street Intersection
AM Peak Hour - Post Development (2038) - 100HH
7:45 AM - 8:45 AM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lackersteen Street											
1	L2	38	0.0	0.095	5.5	LOS A	0.0	0.1	0.00	0.13	57.2
2	T1	142	2.2	0.095	0.0	LOS A	0.0	0.1	0.00	0.13	58.8
3	R2	1	0.0	0.095	5.7	LOS A	0.0	0.1	0.00	0.13	56.6
Approach		181	1.7	0.095	1.2	NA	0.0	0.1	0.00	0.13	58.5
East: Emmett Street											
4	L2	1	0.0	0.045	8.3	LOS A	0.1	1.0	0.43	0.93	50.4
5	T1	3	0.0	0.045	9.6	LOS A	0.1	1.0	0.43	0.93	50.1
6	R2	23	0.0	0.045	11.0	LOS A	0.1	1.0	0.43	0.93	49.9
Approach		27	0.0	0.045	10.7	LOS A	0.1	1.0	0.43	0.93	50.0
North: Lackersteen Street											
7	L2	12	0.0	0.116	6.1	LOS A	0.6	4.0	0.29	0.37	54.3
8	T1	68	7.7	0.116	0.5	LOS A	0.6	4.0	0.29	0.37	55.7
9	R2	112	0.0	0.116	6.1	LOS A	0.6	4.0	0.29	0.37	53.7
Approach		192	2.7	0.116	4.1	NA	0.6	4.0	0.29	0.37	54.4
West: Emmett Street											
10	L2	163	0.0	0.189	8.7	LOS A	0.8	5.6	0.29	0.89	51.5
11	T1	3	0.0	0.189	9.9	LOS A	0.8	5.6	0.29	0.89	51.2
12	R2	38	0.0	0.189	10.2	LOS A	0.8	5.6	0.29	0.89	51.0
Approach		204	0.0	0.189	9.0	LOS A	0.8	5.6	0.29	0.89	51.4
All Vehicles		604	1.4	0.189	5.2	NA	0.8	5.6	0.21	0.50	54.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Emmett Street - Lackersteen Street - PM Peak - Post Dev (2038) - 100HH]

Emmett Street / Lackersteen Street Intersection
PM Peak Hour - Post Development (2038) - 100HH
3:45 PM - 4:45 PM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Lackersteen Street											
1	L2	57	0.0	0.079	5.6	LOS A	0.0	0.1	0.01	0.23	56.3
2	T1	91	5.8	0.079	0.0	LOS A	0.0	0.1	0.01	0.23	57.8
3	R2	1	0.0	0.079	6.1	LOS A	0.0	0.1	0.01	0.23	55.7
Approach		148	3.5	0.079	2.2	NA	0.0	0.1	0.01	0.23	57.2
East: Emmett Street											
4	L2	1	0.0	0.027	8.6	LOS A	0.1	0.6	0.49	0.94	50.1
5	T1	12	0.0	0.027	11.2	LOS A	0.1	0.6	0.49	0.94	49.9
6	R2	3	0.0	0.027	13.1	LOS A	0.1	0.6	0.49	0.94	49.6
Approach		16	0.0	0.027	11.4	LOS A	0.1	0.6	0.49	0.94	49.8
North: Lackersteen Street											
7	L2	37	8.6	0.250	6.2	LOS A	1.4	9.8	0.29	0.34	54.1
8	T1	165	3.2	0.250	0.5	LOS A	1.4	9.8	0.29	0.34	55.9
9	R2	216	4.4	0.250	6.1	LOS A	1.4	9.8	0.29	0.34	53.8
Approach		418	4.3	0.250	3.9	NA	1.4	9.8	0.29	0.34	54.6
West: Emmett Street											
10	L2	152	0.0	0.277	8.4	LOS A	1.2	8.1	0.26	0.92	50.7
11	T1	24	0.0	0.277	12.2	LOS A	1.2	8.1	0.26	0.92	50.5
12	R2	66	0.0	0.277	12.6	LOS A	1.2	8.1	0.26	0.92	50.3
Approach		242	0.0	0.277	9.9	LOS A	1.2	8.1	0.26	0.92	50.6
All Vehicles		824	2.8	0.277	5.5	NA	1.4	9.8	0.23	0.50	53.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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