TRAFFIC IMPACT ASSESSMENT

RESIDENTIAL PLANNING PROPOSAL

LOT 217 IN DP 755242
18 GOSFORD ROAD, WYEE

PREPARED FOR: MRS JUNE WALDEN

NOVEMBER 2020

20/139

PRELIMINARY TRAFFIC ASSESSMENT
MRS JUNE WALDEN

RESIDENTIAL PLANNING PROPOSAL
LOT 217 IN DP 755242
18 GOSFORD ROAD, WYEE

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QUALITY ASSURANCE

This document has been prepared, checked and released in accordance with the Quality Control Standards established by Intersect Traffic Pty Ltd.

Issue	Date	Description	By
A	11/09/20	Draft	JG
B	13/10/20	Edit	JG
D	04/11/20	Final Proof / Client Amendments	JG
E	04/11/20	Approved	JG

This document has been authorised by 

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1.0 INTRODUCTION

Intersect Traffic Pty Ltd (Intersect Traffic) has been engaged by Optima Developments Pty Ltd on behalf of Mrs June Walden to prepare a Traffic Impact Assessment (TIA) Report for a planning proposal for residential development on Lot 217 in DP 755242 – 18 Gosford Road, Wyee. The planning proposal is for a rezoning of the property, located on the southern boundary of the Wyee Township, from RU1 to R2 (low density residential). The proposal is likely to yield in the order of 42 low density residential lots.

The site has been identified as an infill site for urban development within South West Growth Area of the recently adopted Local Strategic Planning Statement (LSPS). Any road and intersection upgrading / improvements are to be in accordance with Lake Macquarie City Council (LMCC) and Transport for NSW (TfNSW) requirements as relevant. The proposed concept development plan is shown in ***Attachment A***.

This report is required to support a planning proposal to LMCC as the initial authority for the rezoning of the subject land for low density residential development. It will allow the Council and TfNSW to assess the proposal regarding 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 near 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 DESCRIPTION

The subject site is located on the southern end of the Wyee township adjoining the north western boundary of Doyalson and the north eastern boundary of Bushells Ridge. The site lies approximately 1.6 kilometres south of the Wyee Post Office and commercial centre of Wyee while the village of Doyalson lies approximately 3.5 kilometres to the south-east of the site. The development is bounded to the north by developed existing residential areas, to the west by an unformed section of Murrawal Road (and the Sydney to Newcastle Rail line), Gosford Road to the south and formed and unformed sections of Jabbarup Road adjoining the eastern boundary. The existing site contains a 2-storey residence and other site structures and is predominately vacant land. ***Figure 1*** below shows the site location from a local context.

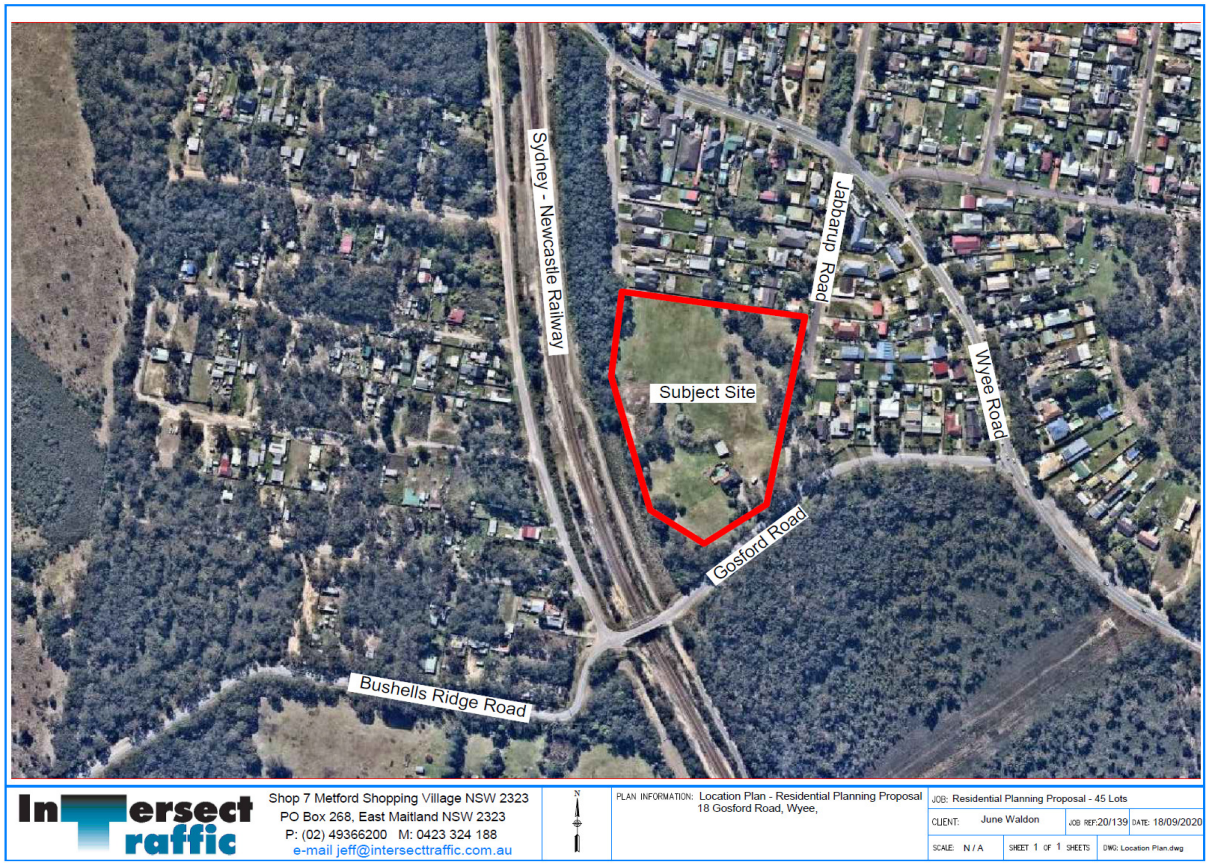


Figure 1 – Site Location

The site has the following property descriptors:

- Formal land title of Lot 217 in DP 755242,
- Residential address of 18 Gosford Road, Wyee,
- Site area of approximately 3.15 ha, and
- Land zoning of RU1 – Rural Landscape pursuant to the LMCC LEP (2014).

The development site is currently accessed via 3 rural gravel combined entry / exit driveways each approximately 4 metres wide; one via the sealed Gosford Road, a second at the Gosford Road end of the partially gravelled section of the southern end of Jabbarup Road and a third at the southern end of the sealed section of Murrawal Road at the northwest corner of the property.

Photograph 1 below shows the existing development and access at Gosford Road whilst ***Photograph 2*** below shows the existing development and access at Jabbarup Road.

Photograph 1 – Development site as viewed looking north from Gosford Road

Photograph 2 – Development site access at Jabbarup Road

3.0 EXISTING ROAD NETWORK

3.1 Wyee Road

Wyee Road is a classified state road (MR454) under the care and control of TfNSW. Under a functional road hierarchy, it would be classified as a sub-arterial road connecting the sub regions of Morisset, Wyee and Doyalson. Near the site, it is constructed as a two-way two-lane urban road except where widening occurs at intersections. Travel lanes are in the order of 4 metres wide and parking lanes are approximately 2 metres wide resulting in approximate carriageway widths between kerbs of between 8 metres and 12 metres. A 60 km/h speed zoning applies near the site and at the time of inspection it was found to be in excellent condition. ***Photograph 3*** shows Wyee Road near Jabbarup Road.

Photograph 3 – Wyee Road east of Gosford Road intersection.

3.2 Gosford Road

Gosford Road is a 400-metre-long sealed two-lane two-way urban road. At its eastern end It connects to Wyee Road and at its western end it connects to Bushells Ridge Road. It is classified as a local collector road within a functional road hierarchy and as an LGA perimeter road acting as a boundary between LGA's is therefore under the care and control of both LMCC and Central Coast Council. Gosford Road has a sealed pavement approximately 8 metres wide. Kerb and gutter is present along the northern side of the road east of Jabbarup Road. This allows for a single parking lane along the northern side of the road in front of the existing residences east of the development. West of Jabbarup Road and along the full length on the southern side of the road a gravel shoulder exists. A 50 km/h speed zoning would apply to this section of road and at the time of inspection it was observed to be in good condition. ***Photograph 4*** shows Gosford Road east of the frontage of the site.

Photograph 4 – Gosford Road - east of the site frontage

3.3 Jabbarup Road

Jabbarup Road is a two-lane two-way urban road. It is a local road within a functional road hierarchy and is under the care and control of LMCC. North of the development it forms a 4-way cross intersection with Wyee Road. The section of Jabbarup Road south of Wyee Road is formally sealed for 200 metres and terminates in a cul-de-sac. The southern-most 65 metre section of the sealed road fronts the development. From the cul-de-sac to Gosford Road the road is unformed however gravel driveways are present along the road reserve and to properties adjoining this unformed section of Jabbarup Road. The sealed section of the road near the development has a carriageway width of 8 metres between kerbs. A 50 km/h speed zoning would apply to this section of road and at the time of inspection it was observed to be in good condition. ***Photograph 6*** shows Jabbarup Road looking south from Wyee Road.

Photograph 5 – Jabbarup Road looking south from the intersection with Wyee Road.

4.0 ROAD NETWORK IMPROVEMENTS

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

There are a number of adjoining residential planning proposals proposed by Darkinjung Local Aboriginal Land Council (DLALC) that will likely involve road network improvements including an upgrading of the Wyee Road / Gosford Road intersection to a signal controlled intersection. Relevant details of these proposals are provided within ***Section11*** of this report however for this assessment as no development approval is yet to be issued on these sites they have not been included in this assessment.

5.0 TRAFFIC VOLUMES

To determine existing traffic volumes on the road network the traffic counts previously undertaken by Northern Transport Planning and Engineering (NTPE) on behalf of Intersect Traffic at the Wyee Road and Gosford Road intersection during the AM and PM peak traffic periods on Tuesday 6th December 2016 have been used. These were undertaken for an adjoining residential planning proposal for Darkinjung Local Aboriginal Land Council. 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 2016 mid-block peak hour figures determined from these counts were:

- Wyee Road north of Gosford Road – 590 vtph (AM) and 747 vtph (PM),
- Wyee Road south of Gosford Road – 603 vtph (AM) and 781 vtph (PM), and
- Gosford Road west of Wyee Road – 46 vtph (AM) and 50 vtph (PM),

This demonstrates that the PM mid-block peak hour traffic volumes were substantially larger than those in the AM peak period. As the PM traffic generated from the proposed development is also larger than AM traffic generated by the development, Intersect Traffic carried out PM manual traffic counts at the Wyee Road / Jabbarup Road 4 Way Cross Intersection on Wednesday 16th September 2020 at the 4.00pm – 5.00pm afternoon peak period (identified as the peak period from the previous NTPE counts) to determine not only updated counts at the intersection a likely background traffic growth rate to convert the 2016 NTPE counts to 2020 values. The 2020 peak hour traffic figures are presented below.

- Wyee Road east of Jabbarup Road – 797 vtph (PM),
- Wyee Road west of Jabbarup Road – 812 vtph (PM),
- Jabbarup Road north of Wyee Road – 60 vtph (PM), and
- Jabbarup Road south of Wyee Road – 11 vtph (PM).

The above data indicated that a background traffic growth rate of 1.5 % per annum between 2016 and 2020 had occurred on Wyee Road therefore a 1.5 % per annum traffic growth rate between 2016 and 2020 which has been adopted for all roads in this assessment. To determine the mid-block 2020 peak hour traffic volumes for the 2016 NTPE traffic counts the mid-block peak hour volumes were therefore increased by a background traffic growth rate of 1.5 % per annum on all roads for 4 years. Similarly, to determine the likely 2025 and 2035 peak hour traffic volumes, the 2020 volumes of all roads were increased using a background traffic growth rate of 1 % per annum for 5 years and 15 years, respectively. The resultant 2020, 2025 and 2035 PM mid-block peak hour traffic volumes for all roads are presented in ***Table 1*** below. The 2016 NTPE and 2020 Intersect Traffic manual count sheets are provided in ***Attachment B.***

Table 1 –Peak Hour Traffic Data

Road	Location	2020 PM Peak (vtph)	2025 PM Peak (vtph)	2035 PM Peak (vtph)
Wyee Road	North of Gosford Road	793	854	991
Wyee Road	South of Gosford Road	829	893	962
Gosford Road	West of Wyee Road	49	53	57
Wyee Road	East of Jabbarup Road	797	859	925
Wyee Road	West of Jabbarup Road	812	875	942
Jabbarup Road	North of Wyee Road	60	65	70
Jabbarup Road	South of Wyee Road	11	12	14

6.0 ROAD CAPACITY

The capacity of urban roads is generally determined by the capacity of intersections. However, Table 4.3 of the *RTA's Guide to Traffic Generating Developments* provides some guidance on mid-block capacities for urban roads for a level of service (LoS) C. This table is reproduced below.

Table 4.3
Typical mid-block capacities for urban roads with interrupted flow

Type of Road	One-Way Mid-block Lane Capacity (pcu/hr)	
Median or inner lane:	Divided Road	1,000
	Undivided Road	900
Outer or kerb lane:	With Adjacent Parking Lane	900
	Clearway Conditions	900
	Occasional Parked Cars	600
4 lane undivided:	Occasional Parked Cars	1,500
	Clearway Conditions	1,800
4 lane divided:	Clearway Conditions	1,900

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

Reading from Table 4.3 above and noting that in general the local road network is a two lane two way undivided road then the technical one-way mid-block road capacity is 900 vtph though Jabbarup Road being narrower would likely be impacted by parked vehicles and would have a one-way mid-block capacity of 600 vtph. Therefore, the two-way mid-block capacity of the road network would be 1,800 vtph for Wyee Road and Gosford Road and 1,200 vtph for Jabbarup Road.

However, as Jabbarup Road provides direct access to residential dwellings the environmental capacity goals for the road network are also relevant. Table 4.6 of the *RTA's Guide to Traffic Generating Developments* provides guidance on the environmental capacity goals for local streets. This table is reproduced below and shows Jabbarup Road would have an environmental capacity of 300 vtph (maximum).

Table 4.6
Environmental capacity performance standards on residential streets

Road class	Road type	Maximum Speed (km/hr)	Maximum peak hour volume (veh/hr)
Local	Access way	25	100
	Street	40	200 environmental goal
			300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

Note: Maximum speed relates to the appropriate design maximum speeds in new residential developments. In existing areas maximum speed relates to 85th percentile speed.

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

From the traffic data assessed by Intersect Traffic (see ***Section 5***) it is concluded that as the existing and predicted peak two way traffic volumes on the local and state road network through to 2035 are less than the determined road capacities described above then it is reasonable to conclude that the local and state road network has spare capacity to cater for additional development in the area.

7.0 ALTERNATE TRANSPORT MODES

Coastal Liner and Busways Central Coast bus services operate public transport (bus) services to the area. The bus route that travels directly past the site (in Gosford Road) is Coastal Liner Route 10 – Wyee to Tuggerah via Wyong and return. The other bus routes that pass near the site in Wyee Road are:

- Route 95X - Lake Haven - Gwandalan - Lake Munmorah – Wyee – Busways,
- Route 96 - Wyee - Blue Haven – San Remo – Budgewoi – Busways,
- Route 97 - Lake Haven - Wyee – Mannering Park – Busways, and
- Route 10 – Wyee to Tuggerah via Wyong and return – Coastal Liner

Routes 95X, 96, and 10 bus route services are provided on morning, afternoon and evenings and operate on weekdays only. Route 97 also provides limited morning and afternoon services on weekends and public holidays. These routes provide transport to various nearby local suburbs and railway stations including Wyee Railway Station as well as to the major shopping and business precincts in the area. Connection at bus interchanges at Wyong and Tuggerah allows access to other bus routes providing services to destinations even further afield. The site is well suited for access by local and regional public transport.

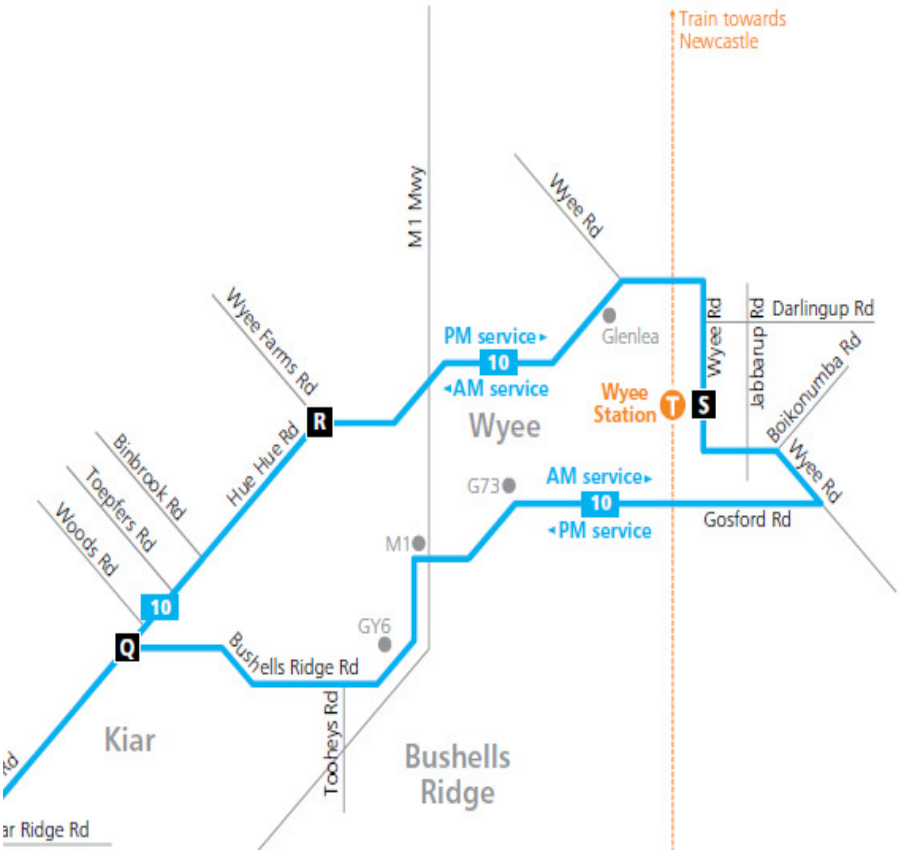
The nearest bus stops are located on either side of Wyee Road at the northern end of Jabbarup Road, 150 metres north of the site. The bus stops in Gosford Road adjoining Bushells Ridge Road west of the site, Wyee Road east of the site near Gosford Road and on Wyee Road near Murrawal Road are all approximately within 250 metres of the site. The local bus route maps (extracts) are provided below in ***Figure 2***.

There is limited concrete pedestrian footpath network on Wyee Road. Otherwise, flat graded well mown verges exist on both sides of the road between Gosford Road and Jabbarup Road. There are no concrete pedestrian footpaths on Gosford Road or Jabbarup Road, however flat graded well mown verges exist along the frontages of the sealed sections of Gosford Road and Jabbarup Road. Currently pedestrians are required to utilise either the grass verges within the road reserves or unformed sections of Jabbarup Road.

For cyclists, there are a number of on-road cycleway motifs marked on Wyee Road. No other cycleway facilities are provided near the site. Typically, cyclists in the area are required to share the 4-metre-wide travel lanes with other vehicles on Wyee Road or utilise road verges or shoulders in other streets where suitable. This is generally only suited to experienced cyclists. Some cycleway motifs and the even grassed verges are shown below in ***Photograph 6***.

Photograph 6 – On-road cycle motifs and flat verges in Wyee Road near Jabbarup Road

Coastal Liner Bus Route



Busways Central Coast Bus Routes

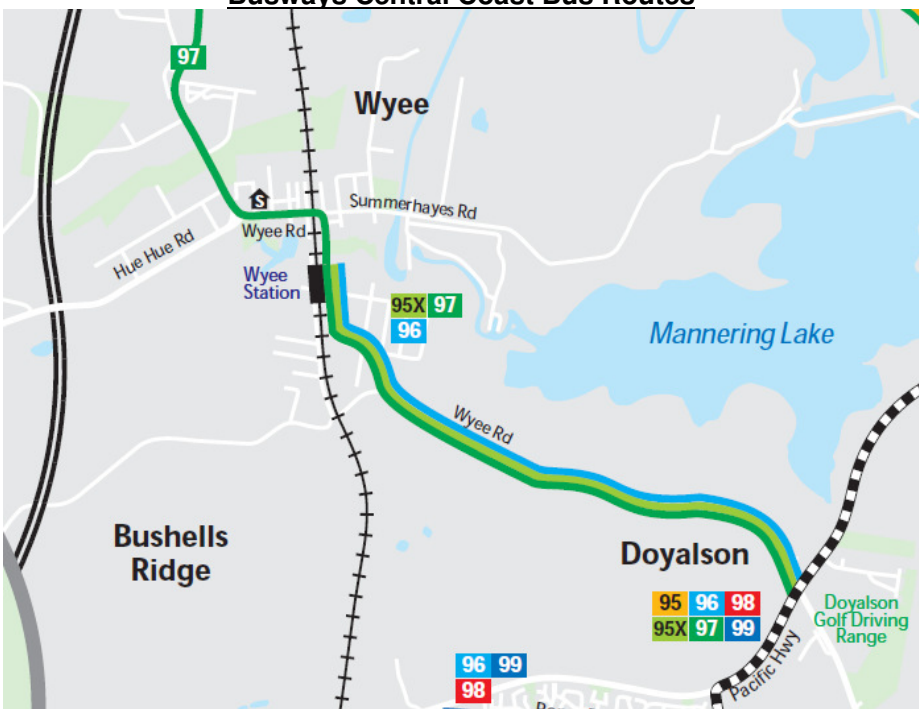


Figure 2 – Local Bus Routes

8.0 DEVELOPMENT PROPOSAL

The planning proposal involves the rezoning of the subject site to permit a residential development (R2 - Low density residential). The proposal is likely to yield in the order of 42 low density residential lots. It is proposed to provide two new public road accesses to Jabbarup Road and upgrade the unsealed section of Jabbarup Road. The proposed concept development plan is shown in ***Attachment A***.

All new internal roads, connections and other roadside infrastructure are to be constructed to the requirements of LMCC 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 be approved and as the site concept plan further develops.

9.0 TRAFFIC GENERATION

The *RTA's 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 amended land use traffic generation rates.

Regarding 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 %).*

As stated previously, the critical peak for assessment purposes will be the PM peak, as larger traffic volumes are generated by the development during the PM peak and this coincides with the larger traffic volumes experienced on the road network during the PM peak times. Therefore, the AM peak does not need to be assessed in this planning proposal report.

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

- *Daily vehicle trips* *42 x 7.4 = **311 vtpd***
- *PM weekday peak hour* *42 x 0.78 = **33 vtph***

These peak mid-block traffic volumes generated for the planning proposal development have been adopted for assessment purposes within this report.

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 several 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 PM, peak period 70% of residential traffic will enter the site and 30% will exit the site.
- 40% of traffic generated by the development will have an origin / destinations northbound via Jabbarup Road and Wyee Road west.
- 60% of traffic generated by the development will have an origin / destinations southbound via Jabbarup Road, Gosford Road east and Wyee Road south.

There may be some slightly different distributions to those assumed however their impact is considered insignificant to the assessment. These assumptions will result in the trip distributions shown in ***Figure 3*** for the relevant traffic movements. Based on this trip distributions the maximum additional PM peak hour traffic generated by this development to be known in this report as development A (**DEV A**) on each road leg is as follows:

- 12 vtph on Wyee Road north of Jabbarup Road,
- 20 vtph on Gosford Road east and Wyee Road south; and
- 20 vtph on Jabbarup Road.

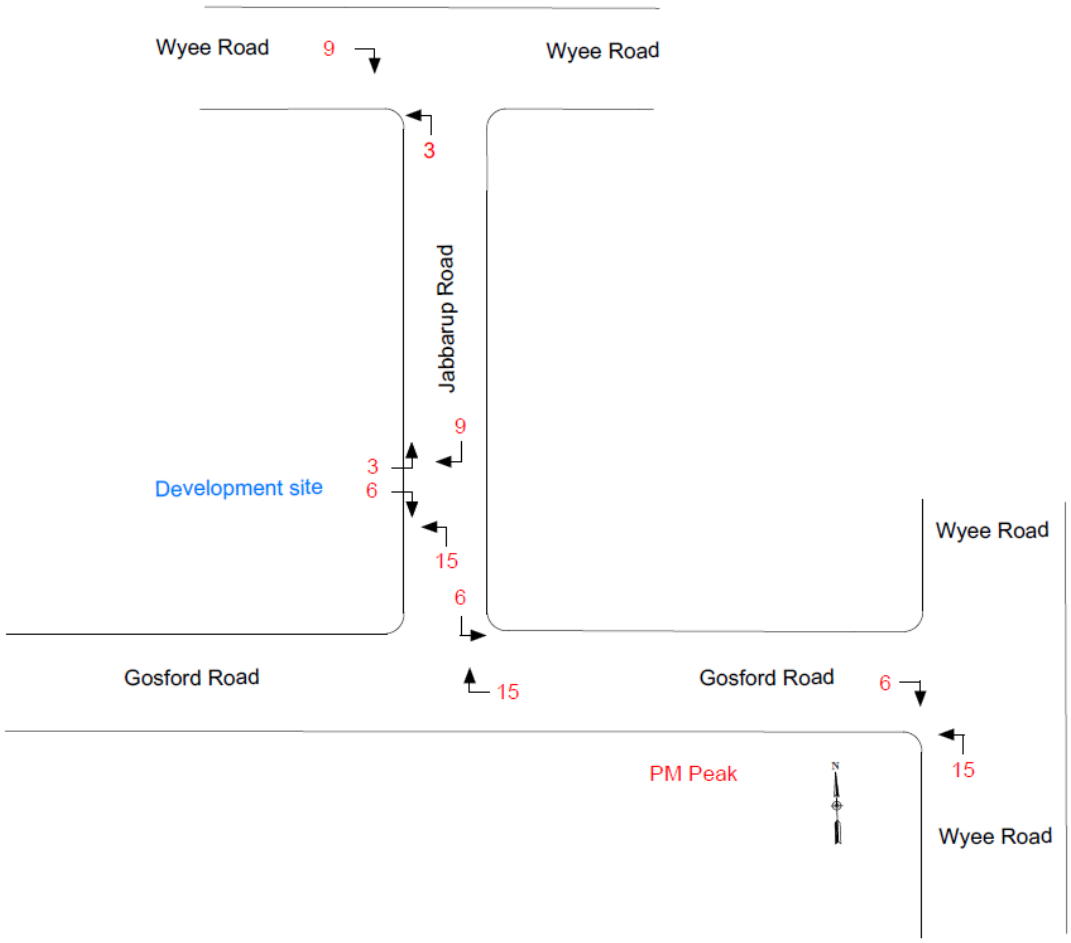


Figure 3 – Development Traffic Trip Distribution – DEV A

11.0 OTHER KNOWN DEVELOPMENTS

Intersect Traffic has previously been engaged by Darkinjung Local Aboriginal Land Council to prepare a Traffic Impact Assessment for a planning proposal (**DEV B**) for part of a Bushells Ridge residential development and commercial lot on three adjoining properties located on the southern side of Bushells Ridge Road west of Wyee Road on the southern boundary of the Wyee Township. This Planning Proposal extends to the south of Gosford Road and is within the Central Coast Council LGA. The plans for this Planning Proposal are provided in ***Attachment D***. The proposal is likely to yield in the order of 894 low density residential lots and includes a 1.45 ha commercial lot on the corner of Wyee Road and Gosford Road. The previous TIA for this residential and commercial planning proposal undertaken by Intersect Traffic (TIA 16_137 Bushells Ridge 090418) is referenced in this report as the impact of both the TIA 16_137 (**DEV B**) and this TIA 20_139 (**DEV B**) have a cumulative effect on the local and state road network. The development traffic trip distribution from TIA 16_137 (**DEV B**) is presented in ***Figure 4*** below.

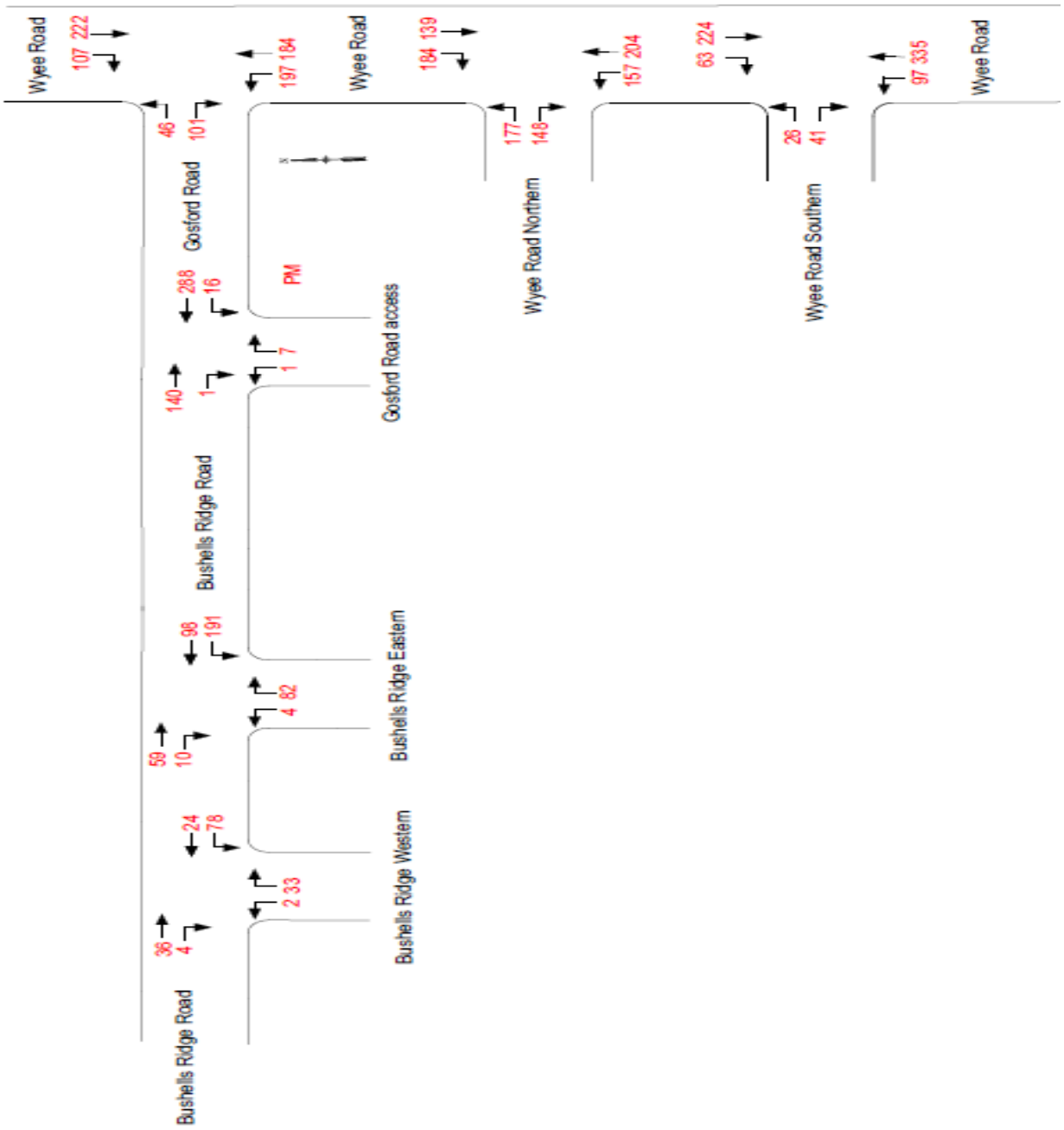


Figure 4 – Development (DLALC PP) Trip Distribution

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 two-way mid-block capacity and environmental capacity as relevant. This planning proposal (**DEV A**) is likely to generate the following maximum additional traffic on the local road network based on the trip distributions shown in ***Figure 3***:

- 12 vtph on Wyee Road north of Jabbarup Road,
- 20 vtph on Gosford Road east and Wyee Road south; and
- 20 vtph on Jabbarup Road.

The addition of this traffic from the **DEV A** planning proposal onto the 2020, 2025 and 2035 traffic volumes determined in ***Section 5*** will not result in the two-way mid-block capacity thresholds for the local and state road network determined in ***Section 6*** to be reached. Further consideration of likely 2025 and 2035 traffic volumes indicates the mid-block traffic capacity thresholds are not reached as demonstrated in ***Table 2*** below.

Table 2 - Road Capacity Assessment – PM post development (DEV A)

Road		CAPACITY Peak (vtph)	2020 PM Peak (vtph)	2025 PM Peak (vtph)	2035 PM Peak (vtph)	DEV A PM
Wyee Road	North of Gosford Road	1800	805	866	1003	12
Wyee Road	South of Gosford Road	1800	850	914	983	21
Gosford Road	West of Wyee Road	1800	70	74	78	21
Wyee Road	East of Jabbarup Road	1800	797	859	925	0
Wyee Road	West of Jabbarup Road	1800	824	887	954	12
Jabbarup Road	North of Wyee Road	300	60	65	70	0
Jabbarup Road	South of Wyee Road	300	32	33	35	21

Therefore, based on the assessment shown in ***Table 2*** above it can be concluded that the local and state 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.

The Bushells Ridge proposed planning proposal (**DEV B**) is likely to generate the following additional traffic on the local road network based on the trip distributions shown in ***Figure 4***:

- 559 vtph on Wyee Road north of Gosford Road (and west of Jabbarup Road)
- 704 vtph on Wyee Road south of Gosford Road, and
- 451 vtph on Gosford Road.

The addition of the development traffic from both the **DEV A** and **DEV B** planning proposals onto the 2020, 2025 and 2035 traffic volumes determined in ***Section 5*** will still not result in the two-way mid-block capacity thresholds for the local road network determined in ***Section 6*** to be reached. Further consideration of likely 2025 and 2035 traffic volumes, with the addition of the **DEV A** and **DEV B**, indicates the mid-block traffic capacity thresholds are still not reached as demonstrated in ***Table 3*** below.

Table 3 - Road Capacity Assessment – PM post development (DEV A+B)

Road		CAPACITY Peak (vtph)	2020 PM Peak (vtph)	2025 PM Peak (vtph)	2035 PM Peak (vtph)	DEV A+B PM
Wyee Road	North of Gosford Road	1800	1211	1272	1409	418
Wyee Road	South of Gosford Road	1800	1554	1618	1687	725
Gosford Road	West of Wyee Road	1800	521	525	529	472
Wyee Road	East of Jabbarup Road	1800	1203	1265	1331	406
Wyee Road	West of Jabbarup Road	1800	1383	1446	1513	571
Jabbarup Road	North of Wyee Road	300	60	65	70	0
Jabbarup Road	South of Wyee Road	300	185	186	188	174

Therefore, based on the assessment shown in ***Table 3*** above it can be concluded that the local and state road network subject to suitable intersection controls being in place has sufficient spare capacity to cater for the additional traffic generated by both the proposed planning proposals.

12.2 Intersection Capacity

In assessing intersection performance, the existing intersections that may be impacted by the development are the Wyee Road / Gosford Road give way-controlled T-intersection and the Wyee Road / Jabbarup Road Stop sign 4-way cross 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 TfNSW 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)

For each of the intersections the impact of this Planning Proposal (**DEV A**) will be assessed separately. The impact of the Darkinjung Local Aboriginal Land Council Planning Proposal (**DEV B**) combined with this Planning Proposal (**DEV A**) will then be assessed. Assumptions made in the modelling for the two intersections were:

- The intersection layouts 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 and by Intersect Traffic on Tuesday 15th September 2020.
- 2020, 2025 and 2035 traffic volumes have been predicted using a 1.5 % per annum background traffic growth rate on all roads.
- Traffic generated by the planning proposals are distributed as per ***Figures 3 & 4.***

12.2.1 Wyee Road / Gosford Road

The results of the modelling for this intersection are summarised in ***Table 4*** below showing the 'all vehicles' summary results except for the average delay / LoS for which the worst result for any movement for average delay and LoS are provided. The Sidra Movement Summary Tables are provided in ***Attachment C***.

Table 4 – Wyee Road / Gosford Road T Intersection – Sidra Modelling – Results Summary

Model Scenario	Degree of Saturation (v/c)	Worst Average Delay (s)	Worst LoS	95% Back of Queue Length (cars)
2020 PM give way	0.216	9.2	A	0.1
2025 PM give way	0.233	9.9	A	0.2
2025 PM + **DEV A**	0.233	10.0	A	0.2
2025 PM + **DEV A+B**	0.677	36.0	C	3.5
2035 PM give way	0.270	11.6	A	0.2
2035 PM + **DEV A**	0.271	11.8	A	0.3
2035 PM + **DEV A+B**	0.903	76.8	F	5.5

This modelling shows that with normal background traffic growth the Wyee Road / Gosford Road T-intersection would continue to operate satisfactorily through to 2035 in the critical PM peak period, with and without **DEV A**. However, the modelling shows that with the additional traffic from the **DEV B** planning proposal the intersection is likely to fail by 2035 with the right turn movement out of Gosford Road experiencing unacceptable delays. Therefore in future road network planning LMCC and Central Coast Council should be looking to upgrade the Wyee Road / Gosford Road intersection to a signal controlled intersection by 2035. This means a joint developer contributions plan for the Wyee Road and Gosford Road catchment should be prepared and implemented which includes the upgrading of the Wyee Road / Gosford Road intersection to signals, to ensure no single development bears the full cost of this intersection upgrade and that all developments in the area contribute to this.

It is concluded however that the modelling demonstrates that the subject planning proposal (**DEV A**) does not adversely impact on the Wyee Road / Gosford Road intersection and without other development in the area the proposal would not require an upgrade of the intersection.

12.2.2 Wyee Road / Jabbarup Road

The results of the modelling for this intersection are summarised in ***Table 5*** 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***.

Table 5 – Wyee Road / Jabbarup Road intersection – Sidra Modelling – Results Summary

Model Scenario	Degree of Saturation (v/c)	Average Delay (s)	LoS	95% Back of Queue Length (cars)
2020 PM stop sign	0.218	18.6	B	0.2
2025 PM stop sign	0.235	27.7	B	0.2
2025 PM + **DEV A**	0.244	20.9	B	0.2
2025 PM + **DEV A+B**	0.402	65.1	E	0.5
2025 PM + **DEV A+B left in / out**	0.397	10.0	A	0.1
2035 PM stop sign	0.274	25.9	B	0.3
2035 PM + **DEV A**	0.283	26.7	B	0.3
2035 PM + **DEV A+B**	0.519	83.3	F	0.8
2035 PM + **DEV A+B left in / out**	0.428	10.3	A	0.1

This modelling shows that the Wyee Road / Jabbarup Road Stop Sign 4-way Cross intersection operates satisfactorily in 2025 and 2035 with and without **DEV A** traffic with all intersection movements LoS B or less. However, with the addition of **DEV B** traffic with **DEV A** traffic the intersection performs poorly in 2025 and fails in 2035 with unacceptable delays for through and right turn movements out of both sides of Jabbarup Road due to the increased traffic on Wyee Road. Sidra modelling of a modified intersection whereby left turn in and left turn out of Jabbarup Road (raised concrete central median through the intersection) only is allowed shows the modified intersection working satisfactorily past 2035. Vehicles seeking to adjust their travel direction can then use the future signals at the Wyee Road / Gosford Road and the new Jabbarup Road connection to Gosford Road for this adjustment of travel direction.

Therefore in future road network planning LMCC should be looking to upgrade the Wyee Road / Jabbarup Road intersection to a left in and left out only intersection between 2025 and 2035. This means a developer contributions plan for the Wyee Road catchment should be prepared and implemented which includes the upgrading of the Wyee Road / Jabbarup Road intersection to a left in and left out only intersection to ensure no single development bears the full cost of this intersection upgrade.

It is concluded however that the modelling demonstrates that the subject planning proposal (**DEV A**) does not adversely impact on the Wyee Road / Jabbarup Road intersection and without other development in the area the proposal would not require an upgrade of the intersection.

12.2.3 Gosford Road / Jabbarup Road and Jabbarup Road / New Public Access Road T-Intersections

The newly formed sealed intersections created by the development are the Gosford Road / Jabbarup Road T-intersection and the two new Jabbarup Road / Development Public Road Accesses intersections. The predicted future traffic on each of the roads at these intersections in 2035 due to this planning proposal, **DEV A**, are:

- 71 vtph Gosford Road,
- 73 Jabbarup Road, and
- less than 35 vtph on either of the two New Public Road Accesses.

To determine if further analysis of these intersections is required it is necessary to determine if the traffic volumes on the roads of each of these intersections are above the thresholds for uninterrupted flow detailed in the following table extracted from *Austroads Guide to Traffic Management Part 6 – Intersections, Interchanges and Crossings*. If traffic volumes are below these thresholds, then uninterrupted flow conditions can be assumed and little or no delay will be experienced by motorists at these intersections and give way control conditions at these intersections will be acceptable.

Major road type[1]	Major road flow (vph)[2]	Minor road flow (vph)[3]
Two-lane	400	250
	500	200
	650	100
Four-lane	1000	100
	1500	50
	2000	25

Source: - Austroads Guide to Traffic Management Part 6 – Intersections, Interchanges and Crossings.

As all future traffic volumes are below the thresholds listed in the table for two-lane roads it is concluded that on completion of **DEV A** these intersections will operate with uninterrupted flow conditions and with low turning volumes would only need to be constructed as urban basic right turn and basic left turn intersections (BAR/BAL).

12.3 Intersection Sight Distance

The assessment of safe intersection sight distance for the proposed Gosford Road / Jabbarup Road T-intersection and the proposed two new subdivision intersection connections to Jabbarup Road will be further reviewed at detailed design stage however from observation on-site the available sight distance at the proposed subdivision accesses on Gosford Road and Jabbarup Road would exceed the Austroads requirements (*Table 3.2 of Austroads Guide to Road Design – Part 4A Unsignalised and signalised intersections*) of 100 metres for a 50 km/h design speed.

12.4 Road Upgrades

Based on the assessments carried out above the road infrastructure works required of this planning proposal are:

- New Gosford Road / Jabbarup Road intersection to be constructed as a BAR / BAL T-intersection prior to release of any new lots,
- Half road construction and provision of suitable roadside drainage such as kerb and gutter along the site frontages in Gosford Road and Jabbarup Road prior to release of lots within these site frontages,
- BAR / BAL access intersections on the two new Public Road Access T-intersections with Jabbarup Road, and
- 8-metre-wide road carriageway in Gosford Road and Jabbarup Road and 5.5-metre-wide internal subdivision roads.

12.5 Road Safety

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

- Lack of delineated access to the southern end of Jabbarup Road,
- Poor lighting in areas surrounding the proposed development,
- Lack of pavement and kerb and gutter on Gosford Road and the southern end of Jabbarup Road.

In general safety was considered satisfactory at the Wyee Road intersections connected to the development however it would be expected that the construction of the Gosford Road and

Jabbarup Road intersection and along their site frontages required for this planning proposal would result in an improvement pavement, provision of sealed shoulders, roadside drainage and improved night time delineation with line marking and improved lighting to the required development standards.

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.

12.5 On-site car parking

On-site car parking in accordance with LMCC's DCP 2014 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 LMCC it is considered that a dwelling with suitable covered and uncovered parking can be provided in accordance with the LMCC's DCP (2014).

13.0 PEDESTRIAN & CYCLE FACILITIES

The planning proposal will generate some pedestrian and bicycle traffic therefore a nexus may exist to provide additional facilities.

Therefore, there would be some benefit and nexus to providing a shared pedestrian / cycle pathway within Gosford Road along the frontage of the planning proposal site for future extension for other developments for connection to the local bus stops on the Wyee Road near Gosford Road. A pathway connection to the southern end of Murrawal Road from the north western side of

the development would be convenient for shorter access to bus stops in Wyee Road and the Wyee Railway station but it would be up to the future asset owner (LMCC) as to whether this is required or not. Internally the provision of concrete pedestrian pathways and cycleways would need to be in accordance with LMCC's requirements as per the relevant DCP documentation.

Again the provision of external pedestrian and cycleway infrastructure should be included in a joint developer contributions plan for the catchment to ensure no single development bears the full cost of this infrastructure upgrade.

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 new residential lots will not be more than 400 metres away from the existing bus services using Wyee Road, Gosford Road and Bushells Ridge Road.

There is little in the way of existing bus stop signs, seats and shelters in the area therefore additional bus stop signs, seats and shelters will be required on Wyee Road, Gosford Road and Bushells Ridge Road. A contribution to the upgrade of these facilities may be relevant to the development. Further consultation with the Council and the provider of the local bus services i.e. Busways / Coastal Liner and NSW Transport will be required to determine the likely suitable contribution for development of the planning proposal.

15.0 CONCLUSIONS

This traffic impact assessment for a planning proposal for a residential development on Lot 217 in DP 755242 – 18 Gosford Road, Wyee has concluded:

- Existing traffic volumes on the local road network are within the technical mid-block road capacities and environmental capacities as relevant determined by Austroads and the TfNSW and therefore the local road network has capacity to cater for additional traffic associated with new development in the area.
- The planning proposal (**DEV A**) is likely to generate an additional 311 vtpd; or 33 vtph during the critical PM peak traffic period.
- The local road network currently has sufficient spare capacity to cater for the traffic generated by this development without adversely impacting on current mid-block levels of service experienced by motorists on the local road network.
- Sidra modelling of the Wyee Road / Gosford Road T-intersection and the Wyee Road / Jabbarup Road 4 way cross intersection has shown that these intersection will perform satisfactorily in 2025 and 2035 with and without the addition of **DEV A** traffic and no upgrades are required as a result of this development.
- However Sidra modelling has also shown that both the Wyee Road / Gosford Road T-intersection and the Wyee Road / Jabbarup Road 4-way cross intersection will fail prior to 2035 with traffic from other known developments in the area on the road network. Proposals to upgrade these intersections have been identified in this report (and Intersect Traffic's TIA 16_137) should these developments proceed. The Wyee Road / Gosford Road intersection will need to be upgraded to a signalised intersection and it is recommended that the Wyee Road / Jabbarup Road intersection be upgraded to left in and left out only from and to both legs of Jabbarup Road. A joint developer contributions plan for the Wyee Road catchment should be prepared and implemented which includes the upgrading of these intersections to ensure no single development bears the full cost of these intersection upgrades.
- Both new subdivision access intersections at Jabbarup Road and the proposed Gosford Road / Jabbarup Road can be constructed as urban BAR / BAL give way controlled T-intersections as it has been demonstrated within this report that they will operate with uninterrupted flow conditions during peak periods and have low turning volumes.
- The available sight distance at the Gosford Road / Jabbarup Road intersection and the proposed Jabbarup Road subdivision access connections would comply with the Austroads requirements (*Table 3.2 of Austroads Guide to Road Design – Part 4A Unsignalised and signalised intersections*) of 100 metres for a 50 km/h design speed as relevant.
- The proposed new lots within the planning proposal are considered large enough to accommodate the car parking requirements of LMCC's DCP (2014).
- 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. Again a joint developer contributions plan should include the provision of this infrastructure to ensure no single development bears the full cost of this infrastructure. Internally the provision of concrete pedestrian pathways and cycleways would need to be in accordance with LMCC's requirements as per the relevant DCP documentation.

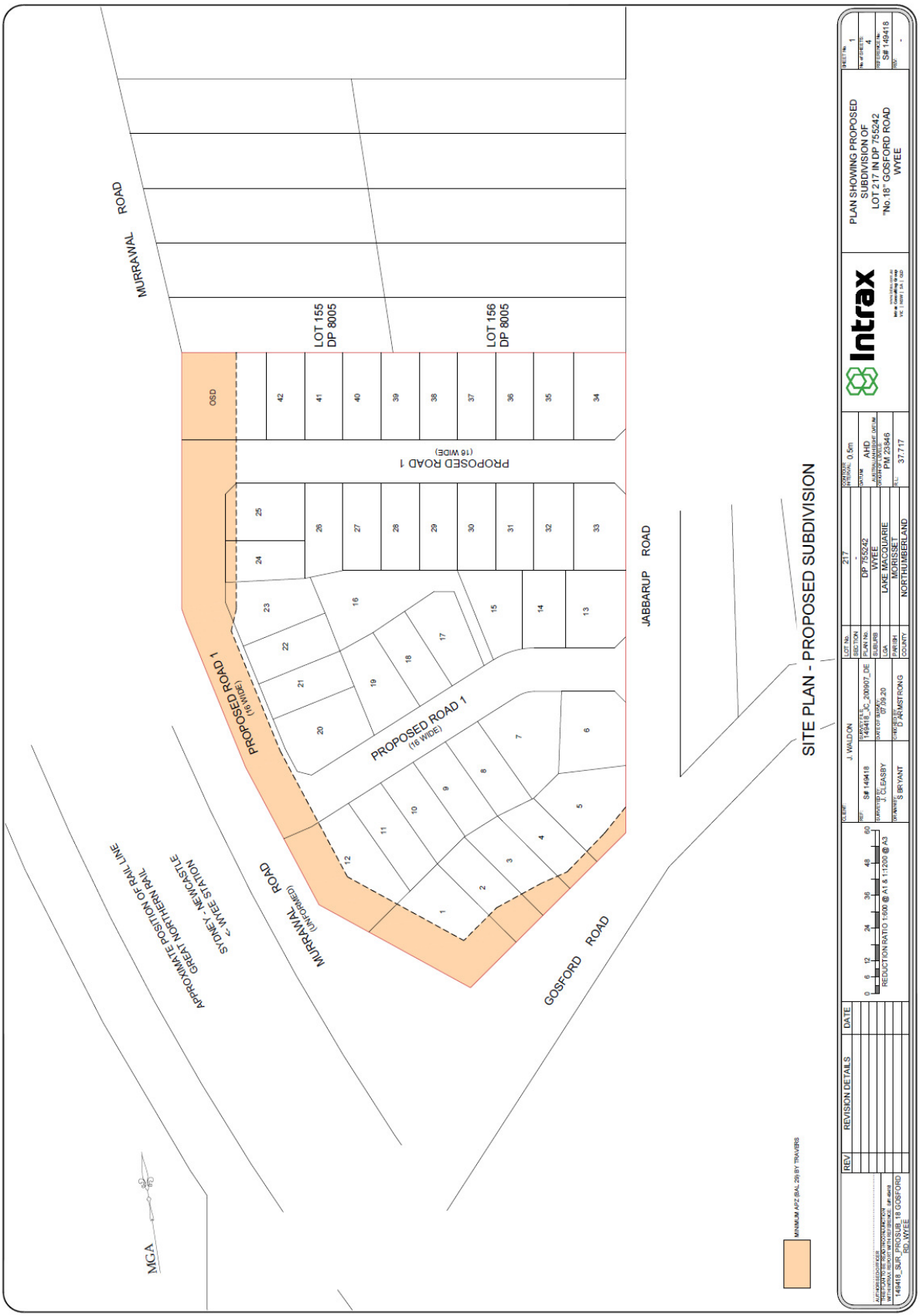
- The site is likely to generate some increased usage for the existing public transport services. As the subdivision lots are all within 400 metres of a bus route there appears little need to vary bus routes in the future, however the need for the existing bus routes to be diverted through the new development would be the subject of future consultation with LMCC, TfNSW and Busways / Coastal Liner should the planning proposal proceed to development application stage.
- A contribution to additional bus stops, seats and shelters in the area is considered reasonable to improve the amenity of the nearby existing bus stops therefore should also be included in a developer contributions plan for the Wyee Road catchment.

16.0 RECOMMENDATION

Having carried out this traffic impact assessment for the planning proposal for a residential development on Lot 217 in DP 755242 – 18 Gosford Road, Wyee it is recommended that the proposal can be supported from a traffic impact perspective subject to the road improvements as described in this report. The proposal will not adversely impact on the local and state road network and complies with all relevant LMCC, Austroads, and TfNSW requirements.

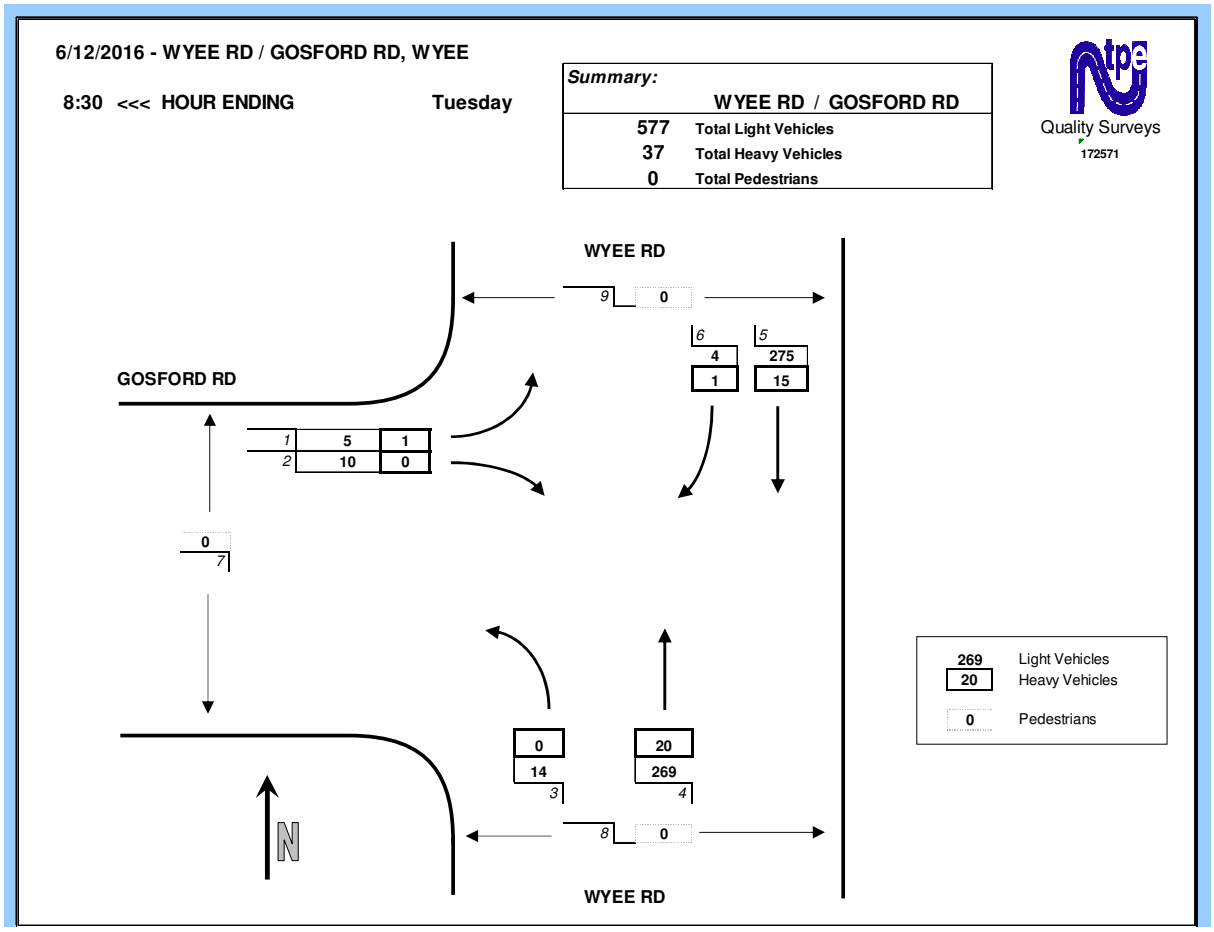
JR Garry BE (Civil), Masters of Traffic
Director
Intersect Traffic Pty Ltd

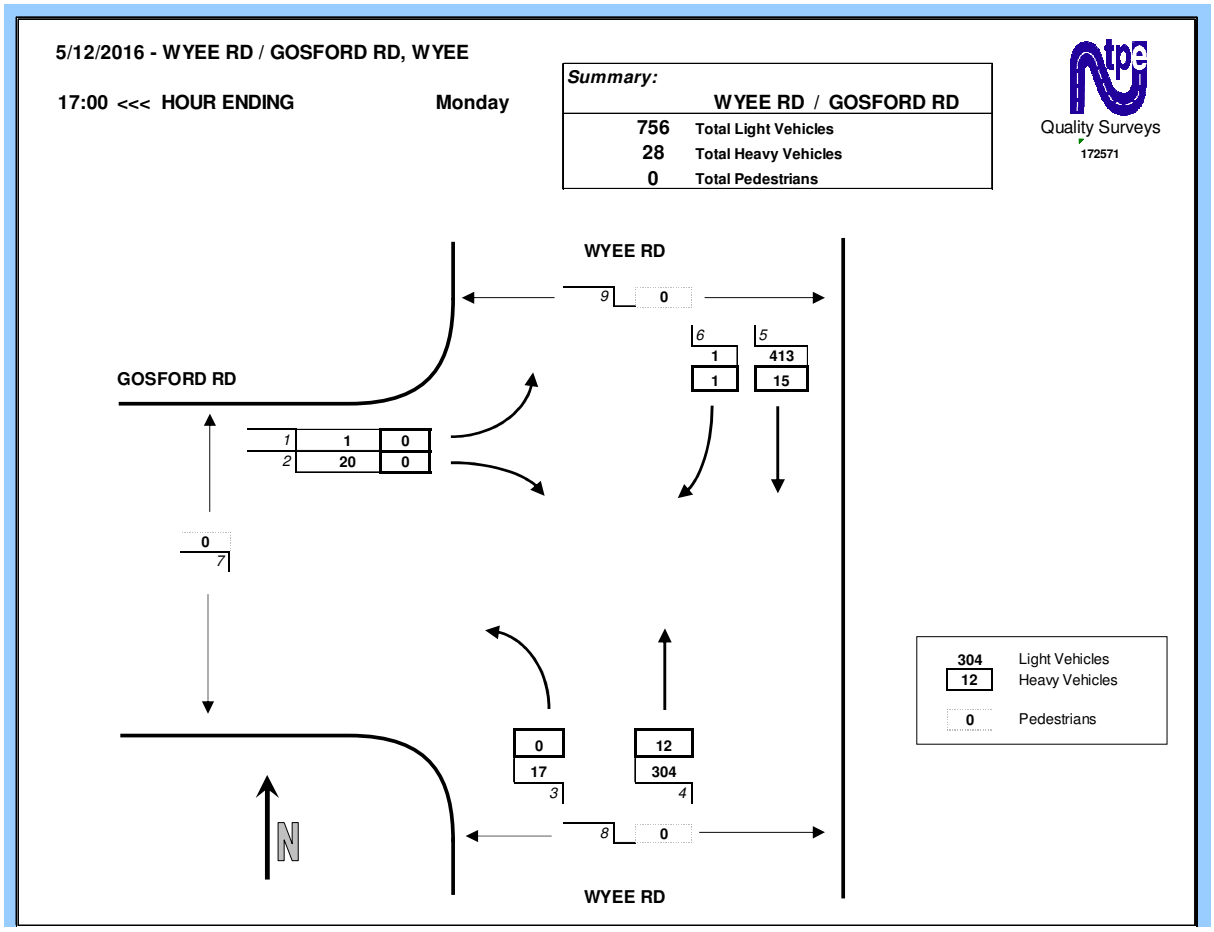
ATTACHMENT A
Development Plans


SITE PLAN - PROPOSED SUBDIVISION
PROPOSED ROAD 1
(16 WIDE)
PROPOSED ROAD 1
(16 WIDE)
LOT 155
DP 8005
LOT 156
DP 8005
OSD
MURRAWAL ROAD
(UNFORMED)
JABBARUP ROAD
GOSFORD ROAD
MURRAWAL ROAD
APPROXIMATE POSITION OF PAUL LINE
GREAT NORTHERN RAIL
STOCKTON, NEWCASTLE
& WYEE STATION
MGA
MINIMUM APZ (BAL 29) BY TRAVERS
PLAN SHOWING PROPOSED
SUBDIVISION OF
LOT 217 IN DP 755242
No.18 GOSFORD ROAD
WYEE
Intrax
J. WALDON
S BRYANT
D ARMSTRONG
DP 755242
WYEE
LAKE MACQUARIE
MORISSET
NORTHUMBERLAND
PM 25346
37.717
AHD
0.5m
REV
REVISION DETAILS
DATE
REDUCTION RATIO 1:600 @ A1 & 1:1200 @ A3
144418_SK2_18 GOSFORD RD_WYEE

ATTACHMENT B

Traffic Count Data


6/12/2016 - WYEE RD / GOSFORD RD, WYEE
8:30 <<< HOUR ENDING
Tuesday
Summary:
WYEE RD / GOSFORD RD
577 Total Light Vehicles
37 Total Heavy Vehicles
0 Total Pedestrians
Quality Surveys
172571
WYEE RD
GOSFORD RD
WYEE RD
269 Light Vehicles
20 Heavy Vehicles
0 Pedestrians


5/12/2016 - WYEE RD / GOSFORD RD, WYEE
17:00 <<< HOUR ENDING
Monday
Summary:
WYEE RD / GOSFORD RD
756 Total Light Vehicles
28 Total Heavy Vehicles
0 Total Pedestrians
Quality Surveys
172571
WYEE RD
GOSFORD RD
WYEE RD
N
304 Light Vehicles
12 Heavy Vehicles
0 Pedestrians

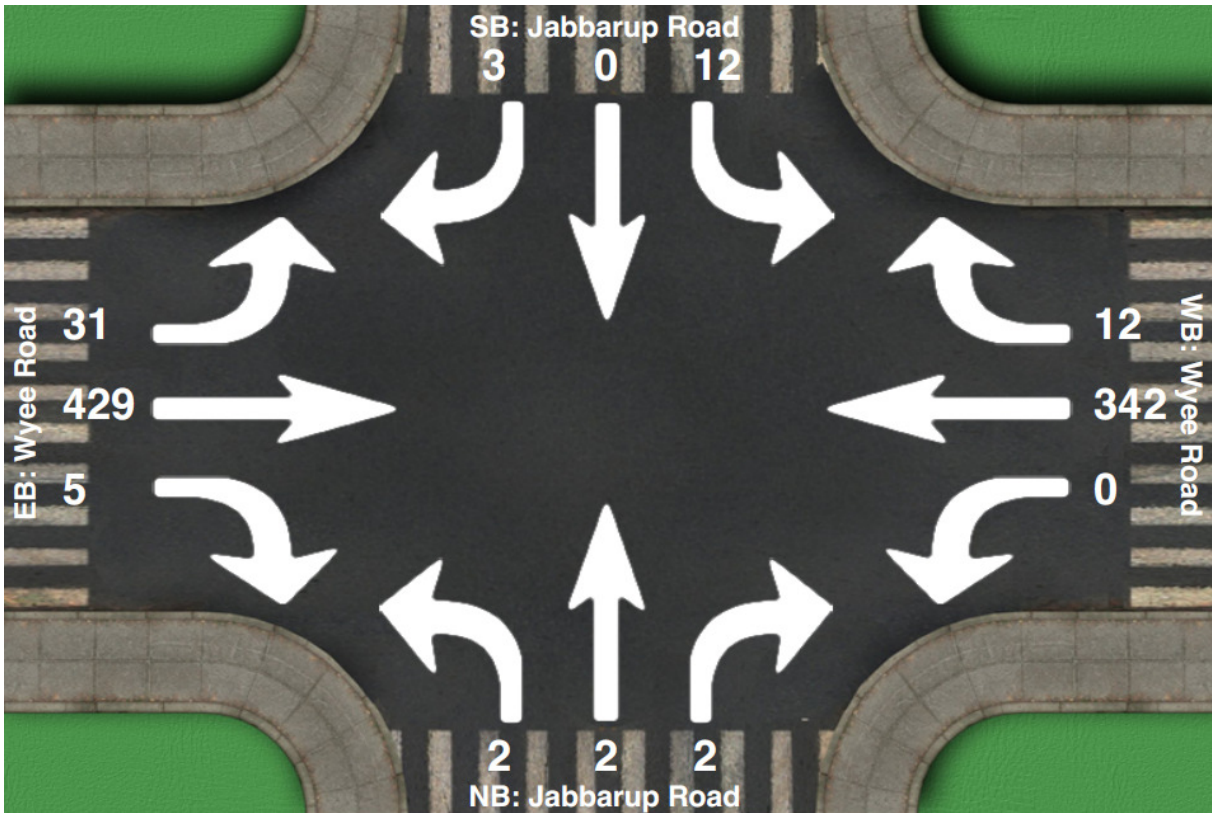
Intersect Traffic
PO Box 268
East Maitland, Nsw, 2323
0423324188

Intersection Peak Hour
16:00 - 17:00

Location: Jabbarup Road at Wyee Road , Wyee
GPS Coordinates: Lat=-33.176020, Lon=151.490113
Date: 2020-09-15
Day of week: Tuesday
Weather: Sunny
Analyst: Peter

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	2	0	1	0	93	4	1	1	1	14	106	3	226
16:15	2	0	1	0	87	0	1	1	1	7	88	2	190
16:30	5	0	1	0	90	6	0	0	0	4	123	0	229
16:45	3	0	0	0	72	2	0	0	0	6	112	0	195



ATTACHMENT C

Sidra Movement Summary Tables

MOVEMENT SUMMARY

Site: 101 [2020 PM (Site Folder: General)]

Wyee Road / Gosford Road Give Way T-intersection
Bushells Ridge
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyee Road														
1	L2	19	0	20	0.0	0.200	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	58.0
2	T1	342	13	360	3.8	0.200	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.6
Approach		361	13	380	3.6	0.200	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.5
North: Wyee Road														
8	T1	464	17	488	3.7	0.216	0.2	LOS A	0.0	0.3	0.01	0.00	0.01	59.9
9	R2	2	1	2	50.0	0.216	9.0	LOS A	0.0	0.3	0.01	0.00	0.01	52.7
Approach		466	18	491	3.9	0.216	0.2	NA	0.0	0.3	0.01	0.00	0.01	59.9
West: Gosford Road														
10	L2	1	0	1	0.0	0.001	5.7	LOS A	0.0	0.0	0.39	0.50	0.39	48.8
12	R2	22	0	23	0.0	0.040	9.2	LOS A	0.1	1.0	0.61	0.78	0.61	46.4
Approach		23	0	24	0.0	0.040	9.0	LOS A	0.1	1.0	0.60	0.77	0.60	46.5
All Vehicles		850	31	895	3.6	0.216	0.5	NA	0.1	1.0	0.02	0.04	0.02	59.3

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.

MOVEMENT SUMMARY

Site: 101 [2025 PM (Site Folder: General)]

Wyee Road / Gosford Road Give Way T-intersection
Bushells Ridge
Site Category: (None)
Give-Way (Two-Way)
Design Life Analysis (Practical Capacity): Results for 5 years

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyee Road														
1	L2	19	0	22	0.0	0.215	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	58.0
2	T1	342	13	388	3.8	0.215	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.6
Approach		361	13	409	3.6	0.215	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.5
North: Wyee Road														
8	T1	464	17	526	3.7	0.233	0.2	LOS A	0.0	0.3	0.01	0.00	0.01	59.9
9	R2	2	1	2	50.0	0.233	9.4	LOS A	0.0	0.3	0.01	0.00	0.01	52.7
Approach		466	18	528	3.9	0.233	0.2	NA	0.0	0.3	0.01	0.00	0.01	59.9
West: Gosford Road														
10	L2	1	0	1	0.0	0.001	5.8	LOS A	0.0	0.0	0.41	0.51	0.41	48.7
12	R2	22	0	25	0.0	0.047	9.9	LOS A	0.2	1.1	0.64	0.82	0.64	46.1
Approach		23	0	26	0.0	0.047	9.7	LOS A	0.2	1.1	0.63	0.80	0.63	46.2
All Vehicles		850	31	964	3.6	0.233	0.5	NA	0.2	1.1	0.02	0.04	0.02	59.3

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.

Organisation: INTERSECT TRAFFIC PTY LTD | Licence: PLUS / 1PC | Processed: Tuesday, 13 October 2020 8:25:18 AM
Project: C:\Work Documents\Projects\2020\2020.139 - Residential Planning Proposal - Gosford Road, Wyee\Wyee_Gosford.sip9

MOVEMENT SUMMARY

Site: 101 [2025 PM + DEV-A (Site Folder: General)]

Wyee Road / Gosford Road Give Way T-intersection
Bushells Ridge
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyee Road														
1	L2	35	0	37	0.0	0.223	5.6	LOS A	0.0	0.0	0.00	0.05	0.00	57.8
2	T1	368	14	387	3.8	0.223	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.4
Approach		403	14	424	3.5	0.223	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.3
North: Wyee Road														
8	T1	500	19	526	3.8	0.233	0.2	LOS A	0.0	0.3	0.01	0.00	0.01	59.9
9	R2	2	1	2	50.0	0.233	9.6	LOS A	0.0	0.3	0.01	0.00	0.01	52.7
Approach		502	20	528	4.0	0.233	0.2	NA	0.0	0.3	0.01	0.00	0.01	59.9
West: Gosford Road														
10	L2	1	0	1	0.0	0.001	5.8	LOS A	0.0	0.0	0.41	0.51	0.41	48.7
12	R2	31	0	33	0.0	0.062	10.0	LOS A	0.2	1.5	0.65	0.84	0.65	46.0
Approach		32	0	34	0.0	0.062	9.9	LOS A	0.2	1.5	0.64	0.83	0.64	46.1
All Vehicles		937	34	986	3.6	0.233	0.7	NA	0.2	1.5	0.03	0.05	0.03	59.0

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.

MOVEMENT SUMMARY

Site: 101 [2025 PM + DEV A+B (Site Folder: General)]

Wyee Road / Gosford Road Give Way T-intersection
Bushells Ridge
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyee Road														
1	L2	232	0	244	0.0	0.434	5.7	LOS A	0.0	0.0	0.00	0.18	0.00	56.6
2	T1	552	14	581	2.5	0.434	0.2	LOS A	0.0	0.0	0.00	0.18	0.00	58.1
Approach		784	14	825	1.8	0.434	1.8	NA	0.0	0.0	0.00	0.18	0.00	57.7
North: Wyee Road														
8	T1	722	19	760	2.6	0.476	3.1	LOS A	3.5	25.0	0.36	0.11	0.54	56.3
9	R2	109	1	115	0.9	0.476	13.9	LOS A	3.5	25.0	0.47	0.14	0.72	49.9
Approach		831	20	875	2.4	0.476	4.5	NA	3.5	25.0	0.38	0.11	0.57	55.4
West: Gosford Road														
10	L2	47	0	49	0.0	0.056	7.0	LOS A	0.2	1.4	0.52	0.69	0.52	48.2
12	R2	132	0	139	0.0	0.677	36.0	LOS C	3.0	20.8	0.95	1.17	1.61	34.6
Approach		179	0	188	0.0	0.677	28.4	LOS B	3.0	20.8	0.83	1.04	1.33	37.4
All Vehicles		1794	34	1888	1.9	0.677	5.7	NA	3.5	25.0	0.26	0.23	0.39	53.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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\2020\2020.139 - Residential Planning Proposal - Gosford Road, Wyee\Wyee_Gosford.sip9

MOVEMENT SUMMARY

Site: 101 [2035 PM (Site Folder: General)]

Wyee Road / Gosford Road Give Way T-intersection
Bushells Ridge
Site Category: (None)
Give-Way (Two-Way)
Design Life Analysis (Practical Capacity): Results for 15 years

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyee Road														
1	L2	19	0	25	0.0	0.250	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	58.0
2	T1	342	13	450	3.8	0.250	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.6
Approach		361	13	475	3.6	0.250	0.4	NA	0.0	0.0	0.00	0.03	0.00	59.5
North: Wyee Road														
8	T1	464	17	611	3.7	0.270	0.2	LOS A	0.1	0.4	0.01	0.00	0.01	59.9
9	R2	2	1	3	50.0	0.270	10.5	LOS A	0.1	0.4	0.01	0.00	0.01	52.7
Approach		466	18	613	3.9	0.270	0.3	NA	0.1	0.4	0.01	0.00	0.01	59.9
West: Gosford Road														
10	L2	1	0	1	0.0	0.001	6.1	LOS A	0.0	0.0	0.44	0.52	0.44	48.6
12	R2	22	0	29	0.0	0.066	11.6	LOS A	0.2	1.6	0.71	0.87	0.71	45.0
Approach		23	0	30	0.0	0.066	11.4	LOS A	0.2	1.6	0.70	0.86	0.70	45.2
All Vehicles		850	31	1119	3.6	0.270	0.6	NA	0.2	1.6	0.02	0.04	0.02	59.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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.

Organisation: INTERSECT TRAFFIC PTY LTD | Licence: PLUS / 1PC | Processed: Tuesday, 13 October 2020 8:25:20 AM
Project: C:\Work Documents\Projects\2020\2020.139 - Residential Planning Proposal - Gosford Road, Wyee\Wyee_Gosford.sip9

MOVEMENT SUMMARY

Site: 101 [2035 PM + DEV-A (Site Folder: General)]

Wyee Road / Gosford Road Give Way T-intersection
Bushells Ridge
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyee Road														
1	L2	35	0	37	0.0	0.257	5.6	LOS A	0.0	0.0	0.00	0.05	0.00	57.8
2	T1	428	17	451	4.0	0.257	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.4
Approach		463	17	487	3.7	0.257	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.3
North: Wyee Road														
8	T1	580	22	611	3.8	0.271	0.3	LOS A	0.1	0.5	0.01	0.00	0.01	59.9
9	R2	3	2	3	50.0	0.271	10.7	LOS A	0.1	0.5	0.01	0.00	0.01	52.7
Approach		583	24	614	4.0	0.271	0.3	NA	0.1	0.5	0.01	0.00	0.01	59.9
West: Gosford Road														
10	L2	1	0	1	0.0	0.001	6.1	LOS A	0.0	0.0	0.44	0.52	0.44	48.6
12	R2	35	0	37	0.0	0.085	11.8	LOS A	0.3	2.0	0.72	0.88	0.72	44.9
Approach		36	0	38	0.0	0.085	11.6	LOS A	0.3	2.0	0.71	0.87	0.71	45.0
All Vehicles		1082	41	1139	3.7	0.271	0.8	NA	0.3	2.0	0.03	0.05	0.03	59.0

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.

Organisation: INTERSECT TRAFFIC PTY LTD | Licence: PLUS / 1PC | Processed: Tuesday, 13 October 2020 8:27:46 AM
Project: C:\Work Documents\Projects\2020\2020.139 - Residential Planning Proposal - Gosford Road, Wyee\Wyee_Gosford.sip9

MOVEMENT SUMMARY

Site: 101 [2035 PM + DEV A+B (Site Folder: General)]

Wyee Road / Gosford Road Give Way T-intersection
Bushells Ridge
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyee Road														
1	L2	228	0	240	0.0	0.466	5.7	LOS A	0.0	0.0	0.00	0.16	0.00	56.7
2	T1	612	17	644	2.8	0.466	0.2	LOS A	0.0	0.0	0.00	0.16	0.00	58.2
Approach		840	17	884	2.0	0.466	1.7	NA	0.0	0.0	0.00	0.16	0.00	57.8
North: Wyee Road														
8	T1	802	22	844	2.7	0.534	3.8	LOS A	4.4	31.8	0.39	0.11	0.63	55.7
9	R2	110	2	116	1.8	0.534	16.1	LOS B	4.4	31.8	0.52	0.14	0.83	49.3
Approach		912	24	960	2.6	0.534	5.3	NA	4.4	31.8	0.41	0.11	0.66	54.8
West: Gosford Road														
10	L2	47	0	49	0.0	0.061	7.5	LOS A	0.2	1.5	0.54	0.72	0.54	47.9
12	R2	136	0	143	0.0	0.903	76.8	LOS F	5.5	38.8	0.99	1.47	2.73	24.9
Approach		183	0	193	0.0	0.903	59.0	LOS E	5.5	38.8	0.87	1.28	2.17	28.4
All Vehicles		1935	41	2037	2.1	0.903	8.8	NA	5.5	38.8	0.28	0.24	0.51	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.
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.

MOVEMENT SUMMARY

Site: 101 [2020PM (Site Folder: General)]

Residential Planning Proposal
Wyee Road / Jabbarup Road Stop Sign controlled Cross Intersection
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jabbarup Road														
1	L2	2	0.0	2	0.0	0.017	8.2	LOS A	0.1	0.4	0.33	0.91	0.33	43.0
2	T1	2	0.0	2	0.0	0.017	18.6	LOS B	0.1	0.4	0.33	0.91	0.33	38.3
3	R2	2	0.0	2	0.0	0.017	17.8	LOS B	0.1	0.4	0.33	0.91	0.33	42.8
Approach		6	0.0	6	0.0	0.017	14.9	LOS B	0.1	0.4	0.33	0.91	0.33	41.5
East: Wyee Road														
4	L2	1	0.0	1	0.0	0.034	5.5	LOS A	0.0	0.0	0.00	0.01	0.00	57.9
5	T1	342	5.0	360	5.0	0.172	0.3	LOS A	0.2	1.3	0.05	0.02	0.05	59.5
6	R2	12	0.0	13	0.0	0.172	8.4	LOS A	0.2	1.3	0.06	0.03	0.06	53.9
Approach		355	4.8	374	4.8	0.172	0.6	NA	0.2	1.3	0.05	0.02	0.05	59.3
North: Jabbarup Road														
7	L2	12	0.0	13	0.0	0.026	8.4	LOS A	0.1	0.6	0.15	0.92	0.15	45.8
8	T1	1	0.0	1	0.0	0.026	18.5	LOS B	0.1	0.6	0.15	0.92	0.15	40.9
9	R2	3	0.0	3	0.0	0.026	18.3	LOS B	0.1	0.6	0.15	0.92	0.15	45.6
Approach		16	0.0	17	0.0	0.026	10.9	LOS A	0.1	0.6	0.15	0.92	0.15	45.5
West: Wyee Road														
10	L2	31	0.0	33	0.0	0.044	5.6	LOS A	0.0	0.0	0.00	0.24	0.00	55.7
11	T1	429	5.0	452	5.0	0.218	0.1	LOS A	0.1	0.5	0.02	0.03	0.02	59.6
12	R2	5	0.0	5	0.0	0.218	7.6	LOS A	0.1	0.5	0.02	0.01	0.02	54.5
Approach		465	4.6	489	4.6	0.218	0.6	NA	0.1	0.5	0.01	0.05	0.01	59.3
All Vehicles		842	4.6	886	4.6	0.218	0.9	NA	0.2	1.3	0.04	0.06	0.04	58.9

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.

MOVEMENT SUMMARY

Site: 101 [2025PM (Site Folder: General)]

Residential Planning Proposal
Wyee Road / Jabbarup Road Stop Sign controlled Cross Intersection
Site Category: (None)
Stop (Two-Way)
Design Life Analysis (Final Year): Results for 5 years

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jabbarup Road														
1	L2	2	0.0	2	0.0	0.020	8.3	LOS A	0.1	0.5	0.37	0.91	0.37	42.2
2	T1	2	0.0	2	0.0	0.020	20.5	LOS B	0.1	0.5	0.37	0.91	0.37	37.6
3	R2	2	0.0	2	0.0	0.020	19.7	LOS B	0.1	0.5	0.37	0.91	0.37	42.1
Approach		6	0.0	7	0.0	0.020	16.1	LOS B	0.1	0.5	0.37	0.91	0.37	40.7
East: Wyee Road														
4	L2	1	0.0	1	0.0	0.037	5.5	LOS A	0.0	0.0	0.00	0.01	0.00	57.9
5	T1	342	5.0	388	5.0	0.186	0.3	LOS A	0.2	1.5	0.06	0.02	0.06	59.5
6	R2	12	0.0	14	0.0	0.186	8.8	LOS A	0.2	1.5	0.07	0.03	0.07	53.9
Approach		355	4.8	403	4.8	0.186	0.6	NA	0.2	1.5	0.06	0.02	0.06	59.3
North: Jabbarup Road														
7	L2	12	0.0	14	0.0	0.037	8.5	LOS A	0.1	0.9	0.19	0.91	0.19	44.5
8	T1	1	0.0	1	0.0	0.037	23.8	LOS B	0.1	0.9	0.19	0.91	0.19	39.6
9	R2	3	0.0	3	0.0	0.037	27.7	LOS B	0.1	0.9	0.19	0.91	0.19	44.3
Approach		16	0.0	18	0.0	0.037	13.1	LOS A	0.1	0.9	0.19	0.91	0.19	44.2
West: Wyee Road														
10	L2	31	0.0	35	0.0	0.047	5.6	LOS A	0.0	0.0	0.00	0.24	0.00	55.7
11	T1	429	5.0	486	5.0	0.235	0.1	LOS A	0.1	0.5	0.02	0.03	0.02	59.6
12	R2	5	0.0	6	0.0	0.235	7.9	LOS A	0.1	0.5	0.02	0.01	0.02	54.5
Approach		465	4.6	527	4.6	0.235	0.6	NA	0.1	0.5	0.02	0.05	0.02	59.3
All Vehicles		842	4.6	955	4.6	0.235	1.0	NA	0.2	1.5	0.04	0.06	0.04	58.8

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 [2025PM + DEV A (Site Folder: General)]

Residential Planning Proposal
Wyee Road / Jabbarup Road Stop Sign controlled Cross Intersection
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jabbarup Road														
1	L2	6	0.0	6	0.0	0.023	8.3	LOS A	0.1	0.5	0.25	0.90	0.25	44.1
2	T1	2	0.0	2	0.0	0.023	20.9	LOS B	0.1	0.5	0.25	0.90	0.25	39.4
3	R2	2	0.0	2	0.0	0.023	20.1	LOS B	0.1	0.5	0.25	0.90	0.25	43.9
Approach		10	0.0	11	0.0	0.023	13.2	LOS A	0.1	0.5	0.25	0.90	0.25	43.2
East: Wyee Road														
4	L2	1	0.0	1	0.0	0.037	5.5	LOS A	0.0	0.0	0.00	0.01	0.00	57.9
5	T1	368	5.0	387	5.0	0.186	0.3	LOS A	0.2	1.5	0.06	0.02	0.06	59.5
6	R2	13	0.0	14	0.0	0.186	8.8	LOS A	0.2	1.5	0.07	0.03	0.07	53.9
Approach		382	4.8	402	4.8	0.186	0.6	NA	0.2	1.5	0.06	0.02	0.06	59.3
North: Jabbarup Road														
7	L2	13	0.0	14	0.0	0.029	8.5	LOS A	0.1	0.7	0.17	0.91	0.17	45.5
8	T1	1	0.0	1	0.0	0.029	20.7	LOS B	0.1	0.7	0.17	0.91	0.17	40.7
9	R2	3	0.0	3	0.0	0.029	20.6	LOS B	0.1	0.7	0.17	0.91	0.17	45.3
Approach		17	0.0	18	0.0	0.029	11.4	LOS A	0.1	0.7	0.17	0.91	0.17	45.2
West: Wyee Road														
10	L2	33	0.0	35	0.0	0.049	5.6	LOS A	0.0	0.0	0.00	0.23	0.00	55.8
11	T1	462	5.0	486	5.0	0.244	0.2	LOS A	0.2	1.5	0.04	0.05	0.04	59.4
12	R2	15	0.0	16	0.0	0.244	7.9	LOS A	0.2	1.5	0.05	0.02	0.05	54.3
Approach		510	4.5	537	4.5	0.244	0.8	NA	0.2	1.5	0.04	0.06	0.04	59.0
All Vehicles		919	4.5	967	4.5	0.244	1.1	NA	0.2	1.5	0.05	0.07	0.05	58.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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.

Organisation: INTERSECT TRAFFIC PTY LTD | Licence: PLUS / 1PC | Processed: Tuesday, 13 October 2020 9:29:07 AM
Project: C:\Work Documents\Projects\2020\2020.139 - Residential Planning Proposal - Gosford Road, Wyee\Final Sidras\Wyee_Jabbarup \Wyee_Jabbarup.sip9

MOVEMENT SUMMARY

Site: 101 [2025PM + DEV A+B (Site Folder: General)]

Residential Planning Proposal
Wyee Road / Jabbarup Road Stop Sign controlled Cross Intersection
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jabbarup Road														
1	L2	6	0.0	6	0.0	0.098	9.1	LOS A	0.2	1.3	0.48	0.86	0.48	35.1
2	T1	2	0.0	2	0.0	0.098	65.1	LOS E	0.2	1.3	0.48	0.86	0.48	30.8
3	R2	2	0.0	2	0.0	0.098	63.3	LOS E	0.2	1.3	0.48	0.86	0.48	35.0
Approach		10	0.0	11	0.0	0.098	31.2	LOS C	0.2	1.3	0.48	0.86	0.48	34.3
East: Wyee Road														
4	L2	1	0.0	1	0.0	0.060	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.9
5	T1	598	5.0	629	5.0	0.302	0.8	LOS A	0.5	3.9	0.07	0.01	0.09	59.1
6	R2	13	0.0	14	0.0	0.302	15.0	LOS B	0.5	3.9	0.09	0.02	0.11	53.5
Approach		612	4.9	644	4.9	0.302	1.1	NA	0.5	3.9	0.07	0.01	0.09	59.0
North: Jabbarup Road														
7	L2	13	0.0	14	0.0	0.079	9.8	LOS A	0.2	1.6	0.47	0.82	0.47	40.0
8	T1	1	0.0	1	0.0	0.079	61.9	LOS E	0.2	1.6	0.47	0.82	0.47	35.1
9	R2	3	0.0	3	0.0	0.079	62.7	LOS E	0.2	1.6	0.47	0.82	0.47	39.8
Approach		17	0.0	18	0.0	0.079	22.2	LOS B	0.2	1.6	0.47	0.82	0.47	39.7
West: Wyee Road														
10	L2	33	0.0	35	0.0	0.080	5.6	LOS A	0.0	0.0	0.00	0.14	0.00	56.6
11	T1	791	5.0	833	5.0	0.402	0.5	LOS A	0.5	3.4	0.05	0.03	0.07	59.3
12	R2	15	0.0	16	0.0	0.402	11.8	LOS A	0.5	3.4	0.06	0.01	0.08	54.1
Approach		839	4.7	883	4.7	0.402	0.9	NA	0.5	3.4	0.05	0.03	0.06	59.1
All Vehicles		1478	4.7	1556	4.7	0.402	1.5	NA	0.5	3.9	0.07	0.04	0.08	58.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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.

MOVEMENT SUMMARY

Site: 101 [2025PM + DEV A+B left in and left out only (Site Folder: General)]

Residential Planning Proposal
Wyee Road / Jabbarup Road Stop Sign controlled Cross Intersection
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jabbarup Road														
1	L2	10	0.0	11	0.0	0.010	9.1	LOS A	0.0	0.2	0.21	0.88	0.21	47.5
Approach		10	0.0	11	0.0	0.010	9.1	LOS A	0.0	0.2	0.21	0.88	0.21	47.5
East: Wyee Road														
4	L2	1	0.0	1	0.0	0.057	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.9
5	T1	611	5.0	643	5.0	0.284	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		612	5.0	644	5.0	0.284	0.3	NA	0.0	0.0	0.00	0.00	0.00	59.8
North: Jabbarup Road														
7	L2	17	0.0	18	0.0	0.017	10.0	LOS A	0.1	0.4	0.22	0.88	0.22	47.5
Approach		17	0.0	18	0.0	0.017	10.0	LOS A	0.1	0.4	0.22	0.88	0.22	47.5
West: Wyee Road														
10	L2	33	0.0	35	0.0	0.079	5.6	LOS A	0.0	0.0	0.00	0.14	0.00	56.6
11	T1	821	5.0	864	5.0	0.397	0.4	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
Approach		854	4.8	899	4.8	0.397	0.6	NA	0.0	0.0	0.00	0.02	0.00	59.5
All Vehicles		1493	4.8	1572	4.8	0.397	0.6	NA	0.1	0.4	0.00	0.03	0.00	59.4

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 [2035PM (Site Folder: General)]

Residential Planning Proposal
Wyee Road / Jabbarup Road Stop Sign controlled Cross Intersection
Site Category: (None)
Stop (Two-Way)
Design Life Analysis (Final Year): Results for 15 years

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jabbarup Road														
1	L2	2	0.0	3	0.0	0.031	8.5	LOS A	0.1	0.7	0.46	0.91	0.46	40.3
2	T1	2	0.0	3	0.0	0.031	25.9	LOS B	0.1	0.7	0.46	0.91	0.46	35.8
3	R2	2	0.0	3	0.0	0.031	24.8	LOS B	0.1	0.7	0.46	0.91	0.46	40.2
Approach		6	0.0	8	0.0	0.031	19.7	LOS B	0.1	0.7	0.46	0.91	0.46	38.8
East: Wyee Road														
4	L2	1	0.0	1	0.0	0.044	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.9
5	T1	342	5.0	450	5.0	0.218	0.4	LOS A	0.3	2.1	0.06	0.02	0.06	59.4
6	R2	12	0.0	16	0.0	0.218	9.9	LOS A	0.3	2.1	0.08	0.03	0.08	53.8
Approach		355	4.8	467	4.8	0.218	0.8	NA	0.3	2.1	0.06	0.02	0.06	59.2
North: Jabbarup Road														
7	L2	12	0.0	16	0.0	0.042	8.8	LOS A	0.1	1.0	0.21	0.90	0.21	44.6
8	T1	1	0.0	1	0.0	0.042	25.8	LOS B	0.1	1.0	0.21	0.90	0.21	39.7
9	R2	3	0.0	4	0.0	0.042	25.7	LOS B	0.1	1.0	0.21	0.90	0.21	44.4
Approach		16	0.0	21	0.0	0.042	13.0	LOS A	0.1	1.0	0.21	0.90	0.21	44.3
West: Wyee Road														
10	L2	31	0.0	41	0.0	0.055	5.6	LOS A	0.0	0.0	0.00	0.24	0.00	55.7
11	T1	429	5.0	565	5.0	0.274	0.2	LOS A	0.1	0.7	0.02	0.03	0.02	59.6
12	R2	5	0.0	7	0.0	0.274	8.6	LOS A	0.1	0.7	0.02	0.01	0.02	54.5
Approach		465	4.6	612	4.6	0.274	0.6	NA	0.1	0.7	0.02	0.05	0.02	59.3
All Vehicles		842	4.6	1108	4.6	0.274	1.1	NA	0.3	2.1	0.04	0.06	0.04	58.8

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.

MOVEMENT SUMMARY

Site: 101 [2035PM + DEV A (Site Folder: General)]

Residential Planning Proposal
Wyee Road / Jabbarup Road Stop Sign controlled Cross Intersection
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jabbarup Road														
1	L2	7	0.0	7	0.0	0.042	8.5	LOS A	0.1	0.9	0.34	0.89	0.34	42.1
2	T1	3	0.0	3	0.0	0.042	26.7	LOS B	0.1	0.9	0.34	0.89	0.34	37.4
3	R2	3	0.0	3	0.0	0.042	25.5	LOS B	0.1	0.9	0.34	0.89	0.34	41.9
Approach		13	0.0	14	0.0	0.042	16.6	LOS B	0.1	0.9	0.34	0.89	0.34	41.0
East: Wyee Road														
4	L2	1	0.0	1	0.0	0.044	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.9
5	T1	428	5.0	451	5.0	0.218	0.4	LOS A	0.3	2.1	0.06	0.02	0.06	59.4
6	R2	15	0.0	16	0.0	0.218	9.9	LOS A	0.3	2.1	0.08	0.03	0.08	53.8
Approach		444	4.8	467	4.8	0.218	0.8	NA	0.3	2.1	0.06	0.02	0.06	59.2
North: Jabbarup Road														
7	L2	15	0.0	16	0.0	0.043	8.8	LOS A	0.1	1.0	0.22	0.90	0.22	44.5
8	T1	1	0.0	1	0.0	0.043	26.2	LOS B	0.1	1.0	0.22	0.90	0.22	39.6
9	R2	4	0.0	4	0.0	0.043	26.3	LOS B	0.1	1.0	0.22	0.90	0.22	44.3
Approach		20	0.0	21	0.0	0.043	13.2	LOS A	0.1	1.0	0.22	0.90	0.22	44.3
West: Wyee Road														
10	L2	39	0.0	41	0.0	0.057	5.6	LOS A	0.0	0.0	0.00	0.23	0.00	55.7
11	T1	536	5.0	564	5.0	0.283	0.3	LOS A	0.3	1.9	0.05	0.04	0.05	59.3
12	R2	16	0.0	17	0.0	0.283	8.6	LOS A	0.3	1.9	0.05	0.02	0.06	54.2
Approach		591	4.5	622	4.5	0.283	0.9	NA	0.3	1.9	0.04	0.06	0.05	59.0
All Vehicles		1068	4.5	1124	4.5	0.283	1.2	NA	0.3	2.1	0.06	0.07	0.06	58.5

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 [2035PM + DEV A+B (Site Folder: General)]

Residential Planning Proposal
Wyee Road / Jabbarup Road Stop Sign controlled Cross Intersection
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jabbarup Road														
1	L2	7	0.0	7	0.0	0.146	9.3	LOS A	0.4	2.8	0.68	0.84	0.68	31.0
2	T1	3	0.0	3	0.0	0.146	83.3	LOS F	0.4	2.8	0.68	0.84	0.68	26.9
3	R2	3	0.0	3	0.0	0.146	80.5	LOS F	0.4	2.8	0.68	0.84	0.68	30.9
Approach		13	0.0	14	0.0	0.146	42.8	LOS D	0.4	2.8	0.68	0.84	0.68	30.1
East: Wyee Road														
4	L2	1	0.0	1	0.0	0.068	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.9
5	T1	658	5.0	693	5.0	0.338	1.1	LOS A	0.8	5.7	0.09	0.02	0.12	58.8
6	R2	15	0.0	16	0.0	0.338	17.2	LOS B	0.8	5.7	0.11	0.02	0.14	53.1
Approach		674	4.9	709	4.9	0.338	1.4	NA	0.8	5.7	0.09	0.02	0.12	58.7
North: Jabbarup Road														
7	L2	15	0.0	16	0.0	0.132	10.5	LOS A	0.4	2.6	0.65	0.83	0.65	37.2
8	T1	1	0.0	1	0.0	0.132	81.7	LOS F	0.4	2.6	0.65	0.83	0.65	32.3
9	R2	4	0.0	4	0.0	0.132	83.2	LOS F	0.4	2.6	0.65	0.83	0.65	37.0
Approach		20	0.0	21	0.0	0.132	28.6	LOS C	0.4	2.6	0.65	0.83	0.65	36.9
West: Wyee Road														
10	L2	39	0.0	41	0.0	0.104	5.6	LOS A	0.0	0.0	0.00	0.13	0.00	56.7
11	T1	865	5.0	911	5.0	0.519	0.8	LOS A	0.6	4.6	0.06	0.03	0.09	59.2
12	R2	16	0.0	17	0.0	0.519	13.2	LOS A	0.6	4.6	0.07	0.01	0.10	53.9
Approach		920	4.7	968	4.7	0.519	1.2	NA	0.6	4.6	0.05	0.04	0.08	59.0
All Vehicles		1627	4.7	1713	4.7	0.519	2.0	NA	0.8	5.7	0.08	0.04	0.11	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.
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 [2035PM + DEV A+B left in and left out only (Site Folder: General)]

Residential Planning Proposal
Wyee Road / Jabbarup Road Stop Sign controlled Cross Intersection
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Jabbarup Road														
1	L2	13	0.0	14	0.0	0.013	9.3	LOS A	0.0	0.3	0.22	0.87	0.22	47.4
Approach		13	0.0	14	0.0	0.013	9.3	LOS A	0.0	0.3	0.22	0.87	0.22	47.4
East: Wyee Road														
4	L2	1	0.0	1	0.0	0.063	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.9
5	T1	673	5.0	708	5.0	0.313	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		674	5.0	709	5.0	0.313	0.3	NA	0.0	0.0	0.00	0.00	0.00	59.8
North: Jabbarup Road														
7	L2	20	0.0	21	0.0	0.020	10.3	LOS A	0.1	0.5	0.22	0.88	0.22	47.5
Approach		20	0.0	21	0.0	0.020	10.3	LOS A	0.1	0.5	0.22	0.88	0.22	47.5
West: Wyee Road														
10	L2	39	0.0	41	0.0	0.086	5.6	LOS A	0.0	0.0	0.00	0.15	0.00	56.5
11	T1	881	5.0	927	5.0	0.428	0.4	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
Approach		920	4.8	968	4.8	0.428	0.7	NA	0.0	0.0	0.00	0.03	0.00	59.4
All Vehicles		1627	4.8	1713	4.8	0.428	0.7	NA	0.1	0.5	0.00	0.03	0.00	59.3

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.

ATTACHMENT D
DLALC PLANNING PROPOSAL PLANS


DARKINJUNG LALC MULTI-SITES RE-ZONING DEVELOPMENT SITES 3 & 4 -
INDICATIVE SUBDIVISION
Local Aboriginal Land Council
DARKINJUNG
WYEE ROAD
GOSFORD RD
BUSHELLS RIDGE ROAD
SYDNEY – NEWCASTLE RAILWAY
COMMERCIAL SITE 1.46ha
PARK
319
180
55
174
42
345
PROPOSED RESIDENTIAL SUBDIVISION
PROPOSED CASAR MOTORSPORT COMPLEX
DARKINJUNG OWNED & UNDER CLAIM LANDS
INDICATIVE NUMBER OF LOTS
Bar Scale 1: 4000 (A1), 1: 8000 (A3)
B 16/06/2014 Drafting Amendments
A 26/05/2014 Preliminary Issue
Ver. Date Comment
Plan of:
adw johnson
adw johnson pty. ltd. 2 bounty close, tuggerah nsw 2259, po box 3717 tuggerah nsw 2259 ph: (02) 43054300 fax: (02) 43054399 coast@adwjohnson.com.au abn 62 129 445 398