

~~PLANS AND DOCUMENTS
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Cardno
Eppell Olsen
Shaping the Future

Yarrabilba Traffic Impact Assessment - Precinct One



Prepared for Delfin Lend
Lease

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EXECUTIVE SUMMARY

Cardno Eppell Olsen has been commissioned by Delfin Lend Lease to undertake a Traffic Impact Assessment for the first part of the Yarrabilba Development, referred to as Precinct One. CEO has previously undertaken detailed assessment for the ultimate development scenario for Yarrabilba to determine required intersection configurations and spacing, internal road network hierarchy and relevant infrastructure agreement conditions.

This report provides material for response to a RFI issued by ULDA and in particular responds to the requirement to assess Precinct One traffic as the initial stage and to then address initial intersection needs and identify how the Precinct One concepts provide for ultimate traffic scenarios.

1 INTRODUCTION

Cardno Eppell Olsen has been commissioned by Delfin Lend Lease to undertake a Traffic Impact Assessment for the first stage of the Yarrabilba Development, referred to as Precinct One. CEO has previously undertaken detailed assessment for the ultimate development scenario for Yarrabilba to determine internal road network hierarchy and, for the northern access, the required intersection configurations and spacing.

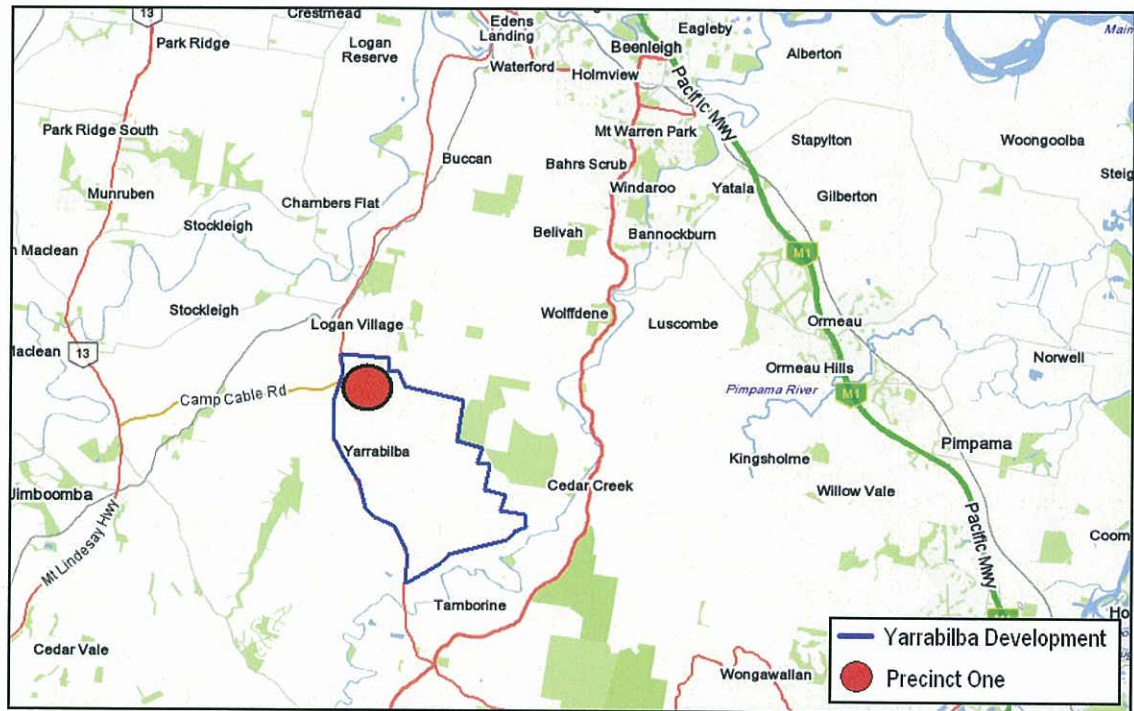
This report provides a brief response to Request for Further Information (RFI), issued by the UDLA, but principally addresses the requirement to provide analysis of interim stages based on Precinct One. The assessment has determined an interim intersection configuration for the Waterford-Tamborine Road/Camp Cable Road/Site Access intersection to provide a five (5) year design horizon to cater for Precinct One generated traffic. In addition, the internal road network of Precinct One has been analysed to ensure that adequate space is provided to cater for ultimate traffic volumes.

1.1 SITE LOCATION

The development site is located in Yarrabilba and is bounded by Waterford-Tamborine Road to the west and Plunkett Road to the south. An East-West link is proposed along the northern boundary of the site. Preliminary planning has a new link continuing parallel to Camp Cable Road with a new intersection to Mt Lindesay Highway north of the existing Camp Cable intersection. The timing of this link is uncertain and the assessment does not include this connection in the five (5) year design scenario. The longer term development scenario includes this link extended east from the site only.

Precinct One is located to the north of the site. Access to Precinct One will be via a new fourth leg at the Waterford-Tamborine Road/Camp Cable Road intersection. The site location and key elements of the road network are illustrated on Figure 1.1.

Figure 1.1: Site Location



Note: Site location indicative only. Not drawn to scale.

1.2 ULTIMATE DEVELOPMENT YIELD

The proposed ultimate yields for the Yarrabilba Development are shown in Table 1.1.

Table 1.1: Proposed Ultimate Development Land Use Yields

Land Use	Yield	Unit
Residential	16,592	dwellings
Retirement Villas	480	dwellings
11 Education Facilities	10,400	students
Town Centre		
Retail	40,000	sq.m
Commercial	40,000	sq.m
Bulky Goods	50,000	sq.m
2 Local Area Centres		
Retail	16,000	sq.m
Commercial	2,000	sq.m
7 Neighbourhood Centres		
Retail	14,000	sq.m
Mixed Industry & Business Area	100	ha

1.3 REQUEST FOR FURTHER INFORMATION

As discussed above as a part of the General Advice, the RFI identifies a need for a traffic report for Precinct One and further discussion with the Department of Transport and Main Roads (DTMR) with regard to the impact on Waterford Tamborine Road. As requested, this report has been prepared to assess and document the impacts of Precinct One. The impact on Waterford – Tamborine Road and the long term access strategy is currently being negotiated with DTMR.

The RFI assessment of Engineering Components, Roads, section also notes other items requiring clarifications, including:

1. Reasoning for the external distribution;
2. The use of the Scenic Rim Regional Council road hierarchy;
3. Details of external traffic volumes and impacts;
4. Details of peak period volumes and effects;
5. The alignment of the Entry Road;
6. Analysis of Precinct One.

The external distribution is based broadly on strategic modelling with consideration of the key destinations in the surrounding area. As a result the predominant direction for external travel is to the north, with approximately 75% of Precinct One traffic travelling north along Waterford - Tamborine Road to reach regional destinations including Logan Hyperdome, Logan City, Beenleigh, Brisbane and the Gold Coast. The remaining traffic is distributed south along Waterford - Tamborine Road and west along Camp Cable Road where more limited attractions and population centres exist. A proportion (15%) of the northbound trips would divert into the proposed East - West link once constructed. It should be noted that the assessment assumed wider through traffic would use the East-West link and not be present on the North Entry Road in the longer term.

As part of the assessment for the greater Yarrabilba Development, TRAFFIX modelling was undertaken to gain an understanding of the likely road forms and cross sections of key links internal to the site. At the time of this assessment, Logan City Council was revising its road hierarchy standards and the cross sections outlined by the Scenic Rim Regional Council were adopted as an interim guide. Key outcomes of the internal link assessment relevant to Precinct One are that the Entry Road should be designed to a sub arterial standard with four lane cross section.

The realignment of the Entry Road is not thought to impact the key outcomes of the earlier assessment.

Peak period traffic volumes, analysis of Precinct One and the resulting impacts are addressed in the following sections of this report.

2 TRAFFIC GENERATION

CEO has previously assessed the ultimate development scenario for Yarrabilba to determine, amongst other things, the ultimate intersection configuration for the Waterford-Tamborine Road/Camp Cable Road/Site Access intersection. As stated previously, the purpose of this assessment is to determine the required configuration for the abovementioned intersection to cater for a five (5) year design horizon based on traffic generated by Precinct One.

2.1 METHODOLOGY

The methodology adopted to obtain development traffic volumes for Precinct One has been summarised below.

1. Determine ultimate development yield for Precinct One.
2. Determine peak generation for each land use in AM and PM peaks.
3. Apply a utilisation factor for each non-residential land use to reflect level of activity during a five (5) year design horizon.
4. Determine likely proportions of drop-in trips, internal trips and external trips for each land use.
5. Assign trips to the proposed road network.
6. Analyse intersection performance with development related traffic.
7. Summarise results.

It should be noted that each of the abovementioned steps will be discussed in detail below.

2.2 PRECINCT ONE DEVELOPMENT YIELD

Ultimate development yields proposed for Precinct One were provided by Delfin for input into the traffic model. The proposed layout and internal road network of Precinct One is illustrated on Figure 2.1. The draft Precinct One Plan is included at Appendix A.

It should be noted that Precinct One will provide a significant amount of non-residential land uses, including Retail, Office, Mixed Use Industry and other similar uses. In contrast, Precinct One will only provide approximately 3% of the total residential yield for the Yarrabilba Development.

As a result of the above, it is unlikely that the non-residential land uses within Precinct One would operate at full capacity during the five (5) year design horizon. This is because the non-residential land uses will rely heavily on future stages of residential development within the Yarrabilba catchment.

Figure 2.1: Precinct One Layout

To obtain appropriate traffic generation volumes for Precinct One during the five (5) year design horizon, a 'utilisation factor' has been applied to all non-residential land uses. The utilisation factor represents the anticipated level of activity for each non-residential land uses during the five (5) design horizon compared with the ultimate development scenario. The adopted utilisation factor and the equivalent yield for the respective land uses are shown in Table 2.1.

Table 2.1: Precinct One Proposed Land Use Yields

Land Use	Ultimate Precinct One Yield	Utilisation Factor	5 Year Design Horizon Equivalent Yield
Residential	552 dwellings	100%	552 dwellings
School/Childcare	825 enrolments	33%	272 enrolments
Retail	5,000 sq.m GFA	60%	3,000 sq.m GFA
Office	2,600 sq.m GFA	20%	520 sq.m GFA
Tavern	2,000 sq.m GFA	50%	1,000 sq.m GFA
Medical Centre	1,500 sq.m GFA	15%	225 sq.m GFA
Gym	700 sq.m GFA	50%	350 sq.m GFA
Sports Fields	2 Fields	100%	2 Fields
Fast Food 1	600 sq.m GFA	25%	150 sq.m GFA
Fast Food 2	600 sq.m GFA	25%	150 sq.m GFA
Fast Food 3	600 sq.m GFA	25%	150 sq.m GFA
Service Station	300 sq.m GFA	25%	75 sq.m GFA
Car Wash	600 sq.m GFA	25%	150 sq.m GFA
Tyre Retail	1200 sq.m GFA	25%	300 sq.m GFA
Mixed Use Industry	18,250 sq.m GFA	50%	9,125 sq.m GFA

2.3 PEAK HOUR GENERATION

Peak generation rates have been obtained from relevant industry standards as well as our experience with similar developments. It should be noted that the peak generation for each of the land uses occur at different times of the day. For example, fewer people would utilise a car wash facility in the morning compared to the afternoon. Similarly, fewer people would drive to a Fast Food establishment in the morning compared to the evening.

To ensure that the generation rate for each land use aligns with the design peak periods (AM and PM road network peaks), a 'temporal factor' is applied to the peak generation rate. The temporal factor represents the anticipated generation of the specific land use during the design road peak period compared to the peak generation of that land use. The peak generation rates and temporal factors adopted for the respective land uses are shown in Table 2.2.

Table 2.2: Peak Generation Rates/Temporal Factors

Land Use	Peak Generation Rate	Temporal Factors (% of peak of each use)	
		AM Peak	PM Peak
Residential	0.65 trips/dwellings	100%	100%
School	0.8 trips/enrolments	100%	25%
Retail	13 trips/100sqm. GFA	25%	80%
Office	2 trips/100sqm. GFA	100%	100%
Tavern	10 trips/100sqm. GFA	10%	100%
Medical Centre	13 trips/100sqm. GFA	100%	100%
Gym	9 trips/100sqm. GFA	100%	100%
Sports Fields	15 trips/fields	0%	0%
Fast Food 1	180 trips/hour	80%	80%
Fast Food 2	100 trips/hour	10%	80%
Fast Food 3	12 trips/hour	10%	80%
Service Station	0.66 trips/GFA	50%	100%
Car Wash	12 Trips/100 sq.m. GFA	50%	100%
Tyre Retail	1 Trips/100 sq.m. GFA	100%	100%
Mixed Use Industry	21 trips/ha	100%	50%

Based on the peak generation rates and temporal factors listed in Table 2.2 the following peak hour traffic generation for each land use has been determined.

Table 2.3: Precinct One - Peak Hour Traffic Generation

Land Use	AM Peak	PM Peak
Residential	359	359
School	218	54
Retail	98	293
Office	10	10
Tavern	10	100
Medical Centre	29	29
Gym	32	32
Sports Fields	0	0
Fast Food 1	36	36
Fast Food 2	3	20
Fast Food 3	0	2
Service Station	25	50
Car Wash	9	18
Tyre Retail	3	3
Mixed Use Industry	19	10
TOTAL	850	1,015

2.4 SELF CONTAINMENT

The peak hour generation listed in Table 2.3 describes the trip generation potential of each individual land use. For a mixed use development, such as Precinct One of the Yarrabilba Development, a proportion of trips will have internal destinations. For example, land uses such as educational facilities, local retail/specialty stores, and medical centre are largely provided to support the local demand. For the purpose of this assessment, the trip generation potential for each individual land use has been divided into three (3) trip types. Each trip type is described below.

Drop-In trip:

A drop-in trip is a linked or multi-purpose trip. One part of a drop-in trip is from internal to internal and the other part is from internal to external. An example of a drop-in trip could be a trip from home to school and then from school to work.

Internal trips:

An internal trip is a trip where both the origin and destination are internal to the site. An example of an internal trip could be a trip from home to school.

External trip:

An external trip is a trip with either an internal origin and external destination or an external origin and internal destination. An example of an external trip could be a trip from home to work.

The adopted proportions for each trip type are summarised in Table 2.4.

Table 2.4: Trip Type by Land Use

Land Use	AM Peak			PM Peak		
	Drop In Trips	Internal Trips	External Trips	Drop In Trips	Internal Trips	External Trips
Residential	0%	48%	52%	0%	47%	53%
School	35%	20%	45%	0%	30%	70%
Retail	0%	40%	60%	10%	14%	76%
Office	0%	15%	85%	0%	15%	85%
Tavern	0%	50%	50%	0%	40%	60%
Medical Centre	0%	60%	40%	0%	60%	40%
Gym	0%	50%	50%	0%	30%	70%
Sports Fields	0%	0%	0%	0%	0%	0%
Fast Food 1	35%	13%	52%	35%	16%	49%
Fast Food 2	35%	13%	52%	35%	16%	49%
Fast Food 3	35%	13%	52%	35%	16%	49%
Service Station	80%	25%	15%	80%	5%	15%
Car Wash	90%	5%	5%	90%	5%	5%
Tyre Retail	0%	50%	50%	0%	50%	50%
Mixed Use Industry	0%	30%	70%	0%	30%	70%

Table 2.4 highlights that approximately 50% of all residential trips during both AM and PM peak will be internal trips. It is anticipated that the self containment rates would actually increase as further residential stages of the Yarrabilba Development are constructed.

The residential trips generated by Precinct One have been summarised in Table 2.5 below to ensure that the split between various trip purposes and internal/external are reasonable.

Table 2.5: Summary of Residential Trips

Residential Trips	AM Peak		PM Peak	
	Trips	%	Trips	%
Food	5	3%	12	7%
Retail	39	22%	54	32%
Recreation	21	12%	49	29%
Medical	18	10%	18	10%
Education	81	46%	16	10%
Services	3	2%	15	9%
Industrial/Office	7	4%	4	3%
TOTAL INTERNAL	173	48%	169	47%
TOTAL EXTERNAL	185	52%	189	53%
TOTAL GENERATION	359	100%	359	100%

Table 2.5 suggests that the vast majority (46%) of internal trips in the AM peak will be to the proposed school and childcare centre. This is considered to be reasonable as the school/childcare centre generates more trips in the AM peak than any other land use. In the PM peak the vast majority (61%) of internal trips are for either retail or recreation purposes (Tavern, Gym etc.). This is again considered reasonable as the afternoon school peak would have passed prior to the PM road network peak.

The overall self containment for Precinct One has been summarised in Table 2.6. It was found that the overall self containment for Precinct One would be in the order of 27% in the AM peak and 22% in the PM peak. This is considered to be reasonable for an interim stage of the Yarrabilba Development and for the purposes of this assessment. Once further stages are development, it is anticipated that the self containment rate would increase significantly.

Table 2.6: Summary of Self Containment

Precinct One	AM Peak				PM Peak			
	Internal Trips	Internal %	External Trips	External %	Internal Trips	Internal %	External Trips	External %
Residential	173	48%	185	52%	169	47%	189	53%
Non-Residential	173	39%	276	61%	169	29%	424	71%
TOTAL SITE	173	27%	462	73%	169	22%	613	78%

2.5 TRAFFIC DISTRIBUTION

The distribution and assignment of development traffic to the external road network has been based upon the consideration of surrounding land uses and key trip attractors. The main metropolitan centres (Beenleigh, Logan, Park Ridge etc.), Public Transport opportunities (Beenleigh Train Station) and access to the Pacific Motorway (for trips to/from Brisbane and Gold Coast) are all to the north of the site. Tamborine and Beaudesert are located to the south of the site however they are not considered to be significant employment or activity centres in the short-medium term. The adopted external distribution assumptions are shown in Table 2.7.

Table 2.7: External Trip Distribution

External Links	Distribution	
	Interim	Ultimate
North (Waterford-Tamborine Road)	75%	60%
East (Future East-West connection)	-	15%
South (Waterford-Tamborine Road)	10%	10%
West (Camp Cable Road)	15%	15%
TOTAL	100%	100%

Internal trips are distributed to internal zones based on relative size of the population in the residential precincts and the distance away from the land use.

2.6 BACKGROUND TRAFFIC

2016 background traffic volumes on Waterford-Tamborine Road and Camp Cable Road have been obtained from the Veitch Lister Consulting (VLC) strategic transport model for the area. These background traffic volumes are the same as were adopted in previous assessments undertaken by CEO.

The adopted background traffic volumes and further details of the assessment are included at Appendix B.

3 INTERSECTION ANALYSIS

The operation of each study intersection has been analysed using SIDRA Intersection 5.0. This program estimates the operational performance of an intersection based on input parameters, including geometry and traffic volumes. As an output, SIDRA provides estimates for the degree of saturation (DOS), queues and delays.

In the *Guidelines for Assessment of Road Impacts of Development*, TMR defines the following standard DOS thresholds:

- 0.80 (80%) for priority controlled intersections;
- 0.85 (85%) for roundabouts;
- 0.90 (90%) for signalised intersections.

The TMR guideline notes that DOS exceeding these values indicates that an intersection is nearing its practical capacity and upgrade works may be required. Above these thresholds, users of an intersection are likely to experience rapidly increasing delays and queuing.

3.1 ASSESSMENT SCENARIOS

A total of five (5) intersections have been analysed as part of the Precinct One assessment. The five (5) intersections include:

External Intersections

- Waterford-Tamborine Road/Camp Cable Road/North Entry Road;

Internal Intersections (from West to East)

- North Entry Road/MIBA Access Road (Internal Intersection 1);
- North Entry Road/Village Centre Access Road (Internal Intersection 2);
- North Entry Road/North Village Access Road (Internal Intersection 3);
- North Entry Road/South Village/School Access Road (Internal Intersections 4).

Table 3.1 highlights each scenario which has been assessed for each of the abovementioned intersections. As there will be no through traffic on the North Entry Road, traffic volumes at the internal intersections will exclusively be development related. As a result, the internal intersections have only been analysed for the 2026 design horizon.

This analysis for the ultimate development assumes that the SIC would be introduced at the point where 85% of the Yarrabilba Site is developed. Beyond this time the introduction of the SIC would reduce volumes on the North Entry Road. That 85% level therefore is taken as the ultimate design case.

Table 3.1: Assessment Scenarios

Scenario	Study Intersections				
	Waterford-Tamborine Rd/Camp Cable Rd/Site Access	Internal Intersection 1	Internal Intersection 2	Internal Intersection 3	Internal Intersection 4
2016 AM BG + P1	✓	•	•	•	•
2016 PM BG + P1	✓	•	•	•	•
2016 AM P1	•	✓	✓	✓	✓
2016 PM P1	•	✓	✓	✓	✓
2026 AM BG + 85% Development	✓	✓	✓	✓	✓
2026 PM BG + 85% Development	✓	✓	✓	✓	✓

Note: P1 refers to Precinct One. 85% Development refers to 85% of the entire Yarrabilba Development.

3.2 WATERFORD TAMBORINE ROAD/CAMP CABLE ROAD/SITE ACCESS

The Waterford-Tamborine Road/Camp Cable Road/Site Access intersection has been analysed for a five (5) year design horizon and an 85% development scenario. As the five (5) year design horizon is only an interim solution, this assessment has assessed the minimum civil works required at the Waterford-Tamborine Road/Camp Cable Road/Site Access intersection knowing that it will ultimately be upgrade to cater for ultimate traffic volumes. It also provides a basis for considering initial stages which provide more than the minimum to have efficient construction and possibly avoid working under traffic with future stages.

Figure 3.1 shows the proposed configuration of the Waterford-Tamborine Road/Camp Cable Road/Site Access intersections. It should be noted that the proposed layout retains the existing configuration of the western side of the intersection. Figure 3.2 highlights the proposed ultimate configuration for the intersection. The results of the analysis are summarised in Table 3.2 with detailed outputs provided at Appendix C.

Figure 3.1: Waterford-Tamborine Road/Camp Cable Road/Site Access – Proposed Interim Configuration

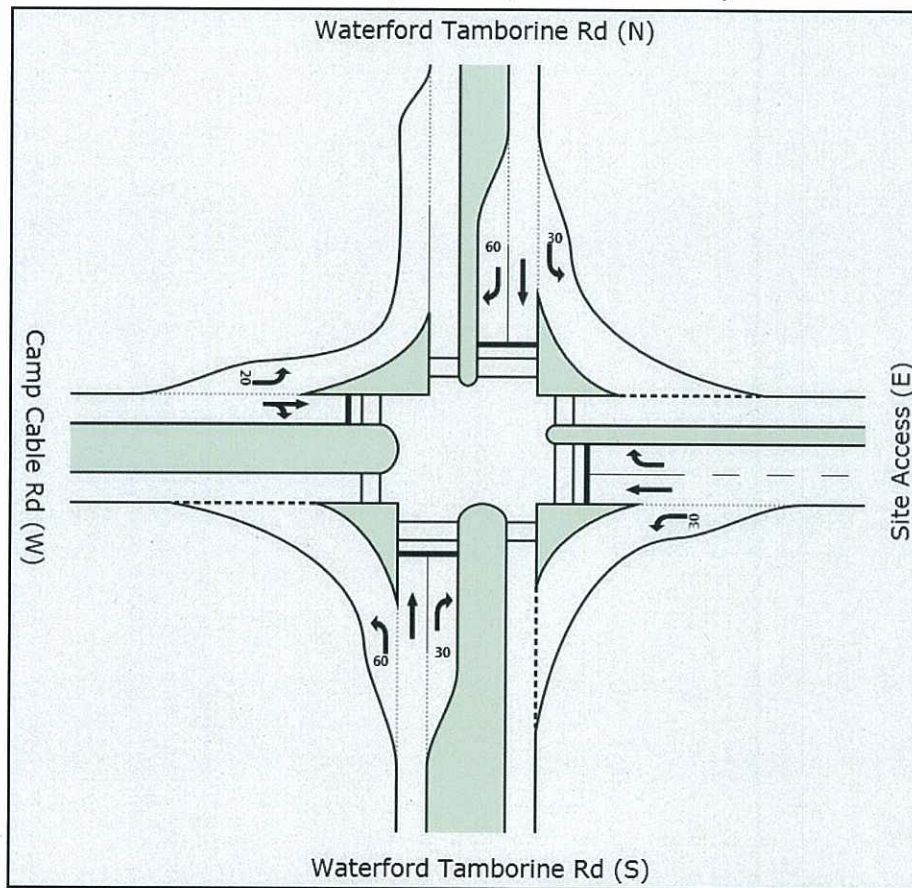


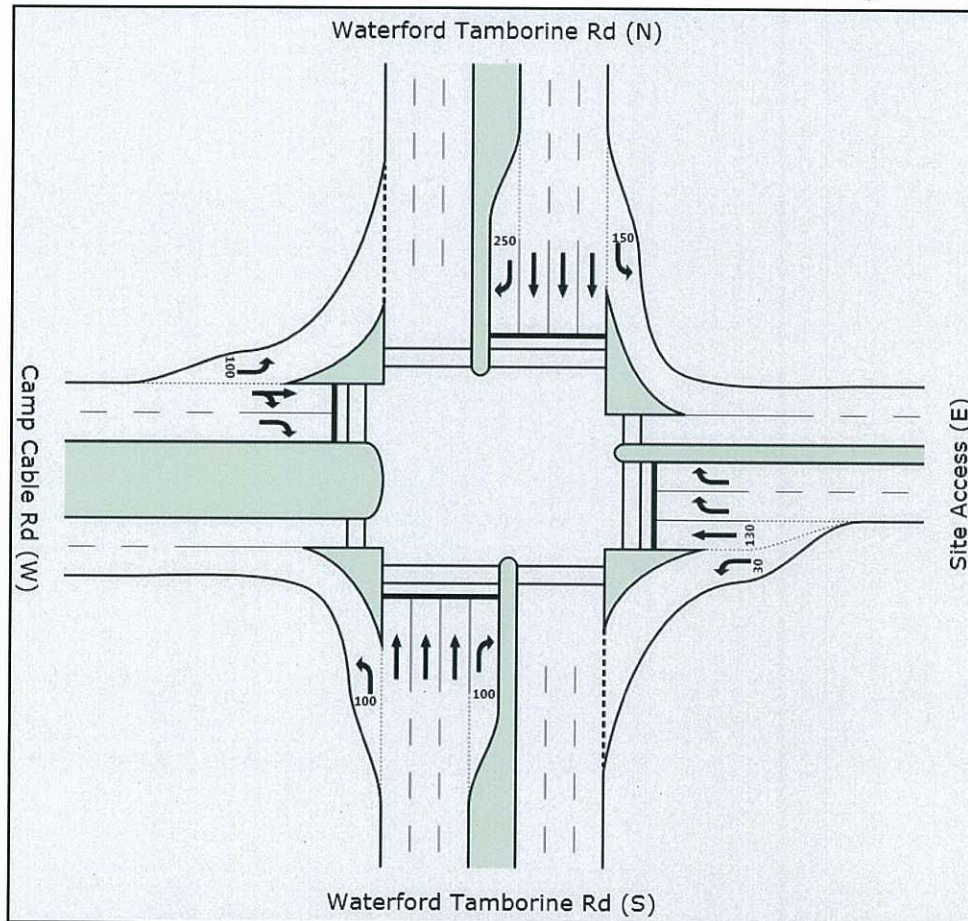
Table 3.2: Waterford-Tamborine Road/Camp Cable Road/Site Access – SIDRA Results

Scenarios	AM Peak			PM Peak		
	DOS	Delay	95 th %le Queue	DOS	Delay	95 th %le Queue
2016 With Precinct One	0.79	31 sec	189m	0.84	35 sec	298m
2026 With 85% of Development	0.65	41 sec	137m	0.98	67 sec	341m

The results shown in Table 3.2 highlight that the proposed interim intersection configuration will provide adequate capacity to cater for Precinct One development traffic for a five (5) year design horizon. As stated previously, the proposed interim layout retains the existing configuration of the western side of the intersection, reducing the amount of civil works required prior to the ultimate upgrade of the Waterford-Tamborine Road/Camp Cable Road/Site Access intersection.

Previous assessment undertaken by CEO identified a suitable intersection form for the Waterford-Tamborine Road/Camp Cable Road/Site Access intersection. It was found that a six (6) lane cross section is required on Waterford-Tamborine Road along part of the site frontage with additional turn lanes at the intersection. The site access and Camp Cable Road would require four (4) lanes in the vicinity of the intersection. This layout has since been refined to optimise turn pocket lengths and reduce the overall footprint of the intersection. The proposed ultimate configuration is illustrated in Figure 3.2.

Figure 3.2: Waterford-Tamborine Road/Camp Cable Road/Site Access – Ultimate Configuration



Previous assessment found that the ultimate configuration would cater for background growth on Waterford-Tamborine Road and Camp Cable Road as well as development generated traffic up to the stage at which 85% of the Yarrabilba Development is constructed. At this level of development the intersection degree of saturation (DOS) would reach a maximum of 0.98 in the critical PM peak.

To achieve adequate capacity with the ultimate development, additional road links would be required to reduce the traffic demand at this location. As discussed above, planned road network upgrades include an East-West link running parallel to Camp Cable Road. The new link would relieve the traffic demand at this location.

Further analysis was undertaken to determine the likely queues which will form on the North Entry Road approach to the Waterford-Tamborine Road/Camp Cable Road/Site Access Road intersection during the ultimate AM and PM peak periods. The purpose of this assessment was to determine if queues which develop on the Site Access Road would extend back and block access to Internal Intersection 1.

Table 3.3 highlights the 95th percentile queues expected to occur on the Site Access Road during each design scenario. It should be noted that the 95th percentile queue represents a maximum queue length that would only be exceeded by 5% of all observed queues.

Table 3.3: Waterford-Tamborine Road/Camp Cable Road/Site Access – Queue Analysis

Scenario	95 th %ile Queue	
	Vehicles	Metres
2016AM With Precinct One	14	99m
2016AM With Precinct One	15	107m
2026AM With 85% of Development	11	87m
2026PM With 85% of Development	16	117m

Table 3.3 highlights that queuing experienced at the Waterford-Tamborine Road/Camp Cable Road/Site Access intersection will not spill back and impact the performance of Internal Intersection 1, which is located approximately 160m to the east.

3.3 INTERNAL INTERSECTION 1

Internal Intersection 1 has been proposed to be an all movement priority controlled 'T' intersection. The proposed layout is highlighted in Figure 3.3. It should be noted that this intersection is located approximately 160m to the east of Waterford-Tamborine Road. Limited intersection spacing may result performance issues during peak periods, particularly as future stages of the Yarrabilba Development are constructed. As a result, this analysis has focused on determining the appropriate layout for the 85% development scenario.

Internal Intersection 1 has been analysed for a five (5) year design horizon and an 85% development scenario. The results of the analysis are summarised in Table 3.4 with detailed outputs provided at Appendix C.

Table 3.4: Internal Intersection 1 – SIDRA Results

Scenarios	AM Peak			PM Peak		
	DOS	Delay	95 th %ile Queue	DOS	Delay	95 th %ile Queue
2016 With Precinct One	0.08	2 sec	3m	0.18	3 sec	6m
2026 With 85% of Development	0.44	5 sec	18m	2.33	327 sec	1,418m
2026 With 85% of Development – Ban Right Turn Out	0.12	2 sec	4m	0.29	2 sec	9m

Figure 3.3: Internal Intersection 1 – Proposed Interim Configuration

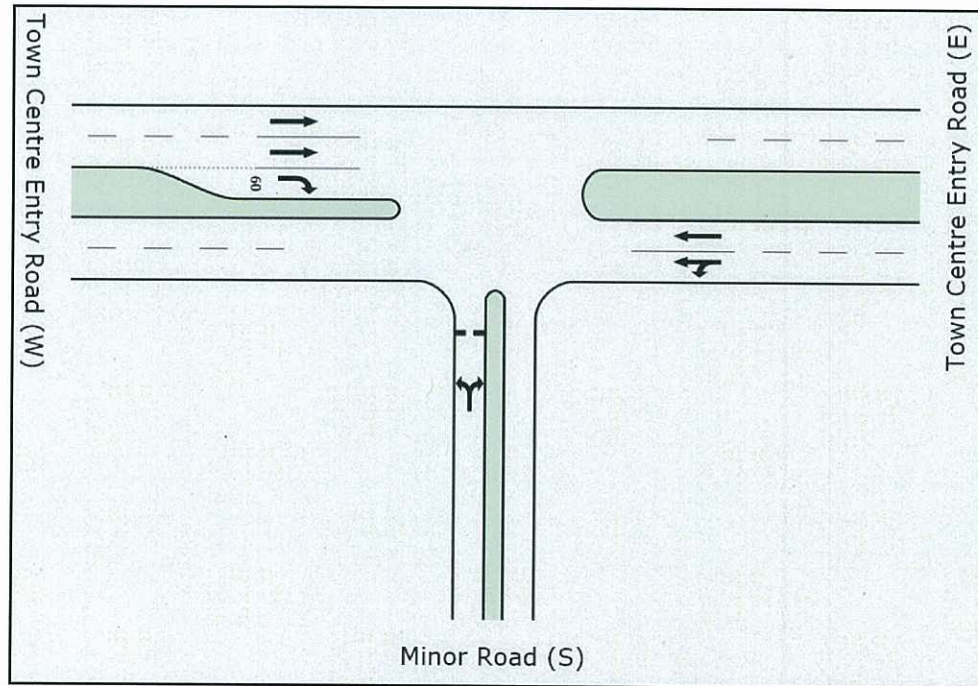
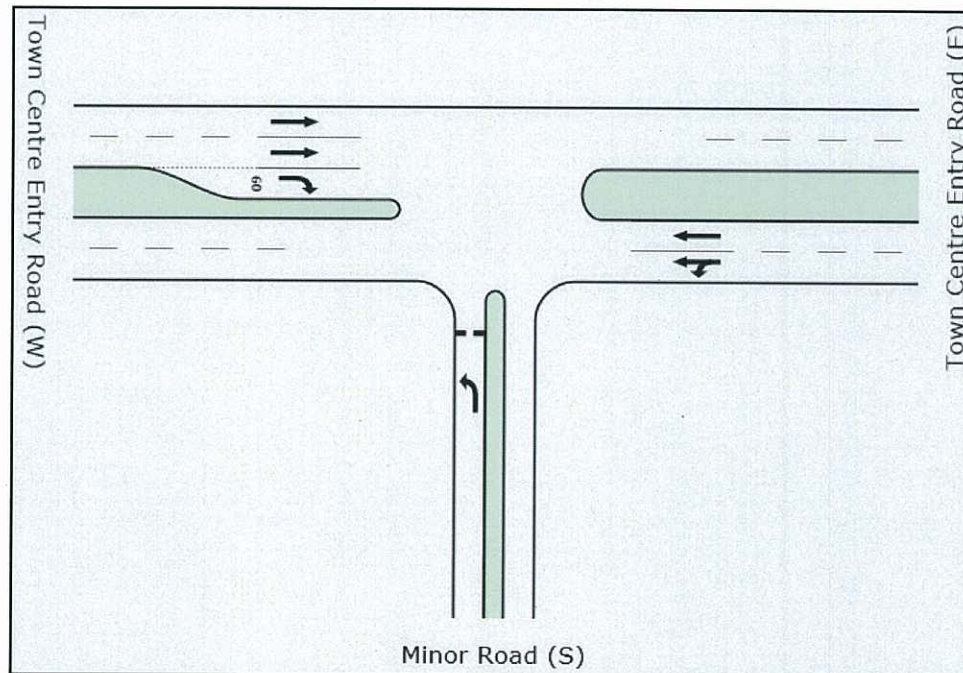


Table 3.4 highlights that the intersection will operate at well below its maximum design capacity (DOS of 0.80) as an all movement intersection during the five (5) year design horizon. However, as future stages of the Yarrabilba Development are constructed, motorists exiting the side street during the PM peak will experience significant delays. As a result, it is recommended that the right turn movement out of the side street at Internal Intersection 1 be restricted to left out only as demands increase. The proposed ultimate configuration is illustrated in Figure 3.4.

Figure 3.4: Internal Intersection 1 – Proposed Ultimate Configuration



3.4 INTERNAL INTERSECTION 2

Internal Intersection 2 has been proposed to be a dual lane roundabout with single lane approach on both side streets. The proposed layout is highlighted on Figure 3.5. Internal Intersection 2 has been analysed for a five (5) year design horizon and an 85% development scenario. The results of the analysis are summarised in Table 3.5 with detailed outputs provided at Appendix C.

Figure 3.5: Internal Intersection 2 – Proposed Ultimate Configuration

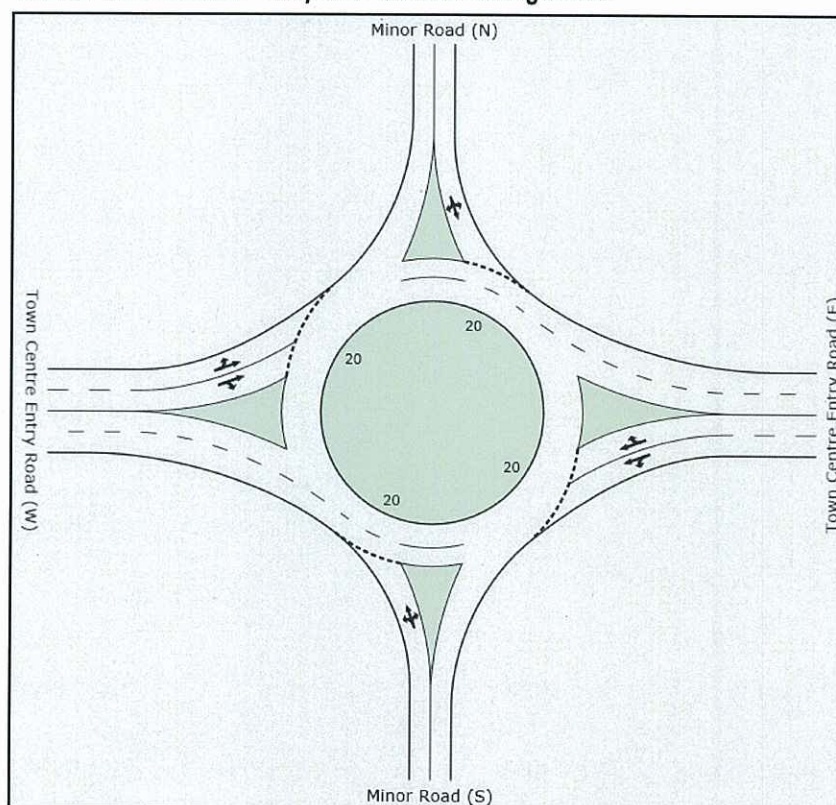


Table 3.5: Internal Intersection 2 – SIDRA Results

Scenarios	AM Peak			PM Peak		
	DOS	Delay	95 th %ile Queue	DOS	Delay	95 th %ile Queue
2026 With Precinct One	0.10	8 sec	3m	0.12	9 sec	4m
2026 With 85% of Development	0.31	10 sec	13m	0.86	13 sec	75m

The results shown in Table 3.5 highlight that Internal Intersection 2 will operate well below its maximum design capacity (DOS of 0.85) during the five (5) year design horizon. It was also found that the proposed layout will also operate satisfactorily during the 85% development scenario. It should be noted that the 85% development scenario was prepared based on the assumption that Internal Intersection 1 would have no right turn out access i.e. right turn traffic exiting Internal Intersection 1 would need to utilise Internal Intersection 2.

3.5 INTERNAL INTERSECTION 3

Internal Intersection 3 has been proposed to ultimately be dual lane roundabout with a single lane approach on the side street. However, as Precinct One will effectively operate as a closed catchment, i.e. no through traffic, Internal Intersection 3 and 4 have been analysed as single lane roundabouts during the interim development scenario. The proposed interim and ultimate layouts are highlighted on Figure 3.6 and Figure 3.7 respectively. The results of the analysis are summarised in Table 3.6 with detailed outputs provided at Appendix C.

Figure 3.6: Internal Intersection 3 – Proposed Interim Configuration

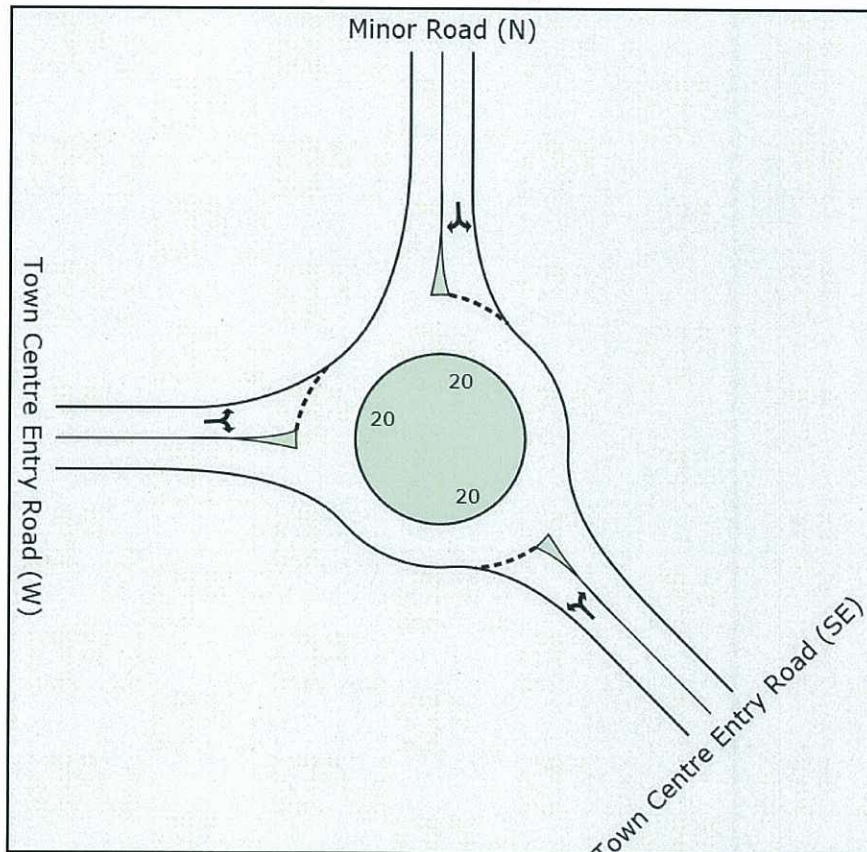
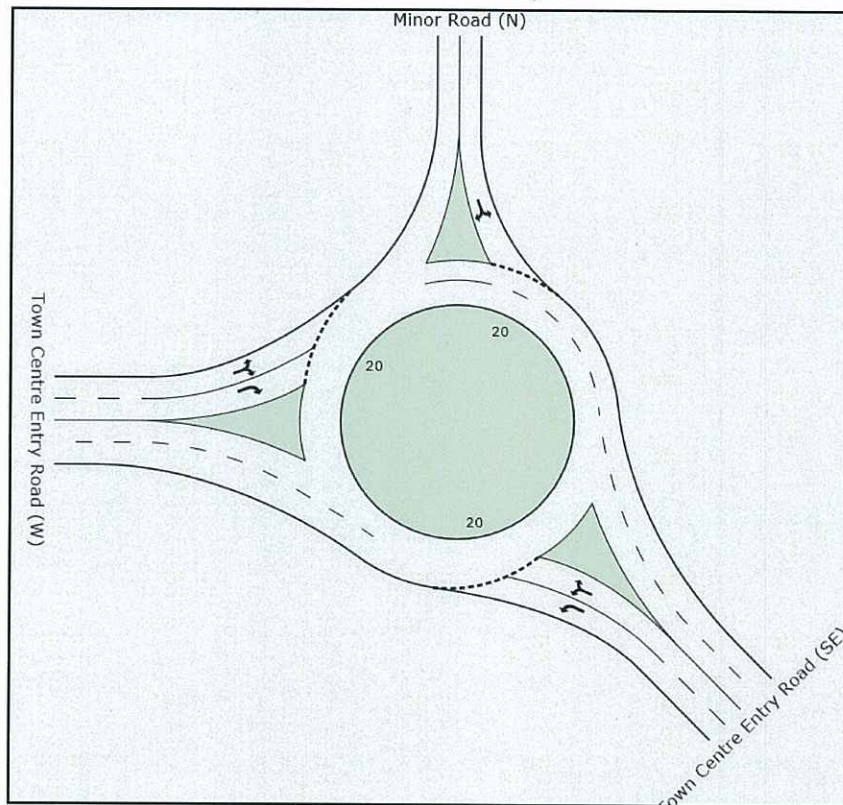


Table 3.6: Internal Intersection 3 – SIDRA Results

Scenarios	AM Peak			PM Peak		
	DOS	Delay	95 th %ile Queue	DOS	Delay	95 th %ile Queue
2026 With Precinct One	0.10	8 sec	5m	0.07	8 sec	3m
2026 With 85% Development	0.70	9 sec	87m	0.51	9 sec	35m

The results shown in Table 3.6 highlight that the Internal Intersection 3 will operate well below its maximum design capacity (DOS of 0.85) with Precinct One fully developed. It also highlights that this intersection would operate satisfactorily as a single lane roundabout in the initial stages of development. A dual lane roundabout will be required as future stages of the Yarrabilba Development come online.

Figure 3.7: Internal Intersection 3 – Proposed Ultimate Configuration



3.6 INTERNAL INTERSECTION 4

Internal Intersection 4 has been proposed to ultimately be a dual lane roundabout with a single lane approach on the side street. However, as stated previously, Internal Intersection 4 has been analysed as a single lane roundabout during the interim development scenario. The proposed interim and ultimate layouts are highlighted in Figure 3.8 and Figure 3.9 respectively. The results of the analysis are summarised in Table 3.7 with detailed outputs provided at Appendix C.

Figure 3.8: Internal Intersection 4 – Proposed Interim Configuration

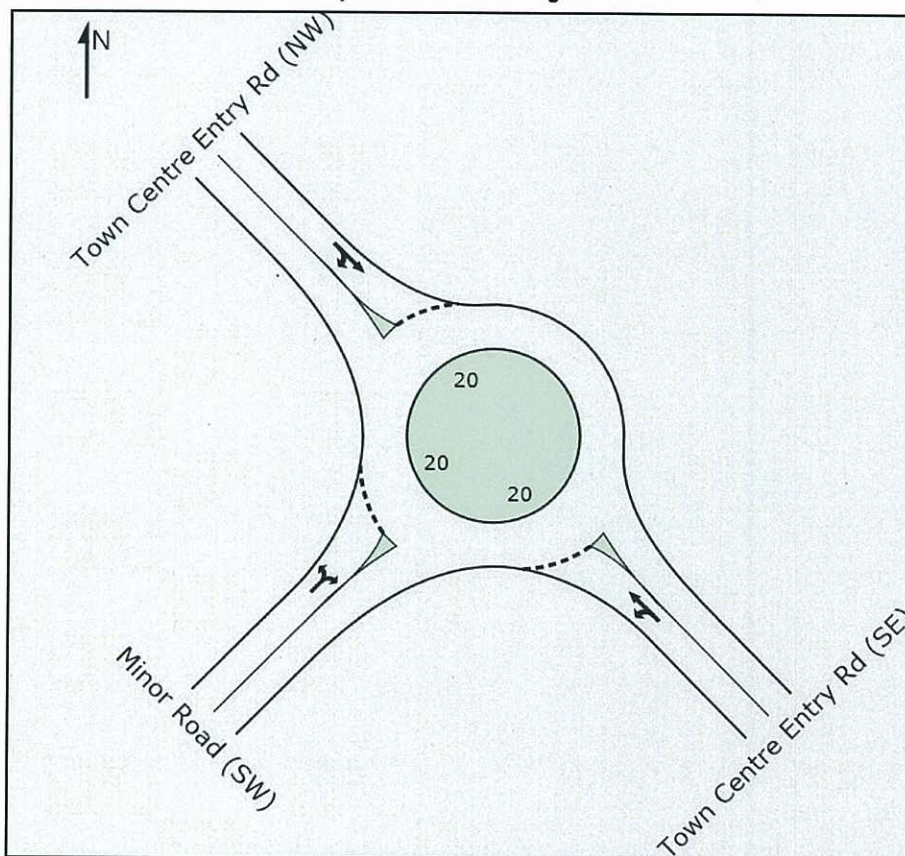


Table 3.7: Internal Intersection 4 – SIDRA Results

Scenarios	AM Peak			PM Peak		
	DOS	Delay	95 th %ile Queue	DOS	Delay	95 th %ile Queue
2026 With Precinct One	0.10	8 sec	5m	0.07	9 sec	3m
2026 With 85% of Development	1.69	443 sec	4,333m	0.72	10 sec	54m
2026 With 85% of Development – Upgraded Layout	0.74	13 sec	56m	0.54	9 sec	46m

The results shown in Table 3.7 highlight that the Internal Intersection 4 will operate well below its maximum design capacity (DOS of 0.85) with Precinct One fully developed. Table 3.7 also highlights that the proposed dual lane roundabout would not provide adequate capacity for the 85% development scenario. In order to operate below its maximum design capacity (DOS of 0.85) it was found that an additional 75m shared left-right turn lane would be required on the side street as demands increase. The recommended layout is shown on Figure 3.10.

Figure 3.9: Internal Intersection 4 – Proposed Ultimate Configuration

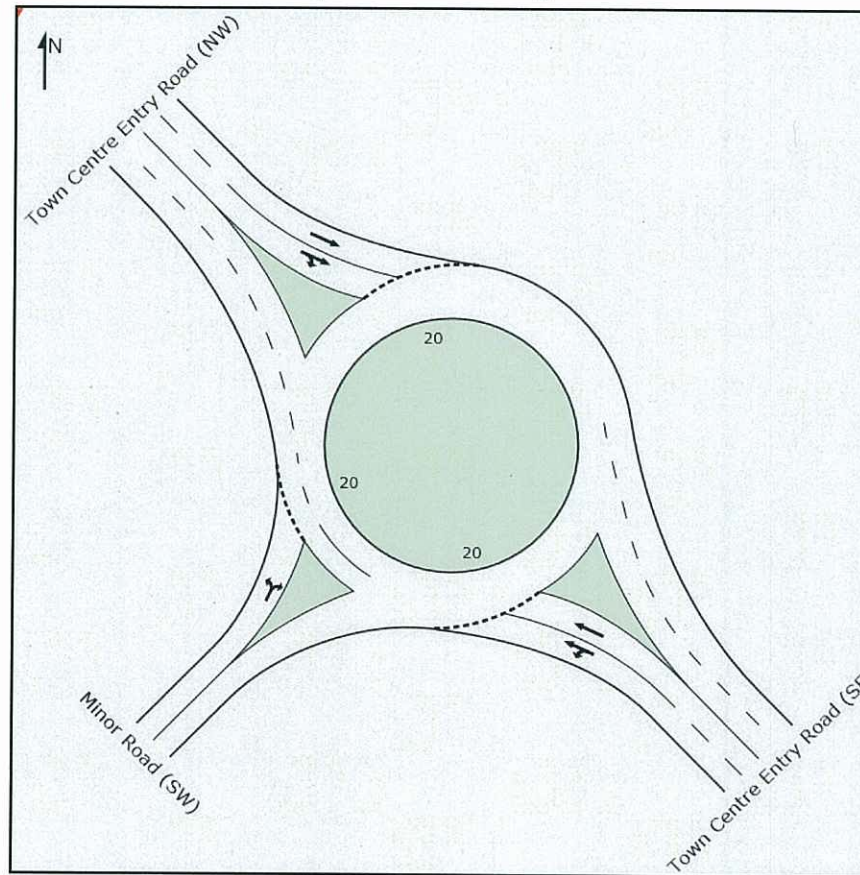
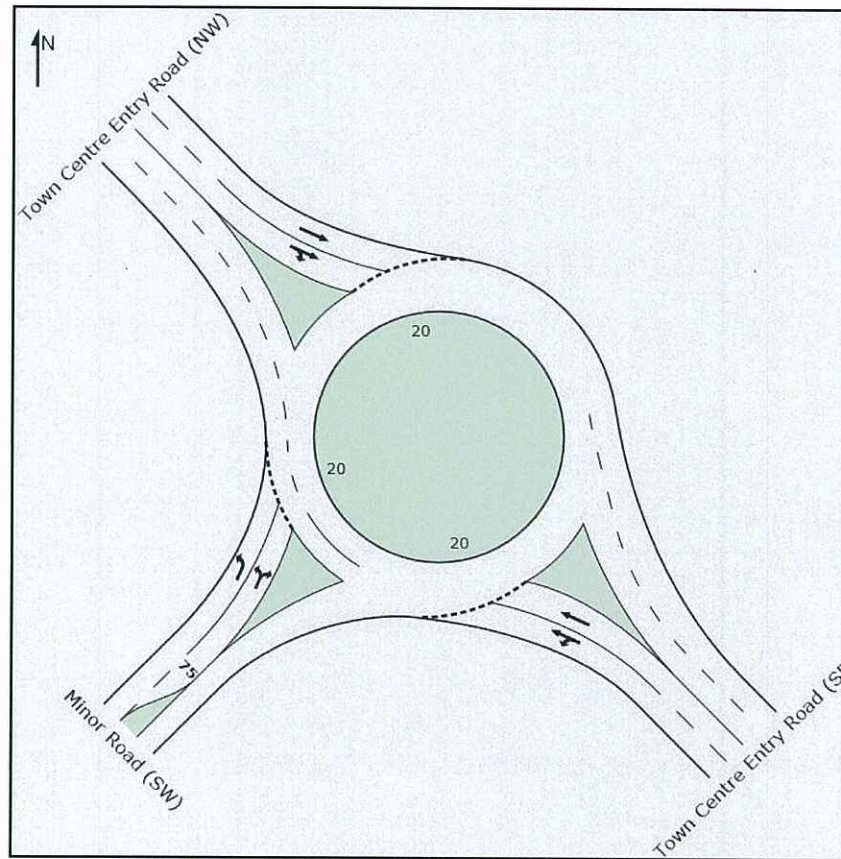


Figure 3.10: Internal Intersection 4 – Recommended Ultimate Configuration



4 CONCLUSIONS

CEO has undertaken a Traffic Impact Assessment for Precinct One of the Yarrabilba Development. Two (2) scenarios were investigated included a five (5) year design horizon for Precinct One and an 85% development scenario for the ultimate development. The purpose of this analysis was to determine an interim intersection configuration of the Waterford-Tamborine Road/Camp Cable Road/Site Access intersection to provide a five (5) year design horizon to cater for Precinct One. In addition, the internal road network of Precinct One has also been analysed to ensure that adequate space is provided to cater for ultimate traffic volumes.

It was found that:

- The initial development of Waterford-Tamborine Road/Camp Cable Road/North Entry Road intersection should proceed as a signalised intersection with Figure 3.1 showing the minimum requirement;
- The Waterford-Tamborine Road/Camp Cable Road/North Entry Road intersection will ultimately need to be upgraded in accordance with Figure 3.2;
- Proposed spacing of 160m between Waterford-Tamborine Road/Camp Cable Road/North Entry Road and Internal Intersection 1 is adequate for operation of the main signalised intersection;
- Internal Intersection 1 will have inadequate capacity to operate as an unsignalised intersection and will ultimately require a right turn ban for motorists exiting the side street as demand grows. Refer Figure 3.4;
- Internal Intersection 2 has been proposed to be constructed as a dual lane roundabout. This configuration provides adequate capacity for both design scenarios;
- Internal Intersection 3 and Internal Intersection 4 could both operate satisfactorily as single lane roundabouts during the five (5) year design scenario. However both will need to be upgraded to dual circulating lanes to cater for ultimate demand volumes.
- Responses to other RFI issues have been provided at Section 1.3 herein.

Appendix A

Delfin Proposed Precinct One Layout

MINIMUM TAKE UP OF MULTI-DWELLINGS COMBINED NORTH AND SOUTH VILLAGES	14.4 du/ha
MAXIMUM TAKE UP OF MULTI-DWELLINGS COMBINED NORTH AND SOUTH VILLAGES	15.6 du/ha

Yarrabilba

A COMPLETE TOWN, A BETTER OUTCOME

LEGEND

- | | |
|--|--|
| | YARRABILBA SITE BOUNDARY |
| | PRECINCT ONE BOUNDARY |
| | ELECTRICAL TRANSMISSION EASEMENT
(E1M) |
| | INDICATIVE SOUTHERN INFRASTRUCTURE
CORRIDOR |
| | RESIDENTIAL VILLAGE BOUNDARY |
| | PROPOSED STAGE BOUNDARY |

PRESIDENTIAL VOTER FIELD				LOT FIELD				LOT AREA FIELD				Lot				Densities			
Lot Type	% Total Lot	% Total Area	Average Size Sq. Ft.	Average Area Acres	Average Area Sq. Ft.	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max		
P	16.2%	16.2%	26,525	0.611	26,525	17,171	35	25	25	25	25	25	25	1	1	1	1		
C	17.0%	17.0%	405	9.11E-5	16,677	25	25	25	25	25	25	25	25	1	1	1	1		
T	10.7%	10.7%	465	1.12E-5	3,075	25	25	25	25	25	25	25	25	1	1	1	1		
PV	10.7%	10.7%	465	1.12E-5	3,075	25	25	25	25	25	25	25	25	1	1	1	1		
TT	5.0%	5.0%	355	5.0%	470	5	5	5	5	5	5	5	5	1	1	1	1		
TC	14.7%	14.7%	300	4.1E-5	3,23	5	5	5	5	5	5	5	5	1	1	1	1		
TC2	17.0%	17.0%	318	4.63E-5	3,008	11	11	11	11	11	11	11	11	1	1	1	1		
TC3	17.0%	17.0%	318	4.63E-5	3,008	11	11	11	11	11	11	11	11	1	1	1	1		
TC4	5.0%	5.0%	311	1.79E-5	262	5	5	5	5	5	5	5	5	1	1	1	1		
Total Number of Lots												152	152	152	152	152			
Min Residents Density = 1.2 / ha												Min Residents Density = 1.2 / ha							
Max Residents Density = 1.2 / ha												Max Residents Density = 1.2 / ha							
Min Lot Area = 17,171 Sq. Ft.												Min Lot Area = 17,171 Sq. Ft.							
Max Lot Area = 35,000 Sq. Ft.												Max Lot Area = 35,000 Sq. Ft.							

[illegible]

NOTE. MINIMUM DWELLINGS is based on the development of one dwelling on each single-family lot, two dwellings on each multi-family strata (MFS) lot, and one dwelling on each multi-family freesthold (MFF).

MAXIMUM DWELLINGS for terrace (TCE) and multi-family strata (MFS) lots is based on floor flats on rear loaded terraces and the development of the maximum number of dwellings on MFS lots

ENSTY calculations include the area of residential lots, local roads and local parks.

the boundaries, roads and pathways shown hereon
are subject to detailed engineering design, final
survey and approval of subsequent development
applications by the relevant authorities.

PRECINCT ONE

RECONFIGURATION OF A LOT



scale 1:2500 AT A1

Case No. YB-P01

Drawing No. YB-P01-ROL101118A SHEET 1 OF 7

JAN 2011

PW No A1000PDU1003

Appendix B

Traffic Generation and Distribution Analysis

Table 1: Total Yield

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 Confirmed by Rob Ball (DLJ) - 11/02/2011

Land Use	Yield	Unit
Residential	475	dwellings
Duplexes	77	dwellings
Supermarket	3,500	sqm GFA
Specialities	1,500	sqm GFA
Office	1,000	sqm GFA
Tavern	2,000	sqm GFA
Medical Centre	1,500	sqm GFA
Gym	700	sqm GFA
Sports Fields	2	fields
Fast Food 1	600	sqm GFA
Fast Food 2	600	sqm GFA
Fast Food 3	600	sqm GFA
Service Station	300	sqm GFA
Car Wash	600	sqm GFA
Tyre Retail	1,200	sqm GFA
Mixed Use Industry	18,250	sqm GFA
Sales & Information Centre	1,600	sqm GFA
School + Childcare	825	enrollments

Table 2: Yield by Zone

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Traffic Zone	Land Use	Yield
1	Fast Food 1	1 Restaurant
	Fast Food 2	1 Restaurant
	Fast Food 3	1 Restaurant
	Service Station	300 sq.m GFA
	Car Wash	600 sq.m GFA
	Tyre Retail	1,200 sq.m GFA
2	Residential	49 dwellings
3	Residential	127 dwellings
4	School	825 enrollments
5	Residential	188 dwellings
6	Residential	188 dwellings
7	Retail	5,000 sq.m GFA
	Office	2,600 sq.m GFA
	Tavern	2,000 sq.m GFA
	Medical Centre	1,500 sq.m GFA
	Gym	700 sq.m GFA
	Sports Field	2 Fields
8	MIBA	18,250 sq.m GFA

Table 3: Generation

Land Use	Peak Generation Rates				Source	Comments
	AM	PM	Peak	Unit		
Residential	0.65	0.65	0.65	Trips/Lot	Logan City PSP	
Duplexes	0.65	0.65	0.65	Trips/Dwelling	RTA - 3.3.2	Assumed as upper of range to be conservative
Supermarket	3	9	13	Trips/100sqm GFA	RTA - 3.6.1	Assumed the same as retail - AM based on previous assessment
Specialities	3	9	13	Trips/100sqm GFA	RTA - 3.6.1	Assumed the same as retail
Office	2	2	2	Trips/100sqm GFA	RTA - 3.5 & RPDM T3.4	
Tavern	1	10	10	Trips/100sqm GFA		
Medical Centre	13	13	13	Trips/100sqm GFA	RPDM T3.9	
Gym	9	9	9	Trips/100sqm GFA	RTA - 3.8.2	
Sports Fields	0	0	15	Trips/field		Need to know what sport(s) will be played on the fields to determine highest and best use
Fast Food 1	180	180	180	Trips/Hour	RTA - 3.7.1	
Fast Food 2	10	100	100	Trips/Hour	RTA - 3.7.1	
Fast Food 3	2	12	12	Trips/Hour	TAG - Table C.4	
Service Station	0.33	0.66	0.66	Trips/GFA	RTA - 3.6.2	Need to know GFA of convenience store size
Car Wash	6	12	12	Trips/100sqm GFA	Logan City PSP	
Tyre Retail	1	1	1	Trips/100sqm Site Area	RTA - 3.6.3	Two tyre retail lots have been assumed for the highway retail area
Mixed Use Industry	21	10.5	21	Trips/ha		Based on previous assessment
Sales & Information Centre	2	2	2	Trips/100sqm GFA	RTA - 3.5	Assumed the same as office
School + Childcare	0.8	0.2	0.8	Trips/enrollment		Based on previous assessment

Land Use	Yield	Peak Generation	Utilisation	Temporal Factor		AM Gen	PM Gen
				AM	PM		
Residential North East	49	dwellings	-	100%	100%	32	32
Residential North West	127	dwellings	-	100%	100%	83	83
Residential South East	188	dwellings	-	100%	100%	122	122
Residential South West	188	dwellings	-	100%	100%	122	122
Fast Food 1	1	Restaurant	25%	80%	80%	36	36
Fast Food 2	1	Restaurant	25%	10%	80%	3	20
Fast Food 3	1	Restaurant	25%	10%	80%	0	2
Service Station	300	sq.m GFA	25%	50%	100%	25	50
Car Wash	600	sq.m GFA	25%	50%	100%	9	18
Tyre Retail	1,200	sq.m GFA	25%	50%	100%	3	3
School + Childcare	825	enrollments	33%	100%	25%	218	54
Retail	5,000	sq.m GFA	60%	25%	75%	98	283
Office	2,600	sq.m GFA	20%	100%	100%	10	10
Tavern	2,000	sq.m GFA	50%	10%	100%	10	100
Medical Centre	1,500	sq.m GFA	15%	100%	100%	29	29
Gym	700	sq.m GFA	50%	100%	100%	32	32
Sports Field	2	Fields	0%	0%	0%	0	0
MIBA	18,250	sq.m GFA	50%	100%	50%	19	10
						850	1,015

850 1,015

Fast Food 1

	AM	PM
Peak Generation	80%	36
Peak IN	50%	18
Peak OUT	50%	18
Drop In	35%	13
New Trips	65%	23
New Internal Trips (%)	20%	0
New Internal Trips	13%	5
New Internal Trips IN	7%	2
New Internal Trips OUT	7%	2
New External Trips (%)	80%	0
New External Trips	52%	19
New External Trips IN	26%	9
New External Trips OUT	26%	9

Fast Food 3

	AM	PM
Peak Generation	10%	0
Peak IN	50%	0
Peak OUT	50%	0
Drop In	35%	0
New Trips	65%	0
New Internal Trips (%)	20%	0
New Internal Trips	13%	0
New Internal Trips IN	7%	0
New Internal Trips OUT	7%	0
New External Trips (%)	80%	0
New External Trips	52%	0
New External Trips IN	26%	0
New External Trips OUT	26%	0

Car Wash

	AM	PM
Peak Generation	50%	9
Peak IN	50%	5
Peak OUT	50%	5
Drop In	90%	8
New Trips	10%	1
New Internal Trips (%)	50%	0
New Internal Trips	5%	0
New Internal Trips IN	3%	0
New Internal Trips OUT	3%	0
New External Trips (%)	50%	0
New External Trips	5%	0
New External Trips IN	3%	0
New External Trips OUT	3%	0

Fast Food 2

	AM	PM
Peak Generation	10%	3
Peak IN	50%	1
Peak OUT	50%	1
Drop In	35%	1
New Trips	65%	2
New Internal Trips (%)	20%	0
New Internal Trips	13%	0
New Internal Trips IN	7%	0
New Internal Trips OUT	7%	0
New External Trips (%)	80%	0
New External Trips	52%	1
New External Trips IN	26%	1
New External Trips OUT	26%	1

Service Station

	AM	PM
Peak Generation	50%	25
Peak IN	50%	12
Peak OUT	50%	12
Drop In	80%	20
New Trips	20%	5
New Internal Trips (%)	25%	0
New Internal Trips	5%	1
New Internal Trips IN	3%	1
New Internal Trips OUT	3%	1
New External Trips (%)	75%	0
New External Trips	15%	4
New External Trips IN	8%	2
New External Trips OUT	8%	2

Tyre Retail

	AM	PM
Peak Generation	100%	3
Peak IN	50%	2
Peak OUT	50%	2
Drop In	0%	0
New Trips	100%	3
New Internal Trips (%)	50%	0
New Internal Trips	50%	2
New Internal Trips IN	25%	1
New Internal Trips OUT	25%	1
New External Trips (%)	50%	0
New External Trips	50%	2
New External Trips IN	25%	1
New External Trips OUT	25%	1

Medical Centre			AM		PM	
Peak Generation	100%	29	100%	29	100%	29
Peak IN	50%	15	50%	15	50%	15
Peak Out	50%	15	50%	15	50%	15
Drop In	0%	0	0%	0	0%	0
New Trips	100%	29	100%	29	100%	29
New Internal Trips (%)	60%	0	60%	0	60%	0
New Internal Trips	60%	18	60%	18	60%	18
New Internal Trips IN	30%	9	30%	9	30%	9
New Internal Trips OUT	30%	9	30%	9	30%	9
New External Trips (%)	40%	0	40%	0	40%	0
New External Trips	40%	12	40%	12	40%	12
New External Trips IN	20%	6	20%	6	20%	6
New External Trips OUT	20%	6	20%	6	20%	6

MIBA			AM		PM	
Peak Generation	100%	19	100%	19	50%	10
Peak IN	70%	13	70%	13	30%	3
Peak Out	30%	6	30%	6	70%	7
Drop In	0%	0	0%	0	0%	0
New Trips	100%	19	100%	19	100%	10
New Internal Trips (%)	30%	0	30%	0	30%	0
New Internal Trips	30%	6	30%	6	30%	3
New Internal Trips IN	21%	4	21%	4	9%	1
New Internal Trips OUT	9%	2	21%	2	21%	2
New External Trips (%)	70%	0	70%	0	70%	0
New External Trips	70%	13	70%	13	70%	7
New External Trips IN	49%	9	21%	2	21%	2
New External Trips OUT	21%	4	49%	5	49%	5

Tavern			AM		PM	
Peak Generation	10%	10	100%	10	100%	100
Peak IN	70%	7	50%	50	50%	50
Peak Out	30%	3	50%	50	50%	50
Drop In	0%	0	0%	0	0%	0
New Trips	100%	10	100%	10	100%	100
New Internal Trips (%)	50%	0	40%	0	40%	0
New Internal Trips	50%	5	40%	0	40%	0
New Internal Trips IN	35%	4	20%	20	35%	20
New Internal Trips OUT	15%	2	20%	20	20%	20
New External Trips (%)	50%	0	60%	0	60%	0
New External Trips	50%	5	60%	60	60%	60
New External Trips IN	35%	4	30%	30	30%	30
New External Trips OUT	15%	2	30%	30	30%	30

AM Summary			Trips		%	
Residential Trips			5	3%		
Food			39	22%		
Retail			21	12%		
Recreational			18	10%		
Medical			81	46%		
Education			3	2%		
Services			7	4%		
Industrial/Office			173	48%		
TOTAL INTERNAL			185	52%		
TOTAL EXTERNAL			359	100%		

PM Summary			Trips		%	
Residential Trips			54	32%		
Food			49	29%		
Retail			18	10%		
Recreational			15	9%		
Medical			4	3%		
Education			169	47%		
Services			189	53%		
Industrial/Office			359	100%		
TOTAL INTERNAL			359	100%		
TOTAL EXTERNAL			783	169	613	22%

Gym			AM		PM	
Peak Generation	100%	32	100%	32	100%	32
Peak IN	50%	16	50%	16	50%	16
Peak Out	50%	16	50%	16	50%	16
Drop In	0%	0	0%	0	0%	0
New Trips	100%	32	100%	32	100%	32
New Internal Trips (%)	50%	0	50%	0	30%	0
New Internal Trips	50%	16	50%	16	30%	9
New Internal Trips IN	25%	8	15%	5	15%	5
New Internal Trips OUT	25%	8	15%	5	15%	5
New External Trips (%)	50%	0	70%	0	70%	0
New External Trips	50%	16	70%	22	70%	22
New External Trips IN	25%	8	35%	11	35%	11
New External Trips OUT	25%	8	35%	11	35%	11

Retail			AM		PM	
Peak Generation	25%	98	75%	293	75%	293
Peak IN	50%	49	50%	146	50%	146
Peak Out	50%	49	50%	146	50%	146
Drop In	0%	0	10%	29	10%	29
New Trips	100%	98	90%	263	90%	263
New Internal Trips (%)	40%	0	15%	0	15%	0
New Internal Trips	40%	39	14%	39	14%	39
New Internal Trips IN	20%	20	7%	20	7%	20
New Internal Trips OUT	20%	20	7%	20	7%	20
New External Trips (%)	60%	0	85%	0	85%	0
New External Trips	60%	59	77%	224	77%	224
New External Trips IN	30%	29	38%	112	38%	112
New External Trips OUT	30%	29	38%	112	38%	112

School			AM		PM	
Peak Generation	100%	218	25%	54	25%	54
Peak IN	50%	109	50%	27	50%	27
Peak Out	50%	109	50%	27	50%	27
Drop In	35%	76	0%	0	0%	0
New Trips	65%	142	100%	54	100%	54
New Internal Trips (%)	30%	0	30%	0	30%	0
New Internal Trips	30%	42	30%	16	30%	16
New Internal Trips IN	10%	21	15%	8	15%	8
New Internal Trips OUT	10%	21	15%	8	15%	8
New External Trips (%)	70%	0	70%	0	70%	0
New External Trips	70%	99	70%	38	70%	38
New External Trips IN	23%	50	35%	19	35%	19
New External Trips OUT	23%	50	35%	19	35%	19

PM Summary			Trips		%	
Residential Trips			12	7%		
Food			54	32%		
Retail			49	29%		
Recreational			18	10%		
Medical			15	9%		
Education			4	3%		
Services			169	47%		
Industrial/Office			189	53%		
TOTAL INTERNAL			359	100%		
TOTAL EXTERNAL			783	169	613	22%

Total Gen			Internal		External	
Residential	359	169	47%	53%		
Non Residential	594	169	29%	71%		
Precinct One	783	169	613	22%	78%	

Sports Field			AM		PM	
Peak Generation	0%	0	0%	0	0%	0
Peak IN	50%	0	50%	0	50%	0
Peak Out	50%	0	50%	0	50%	0
Drop In	0%	0	0%	0	0%	0
New Trips	100%	0	100%	0	100%	0
New Internal Trips (%)	50%	0	50%	0	50%	0
New Internal Trips	50%	0	50%	0	50%	0
New Internal Trips IN	25%	0	25%	0	25%	0
New Internal Trips OUT	25%	0	25%	0	25%	0
New External Trips (%)	50%	0	50%	0	50%	0
New External Trips	50%	0	50%	0	50%	0
New External Trips IN	25%	0	25%	0	25%	0
New External Trips OUT	25%	0	25%	0	25%	0

Office			AM		PM	
Peak Generation	100%	10	100%	10	100%	10
Peak IN	70%	7	70%	7	30%	3
Peak Out	30%	3	70%	7	70%	7
Drop In	0%	0	0%	0	0%	0
New Trips	100%	10	100%	10	100%	10
New Internal Trips (%)	15%	0	15%	0	15%	0
New Internal Trips	15%	2	15%	2	15%	2
New Internal Trips IN	11%	1	11%	1	5%	0
New Internal Trips OUT	5%	0	11%	1	11%	1
New External Trips (%)	85%	0	85%	0	85%	0
New External Trips	85%	9	85%	9	85%	9
New External Trips IN	60%	6	60%	6	26%	3
New External Trips OUT	26%	3	60%	6	60%	6

Residential			AM		PM	
Peak Generation	100%	359	100%	359	100%	359
Peak IN	30%	108	70%	251	70%	251
Peak Out	70%	251	30%	108	30%	108
Drop In	0%	0	0%	0	0%	0
New Trips	100%	359	100%	359	100%	359
New Internal Trips (%)	48%	0	48%	0	47%	0
New Internal Trips	48%	173	47%	169	47%	169
New Internal Trips IN	18%	65	28%	100	28%	100
New Internal Trips OUT	30%	108	19%	70	19%	70
New External Trips (%)	52%	0	52%	0	53%	0
New External Trips	52%	185	52%	185	53%	189
New External Trips IN	15%	56	15%	56	37%	133
New External Trips OUT	36%	130	36%	130	16%	57

2016 Background Traffic Volumes

G:\CEB06067\Analysis\Camp Cable IS Volumes - Roundabout Option.xls

Waterford Tamborine Road



	(198)	288	L	(196)	(769)	
			T	108	232	
Camp Cable	(147)	84	R	R	T	L Site Access
	L	T	R	R		
	89	517		T		
	(84)	(181)		L		

Adopted 2026 Background Traffic Volumes

Assumed Growth Rate 0.03 pa

Waterford Tamborine Road

	(258)	375	L	(255)	(1,000)	
			T	141	301	
Camp Cable	(191)	109	R	R	T	L Site Access
	L	T	R	R		
	115	672		T		
	(109)	(236)		L		

AM Matrix Volumes

	North	West	South	East
North	0	141	301	0
West	375	0	109	0
South	672	115	0	0
East	0	0	0	0

Check
1,713 1,713

PM Matrix Volumes

	North	West	South	East
North	0	255	1,000	0
West	258	0	191	0
South	236	109	0	0
East	0	0	0	0

Check
(2,048) (2,048)

Adopted 2026 Traffic Volumes with 85% of Development Complete

G:\CEB06067\Reporting\Camp Cable Intersection Report 191110\CEB06067 Yarrabilba Internal Road Network - Camp Cable Intersection.19.Nov10.pdf

Waterford Tamborine Road

	(199)	289	L	(297)	(1,472)	(850)
	(284)	81	T	164	957	218
Camp Cable	(562)	375	R	R	T	L Site Access
	L	T	R	R	311	(432)
	330	751	51	T	109	(146)
	(481)	(1,171)	(116)	L	31	(132)

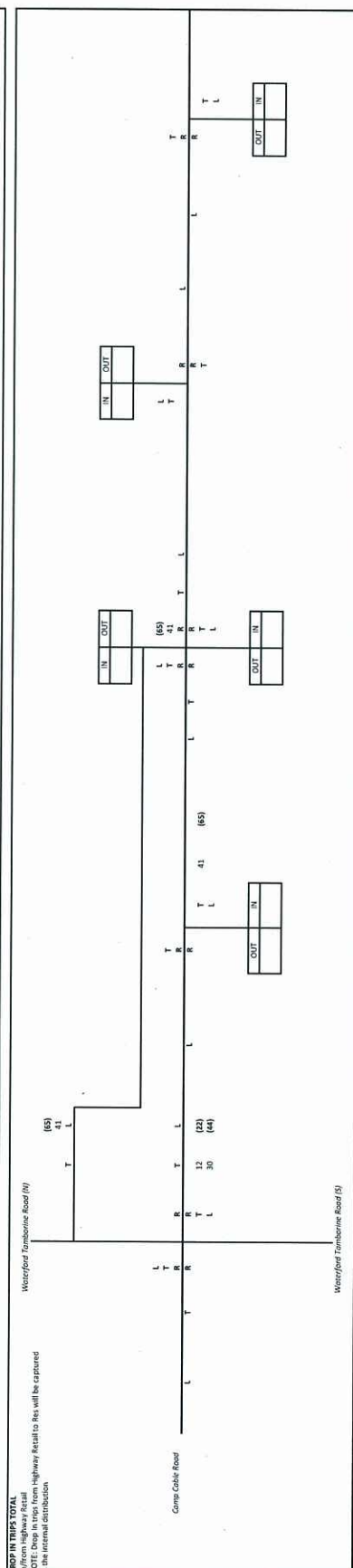
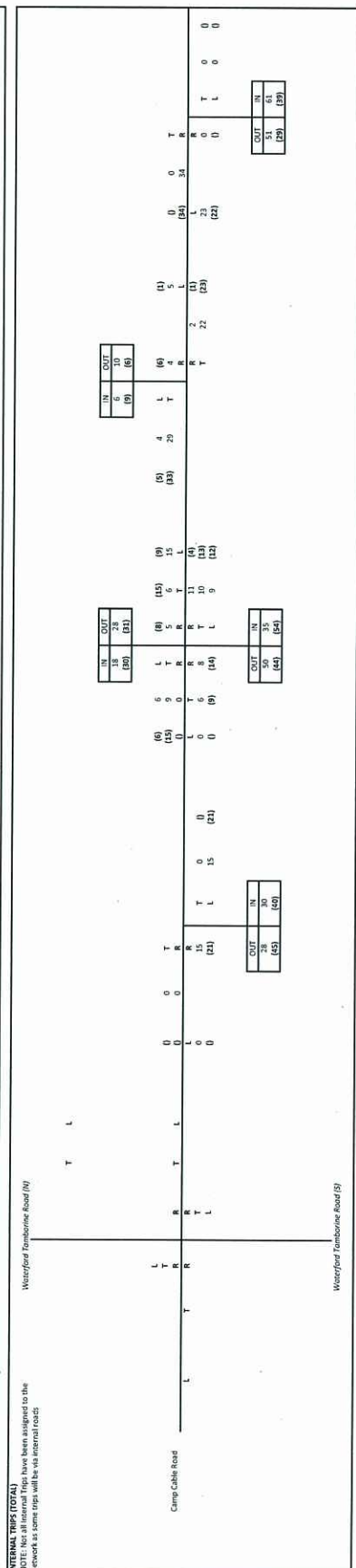
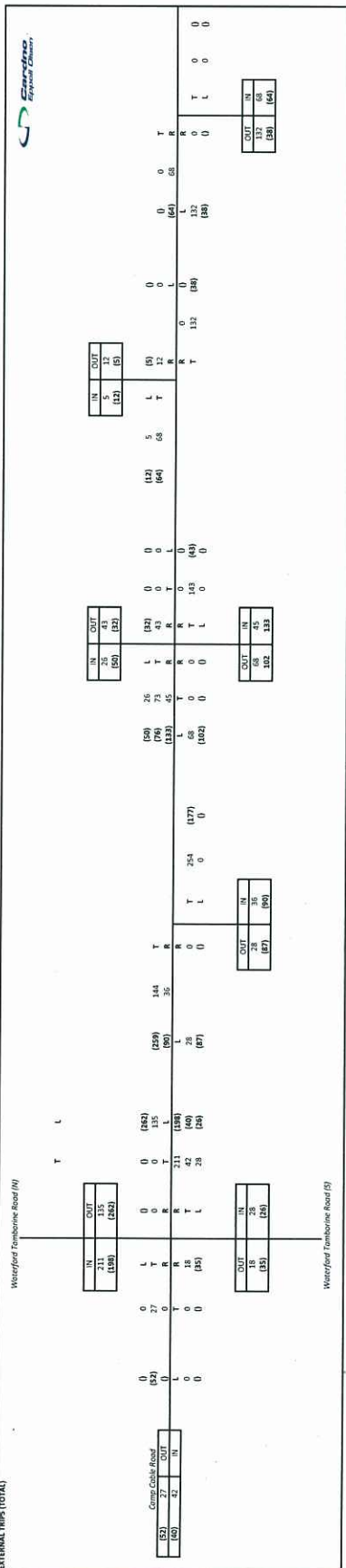
Waterford Tamborine Road

	(7)	42	L	(11)	(61)	(24)	
	(820)	451	T	28	159	64	
Camp Cable	(728)	884	R	R	T	L	Site Access
	L	T	R	R	97	(16)	
	1,086	239	43	T	834	(542)	
	(490)	(41)	(48)	L	70	(27)	

Waterford Tamborine Road

85% Scenario

	(6)	36	L	(9)	(52)	(20)	
	(697)	383	T	24	135	54	
Camp Cable	(619)	751	R	R	T	L	Site Access
	L	T	R	R	82	(14)	
	923	203	37	T	709	(461)	
	(417)	(35)	(41)	L	60	(23)	



TOTAL DEVELOPMENT TRAFFIC

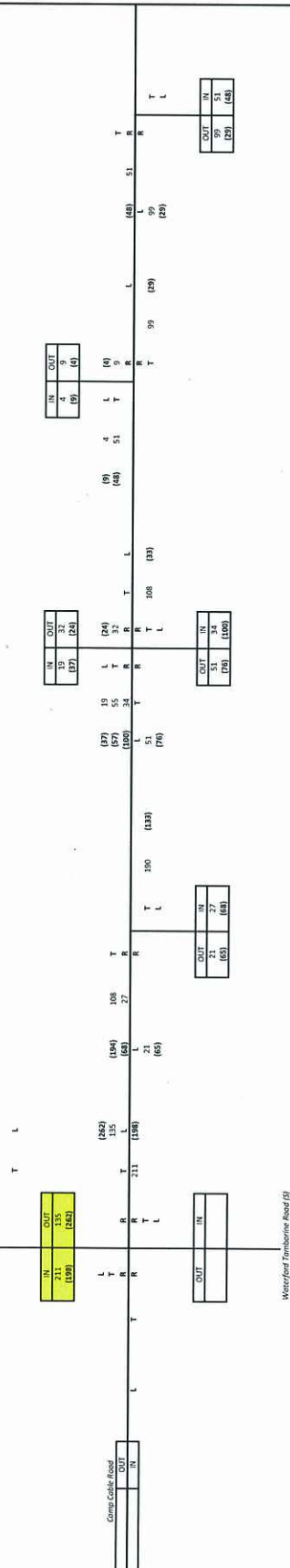
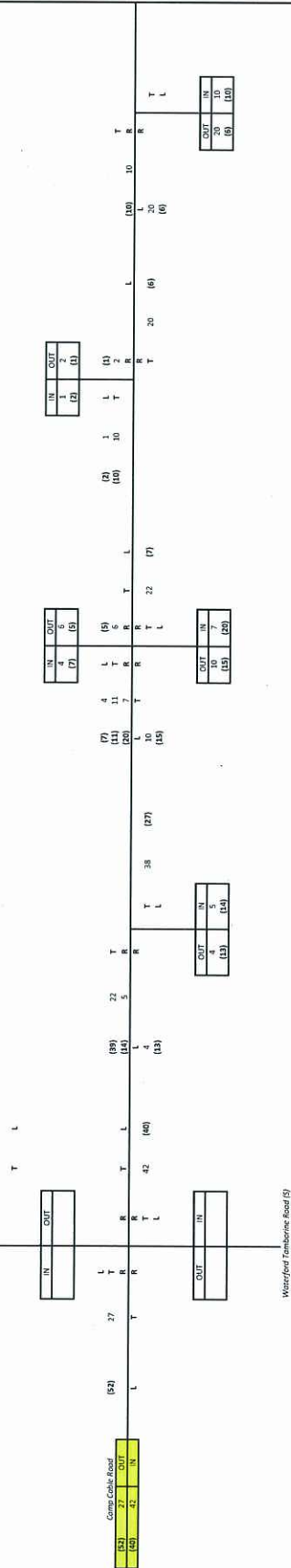
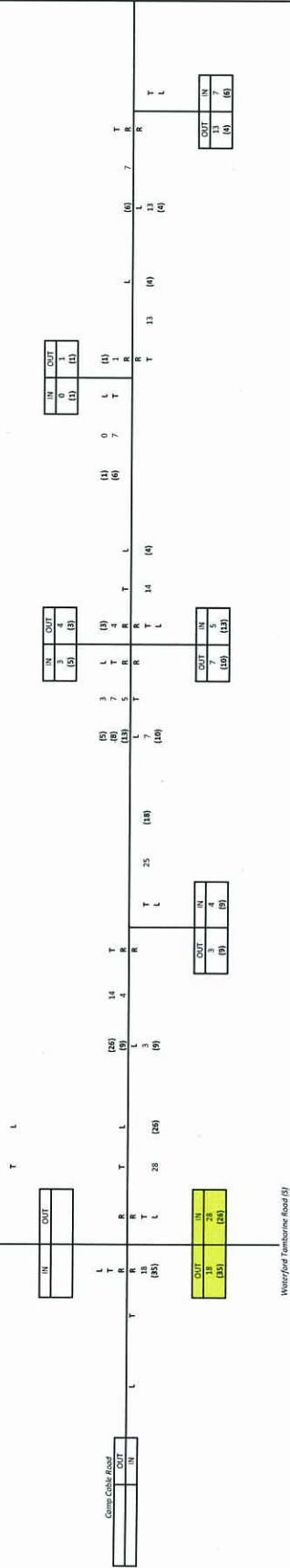
Waterford Tambourine Band (SI)

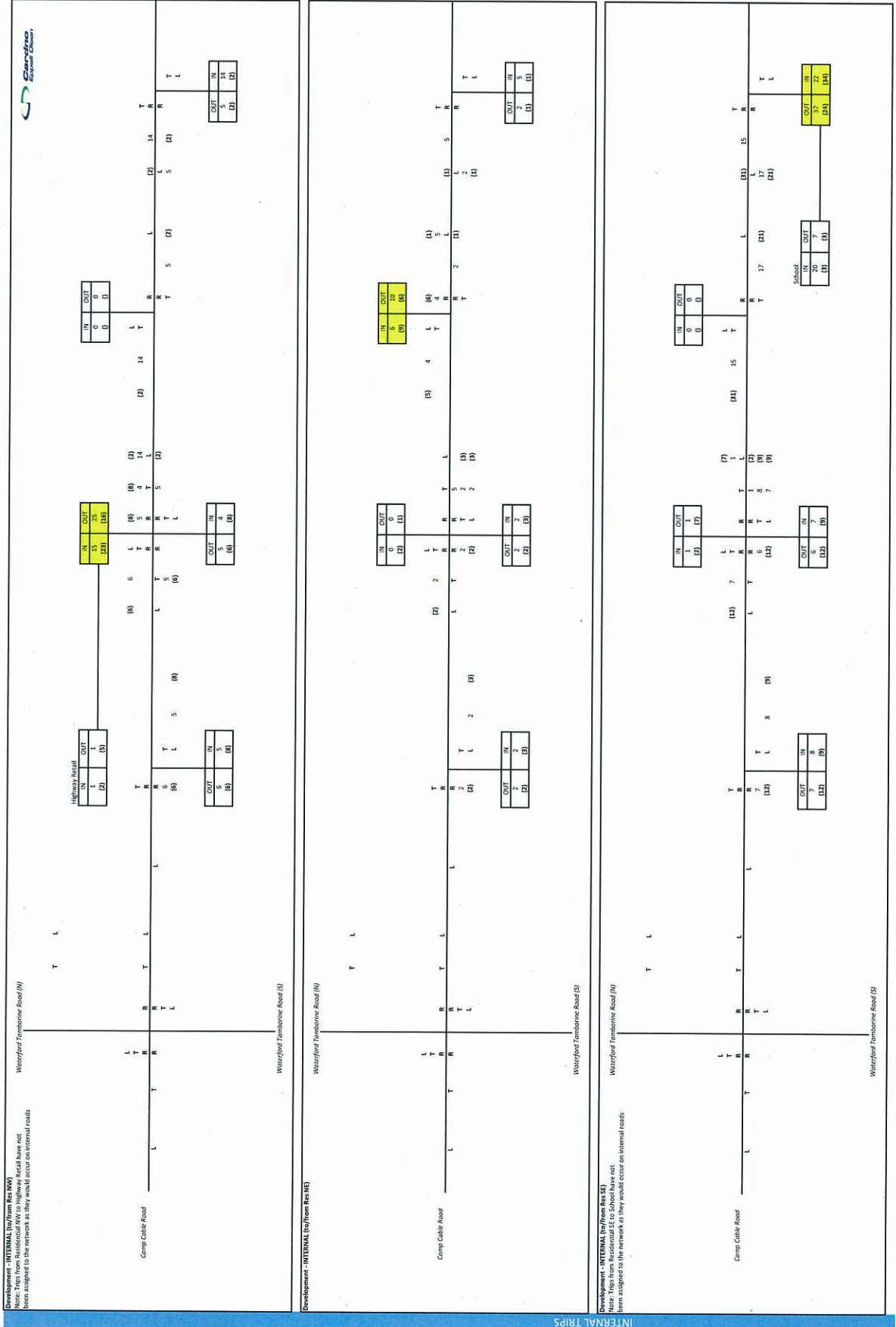
Waterford Tamborine Road (N)

Waterford Tamborine Road (S)

Waterford Tamborine Road (N1)

Unmodified Terebinthine Resin (TR)





Appendix C

SIDRA Output Tables

MOVEMENT SUMMARY

Site: 16AM - BG + DEV - Upgraded Intersection

Waterford Tamborine Road/Camp Cable Road

2016 PM - Background Traffic + Precinct One

5 Year Design Horizon

Signals - Fixed Time Cycle Time = 115 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow 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: Waterford Tamborine Rd (S)											
1	L	89	3.0	0.091	12.0	LOS B	0.8	5.7	0.17	0.71	57.6
2	T	517	3.0	0.758	35.6	LOS D	26.4	189.4	0.95	0.85	35.0
3	R	18	3.0	0.079	22.5	LOS C	0.7	5.4	0.61	0.68	37.1
Approach		624	3.0	0.758	31.9	LOS C	26.4	189.4	0.83	0.82	37.1
East: Site Access (E)											
4	L	58	3.0	0.114	9.4	LOS A	0.8	5.9	0.23	0.64	47.8
5	T	54	3.0	0.191	47.0	LOS D	3.8	27.6	0.91	0.69	25.2
6	R	211	3.0	0.785	63.9	LOS E	13.8	99.3	1.00	0.90	21.8
Approach		323	3.0	0.785	51.3	LOS D	13.8	99.3	0.85	0.82	24.8
North: Waterford Tamborine Rd (N)											
7	L	135	3.0	0.146	8.1	LOS A	0.8	5.5	0.13	0.63	49.1
8	T	190	3.0	0.279	28.2	LOS C	9.3	66.5	0.76	0.63	39.6
9	R	108	3.0	0.286	31.6	LOS C	4.3	30.9	0.85	0.78	39.4
Approach		433	3.0	0.286	22.8	LOS C	9.3	66.5	0.58	0.67	41.9
West: Camp Cable Rd (W)											
10	L	288	3.0	0.158	7.7	NA ⁹	NA ⁹	NA ⁹	NA ⁹	0.60	49.8
11	T	27	3.0	0.385	47.9	LOS D	7.4	52.8	0.94	0.75	24.1
12	R	84	3.0	0.385	56.0	LOS E	7.4	52.8	0.94	0.79	23.9
Approach		399	3.0	0.385	20.6	LOS C	7.4	52.8	0.26	0.65	38.4
All Vehicles		1779	3.0	0.785	30.7	LOS C	26.4	189.4	0.64	0.75	35.4

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS E. LOS Method for individual vehicle movements: Delay (HCM).

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

⁹ Continuous movement

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	49.8	LOS E	0.2	0.2	0.93	0.93
P3	Across E approach	53	51.7	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	53	51.7	LOS E	0.2	0.2	0.95	0.95
P7	Across W approach	53	48.9	LOS E	0.2	0.2	0.92	0.92
All Pedestrians		212	50.5				0.94	0.94

Level of Service (Aver. Int. Delay): LOS E. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS E. LOS Method for individual pedestrian movements: Delay (HCM).

Processed: Thursday, 24 February 2011 8:43:11 AM

SIDRA INTERSECTION 5.0.5.1510

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SIDRA
INTERSECTION

PHASING SUMMARY

Site: 16AM - BG + DEV - Upgraded Intersection

Waterford Tamborine Road/Camp Cable Road

2016 PM - Background Traffic + Precinct One

5 Year Design Horizon

Signals - Fixed Time Cycle Time = 115 seconds (Optimum Cycle Time - Minimum Delay)

Phase times determined by the program

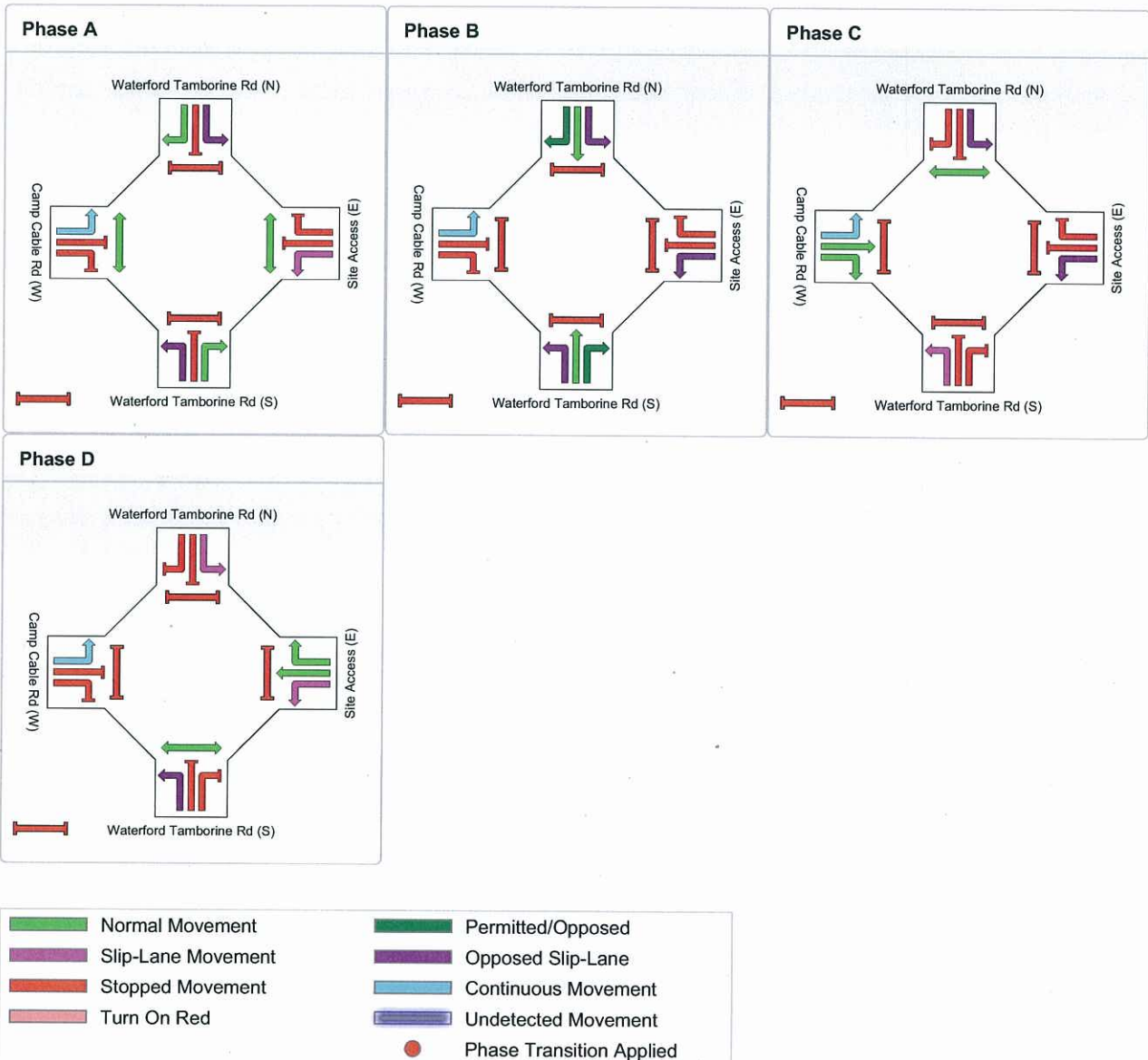
Sequence: 4 Phase

Input Sequence: A, B, C, D

Output Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	15	41	18	17
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	21	47	24	23
Phase Split	18 %	41 %	21 %	20 %



Processed: Thursday, 24 February 2011 8:43:11 AM

SIDRA INTERSECTION 5.0.5.1510

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INTERSECTION

MOVEMENT SUMMARY

Site: 16PM - BG + DEV - Upgraded Intersection

Waterford Tamborine Road/Camp Cable Road

2016 PM - Background Traffic + Precinct One

5 Year Design Horizon

Signals - Fixed Time Cycle Time = 130 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Waterford Tamborine Rd (S)											
1	L	84	3.0	0.098	12.3	LOS B	1.0	7.3	0.18	0.71	57.2
2	T	181	3.0	0.216	23.9	LOS C	8.7	62.4	0.66	0.55	42.8
3	R	35	3.0	0.152	30.3	LOS C	1.4	10.2	0.82	0.73	32.8
Approach		300	3.0	0.216	21.4	LOS C	8.7	62.4	0.54	0.62	44.6
East: Site Access (E)											
4	L	70	3.0	0.351	22.8	LOS C	3.1	22.4	0.55	0.70	37.1
5	T	61	3.0	0.244	55.5	LOS E	4.9	35.0	0.94	0.72	22.9
6	R	198	3.0	0.833	75.1	LOS E	14.9	106.9	1.00	0.93	19.6
Approach		329	3.0	0.833	60.3	LOS E	14.9	106.9	0.89	0.84	22.5
North: Waterford Tamborine Rd (N)											
7	L	262	3.0	0.339	8.4	LOS A	2.2	16.1	0.18	0.64	48.8
8	T	704	3.0	0.839	37.9	LOS D	41.5	298.0	0.96	0.91	33.9
9	R	196	3.0	0.437	25.0	LOS C	7.4	53.3	0.60	0.78	44.1
Approach		1162	3.0	0.839	29.1	LOS C	41.5	298.0	0.72	0.83	37.7
West: Camp Cable Rd (W)											
10	L	198	3.0	0.109	7.7	NA ⁹	NA ⁹	NA ⁹	NA ⁹	0.60	49.8
11	T	52	3.0	0.827	66.4	LOS E	14.9	106.8	1.00	0.94	19.9
12	R	147	3.0	0.826	74.5	LOS E	14.9	106.8	1.00	0.94	19.9
Approach		397	3.0	0.826	40.1	LOS D	14.9	106.8	0.50	0.77	28.5
All Vehicles		2188	3.0	0.839	34.7	LOS C	41.5	298.0	0.68	0.79	33.4

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS E. LOS Method for individual vehicle movements: Delay (HCM).

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

⁹ Continuous movement

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	57.2	LOS E	0.2	0.2	0.94	0.94
P3	Across E approach	53	59.1	LOS E	0.2	0.2	0.95	0.95
P5	Across N approach	53	60.1	LOS F	0.2	0.2	0.96	0.96
P7	Across W approach	53	56.3	LOS E	0.2	0.2	0.93	0.93
All Pedestrians		212	58.2				0.95	0.95

Level of Service (Aver. Int. Delay): LOS E. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS F. LOS Method for individual pedestrian movements: Delay (HCM).

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INTERSECTION

PHASING SUMMARY

Site: 16PM - BG + DEV - Upgraded Intersection

Waterford Tamborine Road/Camp Cable Road
2016 PM - Background Traffic + Precinct One
5 Year Design Horizon
Signals - Fixed Time Cycle Time = 130 seconds (Optimum Cycle Time - Minimum Delay)

Phase times determined by the program

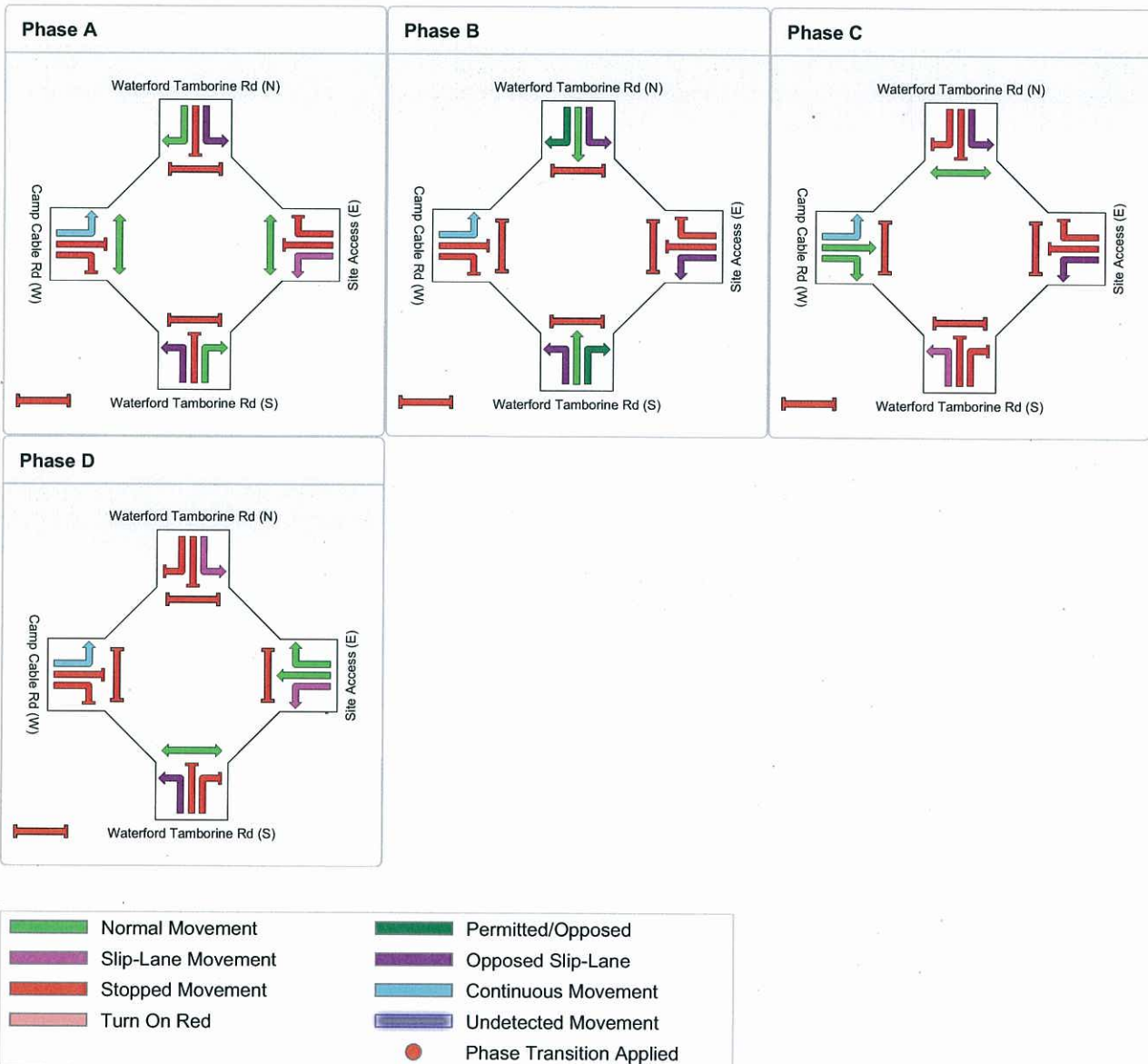
Sequence: 4 Phase

Input Sequence: A, B, C, D

Output Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	15	57	17	17
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	21	63	23	23
Phase Split	16 %	48 %	18 %	18 %



MOVEMENT SUMMARY

Site: 26AM - 85% Development Scenario

Waterford Tamborine Road/Camp Cable Road

2026 AM

85% Development Scenario

Signals - Fixed Time Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Waterford Tamborine Rd (S)											
1	L	330	3.0	0.182	11.2	NA ⁹	NA ⁹	NA ⁹	NA ⁹	0.69	58.8
2	T	751	3.0	0.465	43.0	LOS D	15.0	107.6	0.88	0.74	31.8
3	R	51	3.0	0.180	61.6	LOS E	4.2	29.9	0.91	0.75	22.4
Approach		1132	3.0	0.465	34.6	LOS C	15.0	107.6	0.62	0.73	36.0
East: Site Access (E)											
4	L	31	3.0	0.118	14.4	LOS B	1.0	7.0	0.37	0.66	43.1
5	T	109	3.0	0.296	50.4	LOS D	7.8	56.3	0.90	0.72	24.3
6	R	311	3.0	0.444	60.1	LOS E	10.8	77.6	0.93	0.80	22.8
Approach		451	3.0	0.444	54.6	LOS D	10.8	77.6	0.89	0.77	23.9
North: Waterford Tamborine Rd (N)											
7	L	218	3.0	0.120	7.7	NA ⁹	NA ⁹	NA ⁹	NA ⁹	0.60	49.8
8	T	957	3.0	0.593	44.9	LOS D	19.1	137.3	0.92	0.79	31.0
9	R	164	3.0	0.580	69.3	LOS E	11.8	85.1	0.98	0.81	24.5
Approach		1339	3.0	0.593	41.8	LOS D	19.1	137.3	0.78	0.76	31.7
West: Camp Cable Rd (W)											
10	L	289	3.0	0.389	12.3	LOS B	6.9	49.3	0.36	0.70	45.0
11	T	81	3.0	0.645	54.7	LOS D	15.5	111.2	0.98	0.82	22.5
12	R	375	3.0	0.645	62.5	LOS E	15.5	111.2	0.98	0.83	22.3
Approach		745	3.0	0.645	42.2	LOS D	15.5	111.2	0.74	0.78	27.8
All Vehicles		3667	3.0	0.645	41.2	LOS D	19.1	137.3	0.73	0.76	30.9

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS E. LOS Method for individual vehicle movements: Delay (HCM).

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

⁹ Continuous movement

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	61.6	LOS F	0.2	0.2	0.96	0.96
P3	Across E approach	53	61.6	LOS F	0.2	0.2	0.96	0.96
P5	Across N approach	53	61.6	LOS F	0.2	0.2	0.96	0.96
P7	Across W approach	53	58.8	LOS E	0.2	0.2	0.93	0.93
All Pedestrians		212	60.9				0.95	0.95

Level of Service (Aver. Int. Delay): LOS F. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS F. LOS Method for individual pedestrian movements: Delay (HCM).

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INTERSECTION

PHASING SUMMARY

Site: 26AM - 85% Development Scenario

Waterford Tamborine Road/Camp Cable Road

2026 AM

85% Development Scenario

Signals - Fixed Time Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Phase times determined by the program

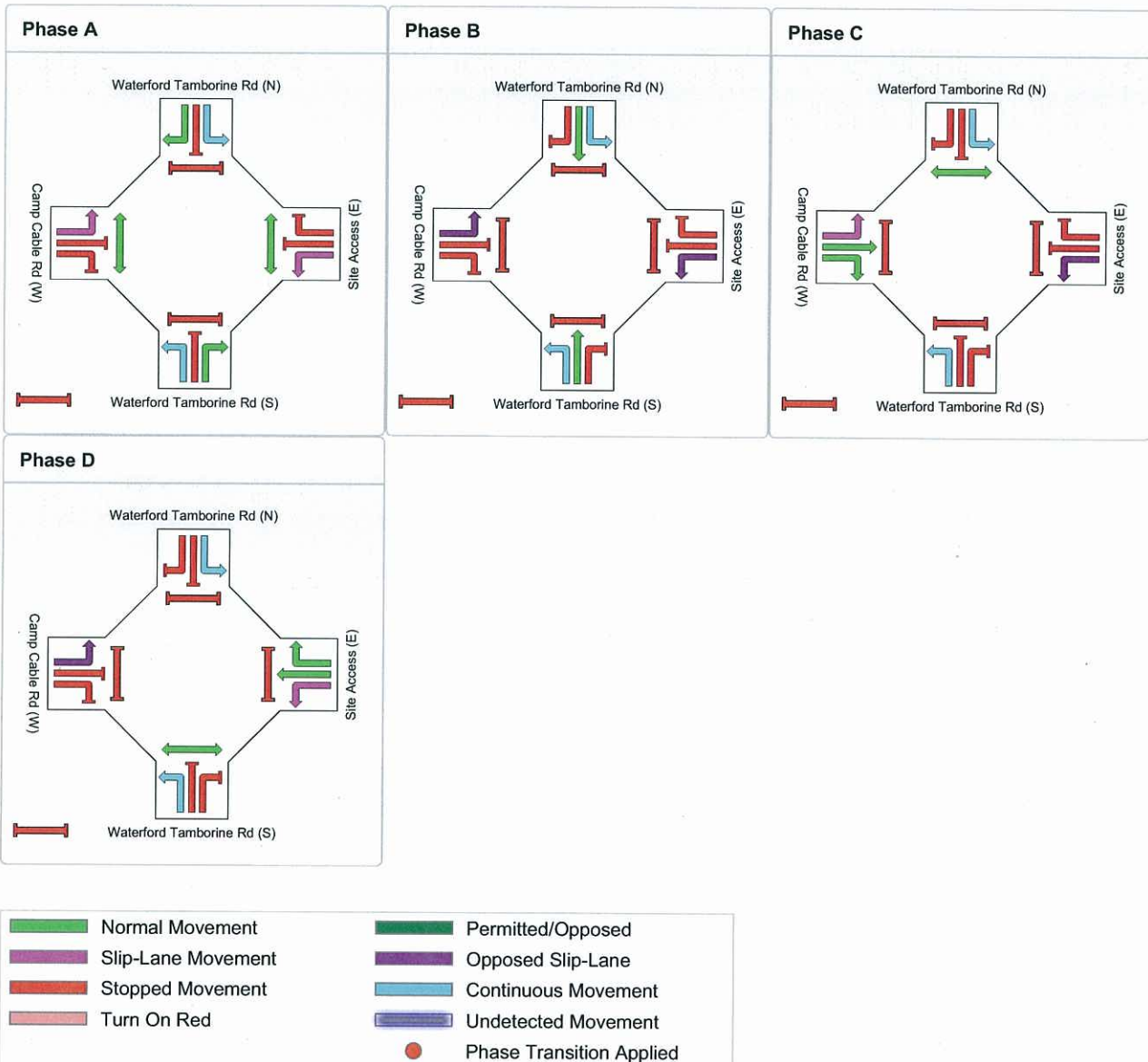
Sequence: 4 Phase

Input Sequence: A, B, C, D

Output Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	21	38	26	26
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	27	44	32	32
Phase Split	20 %	33 %	24 %	24 %



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SIDRA INTERSECTION 5.0.5.1510

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INTERSECTION

MOVEMENT SUMMARY

Site: 26PM - 85% Development
Scenario

Waterford Tamborine Road/Camp Cable Road

2026 PM

85% Development Scenario

Signals - Fixed Time Cycle Time = 150 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Waterford Tamborine Rd (S)											
1	L	481	3.0	0.265	11.2	NA ⁹	NA ⁹	NA ⁹	NA ⁹	0.69	58.8
2	T	1171	3.0	0.765	55.4	LOS E	27.1	194.6	0.99	0.87	27.3
3	R	116	3.0	0.383	68.2	LOS E	9.3	67.0	0.94	0.79	21.0
Approach		1768	3.0	0.765	44.2	LOS D	27.1	194.6	0.71	0.82	31.3
East: Site Access (E)											
4	L	132	3.0	0.763	40.0	LOS D	8.5	61.1	0.65	0.78	28.8
5	T	146	3.0	0.440	60.1	LOS E	11.3	81.0	0.94	0.77	21.9
6	R	432	3.0	0.685	71.4	LOS E	16.3	117.3	0.99	0.84	20.4
Approach		710	3.0	0.763	63.2	LOS E	16.3	117.3	0.92	0.81	21.9
North: Waterford Tamborine Rd (N)											
7	L	850	3.0	0.468	7.7	NA ⁹	NA ⁹	NA ⁹	NA ⁹	0.60	49.7
8	T	1472	3.0	0.962	96.0	LOS F	47.5	341.4	1.00	1.17	18.9
9	R	297	3.0	0.980	127.6	LOS F	30.8	220.9	1.00	1.10	15.5
Approach		2619	3.0	0.980	70.9	LOS E	47.5	341.4	0.68	0.98	22.5
West: Camp Cable Rd (W)											
10	L	199	3.0	0.342	18.0	LOS B	7.2	51.3	0.46	0.71	40.3
11	T	284	3.0	0.981	112.6	LOS F	44.7	321.0	1.00	1.27	14.2
12	R	562	3.0	0.981	121.0	LOS F	44.7	321.0	1.00	1.19	14.0
Approach		1045	3.0	0.981	99.1	LOS F	44.7	321.0	0.90	1.12	16.1
All Vehicles		6142	3.0	0.981	67.1	LOS E	47.5	341.4	0.75	0.94	22.9

Level of Service (Aver. Int. Delay): LOS E. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (HCM).

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

⁹ Continuous movement

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	69.1	LOS F	0.2	0.2	0.96	0.96
P3	Across E approach	53	65.3	LOS F	0.2	0.2	0.93	0.93
P5	Across N approach	53	60.8	LOS F	0.2	0.2	0.90	0.90
P7	Across W approach	53	62.6	LOS F	0.2	0.2	0.91	0.91
All Pedestrians		212	64.4				0.93	0.93

Level of Service (Aver. Int. Delay): LOS F. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS F. LOS Method for individual pedestrian movements: Delay (HCM).

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Road.sip

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PHASING SUMMARY

Site: 26PM - 85% Development Scenario

Waterford Tamborine Road/Camp Cable Road

2026 PM

85% Development Scenario

Signals - Fixed Time Cycle Time = 150 seconds (Optimum Cycle Time - Minimum Delay)

Phase times determined by the program

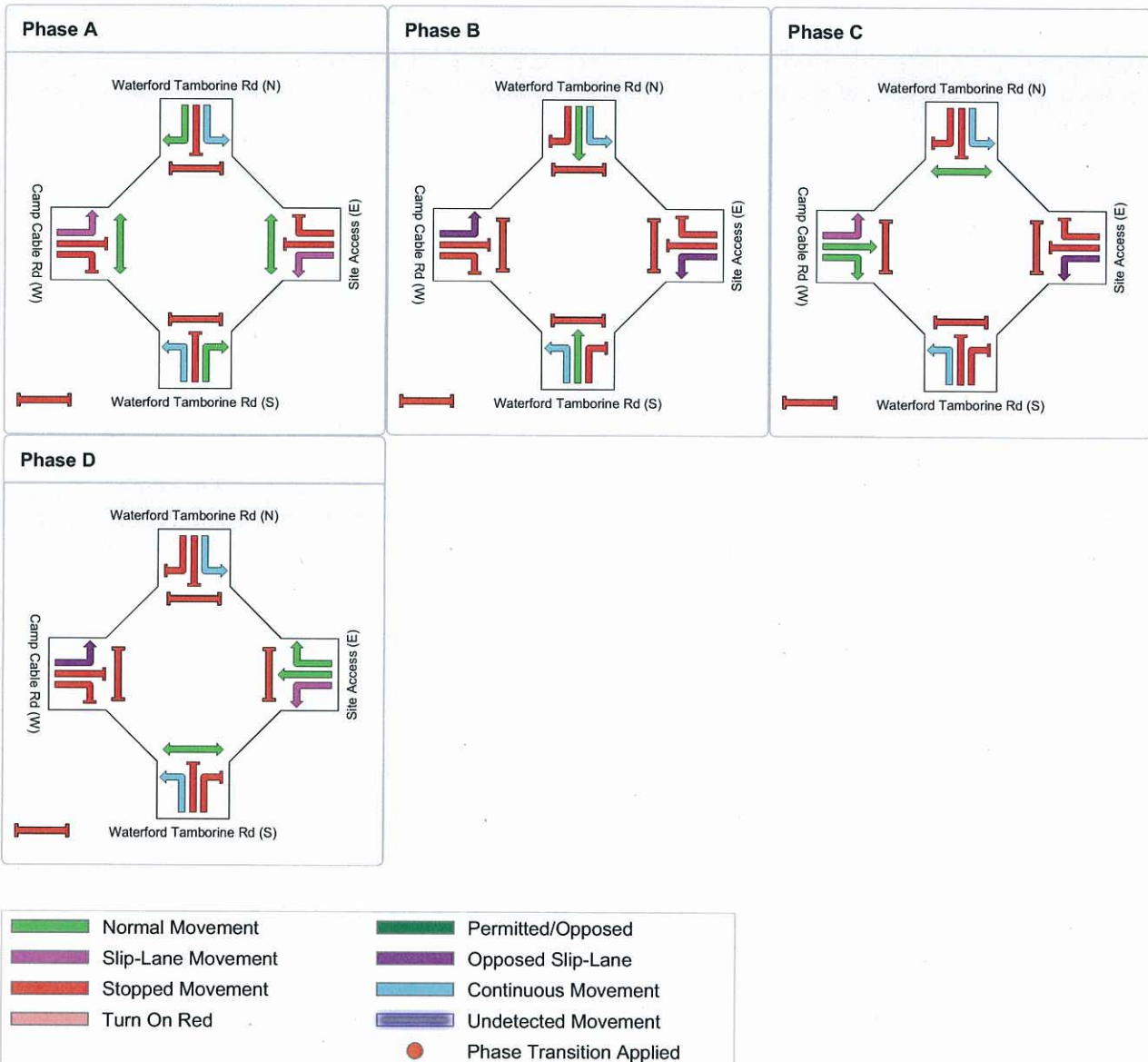
Sequence: 4 Phase

Input Sequence: A, B, C, D

Output Sequence: A, B, C, D

Phase Timing Results

Phase	A	B	C	D
Green Time (sec)	25	40	35	26
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	31	46	41	32
Phase Split	21 %	31 %	27 %	21 %



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INTERSECTION

MOVEMENT SUMMARY

Site: 2016AM - Precinct One

CEB06067 - Yarrabilba Precinct One
Intersection 1
2016 AM Precinct One
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Minor Road (S)											
1	L	28	3.0	0.080	12.2	LOS B	0.3	2.5	0.47	0.69	45.0
3	R	15	3.0	0.080	12.2	LOS B	0.3	2.5	0.47	0.82	45.0
Approach		43	3.0	0.080	12.2	LOS B	0.3	2.5	0.47	0.74	45.0
East: Town Centre Entry Road (E)											
4	L	15	3.0	0.081	8.3	LOS A	0.0	0.0	0.00	1.03	49.0
5	T	295	3.0	0.081	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		310	3.0	0.081	0.4	LOS A	0.0	0.0	0.00	0.05	59.4
West: Town Centre Entry Road (W)											
11	T	144	3.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R	36	3.0	0.042	9.8	LOS A	0.2	1.3	0.38	0.67	47.3
Approach		180	3.0	0.042	2.0	LOS A	0.2	1.3	0.08	0.13	57.0
All Vehicles		533	3.0	0.081	1.9	NA	0.3	2.5	0.06	0.13	57.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: 2016PM - Precinct One

CEB06067 - Yarrabilba Precinct One
Intersection 1
2016 PM - Precinct One
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Minor Road (S)											
1	L	87	3.0	0.179	11.9	LOS B	0.8	5.9	0.45	0.70	45.2
3	R	21	3.0	0.179	11.9	LOS B	0.8	5.9	0.45	0.81	45.2
Approach		108	3.0	0.179	11.9	LOS B	0.8	5.9	0.45	0.72	45.2
East: Town Centre Entry Road (E)											
4	L	21	3.0	0.069	8.3	LOS A	0.0	0.0	0.00	0.99	49.0
5	T	243	3.0	0.069	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		264	3.0	0.069	0.7	LOS A	0.0	0.0	0.00	0.08	58.9
West: Town Centre Entry Road (W)											
11	T	259	3.0	0.068	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R	90	3.0	0.099	9.6	LOS A	0.5	3.3	0.36	0.68	47.4
Approach		349	3.0	0.099	2.5	LOS A	0.5	3.3	0.09	0.17	56.2
All Vehicles		721	3.0	0.179	3.2	NA	0.8	5.9	0.11	0.22	55.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

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INTERSECTION

MOVEMENT SUMMARY

Site: 2026AM - 85% of Yarrabilba

CEB06067 - Yarrabilba Precinct One
Intersection 1
2026 AM - 85% of Yarrabilba
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow 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: Minor Road (S)											
1	L	63	3.0	0.434	23.8	LOS C	2.5	17.6	0.72	1.00	36.3
3	R	61	3.0	0.436	23.8	LOS C	2.5	17.6	0.72	0.99	36.3
Approach		124	3.0	0.436	23.8	LOS C	2.5	17.6	0.72	1.00	36.3
East: Town Centre Entry Road (E)											
4	L	73	3.0	0.121	8.3	LOS A	0.0	0.0	0.00	0.90	49.0
5	T	388	3.0	0.122	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		461	3.0	0.122	1.3	LOS A	0.0	0.0	0.00	0.14	57.9
West: Town Centre Entry Road (W)											
11	T	273	3.0	0.071	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R	77	3.0	0.107	11.0	LOS B	0.5	3.5	0.48	0.76	46.1
Approach		350	3.0	0.107	2.4	LOS B	0.5	3.5	0.11	0.17	56.3
All Vehicles		935	3.0	0.436	4.7	NA	2.5	17.6	0.14	0.27	53.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

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INTERSECTION

MOVEMENT SUMMARY

Site: 2026AM - 85% of Yarrabilba -
Right Turn Out Ban

CEB06067 - Yarrabilba Precinct One
Intersection 1
2026 AM - 85% of Yarrabilba - Ban right turn out
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Minor Road (S)											
1	L	63	3.0	0.084	10.7	LOS B	0.4	2.7	0.46	0.74	46.4
Approach		63	3.0	0.084	10.7	LOS B	0.4	2.7	0.46	0.74	46.4
East: Town Centre Entry Road (E)											
4	L	73	3.0	0.121	8.3	LOS A	0.0	0.0	0.00	0.90	49.0
5	T	388	3.0	0.122	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		461	3.0	0.122	1.3	LOS A	0.0	0.0	0.00	0.14	57.9
West: Town Centre Entry Road (W)											
11	T	273	3.0	0.071	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R	77	3.0	0.107	11.0	LOS B	0.5	3.5	0.48	0.76	46.1
Approach		350	3.0	0.107	2.4	LOS B	0.5	3.5	0.11	0.17	56.3
All Vehicles		874	3.0	0.122	2.4	NA	0.5	3.5	0.08	0.20	56.3

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

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INTERSECTION

MOVEMENT SUMMARY

Site: 2026PM - 85% of Yarrabilba

CEB06067 - Yarrabilba Precinct One
Intersection 1
2026 AM - 85% of Yarrabilba
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Minor Road (S)											
1	L	134	3.0	2.351	2767.2	LOS F	197.5	1418.2	1.00	12.65	0.8
3	R	126	3.0	2.333	2767.2	LOS F	197.5	1418.2	1.00	8.56	0.8
Approach		260	3.0	2.334	2767.2	LOS F	197.5	1418.2	1.00	10.67	0.8
East: Town Centre Entry Road (E)											
4	L	124	3.0	0.185	8.3	LOS A	0.0	0.0	0.00	0.88	49.0
5	T	576	3.0	0.185	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		700	3.0	0.185	1.5	LOS A	0.0	0.0	0.00	0.16	57.7
West: Town Centre Entry Road (W)											
11	T	1118	3.0	0.292	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R	132	3.0	0.252	14.1	LOS B	1.2	8.8	0.63	0.90	43.3
Approach		1250	3.0	0.292	1.5	LOS B	1.2	8.8	0.07	0.09	57.7
All Vehicles		2210	3.0	2.334	326.9	NA	197.5	1418.2	0.16	1.36	6.0

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

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INTERSECTION

MOVEMENT SUMMARY

Site: 2026PM - 85% of Yarrabilba -
Right Turn Out Ban

CEB06067 - Yarrabilba Precinct One
Intersection 1
2026 AM - 85% of Yarrabilba - Ban Right Turn Out
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Minor Road (S)											
1	L	134	3.0	0.234	13.2	LOS B	1.1	8.1	0.59	0.87	44.0
Approach		134	3.0	0.234	13.2	LOS B	1.1	8.1	0.59	0.87	44.0
East: Town Centre Entry Road (E)											
4	L	124	3.0	0.185	8.3	LOS A	0.0	0.0	0.00	0.88	49.0
5	T	576	3.0	0.185	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		700	3.0	0.185	1.5	LOS A	0.0	0.0	0.00	0.16	57.7
West: Town Centre Entry Road (W)											
11	T	1118	3.0	0.292	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R	132	3.0	0.252	14.1	LOS B	1.2	8.8	0.63	0.90	43.3
Approach		1250	3.0	0.292	1.5	LOS B	1.2	8.8	0.07	0.09	57.7
All Vehicles		2084	3.0	0.292	2.2	NA	1.2	8.8	0.08	0.17	56.5

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

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INTERSECTION

MOVEMENT SUMMARY

Site: 2016AM - Development Traffic

CEB06067 - Yarrabilba Precinct One
Intersection 2
2016 AM - Precinct One
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Minor Road (S)											
1	L	68	3.0	0.084	7.5	LOS A	0.4	2.9	0.35	0.59	48.9
2	T	6	3.0	0.083	6.5	LOS A	0.4	2.9	0.35	0.51	49.4
3	R	8	3.0	0.083	12.2	LOS B	0.4	2.9	0.35	0.77	45.8
Approach		82	3.0	0.084	7.9	LOS B	0.4	2.9	0.35	0.60	48.6
East: Town Centre Entry Road (E)											
4	L	9	3.0	0.065	7.3	LOS A	0.4	2.9	0.28	0.59	49.4
5	T	154	3.0	0.065	6.0	LOS A	0.4	2.9	0.28	0.47	50.2
6	R	11	3.0	0.065	11.7	LOS B	0.4	2.8	0.29	0.80	46.3
Approach		174	3.0	0.065	6.4	LOS B	0.4	2.9	0.28	0.50	49.9
North: Minor Road (N)											
7	L	15	3.0	0.097	6.8	LOS A	0.5	3.4	0.25	0.50	49.5
8	T	6	3.0	0.097	5.9	LOS A	0.5	3.4	0.25	0.44	50.0
9	R	89	3.0	0.097	11.7	LOS B	0.5	3.4	0.25	0.69	45.7
Approach		110	3.0	0.097	10.7	LOS B	0.5	3.4	0.25	0.65	46.3
West: Town Centre Entry Road (W)											
10	L	31	3.0	0.052	6.9	LOS A	0.3	2.3	0.10	0.58	50.1
11	T	83	3.0	0.052	5.5	LOS A	0.3	2.3	0.10	0.42	51.5
12	R	45	3.0	0.052	11.2	LOS B	0.3	2.3	0.11	0.75	46.2
Approach		159	3.0	0.052	7.4	LOS B	0.3	2.3	0.10	0.54	49.6
All Vehicles		525	3.0	0.097	7.8	LOS A	0.5	3.4	0.23	0.56	48.8

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

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INTERSECTION

MOVEMENT SUMMARY

Site: 2016PM - Development Traf-
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CEB06067 - Yarrabilba Precinct One
Intersection 2
2016 PM - Precinct One
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Minor Road (S)											
1	L	102	3.0	0.114	6.9	LOS A	0.6	4.3	0.29	0.54	49.5
2	T	9	3.0	0.114	6.1	LOS A	0.6	4.3	0.29	0.48	50.0
3	R	14	3.0	0.114	11.9	LOS B	0.6	4.3	0.29	0.76	46.0
Approach		125	3.0	0.114	7.4	LOS B	0.6	4.3	0.29	0.56	49.1
East: Town Centre Entry Road (E)											
4	L	12	3.0	0.030	7.7	LOS A	0.2	1.3	0.37	0.59	48.9
5	T	56	3.0	0.030	6.4	LOS A	0.2	1.3	0.38	0.49	49.5
6	R	5	3.0	0.030	12.2	LOS B	0.2	1.3	0.38	0.78	46.1
Approach		73	3.0	0.030	7.0	LOS B	0.2	1.3	0.37	0.52	49.1
North: Minor Road (N)											
7	L	9	3.0	0.123	7.2	LOS A	0.6	4.3	0.33	0.55	48.9
8	T	15	3.0	0.123	6.3	LOS A	0.6	4.3	0.33	0.50	49.4
9	R	106	3.0	0.123	12.1	LOS B	0.6	4.3	0.33	0.72	45.4
Approach		130	3.0	0.123	11.1	LOS B	0.6	4.3	0.33	0.68	46.0
West: Town Centre Entry Road (W)											
10	L	56	3.0	0.090	6.9	LOS A	0.6	4.2	0.11	0.58	50.0
11	T	91	3.0	0.090	5.5	LOS A	0.6	4.2	0.11	0.43	51.4
12	R	133	3.0	0.092	11.3	LOS B	0.6	4.2	0.12	0.66	46.0
Approach		280	3.0	0.092	8.5	LOS B	0.6	4.2	0.12	0.57	48.4
All Vehicles		608	3.0	0.123	8.7	LOS A	0.6	4.3	0.23	0.59	48.1

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

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SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: 2026AM - 85% Scenario

CEB06067 - Yarrabilba Precinct One
Intersection 2
2026 AM - 85% Development Scenario
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow 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: Minor Road (S)											
1	L	84	3.0	0.255	8.6	LOS A	1.5	10.6	0.51	0.69	47.7
2	T	4	3.0	0.250	7.5	LOS A	1.5	10.6	0.51	0.63	47.9
3	R	134	3.0	0.255	13.3	LOS B	1.5	10.6	0.51	0.81	44.8
Approach		222	3.0	0.255	11.4	LOS B	1.5	10.6	0.51	0.76	45.9
East: Town Centre Entry Road (E)											
4	L	67	3.0	0.113	8.0	LOS A	0.8	5.6	0.45	0.62	48.4
5	T	154	3.0	0.113	6.7	LOS A	0.8	5.6	0.46	0.54	48.8
6	R	43	3.0	0.113	12.6	LOS B	0.8	5.5	0.46	0.77	45.7
Approach		264	3.0	0.113	8.0	LOS B	0.8	5.6	0.46	0.60	48.1
North: Minor Road (N)											
7	L	62	3.0	0.308	8.1	LOS A	1.8	12.8	0.51	0.68	47.7
8	T	4	3.0	0.308	7.3	LOS A	1.8	12.8	0.51	0.62	47.9
9	R	223	3.0	0.308	13.1	LOS B	1.8	12.8	0.51	0.80	44.8
Approach		289	3.0	0.308	11.9	LOS B	1.8	12.8	0.51	0.77	45.4
West: Town Centre Entry Road (W)											
10	L	47	3.0	0.129	7.5	LOS A	0.9	6.4	0.35	0.60	49.0
11	T	210	3.0	0.129	6.2	LOS A	0.9	6.4	0.36	0.49	49.6
12	R	77	3.0	0.129	12.0	LOS B	0.9	6.3	0.36	0.74	45.8
Approach		334	3.0	0.129	7.7	LOS B	0.9	6.4	0.36	0.56	48.5
All Vehicles		1109	3.0	0.308	9.6	LOS A	1.8	12.8	0.45	0.66	47.0

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

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INTERSECTION

MOVEMENT SUMMARY

Site: 2026PM - 85% Scenario

CEB06067 - Yarrabilba Precinct One
Intersection 2
2026 PM - 85% Development Scenario
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Minor Road (S)											
1	L	138	3.0	0.539	11.6	LOS B	4.6	32.8	0.75	0.94	45.1
2	T	6	3.0	0.545	10.6	LOS B	4.6	32.8	0.75	0.91	45.4
3	R	250	3.0	0.539	16.3	LOS B	4.6	32.8	0.75	0.99	42.3
Approach		394	3.0	0.539	14.6	LOS B	4.6	32.8	0.75	0.97	43.3
East: Town Centre Entry Road (E)											
4	L	134	3.0	0.221	9.2	LOS A	1.9	13.3	0.67	0.72	47.3
5	T	230	3.0	0.221	8.1	LOS A	1.9	13.3	0.67	0.68	47.3
6	R	56	3.0	0.221	14.0	LOS B	1.7	12.5	0.68	0.84	44.7
Approach		420	3.0	0.221	9.3	LOS B	1.9	13.3	0.67	0.72	46.9
North: Minor Road (N)											
7	L	71	3.0	0.866	27.4	LOS C	10.5	75.1	0.95	1.33	33.8
8	T	27	3.0	0.871	26.6	LOS C	10.5	75.1	0.95	1.33	33.9
9	R	332	3.0	0.860	32.3	LOS C	10.5	75.1	0.95	1.34	32.7
Approach		430	3.0	0.861	31.1	LOS C	10.5	75.1	0.95	1.34	32.9
West: Town Centre Entry Road (W)											
10	L	76	3.0	0.539	8.7	LOS A	5.5	39.3	0.67	0.71	47.7
11	T	1014	3.0	0.537	7.5	LOS A	5.5	39.3	0.68	0.65	47.5
12	R	154	3.0	0.537	13.5	LOS B	5.3	37.7	0.69	0.81	45.3
Approach		1244	3.0	0.537	8.3	LOS B	5.5	39.3	0.68	0.68	47.2
All Vehicles		2488	3.0	0.861	13.4	LOS B	10.5	75.1	0.74	0.85	43.2

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

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INTERSECTION

MOVEMENT SUMMARY

Site: 2016 AM - S.L.Roundabout

CEB06067 - Yarrabilba Precinct One
Intersection 3
2016 AM - Precinct One
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Town Centre Entry Road (SE)											
21	L	153	3.0	0.104	5.5	LOS A	0.7	4.8	0.08	0.45	51.7
23	R	5	3.0	0.104	10.2	LOS B	0.7	4.8	0.08	0.85	47.2
Approach		158	3.0	0.104	5.6	LOS B	0.7	4.8	0.08	0.46	51.5
North: Minor Road (N)											
7	L	5	3.0	0.016	5.8	LOS A	0.1	0.7	0.23	0.41	50.3
9	R	15	3.0	0.016	11.6	LOS B	0.1	0.7	0.23	0.69	45.8
Approach		20	3.0	0.016	10.1	LOS B	0.1	0.7	0.23	0.62	46.8
West: Town Centre Entry Road (W)											
10	L	9	3.0	0.067	6.5	LOS A	0.4	2.9	0.04	0.49	50.7
12	R	97	3.0	0.067	10.1	LOS B	0.4	2.9	0.04	0.69	47.2
Approach		106	3.0	0.067	9.8	LOS B	0.4	2.9	0.04	0.67	47.4
All Vehicles		284	3.0	0.104	7.5	LOS A	0.7	4.8	0.08	0.55	49.6

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

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INTERSECTION

MOVEMENT SUMMARY

Site: 2016 PM - S.L.Roundabout

CEB06067 - Yarrabilba Precinct One
Intersection 3
2016 PM Development Traffic
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Town Centre Entry Road (SE)											
21	L	61	3.0	0.045	5.5	LOS A	0.3	2.0	0.07	0.45	51.8
23	R	5	3.0	0.045	10.2	LOS B	0.3	2.0	0.07	0.85	47.2
Approach		66	3.0	0.045	5.8	LOS B	0.3	2.0	0.07	0.48	51.4
North: Minor Road (N)											
7	L	5	3.0	0.013	5.8	LOS A	0.1	0.5	0.23	0.41	50.3
9	R	11	3.0	0.013	11.5	LOS B	0.1	0.5	0.23	0.70	45.9
Approach		16	3.0	0.013	9.8	LOS B	0.1	0.5	0.23	0.61	47.1
West: Town Centre Entry Road (W)											
10	L	17	3.0	0.071	6.5	LOS A	0.4	3.1	0.04	0.50	50.7
12	R	97	3.0	0.072	10.1	LOS B	0.4	3.1	0.04	0.69	47.2
Approach		114	3.0	0.072	9.6	LOS B	0.4	3.1	0.04	0.66	47.6
All Vehicles		196	3.0	0.072	8.3	LOS A	0.4	3.1	0.06	0.60	48.8

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

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SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: 2026 AM - 85% Development Scenario

CEB06067 - Yarrabilba Precinct One
Intersection 3
2026 AM - 85% Development Scenario
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow 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 East: Town Centre Entry Road (SE)											
21	L	1920	3.0	0.701	5.7	LOS A	12.0	86.5	0.30	0.42	50.1
23	R	336	3.0	0.700	10.5	LOS B	11.9	85.1	0.32	0.68	46.7
Approach		2256	3.0	0.701	6.4	LOS B	12.0	86.5	0.31	0.46	49.5
North: Minor Road (N)											
7	L	223	3.0	0.483	11.4	LOS B	3.3	23.4	0.81	0.95	45.6
9	R	28	3.0	0.483	17.2	LOS B	3.3	23.4	0.81	1.04	42.5
Approach		251	3.0	0.483	12.0	LOS B	3.3	23.4	0.81	0.96	45.2
West: Town Centre Entry Road (W)											
10	L	42	3.0	0.592	9.3	LOS A	6.3	45.3	0.69	0.71	46.4
12	R	1335	3.0	0.593	13.0	LOS B	6.4	45.7	0.70	0.77	44.5
Approach		1377	3.0	0.593	12.8	LOS B	6.4	45.7	0.70	0.77	44.5
All Vehicles		3884	3.0	0.701	9.1	LOS A	12.0	86.5	0.48	0.60	47.3

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

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INTERSECTION

MOVEMENT SUMMARY

Site: 2026 PM - 85% Development Scenario

CEB06067 - Yarrabilba Precinct One
Intersection 3
2026 PM - 85% Development Scenario
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Town Centre Entry Road (SE)											
21	L	1032	3.0	0.331	5.5	LOS A	3.1	22.4	0.10	0.44	51.6
23	R	57	3.0	0.331	10.2	LOS B	3.1	22.0	0.10	0.82	47.2
Approach		1089	3.0	0.331	5.7	LOS B	3.1	22.4	0.10	0.46	51.3
North: Minor Road (N)											
7	L	85	3.0	0.166	10.3	LOS B	0.9	6.1	0.70	0.83	46.7
9	R	11	3.0	0.167	16.1	LOS B	0.9	6.1	0.70	0.98	43.2
Approach		96	3.0	0.166	10.9	LOS B	0.9	6.1	0.70	0.85	46.3
West: Town Centre Entry Road (W)											
10	L	7	3.0	0.500	7.2	LOS A	4.9	34.9	0.25	0.51	49.0
12	R	1548	3.0	0.505	10.5	LOS B	4.9	35.1	0.26	0.62	46.2
Approach		1555	3.0	0.505	10.5	LOS B	4.9	35.1	0.26	0.62	46.2
All Vehicles		2740	3.0	0.505	8.6	LOS A	4.9	35.1	0.21	0.57	48.1

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

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INTERSECTION

MOVEMENT SUMMARY

Site: 2016 AM S.L.Roundabout

CEB06067 - Yarrabilba Precinct One
Intersection 4
2016 AM Development Traffic
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow 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 East: Town Centre Entry Road (SE)											
21	L	5	3.0	0.008	6.9	LOS A	0.0	0.3	0.23	0.52	49.7
22	T	5	3.0	0.008	5.9	LOS A	0.0	0.3	0.23	0.43	50.5
Approach		10	3.0	0.008	6.4	LOS A	0.0	0.3	0.23	0.48	50.1
North West: Town Centre Entry Road (NW)											
28	T	5	3.0	0.068	5.4	LOS A	0.4	2.9	0.04	0.39	51.9
29	R	102	3.0	0.067	11.1	LOS B	0.4	2.9	0.04	0.71	46.3
Approach		107	3.0	0.067	10.9	LOS B	0.4	2.9	0.04	0.69	46.6
South West: Minor Road (SW)											
30	L	155	3.0	0.099	6.5	LOS A	0.6	4.6	0.04	0.53	50.7
32	R	5	3.0	0.098	11.1	LOS B	0.6	4.6	0.04	0.81	46.4
Approach		160	3.0	0.099	6.7	LOS B	0.6	4.6	0.04	0.54	50.6
All Vehicles		277	3.0	0.099	8.3	LOS A	0.6	4.6	0.05	0.60	48.9

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

MOVEMENT SUMMARY

Site: 2016 PM S.L.Roundabout

CEB06067 - Yarrabilba Precinct One
Intersection 4
2016 PM Development Traffic
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow 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 East: Town Centre Entry Road (SE)											
21	L	5	3.0	0.008	6.9	LOS A	0.0	0.3	0.23	0.52	49.7
22	T	5	3.0	0.008	5.8	LOS A	0.0	0.3	0.23	0.43	50.5
Approach		10	3.0	0.008	6.4	LOS A	0.0	0.3	0.23	0.48	50.1
North West: Town Centre Entry Road (NW)											
28	T	5	3.0	0.065	5.4	LOS A	0.4	2.7	0.04	0.39	51.9
29	R	98	3.0	0.065	11.1	LOS B	0.4	2.7	0.04	0.71	46.3
Approach		103	3.0	0.065	10.9	LOS B	0.4	2.7	0.04	0.69	46.6
South West: Minor Road (SW)											
30	L	60	3.0	0.042	6.5	LOS A	0.3	1.8	0.04	0.53	50.7
32	R	5	3.0	0.042	11.1	LOS B	0.3	1.8	0.04	0.81	46.4
Approach		65	3.0	0.042	6.9	LOS B	0.3	1.8	0.04	0.55	50.4
All Vehicles		178	3.0	0.065	9.2	LOS A	0.4	2.7	0.05	0.63	48.1

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

MOVEMENT SUMMARY

Site: 2026 AM - 85% Development Scenario

CEB06067 - Yarrabilba Precinct One
Intersection 4
2026 AM - 85% Development Scenario
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow 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 East: Town Centre Entry Road (SE)											
21	L	60	3.0	0.577	17.0	LOS B	7.3	52.5	0.94	1.06	41.7
22	T	791	3.0	0.579	16.6	LOS B	7.3	52.5	0.93	1.08	41.2
Approach		851	3.0	0.579	16.6	LOS B	7.3	52.5	0.93	1.07	41.2
North West: Town Centre Entry Road (NW)											
28	T	438	3.0	0.316	5.6	LOS A	3.0	21.8	0.16	0.44	51.1
29	R	887	3.0	0.510	11.3	LOS B	6.5	46.6	0.19	0.63	45.7
Approach		1325	3.0	0.510	9.4	LOS B	6.5	46.6	0.18	0.57	47.3
South West: Minor Road (SW)											
30	L	1126	3.0	1.686	1249.4	LOS F	603.4	4332.7	1.00	19.16	1.7
32	R	37	3.0	1.682	1254.3	LOS F	603.4	4332.7	1.00	19.16	1.8
Approach		1163	3.0	1.687	1249.6	LOS F	603.4	4332.7	1.00	19.16	1.7
All Vehicles		3339	3.0	1.687	443.2	LOS F	603.4	4332.7	0.66	7.18	4.6

Level of Service (Aver. Int. Delay): LOS F. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS F. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

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INTERSECTION

MOVEMENT SUMMARY

Site: 2026 AM - 85% Development
Scenario - Upgraded Layout

CEB06067 - Yarrabilba Precinct One
Intersection 4
2026 AM - 85% Development Scenario - Upgraded Layout
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow 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 East: Town Centre Entry Road (SE)											
21	L	60	3.0	0.594	17.3	LOS B	7.7	55.0	0.95	1.08	41.5
22	T	791	3.0	0.592	17.0	LOS B	7.7	55.0	0.95	1.09	40.9
Approach		851	3.0	0.592	17.0	LOS B	7.7	55.0	0.95	1.09	41.0
North West: Town Centre Entry Road (NW)											
28	T	438	3.0	0.327	5.7	LOS A	3.0	21.9	0.22	0.45	50.7
29	R	887	3.0	0.525	11.3	LOS B	6.5	46.7	0.25	0.62	45.5
Approach		1325	3.0	0.525	9.5	LOS B	6.5	46.7	0.24	0.56	47.1
South West: Minor Road (SW)											
30	L	1126	3.0	0.737	12.5	LOS B	7.8	56.2	0.88	1.06	44.6
32	R	37	3.0	0.740	17.7	LOS B	7.5	53.6	0.88	1.10	41.6
Approach		1163	3.0	0.737	12.7	LOS B	7.8	56.2	0.88	1.06	44.5
All Vehicles		3339	3.0	0.737	12.5	LOS B	7.8	56.2	0.64	0.87	44.5

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

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INTERSECTION

MOVEMENT SUMMARY

Site: 2026 PM - 85% Development Scenario

CEB06067 - Yarrabilba Precinct One
Intersection 4
2026 PM - 85% Development Scenario
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow 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 East: Town Centre Entry Road (SE)											
21	L	27	3.0	0.375	11.8	LOS B	3.4	24.5	0.83	0.85	46.3
22	T	558	3.0	0.376	10.8	LOS B	3.4	24.5	0.83	0.84	46.3
Approach		585	3.0	0.376	10.9	LOS B	3.4	24.5	0.83	0.84	46.3
North West: Town Centre Entry Road (NW)											
28	T	844	3.0	0.510	5.7	LOS A	6.0	43.3	0.28	0.45	50.3
29	R	789	3.0	0.546	11.5	LOS B	6.7	48.2	0.32	0.62	45.2
Approach		1633	3.0	0.546	8.5	LOS B	6.7	48.2	0.30	0.53	47.7
South West: Minor Road (SW)											
30	L	531	3.0	0.716	11.7	LOS B	7.5	53.6	0.83	1.01	45.3
32	R	48	3.0	0.716	16.7	LOS B	7.5	53.6	0.83	1.07	42.5
Approach		579	3.0	0.715	12.1	LOS B	7.5	53.6	0.83	1.02	45.1
All Vehicles		2797	3.0	0.715	9.8	LOS A	7.5	53.6	0.52	0.70	46.8

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

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MOVEMENT SUMMARY

Site: 2026 PM - 85% Development
Scenario - Upgraded Layout

CEB06067 - Yarrabilba Precinct One
Intersection 4
2026 PM - 85% Development Scenario - Upgraded Layout
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow 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 East: Town Centre Entry Road (SE)											
21	L	27	3.0	0.375	11.8	LOS B	3.4	24.2	0.83	0.85	46.3
22	T	558	3.0	0.374	10.8	LOS B	3.4	24.2	0.83	0.84	46.3
Approach		585	3.0	0.374	10.9	LOS B	3.4	24.2	0.83	0.84	46.3
North West: Town Centre Entry Road (NW)											
28	T	844	3.0	0.508	5.7	LOS A	5.7	40.8	0.26	0.45	50.4
29	R	789	3.0	0.544	11.5	LOS B	6.3	45.6	0.30	0.62	45.3
Approach		1633	3.0	0.544	8.5	LOS B	6.3	45.6	0.28	0.53	47.7
South West: Minor Road (SW)											
30	L	531	3.0	0.308	8.3	LOS A	2.0	14.2	0.60	0.71	47.4
32	R	48	3.0	0.308	13.1	LOS B	1.9	13.8	0.60	0.87	45.0
Approach		579	3.0	0.308	8.7	LOS B	2.0	14.2	0.60	0.72	47.2
All Vehicles		2797	3.0	0.544	9.0	LOS A	6.3	45.6	0.46	0.64	47.3

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

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