TRAFFIC AND PARKING IMPACT ASSESSMENT FOR THE PLANNING PROPOSAL FOR A CHANGE IN LAND USE AT LOT 40 DP 1230679 AT GERRINGONG

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Development Type: **Planning Proposal for a Change in Land Use**

Site Address: **Lot 40 DP 1230679 at Gerringong**

Prepared for: **Allen Price & Scarratts Pty Ltd (APS)**

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TABLE OF CONTENTS

1 INTRODUCTION

M^CLaren Traffic Engineering was commissioned by *Allen Price & Scarratts Pty Ltd (APS)* to provide a traffic and parking impact assessment to accompany a planning proposal for a change in land use of Lot 40 DP 1230679 at Gerringong.

1.1 Description and Scale of Planning Proposal

The subject planning proposal relates to Lot 40 DP 1230679, Gerringong, which is currently a vacant site on the western side of the Princes Highway, accessible from Sims Road. The area subject consists of approximately 2.95ha which is currently zoned *RU1 – Primary Production* and is proposed for general industry and landscape materials supplies development (a concept master plan is presented in **Annexure A**) which could consist of six (6) proposed industrial buildings. A possible future use of each of these buildings have been provided by Allen *Price & Scarratts Pty Ltd (APS)* with the estimated size of each building provided by *Edmiston Jones (EJ)* and presented in **Annexure B.** For the purposes of this report, all operations on site are assumed to operate 6-days per week from 6am till 8pm. The assumed future uses of the buildings and surrounding site area are outlined below in **Table 1**:

TABLE 1: ASSUMED FUTURE USES OF LOT 40

Building	Possible Use	Scale (GFA)	Operation Assumptions
A	Wholesale Landscape Supplies	2,129m^2	• Wholesale landscape supplies • Yard shed for bulk landscape supplies • Storage for landscaping products for wholesale distribution • Office space and staff amenities
B	Firewood Business	110m^2	• Yard sales • Yard storage • Office space and staff amenities
C	Small Fabrication / Manufacturing Business	408m^2	• Product fabrication / storage • Office space and staff amenities
D	Small Fabrication / Manufacturing Business	540m^2	• Product fabrication / storage • Office space and staff amenities
E	Large Fabrication / Manufacturing Business	1,350m^2	• Product fabrication / storage • Office space and staff amenities
F	Large Fabrication / Manufacturing Business	1,600m^2	• Product fabrication / storage • Office space and staff amenities

Building references are provided within the concept plan provided in **Figure 1** below. Note that the proposal is for a change in land use only and the above information is to assist with analysis of the possible future uses of the site. Any subsequent development of the site will be subject to future approval by *Kiama Municipal Council*.

The concept master plan (**Figure 1**) outlines that vehicle access to the site will be obtained via two (2) proposed driveways or public road intersections with Sims Road, which include:

- A western connection with Sims Road, approximately 50m to the north-east of Belinda Street / Sims Road intersection;
- An eastern connection with Sims Road, approximately 250m north-east of the Belinda Street / Sims Road intersection;
- An internal connection between the two proposed driveways / public road intersections.

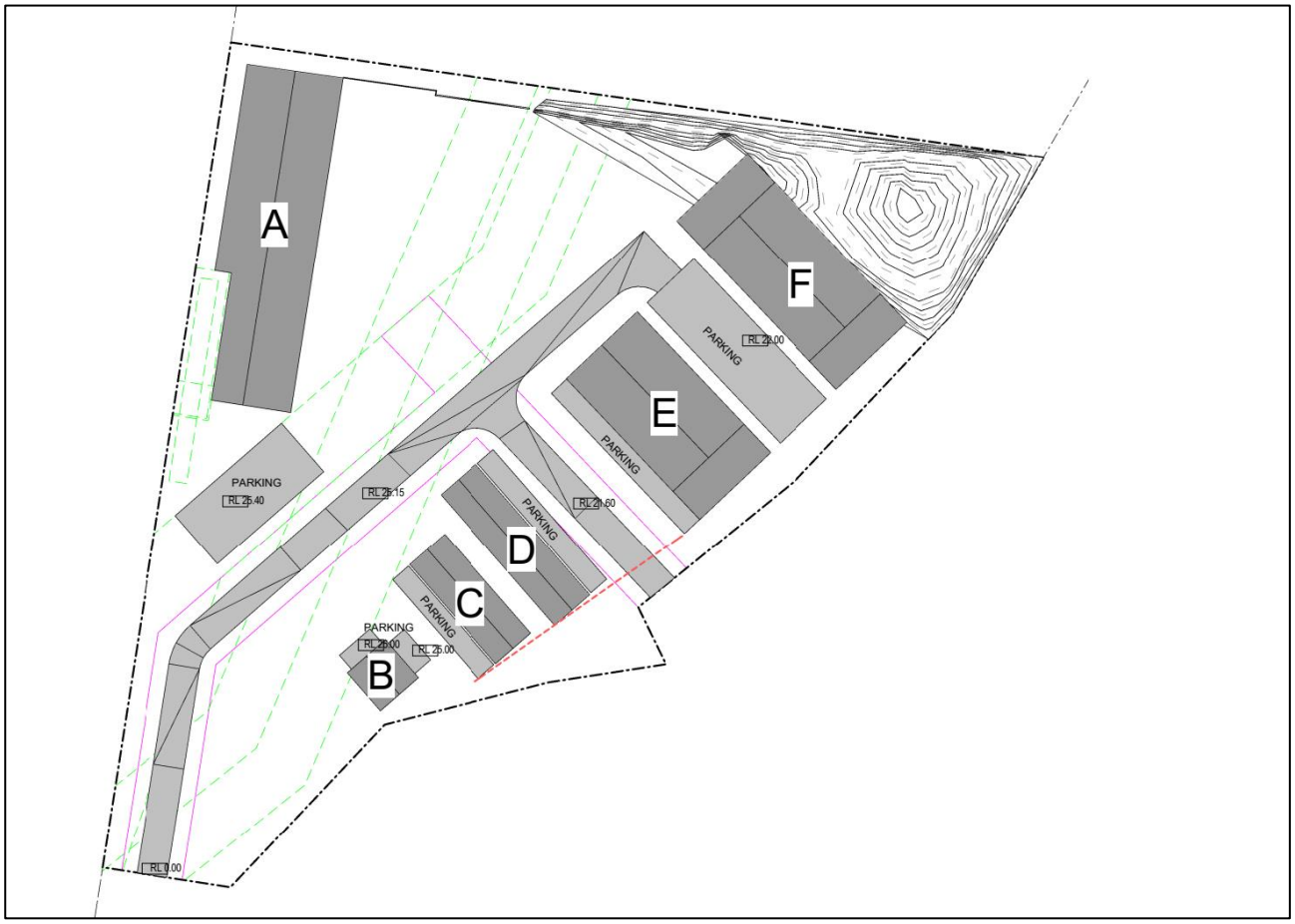


FIGURE 1: CONCEPT MASTER PLAN FOR THE SITE

The above initial concept master plan above in **Figure 1** provides an indicative concept of the proposed driveways / roads and layout of the site.

1.2 State Environmental Planning Policy (Infrastructure) 2007

If the planning proposal for change of land use were approved, a subsequent development application for a subdivision and/or buildings would qualify as a traffic generating development with relevant size and/or capacity under *Clause 104* of the *SEPP (Infrastructure) 2007* as an industrial development of over 5,000m^2 site area, within 90m of a Classified Road (northbound on-ramp of the Princes Highway). Formal referral to the Transport for NSW (TfNSW) would be necessary. It is also expected that the TfNSW will also be involved in the providing feedback on the planning proposal.

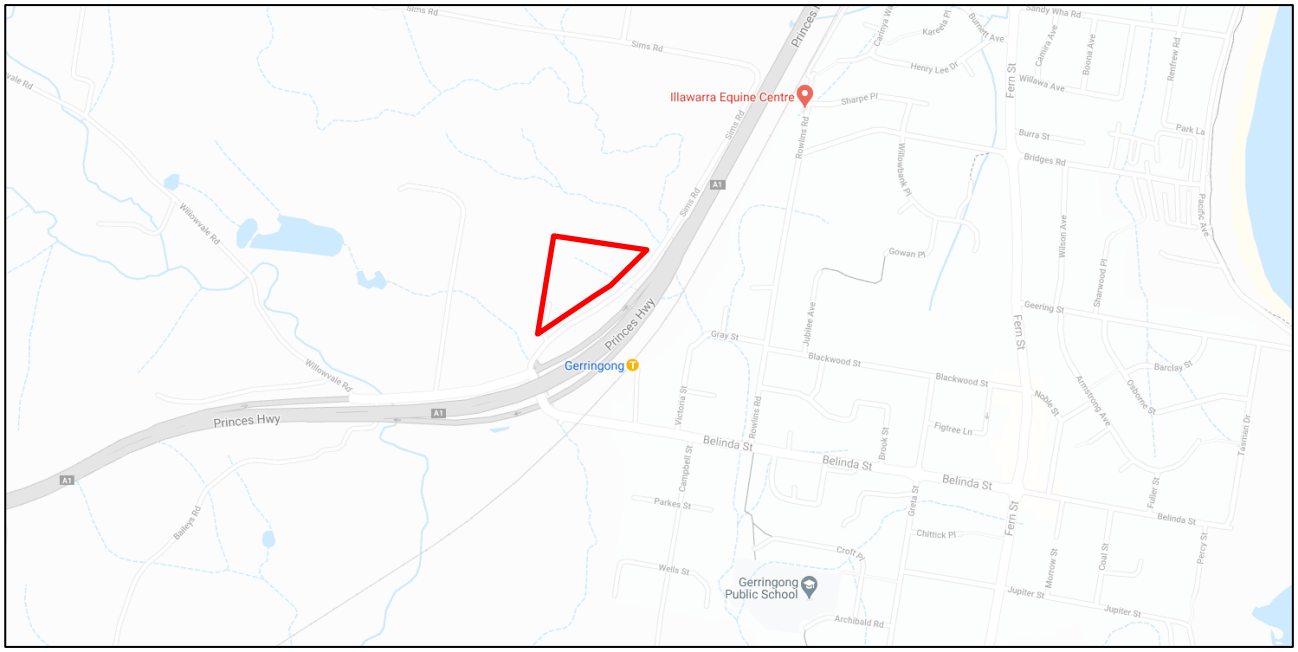
1.3 Site Description

The site is currently zoned *RU1 – Primary Production,* is approximately 2.95 ha in area and is legally identified as Lot 40 DP 1230679. The site is currently vacant land and was most recently used as a site office and depot for the *Roads and Martine Service (RMS)* during the upgrade of the Princes Highway in this location. The site has multiple high-voltage electrical transmission lines passing through the site as well as gas pipeline easement.

The site has frontage to Sims Road to the east, which runs parallel to the Princes Highway, directly to the north and west of the site are adjacent rural properties zoned *RU1 – Primary Production*. Sims Road continues to the south of the subject site and joins Belinda Street under the Princes Highway to form an east and west local through traffic corridor below the Princes Highway. The Princes Highway is grade separated and as such no direct access to Princes Highway is permitted within the vicinity of the site. There are on and off ramps serving the Princes Highway that connect with the Sims Road – Belinda Street Road Corridor on either side of the Princes Highway. Further to the east of the site is the township of Gerringong, including Gerringong Train Station located on the opposite side of the Princes Highway.

1.4 Site Context

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



Site Location

FIGURE 2: SITE CONTEXT – AERIAL PHOTO

Site Location

FIGURE 3: SITE CONTEXT – STREET MAP

2 EXISTING TRAFFIC AND PARKING CONDITIONS

2.1 Road Hierarchy

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

2.1.1 Sims Road

- Unclassified Local Road;
- Approximately 6m wide carriageway facilitating one traffic-flow lane in each direction;
- Default 50km/hr speed limit applies;
- No parking available on either side of the road.

2.1.2 Princes Highway

- RMS Classified STATE Road (No. 1);
- Approximately 30m wide dual carriageway facilitating two traffic-flow lanes in each direction, with 7m wide on-ramps and off-ramps to Belinda Street in both directions;
- Signposted 100km/h speed limit;
- No parking permitted along either side of the highway.

2.1.3 Belinda Street

- RMS Classified REGIONAL Road (No. 571);
- Approximately 11m wide carriageway facilitating one traffic flow lane in each direction;
- Signposted 50km/hr speed limit;
- Intermittent lengths of kerbside parking available on either side of the road.

2.2 Existing Traffic Management

- Give-Way controlled intersection approach from Sims Road to the Sims Road / Belinda Street / Princes Highway (northbound on & off ramps) intersection;
- STOP controlled intersection approach from the Princes Highway northbound off-ramp to Sims Road / Belinda Street intersection;
- STOP controlled approach from the Princes Highway southbound off-ramp to Belinda Street intersection.

2.3 Existing Traffic Environment

Turning movement count surveys were conducted at the intersections of Sims Road / Belinda Street / Princes Highway (northbound on & off ramps) and the Belinda Street / Princes Highway (southbound on & off ramps) from 6:30 AM to 9:30 AM and 2:30 PM to 6:00 PM on Thursday the 11th of February 2021 representing a typical operating weekday.

Additionally, Automatic Traffic Counters (ATCs) traffic tube surveys were undertaken from Thursday the 11th of February 2021 to Thursday the 18th of February 2021 inclusive across both directions of travel of the following roads:

- Sims Road, approximately 260m north of the Sims Road / Belinda Street / Princes Highway (northbound on & off ramps) intersection.

The locations of the turning movement counts and ATCs on these roads are shown in **Annexure C**. The full survey results of both the turning movement count surveys and the traffic tube surveys are shown in **Annexure D** for reference.

2.3.1 Intersection Performance

The performance of the surrounding intersections under the existing traffic conditions has been assessed using SIDRA INTERSECTION 9.0. **Table 2** summarises the resultant intersection performance data, with full SIDRA results reproduced in **Annexure E**.

TABLE 2: EXISTING INTERSECTION PERFORMANCES (SIDRA INTERSECTION 9.0)

Intersection	Peak Hour	Degree of Saturation[1]	Average Delay[2] (sec/veh)	Level of Service[3]	Control Type	Worst Movement
EXISTING PERFORMANCE						
Sims Road / Belinda Street / Princes Highway (northbound on & off ramps)	AM	0.14	5.3 (Worst: 9.7)	**NA** (Worst: A)	Give Way / Stop	T from Princes Highway
	PM	0.20	5.8 (Worst: 9.6)	**NA** (Worst: A)		RT from Princes Highway
Belinda Street / Princes Highway (southbound on & off ramps)	AM	0.20	3.8 (Worst: 11.8)	**NA** (Worst: B)	Give Way	RT from Princes Highway
	PM	0.24	4 (Worst: 13.7)	**NA** (Worst: B)		T from Princes Highway

NOTES:
(1) The Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
(2) The average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
(3) The Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
(4) No overall Level of Service is provided for Give Way and Stop controlled intersections as the low delays associated with the dominant movements skew the average delay of the intersection. The Level of Service of the worst approach is an indicator of the operation of the intersection, with a worse Level of Service corresponding to long delays and reduced safety outcomes for that approach.

As shown in **Table 2**, the intersections of Sims Road / Belinda Street / Princes Highway (northbound on & off ramps) and the Belinda Street / Princes Highway (southbound on & off ramps) are currently performing with a high level of efficiency, with a worst movement Level of Service of either “A” or “B” reflected in the AM & PM peak hour periods in their existing operation.

2.3.1 Tube Traffic Survey Results

The results from the tube traffic surveys have been summarised in **Table 3**.

TABLE 3: TUBE SURVEYS SUMMARY (TWO-WAY VOLUMES)

Road	Peak Hour Volume		Average Weekday Volume	85th Percentile Speed	Heavy Vehicles
	Time	Volume			
Sims Road	AM (11 am – 12 am)	16	166	66.6 km/h	7.1%
	PM (3 pm – 4 pm)	20			

As shown in **Table 3** above, the peak hour two-way volumes along Sims Road are 16 vehicles in the AM peak hour of between 11am - 12pm and 20 vehicles during the PM peak hour between 3pm-4pm. The 85th Percentile speed at the survey location was 66.6km/h, which is higher than the 50km/h signposted speed zoning.

2.4 Public Transport and Pedestrian Connectivity

The subject site is within approximately 500m walking distance of Gerringong Train Station located to the north of the site near Belinda Street, servicing the *SCO - South Coast Line*. A train service departs every 60-90 minutes in commuter peak periods and provides direct access between Bomaderry and Bondi Junction/Sydney CBD. The location of Gerringong Train Station in relation to our site is identified in **Figure 4** below.

FIGURE 4: LOCATION OF GERRINGONG TRAIN STATION

The nearest bus stop from the site is at Gerringong Train Station (ID: 253476) is located approximately 500m walking distance to the east of the site on Belinda Street. This bus stop services existing bus routes 737 (Bomaderry to Kiama), which operates five times each day in each direction and only makes stops at Berry Train Station, Bomaderry Train Station and Kiama Train Station. This service is operated by *Kenbus*.

Generally public transport options to the site are extremely limited and are not considered to be a viable or attractive option for staff or customers to the site at the present time. Detailed consideration of footpath connections from the train station to and from the subject site should be considered in future building or subdivision applications for the site.

2.5 Future Road and Infrastructure Upgrades

From the TfNSW website and the Kiama Municipal Council's Development Application tracker and website, it appears that there are no future planned road or public transport changes that will affect traffic conditions within the immediate vicinity of the subject site.

3 DESIGN CONSIDERATIONS

3.1 Road Design Standards

Kiama Municipal Council does not provide any road design requirements for industrial subdivisions or private roads within their development control plan or other similar planning documentation. Internal private or public road design should be based upon the requirements of the maximum design vehicle expected to access the site, such as a 20m Articulated Vehicle (20m AV) and a 19m Truck & Dog vehicle. During the detailed design stage of any development application consultation should be undertaken with Council as to the requirements for detailed road design for any proposed private driveways or public roads established as part of the development.

Generally, it is recommended that a minimum internal driveways or public road carriageway widths be such to provide for two parked heavy vehicles on either side of the road (2.5m width each), if necessary, and two heavy vehicles to pass (2.5m each, with 0.5m clearance on each side and 1m clearance between moving vehicles), equating to a total road width of 12m. While this may form the basis of initial road design, the recommended road width may change during the detailed design stage. If parking is not proposed along either side of the internal proposed private or public roads, the road carriageway width may be further reduced. It is noted that the 12m width accounts only for the road carriageway and that additional width will be required to accommodate kerb, verge and footpath provisions.

3.2 NSW RFS – "Planning for Bushfire Protection"

The site has not been identified by the *NSW Rural Fire Service* as bushfire prone land and as such is not required to meet the objectives of the *NSW RFS Planning for Bushfire Protection 2019.*

3.3 Proposed Intersection/Road Access Points

The provided concept plan includes two vehicular access points to Sims Road. It is expected based on the proposed nature and scale of the concept plan that both road access points would be required to serve the development, particularly considering that vehicles up to 20m long will be facilitated and would otherwise be required to turn around within the site.

The detailed design of these points of access will need to be further considered as part of any Development Application to improve the site.

3.4 Heavy Vehicle Access

It has been advised by APS that the largest proposed vehicle to use any of the proposed land uses on the site is a 20m Articulated Vehicle (AV) or a 19m Truck and Dog. Given the location of the proposed site with respect to the Princes Highway on and off ramps, the site is considered optimal for use by heavy vehicles having immediate access to the highway without impact on any surrounding residential streets. The on and off-ramps and their associated intersections have been designed to accommodate vehicles up to the proposed maximum size being a 20m AV. Swept path testing has been undertaken of both a 20m AV and 19m Truck and Dog at these intersections, proving successful, with the resultant swept paths being provided in **Annexure F** for reference.

The internal road design of the site shall be designed in future development applications to accommodate the maximum design vehicle for the site, along with any internal proposed driveways which should comply with relevant driveway requirements of *AS2890.1:2004* and *AS2890.2:2018*.

4 PARKING ASSESSMENT

4.1 DCP Car Parking Requirement

Reference is made to Kiama Municipal Council's *Development Control Plan 2020 Chapter 3 – Common Requirements* which designates the following range of parking requirements applicable to the masterplan:

> *Industrial*
>
> > *Light industry (if not otherwise defined below)*
> >
> > > *Whichever is the greater – 2 spaces per unit of 1.3 spaces per 100m^2 gross floor area*
> >
> > *Warehouse or distribution centres*
> >
> > > *1 space per 300m^2 gross floor area*
> >
> > *Depot/transport depot/truck depot*
> >
> > > *Parking requirements will be determined by Council following the completion and submission of a Parking Impact Study by a suitably qualified and experienced professional person*
> >
> > *Bulky goods premises*
> >
> > > *1 space per 50m^2 gross floor area.*
> >
> > *Self storage units*
> >
> > > *Whichever is the greater – 4 space or 1 space per 50 storage units*
>
> *3.6.4. Calculations should be rounded up to the nearest whole number for each use on the site and then combined to give the total amount. For example, if the calculation determines for residential component that 5.3 spaces are required and for commercial component 8.7 spaces are required than 15 spaces would be required in total.*

As a conservative estimate for the sites parking requirements, the *Light Industrial* car parking requirements as provided in the DCP has been adopted broadly to all proposed buildings within the site. It is noted that when the exact uses of each building have been finalised, during the development application stage, the overarching parking requirement can be further refined based on the known operational details of the development. The estimated car parking requirements for the site are summarised in **Table 4** below.

TABLE 4: COUNCIL DCP INDUSTRIAL CAR PARKING REQUIREMENTS

Building	Type	Scale (GFA)	Rate	Parking Provision
A	Industrial	2,129m^2	1.3 spaces per 100m^2	28
B		110m^2		12
C		408m^2		6
D		540m^2		8
E		1,350m^2		18
F		1,600m^2		21
Total				**93**

As identified above, assuming a worst-case (in terms of likely parking requirements), the site would require a combined total of **93** parking spaces across the development. As noted earlier, at the development application stage, where detailed land-use and operational characteristics are known for each building, parking requirements can be refined and likely reduced. Nonetheless, there is sufficient room on the site for enough parking to be provided, to meet the requirements of the Council DCP.

It is noted that the intended use of Building A has been more refined than other the five buildings at this stage with the intended use being a Wholesale Landscape Supplies business. As such this land use is likely to require a lower parking provision than identified above, as such the *Kiama DCP* Warehouse rate may be more applicable to the building. Application of the Warehouse parking rate of *"1 space per 300m^2"* to Building A, results in a total parking provision of **8** spaces.

The exact parking provision for each building can be clearly determined at the development application stage for the site and is likely to vary from what is outlined above. There is sufficient room on the site for the required parking provision to be fully accommodated.

4.2 Disabled Parking

Reference is made to Kiama Municipal Council's *Development Control Plan 2020 Chapter 3 – Common Requirements* which outlines the following with regard to the provision of disable parking:

> *3.5.13 To ensure an adequate parking provision for people with disability, the minimum requirements for Class 3, 5, 6, 7, 8, 9 buildings as defined in the Building Code of Australia (BCA) shall be included within the development.*

The BCA provides the following requirements for Class 5, 7, 8 or 9c which is most likely to apply to the proposed developments:

> *1 space for every 100 carparking spaces or part thereof.*

There is sufficient room on-site for the provision of the appropriate number of disabled spaces. If the site is subdivided and each building is operated independently (i.e., separate parking areas are provided for each building) each individual in isolation shall provide the appropriate number of disabled spaces in accordance with the BCA requirements.

4.3 Bicycle and Motorcycle Parking

Reference is made to Kiama Municipal Council's *Development Control Plan 2020 Chapter 3 – Common Requirements* which outlines the following with regard to bicycle parking provision:

> *3.6.45 Provision of bicycle parking shall be made in accordance with the 'Cycling Aspects of Austroads Guide' (2011) as per the extract in Note C. Where it can be demonstrated that there is sufficient under-utilised bicycle parking in the vicinity of the proposal of that bicycle parking is not warranted in the circumstances, Council may totally or partially waiver this requirement.*

Further reference is made to A*ppendix 5 Bicycle Parking Requirements* of *Chapter 3* of the DCP, which provides an extract of the Austroads, outlining the following bicycle parking provision for industrial uses:

> *General Industry*
>
> > *1 per 150m^2 GFA (Employee Parking Spaces, Class 1 or 2)*
>
> *Light Industry*
>
> > *1 per 1000m^2 GFA (Employee Parking spaces, Class 1 or 2)*

Depending on the final determination of the exact uses for each building, the above bicycle parking rates are likely to apply. Given the location of the site, bicycle usage is expected to be minimal, and as such this bicycle provision is likely to be reduced through consultation with Council. Regardless, there is ample room within the proposed site to provide for the resultant bicycle parking requirements.

The Kiama DCP does not stipulate any requirement for motorcycle parking for an industrial development.

4.4 Servicing & Loading

Reference is made to Kiama Municipal Council's *Development Control Plan 2020 Chapter 3 – Common Requirements* which outlines the following with regard to servicing and loading requirements:

> *3.6.35 To ensure that adequate space is provided for manoeuvring of vehicles, turning paths and heights for vehicle access and parking shall be based upon the largest vehicle likely to utilise the premises, as defined by AS2890. At a minimum these are:*
>
> - *Commercial Zoned Development (sites <600 m^2) – Small Rigid Vehicle (SRV)*
> - *Commercial Zoned Development (sites 600+ m^2) – Medium Rigid Vehicle (MRV)*
> - *Industrial Zoned Development – Heavy Rigid Vehicle*
> - *All sites – size of garbage collection vehicle to service the site.*

The internal private road / driveway or public roads and loading areas of the subject site should be designed to cater for the sites largest design vehicle, being a 20m AV or 19m Truck and Dog. Each individual building that will be created will need to have sufficient room to cater for the provision the appropriate service vehicles and waste collection in accordance with both the DCP and operational needs of each building. The detailed design of each individual building, with regard to access and manoeuvring of service vehicles, will be undertaken at the development application stage of the project.

4.5 Car Park and Loading Facilities Design & Compliance

If the planning proposal were to be approved, the driveway access and on-site parking areas for each building would be required to comply with the relevant clauses and objectives of *AS2890.1:2004, AS2890.2:2018, AS2890.6.2009.* Any proposed subdivision of the site would generally be able to accommodate suitable driveway locations and suitable car parking provision on each individual building. If approved, a detailed assessment of these requirements is expected to be undertaken during detailed DA stage.

5 TRAFFIC ASSESSMENT

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

5.1 Traffic Generation

Reference is made to the *TfNSW (Previously RMS) Guide to Traffic Generating Developments* and more recent technical directions including *TDT2013/04a*. The Guide and its supplements outline the below traffic generation rates with respect to industrial and commercial land uses:

Business parks and industrial estate – Regional

AM Peak (1 hour)

0.70 vehicle trips per 100m^2 GFA (Range: 0.32-1.20)

PM Peak (1 hour)

0.78 vehicle trips per 100m^2 GFA (Range: 0.39-1.30)

It should be noted that these TfNSW traffic generation rates include the traffic generation associated with all vehicles associated with the site including visitors, staff and commercial vehicles.

As the exact operations and uses across the site may vary between the submission of the planning proposal and the submission of an individual development application, a general conservative approach has been adopted in terms of traffic generation for the site.

Based on the above TfNSW rates, the estimated peak hour traffic generation has been estimated using both the average generation rate and (*0.70 vehicle trips per 100m^2 GFA* in the AM and *0.78 vehicle trips per 100m^2 GFA* in the PM) the high range generation rates (*1.20 vehicle trips per 100m^2 GFA* in the AM and *1.30 vehicle trips per 100m^2 GFA* in the PM) for industrial estates, with the resultant traffic generation outlined in **Table 5** and **Table 6** below.

TABLE 5: AVERAGE PEAK HOUR TRAFFIC GENERATION (TFNSW GUIDE)

Building	Type	Scale (GFA)	Rate (trips per 100m² GFA)		Generated Trips	
			AM	PM	AM	PM
A	Industrial	2,129m²	0.70	0.78	15 (12 in, 3 out)	17 (3 in, 14 out)
B		110m²			1 (1 in, 0 out)	1 (0 in, 1 out)
C		408m²			3 (2 in, 1 out)	3 (1 in, 2 out)
D		540m²			4 (3 in, 1 out)	4 (1 in, 3 out)
E		1,350m²			9 (7 in, 2 out)	11 (2 in, 9 out)
F		1,600m²			11 (9 in, 2 out)	12 (2 in, 10 out)
Total		**6,137m²**			**43 (34 in, 9 out)**	**48 (9 in, 39 out)**

Notes:

(1) In the AM peak hour 80% of trips are inbound and 20% of trips are outbound, and vice versa in the PM peak hour.

As shown above, it is expected that the proposed development based on the concept master plan in the average case will generate approximately **43** (34 in, 9 out) and **48** (9 in, 39 out) vehicle trips during the AM and PM peak hours, respectively.

TABLE 6: HIGH RANGE PEAK HOUR TRAFFIC GENERATION (TFNSW GUIDE)

Building	Type	Scale (GFA)	Rate (trips per 100m² GFA)		Generated Trips	
			AM	PM	AM	PM
A	Industrial	2,129m²	1.2	1.3	26 (21 in, 5 out)	28 (6 in, 22 out)
B		110m²			1 (1 in, 0 out)	1 (0 in, 1 out)
C		408m²			5 (4 in, 1 out)	5 (1 in, 4 out)
D		540m²			6 (5 in, 1 out)	7 (1 in, 6 out)
E		1,350m²			16 (13 in, 3 out)	18 (4 in, 14 out)
F		1,600m²			19 (15 in, 4 out)	21 (4 in, 17 out)
Total		**6,137m²**			**73 (59 in, 14 out)**	**80 (16 in, 64 out)**

Notes:

(1) In the AM peak hour 80% of trips are inbound and 20% of trips are outbound, and vice versa in the PM peak hour.

As shown above, it is expected that the high range traffic generation of the site based on the concept master plan (TfNSW Guide maximum rates of regional areas) will be approximately **73** (59 in, 14 out) and **80** (16 In, 64 Out) vehicle trips during the AM and PM peak hours, respectively.

The above traffic generation rates include staff, visitors, and commercial vehicles and as such provide an estimated total generation for the site at both the average and the high range.

5.2 Traffic Assignment

The road network and the locations of residential areas and towns surrounding the site have been assessed and the following traffic assignment has been assumed for all traffic to and from the site:

- 45% to/from the North via the Princes Highway;
- 45% to/from the South via the Princes Highway;
- 10% to/from the East via Belinda Street;

5.3 Traffic Impact

The traffic generation and distribution outlined in **Section 5.1** and **Section 5.2** above has been added to the existing traffic volumes estimated in **Section 2.3**. SIDRA INTERSECTION 9.0 was used to assess the intersections performance of these intersections both under the “average” traffic generation case (**Table 5**) and the “high range” traffic generation case (**Table 6**)

The performance of each intersection with the impact of the planning proposal’s indicative traffic generation has been summarised in **Table 7** below.

TABLE 7: FUTURE INTERSECTION PERFORMANCES

Intersection	Peak Hour	Degree of Saturation[1]	Average Delay[2] (sec/veh)	Level of Service[3]	Control Type	Worst Movement
EXISTING PERFORMANCE						
Sims Road / Belinda Street / Princes Highway (northbound on & off ramps)	AM	0.14	5.3 (Worst: 9.7)	**NA** (Worst: A)	Give Way / Stop	T from Princes Highway
	PM	0.20	5.8 (Worst: 9.6)	**NA** (Worst: A)		RT from Princes Highway
Belinda Street / Princes Highway (southbound on & off ramps)	AM	0.20	3.8 (Worst: 11.8)	**NA** (Worst: B)	Give Way	RT from Princes Highway
	PM	0.24	4 (Worst: 13.7)	**NA** (Worst: B)		T from Princes Highway
FUTURE PERFORMANCE – TfNSW Average Traffic Generation						
Sims Road / Belinda Street / Princes Highway (northbound on & off ramps)	AM	0.16	5.2 (Worst: 9.9)	**NA** (Worst: A)	Give Way / Stop	T from Princes Highway
	PM	0.22	6 (Worst: 9.7)	**NA** (Worst: A)		RT from Princes Highway
Belinda Street / Princes Highway (southbound on & off ramps)	AM	0.21	4 (Worst: 11.1)	**NA** (Worst: B)	Give Way	T from Princes Highway
	PM	0.26	4.2 (Worst: 14.6)	**NA** (Worst: B)		T from Princes Highway
FUTURE PERFORMANCE – TfNSW High Traffic Generation						
Sims Road / Belinda Street / Princes Highway (northbound on & off ramps)	AM	0.17	5.2 (Worst: 10)	**NA** (Worst: B)	Give Way / Stop	T from Princes Highway
	PM	0.23	6 (Worst: 9.9)	**NA** (Worst: A)		RT from Princes Highway
Belinda Street / Princes Highway (southbound on & off ramps)	AM	0.21	4.1 (Worst: 11.2)	**NA** (Worst: B)	Give Way	T from Princes Highway
	PM	0.27	4.2 (Worst: 14.9)	**NA** (Worst: B)		T from Princes Highway

Note: For **Table 7**, please also refer to the notes also provided in association with **Table 2.** Scenario 1 has been analysed using SIDRA Intersection 9.0.

As can be seen from the above SIDRA Intersection results all both the intersection of Sims Road / Belinda Street / Princes Highway (northbound on & off ramps) and Belinda Street / Princes Highway (southbound on & off ramps) retain their current worst movement Level of Service (LoS) of “A” or “B” under future conditions with the impacts of the planning proposal. These results indicate minimal delays and additional capacity, indicating that there will be negligible impact on the existing road network as a result of the planning proposal.

It should be noted that Give Way and Stop controlled intersections, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all movements are operating at a level of Service A, except one which is at level of Service E, may not necessarily define the intersection level of service as E if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

6 CONCLUSION

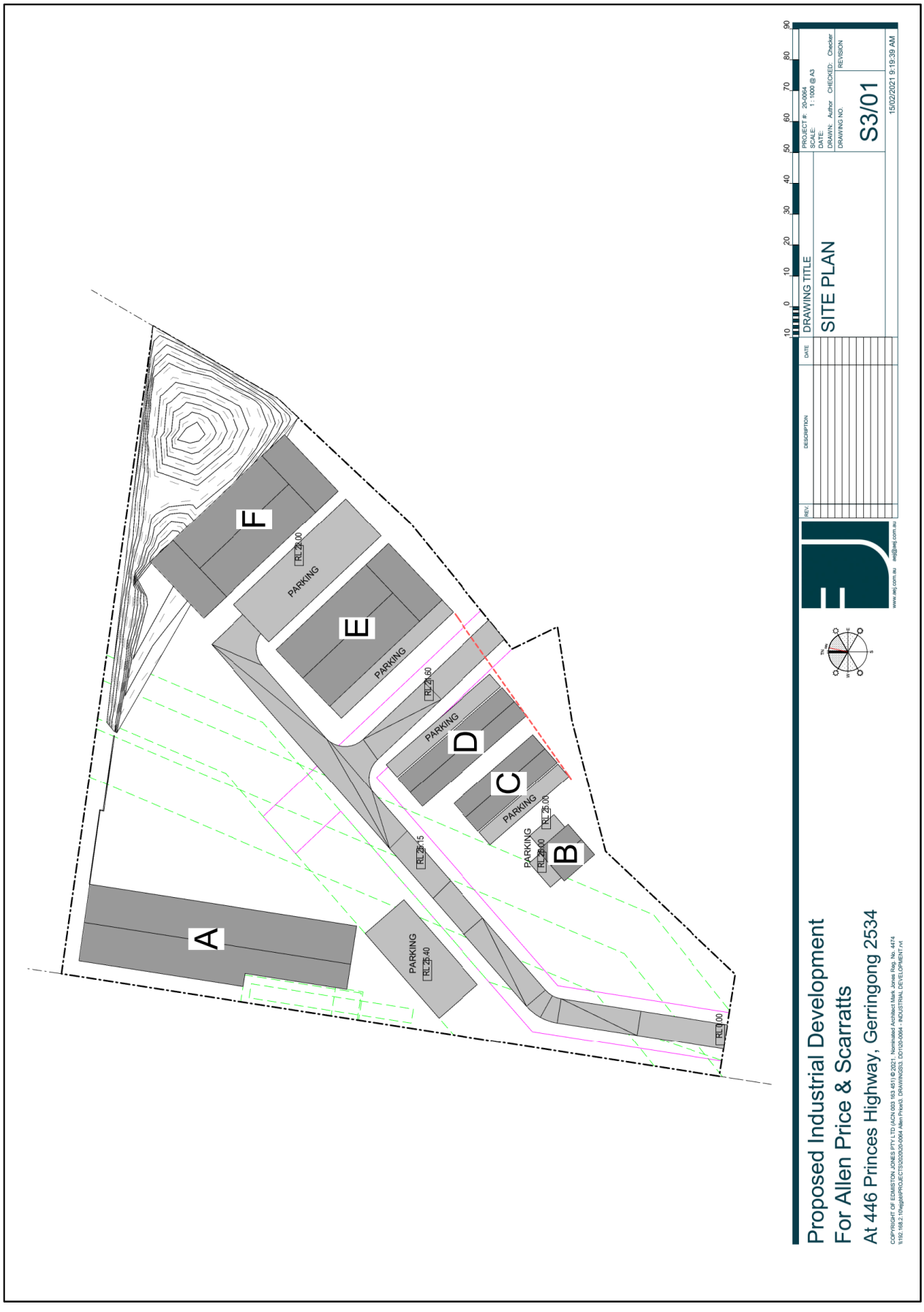
The traffic, road design, road safety and parking impacts of the subject Planning Proposal for a Change in Land Use at Lot 40 DP 1230679 at Gerringong, as shown in the plans provided in **Annexure A** to this report, have been assessed. With the following items important to note:

- The proposal will only result in the change of land use of the land;
- Application of Council's DCP rates for *Light Industrial* (as a worst-case parking scenario), requires the provision of **93** car parking spaces across the site for the current concept masterplan. When the exact operational details of each individual building are known a more refined parking requirement can be determined during the development application stage.
- If the site is subdivided after the change of land use and each building is operated independently (i.e., separate parking areas are provided for each building) each individual building in isolation shall provide the appropriate number of disabled spaces in accordance with the BCA requirements.
- The detailed design of the internal road network (either public or private) shall be assessed at the DA Stage but shall be designed such as to accommodate the largest commercial vehicle intended to use the site, which is currently identified as a 20m AV and a 19m Truck and Dog.
- The internal car park and loading facilities within each building is to be designed in accordance with *AS2890.1:2004*, AS2890.2.2018 and *AS2890.6:2006*. The detailed design of the internal car parks and loading facilities will be reviewed during the development application stage.
- The immediate external road network (Sims Road, Belinda Street and the Princes Highway on and off ramps) have been assessed with Swept Path Testing of a 20m AV and 19m Truck and Dog and have sufficient width and intersection design to accommodate these large vehicles accessing the site. The results have been reproduced within **Annexure F** below.
- The traffic generated by the proposed change of land use has been found to range between **43** (34 in, 9 out) and **73** (59 in, 14 out) vehicle trips during the AM peak and **48** (9 in; 39 out) and **80** (16 in, 64 out) during the PM peak hour, under the average and high-range case, respectively. SIDRA Intersection analysis indicates that the traffic generation of the proposal in both the average and high range cases, would have a negligible impact on the existing road network surrounding the site. There are no changes to the existing Level of Service of the surrounding intersections due the future traffic generation of the planning proposal.

In view of the foregoing, the subject planning proposal is supportable in terms of traffic flow, road safety and parking impacts. It is recognised that this assessment has been informed by a concept masterplan for the site and a more detailed assessment would be required when considering the future buildings or subdivision.

ANNEXURE A: CONCEPT MASTERPLAN

(1 SHEET)



ANNEXURE B: SCHEDULE OF AREAS (GFA)

BASED ON THE CONCEPT MASTERPLAN

(1 SHEET)

Project: Visual Impact study - Gerringong
For: Allen Price & Scarratts
Job No: 20-0064
Date: 11/2/21-1

Edmiston Jones

SCHEDULE OF AREAS

BUILDING	RIDGE HEIGHT (m)	EXTERNAL WALL HEIGHT (m)	MAX LENGTH (m)	MAX SPAN (m)	GROUND FLOOR AREA (m2)	FIRST FLOOR AREA (m2)	TOTAL FLOOR AREA (m2)
A	11	8.5	87.5	25	2029	100	2129
B	9	7.1	12	12	110		110
C	11	7.4	34	12	408		408
D	11	9.1	45	12	540		540
E	11	7.4	50	25	1250	100	1350
F	11	7.4	60	25	1500	100	1600
TOTAL FLOOR AREA					5837	300	6137

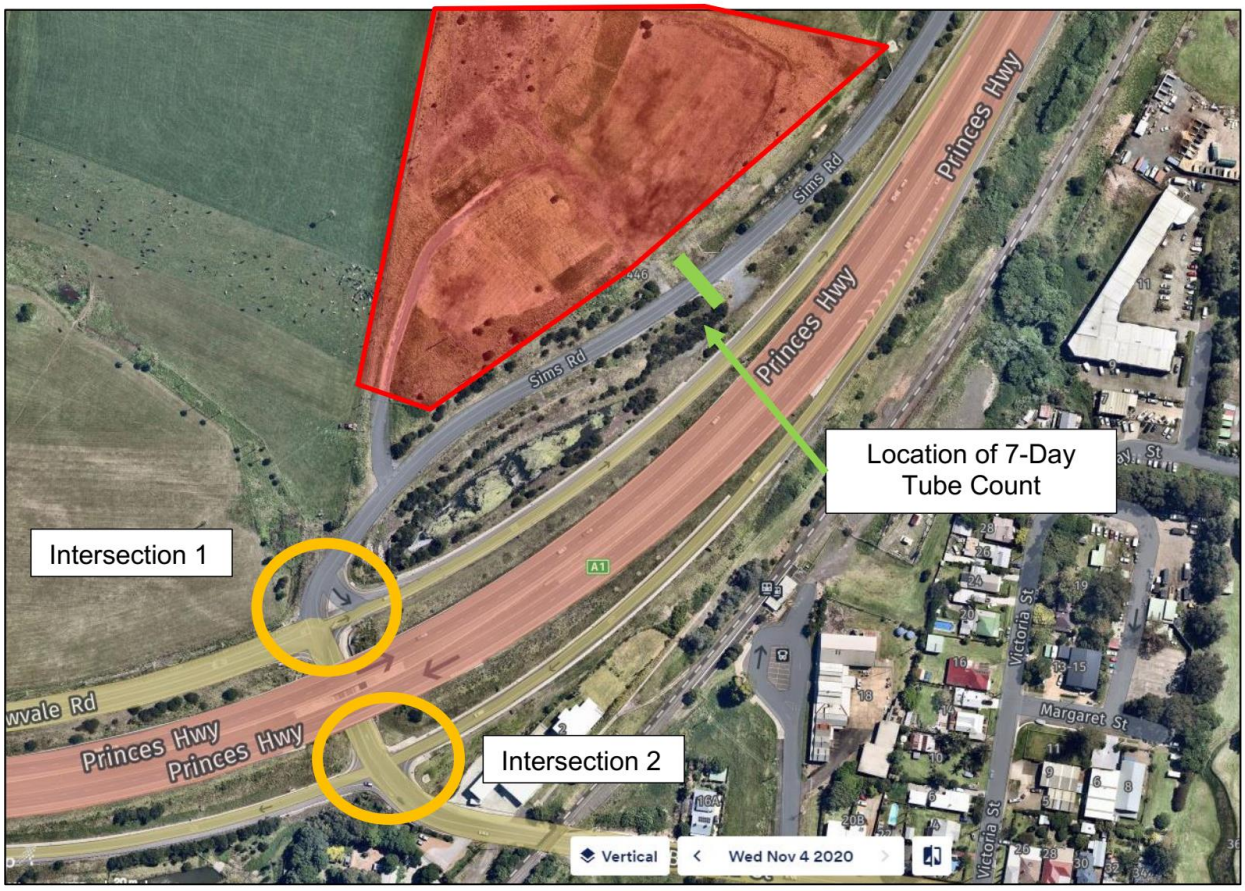
WOLLONGONG T 02 4226 1387
NOWRA T 02 4421 6822
BATEMANS BAY T 02 4472 7388

Nom. Architect: Mark Jones Reg. No. 4474 | Edmiston Jones Pty Ltd | ABN 67 003 163 451

ANNEXURE C: TRAFFIC COUNT LOCATIONS

(1 SHEET)

Site Snapshot and Survey Location



Site Intersection 7-Day Tube Count

ANNEXURE D: TRAFFIC SURVEY RESULTS

(SHEET 1 OF 3)

TRANS TRAFFIC SURVEY
trafficsurvey.com.au
TURNING MOVEMENT SURVEY

Intersection of On-ramp Princess Hwy and Sims Rd, Gerringong

GPS *-34.744854, 150.815167*

Date:	Thu 11/02/21
Weather:	Overcast
Suburban:	Gerringong
Customer:	McLaren

North:	Sims Rd
East:	On-ramp Princess Hwy
South:	Belinda St
West:	Off-ramp Princess Hwy

Survey Period	AM:	6:30 AM-9:30 AM
	PM:	2:30 PM-6:00 PM
Traffic Peak	AM:	8:15 AM-9:15 AM
	PM:	3:15 PM-4:15 PM

All Vehicles

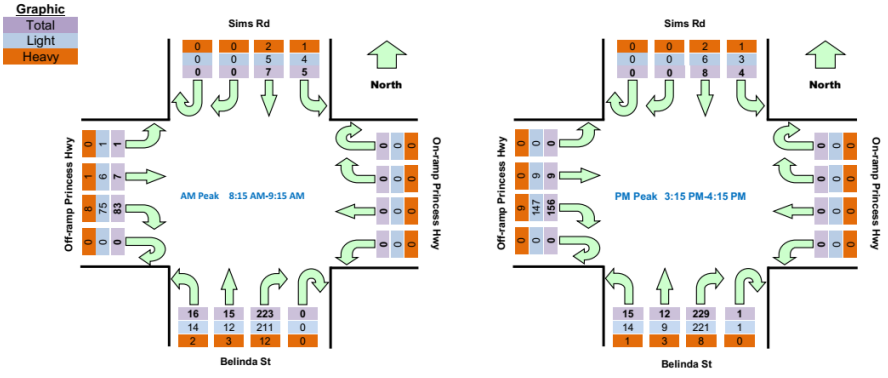
Time		North Approach Sims Rd				East Approach On-ramp Princess Hw				South Approach Belinda St				West Approach Off-ramp Princess Hw				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
6:30	6:45	0	0	0	1	0	0	0	0	0	28	2	2	0	6	0	0	226	
6:45	7:00	0	0	1	0	0	0	0	0	0	32	2	6	0	25	0	0	251	
7:00	7:15	0	0	2	0	0	0	0	0	0	30	3	3	0	22	2	0	263	
7:15	7:30	0	0	0	0	0	0	0	0	0	39	0	2	0	17	0	1	278	
7:30	7:45	0	0	0	0	0	0	0	0	0	49	0	2	0	13	0	0	305	
7:45	8:00	0	0	1	2	0	0	0	0	0	52	2	2	0	17	2	0	318	
8:00	8:15	0	0	1	0	0	0	0	0	0	52	1	2	0	20	1	0	345	
8:15	8:30	0	0	1	0	0	0	0	0	0	58	4	3	0	18	2	0	357	Peak
8:30	8:45	0	0	1	2	0	0	0	0	0	49	2	3	0	18	2	0	348	
8:45	9:00	0	0	1	1	0	0	0	0	0	64	5	5	0	28	1	0		
9:00	9:15	0	0	4	2	0	0	0	0	0	52	4	5	0	19	2	1		
9:15	9:30	0	0	1	1	0	0	0	0	0	45	0	3	0	25	0	2		
14:30	14:45	0	0	0	1	0	0	0	0	0	56	0	1	0	20	1	0	385	
14:45	15:00	0	0	0	3	0	0	0	0	0	55	3	0	0	32	1	0	418	
15:00	15:15	0	0	0	1	0	0	0	0	0	59	2	3	0	26	2	1	427	
15:15	15:30	0	0	0	0	0	0	0	0	0	61	0	5	0	49	3	0	434	Peak
15:30	15:45	0	0	4	2	0	0	0	0	0	56	8	5	0	34	3	0	408	
15:45	16:00	0	0	2	1	0	0	0	0	1	52	3	3	0	41	0	0	417	
16:00	16:15	0	0	2	1	0	0	0	0	0	60	1	2	0	32	3	0	411	
16:15	16:30	0	0	2	1	0	0	0	0	0	52	5	2	0	26	4	0	407	
16:30	16:45	0	0	0	2	0	0	0	0	0	76	0	4	0	38	1	0	417	
16:45	17:00	0	0	2	2	0	0	0	0	0	47	2	6	0	34	4	0	368	
17:00	17:15	0	0	1	0	0	0	0	0	0	62	1	1	0	31	1	0	325	
17:15	17:30	0	0	1	2	0	0	0	0	0	44	7	5	0	40	3	0		
17:30	17:45	0	0	1	1	0	0	0	0	0	39	2	0	0	29	0	0		
17:45	18:00	0	0	0	0	0	0	0	0	0	24	1	6	0	20	2	1		

Peak Time		North Approach Sims Rd				East Approach On-ramp Princess Hw				South Approach Belinda St				West Approach Off-ramp Princess Hw				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:15	9:15	0	0	7	5	0	0	0	0	0	223	15	16	0	83	7	1	357
15:15	16:15	0	0	8	4	0	0	0	0	1	229	12	15	0	156	9	0	434

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

Graphic

Total
Light
Heavy



ANNEXURE D: TRAFFIC SURVEY RESULTS

(SHEET 2 OF 3)

TRANS TRAFFIC SURVEY
TURNING MOVEMENT SURVEY
trafficsurvey.com.au

Intersection of Off-ramp Princess Hwy and Belinda St, Gerringong

GPS	-34.745479, 150.815479
Date:	Thu 11/02/21
Weather:	Overcast
Suburban:	Gerringong
Customer:	McLaren

North:	Belinda St
East:	Off-ramp Princess Hwy
South:	Belinda St
West:	On-ramp Princess Hwy

Survey Period	AM:	6:30 AM-9:30 AM
	PM:	2:30 PM-6:00 PM
Traffic Peak	AM:	7:30 AM-8:30 AM
	PM:	3:45 PM-4:45 PM

All Vehicles

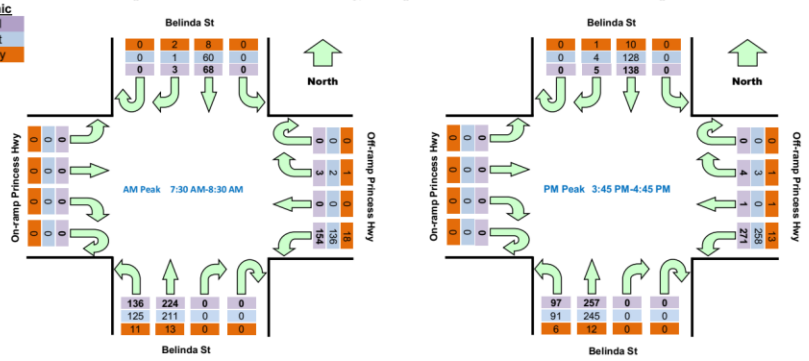
Time		North Approach Belinda St				East Approach Off-ramp Princess Hw				South Approach Belinda St				West Approach On-ramp Princess Hw				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
6:30	6:45	0	0	6	0	0	2	0	25	0	0	30	28	0	0	0	0	491	
6:45	7:00	0	1	25	0	0	4	1	57	0	0	36	37	0	0	0	0	540	
7:00	7:15	0	0	24	0	0	1	0	30	0	0	35	35	0	0	0	0	545	
7:15	7:30	0	0	17	0	0	0	0	32	0	0	41	24	0	0	0	0	563	
7:30	7:45	0	1	12	0	0	1	0	36	0	0	50	40	0	0	0	0	588	Peak
7:45	8:00	0	0	18	0	0	2	0	51	0	0	54	41	0	0	0	0	578	
8:00	8:15	0	1	20	0	0	0	0	36	0	0	55	31	0	0	0	0	571	
8:15	8:30	0	1	18	0	0	0	0	31	0	0	65	24	0	0	0	0	566	
8:30	8:45	0	0	19	0	0	2	0	37	0	0	52	20	0	0	0	0	563	
8:45	9:00	0	0	29	0	0	4	0	31	0	0	70	25	0	0	0	0		
9:00	9:15	0	4	19	0	0	3	0	31	0	0	58	23	0	0	0	0		
9:15	9:30	0	1	25	0	0	1	0	34	0	0	47	28	0	0	0	0		
14:30	14:45	0	1	19	0	0	1	0	59	0	0	56	22	0	0	0	0	678	
14:45	15:00	0	1	31	0	0	1	0	50	0	0	57	28	0	0	0	0	727	
15:00	15:15	0	4	22	0	0	3	0	54	0	0	61	25	0	0	0	0	742	
15:15	15:30	0	2	47	0	0	3	0	53	0	0	63	15	0	0	0	0	770	
15:30	15:45	0	6	32	0	0	3	0	77	0	0	66	23	0	0	0	0	764	
15:45	16:00	0	1	42	0	0	0	1	60	0	0	59	20	0	0	0	0	773	Peak
16:00	16:15	0	2	32	0	0	1	0	69	0	0	62	31	0	0	0	0	760	
16:15	16:30	0	1	27	0	0	2	0	68	0	0	57	22	0	0	0	0	736	
16:30	16:45	0	1	37	0	0	1	0	74	0	0	79	24	0	0	0	0	758	
16:45	17:00	0	0	36	0	0	2	1	56	0	0	53	22	0	0	0	0	680	
17:00	17:15	0	0	32	0	0	0	0	53	0	0	64	24	0	0	0	0	645	
17:15	17:30	0	1	40	0	0	5	0	73	0	0	51	29	0	0	0	0		
17:30	17:45	0	0	30	0	0	0	0	46	0	0	41	21	0	0	0	0		
17:45	18:00	0	0	20	0	0	1	0	62	0	0	30	22	0	0	0	0		

Peak Time		North Approach Belinda St				East Approach Off-ramp Princess Hw				South Approach Belinda St				West Approach On-ramp Princess Hw				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
7:30	8:30	0	3	68	0	0	3	0	154	0	0	224	136	0	0	0	0	588
15:45	16:45	0	5	138	0	0	4	1	271	0	0	257	97	0	0	0	0	773

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

Graphic

Total
Light
Heavy



ANNEXURE D: TRAFFIC SURVEY RESULTS

(SHEET 3 OF 3)

TRANS TRAFFIC SURVEY
trafficsurvey.com.au

T. 1300 82 88 82 - F. 1300 83 88 83 - E. traffic@trafficsurvey.com.au - W. www.trafficsurvey.com.au

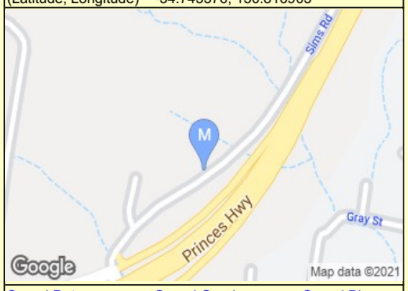
AUTOMATIC COUNT SUMMARY

Street Name :	Sims Rd	**Location :**	Approx. 260m from the intersections of Sims Road
Suburb :	Gerringong	**Start Date :**	00:00 Thu 11/February/2021
Tubecounter ID	Y629DPQ5/P	**Finish Date :**	00:00 Thu 18/February/2021
Site ID Number :	1523	**Speed Zone :**	70 km/h
Prepared By :	Vo Son Binh	**Email:**	binh@trafficsurvey.com.au

GPS information	Lat 34° 44' 36.15 South Long 150° 49' 0.85 East		Direction of Travel		
			Both directions	**Northbound**	**Southbound**
Traffic Volume :		Weekdays Average	166	83	83
(Vehicles/Day)		7 Day Average	165	84	81
Weekday	**AM**	11:00	16	8	8
Peak hour starts	**PM**	15:00	20	10	10
Speeds :		85th Percentile	66.6	65.4	67.9
(Km/Hr)		Average	60.3	58.5	61.6
Classification % :		Light Vehicles up to 5.5m	92.9%	92.9%	92.9%

Location

GPS Information Load Google Map (internet required)
(Latitude, Longitude) -34.743376, 150.816903



Speed Data | Speed Graph | Speed Bin Classification
Volume Data | Volume Graph

QUALITY SYSTEM CERTIFICATION DNV·GL ISO 9001
SAFETY SYSTEM CERTIFICATION DNV·GL AS/NZS 4801
ENVIRONMENTAL SYSTEM CERTIFICATION DNV·GL ISO 14001

QUALITY ASSURED COMPANY BY ISO 9001:2015
OH&S SYSTEM CERTIFIED TO ISO 4801:2001
ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

TRANS TRAFFIC SURVEY
trafficsurvey.com.au

Site Sims Rd

Direction Both directions

Back to Site Summary Page

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	15/02/2021	16/02/2021	17/02/2021	11/02/2021	12/02/2021	13/02/2021	14/02/2021	Total	Average	Total	Average	Total	Average
AM Peak	07:00	11:00	11:00	08:00	10:00	10:00	10:00	N/A	11:00	N/A	11:00	N/A	10:00
PM Peak	15:00	15:00	15:00	15:00	15:00	17:00	14:00	N/A	15:00	N/A	15:00	N/A	14:00
00:00	0	0	0	0	0	0	1	1	0	0	0	1	1
01:00	0	1	0	0	1	1	0	3	0	2	0	1	1
02:00	0	0	0	0	0	2	0	2	0	0	0	2	1
03:00	0	2	0	0	0	0	0	2	0	2	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	3	1	2	0	0	6	1	6	1	0	0
06:00	5	2	3	3	2	0	3	18	3	15	3	3	2
07:00	10	5	11	8	5	3	2	44	6	39	8	5	3
08:00	10	11	12	17	14	13	6	83	12	64	13	19	10
09:00	7	11	12	13	16	10	14	83	12	59	12	24	12
10:00	4	16	9	11	18	18	16	92	13	58	12	34	17
11:00	10	19	18	16	16	13	10	102	15	79	16	23	12
12:00	18	9	12	12	10	9	23	93	13	61	12	32	16
13:00	14	8	11	16	19	14	15	97	14	68	14	29	15
14:00	8	18	12	14	9	15	28	104	15	61	12	43	22
15:00	22	22	14	23	20	3	23	127	18	101	20	26	13
16:00	15	6	13	10	17	8	13	82	12	61	12	21	11
17:00	9	9	9	5	8	19	10	69	10	40	8	29	15
18:00	8	11	3	10	9	15	11	67	10	41	8	26	13
19:00	5	5	2	12	0	9	4	37	5	24	5	13	7
20:00	3	4	2	8	8	5	5	35	5	25	5	10	5
21:00	3	1	2	2	1	1	0	10	1	9	2	1	1
22:00	2	6	0	0	3	5	2	18	3	11	2	7	4
23:00	2	0	1	0	4	0	0	7	1	7	1	0	0
Total	**155**	**166**	**149**	**181**	**182**	**163**	**186**	**1182**	**169**	**833**	**166**	**349**	**181**
% Heavy	**6.45%**	**12.05%**	**10.74%**	**9.94%**	**7.69%**	**1.84%**	**1.61%**	**7.11%**		**9.36%**		**1.72%**	

ANNEXURE E: SIDRA INTERSECTION RESULTS

(12 SHEETS)

MOVEMENT SUMMARY

Site: 101 [(EX AM) Princes / Sims / Belinda North (Site Folder: General)]

Sims Road / Belinda Street (North) / Princes Highway (Northbound)
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: Belinda Street (S)														
1	L2	16	2	16	12.5	0.143	3.9	LOS A	0.0	0.0	0.00	0.56	0.00	50.7
2	T1	15	3	15	20.0	0.143	0.0	LOS A	0.0	0.0	0.00	0.56	0.00	53.9
3	R2	223	12	223	5.4	0.143	4.0	LOS A	0.0	0.0	0.00	0.56	0.00	50.0
Approach		254	17	254	6.7	0.143	3.7	NA	0.0	0.0	0.00	0.56	0.00	50.3
North: Sims Road (N)														
7	L2	5	1	5	20.0	0.012	6.7	LOS A	0.0	0.4	0.30	0.53	0.30	53.1
8	T1	7	2	7	28.6	0.012	5.4	LOS A	0.0	0.4	0.30	0.53	0.30	48.2
9	R2	1	0	1	0.0	0.012	5.9	LOS A	0.0	0.4	0.30	0.53	0.30	52.7
Approach		13	3	13	23.1	0.012	5.9	LOS A	0.0	0.4	0.30	0.53	0.30	51.0
West: Princes Highway (S)														
10	L2	1	0	1	0.0	0.111	8.1	LOS A	0.4	2.9	0.32	0.93	0.32	51.4
11	T1	7	1	7	14.3	0.111	9.7	LOS A	0.4	2.9	0.32	0.93	0.32	50.6
12	R2	83	8	83	9.6	0.111	9.4	LOS A	0.4	2.9	0.32	0.93	0.32	44.9
Approach		91	9	91	9.9	0.111	9.4	LOS A	0.4	2.9	0.32	0.93	0.32	45.7
All Vehicles		358	29	358	8.1	0.143	5.3	NA	0.4	2.9	0.09	0.66	0.09	49.0

Site Level of Service (LOS) Method: Delay (SIDRA). 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 [(EX PM) Princes / Sims / Belinda North (Site Folder: General)]

Sims Road / Belinda Street (North) / Princes Highway (Northbound)
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: Belinda Street (S)														
1	L2	30	14	30	46.7	0.160	3.9	LOS A	0.0	0.0	0.00	0.54	0.00	48.4
2	T1	27	12	27	44.4	0.160	0.0	LOS A	0.0	0.0	0.00	0.54	0.00	53.9
3	R2	223	2	223	0.9	0.160	4.0	LOS A	0.0	0.0	0.00	0.54	0.00	50.4
Approach		280	28	280	10.0	0.160	3.6	NA	0.0	0.0	0.00	0.54	0.00	50.5
North: Sims Road (N)														
7	L2	4	1	4	25.0	0.012	6.8	LOS A	0.0	0.4	0.31	0.53	0.31	53.0
8	T1	8	2	8	25.0	0.012	5.3	LOS A	0.0	0.4	0.31	0.53	0.31	48.4
9	R2	1	0	1	0.0	0.012	6.3	LOS A	0.0	0.4	0.31	0.53	0.31	52.8
Approach		13	3	13	23.1	0.012	5.8	LOS A	0.0	0.4	0.31	0.53	0.31	50.7
West: Princes Highway (S)														
10	L2	1	0	1	0.0	0.204	8.2	LOS A	0.8	5.5	0.39	0.93	0.39	51.3
11	T1	9	0	9	0.0	0.204	9.0	LOS A	0.8	5.5	0.39	0.93	0.39	51.0
12	R2	156	9	156	5.8	0.204	9.6	LOS A	0.8	5.5	0.39	0.93	0.39	44.8
Approach		166	9	166	5.4	0.204	9.5	LOS A	0.8	5.5	0.39	0.93	0.39	45.4
All Vehicles		459	40	459	8.7	0.204	5.8	NA	0.8	5.5	0.15	0.68	0.15	48.5

Site Level of Service (LOS) Method: Delay (SIDRA). 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 [(EX AM) Princes / Belinda South (Site Folder: General)]

Belinda Street / Princes Highway (Southbound)
Site Category: (None)
Stop (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: Belinda Street (S)														
1	L2	136	11	136	8.1	0.197	5.7	LOS A	0.0	0.0	0.00	0.22	0.00	56.0
2	T1	224	13	224	5.8	0.197	0.1	LOS A	0.0	0.0	0.00	0.22	0.00	56.5
Approach		360	24	360	6.7	0.197	2.2	NA	0.0	0.0	0.00	0.22	0.00	56.2
East: Princes Highway (E)														
4	L2	154	18	154	11.7	0.128	8.8	LOS A	0.5	4.2	0.18	0.91	0.18	51.3
5	T1	1	0	1	0.0	0.128	10.7	LOS B	0.5	4.2	0.18	0.91	0.18	51.5
6	R2	3	1	3	33.3	0.128	11.8	LOS B	0.5	4.2	0.18	0.91	0.18	35.2
Approach		158	19	158	12.0	0.128	8.9	LOS A	0.5	4.2	0.18	0.91	0.18	51.0
North: Belinda Street (N)														
8	T1	68	8	68	11.8	0.042	0.2	LOS A	0.0	0.4	0.06	0.02	0.06	59.3
9	R2	3	2	3	66.7	0.042	6.4	LOS A	0.0	0.4	0.06	0.02	0.06	49.6
Approach		71	10	71	14.1	0.042	0.5	NA	0.0	0.4	0.06	0.02	0.06	58.9
All Vehicles		589	53	589	9.0	0.197	3.8	NA	0.5	4.2	0.06	0.38	0.06	54.5

Site Level of Service (LOS) Method: Delay (SIDRA). 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 [(EX PM) Princes / Belinda South (Site Folder: General)]

Belinda Street / Princes Highway (Southbound)
Site Category: (None)
Stop (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: Belinda Street (S)														
1	L2	97	6	97	6.2	0.190	5.7	LOS A	0.0	0.0	0.00	0.16	0.00	56.6
2	T1	257	12	257	4.7	0.190	0.1	LOS A	0.0	0.0	0.00	0.16	0.00	57.4
Approach		354	18	354	5.1	0.190	1.6	NA	0.0	0.0	0.00	0.16	0.00	57.1
East: Princes Highway (E)														
4	L2	271	13	271	4.8	0.238	8.9	LOS A	1.1	8.0	0.30	0.88	0.30	51.4
5	T1	5	1	5	20.0	0.238	13.7	LOS B	1.1	8.0	0.30	0.88	0.30	50.5
6	R2	4	1	4	25.0	0.238	13.2	LOS B	1.1	8.0	0.30	0.88	0.30	35.2
Approach		280	15	280	5.4	0.238	9.1	LOS A	1.1	8.0	0.30	0.88	0.30	51.2
North: Belinda Street (N)														
8	T1	138	10	138	7.2	0.079	0.1	LOS A	0.1	0.4	0.04	0.02	0.04	59.5
9	R2	5	1	5	20.0	0.079	5.6	LOS A	0.1	0.4	0.04	0.02	0.04	53.5
Approach		143	11	143	7.7	0.079	0.3	NA	0.1	0.4	0.04	0.02	0.04	59.3
All Vehicles		777	44	777	5.7	0.238	4.0	NA	1.1	8.0	0.12	0.40	0.12	54.4

Site Level of Service (LOS) Method: Delay (SIDRA). 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 [(FUT AM - AVG) Princes / Sims / Belinda North (Site Folder: General)]

Sims Road / Belinda Street (North) / Princes Highway (Northbound)
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: Belinda Street (S)														
1	L2	16	2	17	12.5	0.161	3.9	LOS A	0.0	0.0	0.00	0.53	0.00	51.0
2	T1	34	3	36	8.8	0.161	0.0	LOS A	0.0	0.0	0.00	0.53	0.00	54.3
3	R2	223	12	235	5.4	0.161	4.0	LOS A	0.0	0.0	0.00	0.53	0.00	50.4
Approach		273	17	287	6.2	0.161	3.5	NA	0.0	0.0	0.00	0.53	0.00	50.9
North: Sims Road (N)														
7	L2	11	1	12	9.1	0.022	6.5	LOS A	0.1	0.6	0.32	0.55	0.32	53.4
8	T1	12	2	13	16.7	0.022	5.2	LOS A	0.1	0.6	0.32	0.55	0.32	48.3
9	R2	1	0	1	0.0	0.022	6.0	LOS A	0.1	0.6	0.32	0.55	0.32	52.6
Approach		24	3	25	12.5	0.022	5.9	LOS A	0.1	0.6	0.32	0.55	0.32	51.4
West: Princes Highway (S)														
10	L2	17	0	18	0.0	0.135	8.2	LOS A	0.5	3.6	0.23	0.95	0.23	51.2
11	T1	7	1	7	14.3	0.135	9.9	LOS A	0.5	3.6	0.23	0.95	0.23	50.4
12	R2	83	8	87	9.6	0.135	9.8	LOS A	0.5	3.6	0.23	0.95	0.23	44.6
Approach		107	9	113	8.4	0.135	9.5	LOS A	0.5	3.6	0.23	0.95	0.23	46.6
All Vehicles		404	29	425	7.2	0.161	5.2	NA	0.5	3.6	0.08	0.64	0.08	49.6

Site Level of Service (LOS) Method: Delay (SIDRA). 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 [(FUT PM - AVG) Princes / Sims / Belinda North (Site Folder: General)]

Sims Road / Belinda Street (North) / Princes Highway (Northbound)
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: Belinda Street (S)														
1	L2	16	2	17	12.5	0.153	3.9	LOS A	0.0	0.0	0.00	0.56	0.00	50.7
2	T1	17	3	18	17.6	0.153	0.0	LOS A	0.0	0.0	0.00	0.56	0.00	53.9
3	R2	229	8	241	3.5	0.153	4.0	LOS A	0.0	0.0	0.00	0.56	0.00	50.2
Approach		262	13	276	5.0	0.153	3.7	NA	0.0	0.0	0.00	0.56	0.00	50.4
North: Sims Road (N)														
7	L2	22	1	23	4.5	0.047	6.5	LOS A	0.2	1.3	0.32	0.56	0.32	53.7
8	T1	30	2	32	6.7	0.047	5.1	LOS A	0.2	1.3	0.32	0.56	0.32	48.5
9	R2	1	0	1	0.0	0.047	6.3	LOS A	0.2	1.3	0.32	0.56	0.32	52.7
Approach		53	3	56	5.7	0.047	5.7	LOS A	0.2	1.3	0.32	0.56	0.32	51.4
West: Princes Highway (S)														
10	L2	5	0	5	0.0	0.221	8.1	LOS A	0.8	6.0	0.32	0.95	0.32	51.1
11	T1	9	0	9	0.0	0.221	9.0	LOS A	0.8	6.0	0.32	0.95	0.32	50.9
12	R2	155	8	163	5.2	0.221	9.7	LOS A	0.8	6.0	0.32	0.95	0.32	44.6
Approach		169	8	178	4.7	0.221	9.6	LOS A	0.8	6.0	0.32	0.95	0.32	45.4
All Vehicles		484	24	509	5.0	0.221	6.0	NA	0.8	6.0	0.15	0.70	0.15	48.7

Site Level of Service (LOS) Method: Delay (SIDRA). 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 [(FUT AM - AVG) Princes / Belinda South (Site Folder: General)]

Belinda Street / Princes Highway (Southbound)
Site Category: (None)
Stop (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: Belinda Street (S)														
1	L2	136	11	143	8.1	0.209	5.7	LOS A	0.0	0.0	0.00	0.22	0.00	56.1
2	T1	228	13	240	5.7	0.209	0.1	LOS A	0.0	0.0	0.00	0.22	0.00	56.5
Approach		364	24	383	6.6	0.209	2.2	NA	0.0	0.0	0.00	0.22	0.00	56.3
East: Princes Highway (E)														
4	L2	154	18	162	11.7	0.160	8.9	LOS A	0.7	5.2	0.19	0.92	0.19	51.2
5	T1	1	0	1	0.0	0.160	11.1	LOS B	0.7	5.2	0.19	0.92	0.19	51.4
6	R2	19	1	20	5.3	0.160	10.4	LOS B	0.7	5.2	0.19	0.92	0.19	35.5
Approach		174	19	183	10.9	0.160	9.0	LOS A	0.7	5.2	0.19	0.92	0.19	49.8
North: Belinda Street (N)														
8	T1	69	8	73	11.6	0.049	0.3	LOS A	0.1	0.7	0.13	0.06	0.13	58.5
9	R2	8	2	8	25.0	0.049	5.8	LOS A	0.1	0.7	0.13	0.06	0.13	52.3
Approach		77	10	81	13.0	0.049	0.9	NA	0.1	0.7	0.13	0.06	0.13	57.8
All Vehicles		615	53	647	8.6	0.209	4.0	NA	0.7	5.2	0.07	0.40	0.07	53.9

Site Level of Service (LOS) Method: Delay (SIDRA). 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 [(FUT PM - AVG) Princes / Belinda South (Site Folder: General)]

Belinda Street / Princes Highway (Southbound)
Site Category: (None)
Stop (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: Belinda Street (S)														
1	L2	97	6	102	6.2	0.201	5.7	LOS A	0.0	0.0	0.00	0.16	0.00	56.6
2	T1	258	12	272	4.7	0.201	0.1	LOS A	0.0	0.0	0.00	0.16	0.00	57.4
Approach		355	18	374	5.1	0.201	1.6	NA	0.0	0.0	0.00	0.16	0.00	57.1
East: Princes Highway (E)														
4	L2	271	13	285	4.8	0.264	9.0	LOS A	1.2	9.0	0.32	0.89	0.32	51.3
5	T1	5	1	5	20.0	0.264	14.6	LOS B	1.2	9.0	0.32	0.89	0.32	50.5
6	R2	9	1	9	11.1	0.264	12.8	LOS B	1.2	9.0	0.32	0.89	0.32	35.3
Approach		285	15	300	5.3	0.264	9.2	LOS A	1.2	9.0	0.32	0.89	0.32	50.9
North: Belinda Street (N)														
8	T1	142	10	149	7.0	0.101	0.4	LOS A	0.2	1.6	0.16	0.09	0.16	58.1
9	R2	23	1	24	4.3	0.101	5.5	LOS A	0.2	1.6	0.16	0.09	0.16	53.7
Approach		165	11	174	6.7	0.101	1.1	NA	0.2	1.6	0.16	0.09	0.16	57.5
All Vehicles		805	44	847	5.5	0.264	4.2	NA	1.2	9.0	0.14	0.40	0.14	54.1

Site Level of Service (LOS) Method: Delay (SIDRA). 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 [(FUT AM - HIGH) Princes / Sims / Belinda North (Site Folder: General)]

Sims Road / Belinda Street (North) / Princes Highway (Northbound)
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: Belinda Street (S)														
1	L2	16	2	17	12.5	0.168	3.9	LOS A	0.0	0.0	0.00	0.51	0.00	51.3
2	T1	48	3	51	6.3	0.168	0.0	LOS A	0.0	0.0	0.00	0.51	0.00	54.6
3	R2	223	12	235	5.4	0.168	4.0	LOS A	0.0	0.0	0.00	0.51	0.00	50.6
Approach		287	17	302	5.9	0.168	3.3	NA	0.0	0.0	0.00	0.51	0.00	51.2
North: Sims Road (N)														
7	L2	13	1	14	7.7	0.026	6.5	LOS A	0.1	0.7	0.32	0.55	0.32	53.5
8	T1	15	2	16	13.3	0.026	5.2	LOS A	0.1	0.7	0.32	0.55	0.32	48.3
9	R2	1	0	1	0.0	0.026	6.1	LOS A	0.1	0.7	0.32	0.55	0.32	52.6
Approach		29	3	31	10.3	0.026	5.8	LOS A	0.1	0.7	0.32	0.55	0.32	51.4
West: Princes Highway (S)														
10	L2	28	0	29	0.0	0.146	8.2	LOS A	0.5	4.0	0.23	0.95	0.23	51.2
11	T1	7	1	7	14.3	0.146	10.0	LOS B	0.5	4.0	0.23	0.95	0.23	50.3
12	R2	83	8	87	9.6	0.146	10.0	LOS A	0.5	4.0	0.23	0.95	0.23	44.6
Approach		118	9	124	7.6	0.146	9.6	LOS A	0.5	4.0	0.23	0.95	0.23	47.1
All Vehicles		434	29	457	6.7	0.168	5.2	NA	0.5	4.0	0.09	0.63	0.09	49.9

Site Level of Service (LOS) Method: Delay (SIDRA). 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 [(FUT PM - HIGH) Princes / Sims / Belinda North (Site Folder: General)]

Sims Road / Belinda Street (North) / Princes Highway (Northbound)
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: Belinda Street (S)														
1	L2	16	2	17	12.5	0.155	3.9	LOS A	0.0	0.0	0.00	0.55	0.00	50.8
2	T1	21	3	22	14.3	0.155	0.0	LOS A	0.0	0.0	0.00	0.55	0.00	54.0
3	R2	229	8	241	3.5	0.155	4.0	LOS A	0.0	0.0	0.00	0.55	0.00	50.2
Approach		266	13	280	4.9	0.155	3.7	NA	0.0	0.0	0.00	0.55	0.00	50.6
North: Sims Road (N)														
7	L2	33	1	35	3.0	0.068	6.5	LOS A	0.3	1.8	0.32	0.57	0.32	53.7
8	T1	44	2	46	4.5	0.068	5.1	LOS A	0.3	1.8	0.32	0.57	0.32	48.5
9	R2	1	0	1	0.0	0.068	6.3	LOS A	0.3	1.8	0.32	0.57	0.32	52.7
Approach		78	3	82	3.8	0.068	5.7	LOS A	0.3	1.8	0.32	0.57	0.32	51.4
West: Princes Highway (S)														
10	L2	8	0	8	0.0	0.228	8.1	LOS A	0.9	6.2	0.31	0.96	0.31	51.0
11	T1	9	0	9	0.0	0.228	9.1	LOS A	0.9	6.2	0.31	0.96	0.31	50.8
12	R2	155	8	163	5.2	0.228	9.9	LOS A	0.9	6.2	0.31	0.96	0.31	44.5
Approach		172	8	181	4.7	0.228	9.8	LOS A	0.9	6.2	0.31	0.96	0.31	45.4
All Vehicles		516	24	543	4.7	0.228	6.0	NA	0.9	6.2	0.15	0.69	0.15	48.9

Site Level of Service (LOS) Method: Delay (SIDRA). 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 [(FUT AM - HIGH) Princes / Belinda South (Site Folder: General)]

Belinda Street / Princes Highway (Southbound)
Site Category: (None)
Stop (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: Belinda Street (S)														
1	L2	136	11	143	8.1	0.210	5.7	LOS A	0.0	0.0	0.00	0.22	0.00	56.1
2	T1	230	13	242	5.7	0.210	0.1	LOS A	0.0	0.0	0.00	0.22	0.00	56.5
Approach		366	24	385	6.6	0.210	2.1	NA	0.0	0.0	0.00	0.22	0.00	56.3
East: Princes Highway (E)														
4	L2	154	18	162	11.7	0.177	8.9	LOS A	0.8	5.7	0.20	0.92	0.20	51.1
5	T1	1	0	1	0.0	0.177	11.2	LOS B	0.8	5.7	0.20	0.92	0.20	51.3
6	R2	30	1	32	3.3	0.177	10.3	LOS B	0.8	5.7	0.20	0.92	0.20	35.5
Approach		185	19	195	10.3	0.177	9.1	LOS A	0.8	5.7	0.20	0.92	0.20	49.0
North: Belinda Street (N)														
8	T1	70	8	74	11.4	0.051	0.4	LOS A	0.1	0.8	0.15	0.08	0.15	58.2
9	R2	10	2	11	20.0	0.051	5.7	LOS A	0.1	0.8	0.15	0.08	0.15	52.5
Approach		80	10	84	12.5	0.051	1.1	NA	0.1	0.8	0.15	0.08	0.15	57.5
All Vehicles		631	53	664	8.4	0.210	4.1	NA	0.8	5.7	0.08	0.41	0.08	53.5

Site Level of Service (LOS) Method: Delay (SIDRA). 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 [(FUT PM - HIGH) Princes / Belinda South (Site Folder: General)]

Belinda Street / Princes Highway (Southbound)
Site Category: (None)
Stop (Two-Way)

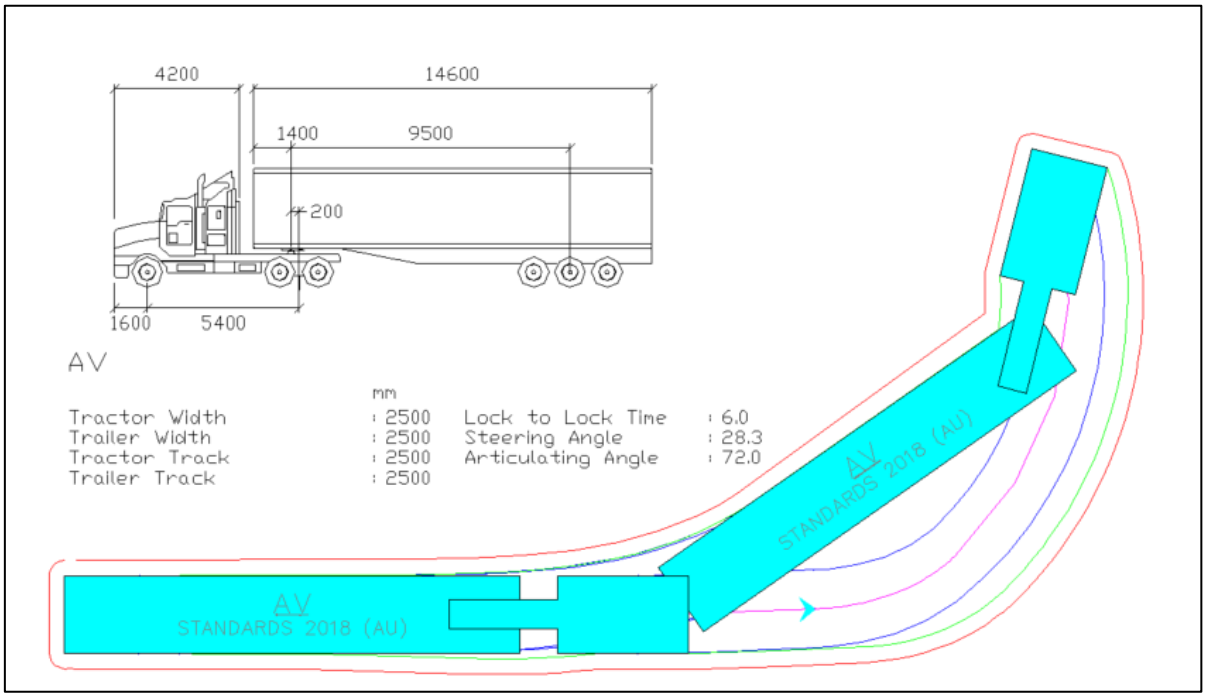
Vehicle Movement Performance

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: Belinda Street (S)														
1	L2	97	6	102	6.2	0.201	5.7	LOS A	0.0	0.0	0.00	0.16	0.00	56.6
2	T1	259	12	273	4.6	0.201	0.1	LOS A	0.0	0.0	0.00	0.16	0.00	57.4
Approach		356	18	375	5.1	0.201	1.6	NA	0.0	0.0	0.00	0.16	0.00	57.1
East: Princes Highway (E)														
4	L2	271	13	285	4.8	0.270	9.0	LOS A	1.3	9.2	0.32	0.89	0.32	51.3
5	T1	5	1	5	20.0	0.270	14.9	LOS B	1.3	9.2	0.32	0.89	0.32	50.4
6	R2	12	1	13	8.3	0.270	12.8	LOS B	1.3	9.2	0.32	0.89	0.32	35.3
Approach		288	15	303	5.2	0.270	9.3	LOS A	1.3	9.2	0.32	0.89	0.32	50.7
North: Belinda Street (N)														
8	T1	145	10	153	6.9	0.112	0.5	LOS A	0.3	2.3	0.21	0.13	0.21	57.5
9	R2	34	1	36	2.9	0.112	5.5	LOS A	0.3	2.3	0.21	0.13	0.21	53.3
Approach		179	11	188	6.1	0.112	1.4	NA	0.3	2.3	0.21	0.13	0.21	56.6
All Vehicles		823	44	866	5.3	0.270	4.2	NA	1.3	9.2	0.16	0.41	0.16	53.9

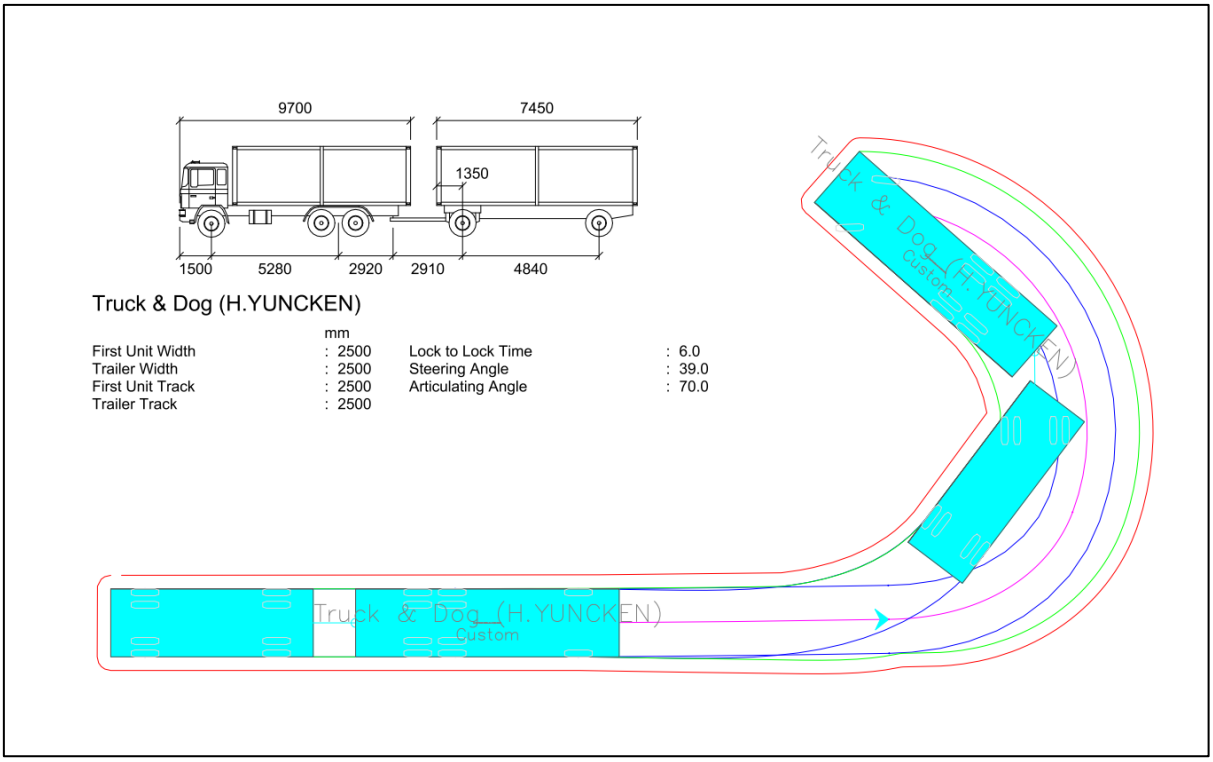
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and 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.

ANNEXURE F: SWEPT PATH ACCESS ANALYSIS

(SHEET 1 OF 3)



AUSTRALIAN STANDARD ARTICULATED VEHICLE (AV)

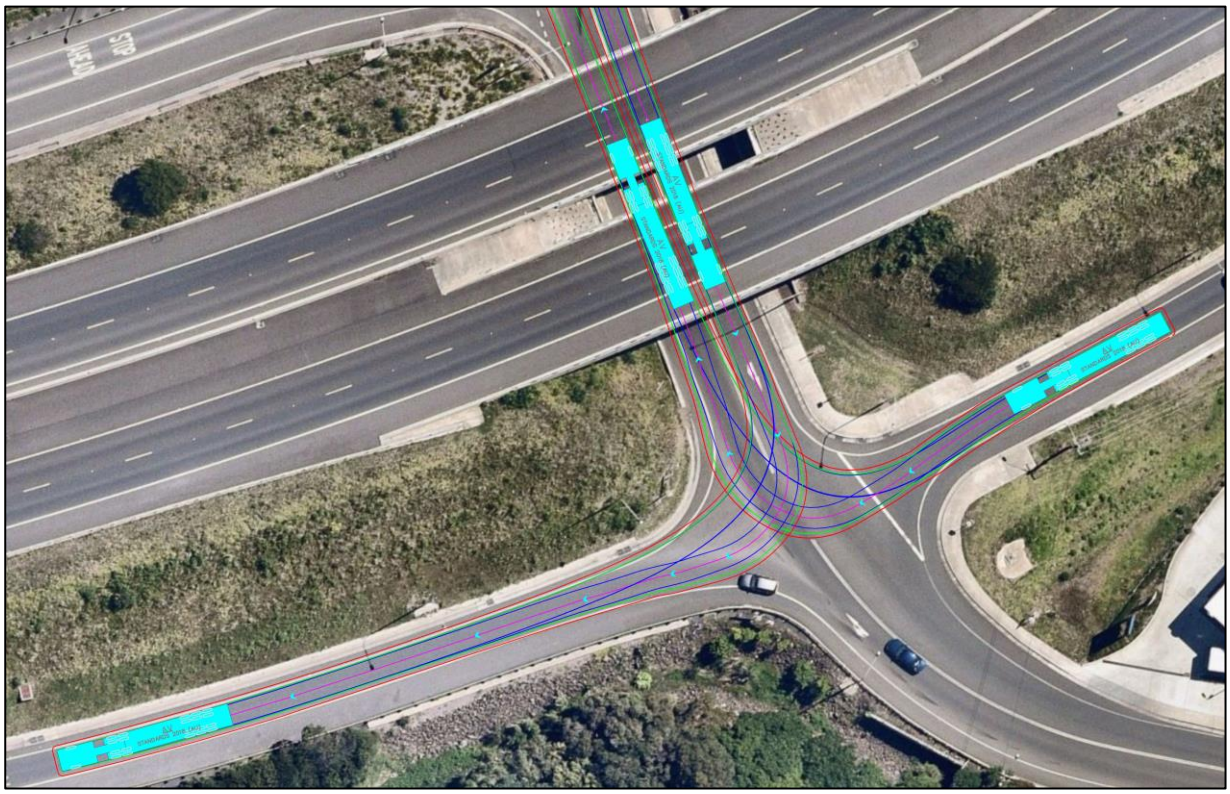


19M TRUCK AND DOG VEHICLE

Blue – Tyre Path
Green – Vehicle Body
Red – 500mm Clearance

ANNEXURE F: SWEPT PATH ACCESS ANALYSIS

(SHEET 2 OF 3)

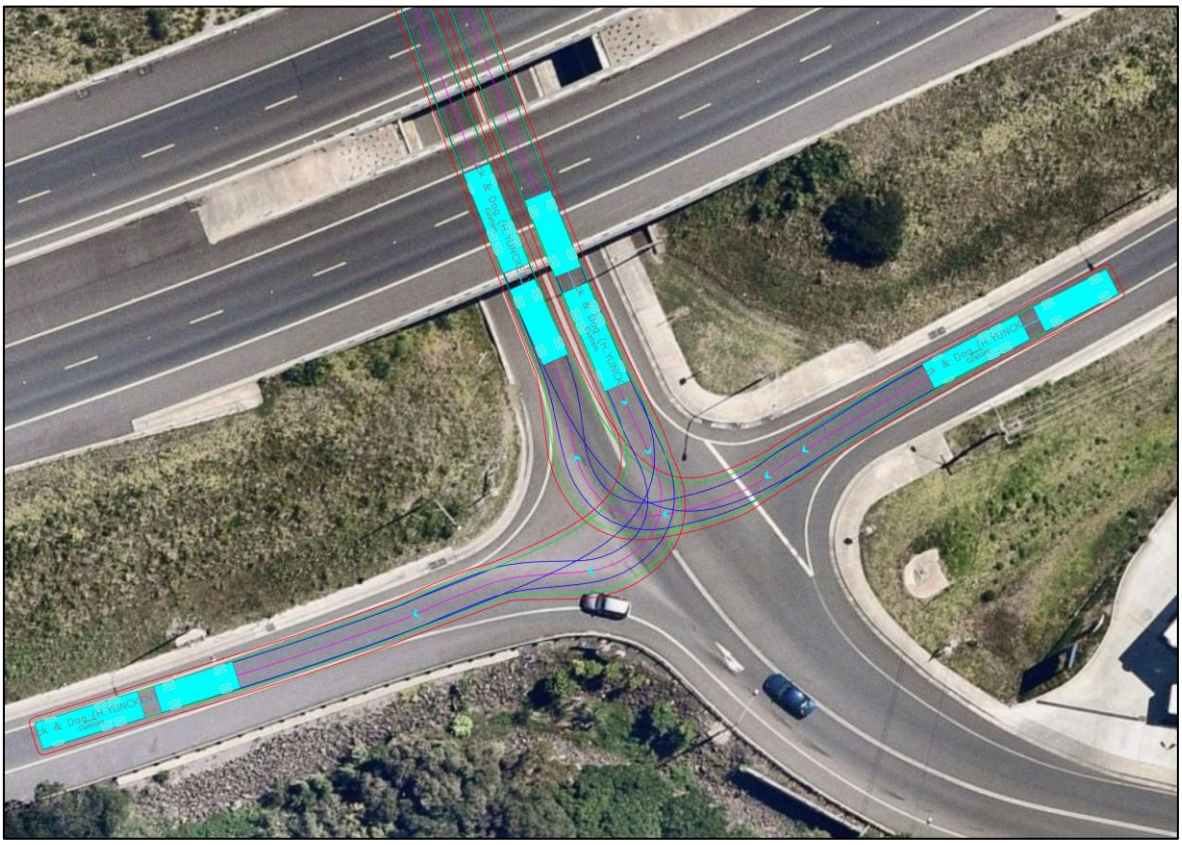


20m AV – SOUTHBOUND AND NORTHBOUND ENTRY & EXIT

SUCCESSFUL

ANNEXURE F: SWEPT PATH ACCESS ANALYSIS

(SHEET 3 OF 3)



19m TRUCK AND DOG – SOUTHBOUND AND NORTHBOUND ENTRY & EXIT

SUCCESSFUL