

TRAFFIC IMPACT ASSESSMENT

RESIDENTIAL PLANNING PROPOSAL

LOT 642 IN DP 1027231 & LOT 100 IN DP 1044282

**405 – 415 PACIFIC HIGHWAY, LAKE MUNMORAH
& 425 PACIFIC HIGHWAY, CRANGAN BAY**

PREPARED FOR: DARKINJUNG LALC

AMENDED OCTOBER 2022

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**PRELIMINARY TRAFFIC ASSESSMENT
DARKINJUNG LALC****PLANNING PROPOSAL
RESIDENTIAL DEVELOPMENT
LOT 642 IN DP 1027231 & LOT 100 IN DP 1044282
405 – 415 PACIFIC HIGHWAY, LAKE MUNMORAH & 425 PACIFIC HIGHWAY, CRANGAN BAY.**

Intersect Traffic Pty Ltd (ABN: 43 112 606 952)

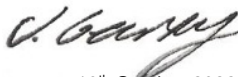
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Issue	Date	Description	By
A	11/01/17	Draft	JG
B	10/03/20	Amended Plan / Edit	JG
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G	10/10/22	DPI Amendments / Approved	JG

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1.0 INTRODUCTION

Intersect Traffic Pty Ltd (Intersect Traffic) has been engaged by Darkinjung Local Aboriginal Land Council (Darkinjung LALC) to prepare a Traffic Impact Assessment Report for a planning proposal for a residential development proposal on Lot 642 in DP 1027231 - 405 – 415 Pacific Highway, Lake Munmorah and Lot 100 in DP 1044282 – 425 Pacific Highway, Crangan Bay. These adjoining properties are located on the western and eastern side of Chain Valley Bay Road respectively at its intersection with the Pacific Highway. The proposal is likely to yield in the order of 470 low density residential lots. However the Department of Planning and Environment has requested that for assessment of the planning proposal this report should also include a sensitivity scenario for total dwelling yields of 490 and 755 dwellings.

The planning proposal currently includes the full width upgrading of Chain Valley Bay Road along the site frontage and the construction of (4) four new public roads accessing the residential subdivision off Chain Valley Bay at two proposed four way cross-intersections. The road upgrading / improvements are to be in accordance with Central Coast Council requirements. The proposed concept development plan is shown in **Attachment A**.

This report is required to support a planning proposal to Central Coast Council as the consent authority for the rezoning of the subject land for low density residential development. It will allow the Council and NSW Roads and Maritime Services (NSW RMS) to assess the proposal in regard to its traffic impacts on the local and state road network.

This report presents the findings of the traffic assessment and includes the following.

1. An outline of the existing situation in the vicinity of the site.
2. An assessment of the traffic impacts of the proposed development including the predicted traffic generation and its impact on existing road and intersection capacities as well as road safety.
3. Determines any triggers for the provision of additional infrastructure.
4. Reviews parking, public transport, pedestrian, and cycle way requirements for the proposed development, including assessment against Council's DCP and Australian Standard requirements.
5. Presentation of conclusions and recommendations.

2.0 SITE LOCATION

The subject site is located on the eastern and western sides of Chain Valley Bay Road, Lake Munmorah at its intersection with the Pacific Highway. The development area extends approximately 700 metres north of the Pacific Highway, 500 metres east of Chain Valley Bay Road and 460 metres west of Chain Valley Bay Road. The main residential, commercial and educational precincts of Lake Munmorah lie to the south-west of the site while the village of Chain Valley Bay lies to the north-west of the site. **Figure 1** below shows the site location from a local context.

The site contains two separate land titles as described below.

- ◆ Lot 642 in DP 1027231 – 405 – 415 Pacific Highway, Lake Munmorah; and
- ◆ Lot 100 in DP 1044282 – 425 Pacific Highway, Crangan Bay.

The part of the site proposed for residential development has a development area of approximately 32.7 ha. The site is currently vacant rural land. Pursuant to the Central Coast LEP (2022) the site is currently zoned C2 – Environmental Conservation and C3 – Environmental Management.

Photograph 1 shows the existing conditions at the site west of Chain Valley Bay Road while **Photograph 2** shows the existing conditions at the site east of Chain Valley Bay Road.

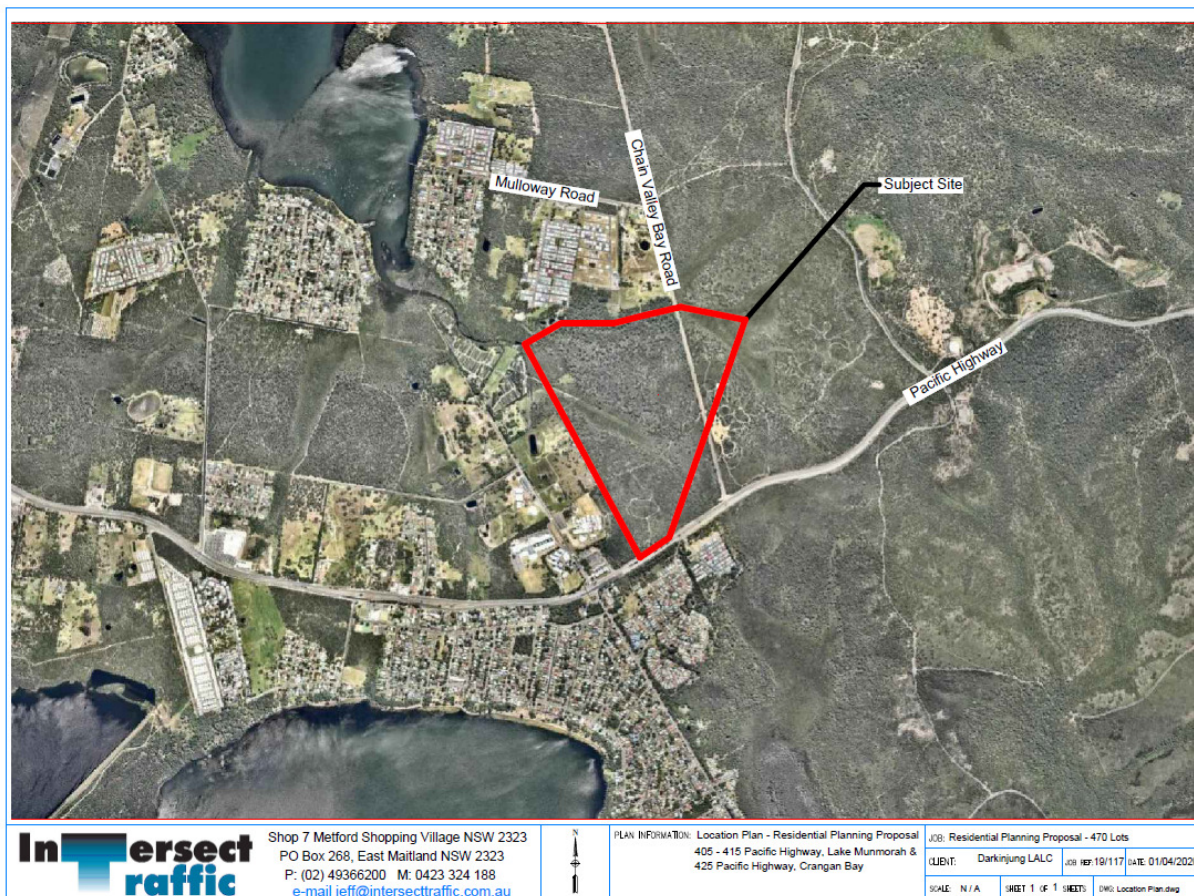


Figure 1 – Site Location



Photograph 1 – Development site west of Chain Valley Bay Road



Photograph 2 – Development site east of Chain Valley Bay Road

3.0 EXISTING ROAD NETWORK

3.1 Pacific Highway

The Pacific Highway would currently be classified as an arterial road under a functional road classification and as such is under the care and control of NSW RMS. The Pacific Highway is a major transport route and connects the southern suburbs of Newcastle and the Central Coast suburbs. In the vicinity of the site it is a median separated (dual carriageway) four lane two way road with each carriageway having a sealed width of approximately 12.5 metres. Lane widths are approximately 3.7 metres with break down / shoulder sealed widths of 4.0 metres (approx.) adjacent to the inside lane and 0.3 to 1.0 metre (approx.) adjacent to the outside lane. **Photograph 3** below shows the standard of the Pacific Highway in this location. At the time of inspection the Pacific Highway was in good condition and an 80 km/h speed zone applied in this location.



Photograph 3 – The Pacific Highway adjacent to Chain Valley Bay Road

3.2 Chain Valley Bay Road

Chain Valley Bay Road is a local collector road under the care and control of Central Coast Council. In the vicinity of the site it is two way two lane rural road with a sealed carriageway width of approximately 6.5 metres. Sealed lane widths vary between 3.0 and 3.5 metres and the grassed and / or gravel shoulders are generally 1.5 metres wide. Chain Valley Bay Road provides access to other local roads and to properties along its length and connects to the Pacific Highway. The intersection with the Pacific Highway is constructed as a rural channelised right turn (CHR) / auxiliary left turn (AUL) T- intersection with a U-turn facility for eastbound traffic.

An 80 km/h speed zoning applies to Chain Valley Bay Road adjacent to the site and through to the Pacific Highway intersection. At the time of inspection Chain Valley Road was found to be in fair condition. **Photograph 4** shows Chain Valley Bay Road near the northern end of the site while **Photograph 5** shows Chain Valley Bay Road at its intersection with the Pacific Highway.



Photograph 4 – Chain Valley Bay Road near the northern end of the site



Photograph 5 – Chain Valley Bay Road at its intersection with the Pacific Highway

4.0 ROAD NETWORK IMPROVEMENTS

No proposed road network improvements are known in the vicinity of the site that would increase the capacity of the road network. Upgrading works as part of Central Coast Council's and NSW RMS forward works programs may occur in the future.

5.0 TRAFFIC VOLUMES

To determine existing traffic volumes on the road network Northern Transport Planning and Engineering (NTPE) on behalf of Intersect Traffic undertook traffic counts at the Chain Valley Bay Road and Pacific Highway intersection during the AM and PM peak traffic periods on Tuesday 6th December 2016. Counts were undertaken from 7 am to 9 am and 4.00 pm to 5.00 pm with the peak hour periods found to be 7.30 am – 8.30 am and 4.00 pm to 5.00 pm. The manual count sheets are provided in **Attachment B**.

NTPE also installed traffic classifiers on each leg of this intersection and collected data for a period of 1 week from Thursday 8th December 2016. The classifier data determined the following peak hour traffic volumes.

- ◆ Pacific Highway west of Chain Valley Bay Road – 2097 vtph (AM) and 2386 vtph (PM)
- ◆ Chain Valley Bay Road north of the Pacific Highway – 251 vtph (AM) and 263 vtph (PM)

This data showed that on average the peak hour traffic volume recorded was 20 % higher on Chain Valley Bay Road in both the AM and PM peak, 6 % higher on the Pacific Highway in the PM peak but 11% lower in the AM peak than during the manual intersection count on Tuesday 6th December 2016. Therefore both the road mid-block capacity and intersection analysis have been adjusted allowing for a 20 % increase in traffic volumes on Chain Valley Bay Road in both the AM and PM peaks and a 6 % traffic volume increase in traffic volumes on the Pacific Highway in the PM peak.

The resultant 2016, 2026 and 2036 peak hour traffic volumes for the intersection determined from the collected traffic data and by adopting a background traffic growth rate of 1.5 % per annum are as shown below in **Table 1**.

Table 1 –Peak Hour Traffic Data – Pacific Highway / Chain Valley Bay Road Intersection

Road Section	2016 AM peak hour (vtph)	2016 PM peak hour (vtph)	2026 AM peak hour (vtph)	2026 PM peak hour (vtph)	2036 AM peak hour (vtph)	2036 PM peak hour (vtph)
Pacific Highway east of Chain Valley Bay Road	2164	2193	2511	2545	2915	2954
Pacific Highway west of Chain Valley Bay Road	2344	2529	2720	2725	3157	3406
Chain Valley Bay Road north of Pacific Highway	301	263	350	283	406	354

Further data collection on the local road network to update the 2016 counts will be carried out as part of a traffic impact assessment for each stage of the proposal during the development application process should the project progress to that stage.

6.0 ROAD CAPACITY

The capacity of urban and rural roads is generally determined by the capacity of intersections. However, Tables 4.3, 4.4 & 4.5 of the RMS's *Guide to Traffic Generating Developments* provides some guidance on mid-block capacities for urban and rural roads and likely levels of service.

The criteria adopted for capacity assessment for the roads at the Pacific Highway / Chain Valley Bay Road intersection, are rural road, a level terrain, 5% heavy vehicles and 80 km/h speed zoning. Therefore the use of Table 4.5 above is warranted, noting the level of service (LoS), vehicles per hour, require factoring by 0.9 for a reduction of the speed travel from 100 km/h to 80 km/h. Table 4.5 is reproduced below.

Table 4.5
peak hour flow on two-lane rural roads (veh/hr)
(Design speed of 100km/hr)

Terrain	Level of Service	Percent of Heavy Vehicles			
		0	5	10	15
Level	B	630	590	560	530
	C	1030	970	920	870
	D	1630	1550	1480	1410
	E	2630	2500	2390	2290
Rolling	B	500	420	360	310
	C	920	760	650	570
	D	1370	1140	970	700
	E	2420	2000	1720	1510
Mountainous	B	340	230	180	150
	C	600	410	320	260
	D	1050	680	500	400
	E	2160	1400	1040	820

The data for Table 4.5 assumes the following criteria:

- terrain level with 20% no overtaking.
- rolling with 40% no overtaking.
- mountainous with 60% no overtaking.
- 3.7 m traffic lane width with side clearances of at least 2m.
- 60/40 directional split of traffic.

A desirable level of service on a rural road is generally considered to be a level of service (LoS) C or better however on an arterial road such as the Pacific Highway a LoS D is still considered acceptable. Utilising this criteria and from Table 4.5 above a LoS E for two way two lanes of flow occurs when mid-block traffic volumes exceed $2,500 \text{ vph} \times 0.9 = 2,250 \text{ vph}$. Therefore the two way two lane mid-block traffic volume threshold for a LoS D is 2,250 vph. This means the two way four lane mid-block traffic volume threshold for a LoS D for the Pacific Highway is approximately 4,500 vph. Therefore it is considered that the Pacific Highway in the vicinity of the site as a four lane two way rural road has a two-way mid-block road capacity of at least 4,500 vph.

Similarly, for a LoS C on a two way two lane flow occurs when mid-block traffic volumes exceed $1,550 \times 0.9 \text{ vph} = 1,395 \text{ vph}$ therefore the two way two lane mid-block traffic volume threshold for a LoS C is 1,395 vph. This means the two-way two lane mid-block traffic volume threshold for a LoS C for Chain Valley Bay Road is 1,395 vph.

From the traffic data sourced and calculated in **Section 5** and noting the likely technical two-way mid-block road capacities of the Pacific Highway and Chain Valley Bay Road are well in excess of the predicted 2021 and 2031 traffic volumes on the road network it is considered that the adjacent road network is operating within its technical capacity and has scope to cater for additional traffic generated by the new development.

7.0 ALTERNATE TRANSPORT MODES

Busways Central Coast operates public transport (bus) services to the area. Bus routes that pass the site are.

- ◆ Route 95 - Lake Haven - Gwandalan - Lake Munmorah - Morisset
- ◆ Route 95X - Lake Haven - Gwandalan - Lake Munmorah - Wyee
- ◆ Route 98 - Lake Haven - Blue Haven - Chain Valley Bay
- ◆ Route 99 - Lake Haven - Blue Haven - Gwandalan - Swansea - Charlestown

Route 95, 95X and 98 bus route services are provided on morning and evenings and operate on weekdays only. It provides transport to various nearby local suburbs and railway stations as well as to other bus service routes for bus and train travel to destinations further afield. Route 99 which provides a regular service to Swansea and Charlestown on weekdays also provides a very infrequent weekend only service for the proposed development.

The nearest bus stops are located on the Pacific Highway in front of the site approximately 180 metres west of Chain Valley Bay Road as shown in **Photograph 6**. The local bus route map (extract) is provided below in **Figure 2**.

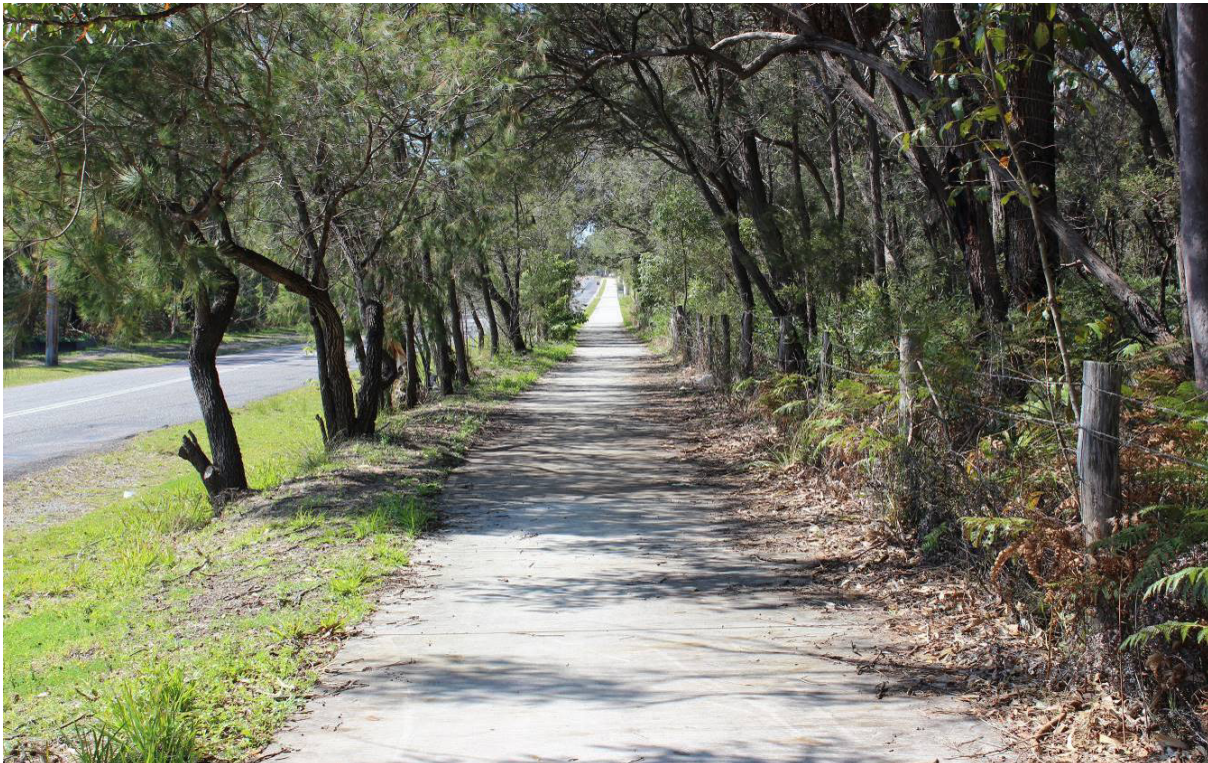


Figure 2 – Local Bus Routes

There are no constructed pedestrian pathways or on or off road cycle paths in the vicinity of the site and pedestrian and cyclists would currently need to use the grass verges and / or share the outside travel lanes on the road network. However approximately 800 metres north west of the site a 2.5 metre wide concrete pathway on Mulloy Road (**Photograph 7**) commences 150 metres west of Chain Valley Bay Road, is approximately 650 metre long and ends at Trevally Avenue. In practice it operates as a shared cycleway / pedestrian path for access into Chain Valley Bay.



Photograph 6 – Bus stop Pacific Highway near the site.



Photograph 7 – Off-road cycle / pedestrian path in Malloway Road north west of the site.

8.0 DEVELOPMENT PROPOSAL

The planning proposal involves the rezoning of the subject site to permit a residential development (R1 - General Residential and R3 – Medium Density Residential). The proposal is likely to yield in the order of 470 low density residential lots however the Department of Planning and Environment have requested a sensitivity analysis for dwelling yields of 490 & 755 dwellings. The planning proposal currently includes the full width upgrading of Chain Valley Bay Road along the site frontage and the construction of (4) four new public roads accessing the residential subdivision off Chain Valley Bay at two proposed four way cross-intersections. The road upgrading / improvements are to be in accordance with Central Coast Council requirements. The proposed concept development plan is shown in **Attachment A**.

It would be expected that most of traffic generated by the development would utilise Chain Valley Bay Road to the Pacific Highway in their trip making as part of their origin / destination travel routes for all purposes during peak traffic periods. All new internal roads, connections and other roadside infrastructure would be constructed to the requirements of Central Coast Council as per the Wyong Council DCP (2013) and engineering documentation. Detailed assessment of road upgrading requirements would need to be further assessed at development application stage should the rezoning proposal proceed to that stage of the approval process.

9.0 TRAFFIC GENERATION

The RMS' *Guide to Traffic Generating Development's* provides specific advice on the traffic generation potential of various land uses. However TfNSW has released a Technical Direction (TDT 2013/4) releasing the results of updated traffic surveys and as a result amended land use traffic generation rates. In regard to low density residential dwellings the following amended advice is provided within the Technical Direction.

Daily vehicle trips = 10.7 per dwelling in Sydney, 7.4 per dwelling in regional areas

Weekday average evening peak hour vehicle trips = 0.99 per dwelling in Sydney (maximum 1.39), 0.78 per dwelling in regional areas (maximum 0.90).

Weekday average morning peak hour vehicle trips = 0.95 per dwelling in Sydney (maximum 1.32), 0.71 per dwelling in regional areas (maximum 0.85).

*(The above rates do **not** include trips made internal to the subdivision, which may add up to an additional 25 %).*

Adopting an average rate approach for regional areas the following additional development traffic from the proposed planning proposal of 490 dwellings can be calculated (rounded up)

- ◆ *Daily vehicle trips* $490 \times 7.4 = \mathbf{3,626 \text{ vtpd}}$
- ◆ *AM weekday peak hour* $490 \times 0.71 = \mathbf{348 \text{ vtpd}}$
- ◆ *PM weekday peak hour* $490 \times 0.78 = \mathbf{383 \text{ vtpd}}$

Further a sensitivity analysis for up to 755 dwellings also needs to be considered and this scale of development would generate the following additional development traffic;

- ◆ *Daily vehicle trips* $755 \times 7.4 = \mathbf{5,587 \text{ vtpd}}$
- ◆ *AM weekday peak hour* $755 \times 0.71 = \mathbf{536 \text{ vtpd}}$
- ◆ *PM weekday peak hour* $755 \times 0.78 = \mathbf{589 \text{ vtpd}}$



10.0 TRIP DISTRIBUTION

Before carrying out any traffic assessment the peak hour traffic generated by the development needs to be distributed through the adjoining road network. This involves making a number of assumptions as to distribution patterns to and from the development. In distributing the generated peak hour traffic through the adjacent road network the following assumptions have been made for this site.

- ◆ In the AM peak period 30% of traffic will enter the site and 70% will exit the site – based on the existing traffic count at the Chain Valley Bay Road / Pacific Highway intersection.
- ◆ In the PM peak period 60% of traffic will enter the site and 40% will exit the site– based on the existing traffic count at the Chain Valley Bay Road / Pacific Highway intersection.
- ◆ 95% of traffic entering / exiting the site will be via Chain Valley Bay Road south.
- ◆ 5% of traffic entering / exiting the site will be via Chain Valley Bay Road north.
- ◆ Traffic distributed at the intersection of the Pacific Highway and Chain Valley Bay Road will have a 15% origin / destination via Pacific Highway east and 85% will have an origin / destination via Pacific Highway west which approximates current distributions.
- ◆ At the southern subdivision access 45 % of the lots will access to / from the west and 25 % of the lots will access to / from the east.
- ◆ At the northern subdivision access 20 % of the lots will access to / from the west and 10 % of the lots will access to / from the east.

◆ These assumptions will result in the trip distributions shown in **Figure 3** for the relevant traffic movements for a 490 dwelling yield while **Figure 4** shows the relevant trip distributions for a 755 lot yield.

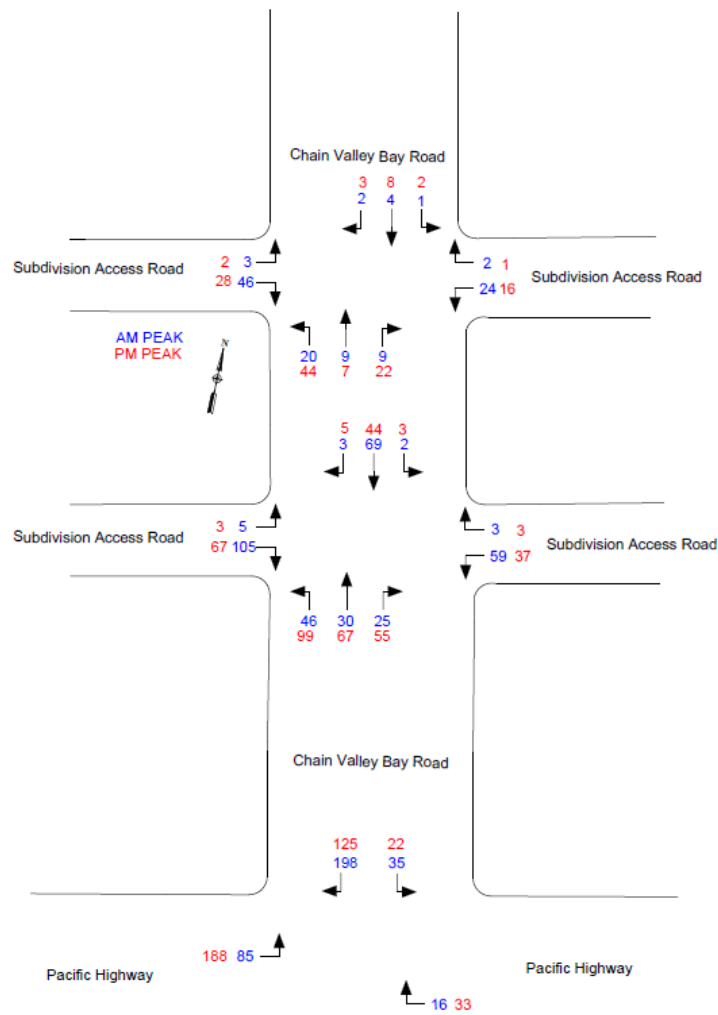


Figure 3 – Development Trip Distribution – 490 dwellings

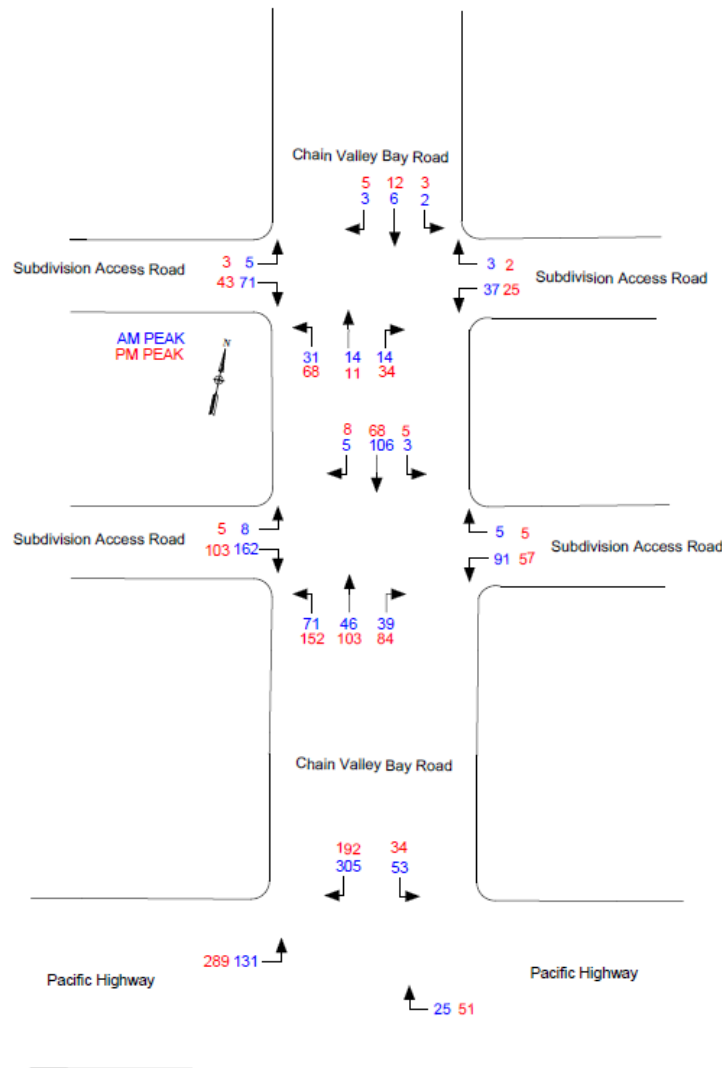


Figure 4 – Development Trip Distribution – 755 dwellings

11.0 OTHER KNOWN DEVELOPMENTS

The other known significant development in the Chain Valley Bay area that will impact on traffic volumes in the study area is a residential planning proposal at 15 Mulloway Road, an extension to the existing manufactured home estate at 2 Mulloway Road and a new manufactured home estate at 45 Mulloway Road. All other development in the area is at this stage only likely to be in-fill development catered for within the 1.5 % background traffic growth. Any new major developments proposed in the future would need to undertake their own traffic assessments that consider both the Mulloway Road planning proposal and the subject Darkinjung LALC planning proposal.

Intersect Traffic undertook the traffic assessment (October 2016) for the 15 Mulloway Road planning proposal and the manufactured home estate extension at 2 Mulloway Road as well as reviewing the cumulative impacts of other developments on the new manufactured home estate at 45 Mulloway Road. From these assessments and reports it has been determined that the cumulative trip distribution for these proposals at the Pacific Highway / Chain Valley Bay Road intersection would be as shown in **Figure 5** below. This additional traffic from these developments has been included in all mid-block road and intersection analysis undertaken in this analysis to ensure the cumulative traffic impacts of these major developments are considered.

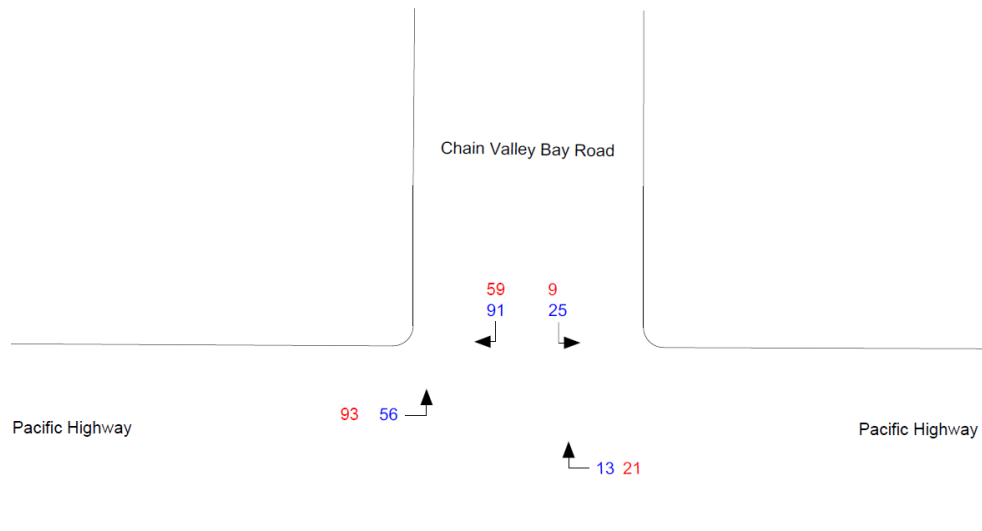


Figure 5 – Other known major developments Chain Valley Bay trip distribution



12.0 TRAFFIC IMPACTS OF DEVELOPMENT

12.1 Road Network Capacity

It has previously been shown in **Section 6** of this report that the local road network is currently operating within its technical mid-block capacity.

The proposed planning proposal is likely to generate the following additional traffic on the local road network for 490 dwellings based on the trip distributions shown in **Figure 3**.

- ◆ The Pacific Highway west of Chain Valley Bay Road – 283 vtpm in the AM peak and 313 vtpm in the PM peak.
- ◆ The Pacific Highway east of Chain Valley Bay Road – 51 vtpm in the AM peak and 55 vtpm in the PM peak.
- ◆ Chain Valley Bay Road north of the Pacific Highway – 334 vtpm in the AM peak and 368 vtpm in the PM peak.

The proposed planning proposal is likely to generate the following additional traffic on the local road network for 755 dwellings based on the trip distributions shown in **Figure 4**.

- ◆ The Pacific Highway west of Chain Valley Bay Road – 436 vtpm in the AM peak and 481 vtpm in the PM peak.
- ◆ The Pacific Highway east of Chain Valley Bay Road – 60 vtpm in the AM peak and 85 vtpm in the PM peak.
- ◆ Chain Valley Bay Road north of the Pacific Highway – 496 vtpm in the AM peak and 566 vtpm in the PM peak.

The additional Mulloway Road developments are also likely to generate the following additional traffic on the local road network based on the trip distributions shown in **Figure 5**.

- ◆ The Pacific Highway west of Chain Valley Bay Road – 147 vtpm in the AM peak and 152 vtpm in the PM peak.
- ◆ The Pacific Highway east of Chain Valley Bay Road – 38 vtpm in the AM peak and 30 vtpm in the PM peak.
- ◆ Chain Valley Bay Road north of the Pacific Highway – 185 vtpm in the AM peak and 182 vtpm in the PM peak.

The addition of this traffic from these developments onto the 2016 traffic volumes determined in **Section 5** will not result in the capacity thresholds for the local road network determined in **Section 6** to be reached. Further consideration of likely 2026 and 2036 traffic volumes indicates the mid-block traffic capacity thresholds are still not reached as demonstrated in **Tables 2, 3, 4 and 5** below.

Table 2 - Road Capacity Assessment – AM post development – 490 dwellings

Road	Capacity (vtpm)	Darkinjung LALC Development AM (vtpm)	Mulloway Rd Developments AM (vtpm)	Post Development		
				2016 AM peak (vtpm)	2026 AM peak (vtpm)	2036AM Peak (vtpm)
Pacific Highway east of Chain Valley Bay Road	4500	51	38	2253	2600	3004
Pacific Highway west of Chain Valley Bay Road	4500	283	147	2774	3150	3587
Chain Valley Bay Road north of Pacific Highway	1350	334	185	820	820	925

Table 3 - Road Capacity Assessment – PM post development – 490 dwellings

Road	Capacity (vtph)	Darkinjung LALC Development PM (vtph)	Mulloway Rd Developments PM (vtph)	Post Development		
				2016 PM peak (vtph)	2026 PM peak (vtph)	2036 PM Peak (vtph)
Pacific Highway east of Chain Valley Bay Road	4500	55	30	2278	2630	3039
Pacific Highway west of Chain Valley Bay Road	4500	313	152	2994	3190	3871
Chain Valley Bay Road north of Pacific Highway	1350	368	182	813	833	904

Table 4 - Road Capacity Assessment – AM post development – 755 dwellings

Road	Capacity (vtph)	Darkinjung LALC Development AM (vtph)	Mulloway Rd Developments AM (vtph)	Post Development		
				2016 AM peak (vtph)	2026 AM peak (vtph)	2036AM Peak (vtph)
Pacific Highway east of Chain Valley Bay Road	4500	60	38	2262	2609	3013
Pacific Highway west of Chain Valley Bay Road	4500	436	147	2927	3303	3740
Chain Valley Bay Road north of Pacific Highway	1350	496	185	982	1031	1087

Table 5 - Road Capacity Assessment – PM post development – 755 dwellings

Road	Capacity (vtph)	Darkinjung LALC Development PM (vtph)	Mulloway Rd Developments PM (vtph)	2016 PM peak (vtph)	2026 PM peak (vtph)	2036 PM Peak (vtph)
Pacific Highway east of Chain Valley Bay Road	4500	85	30	2308	2660	3069
Pacific Highway west of Chain Valley Bay Road	4500	481	152	3162	3358	4039
Chain Valley Bay Road north of Pacific Highway	1350	566	182	1011	1031	1102

Therefore in analysing the assessment shown in **Tables 2 to 5** above it can be concluded that the local road network subject to suitable intersection controls being in place has sufficient spare capacity to cater for the additional traffic generated by the proposed planning proposal.

It is noted that all roads within the planning proposal will need to be constructed in accordance with Central Coast Council's DCP requirements and some upgrading to existing roads may also be required particularly in terms of pavement and shoulder width along the site frontage on Chain Valley Bay Road for which the planning proposal results in additional traffic.

12.2 Intersection Capacity

12.2.1 Pacific Highway / Chain Valley Bay Road

In assessing intersection performance the main existing intersection of concern will be the Pacific Highway / Chain Valley Bay Road priority controlled T-intersection.

The impacts of the development are best assessed using the SIDRA intersection modelling software. This software package predicts likely delays, queue lengths and thus levels of service that will occur at intersections. Assessment is then based on the level of service requirements of the RMS shown below.

Table 4.2
Level of service criteria for intersections

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

Source : - RTA's Guide to Traffic Generating Developments (2002)

Assumptions made in this modelling were.

- ◆ The intersection layout will remain as per current conditions.
- ◆ Traffic volumes used in the modelling were collected by NTPE on behalf of Intersect Traffic on Tuesday 6th December 2016 but increased by 20% on Chain Valley Bay Road for both the AM and PM peaks and 6.5% on the Pacific Highway in the PM peak.
- ◆ 2026 and 2036 traffic volumes have been predicted using a 1.5 % per annum background traffic growth rate.
- ◆ Traffic generated by the planning proposal is distributed as per **Figures 3 & 4**.
- ◆ Traffic generated by the Mulloway Road developments is as per **Figure 5**.
- ◆ As the intersection is already failing 2016 modelling as well as all 2026 and 2036 modelling was undertaken for a signalised intersection. The layout was as shown in the concept plan by TfNSW within **Attachment A**.

The results of the modelling are summarised in **Table 6** below showing the 'all vehicles' summary results except for the LoS for the give way intersection which is the worst result for any movement. The Sidra Movement Summary Tables are provided in **Attachment C**.

This modelling shows that the Pacific Highway / Chain Valley Bay Road intersection does not currently operate satisfactorily during both the AM and PM peak periods and obviously would continue to do so post development through to 2036. Whilst average delays, LoS and 95 % back of queue lengths for the majority of movements at the intersection remain at acceptable levels based on the RMS assessment criteria listed above the right turn movement from Chain Valley Bay Road has unacceptable average delays, LoS and 95 % back of queue lengths. The intersection therefore already requires upgrading to traffic signals.

However with conversion of the intersection to traffic signals the intersection will operate satisfactorily through to 2036 with the additional traffic from both this planning proposal and the Mulloway Road developments. Average delays, LoS and 95 % back of queue lengths for all movements at the intersection remain at acceptable levels based on the RMS assessment criteria listed above.

Table 6 – The Pacific Highway / Chain Valley Bay Road T Intersection – Sidra Modelling – Results Summary

Model Scenario	Degree of Saturation (v/c)	Average or Worst Delay (s)	LoS	95% Back of Queue Length (cars)
2016 AM give way	0.910	65.6	E	6.8
2016 PM give way	0.641	49.6	D	2.4
2016 AM + developments give way (490)	2.989	1812.6	F	207
2016 AM + developments give way (755)	3.894	2623.9	F	283.2
2016 PM + development give way (490)	3.021	1851.8	F	125.2
2016 PM + developments give way (755)	4.447	3130.2	F	186.4
2016 AM + development – signals (490)	0.673	20.4	B	19.0
2016 AM + development – signals (755)	0.731	22.5	B	20.2
2016 PM + developments – signals (490)	0.556	16.5	B	15.4
2016 PM + development – signals (755)	0.603	18.4	B	16.6
2026 AM + development – signals (490)	0.744	21.2	B	23.9
2026 AM + development – signals (755)	0.782	24.3	B	26.8
2026 PM + developments – signals (490)	0.640	16.2	B	18.2
2026 PM + developments – signals (755)	0.682	18.1	B	19.7
2036 AM + development – signals (490)	0.787	23.5	B	33.2
2036 AM + development – signals (755)	0.828	27.5	B	37.7
2036 PM + development – signals (490)	0.713	16.5	B	22.4
2036 PM + development – signals (755)	0.755	18.6	B	24.4

As this intersection already fails the intersection should only be subject to contributions from the developer based on the proportion of traffic generated by the development against the total traffic on the intersection. Based on traffic volumes on Chain Valley Bay Road utilising 2036 AM volumes being the critical peak the contribution apportionments would be calculated as follows.

Existing 2036 AM peak traffic volume	= 594 vtp
Darkinjung LALC PP AM peak traffic volume	= 536 vtp (755 dwellings)
Mulloway Road Developments AM peak traffic volume	= <u>185 vtp</u>
Total	= 1315 vtp
Darkinjung LALC contribution rate	= 536 / 1315 = 41 %
Mulloway Road Developments contribution rate	= 185 / 1315 = 14 %
Road Authority contribution rate	= 594 / 1315 = 45 %.

Contributions would need to be applied either through a developer contributions plan, a voluntary planning agreement or as the Pacific Highway is a state classified highway via the State Infrastructure Contributions (SIC) levy.

12.2.2 Chain Valley Bay Road / Internal Subdivision Roads

Two new intersections are proposed on Chain Valley Bay Road for intersection access with both proposed as four way cross intersections. These intersections have also been modelled using the SIDRA intersection modelling program using the trip distributions determined in **Figure's 3, 4 and 5** (includes Mulloway Road planning proposal) as well as the traffic data collected and described in **Section 5**. Note an internal subdivision trip movement was also assumed across the intersections representing 25 % of the external trip movements (as recommended by NSW RMS) in the leg.

The results for both intersections known as the northern and southern intersections are provided in **Tables 7 and 8** below while the Sidra Movement Summary Sheets are provided in **Attachment C**.

Table 7 –Chain Valley Bay Road / Southern access intersection – Sidra Modelling – Results Summary

Model Scenario	Degree of Saturation (v/c)	Worst or Average Delay (s)	Worst LoS	95% Back of Queue Length (cars)
2026 AM – 490 dwellings – give way	0.637	31.5	C	3.4
2026 AM – 755 dwellings – give way	1.197	235.4	F	29.5
2036 AM – 490 dwellings – give way	0.714	39.1	C	4.0
2036 AM – 755 dwellings – give way	1.362	375.3	F	41.7
2026 PM – 490 dwellings – give way	0.448	28.0	B	1.9
2026 PM – 755 dwellings – give way	0.908	83.3	F	6.7
2036 PM – 490 dwellings – give way	0.449	28.1	B	1.9
2036 PM -755 dwellings – give way	0.909	83.5	F	6.7
2026 AM – 490 dwellings – roundabout	0.264	6.5	A	1.6
2026 AM – 755 dwellings – roundabout	0.304	6.9	A	2.0
2036 AM – 490 dwellings – roundabout	0.286	6.6	A	1.8
2036 AM – 755 dwellings – roundabout	0.328	6.9	A	2.2
2026 PM – 490 dwellings – roundabout	0.216	6.6	A	1.3
2026 PM – 755 dwellings – roundabout	0.240	6.8	A	1.5
2036 PM – 490 dwellings – roundabout	0.208	6.6	A	1.2
2036 PM – 755 dwellings - roundabout	0.232	6.8	A	1.4

Table 8 –Chain Valley Bay Road / Northern access intersection – Sidra Modelling – Results Summary

Model Scenario	Degree of Saturation (v/c)	Worst Delay (s)	Worst LoS	95% Back of Queue Length (cars)
2026 AM – 490 dwelling	0.187	14.4	A	0.7
2026 AM – 755 dwelling	0.308	17.3	B	1.2
2036 AM – 490 dwelling	0.214	16.3	B	0.8
2036 AM – 755 dwelling	0.349	19.9	B	1.4
2026 PM – 490 dwelling	0.176	14.7	B	0.4
2026 PM – 755 dwelling	0.200	16.7	B	0.7
2036 PM – 490 dwelling	0.194	16.3	B	0.5
2036 PM – 755 dwelling	0.223	18.9	B	0.8

This modelling shows that both intersections can operate satisfactorily post development with average delays, LoS and 95 % back of queue lengths for all movements at the intersections remaining at acceptable levels based on the TfNSW assessment criteria through to 2036. It is noted however that to operate satisfactorily the southern intersection will be required to be constructed as a single lane roundabout for the 755 dwelling scenario but could operate satisfactorily as give way controlled priority intersection for the 490 dwelling scenario. The northern access intersection operates satisfactorily as a give way controlled priority intersection for both the 490 and the 755 dwelling scenarios.

The assessment of safe intersection sight distance for the new subdivision intersection connections to Chain Valley Bay Road will be further reviewed at detailed design stage however from observation on-site the available sight distance at the proposed subdivision accesses on Chain Valley Bay Road would exceed the Austroad requirements (*Table 3.2 of Austroads Guide to Road Design – Part 4A Unsignalised and signalised intersections*) of approximately 180 metres for an 80 km/h design speed.

Overall it is concluded that subject to the Pacific Highway / Chain Valley Bay Road intersection being upgraded to a signal controlled intersection the planning proposal would not adversely

impact on the efficiency of the local road network. As this intersection is already operating unsatisfactorily the upgrading of the intersection needs to be included within a suitable mechanism i.e. developer contributions plan, voluntary planning agreement or SIC levy contribution as it is unreasonable to require the developer of this planning proposal to fully fund the upgrade.

It is noted that Central Coast Council has requested consideration of a road connection from the subdivision to Carters Road be considered in this assessment. As the subject site does not have frontage to Carter's Road there is no chance of a direct connection to occur as part of this development therefore this requirement is considered irrelevant for the assessment.

Connection to Carter's Road would require resumption of land to the west of the site for which the developer has no legal powers. It would need significant assistance from Central Coast Council and as a Council initiative Council should be responsible for the traffic impact assessment. As a preliminary comment this connection would provide benefit to residents in Chain Valley Bay and possibly Gwandalan in accessing the school sites on Carter's Road therefore would probably result in reduced traffic volumes on the Pacific Highway / Chain Valley Bay Road intersection possibly up to 25 % reduction however this would not be enough to allow the existing intersection to operate satisfactorily in the future and the intersection would still require upgrading to signals. Therefore any further expense and time in assessing this option within this assessment is not required noting the assessment would need to undertake expensive origin / destination surveys and network modelling to fully determine the impact of a connection to Carter's Road.

12.3 Road Safety

A preliminary road safety assessment of the existing road network around the site identified the following issues.

- ◆ Difficulty in turning right out of Chain Valley Bay Road onto the Pacific Highway due to peak traffic volumes on the Highway, a restricted sight distance to the east and a short acceleration / merge storage lane at the intersection.
- ◆ The pavement condition and lack of sealed shoulders on Chain Valley Bay Road; and
- ◆ Poor night time delineation on Chain Valley Bay Road due to lack of edge marking, guide posts and raised pavement markers.

It would however be expected that the upgrading of Chain Valley Bay Road along the site frontage required for this planning proposal would result in an improvement pavement, provision of sealed shoulders and improved night time delineation with edge marking, additional guide posts and raised pavement markers. Further the upgrading of the Pacific Highway / Chain Valley Bay Road intersection to a signalised intersection would resolve all road safety issues currently associated with this intersection.

It is therefore concluded that there are no road safety issues on the local road network that could not be overcome through normal road upgrading conditions for the planning proposal and as such road safety is not a constraint to the approval of the planning proposal.

12.4 On-site car parking

On-site car parking in accordance with Central Coast Council as per Wyong Council DCP 2013 needs to be provided within the planning proposal. Whilst this will be assessed in detail in future development applications for development on the individual allotments contained in the planning proposal a general assessment has been carried out in this report.

As the lot sizes are equal to or greater than the minimum lot size required by Central Coast Council it is considered that a dwelling with suitable covered and uncovered parking can be provided in accordance with the Wyong Council DCP (2013).

13.0 PEDESTRIAN & CYCLE FACILITIES

The planning proposal will generate pedestrian and bicycle traffic therefore a nexus would exist to provide additional facilities. It is also noted that to the north west of the site a shared pedestrian cycle pathway exists in Mulloway Road providing connection into Chain Valley Bay village area.

Therefore there would be some benefit and nexus to providing a shared pedestrian / cycle pathway within Chain Valley Bay Road (western side only) along the frontage of the planning proposal site. This pathway should also connect to the local bus stops on the Pacific Highway.

Internally the provision of concrete pedestrian pathways and cycleways would need to be in accordance with Central Coast Council's requirements as per the relevant DCP documentation but at least within all collector roads.

14.0 PUBLIC TRANSPORT FACILITIES

The proposed development is likely to generate additional public transport usage of the existing service to the area. However, it is noted that the majority of new residential lots will not be more than 400 metres away from the existing bus services using Chain Valley Bay Road. The only lots further than 400 metres away from Chain Valley Bay Road are the lots in the western side of the planning proposal. Therefore the subdivision road network should be designed such that a loop bus route is provided from the southern access intersection through to the far western section of the planning proposal to ensure all lots could be within 400 metres of a bus route. Whether the bus companies altered their routes to include the bus route loop for regular and / or school services will be subject to future demand.

Additional bus stops, seats and shelters will be required both on Chain Valley Bay Road and the bus route loop within the subdivision and further consultation with the provider of the local bus services i.e. Busways and NSW Transport will be required to determine the likely future bus routes, stops and facilities should a future development application be lodged for development of the planning proposal.



15.0 CONCLUSIONS

This traffic impact assessment for a planning proposal for residential development on Lot 642 in DP 1027231 - 405 – 415 Pacific Highway, Lake Munmorah & Lot 100 in DP 1044282 – 425 Pacific Highway, Crangan Bay has concluded.

- ◆ Existing traffic volumes on the local road network are within the technical mid-block road capacities determined by Austroads and the NSW Roads and Maritime Services (RMS) therefore the local road network has capacity to cater for additional traffic associated with new development in the area.
- ◆ The planning proposal when fully developed is likely to generate an additional 3,626 vtpd or 348 vtph during the AM peak and 383 vtph during the PM peak traffic periods for 490 dwellings or 5,587 vtpd or 536 vtph during the AM peak period and 589 vtph during the PM peak period for 755 dwellings.
- ◆ The local and state road network currently has sufficient spare two way mid-block capacity to cater for the traffic generated by this development for at least up to 755 dwellings and other known developments in the area without adversely impacting on current levels of service experienced by motorists mid-block on the local and state road network.
- ◆ Sidra modelling of the Pacific Highway / Chain Valley Bay Road intersection has shown that the right hand turn movement onto the Pacific Highway from Chain Valley Bay Road currently operates with unsatisfactory average delays, LoS and 95 % back of queue lengths which is only exacerbated by the proposed development. Therefore this intersection will be required to be upgraded to a signal controlled intersection before further development occurred. Provision of a signal controlled intersection will result in satisfactory operation of the local and state road network through to 2036 with all known developments in the area considered including up to at least 755 dwellings in the subject development.
- ◆ As the Pacific Highway / Chain Valley Bay Road intersection is currently not operating satisfactorily the upgrading of the intersection would also provide benefit to existing road users and future developments in the area. It would therefore be unreasonable to expect the developers to fully fund the development and the upgrading of the intersection should be contained within a developer contributions plan, voluntary planning agreement or through a SIC levy providing a mechanism for a fair and reasonable contribution to the intersection upgrade from all developers who would gain benefit from the intersection upgrade as well as the road authority for existing traffic.
- ◆ Sidra modelling has both subdivision access intersections off Chain Valley Bay Road would operate satisfactorily post development including for all other known development traffic. For a yield of 490 dwellings both intersections could be priority controlled give way intersections however should a yield of 755 dwellings be achieved then the southern access intersection would need to be constructed as a single lane roundabout.
- ◆ The available sight distance at the proposed subdivision access connections on Chain Valley Bay Road would exceed the Austroad requirements (*Table 3.2 of Austroads Guide to Road Design – Part 4A Unsignalised and signalised intersections*) of approximately 180 metres for an 80 km/h design speed.
- ◆ The proposed new lots within the planning proposal are considered large enough to accommodate the car parking requirements of Central Coast Council, the Wyong Council DCP 2013.
- ◆ There are no road safety issues on the local road network that could not be overcome through normal road upgrading conditions for the planning proposal and as such road safety is not a constraint to the approval of the planning proposal.
- ◆ The proposed subdivision will generate pedestrian and cycle traffic therefore a nexus would exist to provide additional facilities. There would be some benefit and nexus to providing a

shared pedestrian / cycle pathway within Chain Valley Bay Road (western side only) along the frontage of the planning proposal site. This pathway should also connect to the local bus stops on the Pacific Highway. Internally the provision of concrete pedestrian pathways and cycleways would need to be in accordance with Central Coast Council's requirements as per the relevant DCP documentation but at least within all collector roads.

- ◆ The site is likely to generate increased usage for the existing public transport services. Therefore the subdivision road network should be designed such that a loop bus route is provided from the southern access intersection through to the far western section of the planning proposal to ensure all lots could be within 400 metres of a bus route. The need for the existing bus routes to be diverted through the new development will need to be the subject of future consultation with Central Coast Council, Transport NSW and Busways should the planning proposal proceed to development application stage.
- ◆ Additional bus stops, seats and shelters will be required both on Chain Valley Bay Road and the bus route loop within the subdivision.

16.0 RECOMMENDATION

Having carried out this preliminary traffic impact assessment for the proposed planning proposal for a residential development Lot 642 in DP 1027231 - 405 – 415 Pacific Highway, Lake Munmorah & Lot 100 in DP 1044282 – 425 Pacific Highway, Crangan Bay it is recommended that the proposal can be supported from a traffic impact perspective. Subject to the upgrading of the Pacific Highway / Chain Valley Bay Road intersection to a signalised intersection and appropriate conditioning for the internal access intersections it will not adversely impact on the local and state road network and complies with all relevant Central Coast Council, Austroads, and TfNSW requirements.

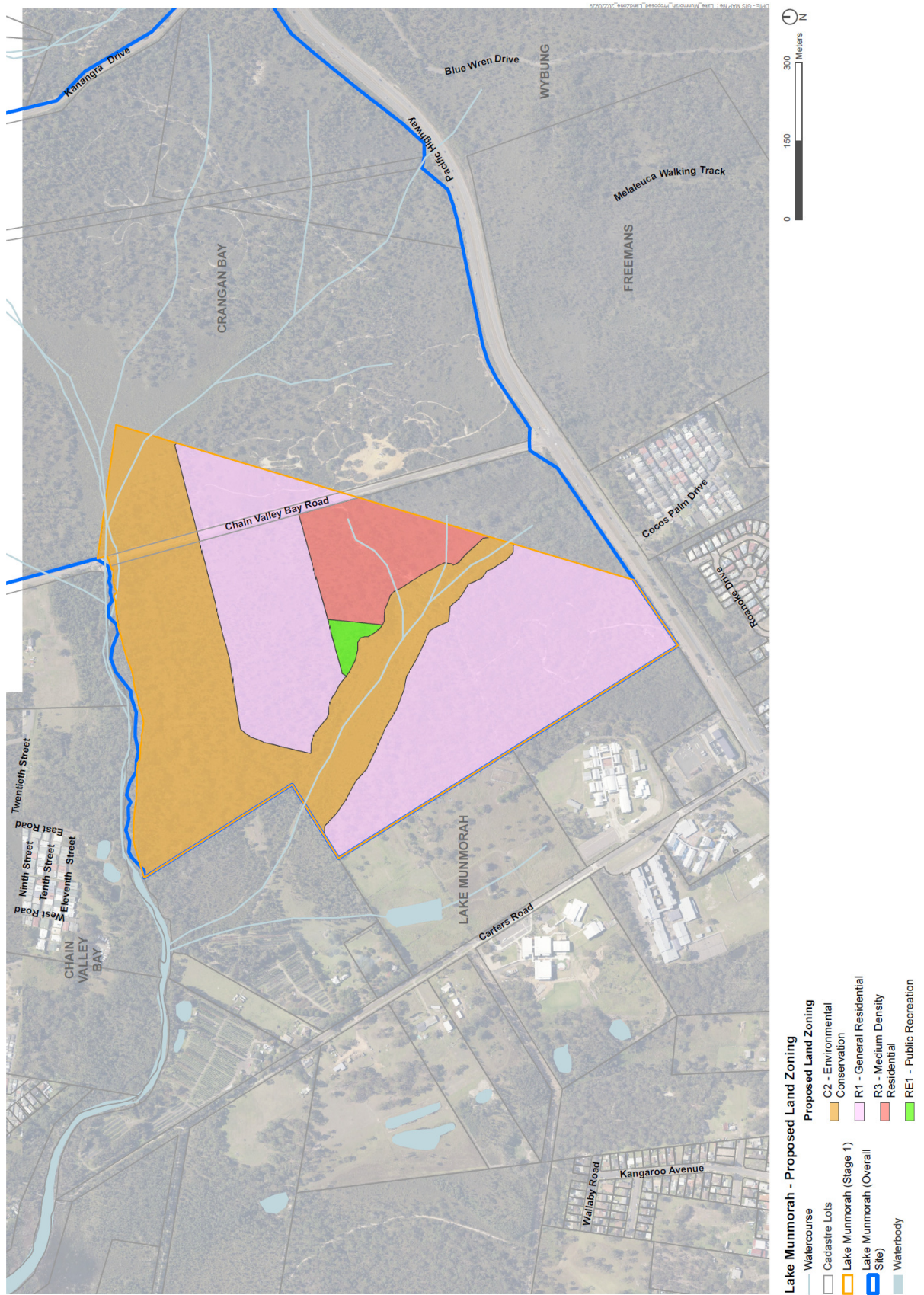


JR Garry BE (Civil), Masters of Traffic
Director
Intersect Traffic Pty Ltd



ATTACHMENT A

Development Plans





ATTACHMENT B

Traffic Count Data

6/12/2016 - PACIFIC HWY / CHAIN VALLEY BAY RD, FREEMANS

8:30 <<< HOUR ENDING

Tuesday

Summary:

PACIFIC HWY / CHAIN VALLEY BAY RD

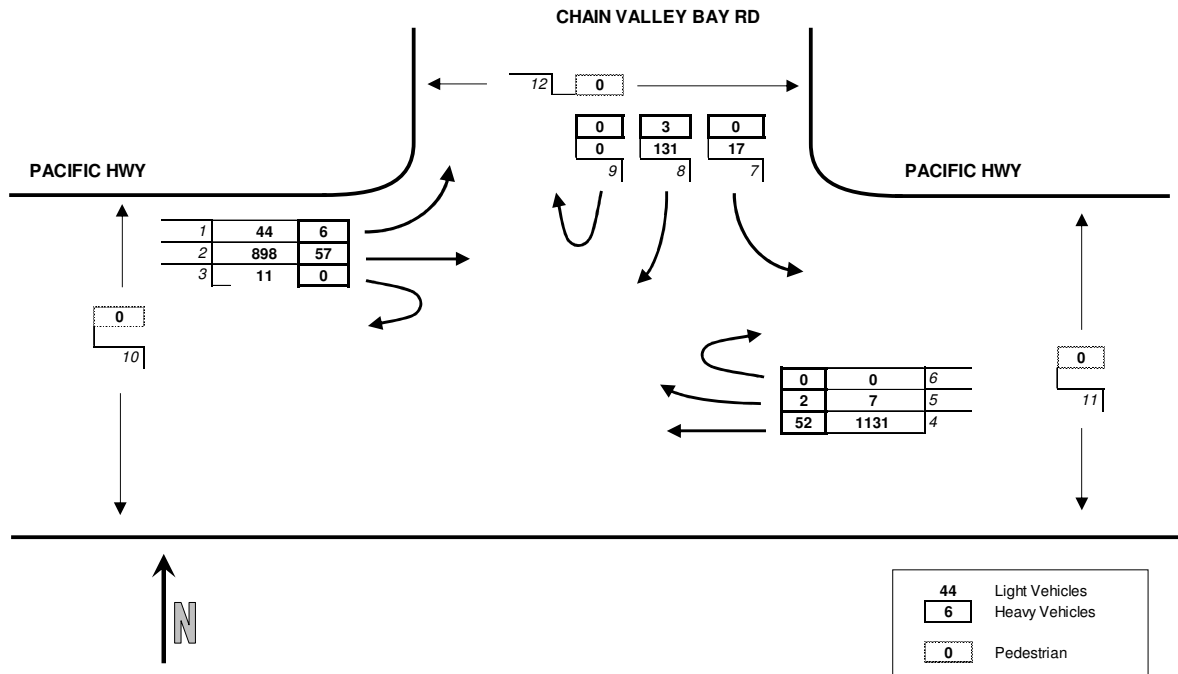
2239 Total Light Vehicles

120 Total Heavy Vehicles

0 Total Pedestrians



Quality Surveys
172571



5/12/2016 - PACIFIC HWY / CHAIN VALLEY BAY RD, FREEMANS

17:00 <<< HOUR ENDING

Monday

Summary:

PACIFIC HWY / CHAIN VALLEY BAY RD

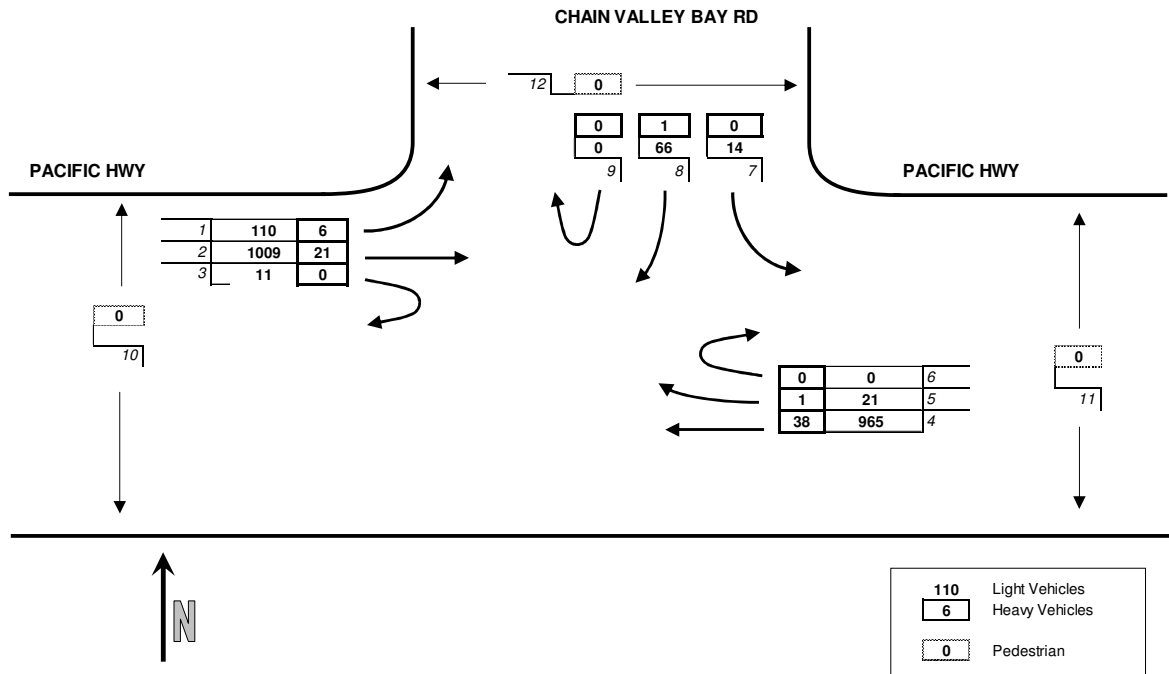
2196 Total Light Vehicles

67 Total Heavy Vehicles

0 Total Pedestrians

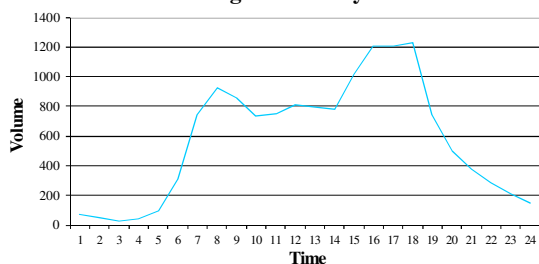


Quality Surveys
172571



Site 4 Pacific Hwy - 300m N of Elizabeth Bay Dr
Northbound

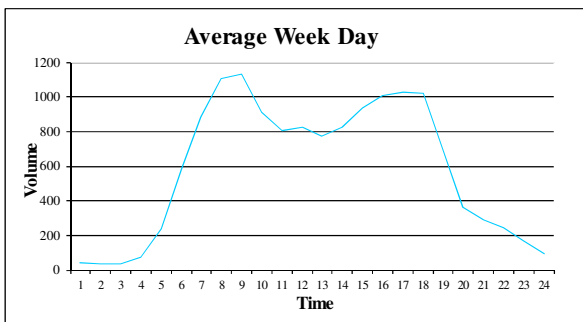
Day Time	Thu 08/12/16	Fri 09-12-16	Sat 10-12-16	Sun 11-12-16	Mon 12-12-16	Tue 13-12-16	Wed 14-12-16	W/Day Ave.	W/End Ave.	7 Day Ave
0:00	56	74	106	177	54	77	103	73	142	92
1:00	46	44	72	57	20	72	68	50	65	54
2:00	28	26	37	44	18	33	26	26	41	30
3:00	36	36	48	46	35	40	44	38	47	41
4:00	93	94	62	69	87	98	101	95	66	86
5:00	313	328	147	98	296	295	322	311	123	257
6:00	762	694	261	223	737	770	756	744	242	600
7:00	937	897	474	262	904	944	935	923	368	765
8:00	809	908	608	451	795	912	852	855	530	762
9:00	720	758	787	723	689	768	738	735	755	740
10:00	774	796	947	936	706	736	754	753	942	807
11:00	849	859	1048	1101	790	769	771	808	1075	884
12:00	811	845	1067	1031	767	791	764	796	1049	868
13:00	774	808	898	897	766	787	773	782	898	815
14:00	958	1149	943	873	977	962	1019	1013	908	983
15:00	1248	1244	904	864	1136	1171	1216	1203	884	1112
16:00	1163	1290	1021	877	1168	1256	1146	1205	949	1132
17:00	1205	1315	894	837	1246	1196	1198	1232	866	1127
18:00	815	874	694	620	664	677	698	746	657	720
19:00	480	598	451	433	449	487	481	499	442	483
20:00	390	451	346	346	317	352	384	379	346	369
21:00	330	360	297	206	220	289	233	286	252	276
22:00	225	292	351	164	183	162	184	209	258	223
23:00	151	213	222	103	130	123	134	150	163	154
Total	13973	14953	12685	11438	13154	13767	13700	13909	12062	13381

Average Week Day

Summary

	from	to	
AM Peak	7:00 AM	8:00 AM	944
PM Peak	5:00 PM	6:00 PM	1315
Week Day Average			13909
Weekend Day Average			12062
7 Day Average			13381

Site 4 Pacific Hwy - 300m N of Elizabeth Bay Dr
Southbound

Day Time	Thu 08/12/16	Fri 09-12-16	Sat 10-12-16	Sun 11-12-16	Mon 12-12-16	Tue 13-12-16	Wed 14-12-16	W/Day Ave.	W/End Ave.	7 Day Ave
0:00	38	55	106	156	38	45	48	45	131	69
1:00	34	31	49	85	30	34	40	34	67	43
2:00	39	33	37	36	28	48	40	38	37	37
3:00	77	67	48	31	73	71	86	75	40	65
4:00	245	227	120	79	250	245	233	240	100	200
5:00	581	502	206	131	643	594	610	586	169	467
6:00	882	813	423	255	899	887	926	881	339	726
7:00	1098	1031	521	426	1117	1153	1123	1104	474	924
8:00	1135	1105	820	665	1107	1165	1137	1130	743	1019
9:00	896	927	934	876	893	907	926	910	905	908
10:00	781	900	1082	1027	783	769	795	806	1055	877
11:00	777	899	937	1071	823	776	835	822	1004	874
12:00	788	778	916	992	724	817	770	775	954	826
13:00	821	919	854	890	804	829	767	828	872	841
14:00	957	954	856	1013	876	941	962	938	935	937
15:00	954	1061	901	1100	1024	996	997	1006	1001	1005
16:00	1014	1096	900	919	1007	1013	1018	1030	910	995
17:00	1014	1048	738	851	960	1036	1046	1021	795	956
18:00	703	800	574	563	635	694	671	701	569	663
19:00	374	421	390	429	350	360	315	364	410	377
20:00	298	326	285	337	249	290	294	291	311	297
21:00	316	274	296	247	177	226	220	243	272	251
22:00	191	223	228	136	145	131	146	167	182	171
23:00	91	172	244	63	69	68	71	94	154	111
Total	14104	14662	12465	12378	13704	14095	14076	14128	12422	13641

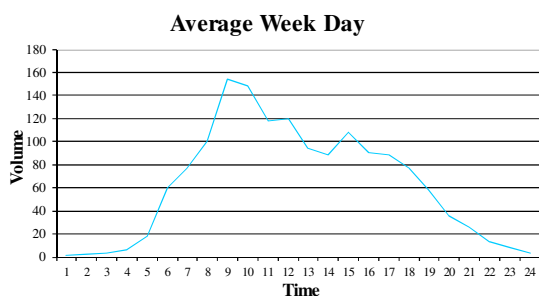


Summary			
	from	to	
AM Peak	8:00 AM	9:00 AM	1165
PM Peak	4:00 PM	5:00 PM	1096
Week Day Average			14128
Weekend Day Average			12422
7 Day Average			13641

Site 5 Chain Valley Bay Rd - 200m W of Pacific Hwy

Eastbound

Day Time	Thu 08/12/16	Fri 09-12-16	Sat 10-12-16	Sun 11-12-16	Mon 12-12-16	Tue 13-12-16	Wed 14-12-16	W/Day Ave.	W/End Ave.	7 Day Ave
0:00	0	0	4	7	1	2	4	1	6	3
1:00	0	2	3	6	2	1	5	2	5	3
2:00	2	2	3	5	2	6	5	3	4	4
3:00	6	9	2	2	5	8	5	7	2	5
4:00	22	15	11	7	17	19	19	18	9	16
5:00	56	49	17	12	62	71	61	60	15	47
6:00	89	73	38	27	74	73	75	77	33	64
7:00	86	95	54	54	103	108	108	100	54	87
8:00	164	145	115	78	143	171	149	154	97	138
9:00	131	154	134	130	133	151	172	148	132	144
10:00	123	131	156	123	105	128	103	118	140	124
11:00	109	121	102	126	130	108	132	120	114	118
12:00	97	105	99	75	89	83	99	95	87	92
13:00	76	94	89	80	100	88	86	89	85	88
14:00	122	92	76	80	103	113	111	108	78	100
15:00	85	89	75	65	95	91	92	90	70	85
16:00	88	96	70	64	88	76	95	89	67	82
17:00	71	90	76	66	67	78	80	77	71	75
18:00	65	56	71	58	52	62	58	59	65	60
19:00	44	39	33	30	34	33	30	36	32	35
20:00	15	22	26	35	26	35	30	26	31	27
21:00	12	25	18	7	10	14	5	13	13	13
22:00	12	13	15	7	3	5	7	8	11	9
23:00	3	10	18	3	3	1	2	4	11	6
Total	1478	1527	1305	1147	1447	1525	1533	1502	1226	1423



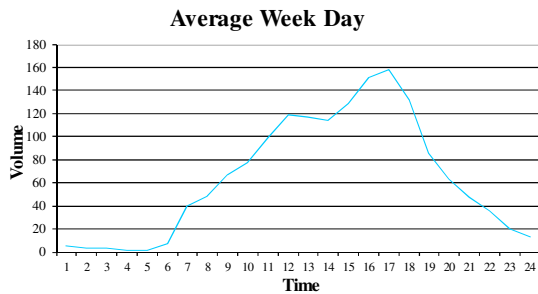
Summary

	from	to	
AM Peak	9:00 AM	10:00 AM	172
PM Peak	2:00 PM	3:00 PM	122
Week Day Average			1502
Weekend Day Average			1226
7 Day Average			1423

Site 5 Chain Valley Bay Rd - 200m W of Pacific Hwy

Westbound

Day Time	Thu 08/12/16	Fri 09-12-16	Sat 10-12-16	Sun 11-12-16	Mon 12-12-16	Tue 13-12-16	Wed 14-12-16	W/Day Ave.	W/End Ave.	7 Day Ave
0:00	3	6	13	15	5	6	5	5	14	8
1:00	5	2	8	4	1	3	5	3	6	4
2:00	2	3	5	6	4	6	3	4	6	4
3:00	2	3	3	9	0	1	2	2	6	3
4:00	2	1	5	3	1	3	1	2	4	2
5:00	6	14	4	4	9	2	4	7	4	6
6:00	41	40	13	13	37	35	45	40	13	32
7:00	44	47	28	26	52	54	43	48	27	42
8:00	59	73	49	39	64	69	68	67	44	60
9:00	71	85	83	75	65	88	79	78	79	78
10:00	116	79	113	93	101	107	94	99	103	100
11:00	124	112	119	107	111	128	121	119	113	117
12:00	112	132	113	87	101	112	128	117	100	112
13:00	117	112	107	92	123	112	105	114	100	110
14:00	120	133	112	97	140	122	129	129	105	122
15:00	136	152	111	110	155	165	149	151	111	140
16:00	153	167	96	102	156	151	164	158	99	141
17:00	123	128	87	91	142	130	136	132	89	120
18:00	87	86	78	74	72	92	91	86	76	83
19:00	61	71	54	67	57	69	57	63	61	62
20:00	48	44	37	43	42	43	62	48	40	46
21:00	38	36	35	23	28	41	35	36	29	34
22:00	19	31	39	13	16	18	18	20	26	22
23:00	14	18	23	5	13	11	8	13	14	13
Total	1503	1575	1335	1198	1495	1568	1552	1539	1267	1461



Summary

	from	to	
AM Peak	11:00 AM	12:00 PM	128
PM Peak	4:00 PM	5:00 PM	167
Week Day Average			1539
Weekend Day Average			1267
7 Day Average			1461

ATTACHMENT C

Sidra Movement Summary Tables

MOVEMENT SUMMARY

▽ Site: 101 [2016 AM]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Pacific Highway												
5	T1	1245	4.4	0.328	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
6	R2	12	18.2	0.066	25.5	LOS B	0.2	1.6	0.82	0.93	0.82	46.0
Approach		1257	4.5	0.328	0.3	NA	0.2	1.6	0.01	0.01	0.01	79.3
North: Chain Valley Bay Road												
7	L2	22	0.0	0.029	9.5	LOS A	0.1	0.7	0.48	0.71	0.48	62.5
9	R2	169	1.9	0.910	65.6	LOS E	6.8	48.1	0.98	1.41	3.10	31.9
Approach		192	1.6	0.910	59.2	LOS E	6.8	48.1	0.92	1.33	2.80	33.8
West: Pacific Highway												
10	L2	63	10.0	0.036	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	62.1
11	T1	1005	6.0	0.268	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
12u	U	12	0.0	0.100	38.2	LOS C	0.3	2.1	0.90	0.97	0.90	41.8
Approach		1080	6.1	0.268	0.9	NA	0.3	2.1	0.01	0.05	0.01	77.8
All Vehicles		2528	5.0	0.910	5.0	NA	6.8	48.1	0.08	0.13	0.22	71.4

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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Project: C:\Work Documents\Projects\2019\19.117 - Darkinjung Lake Munmorah report update\Sidra\PacHwy_ChainValleyBay.sip8

MOVEMENT SUMMARY

▽ Site: 101 [2016 PM]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah

Site Category: (None)

Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Pacific Highway												
5	T1	1119	3.6	0.296	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
6	R2	27	3.8	0.189	31.2	LOS C	0.6	4.1	0.88	0.96	0.92	45.0
Approach		1146	3.6	0.296	0.8	NA	0.6	4.1	0.02	0.02	0.02	78.4
North: Chain Valley Bay Road												
7	L2	18	0.0	0.026	10.0	LOS A	0.1	0.6	0.51	0.73	0.51	62.0
9	R2	84	1.3	0.641	49.6	LOS D	2.5	17.4	0.94	1.08	1.49	37.2
Approach		102	1.0	0.641	42.6	LOS D	2.5	17.4	0.87	1.02	1.32	40.0
West: Pacific Highway												
10	L2	146	4.3	0.081	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.9
11	T1	1149	1.9	0.299	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
12u	U	13	0.0	0.080	29.9	LOS C	0.2	1.7	0.86	0.96	0.86	46.2
Approach		1308	2.2	0.299	1.1	NA	0.2	1.7	0.01	0.08	0.01	77.2
All Vehicles		2557	2.8	0.641	2.6	NA	2.5	17.4	0.05	0.09	0.07	74.9

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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Project: C:\Work Documents\Projects\2019\19.117 - Darkinjung Lake Munmorah report update\Sidra\PacHwy_ChainValleyBay.sip8

MOVEMENT SUMMARY

▼ Site: 101 [2016 AM + development 490 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah
Darkinjung & all Mullyoway developments
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Pacific Highway														
5	T1	1183	52	1245	4.4	0.330	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
6	R2	40	2	42	5.0	0.255	29.7	LOS C	0.8	5.9	0.87	0.97	0.97	45.7
Approach		1223	54	1287	4.4	0.330	1.0	NA	0.8	5.9	0.03	0.03	0.03	77.8
North: Chain Valley Bay Road														
7	L2	81	0	85	0.0	0.112	9.8	LOS A	0.4	2.8	0.50	0.77	0.50	62.3
9	R2	450	3	474	0.7	2.989	1812.6	LOS F	207.0	1457.4	1.00	5.50	24.36	2.0
Approach		531	3	559	0.6	2.989	1537.6	LOS F	207.0	1457.4	0.92	4.78	20.72	2.3
West: Pacific Highway														
10	L2	201	6	212	3.0	0.116	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	64.3
11	T1	955	57	1005	6.0	0.268	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
12u	U	11	0	12	0.0	0.101	38.3	LOS C	0.3	2.1	0.90	0.97	0.90	41.8
Approach		1167	63	1228	5.4	0.268	1.6	NA	0.3	2.1	0.01	0.12	0.01	76.0
All Vehicles		2921	120	3075	4.1	2.989	280.6	NA	207.0	1457.4	0.18	0.93	3.78	11.1

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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Project: C:\Work Documents\Projects\2022\22.162 - DPE Update Lake Munmorah residential PP Darkinjung\Sidra

IPacHwy_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

▽ Site: 101 [2016 AM + development 755 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah

Darkinjung & all Mulloway developments

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Pacific Highway														
5	T1	1183	52	1245	4.4	0.330	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
6	R2	49	2	52	4.1	0.333	33.2	LOS C	1.1	7.9	0.89	0.99	1.06	43.9
Approach		1232	54	1297	4.4	0.333	1.4	NA	1.1	7.9	0.04	0.04	0.04	77.2
North: Chain Valley Bay Road														
7	L2	99	0	104	0.0	0.137	9.8	LOS A	0.5	3.4	0.51	0.78	0.51	62.2
9	R2	554	3	583	0.5	3.894	2623.9	LOS F	283.2	1991.7	1.00	5.77	25.98	1.4
Approach		653	3	687	0.5	3.894	2227.6	LOS F	283.2	1991.7	0.93	5.01	22.12	1.6
West: Pacific Highway														
10	L2	247	6	260	2.4	0.142	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	64.5
11	T1	955	57	1005	6.0	0.268	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
12u	U	11	0	12	0.0	0.101	38.3	LOS C	0.3	2.1	0.90	0.97	0.90	41.7
Approach		1213	63	1277	5.2	0.268	1.8	NA	0.3	2.1	0.01	0.14	0.01	75.5
All Vehicles		3098	120	3261	3.9	3.894	470.8	NA	283.2	1991.7	0.21	1.13	4.68	7.0

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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Project: C:\Work Documents\Projects\2022\22.162 - DPE Update Lake Munmorah residential PP Darkinjung\Sidra

\PacHwy_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

Site: 101 [2016 PM + development - 490 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Pacific Highway														
5	T1	1063	38	1119	3.6	0.295	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
6	R2	80	1	84	1.3	0.901	112.2	LOS F	4.6	32.5	0.99	1.25	2.40	22.6
Approach		1143	39	1203	3.4	0.901	7.9	NA	4.6	32.5	0.07	0.09	0.17	67.8
North: Chain Valley Bay Road														
7	L2	48	0	51	0.0	0.073	10.2	LOS A	0.2	1.7	0.52	0.77	0.52	61.8
9	R2	264	1	278	0.4	3.021	1851.8	LOS F	125.2	879.3	1.00	3.83	16.60	1.9
Approach		312	1	328	0.3	3.021	1568.5	LOS F	125.2	879.3	0.93	3.36	14.13	2.2
West: Pacific Highway														
10	L2	420	6	442	1.4	0.240	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	64.8
11	T1	1092	21	1149	1.9	0.299	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
12u	U	12	0	13	0.0	0.080	29.8	LOS C	0.2	1.7	0.86	0.96	0.86	46.2
Approach		1524	27	1604	1.8	0.299	2.2	NA	0.2	1.7	0.01	0.18	0.01	74.6
All Vehicles		2979	67	3136	2.2	3.021	168.4	NA	125.2	879.3	0.13	0.48	1.55	16.8

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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\PacHwy_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

Site: 101 [2016 PM + development - 755 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Pacific Highway														
5	T1	1063	38	1119	3.6	0.516	2.6	LOS A	5.1	36.6	0.12	0.00	0.13	75.7
6	R2	98	1	103	1.0	1.305	367.3	LOS F	20.0	141.1	1.00	1.98	6.45	8.5
Approach		1161	39	1222	3.4	1.305	33.4	NA	20.0	141.1	0.19	0.17	0.66	45.5
North: Chain Valley Bay Road														
7	L2	60	0	63	0.0	0.091	10.2	LOS A	0.3	2.2	0.52	0.78	0.52	61.8
9	R2	341	1	359	0.3	4.447	3130.2	LOS F	186.4	1308.3	1.00	3.90	17.17	1.1
Approach		401	1	422	0.2	4.447	2663.3	LOS F	186.4	1308.3	0.93	3.44	14.68	1.3
West: Pacific Highway														
10	L2	521	6	548	1.2	0.298	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	64.9
11	T1	1092	21	1149	1.9	0.298	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
12u	U	12	0	13	0.0	0.109	38.4	LOS C	0.3	2.3	0.90	0.97	0.90	41.7
Approach		1625	27	1711	1.7	0.298	2.6	NA	0.3	2.3	0.01	0.21	0.01	73.8
All Vehicles		3187	67	3355	2.1	4.447	348.6	NA	186.4	1308.3	0.19	0.60	2.09	9.1

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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Project: C:\Work Documents\Projects\2022\22.162 - DPE Update Lake Munmorah residential PP Darkingung\Sidra

\PacHwy_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

Site: 101v [2016 AM + development 490 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah

Darkinjung & all Mulloway developments

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 82 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
East: Pacific Highway														
5	T1	1183	52	1245	4.4	0.673	17.3	LOS B	19.0	138.2	0.82	0.73	0.82	58.0
6	R2	40	2	42	5.0	0.321	48.8	LOS D	1.7	12.6	0.98	0.73	0.98	36.9
Approach		1223	54	1287	4.4	0.673	18.3	LOS B	19.0	138.2	0.83	0.73	0.83	57.0
North: Chain Valley Bay Road														
7	L2	81	0	85	0.0	*0.673	35.4	LOS C	10.1	71.1	0.97	0.84	1.00	43.3
9	R2	450	3	474	0.7	*0.673	38.3	LOS C	10.4	73.6	0.97	0.84	1.00	42.1
Approach		531	3	559	0.6	0.673	37.8	LOS C	10.4	73.6	0.97	0.84	1.00	42.2
West: Pacific Highway														
10	L2	201	6	212	3.0	0.137	8.0	LOS A	0.9	6.3	0.19	0.65	0.19	63.8
11	T1	955	57	1005	6.0	0.555	15.8	LOS B	14.3	105.0	0.75	0.66	0.75	59.4
12u	U	11	0	12	0.0	0.114	49.2	LOS D	0.5	3.3	0.96	0.69	0.96	37.1
Approach		1167	63	1228	5.4	0.555	14.8	LOS B	14.3	105.0	0.66	0.66	0.66	59.8
All Vehicles		2921	120	3075	4.1	0.673	20.4	LOS B	19.0	138.2	0.78	0.73	0.79	54.5

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

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

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

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

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Project: C:\Work Documents\Projects\2022\22.162 - DPE Update Lake Munmorah residential PP Darkinjung\Sidra

\PacHwy_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

Site: 101v [2016 AM + development 755 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah

Darkinjung & all Malloway developments

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
East: Pacific Highway														
5	T1	1183	52	1245	4.4	0.730	19.7	LOS B	20.2	146.4	0.88	0.79	0.89	55.8
6	R2	49	2	52	4.1	0.381	47.9	LOS D	2.1	15.0	0.99	0.74	0.99	37.3
Approach		1232	54	1297	4.4	0.730	20.9	LOS B	20.2	146.4	0.88	0.79	0.89	54.7
North: Chain Valley Bay Road														
7	L2	99	0	104	0.0	*0.731	35.3	LOS C	12.6	88.7	0.97	0.87	1.04	43.4
9	R2	557	3	586	0.5	*0.731	37.6	LOS C	12.9	90.7	0.97	0.87	1.05	42.4
Approach		656	3	691	0.5	0.731	37.3	LOS C	12.9	90.7	0.97	0.87	1.05	42.5
West: Pacific Highway														
10	L2	247	6	260	2.4	0.169	8.2	LOS A	1.3	8.9	0.21	0.66	0.21	63.8
11	T1	955	57	1005	6.0	0.601	17.9	LOS B	15.0	110.4	0.81	0.71	0.81	57.5
12u	U	11	0	12	0.0	0.111	48.0	LOS D	0.5	3.2	0.96	0.69	0.96	37.6
Approach		1213	63	1277	5.2	0.601	16.2	LOS B	15.0	110.4	0.69	0.70	0.69	58.4
All Vehicles		3101	120	3264	3.9	0.731	22.5	LOS B	20.2	146.4	0.83	0.77	0.84	52.8

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

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

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

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

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Project: C:\Work Documents\Projects\2022\22.162 - DPE Update Lake Munmorah residential PP Darkinjung\Sidra

\PacHwy_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

Site: 101v [2016 PM + development - 490 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 83 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Pacific Highway														
5	T1	1063	38	1119	3.6	0.541	13.2	LOS A	14.6	105.6	0.70	0.62	0.70	62.0
6	R2	80	1	84	1.3	* 0.542	49.2	LOS D	3.5	24.9	1.00	0.77	1.02	37.1
Approach		1143	39	1203	3.4	0.542	15.7	LOS B	14.6	105.6	0.72	0.63	0.72	59.2
North: Chain Valley Bay Road														
7	L2	48	0	51	0.0	0.548	36.8	LOS C	6.0	41.9	0.96	0.80	0.96	42.6
9	R2	264	1	278	0.4	* 0.548	40.6	LOS C	6.2	43.5	0.97	0.80	0.97	41.0
Approach		312	1	328	0.3	0.548	40.1	LOS C	6.2	43.5	0.97	0.80	0.97	41.2
West: Pacific Highway														
10	L2	420	6	442	1.4	0.289	8.4	LOS A	2.7	19.0	0.24	0.67	0.24	63.9
11	T1	1092	21	1149	1.9	* 0.556	13.3	LOS A	15.4	109.3	0.70	0.63	0.70	61.9
12u	U	12	0	13	0.0	0.108	48.3	LOS D	0.5	3.5	0.95	0.69	0.95	37.5
Approach		1524	27	1604	1.8	0.556	12.2	LOS A	15.4	109.3	0.58	0.64	0.58	62.1
All Vehicles		2979	67	3136	2.2	0.556	16.5	LOS B	15.4	109.3	0.67	0.65	0.67	58.0

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

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

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

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

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Project: C:\Work Documents\Projects\2022\22.162 - DPE Update Lake Munmorah residential PP Darkinjung\Sidra

\PacHwy_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

 Site: 101v [2016 PM + development - 755 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 82 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Pacific Highway														
5	T1	1063	38	1119	3.6	0.587	15.6	LOS B	15.8	114.3	0.76	0.68	0.76	59.6
6	R2	98	1	103	1.0	0.573	47.7	LOS D	4.2	29.8	1.00	0.79	1.03	37.7
Approach		1161	39	1222	3.4	0.587	18.3	LOS B	15.8	114.3	0.78	0.69	0.78	56.8
North: Chain Valley Bay Road														
7	L2	60	0	63	0.0	* 0.591	35.0	LOS C	7.2	50.8	0.96	0.81	0.96	43.5
9	R2	331	1	348	0.3	* 0.591	38.7	LOS C	7.6	53.4	0.96	0.81	0.96	41.9
Approach		391	1	412	0.3	0.591	38.2	LOS C	7.6	53.4	0.96	0.81	0.96	42.1
West: Pacific Highway														
10	L2	521	6	548	1.2	0.363	8.6	LOS A	3.9	27.4	0.28	0.68	0.28	63.7
11	T1	1092	21	1149	1.9	0.603	15.7	LOS B	16.6	118.3	0.77	0.68	0.77	59.5
12u	U	12	0	13	0.0	0.093	46.4	LOS D	0.5	3.4	0.94	0.69	0.94	38.2
Approach		1625	27	1711	1.7	0.603	13.7	LOS A	16.6	118.3	0.61	0.68	0.61	60.5
All Vehicles		3177	67	3344	2.1	0.603	18.4	LOS B	16.6	118.3	0.72	0.70	0.72	56.2

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

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

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

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

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Project: C:\Work Documents\Projects\2022\22.162 - DPE Update Lake Munmorah residential PP Darkinjung\Sidra

IPacHwy_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

Site: 101v [2026 AM + development - 490 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah

Darkinjung & all Mulloway developments

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 86 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Pacific Highway														
5	T1	1373	52	1445	3.8	0.742	17.8	LOS B	23.9	172.4	0.85	0.77	0.85	57.6
6	R2	42	2	44	4.8	0.353	51.3	LOS D	1.9	13.9	0.99	0.74	0.99	36.0
Approach		1415	54	1489	3.8	0.742	18.8	LOS B	23.9	172.4	0.85	0.77	0.85	56.5
North: Chain Valley Bay Road														
7	L2	84	0	88	0.0	* 0.744	39.9	LOS C	11.9	83.8	0.99	0.87	1.09	41.1
9	R2	476	3	501	0.6	* 0.744	42.6	LOS D	12.2	85.5	0.99	0.88	1.09	40.1
Approach		560	3	589	0.5	0.744	42.2	LOS C	12.2	85.5	0.99	0.88	1.09	40.2
West: Pacific Highway														
10	L2	211	6	222	2.8	0.142	8.1	LOS A	1.0	7.5	0.19	0.65	0.19	63.8
11	T1	1108	57	1166	5.1	0.611	15.9	LOS B	17.5	128.2	0.76	0.68	0.76	59.3
12u	U	13	0	14	0.0	0.141	51.7	LOS D	0.6	4.1	0.97	0.69	0.97	36.2
Approach		1332	63	1402	4.7	0.611	15.0	LOS B	17.5	128.2	0.67	0.67	0.67	59.6
All Vehicles		3307	120	3481	3.6	0.744	21.2	LOS B	23.9	172.4	0.80	0.75	0.82	53.9

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

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

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

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

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Project: C:\Work Documents\Projects\2022\22.162 - DPE Update Lake Munmorah residential PP Darkinjung\Sidra

IPacHwy_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

Site: 101v [2026 AM + development - 755 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah

Darkinjung & all Mullettway developments

Site Category: (None)

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

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
East: Pacific Highway														
5	T1	1373	52	1445	3.8	0.777	21.4	LOS B	26.8	193.6	0.89	0.82	0.91	54.5
6	R2	51	2	54	3.9	0.446	54.0	LOS D	2.4	17.7	1.00	0.74	1.00	35.1
Approach		1424	54	1499	3.8	0.777	22.5	LOS B	26.8	193.6	0.89	0.82	0.91	53.4
North: Chain Valley Bay Road														
7	L2	102	0	107	0.0	* 0.782	41.6	LOS C	15.6	109.3	0.99	0.90	1.11	40.4
9	R2	583	3	614	0.5	* 0.782	43.8	LOS D	15.8	110.8	0.99	0.90	1.11	39.6
Approach		685	3	721	0.4	0.782	43.4	LOS D	15.8	110.8	0.99	0.90	1.11	39.7
West: Pacific Highway														
10	L2	257	6	271	2.3	0.173	8.1	LOS A	1.3	9.5	0.19	0.65	0.19	64.0
11	T1	1108	57	1166	5.1	0.639	18.3	LOS B	19.2	140.4	0.80	0.71	0.80	57.1
12u	U	13	0	14	0.0	0.147	54.0	LOS D	0.6	4.3	0.97	0.69	0.97	35.4
Approach		1378	63	1451	4.6	0.639	16.7	LOS B	19.2	140.4	0.68	0.70	0.68	57.9
All Vehicles		3487	120	3671	3.4	0.782	24.3	LOS B	26.8	193.6	0.83	0.79	0.86	51.5

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

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

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

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

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\PacHwy_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

Site: 101v [2026 PM + development - 490 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Pacific Highway														
5	T1	1234	38	1299	3.1	0.618	13.2	LOS A	17.2	123.9	0.73	0.66	0.73	62.1
6	R2	84	1	88	1.2	* 0.640	49.6	LOS D	3.7	26.1	1.00	0.80	1.12	37.0
Approach		1318	39	1387	3.0	0.640	15.5	LOS B	17.2	123.9	0.75	0.67	0.76	59.5
North: Chain Valley Bay Road														
7	L2	51	0	54	0.0	0.600	36.4	LOS C	6.2	43.3	0.98	0.81	0.99	42.8
9	R2	277	1	292	0.4	* 0.600	40.3	LOS C	6.4	44.9	0.98	0.81	1.00	41.1
Approach		328	1	345	0.3	0.600	39.7	LOS C	6.4	44.9	0.98	0.81	0.99	41.4
West: Pacific Highway														
10	L2	442	6	465	1.4	0.305	8.4	LOS A	2.8	20.0	0.25	0.67	0.25	63.9
11	T1	1267	21	1334	1.7	* 0.635	13.3	LOS A	18.2	128.9	0.74	0.67	0.74	61.9
12u	U	14	0	15	0.0	0.141	48.2	LOS D	0.6	4.1	0.96	0.70	0.96	37.5
Approach		1723	27	1814	1.6	0.635	12.3	LOS A	18.2	128.9	0.62	0.67	0.62	62.1
All Vehicles		3369	67	3546	2.0	0.640	16.2	LOS B	18.2	128.9	0.70	0.68	0.71	58.2

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

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

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

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

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Project: C:\Work Documents\Projects\2022\22.162 - DPE Update Lake Munmorah residential PP Darkinjung\Sidra

\PacHwy_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

Site: 101v [2026 PM + development - 755 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 82 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV] veh/h	[Total veh/h]	[HV] %				[Veh. veh]	[Dist] m				
East: Pacific Highway														
5	T1	1234	38	1299	3.1	0.648	15.1	LOS B	18.7	134.3	0.78	0.70	0.78	60.1
6	R2	102	1	107	1.0	0.682	50.2	LOS D	4.6	32.3	1.00	0.83	1.15	36.8
Approach		1336	39	1406	2.9	0.682	17.8	LOS B	18.7	134.3	0.79	0.71	0.80	57.3
North: Chain Valley Bay Road														
7	L2	63	0	66	0.0	* 0.657	36.7	LOS C	7.9	55.1	0.98	0.83	1.02	42.7
9	R2	344	1	362	0.3	* 0.657	40.6	LOS C	8.2	57.5	0.98	0.83	1.03	41.0
Approach		407	1	428	0.2	0.657	40.0	LOS C	8.2	57.5	0.98	0.83	1.03	41.3
West: Pacific Highway														
10	L2	543	6	572	1.1	0.377	8.6	LOS A	4.0	28.5	0.28	0.68	0.28	63.7
11	T1	1267	21	1334	1.7	0.666	15.2	LOS B	19.7	139.7	0.78	0.70	0.78	60.0
12u	U	14	0	15	0.0	0.124	47.9	LOS D	0.6	4.1	0.95	0.70	0.95	37.6
Approach		1824	27	1920	1.5	0.666	13.5	LOS A	19.7	139.7	0.63	0.70	0.63	60.7
All Vehicles		3567	67	3755	1.9	0.682	18.1	LOS B	19.7	139.7	0.73	0.72	0.74	56.4

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

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

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

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

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Project: C:\Work Documents\Projects\2022\22.162 - DPE Update Lake Munmorah residential PP Darkingjung\Sidra

\PacHwy_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

Site: 101v [2036 AM + development - 490 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah

Darkinjung & all Mulloway developments

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 104 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Pacific Highway														
5	T1	1593	52	1677	3.3	0.787	19.3	LOS B	33.2	239.2	0.85	0.78	0.85	56.2
6	R2	44	2	46	4.5	0.446	62.0	LOS E	2.5	17.8	1.00	0.74	1.00	32.6
Approach		1637	54	1723	3.3	0.787	20.5	LOS B	33.2	239.2	0.86	0.78	0.86	55.1
North: Chain Valley Bay Road														
7	L2	88	0	93	0.0	* 0.784	48.6	LOS D	15.7	110.1	1.00	0.89	1.12	37.5
9	R2	506	3	533	0.6	* 0.784	51.2	LOS D	15.8	111.5	1.00	0.89	1.12	36.6
Approach		594	3	625	0.5	0.784	50.8	LOS D	15.8	111.5	1.00	0.89	1.12	36.7
West: Pacific Highway														
10	L2	222	6	234	2.7	0.146	8.0	LOS A	1.1	8.0	0.16	0.65	0.16	64.0
11	T1	1286	57	1354	4.4	0.648	16.9	LOS B	23.8	173.2	0.74	0.67	0.74	58.4
12u	U	15	0	16	0.0	0.196	62.4	LOS E	0.8	5.8	0.98	0.70	0.98	32.7
Approach		1523	63	1603	4.1	0.648	16.0	LOS B	23.8	173.2	0.66	0.67	0.66	58.7
All Vehicles		3754	120	3952	3.2	0.787	23.5	LOS B	33.2	239.2	0.80	0.75	0.82	52.3

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

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

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

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

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Project: C:\Work Documents\Projects\2022\22.162 - DPE Update Lake Munmorah residential PP Darkinjung\Sidra

\PacHwy_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

Site: 101v [2036 AM + development - 755 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah
Darkinjung & all Mullooly developments

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 107 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Pacific Highway														
5	T1	1593	52	1677	3.3	0.824	24.3	LOS B	37.7	271.4	0.90	0.85	0.93	52.2
6	R2	53	2	56	3.8	0.550	64.4	LOS E	3.1	22.2	1.00	0.76	1.04	32.0
Approach		1646	54	1733	3.3	0.824	25.6	LOS B	37.7	271.4	0.91	0.85	0.94	51.2
North: Chain Valley Bay Road														
7	L2	106	0	112	0.0	* 0.828	51.1	LOS D	20.2	142.0	1.00	0.92	1.15	36.6
9	R2	613	3	645	0.5	* 0.828	53.2	LOS D	20.3	143.0	1.00	0.92	1.15	35.9
Approach		719	3	757	0.4	0.828	52.9	LOS D	20.3	143.0	1.00	0.92	1.15	36.0
West: Pacific Highway														
10	L2	268	6	282	2.2	0.176	8.1	LOS A	1.5	11.0	0.17	0.65	0.17	64.0
11	T1	1286	57	1354	4.4	0.678	19.4	LOS B	25.9	188.3	0.79	0.71	0.79	56.1
12u	U	15	0	16	0.0	0.202	64.2	LOS E	0.9	6.0	0.98	0.70	0.98	32.2
Approach		1569	63	1652	4.0	0.678	17.9	LOS B	25.9	188.3	0.68	0.70	0.68	57.0
All Vehicles		3934	120	4141	3.1	0.828	27.5	LOS B	37.7	271.4	0.83	0.80	0.87	49.4

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

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

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

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

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Project: C:\Work Documents\Projects\2022\22.162 - DPE Update Lake Munmorah residential PP Darkinjung\Sidra

\PacHwy_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

Site: 101v [2036 PM + development - 490 dwellings (Site Folder: General)]

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 81 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Pacific Highway														
5	T1	1432	38	1507	2.7	0.692	13.4	LOS A	21.2	151.5	0.77	0.70	0.77	61.9
6	R2	89	1	94	1.1	* 0.686	50.8	LOS D	4.0	28.3	1.00	0.82	1.18	36.5
Approach		1521	39	1601	2.6	0.692	15.6	LOS B	21.2	151.5	0.78	0.70	0.79	59.4
North: Chain Valley Bay Road														
7	L2	54	0	57	0.0	0.697	39.4	LOS C	7.0	49.1	1.00	0.84	1.10	41.4
9	R2	292	1	307	0.3	* 0.697	43.4	LOS D	7.1	50.1	1.00	0.85	1.11	39.8
Approach		346	1	364	0.3	0.697	42.8	LOS D	7.1	50.1	1.00	0.85	1.11	40.0
West: Pacific Highway														
10	L2	468	6	493	1.3	0.323	8.5	LOS A	3.1	22.3	0.26	0.67	0.26	63.7
11	T1	1471	21	1548	1.4	* 0.713	13.5	LOS A	22.4	158.7	0.78	0.71	0.78	61.7
12u	U	16	0	17	0.0	0.163	49.0	LOS D	0.7	4.7	0.97	0.70	0.97	37.2
Approach		1955	27	2058	1.4	0.713	12.6	LOS A	22.4	158.7	0.66	0.70	0.66	61.8
All Vehicles		3822	67	4023	1.8	0.713	16.5	LOS B	22.4	158.7	0.74	0.71	0.75	58.0

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

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

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

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

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\PachWV_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

 **Site: 101v [2036 PM + development - 755 dwellings (Site Folder: General)]**

Pacific Highway / Chain Valley Bay Road T-intersection, Lake Munmorah

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 82 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Pacific Highway														
5	T1	1432	38	1507	2.7	0.733	15.6	LOS B	23.0	164.7	0.82	0.75	0.82	59.6
6	R2	107	1	113	0.9	0.715	50.7	LOS D	4.8	34.2	1.00	0.84	1.19	36.6
Approach		1539	39	1620	2.5	0.733	18.0	LOS B	23.0	164.7	0.84	0.75	0.85	57.1
North: Chain Valley Bay Road														
7	L2	66	0	69	0.0	* 0.737	39.6	LOS C	8.7	61.2	1.00	0.86	1.13	41.3
9	R2	359	1	378	0.3	* 0.737	43.4	LOS D	9.0	62.9	1.00	0.87	1.14	39.8
Approach		425	1	447	0.2	0.737	42.8	LOS D	9.0	62.9	1.00	0.87	1.13	40.0
West: Pacific Highway														
10	L2	579	6	609	1.0	0.403	8.7	LOS A	4.4	31.3	0.29	0.68	0.29	63.6
11	T1	1471	21	1548	1.4	0.755	15.9	LOS B	24.4	172.9	0.84	0.76	0.84	59.3
12u	U	16	0	17	0.0	0.142	48.0	LOS D	0.7	4.7	0.96	0.70	0.96	37.6
Approach		2066	27	2175	1.3	0.755	14.1	LOS A	24.4	172.9	0.68	0.74	0.68	60.2
All Vehicles		4030	67	4242	1.7	0.755	18.6	LOS B	24.4	172.9	0.77	0.76	0.80	56.0

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

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

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

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

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

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Project: C:\Work Documents\Projects\2022\22.162 - DPE Update Lake Munmorah residential PP Darkinjung\Sidra

PachWV_ChainValleyBayDPE.sip9

MOVEMENT SUMMARY

Site: 101 [2026 AM - southern - 490 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - southern intersection

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	46	5.0	48	5.0	0.027	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	182	5.0	192	5.0	0.102	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	25	5.0	26	5.0	0.030	9.0	LOS A	0.1	0.8	0.46	0.68	0.46	52.7
Approach		253	5.0	266	5.0	0.102	2.2	NA	0.1	0.8	0.05	0.18	0.05	72.8
East: East subdivision access														
4	L2	59	5.0	62	5.0	0.076	6.8	LOS A	0.3	1.9	0.45	0.66	0.45	51.4
5	T1	18	5.0	19	5.0	0.090	16.3	LOS B	0.3	2.2	0.72	0.85	0.72	40.7
6	R2	3	5.0	3	5.0	0.090	17.0	LOS B	0.3	2.2	0.72	0.85	0.72	45.3
Approach		80	5.0	84	5.0	0.090	9.3	LOS A	0.3	2.2	0.52	0.71	0.52	48.3
North: Chain Valley Bay Road														
7	L2	2	5.0	2	5.0	0.001	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	396	5.0	417	5.0	0.221	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	3	5.0	3	5.0	0.003	7.8	LOS A	0.0	0.1	0.33	0.58	0.33	53.4
Approach		401	5.0	422	5.0	0.221	0.1	NA	0.0	0.1	0.00	0.01	0.00	79.5
West: West subdivision access														
10	L2	5	5.0	5	5.0	0.005	5.4	LOS A	0.0	0.1	0.28	0.51	0.28	52.2
11	T1	32	5.0	34	5.0	0.637	27.1	LOS B	3.4	24.8	0.88	1.16	1.57	35.2
12	R2	105	5.0	111	5.0	0.637	31.5	LOS C	3.4	24.8	0.88	1.16	1.57	38.6
Approach		142	5.0	149	5.0	0.637	29.6	LOS C	3.4	24.8	0.86	1.13	1.52	38.1
All Vehicles		876	5.0	922	5.0	0.637	6.3	NA	3.4	24.8	0.20	0.30	0.31	63.0

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

Site: 101 [2026 AM - southern - 755 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - southern intersection

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	71	5.0	75	5.0	0.042	7.0	LOSA	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	195	5.0	205	5.0	0.109	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	39	5.0	41	5.0	0.050	9.3	LOSA	0.2	1.3	0.49	0.71	0.49	52.5
Approach		305	5.0	321	5.0	0.109	2.8	NA	0.2	1.3	0.06	0.24	0.06	71.0
East: East subdivision access														
4	L2	91	5.0	96	5.0	0.123	7.2	LOSA	0.4	3.2	0.48	0.70	0.48	51.1
5	T1	22	5.0	23	5.0	0.141	20.3	LOS B	0.5	3.3	0.79	0.88	0.79	39.0
6	R2	5	5.0	5	5.0	0.141	20.2	LOS B	0.5	3.3	0.79	0.88	0.79	43.2
Approach		118	5.0	124	5.0	0.141	10.2	LOSA	0.5	3.3	0.55	0.74	0.55	48.0
North: Chain Valley Bay Road														
7	L2	3	5.0	3	5.0	0.002	7.0	LOSA	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	433	5.0	456	5.0	0.241	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	79.8
9	R2	5	5.0	5	5.0	0.005	8.0	LOSA	0.0	0.1	0.36	0.59	0.36	53.3
Approach		441	5.0	464	5.0	0.241	0.2	NA	0.0	0.1	0.00	0.01	0.00	79.3
West: West subdivision access														
10	L2	8	5.0	8	5.0	0.008	5.4	LOSA	0.0	0.2	0.29	0.52	0.29	52.2
11	T1	36	5.0	38	5.0	1.197	228.9	LOS F	29.5	215.3	1.00	3.11	7.99	11.7
12	R2	162	5.0	171	5.0	1.197	235.4	LOS F	29.5	215.3	1.00	3.11	7.99	12.1
Approach		206	5.0	217	5.0	1.197	225.4	LOS F	29.5	215.3	0.97	3.01	7.69	12.4
All Vehicles		1070	5.0	1126	5.0	1.197	45.4	NA	29.5	215.3	0.27	0.73	1.56	36.9

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

▼ Site: 101 [2036 AM - southern - 490 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - southern intersection

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	46	5.0	48	5.0	0.027	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	195	5.0	205	5.0	0.109	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	25	5.0	26	5.0	0.032	9.2	LOS A	0.1	0.8	0.48	0.69	0.48	52.5
Approach		266	5.0	280	5.0	0.109	2.1	NA	0.1	0.8	0.05	0.17	0.05	73.1
East: East subdivision access														
4	L2	59	5.0	62	5.0	0.080	7.1	LOS A	0.3	2.0	0.47	0.68	0.47	51.2
5	T1	18	5.0	19	5.0	0.100	18.3	LOS B	0.3	2.4	0.76	0.87	0.76	39.9
6	R2	3	5.0	3	5.0	0.100	18.9	LOS B	0.3	2.4	0.76	0.87	0.76	44.3
Approach		80	5.0	84	5.0	0.100	10.0	LOS A	0.3	2.4	0.55	0.73	0.55	47.9
North: Chain Valley Bay Road														
7	L2	2	5.0	2	5.0	0.001	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	430	5.0	453	5.0	0.240	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
9	R2	3	5.0	3	5.0	0.003	7.9	LOS A	0.0	0.1	0.34	0.58	0.34	53.3
Approach		435	5.0	458	5.0	0.240	0.1	NA	0.0	0.1	0.00	0.01	0.00	79.5
West: West subdivision access														
10	L2	5	5.0	5	5.0	0.005	5.4	LOS A	0.0	0.1	0.29	0.51	0.29	52.2
11	T1	32	5.0	34	5.0	0.714	34.3	LOS C	4.0	29.4	0.92	1.24	1.82	32.9
12	R2	105	5.0	111	5.0	0.714	39.1	LOS C	4.0	29.4	0.92	1.24	1.82	35.8
Approach		142	5.0	149	5.0	0.714	36.8	LOS C	4.0	29.4	0.89	1.21	1.77	35.5
All Vehicles		923	5.0	972	5.0	0.714	7.2	NA	4.0	29.4	0.20	0.30	0.33	62.4

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

Site: 101 [2036 AM - southern - 755 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - southern intersection

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	71	5.0	75	5.0	0.042	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	211	5.0	222	5.0	0.118	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	39	5.0	41	5.0	0.052	9.6	LOS A	0.2	1.4	0.51	0.73	0.51	52.3
Approach		321	5.0	338	5.0	0.118	2.7	NA	0.2	1.4	0.06	0.23	0.06	71.3
East: East subdivision access														
4	L2	91	5.0	96	5.0	0.130	7.5	LOS A	0.5	3.3	0.50	0.73	0.50	50.9
5	T1	22	5.0	23	5.0	0.160	23.0	LOS B	0.5	3.7	0.81	0.90	0.81	38.0
6	R2	5	5.0	5	5.0	0.160	22.8	LOS B	0.5	3.7	0.81	0.90	0.81	41.9
Approach		118	5.0	124	5.0	0.160	11.1	LOS A	0.5	3.7	0.58	0.77	0.58	47.4
North: Chain Valley Bay Road														
7	L2	3	5.0	3	5.0	0.002	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	467	5.0	492	5.0	0.260	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
9	R2	5	5.0	5	5.0	0.005	8.1	LOS A	0.0	0.1	0.37	0.59	0.37	53.2
Approach		475	5.0	500	5.0	0.260	0.2	NA	0.0	0.1	0.00	0.01	0.00	79.3
West: West subdivision access														
10	L2	8	5.0	8	5.0	0.008	5.5	LOS A	0.0	0.2	0.30	0.52	0.30	52.1
11	T1	36	5.0	38	5.0	1.362	368.9	LOS F	41.7	304.5	1.00	3.69	10.11	8.0
12	R2	162	5.0	171	5.0	1.362	375.3	LOS F	41.7	304.5	1.00	3.69	10.11	8.2
Approach		206	5.0	217	5.0	1.362	359.8	LOS F	41.7	304.5	0.97	3.57	9.72	8.5
All Vehicles		1120	5.0	1179	5.0	1.362	68.2	NA	41.7	304.5	0.26	0.81	1.87	29.9

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

Site: 101 [2026 PM - southern - 490 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - southern intersection

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	99	5.0	104	5.0	0.058	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	372	5.0	392	5.0	0.208	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	55	5.0	58	5.0	0.053	8.0	LOS A	0.2	1.5	0.35	0.63	0.35	53.3
Approach		526	5.0	554	5.0	0.208	2.2	NA	0.2	1.5	0.04	0.18	0.04	72.6
East: East subdivision access														
4	L2	37	5.0	39	5.0	0.038	5.6	LOS A	0.1	1.0	0.32	0.55	0.32	52.1
5	T1	11	5.0	12	5.0	0.072	19.9	LOS B	0.2	1.7	0.77	0.87	0.77	39.4
6	R2	3	5.0	3	5.0	0.072	17.8	LOS B	0.2	1.7	0.77	0.87	0.77	43.7
Approach		51	5.0	54	5.0	0.072	9.4	LOS A	0.2	1.7	0.44	0.64	0.44	48.2
North: Chain Valley Bay Road														
7	L2	3	5.0	3	5.0	0.002	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	225	5.0	237	5.0	0.125	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	5	5.0	5	5.0	0.007	9.3	LOS A	0.0	0.2	0.49	0.65	0.49	52.5
Approach		233	5.0	245	5.0	0.125	0.3	NA	0.0	0.2	0.01	0.02	0.01	78.8
West: West subdivision access														
10	L2	3	5.0	3	5.0	0.004	6.4	LOS A	0.0	0.1	0.42	0.55	0.42	51.7
11	T1	19	5.0	20	5.0	0.448	24.8	LOS B	1.9	13.7	0.85	1.03	1.17	36.3
12	R2	67	5.0	71	5.0	0.448	28.0	LOS B	1.9	13.7	0.85	1.03	1.17	39.9
Approach		89	5.0	94	5.0	0.448	26.6	LOS B	1.9	13.7	0.84	1.01	1.15	39.4
All Vehicles		899	5.0	946	5.0	0.448	4.5	NA	1.9	13.7	0.13	0.25	0.16	66.5

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

▼ Site: 101 [2026 PM - southern - 755 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - southern intersection

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Chain Valley Bay Road														
1	L2	152	5.0	160	5.0	0.089	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	408	5.0	429	5.0	0.229	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	84	5.0	88	5.0	0.083	8.1	LOS A	0.3	2.4	0.37	0.65	0.37	53.2
Approach		644	5.0	678	5.0	0.229	2.8	NA	0.3	2.4	0.05	0.23	0.05	71.0
East: East subdivision access														
4	L2	57	5.0	60	5.0	0.060	5.8	LOS A	0.2	1.6	0.35	0.57	0.35	52.0
5	T1	14	5.0	15	5.0	0.131	27.8	LOS B	0.4	3.0	0.84	0.91	0.84	36.7
6	R2	5	5.0	5	5.0	0.131	22.2	LOS B	0.4	3.0	0.84	0.91	0.84	40.4
Approach		76	5.0	80	5.0	0.131	10.9	LOS A	0.4	3.0	0.47	0.66	0.47	47.4
North: Chain Valley Bay Road														
7	L2	5	5.0	5	5.0	0.003	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	249	5.0	262	5.0	0.139	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	8	5.0	8	5.0	0.012	10.1	LOS A	0.0	0.3	0.53	0.69	0.53	51.9
Approach		262	5.0	276	5.0	0.139	0.5	NA	0.0	0.3	0.02	0.03	0.02	78.3
West: West subdivision access														
10	L2	5	5.0	5	5.0	0.007	6.7	LOS A	0.0	0.2	0.44	0.58	0.44	51.5
11	T1	22	5.0	23	5.0	0.908	77.4	LOS F	6.7	49.1	0.98	1.56	2.93	23.5
12	R2	103	5.0	108	5.0	0.908	83.3	LOS F	6.7	49.1	0.98	1.56	2.93	25.0
Approach		130	5.0	137	5.0	0.908	79.4	LOS F	6.7	49.1	0.96	1.52	2.84	25.2
All Vehicles		1112	5.0	1171	5.0	0.908	11.7	NA	6.7	49.1	0.18	0.37	0.40	57.9

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

Site: 101 [2036 PM - southern - 490 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - southern intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	99	5.0	104	5.0	0.058	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	358	5.0	377	5.0	0.201	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	55	5.0	58	5.0	0.054	8.1	LOS A	0.2	1.5	0.36	0.64	0.36	53.3
Approach		512	5.0	539	5.0	0.201	2.3	NA	0.2	1.5	0.04	0.19	0.04	72.4
East: East subdivision access														
4	L2	37	5.0	39	5.0	0.039	5.7	LOS A	0.1	1.0	0.34	0.56	0.34	52.0
5	T1	11	5.0	12	5.0	0.072	19.9	LOS B	0.2	1.7	0.77	0.88	0.77	39.4
6	R2	3	5.0	3	5.0	0.072	17.9	LOS B	0.2	1.7	0.77	0.88	0.77	43.7
Approach		51	5.0	54	5.0	0.072	9.5	LOS A	0.2	1.7	0.46	0.65	0.46	48.1
North: Chain Valley Bay Road														
7	L2	3	5.0	3	5.0	0.002	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	243	5.0	256	5.0	0.135	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	5	5.0	5	5.0	0.006	9.2	LOS A	0.0	0.2	0.48	0.64	0.48	52.6
Approach		251	5.0	264	5.0	0.135	0.3	NA	0.0	0.2	0.01	0.02	0.01	78.9
West: West subdivision access														
10	L2	3	5.0	3	5.0	0.004	6.3	LOS A	0.0	0.1	0.41	0.55	0.41	51.8
11	T1	19	5.0	20	5.0	0.449	24.9	LOS B	1.9	13.7	0.85	1.03	1.18	36.3
12	R2	67	5.0	71	5.0	0.449	28.1	LOS B	1.9	13.7	0.85	1.03	1.18	39.9
Approach		89	5.0	94	5.0	0.449	26.7	LOS B	1.9	13.7	0.84	1.01	1.15	39.4
All Vehicles		903	5.0	951	5.0	0.449	4.5	NA	1.9	13.7	0.13	0.25	0.16	66.5

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

Site: 101 [2036 PM - southern - 755 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - southern intersection

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] [veh/h %]		DEMAND FLOWS [Total HV] [veh/h %]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] [veh m]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chain Valley Bay Road														
1	L2	152	5.0	160	5.0	0.089	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	394	5.0	415	5.0	0.222	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	84	5.0	88	5.0	0.085	8.3	LOS A	0.3	2.5	0.39	0.66	0.39	53.2
Approach		630	5.0	663	5.0	0.222	2.8	NA	0.3	2.5	0.05	0.24	0.05	70.8
East: East subdivision access														
4	L2	57	5.0	60	5.0	0.062	5.9	LOS A	0.2	1.6	0.36	0.58	0.36	51.9
5	T1	14	5.0	15	5.0	0.131	27.8	LOS B	0.4	3.0	0.84	0.91	0.84	36.7
6	R2	5	5.0	5	5.0	0.131	22.2	LOS B	0.4	3.0	0.84	0.91	0.84	40.4
Approach		76	5.0	80	5.0	0.131	11.0	LOS A	0.4	3.0	0.48	0.67	0.48	47.4
North: Chain Valley Bay Road														
7	L2	5	5.0	5	5.0	0.003	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	267	5.0	281	5.0	0.149	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	8	5.0	8	5.0	0.012	9.9	LOS A	0.0	0.3	0.53	0.69	0.53	52.0
Approach		280	5.0	295	5.0	0.149	0.4	NA	0.0	0.3	0.02	0.03	0.02	78.4
West: West subdivision access														
10	L2	5	5.0	5	5.0	0.006	6.6	LOS A	0.0	0.2	0.43	0.58	0.43	51.6
11	T1	22	5.0	23	5.0	0.909	77.6	LOS F	6.7	49.2	0.98	1.56	2.94	23.5
12	R2	103	5.0	108	5.0	0.909	83.5	LOS F	6.7	49.2	0.98	1.56	2.94	24.9
Approach		130	5.0	137	5.0	0.909	79.6	LOS F	6.7	49.2	0.96	1.53	2.84	25.2
All Vehicles		1116	5.0	1175	5.0	0.909	11.7	NA	6.7	49.2	0.18	0.37	0.40	58.0

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

Site: 101v [2026 AM - southern - 490 dwellings - Conversion (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - southern intersection
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Chain Valley Bay Road														
1	L2	46	5.0	48	5.0	0.038	5.8	LOSA	0.2	1.4	0.13	0.51	0.13	56.5
2	T1	182	5.0	192	5.0	0.108	6.1	LOSA	0.6	4.5	0.12	0.45	0.12	68.5
3	R2	25	5.0	26	5.0	0.021	12.0	LOSA	0.1	0.8	0.12	0.64	0.12	55.1
Approach		253	5.0	266	5.0	0.108	6.6	LOSA	0.6	4.5	0.12	0.48	0.12	64.5
East: East subdivision access														
4	L2	59	5.0	62	5.0	0.062	4.7	LOSA	0.3	2.4	0.56	0.55	0.56	53.9
5	T1	18	5.0	19	5.0	0.032	5.3	LOSA	0.2	1.1	0.58	0.55	0.58	47.8
6	R2	3	5.0	3	5.0	0.032	10.8	LOSA	0.2	1.1	0.58	0.55	0.58	53.8
Approach		80	5.0	84	5.0	0.062	5.0	LOSA	0.3	2.4	0.57	0.55	0.57	52.4
North: Chain Valley Bay Road														
7	L2	2	5.0	2	5.0	0.002	6.4	LOSA	0.0	0.1	0.33	0.49	0.33	55.7
8	T1	396	5.0	417	5.0	0.264	6.6	LOSA	1.6	11.8	0.36	0.50	0.36	66.6
9	R2	3	5.0	3	5.0	0.003	12.6	LOSA	0.0	0.1	0.33	0.60	0.33	54.3
Approach		401	5.0	422	5.0	0.264	6.7	LOSA	1.6	11.8	0.35	0.50	0.35	66.4
West: West subdivision access														
10	L2	5	5.0	5	5.0	0.007	4.0	LOSA	0.0	0.2	0.39	0.41	0.39	54.6
11	T1	32	5.0	34	5.0	0.115	2.9	LOSA	0.5	4.0	0.35	0.56	0.35	47.1
12	R2	105	5.0	111	5.0	0.115	8.3	LOSA	0.5	4.0	0.35	0.56	0.35	52.8
Approach		142	5.0	149	5.0	0.115	7.0	LOSA	0.5	4.0	0.36	0.55	0.36	51.5
All Vehicles		876	5.0	922	5.0	0.264	6.5	LOSA	1.6	11.8	0.31	0.51	0.31	61.5

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

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

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

Roundabout Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA Standard.

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

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

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Project: C:\Work Documents\Projects\2022\22.162 - DPE Update Lake Munmorah residential PP Darkinjung\Sidra\CHB_subaccess.sip9

MOVEMENT SUMMARY

 **Site: 101v [2026 AM - southern - 755 dwellings - Conversion (Site Folder: General)]**

Chain Valley Bay Road / Subdivision Access - southern intersection
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	71	5.0	75	5.0	0.056	5.8	LOSA	0.3	2.2	0.15	0.51	0.15	56.4
2	T1	195	5.0	205	5.0	0.117	6.1	LOSA	0.7	5.0	0.14	0.45	0.14	68.3
3	R2	39	5.0	41	5.0	0.033	12.0	LOSA	0.2	1.2	0.15	0.64	0.15	55.0
Approach		305	5.0	321	5.0	0.117	6.8	LOSA	0.7	5.0	0.14	0.48	0.14	63.3
East: East subdivision access														
4	L2	91	5.0	96	5.0	0.103	5.3	LOSA	0.6	4.3	0.63	0.62	0.63	53.6
5	T1	22	5.0	23	5.0	0.047	6.4	LOSA	0.2	1.7	0.64	0.63	0.64	47.3
6	R2	5	5.0	5	5.0	0.047	11.9	LOSA	0.2	1.7	0.64	0.63	0.64	53.2
Approach		118	5.0	124	5.0	0.103	5.8	LOSA	0.6	4.3	0.63	0.62	0.63	52.3
North: Chain Valley Bay Road														
7	L2	3	5.0	3	5.0	0.003	6.8	LOSA	0.0	0.1	0.40	0.51	0.40	55.4
8	T1	433	5.0	456	5.0	0.304	7.0	LOSA	2.0	14.4	0.45	0.55	0.45	65.9
9	R2	5	5.0	5	5.0	0.005	13.0	LOSA	0.0	0.2	0.40	0.61	0.40	54.1
Approach		441	5.0	464	5.0	0.304	7.0	LOSA	2.0	14.4	0.45	0.55	0.45	65.6
West: West subdivision access														
10	L2	8	5.0	8	5.0	0.011	4.2	LOSA	0.0	0.3	0.41	0.43	0.41	54.5
11	T1	36	5.0	38	5.0	0.169	3.1	LOSA	0.8	6.1	0.39	0.59	0.39	46.8
12	R2	162	5.0	171	5.0	0.169	8.5	LOSA	0.8	6.1	0.39	0.59	0.39	52.5
Approach		206	5.0	217	5.0	0.169	7.4	LOSA	0.8	6.1	0.39	0.58	0.39	51.5
All Vehicles		1070	5.0	1126	5.0	0.304	6.9	LOSA	2.0	14.4	0.37	0.54	0.37	60.1

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

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

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

Roundabout Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

 Site: 101v [2036 AM - southern - 490 dwellings - Conversion
(Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - southern intersection

Site Category: (None)

Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	46	5.0	48	5.0	0.039	5.8	LOSA	0.2	1.4	0.13	0.51	0.13	56.5
2	T1	195	5.0	205	5.0	0.116	6.1	LOSA	0.7	4.9	0.12	0.45	0.12	68.5
3	R2	25	5.0	26	5.0	0.021	12.0	LOSA	0.1	0.8	0.12	0.64	0.12	55.1
Approach		266	5.0	280	5.0	0.116	6.6	LOSA	0.7	4.9	0.12	0.48	0.12	64.7
East: East subdivision access														
4	L2	59	5.0	62	5.0	0.063	4.9	LOSA	0.3	2.5	0.58	0.57	0.58	53.8
5	T1	18	5.0	19	5.0	0.033	5.6	LOSA	0.2	1.2	0.60	0.57	0.60	47.7
6	R2	3	5.0	3	5.0	0.033	11.0	LOSA	0.2	1.2	0.60	0.57	0.60	53.7
Approach		80	5.0	84	5.0	0.063	5.2	LOSA	0.3	2.5	0.59	0.57	0.59	52.3
North: Chain Valley Bay Road														
7	L2	2	5.0	2	5.0	0.002	6.4	LOSA	0.0	0.1	0.33	0.49	0.33	55.7
8	T1	430	5.0	453	5.0	0.286	6.6	LOSA	1.8	13.2	0.36	0.50	0.36	66.5
9	R2	3	5.0	3	5.0	0.003	12.6	LOSA	0.0	0.1	0.33	0.60	0.33	54.3
Approach		435	5.0	458	5.0	0.286	6.7	LOSA	1.8	13.2	0.36	0.50	0.36	66.4
West: West subdivision access														
10	L2	5	5.0	5	5.0	0.007	4.1	LOSA	0.0	0.2	0.40	0.42	0.40	54.5
11	T1	32	5.0	34	5.0	0.116	2.9	LOSA	0.6	4.0	0.37	0.56	0.37	47.1
12	R2	105	5.0	111	5.0	0.116	8.4	LOSA	0.6	4.0	0.37	0.56	0.37	52.8
Approach		142	5.0	149	5.0	0.116	7.0	LOSA	0.6	4.0	0.37	0.56	0.37	51.4
All Vehicles		923	5.0	972	5.0	0.286	6.6	LOSA	1.8	13.2	0.31	0.51	0.31	61.7

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

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

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

Roundabout Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

**Site: 101v [2036 AM - southern - 755 dwellings - Conversion
(Site Folder: General)]**

Chain Valley Bay Road / Subdivision Access - southern intersection

Site Category: (None)

Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	71	5.0	75	5.0	0.057	5.8	LOSA	0.3	2.2	0.15	0.51	0.15	56.4
2	T1	211	5.0	222	5.0	0.126	6.1	LOSA	0.8	5.5	0.14	0.45	0.14	68.3
3	R2	39	5.0	41	5.0	0.033	12.0	LOSA	0.2	1.2	0.15	0.64	0.15	55.0
Approach		321	5.0	338	5.0	0.126	6.8	LOSA	0.8	5.5	0.14	0.48	0.14	63.5
East: East subdivision access														
4	L2	91	5.0	96	5.0	0.107	5.5	LOSA	0.6	4.5	0.66	0.64	0.66	53.5
5	T1	22	5.0	23	5.0	0.049	6.7	LOSA	0.2	1.8	0.66	0.65	0.66	47.1
6	R2	5	5.0	5	5.0	0.049	12.2	LOSA	0.2	1.8	0.66	0.65	0.66	53.0
Approach		118	5.0	124	5.0	0.107	6.0	LOSA	0.6	4.5	0.66	0.64	0.66	52.2
North: Chain Valley Bay Road														
7	L2	3	5.0	3	5.0	0.003	6.8	LOSA	0.0	0.1	0.40	0.51	0.40	55.4
8	T1	467	5.0	492	5.0	0.328	7.0	LOSA	2.2	15.9	0.46	0.55	0.46	65.8
9	R2	5	5.0	5	5.0	0.005	13.0	LOSA	0.0	0.2	0.40	0.61	0.40	54.1
Approach		475	5.0	500	5.0	0.328	7.1	LOSA	2.2	15.9	0.46	0.55	0.46	65.6
West: West subdivision access														
10	L2	8	5.0	8	5.0	0.011	4.3	LOSA	0.0	0.3	0.42	0.44	0.42	54.4
11	T1	36	5.0	38	5.0	0.171	3.1	LOSA	0.8	6.2	0.41	0.59	0.41	46.8
12	R2	162	5.0	171	5.0	0.171	8.6	LOSA	0.8	6.2	0.41	0.59	0.41	52.4
Approach		206	5.0	217	5.0	0.171	7.5	LOSA	0.8	6.2	0.41	0.59	0.41	51.4
All Vehicles		1120	5.0	1179	5.0	0.328	6.9	LOSA	2.2	15.9	0.38	0.55	0.38	60.3

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

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

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

Roundabout Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

**Site: 101v [2026 PM - southern - 490 dwellings - Conversion
(Site Folder: General)]**

Chain Valley Bay Road / Subdivision Access - southern intersection

Site Category: (None)

Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	99	5.0	104	5.0	0.080	5.8	LOSA	0.4	2.9	0.11	0.51	0.11	56.6
2	T1	372	5.0	392	5.0	0.216	6.1	LOSA	1.3	9.4	0.10	0.45	0.10	68.6
3	R2	55	5.0	58	5.0	0.045	11.9	LOSA	0.2	1.6	0.10	0.65	0.10	55.2
Approach		526	5.0	554	5.0	0.216	6.6	LOSA	1.3	9.4	0.10	0.48	0.10	64.4
East: East subdivision access														
4	L2	37	5.0	39	5.0	0.033	3.6	LOSA	0.2	1.2	0.41	0.44	0.41	54.5
5	T1	11	5.0	12	5.0	0.017	3.8	LOSA	0.1	0.6	0.45	0.46	0.45	48.2
6	R2	3	5.0	3	5.0	0.017	9.3	LOSA	0.1	0.6	0.45	0.46	0.45	54.3
Approach		51	5.0	54	5.0	0.033	4.0	LOSA	0.2	1.2	0.42	0.44	0.42	52.9
North: Chain Valley Bay Road														
7	L2	3	5.0	3	5.0	0.003	6.3	LOSA	0.0	0.1	0.30	0.49	0.30	55.8
8	T1	225	5.0	237	5.0	0.148	6.5	LOSA	0.8	6.0	0.30	0.48	0.30	67.0
9	R2	5	5.0	5	5.0	0.005	12.5	LOSA	0.0	0.2	0.30	0.61	0.30	54.4
Approach		233	5.0	245	5.0	0.148	6.6	LOSA	0.8	6.0	0.30	0.48	0.30	66.5
West: West subdivision access														
10	L2	3	5.0	3	5.0	0.005	5.4	LOSA	0.0	0.1	0.51	0.48	0.51	53.7
11	T1	19	5.0	20	5.0	0.082	3.7	LOSA	0.4	2.8	0.48	0.62	0.48	46.7
12	R2	67	5.0	71	5.0	0.082	9.1	LOSA	0.4	2.8	0.48	0.62	0.48	52.4
Approach		89	5.0	94	5.0	0.082	7.8	LOSA	0.4	2.8	0.48	0.61	0.48	51.1
All Vehicles		899	5.0	946	5.0	0.216	6.6	LOSA	1.3	9.4	0.21	0.49	0.21	62.5

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

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

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

Roundabout Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

**Site: 101v [2026 PM - southern - 755 dwellings - Conversion
(Site Folder: General)]**

Chain Valley Bay Road / Subdivision Access - southern intersection

Site Category: (None)

Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	152	5.0	160	5.0	0.117	5.8	LOSA	0.6	4.5	0.13	0.51	0.13	56.4
2	T1	408	5.0	429	5.0	0.240	6.1	LOSA	1.5	10.8	0.13	0.45	0.13	68.4
3	R2	84	5.0	88	5.0	0.070	12.0	LOSA	0.4	2.6	0.13	0.65	0.13	55.1
Approach		644	5.0	678	5.0	0.240	6.8	LOSA	1.5	10.8	0.13	0.49	0.13	63.2
East: East subdivision access														
4	L2	57	5.0	60	5.0	0.053	3.9	LOSA	0.3	1.9	0.46	0.48	0.46	54.3
5	T1	14	5.0	15	5.0	0.026	4.3	LOSA	0.1	0.9	0.50	0.51	0.50	47.9
6	R2	5	5.0	5	5.0	0.026	9.8	LOSA	0.1	0.9	0.50	0.51	0.50	53.9
Approach		76	5.0	80	5.0	0.053	4.4	LOSA	0.3	1.9	0.47	0.49	0.47	52.9
North: Chain Valley Bay Road														
7	L2	5	5.0	5	5.0	0.005	6.7	LOSA	0.0	0.2	0.37	0.51	0.37	55.5
8	T1	249	5.0	262	5.0	0.172	6.7	LOSA	1.0	7.2	0.38	0.51	0.38	66.4
9	R2	8	5.0	8	5.0	0.008	12.8	LOSA	0.0	0.3	0.37	0.62	0.37	54.2
Approach		262	5.0	276	5.0	0.172	6.9	LOSA	1.0	7.2	0.38	0.52	0.38	65.7
West: West subdivision access														
10	L2	5	5.0	5	5.0	0.008	5.8	LOSA	0.0	0.2	0.54	0.52	0.54	53.4
11	T1	22	5.0	23	5.0	0.124	4.0	LOSA	0.6	4.3	0.52	0.66	0.52	46.5
12	R2	103	5.0	108	5.0	0.124	9.4	LOSA	0.6	4.3	0.52	0.66	0.52	52.0
Approach		130	5.0	137	5.0	0.124	8.4	LOSA	0.6	4.3	0.52	0.66	0.52	51.1
All Vehicles		1112	5.0	1171	5.0	0.240	6.8	LOSA	1.5	10.8	0.26	0.51	0.26	61.2

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

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

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

Roundabout Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

 **Site: 101v [2036 PM - southern - 490 dwellings - Conversion (Site Folder: General)]**

Chain Valley Bay Road / Subdivision Access - southern intersection
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	99	5.0	104	5.0	0.079	5.8	LOSA	0.4	2.9	0.11	0.51	0.11	56.6
2	T1	358	5.0	377	5.0	0.208	6.1	LOSA	1.2	9.0	0.10	0.45	0.10	68.6
3	R2	55	5.0	58	5.0	0.045	11.9	LOSA	0.2	1.6	0.10	0.65	0.10	55.2
Approach		512	5.0	539	5.0	0.208	6.6	LOSA	1.2	9.0	0.10	0.48	0.10	64.3
East: East subdivision access														
4	L2	37	5.0	39	5.0	0.033	3.7	LOSA	0.2	1.2	0.43	0.45	0.43	54.4
5	T1	11	5.0	12	5.0	0.017	3.9	LOSA	0.1	0.6	0.46	0.46	0.46	48.2
6	R2	3	5.0	3	5.0	0.017	9.4	LOSA	0.1	0.6	0.46	0.46	0.46	54.3
Approach		51	5.0	54	5.0	0.033	4.1	LOSA	0.2	1.2	0.44	0.45	0.44	52.9
North: Chain Valley Bay Road														
7	L2	3	5.0	3	5.0	0.003	6.3	LOSA	0.0	0.1	0.30	0.49	0.30	55.8
8	T1	243	5.0	256	5.0	0.159	6.5	LOSA	0.9	6.5	0.30	0.48	0.30	67.0
9	R2	5	5.0	5	5.0	0.005	12.5	LOSA	0.0	0.2	0.30	0.61	0.30	54.4
Approach		251	5.0	264	5.0	0.159	6.6	LOSA	0.9	6.5	0.30	0.48	0.30	66.5
West: West subdivision access														
10	L2	3	5.0	3	5.0	0.005	5.3	LOSA	0.0	0.1	0.51	0.48	0.51	53.7
11	T1	19	5.0	20	5.0	0.081	3.6	LOSA	0.4	2.8	0.47	0.62	0.47	46.7
12	R2	67	5.0	71	5.0	0.081	9.1	LOSA	0.4	2.8	0.47	0.62	0.47	52.4
Approach		89	5.0	94	5.0	0.081	7.8	LOSA	0.4	2.8	0.47	0.61	0.47	51.1
All Vehicles		903	5.0	951	5.0	0.208	6.6	LOSA	1.2	9.0	0.21	0.49	0.21	62.5

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

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

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

Roundabout Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

 **Site: 101v [2036 PM - southern - 755 dwellings - Conversion (Site Folder: General)]**

Chain Valley Bay Road / Subdivision Access - southern intersection

Site Category: (None)

Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV] %	[Total veh/h]	[HV] %				[Veh. veh	[Dist] m				
South: Chain Valley Bay Road														
1	L2	152	5.0	160	5.0	0.116	5.8	LOSA	0.6	4.5	0.13	0.51	0.13	56.4
2	T1	394	5.0	415	5.0	0.232	6.1	LOSA	1.4	10.4	0.13	0.45	0.13	68.4
3	R2	84	5.0	88	5.0	0.070	12.0	LOSA	0.4	2.6	0.13	0.65	0.13	55.1
Approach		630	5.0	663	5.0	0.232	6.8	LOSA	1.4	10.4	0.13	0.49	0.13	63.1
East: East subdivision access														
4	L2	57	5.0	60	5.0	0.054	4.0	LOSA	0.3	2.0	0.48	0.49	0.48	54.2
5	T1	14	5.0	15	5.0	0.026	4.5	LOSA	0.1	0.9	0.51	0.52	0.51	47.8
6	R2	5	5.0	5	5.0	0.026	9.9	LOSA	0.1	0.9	0.51	0.52	0.51	53.8
Approach		76	5.0	80	5.0	0.054	4.4	LOSA	0.3	2.0	0.48	0.50	0.48	52.9
North: Chain Valley Bay Road														
7	L2	5	5.0	5	5.0	0.005	6.7	LOSA	0.0	0.2	0.37	0.51	0.37	55.5
8	T1	267	5.0	281	5.0	0.184	6.7	LOSA	1.1	7.8	0.38	0.51	0.38	66.4
9	R2	8	5.0	8	5.0	0.008	12.8	LOSA	0.0	0.3	0.37	0.62	0.37	54.2
Approach		280	5.0	295	5.0	0.184	6.9	LOSA	1.1	7.8	0.38	0.52	0.38	65.7
West: West subdivision access														
10	L2	5	5.0	5	5.0	0.008	5.7	LOSA	0.0	0.2	0.54	0.51	0.54	53.4
11	T1	22	5.0	23	5.0	0.123	3.9	LOSA	0.6	4.3	0.51	0.66	0.51	46.5
12	R2	103	5.0	108	5.0	0.123	9.4	LOSA	0.6	4.3	0.51	0.66	0.51	52.1
Approach		130	5.0	137	5.0	0.123	8.3	LOSA	0.6	4.3	0.51	0.65	0.51	51.1
All Vehicles		1116	5.0	1175	5.0	0.232	6.8	LOSA	1.4	10.4	0.26	0.52	0.26	61.2

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

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

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

Roundabout Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

Site: 101 [2026 AM - northern - 490 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - northern intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	20	5.0	21	5.0	0.012	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	161	5.0	169	5.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	80.0
3	R2	9	5.0	9	5.0	0.010	8.5	LOS A	0.0	0.3	0.41	0.62	0.41	53.1
Approach		190	5.0	200	5.0	0.090	1.2	NA	0.0	0.3	0.02	0.10	0.02	76.1
East: East subdivision access														
4	L2	24	5.0	25	5.0	0.028	6.2	LOS A	0.1	0.7	0.40	0.59	0.40	51.8
5	T1	7	5.0	7	5.0	0.029	11.9	LOS A	0.1	0.7	0.62	0.74	0.62	42.8
6	R2	2	5.0	2	5.0	0.029	12.7	LOS A	0.1	0.7	0.62	0.74	0.62	47.9
Approach		33	5.0	35	5.0	0.029	7.8	LOS A	0.1	0.7	0.46	0.63	0.46	49.4
North: Chain Valley Bay Road														
7	L2	1	5.0	1	5.0	0.001	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	331	5.0	348	5.0	0.184	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	2	5.0	2	5.0	0.002	7.6	LOS A	0.0	0.1	0.29	0.57	0.29	53.5
Approach		334	5.0	352	5.0	0.184	0.1	NA	0.0	0.1	0.00	0.01	0.00	79.6
West: West subdivision access														
10	L2	3	5.0	3	5.0	0.003	5.2	LOS A	0.0	0.1	0.26	0.50	0.26	52.2
11	T1	10	5.0	11	5.0	0.187	12.6	LOS A	0.7	4.8	0.67	0.84	0.67	41.9
12	R2	46	5.0	48	5.0	0.187	14.4	LOS A	0.7	4.8	0.67	0.84	0.67	46.7
Approach		59	5.0	62	5.0	0.187	13.6	LOS A	0.7	4.8	0.65	0.82	0.65	46.0
All Vehicles		616	5.0	648	5.0	0.187	2.1	NA	0.7	4.8	0.09	0.14	0.09	71.3

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

▽ Site: 101 [2026 AM - northern - 755 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - northern intersection

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	31	5.0	33	5.0	0.018	7.0	LOSA	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	166	5.0	175	5.0	0.093	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	14	5.0	15	5.0	0.015	8.5	LOSA	0.1	0.4	0.42	0.64	0.42	53.1
Approach		211	5.0	222	5.0	0.093	1.6	NA	0.1	0.4	0.03	0.13	0.03	74.6
East: East subdivision access														
4	L2	37	5.0	39	5.0	0.044	6.3	LOSA	0.2	1.1	0.40	0.61	0.40	51.8
5	T1	12	5.0	13	5.0	0.051	12.7	LOSA	0.2	1.2	0.64	0.79	0.64	42.4
6	R2	3	5.0	3	5.0	0.051	13.4	LOSA	0.2	1.2	0.64	0.79	0.64	47.4
Approach		52	5.0	55	5.0	0.051	8.2	LOSA	0.2	1.2	0.47	0.66	0.47	49.0
North: Chain Valley Bay Road														
7	L2	2	5.0	2	5.0	0.001	7.0	LOSA	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	333	5.0	351	5.0	0.186	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	3	5.0	3	5.0	0.003	7.7	LOSA	0.0	0.1	0.31	0.57	0.31	53.4
Approach		338	5.0	356	5.0	0.186	0.1	NA	0.0	0.1	0.00	0.01	0.00	79.4
West: West subdivision access														
10	L2	5	5.0	5	5.0	0.005	5.3	LOSA	0.0	0.1	0.26	0.50	0.26	52.2
11	T1	15	5.0	16	5.0	0.308	14.9	LOS B	1.2	9.1	0.73	0.92	0.87	40.5
12	R2	71	5.0	75	5.0	0.308	17.3	LOS B	1.2	9.1	0.73	0.92	0.87	45.0
Approach		91	5.0	96	5.0	0.308	16.3	LOS B	1.2	9.1	0.70	0.89	0.84	44.6
All Vehicles		692	5.0	728	5.0	0.308	3.3	NA	1.2	9.1	0.14	0.21	0.16	67.9

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

▽ Site: 101 [2036 AM - northern - 490 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - northern intersection

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	20	5.0	21	5.0	0.012	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	174	5.0	183	5.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	9	5.0	9	5.0	0.010	8.7	LOS A	0.0	0.3	0.44	0.63	0.44	53.0
Approach		203	5.0	214	5.0	0.097	1.1	NA	0.0	0.3	0.02	0.09	0.02	76.3
East: East subdivision access														
4	L2	24	5.0	25	5.0	0.030	6.5	LOS A	0.1	0.7	0.42	0.61	0.42	51.7
5	T1	7	5.0	7	5.0	0.032	13.2	LOS A	0.1	0.8	0.66	0.78	0.66	42.2
6	R2	2	5.0	2	5.0	0.032	14.0	LOS A	0.1	0.8	0.66	0.78	0.66	47.1
Approach		33	5.0	35	5.0	0.032	8.4	LOS A	0.1	0.8	0.48	0.66	0.48	49.0
North: Chain Valley Bay Road														
7	L2	1	5.0	1	5.0	0.001	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	365	5.0	384	5.0	0.203	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	2	5.0	2	5.0	0.002	7.7	LOS A	0.0	0.1	0.30	0.57	0.30	53.4
Approach		368	5.0	387	5.0	0.203	0.1	NA	0.0	0.1	0.00	0.00	0.00	79.6
West: West subdivision access														
10	L2	3	5.0	3	5.0	0.003	5.3	LOS A	0.0	0.1	0.27	0.50	0.27	52.2
11	T1	12	5.0	13	5.0	0.214	14.4	LOS A	0.8	5.6	0.71	0.87	0.75	41.0
12	R2	46	5.0	48	5.0	0.214	16.3	LOS B	0.8	5.6	0.71	0.87	0.75	45.6
Approach		61	5.0	64	5.0	0.214	15.4	LOS B	0.8	5.6	0.69	0.85	0.73	44.9
All Vehicles		665	5.0	700	5.0	0.214	2.2	NA	0.8	5.6	0.09	0.14	0.10	71.4

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

Site: 101 [2036 AM - northern - 755 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - northern intersection

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	31	5.0	33	5.0	0.018	7.0	LOSA	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	179	5.0	188	5.0	0.100	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	14	5.0	15	5.0	0.016	8.7	LOSA	0.1	0.4	0.44	0.65	0.44	52.9
Approach		224	5.0	236	5.0	0.100	1.5	NA	0.1	0.4	0.03	0.13	0.03	74.9
East: East subdivision access														
4	L2	37	5.0	39	5.0	0.046	6.5	LOSA	0.2	1.1	0.43	0.62	0.43	51.6
5	T1	12	5.0	13	5.0	0.056	14.1	LOSA	0.2	1.4	0.68	0.83	0.68	41.7
6	R2	3	5.0	3	5.0	0.056	14.8	LOS B	0.2	1.4	0.68	0.83	0.68	46.6
Approach		52	5.0	55	5.0	0.056	8.8	LOSA	0.2	1.4	0.50	0.68	0.50	48.7
North: Chain Valley Bay Road														
7	L2	2	5.0	2	5.0	0.001	7.0	LOSA	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	367	5.0	386	5.0	0.205	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	3	5.0	3	5.0	0.003	7.8	LOSA	0.0	0.1	0.32	0.57	0.32	53.4
Approach		372	5.0	392	5.0	0.205	0.1	NA	0.0	0.1	0.00	0.01	0.00	79.4
West: West subdivision access														
10	L2	5	5.0	5	5.0	0.005	5.3	LOSA	0.0	0.1	0.28	0.51	0.28	52.2
11	T1	17	5.0	18	5.0	0.349	17.3	LOS B	1.4	10.5	0.77	0.95	0.97	39.4
12	R2	71	5.0	75	5.0	0.349	19.9	LOS B	1.4	10.5	0.77	0.95	0.97	43.7
Approach		93	5.0	98	5.0	0.349	18.6	LOS B	1.4	10.5	0.74	0.93	0.93	43.2
All Vehicles		741	5.0	780	5.0	0.349	3.5	NA	1.4	10.5	0.14	0.21	0.16	68.0

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

▽ Site: 101 [2026 PM - northern - 490 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - northern intersection

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist m]				
South: Chain Valley Bay Road														
1	L2	44	5.0	46	5.0	0.026	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	313	5.0	329	5.0	0.176	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	22	5.0	23	5.0	0.020	7.7	LOS A	0.1	0.6	0.31	0.60	0.31	53.4
Approach		379	5.0	399	5.0	0.176	1.3	NA	0.1	0.6	0.02	0.11	0.02	75.5
East: East subdivision access														
4	L2	16	5.0	17	5.0	0.016	5.4	LOS A	0.1	0.4	0.29	0.53	0.29	52.2
5	T1	4	5.0	4	5.0	0.017	12.9	LOS A	0.1	0.4	0.64	0.74	0.64	42.4
6	R2	1	5.0	1	5.0	0.017	13.0	LOS A	0.1	0.4	0.64	0.74	0.64	47.4
Approach		21	5.0	22	5.0	0.017	7.2	LOS A	0.1	0.4	0.37	0.58	0.37	49.7
North: Chain Valley Bay Road														
7	L2	2	5.0	2	5.0	0.001	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	190	5.0	200	5.0	0.106	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	3	5.0	3	5.0	0.003	8.6	LOS A	0.0	0.1	0.43	0.60	0.43	53.1
Approach		195	5.0	205	5.0	0.106	0.2	NA	0.0	0.1	0.01	0.02	0.01	79.1
West: West subdivision access														
10	L2	2	5.0	2	5.0	0.002	6.0	LOS A	0.0	0.1	0.38	0.53	0.38	51.9
11	T1	7	5.0	7	5.0	0.123	13.2	LOS A	0.4	3.1	0.67	0.84	0.67	41.7
12	R2	28	5.0	29	5.0	0.123	14.7	LOS B	0.4	3.1	0.67	0.84	0.67	46.5
Approach		37	5.0	39	5.0	0.123	13.9	LOS A	0.4	3.1	0.66	0.82	0.66	45.8
All Vehicles		632	5.0	665	5.0	0.176	1.9	NA	0.4	3.1	0.06	0.14	0.06	72.5

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

▽ Site: 101 [2026 PM - northern - 755 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - northern intersection

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	68	5.0	72	5.0	0.040	7.0	LOSA	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	317	5.0	334	5.0	0.178	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	34	5.0	36	5.0	0.032	7.8	LOSA	0.1	0.9	0.31	0.61	0.31	53.4
Approach		419	5.0	441	5.0	0.178	1.8	NA	0.1	0.9	0.03	0.15	0.03	73.9
East: East subdivision access														
4	L2	25	5.0	26	5.0	0.025	5.4	LOSA	0.1	0.6	0.29	0.53	0.29	52.1
5	T1	6	5.0	6	5.0	0.030	14.4	LOSA	0.1	0.7	0.67	0.80	0.67	41.8
6	R2	2	5.0	2	5.0	0.030	13.7	LOSA	0.1	0.7	0.67	0.80	0.67	46.6
Approach		33	5.0	35	5.0	0.030	7.6	LOSA	0.1	0.7	0.39	0.60	0.39	49.5
North: Chain Valley Bay Road														
7	L2	3	5.0	3	5.0	0.002	7.0	LOSA	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	194	5.0	204	5.0	0.108	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	5	5.0	5	5.0	0.006	8.7	LOSA	0.0	0.2	0.44	0.62	0.44	52.9
Approach		202	5.0	213	5.0	0.108	0.3	NA	0.0	0.2	0.01	0.02	0.01	78.6
West: West subdivision access														
10	L2	3	5.0	3	5.0	0.003	6.1	LOSA	0.0	0.1	0.38	0.54	0.38	51.9
11	T1	9	5.0	9	5.0	0.200	14.8	LOS B	0.7	5.1	0.72	0.87	0.74	40.8
12	R2	43	5.0	45	5.0	0.200	16.7	LOS B	0.7	5.1	0.72	0.87	0.74	45.3
Approach		55	5.0	58	5.0	0.200	15.8	LOS B	0.7	5.1	0.70	0.85	0.72	44.8
All Vehicles		709	5.0	746	5.0	0.200	2.7	NA	0.7	5.1	0.09	0.19	0.09	70.0

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

Site: 101 [2036 PM - northern - 490 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - northern intersection
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	44	5.0	46	5.0	0.026	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	344	5.0	362	5.0	0.194	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	22	5.0	23	5.0	0.021	7.8	LOS A	0.1	0.6	0.32	0.61	0.32	53.4
Approach		410	5.0	432	5.0	0.194	1.2	NA	0.1	0.6	0.02	0.10	0.02	75.8
East: East subdivision access														
4	L2	16	5.0	17	5.0	0.016	5.5	LOS A	0.1	0.4	0.30	0.53	0.30	52.1
5	T1	4	5.0	4	5.0	0.019	14.4	LOS A	0.1	0.5	0.68	0.77	0.68	41.7
6	R2	1	5.0	1	5.0	0.019	14.3	LOS A	0.1	0.5	0.68	0.77	0.68	46.5
Approach		21	5.0	22	5.0	0.019	7.6	LOS A	0.1	0.5	0.39	0.59	0.39	49.5
North: Chain Valley Bay Road														
7	L2	2	5.0	2	5.0	0.001	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	207	5.0	218	5.0	0.115	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	3	5.0	3	5.0	0.004	8.8	LOS A	0.0	0.1	0.44	0.61	0.44	52.9
Approach		212	5.0	223	5.0	0.115	0.2	NA	0.0	0.1	0.01	0.01	0.01	79.2
West: West subdivision access														
10	L2	2	5.0	2	5.0	0.002	6.2	LOS A	0.0	0.1	0.40	0.54	0.40	51.8
11	T1	7	5.0	7	5.0	0.137	14.7	LOS B	0.5	3.4	0.71	0.86	0.71	40.9
12	R2	28	5.0	29	5.0	0.137	16.3	LOS B	0.5	3.4	0.71	0.86	0.71	45.6
Approach		37	5.0	39	5.0	0.137	15.4	LOS B	0.5	3.4	0.69	0.84	0.69	44.9
All Vehicles		680	5.0	716	5.0	0.194	1.9	NA	0.5	3.4	0.06	0.13	0.06	72.8

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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MOVEMENT SUMMARY

Site: 101 [2036 PM - northern - 755 dwellings (Site Folder: General)]

Chain Valley Bay Road / Subdivision Access - northern intersection

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
South: Chain Valley Bay Road														
1	L2	68	5.0	72	5.0	0.040	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
2	T1	348	5.0	366	5.0	0.195	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	34	5.0	36	5.0	0.032	7.8	LOS A	0.1	0.9	0.33	0.61	0.33	53.4
Approach		450	5.0	474	5.0	0.195	1.7	NA	0.1	0.9	0.02	0.14	0.02	74.2
East: East subdivision access														
4	L2	25	5.0	26	5.0	0.025	5.5	LOS A	0.1	0.6	0.31	0.54	0.31	52.1
5	T1	6	5.0	6	5.0	0.034	16.0	LOS B	0.1	0.8	0.71	0.84	0.71	41.0
6	R2	2	5.0	2	5.0	0.034	15.2	LOS B	0.1	0.8	0.71	0.84	0.71	45.6
Approach		33	5.0	35	5.0	0.034	8.0	LOS A	0.1	0.8	0.41	0.61	0.41	49.3
North: Chain Valley Bay Road														
7	L2	3	5.0	3	5.0	0.002	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	63.7
8	T1	211	5.0	222	5.0	0.118	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
9	R2	5	5.0	5	5.0	0.006	9.0	LOS A	0.0	0.2	0.46	0.63	0.46	52.8
Approach		219	5.0	231	5.0	0.118	0.3	NA	0.0	0.2	0.01	0.02	0.01	78.7
West: West subdivision access														
10	L2	3	5.0	3	5.0	0.004	6.3	LOS A	0.0	0.1	0.40	0.55	0.40	51.8
11	T1	9	5.0	9	5.0	0.223	16.9	LOS B	0.8	5.8	0.76	0.90	0.81	39.8
12	R2	43	5.0	45	5.0	0.223	18.9	LOS B	0.8	5.8	0.76	0.90	0.81	44.1
Approach		55	5.0	58	5.0	0.223	17.9	LOS B	0.8	5.8	0.74	0.88	0.79	43.7
All Vehicles		757	5.0	797	5.0	0.223	2.7	NA	0.8	5.8	0.09	0.18	0.09	70.3

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

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

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

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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

Queue Model: SIDRA Standard.

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

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

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