asongroup

Prepared for
BUREAU SRH

Transport Impact Assessment

Warehouse and Office Development Application
28 Yarrunga Street, Prestons

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5/12/2019

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Revision History

Revision	Date	Details	Author	Approved by
-	3/9/2019	Draft	D. Budai	
1	31/10/19	Issue I	D. Budai	T. Lewis
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3	2/12/2019	Issue III	D. Budai	

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1 Introduction

1.1 Background

Ason Group has been engaged by Bureau SRH to prepare a Transport Impact Assessment (TIA) to support a Development Application for an industrial warehouse redevelopment (the Proposal) at 28 Yarrunga Street, Prestons (the Site). The Site is located within the Liverpool (LGA) and is therefore subject to that Council's controls.

This TIA report provides an assessment of the relevant traffic, transport and parking implications of the Proposal. In preparing this TIA, Ason Group has referenced key planning documents, these include:

- Liverpool Development Control Plan 2008 (LDCP)
- Liverpool Local Environmental Plan 2008 (LLEP)

This TIA also references general access, traffic and parking guidelines, including:

- Roads and Maritime Services, Guide to Traffic Generating Developments (RMS Guide)
- TDT 2013/04a Guide to Traffic Generating Developments updated traffic surveys (RMS Guide Update)
- Australian Standard 2890.1: Parking Facilities – Off Street Car Parking (AS 2890.1)
- Australian Standard 2890.2: Parking Facilities – Off Street Commercial Vehicle Facilities (AS 2890.2)

1.2 Site Planning Context

The Site is currently zoned IN3 Heavy Industrial under the Liverpool Local Environmental Plan 2015 and the applicable planning controls are summarised below.

- Local Environmental Plans: Liverpool Local Environmental Plan 2008 (pub. 24-10-2014)
- Land Zoning: IN3 - Heavy Industrial: (pub. 29-8-2008)
- Height of Building: 30m
- Floor Space Ratio: NA
- Minimum Lot Size: 2,000m²

2 Overview of Proposal

A detailed description of the proposed development is included in the Statement of Environmental Effects, prepared separately.

In summary, the application relates to the construction of a multi-level warehouse and distribution complex. It is envisaged that the development may be constructed in 2 stages.

Table 1 summarises building areas (by tenancy) proposed.

Table 1: Proposed Schedule

Tenancy	Warehouse GLA (m^2)	Office GFA (m^2)	Total
Stage 1			
1	6,469	646	7,115
2	6,624	1,137	7,761
3	6,725	1,469	8,194
4	6,769	809	7,578
Total Stage 1	**26,587**	**4,061**	**30,648**
Stage 2			
5	7,677	537	8,214
6	7,747	541	8,288
7	7,698	1,074	8,772
8	7,765	1,082	8,847
5	7,677	537	8,214
Total Stage 2	**30,887**	**3,234**	**34,121**
Site Total	**57,474**	**7,295**	**64,769**

The Proposal also includes the provision of a total of 397 car parking spaces (Stages 1 and 2).

3 Existing Conditions

3.1 Site and Location

The Site is located within the Liverpool LGA and has a site area of 46,838m^2 with frontages to Yarrunga Street to the south and approved industrial developments to the west, north and east, as shown in **Figure 2**.

It is currently zoned IN3 Heavy Industrial under the Liverpool Local Environmental Plan 2008 and currently consists of one property with warehousing, office space and associated parking. The Site is accessed via a driveway from Yarrunga Street. Unrestricted parking is provided on both sides of Yarrunga Street.

Figure 1: Site Location

3.1.1 Road Hierarchy

The precinct is strategically located within Sydney's orbital motorway network, with the M7/Bernera Road interchange being located within the area as shown in **Figure 2**. As such, the Site has direct links via the M7 to the Sydney City Centre, Port Botany, and Sydney Airport, other employment areas within the greater metropolitan region and interstate freeways. Key roads in the vicinity of the Site are described in **Table 2**.

Table 2: Road Network

Road Name	Road Classification	Comments
Westlink M7	Privately Operated Tollway	A 40km toll road that runs north-south through Sydney's western suburbs and forms a critical link in Sydney's 110km orbital network. Westlink M7 links major residential growth centres, distribution centres and areas of industrial development in Sydney's west and connects three key Sydney motorways, the M2, M4 and M5 motorways.
Bernera Road	Collector Road	A collector road which extends (north-south) between Camden Valley Way and Hoxton Park Road via sections of Jedda Road and Joadja Road.
Kurrajong Road	Collector Road	A collector road which extends westerly from Hume Highway and connects to Cowpasture Road over Cabramatta Creek.
Yarrunga Street	Collector Road	A minor collector road which extends east-west along the northern boundary of the Site and connects with Bernera Road to the east.
Kookaburra Road North	Collector Road	A minor collector road which extends northerly from Kurrajong Road and connects to Yarrunga Street on the north-west corner of the Site.

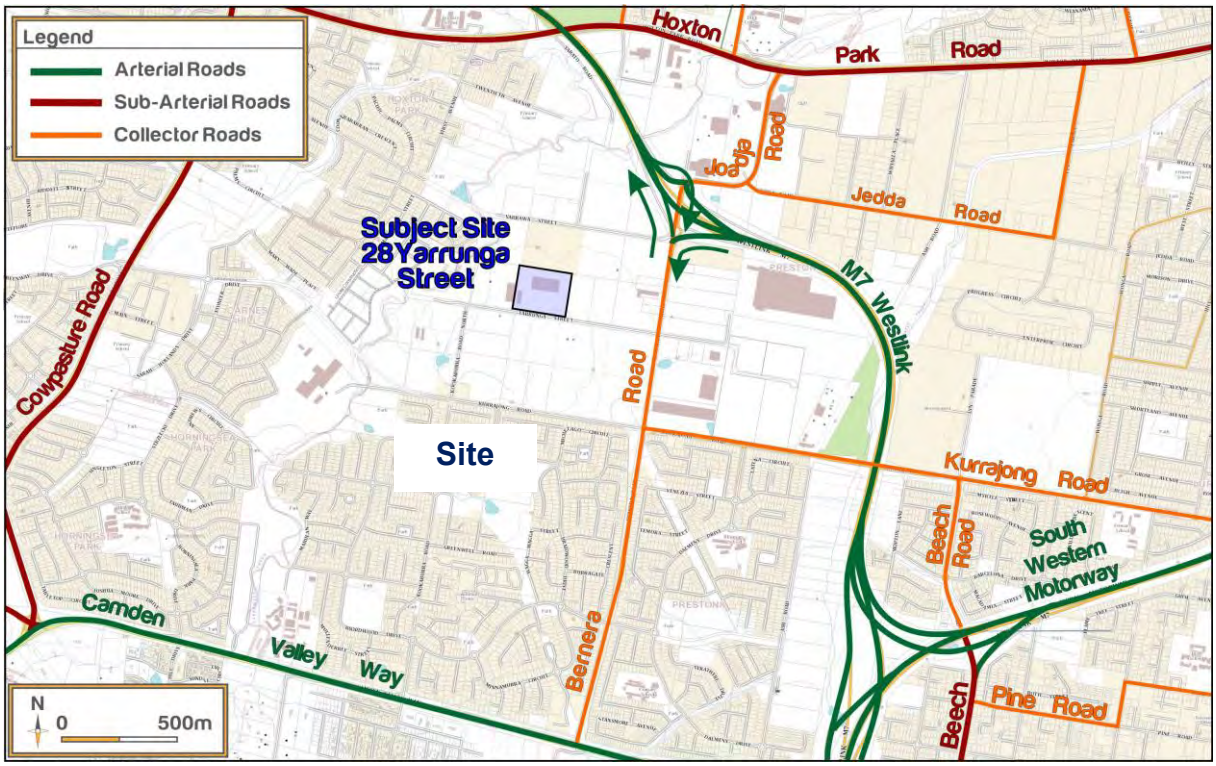

Figure 2: Site and Road Hierarchy

3.2 Active Transport

3.2.1 Pedestrian Network

Pedestrian access shall be facilitated by Council's proposed off-road shared paths along Bernera Road and Kurrajong Road— both of which connect to the regional shared path running along the Westlink M7.

3.2.2 Bicycle Network

There are currently limited cycling facilities and routes provided within the proximity of the development. With reference to **Figure 3,** off-road paths are provided along Kurrajong Road to the south of the Site, providing connectivity to Cowpasture Road, Camden Valley Way and Westlink M7 Motorway cycleways.

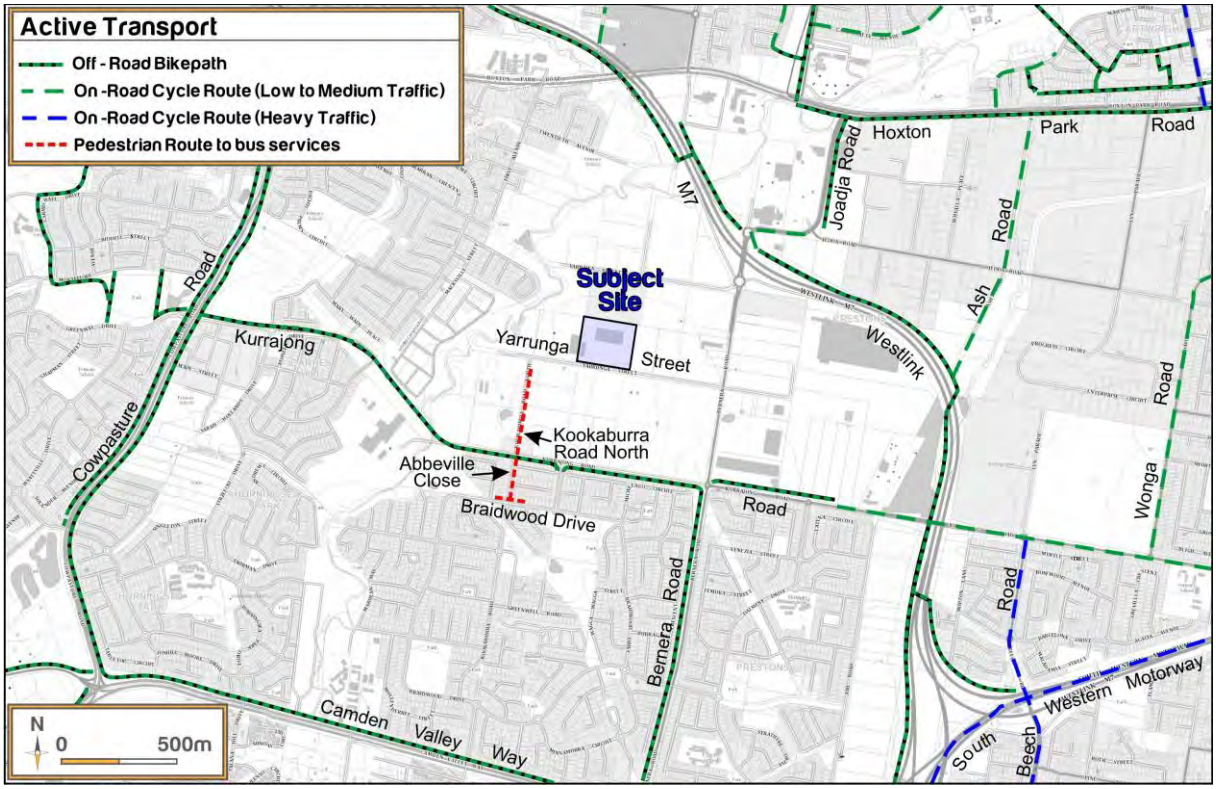

Figure 3: Existing Active Transport Network

3.3 Public Transport

3.3.1 Rail Services

The Integrated Public Transport Service Planning Guidelines, Sydney Metropolitan Area (Transport for NSW, December 2013) state that rail services influence the travel mode choices of areas within 800 metres walk (approximately 10 minutes) of a railway station.

The Site is located approximately 3-4km walking distance to the north of Edmondson Park Railway Station. Edmondson Park Railway Station is serviced by Airport, Inner West and South Line services and provides connections to the Liverpool, Campbelltown, Fairfield, Bankstown, Parramatta and Sydney CBD areas.

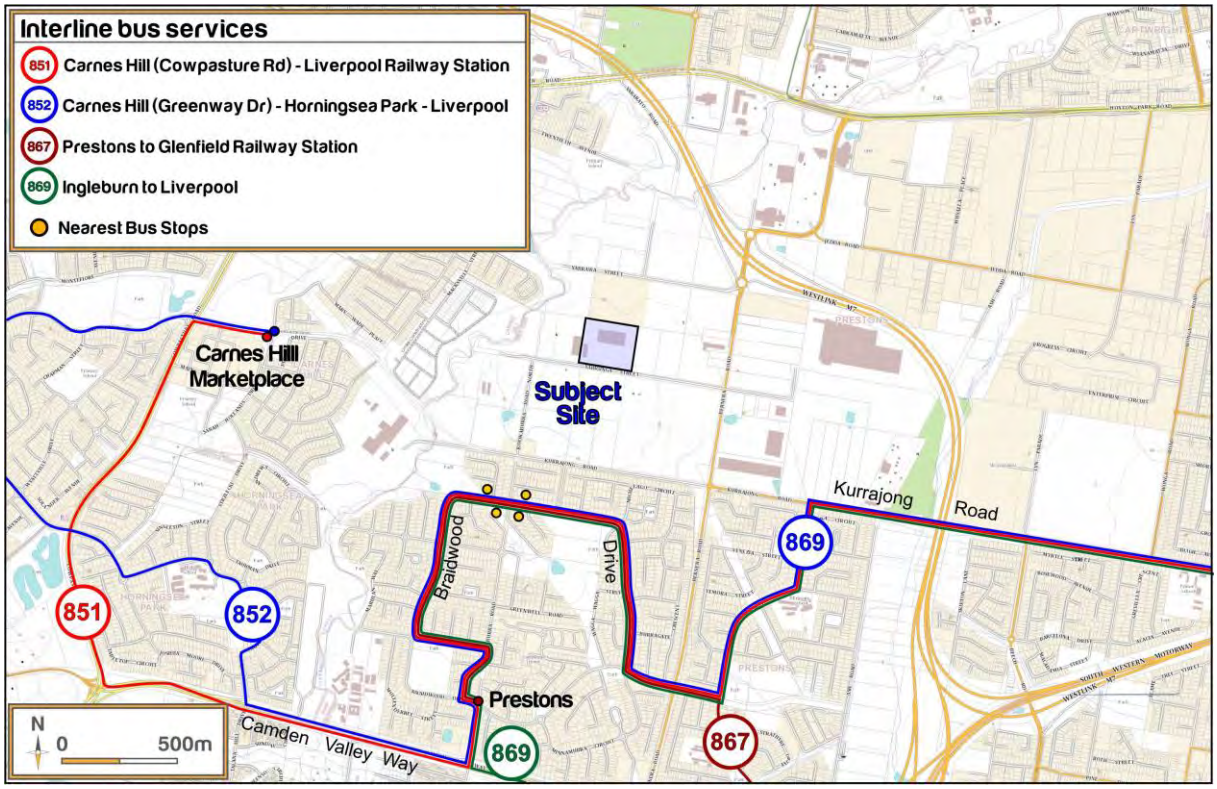

Figure 4: Public Transport Network

3.3.2 Bus Services

Having regard to the standard bus travel, the Integrated Public Transport Service Planning Guidelines state that bus services influence the travel mode choices of sites within 400 metres (approximately 5 minutes) of a bus stop. The Site is serviced by 4 bus stops within 500m walking distance of the Site as shown in **Figure 4**.

3.4 Private Transport

3.4.1 Traffic Generation

The existing Site is currently occupied by approximately 7,500 m^2 of warehouse and 2,000 m^2 of office space. Observations and counts were conducted on-site during the morning and evening peak hours on Thursday, 27 June 2019. **Table 3** provides a summary of the existing traffic generation derived from these observations.

Table 3: Existing Traffic Generation

Vehicle Type	AM		PM	
	In	Out	In	Out
Cars	31	6	4	24
Trucks	4	1	3	2
Total	35	7	7	26

These observed rates are consistent with the RMS Guide Update traffic generation rates for warehouses.

3.4.2 Traffic Volumes

Intersection traffic surveys were also conducted on 27 June 2019 and the observed weekday morning (AM) and evening (PM) peak traffic volumes are shown in **Figure 5**.

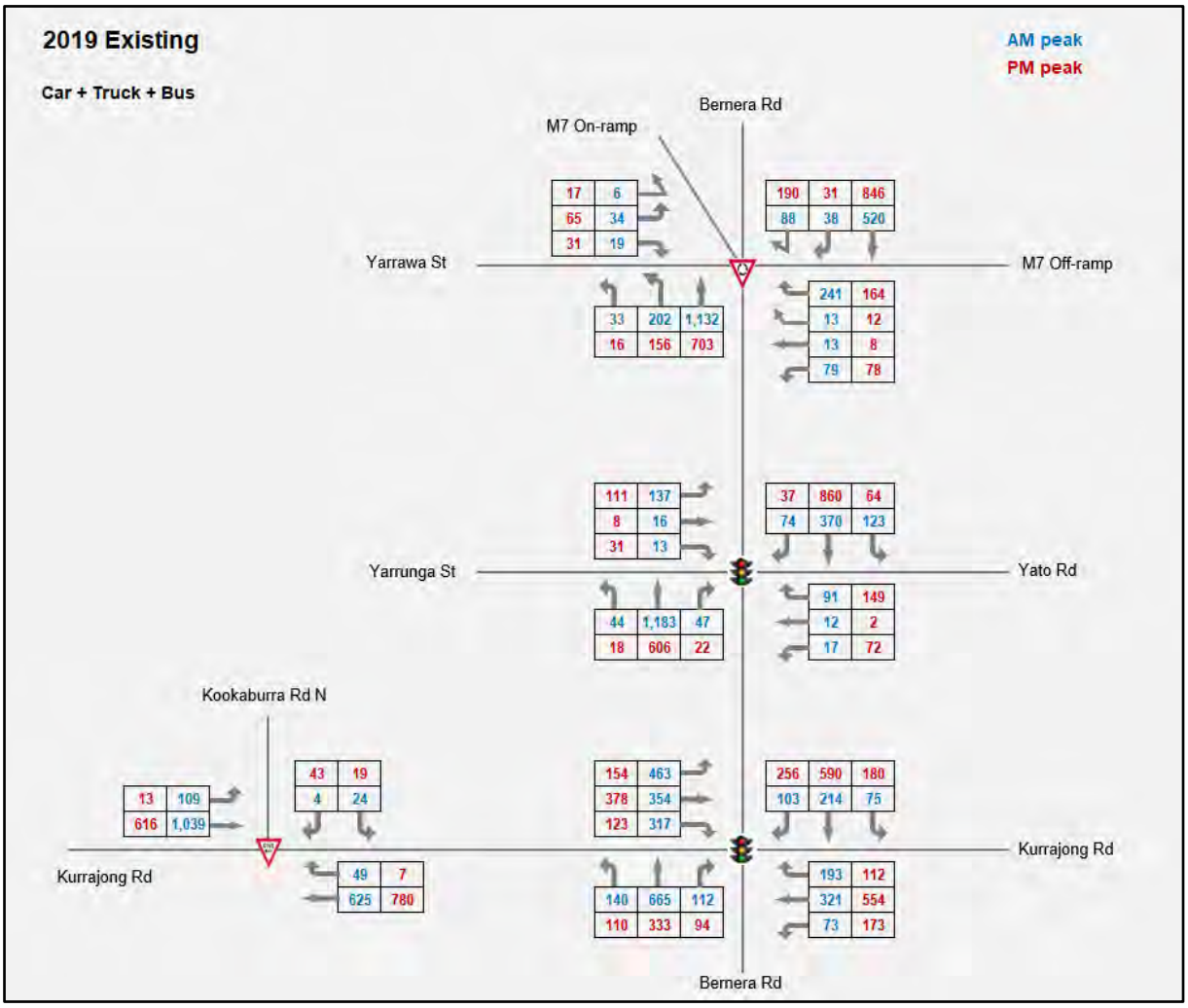

Figure 5: Existing traffic volumes

3.4.3 Intersection Performance

As a result of recently approved developments in the Prestons area a concept design for the upgrade of the traffic signals at the Bernera Road, Yarrunga Street, Yato Road intersection has been developed by Council . This upgrade, shown in **Figure 6** and **Appendix B**, is currently with RMS for approval. This design has been used for the future SIDRA model scenarios.

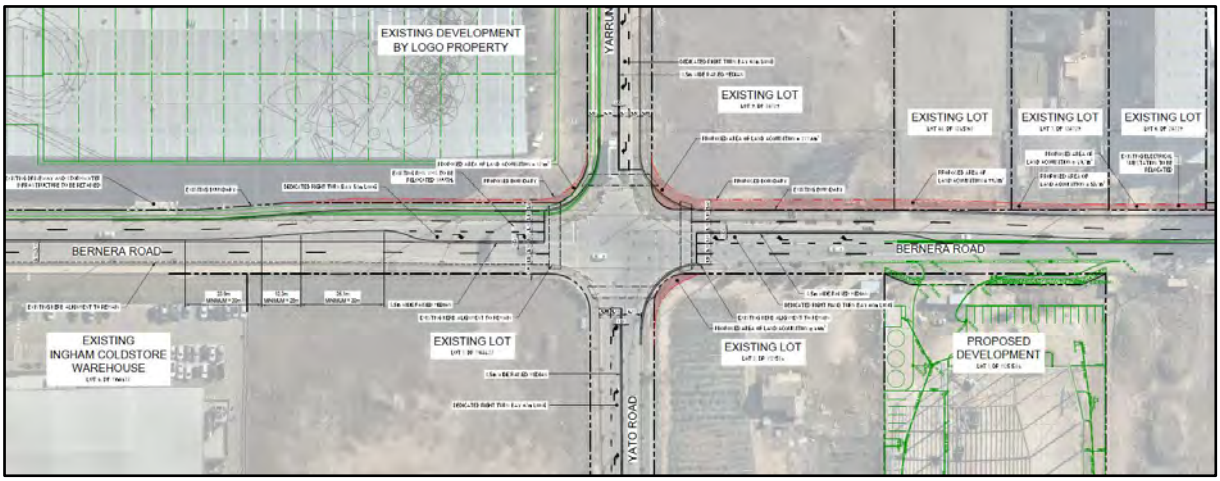

Figure 6: Planned Upgrade to Bernera Rd / Yarrunga St / Yato Rd

The performance of the key intersections has been analysed using the SIDRA Intersection modelling software. SIDRA modelling outputs a range of performance measures, in particular:

- Average Vehicle Delay (AVD) – Average delay per vehicle in seconds for intersections provides a measure of the operational performance of an intersection and is used to determine an intersection's Level of Service (see below). For signalised intersections, the AVD reported relates to the average of all vehicle movements through the intersection. For priority (Give Way, Stop and Roundabout controlled) intersections, AVD reported is the movement with the highest AVD.
- Level of Service (LOS) – This is a comparative measure that provides an indication of the operating performance, based on AVD.

The following table provides a recommended baseline for assessment as per the RMS Guide:

Table 4: RMS Level of Service

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and 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
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

The SIDRA modelling results of the key intersections in the study area using the existing traffic volumes are shown in **Table 5**.

Table 5: Key Intersections Performance, Existing Scenario

Intersection	Peak	2019 Existing	
		Delay	LOS
Bernera Rd / Yarrawa St	AM	22	B
	PM	16	B
Bernera Rd / Yarrunga St	AM	17	B
	PM	19	B
Bernera Rd / Kurrajong Rd	AM	38	C
	PM	33	C
Kookaburra Rd / Kurrajong Rd	AM	200	F
	PM	40	C

The results of the analysis indicate that the key intersections in the study area generally operate satisfactorily under the existing “baseline” scenario in both AM and PM Peak Periods (7:45 – 8:45 and 15:15 – 16:15). An exception is the Kookaburra Road / Kurrajong Road intersection during the AM peak, with a modelled LoS F. This is expected to be caused by the significant right turn delays across two lanes and would be a deterrent to vehicles accessing the Site.

Detailed SIDRA intersection analysis results are included in **Appendix C**.

4 Parking and Servicing Requirements

4.1 Demands Derived from Similar Developments

Historically car parking for industrial developments is driven by planning controls and does not take into account the requirements of the end user. Furthermore, significant technological advances in recent times have resulted in lower employee densities within warehouse developments, with the 2012 Employment Typology Study for the Western Sydney Employment Area (WSEA) prepared for the Department of Planning & Infrastructure indicating employment densities of less than 20 employees per hectare. Consequently, many industrial developments provide car parking significantly in excess of the actual parking requirements of end users.

LDCP requires car parking for warehouse developments of GFA >1,000m^2 at a rate of 1 space per 250m^2 GFA. However, this rate applies to all lands within Council's LGA and does not take into account the general type and scale of the developments proposed under this application. Accordingly, the car parking rates for application to this site have been established based on the methodology adopted in the establishment of the warehouse car parking rates outlined in the RMS Guide to Traffic Generating Developments. In this regard, Section 5.11.2 of the RMS Guide requires parking for warehouse developments be provided at the rate of 1 space per 300m^2 of GFA.

The car parking rate of 1 space per 300m^2 adopted in the RMS Guide was established through surveys of 10 facilities. The surveys undertaken by RMS demonstrated car parking requirements that ranged between one space per 80m^2 and one space per 960m^2 with a mean and standard deviation of one space per 338m^2 and one space per 280m^2 respectively. The adopted rate of 1 space per 300m^2 therefore reflected a mid-range parking rate. Furthermore, the adopted parking rate was also based on relatively high employee densities of approximately 45 employees per hectare.

It is noteworthy that a number of other warehouse and distribution centres within the Liverpool LGA, as well as the broader WSEA have been approved providing car parking in accordance with the RMS Guide to Traffic Generating Developments (RMS Guide), being more representative of the typical demands for the type and scale of development proposed.

For the purpose of this application, the survey results of five comparable industrial developments (generally warehouse or freight forwarding facilities) have been utilised to establish the effective parking rate of similar operational developments—adopting the same methodology as that used in establishing the RMS rate.

The results of these surveys are summarised in **Table 6**.

Table 6: Effective Parking Rates for Surveyed Developments

Site Address	LGA	Car Parking Provided	Total GFA (m^2)	Maximum Car Park Utilisation	Effective Parking Rate per $100m^2$
Bunning's – 8 Interchange Dr	Blacktown	140	55,550	68	817
Toll - Lot 11 Wonderland Dr	Blacktown	137	27,440	47	584
Kimberly Clarke 35 Sarah Andrews Cl	Penrith	100	45,210	78	580
Linfox – 25 Sarah Andrews Cl	Penrith	217	51,200	116	441
Woolworths - 29 Sarah Andrews Cl	Penrith	280	52,705	197	268
				Total Average Rate	**538**

The surveys demonstrated a range of between one space per $268m^2$ and one space per $817m^2$ with a mean of one space per $538m^2$. one space per $538m^2$ Accordingly, based on the methodology adopted in the RMS Guide, the mid-range car parking rate based on the surveys would be in the order of 1 space per $350m^2$.

These rates are consistent with those established by the RMS Guide and indeed suggest that a reduction in overall car parking could be justified. Notwithstanding the above, it is recommended that the RMS rates be adopted as a minimum requirement.

The adoption of a minimum rate of 1 space per $300m^2$ for the warehouse developments is considered appropriate and sustainable and is consistent with both the RMS Guidelines and State planning policies. The proposed minimum rates will also enable the required flexibility in the design of future developments whilst still ensuring that parking to accommodate both the current and future parking requirements of tenants.

4.1.1 Parking Provision

Table 7 shows the comparison between the LDCP, Section 20.2 Car Parking Provision and Service Facilities by Land Use and the RMS rates. The RMS Guide adopts the parking rates resulting in a requirement for 374 spaces for the Proposal. **Table 8** shows a comparison of the requirements with the proposed provision.

Accordingly, the proposed provision of 397 spaces—91% of the LDCP requirement—forms a suitable compromise between the LDCP requirement and the forecast demands derived from surveys. The proposed car parking allocation is therefore considered supportable.

Table 7: Parking Rates

Land Use	LDCP Parking Rate	RMS Parking Rate
Warehouse	Warehouse developments of GFA >1,000m^2: 1 space per 250m^2 GFA	1 space per 300m^2 GFA
Office	1 space per 35m^2 of office LFA	1 space per 40m^2 LFA

Table 8: Car Parking Requirements and Provision

Stage	Land Use	GFA (m^2)	LDCP Parking Requirements	RMS Parking Requirements	Proposed Parking Provision
1	Warehouse	26,587	106	89	159
	Office	4,061	116	102	
	Subtotal	30,648	222	190	
2	Warehouse	30,887	124	103	238
	Office	3,234	92	81	
	Subtotal	34,121	216	184	
	Total		**438**	**374**	**397**

4.1.2 Accessible Parking

LDCP has an accessible car parking requirement of 1 per 100 spaces. In response, the Proposal includes provision for 4 accessible car parking spaces, thereby satisfying the requirement.

4.2 Motorcycle Parking

Council's DCP indicates a provision of motorcycle parking for developments at a rate of 1 space per 20 car spaces which results in a requirement of 20 spaces. In response, the Proposal includes provision for 20 motorcycle parking spaces, thereby satisfying the requirement.

4.3 Bicycle Parking

Austroads indicates a requirement for bicycle parking for commercial developments at a rate of 1 space per 1,000m^2. Application of this rate to the proposed development results in a requirement of 65 bicycle

spaces. It is proposed to provide 68 spaces, thereby satisfying the requirement with a surplus of 3 spaces.

4.4 Servicing

Refuse will be removed by a contractor and this vehicle as well as other commercial vehicles (trucks) will be able to utilise the large hardstand areas provided.

5 Traffic Assessment

5.1 Traffic Generation

Traffic modelling of the Proposal has been undertaken in accordance with the RMS Guide to Traffic Generating Developments specifying the requirements for a traffic study.

It is noted that TTPA undertook the assessment for Council of the Industrial Zoning for Prestons, adopting a network peak traffic generation rate incorporating a "sensitivity factory" of +40% above that of the RMS derived network peak generation rate for Erskine Park and Wonderland Drive. It is apparent therefore, that the assessment is robust.

There were four Metropolitan Area sites surveyed and assessed for the RMS study, and the Erskine Park site contained a mixture of large warehouse/distribution, factory, factory/warehouse and office uses, and is considered the most pertinent data base for comparison of large contemporary warehouse/distribution use. The results obtained from this survey are very consistent and the reasons for the difference between these generation rates and the other sites and earlier, former RTA data are:

- very large contemporary warehouses with low staffing levels
- 12-hour shifts, where workers start work at 6am and leave at 6pm each day (out of background AM and PM peak period).

In order to provide some robustness, a sensitivity factor of +40% is applied for the adopted peak generation rates for the "network" peaks, resulting in 0.22vph/100m^2. Application of this adopted peak traffic generation rate to the proposed assessable development area with consideration of the existing traffic generation of the Site results in the net generation shown in **Table 10**.

Table 9: Net Traffic Generation

Peak	Stage	All Vehicles	Car	Truck
AM	1	**67**	46	21
	2	**75**	52	23
	Existing	42	37	5
	Net Total	**101**	**61**	**39**
PM	1	67	46	21
	2	75	52	23
	Existing	33	28	5
	Net Total	**110**	**70**	**39**

5.2 Traffic Distribution

A review of the relevant Journey to Work census data provided by the Bureau of Transport Statistics of employee mode share for Travel Zone (TZ) 3854 indicates trips within the TZ are to / from the following suburbs:

- North (40%) – Blacktown, Penrith and Mt Druitt
- East (10%) – Merrylands, Liverpool and Fairfield
- South (40%) – Wollondilly, Campbelltown and Camden
- West (10%) – Bringelly, Green Valley

In the absence of a detailed heavy vehicle schedule for the Proposal, the worst-case scenario has been assessed, which assumes that all heavy traffic will use the Bernera Road / Yarrunga Road / Yato Road intersection—the approved Restricted Access Vehicle route—and all workers will arrive and depart during the peak period. Accordingly . **Figure 7** illustrates the assumed access routes to the Site in the worst-case scenario.

Figure 7: Proposed Site Access Routes

The following inbound and outbound assumptions have also been made based on the characteristics of the Site:

- 80% inbound traffic and 20% outbound traffic in AM Peak
- 20% inbound traffic and 80% outbound traffic in PM Peak
- 20% of total traffic are heavy vehicles

Table 10 summarises projected traffic distribution during AM and PM peak periods.

Table 10: Traffic Distribution

Peak	Stage	All vehicles			Car			Truck		
		In	Out	Total	In	Out	Total	In	Out	Total
AM	1	45	19	**64**	35	9	44	10	10	20
	2	51	21	**73**	40	10	50	11	11	23
	Existing	35	7	42	31	6	37	4	1	5
	Net Total	**62**	**33**	**95**	**44**	**13**	**57**	**17**	**20**	**38**
PM	1	19	45	64	9	35	44	10	10	20
	2	21	51	73	10	40	50	11	11	23
	Existing	7	26	33	4	24	28	3	2	5
	Net Total	**33**	**71**	**104**	**15**	**51**	**66**	**18**	**19**	**38**

5.3 Further Modelling Assumptions

5.3.1 Background Growth

Background forecast traffic volumes and growth rates within the local road network have been extracted from TfNSW's Strategic Traffic Forecasting Model (STFM). However, the forecast volumes showed a reduction of up to 60% compared with the existing volumes. This indicates that some of the land-use assumptions made in the development of the model have already been achieved and / or that some zones in the area may have been empty in the base year.

Use of growth factor techniques in strategic modelling should ideally be limited to short term horizons where land use changes are minimal—a maximum of five years in accordance with RMS traffic modelling guidelines. Additionally, these techniques cannot be applied to empty zones in the base year because zero cells will not grow. Accordingly, appropriate rates as advised by RMS have been applied to the forecast volumes used in the future model scenarios.

5.3.2 Intersection Design

As a result of recently approved developments in the Prestons Area, including State Significant Development Number SSD-7155 (Prestons Industrial Estate) and a large approved warehouse development site at 290 Kurrajong Road, a concept design has been developed by Council for the upgrade of the Bernera Road / Yarrunga Street / Yato Road intersection as shown in Figure 6 and is currently with RMS for approval. This design has been used for the future SIDRA model scenarios.

5.3.3 Pedestrians

The traffic surveys counted a total of 3 pedestrians crossing at each of the signalised intersections during both peak periods. However, a nominal pedestrian call rate in excess of this (5%) has been used in the modelling, again assuming a worst case scenario for future scenarios.

5.4 Traffic Impacts

For this assessment, a future base year of 2029 (existing + 10 years) has been assessed and the performance of the key intersections further to the introduction of the Proposal's net traffic generation has been assessed and the results of the SIDRA analysis are summarised in **Table 11**, along with the comparative operations under existing (2019) base conditions.

The impact of the proposed development at the key intersections in the study area has been assessed as a net increase over and above the existing and the results of this analysis are summarised in **Table 11**.

Table 11: Intersection Performance

Intersection	Peak	2019 Existing		2019 Existing + Dev		2029 Base + Upgrade		2029 Base + Dev + Upgrade	
		Delay	LoS	Delay	LoS	Delay	LoS	Delay	LoS
Bernera Rd / Yarrawa St / M7	AM	22	B	22	B	27	B	30	C
	PM	16	B	17	B	18	B	18	B
Bernera Rd / Yarrunga St / Yato Rd	AM	17	B	39	C	24	B	33	C
	PM	19	B	20	B	27	B	27	B
Bernera Rd / Kurrajong Rd	AM	38	C	39	C	62	E	63	E
	PM	33	C	36	C	36	C	44	D
Kurrajong Rd / Kookaburra Rd	AM	261	F	274	F	62	E	921	F
	PM	51	D	53	D	36	C	114	F

The SIDRA analysis indicates that, in the worst-case scenario, the net traffic volumes generating from the Site would result in only low increases in delay and with a 10-year horizon, the key intersections would continue to operate satisfactorily, with the exception of the AM Peak at Bernera Road / Kurrajong Road due to the assumed background growth rate. It should be noted that the development traffic only adds 1 second additional delay to this intersection during this peak hour.

The Kookaburra Road / Kurrajong Road intersection currently has a LOS F caused by the significant right turn delays across two lanes of traffic from Kookaburra Road to Kurrajong Road despite this movement having relatively low volumes.

In summary, the traffic impact analysis concludes that the net traffic generation volumes generated by the development are of a sufficiently low order that once distributed on to the surrounding road network, the impacts of these volumes at the key intersections would be low and the intersections would continue to operate as they currently do.

6 Design Commentary

6.1 Relevant Design Standards

The site access, car park and loading areas have generally been designed to comply with the following relevant Australian Standards:

- AS2890.1 for car parking areas;
- AS2890.2 for commercial vehicle loading areas;
- AS2890.3 for bicycle parking;
- AS2890.6 for accessible (disabled) parking.

It is expected that any detailed construction drawings in relation to the car park, vehicle loading areas or site access would comply with these Standards. Furthermore, compliance with the above standards would be expected to form a standard condition of consent to any development approval.

6.2 Heavy Vehicle Access

The commercial (heavy) vehicle facilities have generally been designed having regard for the requirements of AS2890.2. In this regard, the following is considered noteworthy:

- A review of the internal design of the service area has been undertaken in accordance with the requirements of AS28090.2 for the maximum length vehicle accessing the Site being a B-double of 26m in length.
- All service vehicles can enter and exit the site in a forward direction.

Swept path analysis is provided in **Appendix E** which demonstrates compliance with relevant sections of AS2890.2.

7 Conclusions

The key findings of this Traffic Impact Assessment are:

- The Development Application relates to a warehouse development and associated works at 28 Yarrunga Street, Prestons with the following characteristics:

Stage	Warehouse GLA (m^2)	Office GFA (m^2)	Total
1	26,587	4,061	30,648
2	30,887	3,234	34,121
Site Total	**57,474**	**7,295**	**64,769**

- The Site is located within the Liverpool LGA. Edmondson Park Railway Station is located approximately 3.5km from the Site and it is serviced by bus stops within 500m.

- The proposed provision of 397 spaces—91% of the LDCP requirement—is compliant with RMS requirements and forms a suitable compromise between the LDCP requirement and the forecast demands derived from surveys. The proposed car parking allocation is therefore considered supportable.

- The Site access, car park and loading areas have generally been designed having regard for relevant Australian Standards (AS2890). A standard condition of consent requiring compliance with AS2890 would be considered sufficient to ensure that any minor changes to the plans required, if any, could be undertaken as part of detailed Construction Certificate documentation.

- The Proposal will result in the following distribution and net increase in traffic generation:

Peak	Stage	All vehicles			Car			Truck		
		In	Out	Total	In	Out	Total	In	Out	Total
AM	1	45	19	**64**	35	9	44	10	10	20
	2	51	21	**73**	40	10	50	11	11	23
	Existing	35	7	42	31	6	37	4	1	5
	Net Total	**62**	**33**	**95**	**44**	**13**	**57**	**17**	**20**	**38**
PM	1	19	45	64	9	35	44	10	10	20
	2	21	51	73	10	40	50	11	11	23
	Existing	7	26	33	4	24	28	3	2	5
	Net Total	**33**	**71**	**104**	**15**	**51**	**66**	**18**	**19**	**38**

- The SIDRA analysis indicates that, in the worst-case scenario—assuming that all development traffic will use the Bernera Road / Yarrunga Road / Yato Road intersection and all workers will

arrive and depart during the peak periods—the net traffic volumes generating from the Site would result in only low increases in delay with a 10 year horizon.

- The AM Peak at Bernera Road / Kurrajong Road is forecast to operate at LOS E in the AM Peak of the 2029 scenario due to the assumed background growth rate. However, it should be noted that the development traffic only adds 1 second additional delay to this intersection during this peak hour.

- The Kookaburra Road / Kurrajong Road intersection currently has a LOS F caused by the significant right turn delays across two lanes of traffic from Kookaburra Road to Kurrajong Road. This movement has relatively low volumes therefore, it is recommended that Council consider restricting the control to left in / left out to mitigate safety risks.

- In summary, the traffic impact assessment concludes that the net traffic generation volumes are of a sufficiently low order that once distributed on to the surrounding road network, the impacts of these volumes at the key intersections would be low and the intersections would continue to operate as they currently do.

In summary, the Proposal is supportable on traffic planning grounds and will not result in any adverse impacts on the surrounding road network or the availability of on-street parking.

Appendix A

Traffic Surveys

TTM Data

TTM Reference: 19SYD0109
Location: Kurrajong Rd & Kookaburra Rd N
Suburb: Prestons
Date: Thursday, 27 June 2019
Survey Duration: 0700-1000 & 1500-1900 AM Peak: 0745-0845
Weather: Fine PM Peak: 1700-1800
Notes:

Time	Eastern Approach Kurrajong Rd											Northern Approach Kookaburra Rd N											Western Approach Kurrajong Rd										
15 min	Straight				Right				U Turn	TOTAL	Peds	Left				Right				U Turn	TOTAL	Peds	Left				Straight				U Turn	TOTAL	Peds
time start	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total				Light	Heavy	Bus	Total	Light	Heavy	Bus	Total				Light	Heavy	Bus	Total	Light	Heavy	Bus	Total			
7:00	79	6	0	**85**	3	4	0	**7**	0	**92**	0	0	1	0	**1**	0	0	0	**0**	0	**1**	0	8	2	0	**10**	136	4	0	**140**	0	**150**	0
7:15	112	4	1	**117**	6	3	0	**9**	0	**126**	0	3	2	0	**5**	1	0	0	**1**	0	**6**	0	17	0	0	**17**	153	5	0	**158**	0	**175**	0
7:30	135	6	1	**142**	7	1	0	**8**	0	**150**	0	1	2	0	**3**	4	4	0	**8**	0	**11**	0	14	2	0	**16**	156	1	1	**158**	0	**174**	0
7:45	135	3	1	**139**	11	0	0	**11**	0	**150**	0	3	2	0	**5**	1	0	0	**1**	0	**6**	0	21	1	0	**22**	207	2	0	**209**	0	**231**	0
8:00	191	0	1	**192**	11	1	0	**12**	0	**204**	0	3	3	0	**6**	0	1	0	**1**	0	**7**	0	14	2	0	**16**	250	1	0	**251**	0	**267**	0
8:15	174	1	0	**175**	11	2	1	**14**	1	**190**	0	5	2	1	**8**	0	0	0	**0**	0	**8**	0	31	3	0	**34**	298	5	0	**303**	0	**337**	0
8:30	109	8	2	**119**	9	2	1	**12**	0	**131**	0	4	1	0	**5**	1	1	0	**2**	0	**7**	0	33	3	1	**37**	271	4	1	**276**	0	**313**	0
8:45	109	3	2	**114**	4	1	0	**5**	1	**120**	0	2	2	0	**4**	2	0	0	**2**	0	**6**	0	15	2	0	**17**	168	4	0	**172**	0	**189**	0
9:00	100	5	0	**105**	6	1	1	**8**	0	**113**	0	1	1	0	**2**	0	1	0	**1**	0	**3**	0	8	2	0	**10**	127	2	0	**129**	0	**139**	0
9:15	82	0	0	**82**	2	0	0	**2**	0	**84**	0	4	0	0	**4**	3	0	0	**3**	0	**7**	0	6	0	0	**6**	101	5	0	**106**	0	**112**	0
9:30	70	4	0	**74**	3	2	0	**5**	0	**79**	0	0	0	1	**1**	3	1	0	**4**	0	**5**	0	4	1	0	**5**	101	5	0	**106**	0	**111**	0
9:45	100	6	2	**108**	2	0	0	**2**	1	**111**	0	3	4	0	**7**	1	2	0	**3**	0	**10**	0	5	1	0	**6**	73	1	0	**74**	0	**80**	0
TOTAL	**1396**	**46**	**10**	**1452**	**75**	**17**	**3**	**95**	**3**	**1550**	**0**	**29**	**20**	**2**	**51**	**16**	**10**	**0**	**26**	**0**	**77**	**0**	**176**	**19**	**1**	**196**	**2041**	**39**	**2**	**2082**	**0**	**2278**	**0**
AM Peak	609	12	4	625	42	5	2	49	1	675	0	15	8	1	24	2	2	0	4	0	28	0	99	9	1	109	1026	12	1	1039	0	1148	0
15:00	170	2	0	**172**	1	2	0	**3**	0	**175**	0	5	2	0	**7**	3	0	0	**3**	0	**10**	0	1	1	0	**2**	173	4	1	**178**	0	**180**	0
15:15	186	3	1	**190**	3	1	0	**4**	0	**194**	0	4	2	0	**6**	10	0	0	**10**	0	**16**	0	2	0	0	**2**	166	1	0	**167**	0	**169**	0
15:30	189	3	0	**192**	1	1	0	**2**	0	**194**	0	9	1	0	**10**	7	1	0	**8**	0	**18**	0	6	0	0	**6**	144	2	0	**146**	0	**152**	0
15:45	175	3	0	**178**	1	0	0	**1**	0	**179**	0	2	0	0	**2**	5	0	0	**5**	0	**7**	0	3	0	0	**3**	142	1	0	**143**	0	**146**	0
16:00	209	4	0	**213**	1	0	0	**1**	0	**214**	0	7	2	0	**9**	10	0	0	**10**	0	**19**	0	3	1	0	**4**	118	2	0	**120**	0	**124**	0
16:15	190	4	1	**195**	1	0	0	**1**	0	**196**	0	3	0	0	**3**	5	0	0	**5**	0	**8**	0	4	0	0	**4**	137	1	1	**139**	0	**143**	0
16:30	198	1	0	**199**	1	0	0	**1**	0	**200**	0	4	0	0	**4**	8	0	0	**8**	0	**12**	0	2	0	0	**2**	125	0	0	**125**	0	**127**	0
16:45	175	3	0	**178**	1	1	0	**2**	0	**180**	0	4	0	0	**4**	6	0	0	**6**	0	**10**	0	4	0	0	**4**	141	2	1	**144**	0	**148**	0
17:00	206	1	0	**207**	0	0	0	**0**	0	**207**	0	7	0	0	**7**	21	0	0	**21**	0	**28**	0	2	3	0	**5**	158	0	0	**158**	0	**163**	0
17:15	192	2	0	**194**	1	2	0	**3**	1	**198**	0	4	0	0	**4**	5	0	0	**5**	0	**9**	0	3	0	0	**3**	147	1	0	**148**	0	**151**	0
17:30	183	2	0	**185**	1	0	0	**1**	0	**186**	0	6	0	0	**6**	11	0	0	**11**	0	**17**	0	5	0	0	**5**	165	1	0	**166**	0	**171**	0
17:45	193	1	0	**194**	2	1	0	**3**	0	**197**	0	2	0	0	**2**	6	0	0	**6**	0	**8**	0	0	0	0	**0**	143	1	0	**144**	0	**144**	0
18:00	165	1	0	**166**	2	0	0	**2**	0	**168**	0	4	0	0	**4**	4	0	0	**4**	0	**8**	0	1	2	0	**3**	127	1	1	**129**	0	**132**	0
18:15	197	3	0	**200**	1	0	0	**1**	0	**201**	0	1	0	0	**1**	5	0	0	**5**	0	**6**	0	0	0	0	**0**	117	1	0	**118**	0	**118**	0
18:30	172	3	0	**175**	1	0	0	**1**	0	**176**	0	1	0	0	**1**	1	0	0	**1**	0	**2**	0	1	0	0	**1**	117	1	0	**118**	1	**120**	0
18:45	168	0	0	**168**	0	0	0	**0**	0	**168**	0	0	0	0	**0**	2	0	0	**2**	0	**2**	0	0	0	0	**0**	112	0	0	**112**	0	**112**	0
TOTAL	**2968**	**36**	**2**	**3006**	**18**	**8**	**0**	**26**	**1**	**3033**	**0**	**63**	**7**	**0**	**70**	**109**	**1**	**0**	**110**	**0**	**180**	**0**	**37**	**7**	**0**	**44**	**2232**	**19**	**4**	**2255**	**1**	**2300**	**0**
PM Peak	774	6	0	780	4	3	0	7	1	788	0	19	0	0	19	43	0	0	43	0	62	0	10	3	0	13	613	3	0	616	0	629	0

TTM Data

TTM Reference: 19SYD0109
Location: Kurrajong Rd & Bernera Rd
Suburb: Prestons
Date: Thursday, 27 June 2019
Survey Duration: 0700-1000 & 1500-1900
Weather: Fine
Notes:

AM Peak: 0745-0845
PM Peak: 1700-1800

Time	Northern Approach: Bernera Rd															Southern Approach: Bernera Rd													
15 min	Left				Straight				Right				U Turn	TOTAL	Peds	Left				Straight				Right				U Turn	TOTAL	Peds
time start	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total				Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total			
7:00	5	2	0	**7**	31	13	0	**44**	7	3	0	**10**	0	**61**	0	16	3	0	**19**	82	6	0	**88**	24	0	0	**24**	0	**131**	0
7:15	9	1	0	**10**	34	10	0	**44**	11	2	0	**13**	0	**67**	1	17	0	0	**17**	94	2	2	**98**	29	1	0	**30**	0	**145**	0
7:30	22	1	0	**23**	47	8	0	**55**	13	0	0	**13**	0	**91**	0	32	3	0	**35**	143	6	0	**149**	25	0	1	**26**	0	**210**	1
7:45	14	2	0	**16**	33	14	0	**47**	16	2	0	**18**	0	**81**	0	31	0	0	**31**	143	6	1	**150**	29	0	0	**29**	0	**210**	0
8:00	16	1	0	**17**	45	6	0	**51**	29	1	1	**31**	0	**99**	0	30	0	0	**30**	204	10	0	**214**	38	1	0	**39**	0	**283**	0
8:15	24	2	1	**27**	48	9	1	**58**	19	1	3	**23**	0	**108**	2	42	1	0	**43**	148	3	1	**152**	26	0	0	**26**	0	**221**	0
8:30	14	1	0	**15**	48	10	0	**58**	23	8	0	**31**	0	**104**	0	35	0	1	**36**	141	8	0	**149**	18	0	0	**18**	0	**203**	0
8:45	9	2	0	**11**	34	9	0	**43**	17	2	0	**19**	0	**73**	0	33	1	0	**34**	158	17	1	**176**	14	1	0	**15**	0	**225**	1
9:00	10	2	0	**12**	33	7	0	**40**	19	5	0	**24**	0	**76**	0	27	0	0	**27**	98	4	0	**102**	21	1	0	**22**	0	**151**	0
9:15	13	1	1	**15**	37	9	1	**47**	16	0	0	**16**	0	**78**	0	17	0	0	**17**	89	5	0	**94**	18	1	0	**19**	0	**130**	0
9:30	17	2	0	**19**	35	8	0	**43**	16	2	0	**18**	0	**80**	1	11	2	0	**13**	62	8	0	**70**	10	3	0	**13**	0	**96**	0
9:45	16	4	0	**20**	43	4	0	**47**	18	3	0	**21**	0	**88**	0	14	1	0	**15**	72	7	0	**79**	14	0	0	**14**	0	**108**	0
TOTAL	**169**	**21**	**2**	**192**	**468**	**107**	**2**	**577**	**204**	**29**	**4**	**237**	**0**	**1006**	**4**	**305**	**11**	**1**	**317**	**1434**	**82**	**5**	**1521**	**266**	**8**	**1**	**275**	**0**	**2113**	**2**
AM Peak	68	6	1	75	174	39	1	214	87	12	4	103	0	392	2	138	1	1	140	636	27	2	665	111	1	0	112	0	917	0
15:00	20	1	1	**22**	101	9	1	**111**	45	4	0	**49**	0	**182**	0	38	2	0	**40**	57	8	0	**65**	21	0	0	**21**	0	**126**	0
15:15	26	2	0	**28**	99	7	0	**106**	59	2	0	**61**	0	**195**	0	23	1	0	**24**	57	7	1	**65**	23	1	2	**26**	0	**115**	0
15:30	34	0	1	**35**	155	4	0	**159**	71	1	0	**72**	0	**266**	0	47	1	0	**48**	84	8	1	**93**	18	0	0	**18**	0	**159**	2
15:45	31	0	0	**31**	125	11	0	**136**	67	1	0	**68**	0	**235**	0	29	2	0	**31**	94	8	0	**102**	16	0	0	**16**	0	**149**	1
16:00	24	0	0	**24**	147	9	0	**156**	83	1	0	**84**	0	**264**	0	25	0	0	**25**	55	10	0	**65**	23	0	0	**23**	0	**113**	0
16:15	35	1	0	**36**	134	4	0	**138**	68	0	0	**68**	0	**242**	0	32	1	0	**33**	68	3	0	**71**	9	0	0	**9**	0	**113**	0
16:30	51	3	0	**54**	124	4	1	**129**	57	1	0	**58**	0	**241**	0	30	0	0	**30**	77	5	0	**82**	13	0	0	**13**	0	**125**	0
16:45	36	0	0	**36**	109	1	0	**110**	60	1	0	**61**	0	**207**	0	25	0	0	**25**	59	3	0	**62**	26	0	0	**26**	0	**113**	0
17:00	40	1	0	**41**	156	7	0	**163**	64	2	0	**66**	0	**270**	0	36	0	0	**36**	68	4	0	**72**	24	0	0	**24**	0	**132**	0
17:15	35	2	0	**37**	172	6	0	**178**	59	1	0	**60**	0	**275**	0	21	0	0	**21**	63	5	0	**68**	21	0	0	**21**	0	**110**	0
17:30	51	0	0	**51**	137	4	0	**141**	65	1	0	**66**	0	**258**	0	34	0	0	**34**	97	8	0	**105**	23	0	0	**23**	0	**162**	0
17:45	50	1	0	**51**	107	1	0	**108**	64	0	0	**64**	0	**223**	0	19	0	0	**19**	84	4	0	**88**	25	1	0	**26**	0	**133**	0
18:00	31	1	0	**32**	109	2	0	**111**	36	1	0	**37**	0	**180**	0	32	1	0	**33**	78	3	0	**81**	20	0	0	**20**	0	**134**	0
18:15	25	1	0	**26**	94	6	0	**100**	61	1	0	**62**	0	**188**	0	40	0	0	**40**	72	1	0	**73**	26	0	0	**26**	0	**139**	0
18:30	25	1	0	**26**	51	1	0	**52**	51	0	0	**51**	0	**129**	0	25	1	0	**26**	40	1	0	**41**	20	0	0	**20**	0	**87**	0
18:45	24	1	0	**25**	61	3	0	**64**	36	1	0	**37**	0	**126**	0	31	0	0	**31**	53	0	0	**53**	18	1	0	**19**	0	**103**	0
TOTAL	**538**	**15**	**2**	**555**	**1881**	**79**	**2**	**1962**	**946**	**18**	**0**	**964**	**0**	**3481**	**0**	**487**	**9**	**0**	**496**	**1106**	**78**	**2**	**1186**	**326**	**3**	**2**	**331**	**0**	**2013**	**3**
PM Peak	176	4	0	180	572	18	0	590	252	4	0	256	0	1026	0	110	0	0	110	312	21	0	333	93	1	0	94	0	537	0

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Time	Eastern Approach: Kurrajong Rd															Western Approach: Kurrajong Rd												
15 min	Left				Straight				Right				U Turn	TOTAL	Peds	Left				Straight				Right				U Turn	TOTAL	Peds
time start	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total				Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total			
7:00	7	0	0	**7**	50	5	0	**55**	41	2	0	**43**	0	**105**	0	34	1	0	**35**	72	2	0	**74**	42	2	0	**44**	0	**153**	0
7:15	10	4	1	**15**	81	3	1	**85**	43	2	0	**45**	0	**145**	2	56	2	0	**58**	92	3	0	**95**	47	2	0	**49**	0	**202**	0
7:30	10	0	1	**11**	77	1	2	**80**	44	4	0	**48**	0	**139**	0	58	2	0	**60**	76	1	1	**78**	44	0	0	**44**	0	**182**	0
7:45	16	1	0	**17**	84	1	0	**85**	63	1	0	**64**	0	**166**	0	102	3	0	**105**	96	0	0	**96**	52	2	0	**54**	0	**255**	0
8:00	19	0	1	**20**	103	0	1	**104**	38	3	0	**41**	0	**165**	0	103	2	0	**105**	109	1	0	**110**	60	1	0	**61**	0	**276**	0
8:15	18	0	1	**19**	81	2	0	**83**	42	0	0	**42**	0	**144**	0	112	7	2	**121**	88	1	0	**89**	98	0	0	**98**	0	**308**	0
8:30	17	0	0	**17**	47	2	0	**49**	43	3	0	**46**	0	**112**	0	130	2	0	**132**	57	2	0	**59**	102	1	1	**104**	0	**295**	0
8:45	28	0	0	**28**	52	0	1	**53**	27	3	0	**30**	0	**111**	0	81	6	0	**87**	49	0	1	**50**	50	1	0	**51**	0	**188**	0
9:00	28	0	0	**28**	72	2	1	**75**	39	2	0	**41**	0	**144**	0	54	0	0	**54**	58	1	0	**59**	27	2	0	**29**	0	**142**	0
9:15	17	1	0	**18**	52	1	0	**53**	23	4	0	**27**	0	**98**	0	34	1	0	**35**	70	0	0	**70**	20	2	0	**22**	0	**127**	0
9:30	17	1	0	**18**	48	2	0	**50**	20	4	0	**24**	0	**92**	0	40	3	0	**43**	54	1	0	**55**	21	2	1	**24**	0	**122**	1
9:45	14	0	0	**14**	60	3	2	**65**	28	2	0	**30**	0	**109**	0	34	3	0	**37**	36	0	0	**36**	18	1	0	**19**	0	**92**	0
TOTAL	**201**	**7**	**4**	**212**	**807**	**22**	**8**	**837**	**451**	**30**	**0**	**481**	**0**	**1530**	**2**	**838**	**32**	**2**	**872**	**857**	**12**	**2**	**871**	**581**	**16**	**2**	**599**	**0**	**2342**	**1**
AM Peak	70	1	2	73	315	5	1	321	186	7	0	193	0	587	0	447	14	2	463	350	4	0	354	312	4	1	317	0	1134	0
15:00	37	0	1	**38**	123	4	0	**127**	20	3	0	**23**	0	**188**	0	31	3	0	**34**	81	2	0	**83**	31	0	0	**31**	0	**148**	1
15:15	37	1	2	**40**	104	2	0	**106**	30	3	0	**33**	0	**179**	0	65	2	3	**70**	67	0	2	**69**	52	2	0	**54**	0	**193**	0
15:30	30	0	0	**30**	73	1	1	**75**	37	1	0	**38**	0	**143**	0	38	2	0	**40**	68	0	1	**69**	38	1	0	**39**	0	**148**	0
15:45	37	0	0	**37**	101	3	0	**104**	29	0	0	**29**	0	**170**	0	49	0	0	**49**	53	0	1	**54**	35	2	0	**37**	0	**140**	0
16:00	44	0	1	**45**	138	1	3	**142**	28	1	0	**29**	0	**216**	0	27	1	0	**28**	63	0	0	**63**	28	1	0	**29**	0	**120**	0
16:15	47	0	1	**48**	126	2	0	**128**	29	3	0	**32**	0	**208**	0	30	1	0	**31**	73	1	0	**74**	23	2	0	**25**	0	**130**	0
16:30	39	1	0	**40**	142	2	1	**145**	30	1	0	**31**	0	**216**	0	37	0	0	**37**	49	1	1	**51**	27	0	0	**27**	0	**115**	0
16:45	48	3	0	**51**	128	1	0	**129**	32	5	1	**38**	0	**218**	0	25	0	0	**25**	81	0	0	**81**	27	0	0	**27**	0	**133**	0
17:00	48	0	0	**48**	144	5	0	**149**	24	1	0	**25**	0	**222**	0	44	0	0	**44**	103	1	1	**105**	33	1	0	**34**	0	**183**	0
17:15	43	2	0	**45**	137	1	0	**138**	23	0	0	**23**	0	**206**	0	33	0	0	**33**	78	0	0	**78**	26	0	0	**26**	0	**137**	0
17:30	37	0	0	**37**	115	3	0	**118**	33	2	0	**35**	0	**190**	0	27	0	0	**27**	96	1	0	**97**	27	0	0	**27**	0	**151**	0
17:45	43	0	0	**43**	147	2	0	**149**	27	2	0	**29**	0	**221**	0	49	1	0	**50**	98	0	0	**98**	36	0	0	**36**	0	**184**	0
18:00	43	0	0	**43**	134	0	0	**134**	28	0	0	**28**	0	**205**	0	36	0	0	**36**	58	1	0	**59**	28	0	0	**28**	0	**123**	1
18:15	30	0	0	**30**	119	1	0	**120**	24	2	0	**26**	0	**176**	0	25	0	0	**25**	57	0	0	**57**	28	0	0	**28**	0	**110**	0
18:30	35	0	0	**35**	128	1	0	**129**	25	1	0	**26**	0	**190**	0	30	0	0	**30**	65	1	0	**66**	19	0	0	**19**	0	**115**	0
18:45	32	0	1	**33**	122	2	0	**124**	28	1	0	**29**	0	**186**	0	25	0	0	**25**	69	1	0	**70**	18	0	0	**18**	0	**113**	0
TOTAL	**630**	**7**	**6**	**643**	**1981**	**31**	**5**	**2017**	**447**	**26**	**1**	**474**	**0**	**3134**	**0**	**571**	**10**	**3**	**584**	**1159**	**9**	**6**	**1174**	**476**	**9**	**0**	**485**	**0**	**2243**	**2**
PM Peak	171	2	0	173	543	11	0	554	107	5	0	112	0	839	0	153	1	0	154	375	2	1	378	122	1	0	123	0	655	0

TTM Data

TTM Reference: 19SYD0109
Location: Bernera Rd & Yato Rd
Suburb: Prestons
Date: Thursday, 27 June 2019
Survey Duration: 0700-1000 & 1500-1900
Weather: Fine
Notes:

AM Peak: 0745-0845
PM Peak: 1515-1615

Time	Northern Approach: Bernera Rd															Southern Approach: Bernera Rd													
15 min	Left				Straight				Right				U Turn	TOTAL	Peds	Left				Straight				Right				U Turn	TOTAL	Peds
time start	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total				Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total			
7:00	10	8	0	**18**	43	17	0	**60**	10	11	0	**21**	0	**99**	0	9	1	0	**10**	132	8	0	**140**	7	0	0	**7**	0	**157**	0
7:15	12	12	0	**24**	55	10	1	**66**	20	9	0	**29**	0	**119**	0	8	1	0	**9**	169	6	0	**175**	11	1	0	**12**	0	**196**	0
7:30	25	6	0	**31**	81	4	1	**86**	11	7	0	**18**	0	**135**	0	9	0	0	**9**	225	11	0	**236**	15	1	0	**16**	0	**261**	0
7:45	31	11	0	**42**	68	16	0	**84**	16	7	0	**23**	0	**149**	0	10	1	0	**11**	273	8	1	**282**	16	0	0	**16**	0	**309**	0
8:00	18	13	0	**31**	75	7	1	**83**	13	4	0	**17**	0	**131**	0	10	1	0	**11**	312	10	0	**322**	6	3	0	**9**	0	**342**	0
8:15	19	7	0	**26**	86	13	5	**104**	7	3	0	**10**	0	**140**	0	11	0	0	**11**	253	9	3	**265**	12	0	0	**12**	0	**288**	0
8:30	17	7	0	**24**	86	13	0	**99**	16	8	0	**24**	0	**147**	0	9	2	0	**11**	305	9	0	**314**	8	2	0	**10**	0	**335**	0
8:45	13	13	0	**26**	47	10	0	**57**	16	7	0	**23**	0	**106**	0	12	4	0	**16**	249	21	1	**271**	9	2	0	**11**	0	**298**	0
9:00	13	8	0	**21**	57	8	0	**65**	11	9	1	**21**	0	**107**	1	9	0	0	**9**	176	6	0	**182**	11	0	0	**11**	0	**202**	0
9:15	16	11	0	**27**	62	10	0	**72**	13	7	0	**20**	0	**119**	0	9	1	0	**10**	127	5	0	**132**	5	4	0	**9**	0	**151**	0
9:30	11	13	0	**24**	66	7	0	**73**	6	4	0	**10**	0	**107**	0	5	1	0	**6**	109	8	0	**117**	15	5	0	**20**	0	**143**	0
9:45	11	8	0	**19**	63	11	0	**74**	11	10	0	**21**	0	**114**	0	6	1	0	**7**	104	12	0	**116**	9	1	0	**10**	0	**133**	0
TOTAL	**196**	**117**	**0**	**313**	**789**	**126**	**8**	**923**	**150**	**86**	**1**	**237**	**0**	**1473**	**1**	**107**	**13**	**0**	**120**	**2434**	**113**	**5**	**2552**	**124**	**19**	**0**	**143**	**0**	**2815**	**0**
AM Peak	85	38	0	123	315	49	6	370	52	22	0	74	0	567	0	40	4	0	44	1143	36	4	1183	42	5	0	47	0	1274	0
15:00	9	5	0	**14**	142	13	1	**156**	7	5	0	**12**	0	**182**	0	3	1	0	**4**	109	15	0	**124**	2	1	0	**3**	0	**131**	0
15:15	8	7	0	**15**	169	9	1	**179**	6	4	0	**10**	0	**204**	0	1	2	0	**3**	145	9	4	**158**	5	1	0	**6**	0	**167**	0
15:30	10	9	0	**19**	246	4	0	**250**	7	5	0	**12**	0	**281**	0	6	1	0	**7**	150	10	1	**161**	4	1	0	**5**	0	**173**	0
15:45	11	4	0	**15**	202	6	0	**208**	2	6	0	**8**	0	**231**	0	4	1	0	**5**	162	6	0	**168**	7	0	0	**7**	0	**180**	0
16:00	10	5	0	**15**	213	10	0	**223**	4	3	0	**7**	0	**245**	0	2	1	0	**3**	109	10	0	**119**	3	1	0	**4**	0	**126**	0
16:15	6	4	0	**10**	191	7	0	**198**	3	5	0	**8**	0	**216**	0	1	0	0	**1**	114	6	0	**120**	4	1	0	**5**	0	**126**	0
16:30	7	5	0	**12**	213	7	1	**221**	2	5	0	**7**	0	**240**	0	2	0	0	**2**	143	4	0	**147**	1	0	0	**1**	0	**150**	0
16:45	9	6	0	**15**	193	5	0	**198**	3	8	0	**11**	0	**224**	0	3	1	0	**4**	111	7	0	**118**	1	0	0	**1**	0	**123**	0
17:00	7	0	0	**7**	221	8	0	**229**	5	6	0	**11**	0	**247**	0	1	0	0	**1**	129	3	0	**132**	2	1	0	**3**	0	**136**	0
17:15	14	5	0	**19**	231	5	0	**236**	5	9	0	**14**	0	**269**	0	1	0	0	**1**	120	5	0	**125**	7	0	0	**7**	0	**133**	0
17:30	21	2	0	**23**	231	5	0	**236**	5	8	0	**13**	0	**272**	0	1	1	0	**2**	128	7	0	**135**	11	1	0	**12**	0	**149**	0
17:45	16	3	0	**19**	186	2	0	**188**	3	3	0	**6**	0	**213**	0	3	1	0	**4**	160	6	0	**166**	11	0	0	**11**	0	**181**	0
18:00	3	1	0	**4**	166	3	0	**169**	4	1	0	**5**	0	**178**	0	1	0	0	**1**	131	2	0	**133**	3	1	0	**4**	0	**138**	0
18:15	1	2	0	**3**	157	7	0	**164**	1	4	0	**5**	0	**172**	0	1	0	0	**1**	121	3	0	**124**	1	0	0	**1**	0	**126**	0
18:30	4	5	0	**9**	127	1	0	**128**	2	2	0	**4**	0	**141**	0	0	0	0	**0**	94	2	0	**96**	1	0	0	**1**	0	**97**	0
18:45	5	6	0	**11**	115	4	0	**119**	2	1	0	**3**	0	**133**	0	1	0	0	**1**	108	0	0	**108**	0	1	0	**1**	0	**110**	0
TOTAL	**141**	**69**	**0**	**210**	**3003**	**96**	**3**	**3102**	**61**	**75**	**0**	**136**	**0**	**3448**	**0**	**31**	**9**	**0**	**40**	**2034**	**95**	**5**	**2134**	**63**	**9**	**0**	**72**	**0**	**2246**	**0**
PM Peak	39	25	0	64	830	29	1	860	19	18	0	37	0	961	0	13	5	0	18	566	35	5	606	19	3	0	22	0	646	0

TTM Data

TTM Reference: 19SYD0109
Location: Bernera Rd & Yato Rd
Suburb: Prestons
Date: Thursday, 27 June 2019
Survey Duration: 0700-1000 & 1500-1900
Weather: Fine
Notes:

AM Peak: 0745-0845
PM Peak: 1515-1615

Time	Eastern Approach: Yato Rd															Western Approach: Yarrunga St												
15 min	Left				Straight				Right				U Turn	TOTAL	Peds	Left				Straight				Right				U Turn	TOTAL	Peds
time start	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total				Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total			
7:00	1	3	0	**4**	0	0	0	**0**	3	12	0	**15**	0	**19**	0	3	8	0	**11**	0	0	0	**0**	1	0	0	**1**	0	**12**	0
7:15	4	2	0	**6**	0	1	0	**1**	8	15	0	**23**	0	**30**	0	8	3	0	**11**	3	0	0	**3**	1	1	0	**2**	0	**16**	0
7:30	3	1	0	**4**	0	1	0	**1**	6	8	0	**14**	0	**19**	0	9	9	0	**18**	1	0	0	**1**	0	1	0	**1**	0	**20**	0
7:45	3	3	0	**6**	3	2	0	**5**	6	4	0	**10**	0	**21**	0	18	10	0	**28**	6	2	0	**8**	4	2	0	**6**	0	**42**	0
8:00	2	1	0	**3**	1	0	0	**1**	9	14	0	**23**	0	**27**	0	11	10	0	**21**	4	0	0	**4**	1	1	0	**2**	0	**27**	0
8:15	3	3	0	**6**	1	0	0	**1**	15	21	0	**36**	0	**43**	0	36	9	0	**45**	3	0	0	**3**	2	0	0	**2**	0	**50**	0
8:30	1	1	0	**2**	4	1	0	**5**	7	15	0	**22**	0	**29**	0	35	6	2	**43**	1	0	0	**1**	2	1	0	**3**	0	**47**	0
8:45	1	2	0	**3**	0	0	0	**0**	12	21	0	**33**	0	**36**	0	17	8	1	**26**	3	2	0	**5**	1	1	0	**2**	0	**33**	0
9:00	4	6	0	**10**	0	0	0	**0**	11	13	0	**24**	0	**34**	0	6	12	0	**18**	0	0	0	**0**	3	1	0	**4**	0	**22**	0
9:15	3	1	0	**4**	0	0	0	**0**	6	13	0	**19**	0	**23**	1	12	5	1	**18**	3	0	0	**3**	2	0	2	**4**	0	**25**	0
9:30	3	4	0	**7**	0	0	0	**0**	8	20	0	**28**	0	**35**	1	4	8	0	**12**	2	0	0	**2**	3	3	0	**6**	0	**20**	0
9:45	1	1	0	**2**	1	0	0	**1**	9	15	0	**24**	0	**27**	0	14	4	0	**18**	1	0	0	**1**	4	1	0	**5**	0	**24**	0
TOTAL	**29**	**28**	**0**	**57**	**10**	**5**	**0**	**15**	**100**	**171**	**0**	**271**	**0**	**343**	**2**	**173**	**92**	**4**	**269**	**27**	**4**	**0**	**31**	**24**	**12**	**2**	**38**	**0**	**338**	**0**
AM Peak	9	8	0	17	9	3	0	12	37	54	0	91	0	120	0	100	35	2	137	14	2	0	16	9	4	0	13	0	166	0
15:00	16	1	0	**17**	0	0	0	**0**	22	6	0	**28**	0	**45**	0	28	6	0	**34**	1	0	0	**1**	15	0	0	**15**	0	**50**	1
15:15	5	3	0	**8**	1	0	0	**1**	26	9	0	**35**	0	**44**	0	22	8	0	**30**	1	1	0	**2**	6	0	0	**6**	0	**38**	0
15:30	10	1	0	**11**	0	0	0	**0**	32	7	0	**39**	0	**50**	0	15	8	0	**23**	3	0	0	**3**	11	0	0	**11**	0	**37**	1
15:45	14	2	0	**16**	1	0	0	**1**	23	7	0	**30**	0	**47**	0	16	9	0	**25**	2	0	0	**2**	3	2	0	**5**	0	**32**	0
16:00	36	1	0	**37**	0	0	0	**0**	37	8	0	**45**	0	**82**	0	24	9	0	**33**	1	0	0	**1**	8	1	0	**9**	0	**43**	0
16:15	17	0	0	**17**	1	0	0	**1**	33	13	0	**46**	0	**64**	0	22	0	0	**22**	0	0	0	**0**	10	0	0	**10**	0	**32**	0
16:30	10	0	0	**10**	0	0	0	**0**	20	6	0	**26**	0	**36**	0	16	2	0	**18**	0	0	0	**0**	4	1	0	**5**	0	**23**	0
16:45	8	1	0	**9**	1	0	0	**1**	11	5	0	**16**	0	**26**	0	14	3	0	**17**	0	0	0	**0**	4	0	0	**4**	0	**21**	0
17:00	15	0	0	**15**	0	0	0	**0**	22	6	0	**28**	0	**43**	0	26	3	0	**29**	2	0	0	**2**	22	1	0	**23**	0	**54**	0
17:15	15	1	0	**16**	0	0	0	**0**	16	2	0	**18**	0	**34**	0	20	3	0	**23**	0	1	0	**1**	13	1	0	**14**	0	**38**	0
17:30	7	1	0	**8**	0	0	0	**0**	15	3	0	**18**	0	**26**	0	21	7	0	**28**	2	0	0	**2**	13	0	0	**13**	0	**43**	0
17:45	10	0	0	**10**	0	0	0	**0**	10	2	0	**12**	0	**22**	0	11	3	0	**14**	0	0	0	**0**	8	0	0	**8**	0	**22**	0
18:00	10	0	0	**10**	0	0	0	**0**	10	3	0	**13**	0	**23**	0	23	7	0	**30**	0	0	0	**0**	11	1	0	**12**	0	**42**	0
18:15	8	1	0	**9**	0	0	0	**0**	8	8	0	**16**	0	**25**	0	4	3	0	**7**	0	0	0	**0**	4	1	0	**5**	0	**12**	0
18:30	6	1	0	**7**	0	0	0	**0**	4	1	0	**5**	0	**12**	0	7	2	0	**9**	0	0	0	**0**	0	1	0	**1**	0	**10**	0
18:45	5	1	0	**6**	0	0	0	**0**	4	5	0	**9**	0	**15**	0	7	3	0	**10**	0	0	0	**0**	0	0	0	**0**	0	**10**	0
TOTAL	**192**	**14**	**0**	**206**	**4**	**0**	**0**	**4**	**293**	**91**	**0**	**384**	**0**	**594**	**0**	**276**	**76**	**0**	**352**	**12**	**2**	**0**	**14**	**132**	**9**	**0**	**141**	**0**	**507**	**2**
PM Peak	65	7	0	72	2	0	0	2	118	31	0	149	0	223	0	77	34	0	111	7	1	0	8	28	3	0	31	0	150	1

TTM Data

TTM Reference: 19SYD0109
Location: Bernera Rd & M7 Ramps
Suburb: Prestons
Date: Thursday, 27 June 2019
Survey Duration: 0700-1000 & 1500-1900
Weather: Fine
Notes:

AM Peak: 0745-0845
PM Peak: 1515-1615

Time	Northern Approach: Bernera Rd															Southern Approach: Bernera Rd												
15 min	Straight to Bernera S				Right to Yarrawa				Right to M7				U Turn	TOTAL	Peds	Left to Yarrawa				Left to M7				Straight to Bernera N				U Turn	TOTAL	Peds
time start	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total				Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total			
7:00	65	21	1	**87**	7	3	0	**10**	6	11	0	**17**	4	**118**	0	2	2	0	**4**	29	10	0	**39**	121	13	0	**134**	7	**184**	0
7:15	77	15	1	**93**	6	2	0	**8**	14	6	0	**20**	2	**123**	0	3	1	0	**4**	26	7	0	**33**	142	8	0	**150**	15	**202**	0
7:30	106	10	1	**117**	4	4	0	**8**	27	3	0	**30**	0	**155**	0	6	1	0	**7**	41	9	0	**50**	188	13	0	**201**	18	**276**	0
7:45	113	17	0	**130**	16	3	0	**19**	6	10	0	**16**	8	**173**	0	6	1	0	**7**	48	4	0	**52**	208	13	1	**222**	13	**294**	0
8:00	101	16	1	**118**	0	0	0	**0**	15	6	0	**21**	0	**139**	0	13	3	0	**16**	42	10	0	**52**	278	19	0	**297**	5	**370**	0
8:15	125	20	5	**150**	10	1	0	**11**	22	6	0	**28**	0	**189**	0	3	3	0	**6**	35	8	0	**43**	279	28	3	**310**	8	**367**	0
8:30	105	17	0	**122**	5	3	0	**8**	19	4	0	**23**	1	**154**	0	4	0	0	**4**	44	11	0	**55**	283	18	2	**303**	7	**369**	0
8:45	72	21	0	**93**	4	3	0	**7**	19	8	0	**27**	0	**127**	0	9	3	0	**12**	34	15	0	**49**	256	28	2	**286**	6	**353**	0
9:00	77	17	0	**94**	0	4	0	**4**	15	7	0	**22**	11	**131**	0	9	3	0	**12**	25	11	0	**36**	130	21	0	**151**	0	**199**	0
9:15	78	16	0	**94**	6	0	0	**6**	24	11	0	**35**	3	**138**	0	5	0	0	**5**	20	12	0	**32**	134	10	1	**145**	1	**183**	0
9:30	72	16	0	**88**	0	7	0	**7**	20	8	0	**28**	2	**125**	0	1	1	0	**2**	17	13	0	**30**	100	21	0	**121**	0	**153**	0
9:45	79	20	0	**99**	2	4	0	**6**	22	7	0	**29**	2	**136**	0	6	3	0	**9**	14	9	0	**23**	111	15	0	**126**	2	**160**	0
TOTAL	**1070**	**206**	**9**	**1285**	**60**	**34**	**0**	**94**	**209**	**87**	**0**	**296**	**33**	**1708**	**0**	**67**	**21**	**0**	**88**	**375**	**119**	**0**	**494**	**2230**	**207**	**9**	**2446**	**82**	**3110**	**0**
AM Peak	444	70	6	520	31	7	0	38	62	26	0	88	9	655	0	26	7	0	33	169	33	0	202	1048	78	6	1132	33	1400	0
15:00	148	20	1	**169**	5	3	0	**8**	39	11	0	**50**	4	**231**	0	2	5	0	**7**	24	5	0	**29**	127	12	0	**139**	6	**181**	0
15:15	157	14	1	**172**	5	4	0	**9**	34	5	0	**39**	2	**222**	0	4	2	0	**6**	33	4	0	**37**	166	18	4	**188**	10	**241**	0
15:30	235	9	0	**244**	1	8	0	**9**	46	8	0	**54**	0	**307**	0	2	0	0	**2**	42	7	0	**49**	156	12	1	**169**	6	**226**	0
15:45	195	15	0	**210**	5	7	0	**12**	44	7	0	**51**	0	**273**	0	1	3	0	**4**	28	10	0	**38**	176	10	0	**186**	1	**229**	0
16:00	209	11	0	**220**	0	1	0	**1**	39	7	0	**46**	0	**267**	0	2	2	0	**4**	25	7	0	**32**	146	14	0	**160**	7	**203**	0
16:15	178	8	0	**186**	0	1	0	**1**	32	10	0	**42**	2	**231**	0	0	3	0	**3**	28	3	0	**31**	148	15	0	**163**	2	**199**	0
16:30	205	8	1	**214**	0	2	0	**2**	43	7	0	**50**	2	**268**	0	2	1	0	**3**	39	4	0	**43**	147	7	0	**154**	3	**203**	0
16:45	196	11	0	**207**	0	4	0	**4**	33	7	0	**40**	2	**253**	0	2	4	0	**6**	23	3	0	**26**	104	11	0	**115**	4	**151**	0
17:00	228	10	0	**238**	0	1	0	**1**	52	5	0	**57**	1	**297**	0	2	0	0	**2**	27	4	2	**33**	151	9	0	**160**	4	**199**	0
17:15	227	11	0	**238**	0	6	0	**6**	29	2	1	**32**	2	**278**	0	1	0	0	**1**	18	1	0	**19**	141	10	0	**151**	1	**172**	0
17:30	234	11	0	**245**	5	4	0	**9**	43	3	0	**46**	3	**303**	0	2	2	0	**4**	29	9	0	**38**	133	7	0	**140**	3	**185**	0
17:45	172	6	0	**178**	0	4	0	**4**	32	1	0	**33**	0	**215**	0	0	1	0	**1**	16	1	0	**17**	166	7	0	**173**	3	**194**	0
18:00	152	4	0	**156**	0	4	0	**4**	17	1	0	**18**	7	**185**	0	0	0	0	**0**	26	5	0	**31**	134	7	0	**141**	0	**172**	0
18:15	150	8	0	**158**	0	2	0	**2**	13	6	0	**19**	6	**185**	0	1	1	0	**2**	19	7	0	**26**	122	3	0	**125**	4	**157**	0
18:30	119	4	0	**123**	3	2	0	**5**	18	4	0	**22**	0	**150**	0	0	3	0	**3**	18	2	0	**20**	91	2	0	**93**	3	**119**	0
18:45	117	7	0	**124**	0	4	0	**4**	9	1	0	**10**	0	**138**	0	2	0	0	**2**	13	2	0	**15**	99	6	0	**105**	5	**127**	0
TOTAL	**2922**	**157**	**3**	**3082**	**24**	**57**	**0**	**81**	**523**	**85**	**1**	**609**	**31**	**3803**	**0**	**23**	**27**	**0**	**50**	**408**	**74**	**2**	**484**	**2207**	**150**	**5**	**2362**	**62**	**2958**	**0**
PM Peak	796	49	1	846	11	20	0	31	163	27	0	190	2	1069	0	9	7	0	16	128	28	0	156	644	54	5	703	24	899	0

TTM Data

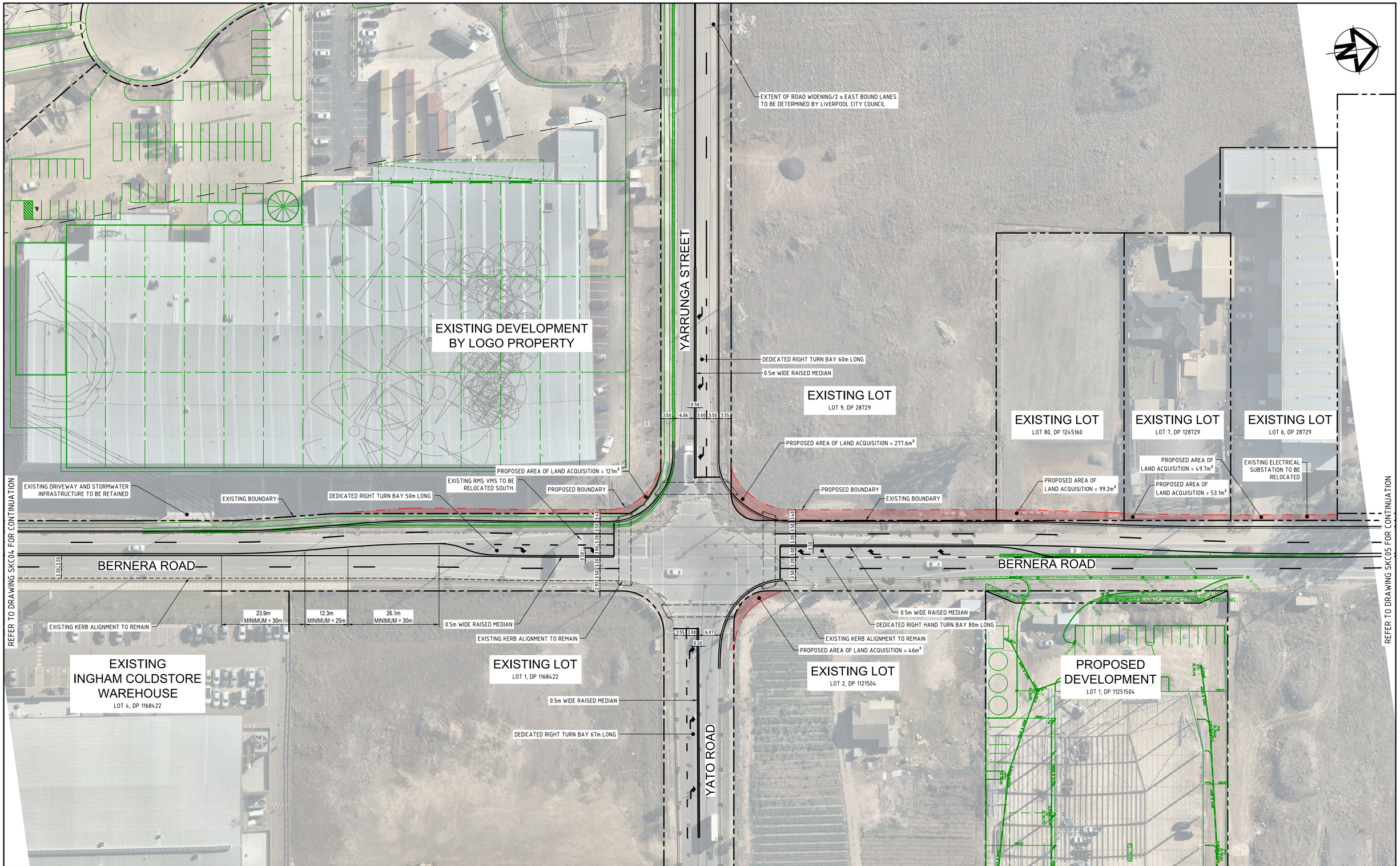
TTM Reference: 19SYD0109
Location: Bernera Rd & M7 Ramps
Suburb: Prestons
Date: Thursday, 27 June 2019
Survey Duration: 0700-1000 & 1500-1900
Weather: Fine
Notes:

AM Peak: 0745-0845
PM Peak: 1515-1615

Time	Eastern Approach: M7 Off-Ramp																			Western Approach: Yarrawa St / M7 On-Ramp															
15 min	Left to Bernera S				Straight to Yarrawa				Right to M7				Right to Bernera N				U Turn	TOTAL	Peds	Left to M7				Left to Bernera N				Right to Bernera S				U Turn	TOTAL	Peds
time start	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total				Light	Heavy	Bus	Total	Light	Heavy	Bus	Total	Light	Heavy	Bus	Total			
7:00	10	6	0	**16**	1	2	0	**3**	0	0	0	**0**	39	8	1	**48**	0	**67**	0	0	3	0	**3**	1	10	0	**11**	2	1	0	**3**	0	**17**	0
7:15	15	7	0	**22**	0	1	0	**1**	0	0	0	**0**	43	9	0	**52**	0	**75**	0	0	2	0	**2**	0	11	0	**11**	2	1	0	**3**	0	**16**	0
7:30	12	5	0	**17**	1	0	0	**1**	4	1	0	**5**	56	3	0	**59**	0	**82**	0	0	3	0	**3**	7	8	0	**15**	0	2	0	**2**	0	**20**	0
7:45	19	4	0	**23**	3	0	0	**3**	0	2	0	**2**	78	7	0	**85**	0	**113**	0	0	1	0	**1**	8	12	0	**20**	4	1	0	**5**	0	**26**	0
8:00	17	5	0	**22**	3	1	0	**4**	0	2	0	**2**	68	11	0	**79**	0	**107**	0	0	1	0	**1**	0	2	0	**2**	4	3	0	**7**	0	**10**	0
8:15	8	4	0	**12**	4	0	0	**4**	5	2	0	**7**	43	2	0	**45**	0	**68**	0	1	1	0	**2**	2	5	0	**7**	0	3	0	**3**	0	**12**	0
8:30	16	6	0	**22**	0	2	0	**2**	2	0	0	**2**	24	8	0	**32**	0	**58**	0	2	0	0	**2**	3	2	0	**5**	2	2	0	**4**	0	**11**	0
8:45	14	6	0	**20**	3	1	0	**4**	3	0	0	**3**	59	8	0	**67**	0	**94**	0	1	2	0	**3**	2	2	0	**4**	1	3	0	**4**	0	**11**	0
9:00	26	3	1	**30**	2	1	0	**3**	0	0	0	**0**	60	15	0	**75**	0	**108**	0	0	0	0	**0**	2	2	0	**4**	4	3	0	**7**	0	**11**	0
9:15	10	5	0	**15**	0	4	0	**4**	6	0	1	**7**	33	10	1	**44**	0	**70**	0	2	1	0	**3**	0	5	0	**5**	4	5	0	**9**	0	**17**	0
9:30	13	4	0	**17**	0	1	0	**1**	2	0	0	**2**	33	10	0	**43**	0	**63**	0	1	1	0	**2**	1	3	0	**4**	3	4	0	**7**	0	**13**	0
9:45	4	7	0	**11**	4	1	0	**5**	0	0	0	**0**	22	10	0	**32**	0	**48**	0	1	4	0	**5**	2	4	0	**6**	2	4	0	**6**	0	**17**	0
TOTAL	**164**	**62**	**1**	**227**	**21**	**14**	**0**	**35**	**22**	**7**	**1**	**30**	**558**	**101**	**2**	**661**	**0**	**953**	**0**	**8**	**19**	**0**	**27**	**28**	**66**	**0**	**94**	**28**	**32**	**0**	**60**	**0**	**181**	**0**
AM Peak	60	19	0	79	10	3	0	13	7	6	0	13	213	28	0	241	0	346	0	3	3	0	6	13	21	0	34	10	9	0	19	0	59	0
15:00	9	7	1	**17**	1	0	0	**1**	0	1	0	**1**	41	9	0	**50**	0	**69**	0	2	0	0	**2**	5	2	0	**7**	3	0	0	**3**	0	**12**	0
15:15	9	5	0	**14**	1	2	0	**3**	0	2	0	**2**	33	6	0	**39**	0	**58**	0	5	0	0	**5**	19	0	0	**19**	3	0	0	**3**	0	**27**	0
15:30	16	9	0	**25**	2	0	0	**2**	0	2	0	**2**	39	3	0	**42**	0	**71**	0	4	1	0	**5**	20	2	0	**22**	6	0	0	**6**	0	**33**	0
15:45	19	7	0	**26**	2	1	0	**3**	3	3	0	**6**	37	7	0	**44**	0	**79**	0	5	0	0	**5**	12	1	0	**13**	6	0	0	**6**	0	**24**	0
16:00	10	3	0	**13**	0	0	0	**0**	2	0	0	**2**	34	5	0	**39**	0	**54**	0	1	1	0	**2**	7	4	0	**11**	12	4	0	**16**	0	**29**	0
16:15	4	5	0	**9**	0	1	0	**1**	0	0	0	**0**	33	8	0	**41**	0	**51**	0	4	1	0	**5**	5	2	0	**7**	5	1	0	**6**	0	**18**	0
16:30	8	6	0	**14**	0	1	0	**1**	0	0	0	**0**	30	0	0	**30**	0	**45**	0	2	0	0	**2**	14	3	0	**17**	7	0	0	**7**	0	**26**	0
16:45	7	5	0	**12**	0	0	0	**0**	0	1	0	**1**	30	3	0	**33**	0	**46**	0	1	2	0	**3**	6	3	0	**9**	2	3	0	**5**	0	**17**	0
17:00	8	7	0	**15**	0	0	0	**0**	0	4	0	**4**	37	0	0	**37**	0	**56**	0	1	1	0	**2**	7	1	0	**8**	11	2	0	**13**	0	**23**	0
17:15	13	7	0	**20**	0	1	0	**1**	0	3	0	**3**	37	3	0	**40**	0	**64**	0	1	1	0	**2**	7	2	0	**9**	14	2	0	**16**	0	**27**	0
17:30	14	2	0	**16**	0	0	0	**0**	0	0	0	**0**	34	0	0	**34**	0	**50**	0	1	0	0	**1**	13	1	0	**14**	11	0	0	**11**	0	**26**	0
17:45	14	4	0	**18**	0	0	0	**0**	4	0	0	**4**	43	2	0	**45**	0	**67**	0	2	0	0	**2**	3	0	0	**3**	1	0	0	**1**	0	**6**	0
18:00	5	1	0	**6**	0	1	0	**1**	0	3	0	**3**	31	11	0	**42**	0	**52**	0	3	2	0	**5**	5	2	0	**7**	4	0	0	**4**	0	**16**	0
18:15	6	4	0	**10**	0	1	0	**1**	0	0	0	**0**	38	3	0	**41**	0	**52**	0	1	1	0	**2**	6	2	0	**8**	5	1	0	**6**	0	**16**	0
18:30	10	2	0	**12**	0	0	0	**0**	0	0	0	**0**	26	4	0	**30**	0	**42**	0	3	0	0	**3**	2	1	0	**3**	1	0	0	**1**	0	**7**	0
18:45	1	3	0	**4**	1	0	0	**1**	0	2	0	**2**	31	5	0	**36**	0	**43**	0	1	3	0	**4**	0	2	0	**2**	3	1	0	**4**	0	**10**	0
TOTAL	**153**	**77**	**1**	**231**	**7**	**8**	**0**	**15**	**9**	**21**	**0**	**30**	**554**	**69**	**0**	**623**	**0**	**899**	**0**	**37**	**13**	**0**	**50**	**131**	**28**	**0**	**159**	**94**	**14**	**0**	**108**	**0**	**317**	**0**
PM Peak	54	24	0	78	5	3	0	8	5	7	0	12	143	21	0	164	0	262	0	15	2	0	17	58	7	0	65	27	4	0	31	0	113	0

Appendix B

Concept Intersection Plan



Issue	Description	Date
P5	ISSUED FOR RMS COMMENT AND APPROVAL	25-02-19
P4	ISSUED FOR RMS COMMENT AND APPROVAL	30-11-18
P3	ISSUED FOR INFORMATION	15-10-18
P2	ISSUED FOR INFORMATION	07-09-18
P1	ISSUED FOR INFORMATION	14-08-18

100mm on Original

Bar Scales

0 10 20 30 40 50m

1 : 500 @ A1 1 : 1000 @ A3

Client

LIVERPOOL THE GREAT SOUTH WEST

Scales	1 : 500
Grid	MGA
Height Datum	AHD
Drawn	ASD
Designed	ASD
Checked	MM
Approved	

Project

BERNERA RD / YARRUNGA ST, PRESTONS, NSW, 2170
PROPOSED INTERSECTION WORKS

Title

CONCEPT INTERSECTION LAYOUT PLAN

Civil Engineers and Project Managers

at&l

Level 7, 153 Walker Street
North Sydney NSW 2060
ABN 96 130 882 405
Tel: 02 9439 1777
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www.atl.net.au
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Status		Issue
FOR INFORMATION NOT FOR CONSTRUCTION		A1
Drawing No.	Project No.	Issue
SKC01	18-568	P5

Date Plotted: 25 Feb 2019 - 09:15AM File Name: F:\18-568 - Bernera Rd Prestons LCC\Drgs\Civil\Sketches\SKC01 Concept Intersection Layout Plan.dwg

Appendix C

SIDRA Outputs

MOVEMENT SUMMARY

Site: 1 [[2019] Bernera x Yarrawa - Existing - AM]

Network: N1 [2019 AM]

Bernera Road x Yarrawa Street, Prestons
Site Category: 5 leg Priority-controlled
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (420m)														
1b	L3	35	21.2	35	21.2	0.687	5.3	LOS A	5.3	40.3	0.53	0.70	0.64	51.9
1a	L1	213	16.3	213	16.3	0.687	7.5	LOS A	5.3	40.3	0.53	0.70	0.64	54.0
2	T1	1192	7.4	1192	7.4	0.687	7.1	LOS A	5.4	40.2	0.57	0.72	0.68	51.7
Approach		1439	9.1	1439	9.1	0.687	7.1	LOS A	5.4	40.3	0.56	0.71	0.68	52.2
NorthEast: M7 Off-ramp														
24a	L1	83	24.1	83	24.1	0.148	6.7	LOS A	0.5	4.5	0.55	0.70	0.55	49.8
25	T1	14	23.1	14	23.1	0.148	7.0	LOS A	0.5	4.5	0.55	0.70	0.55	55.4
26	R2	14	46.2	14	46.2	0.264	12.4	LOS A	1.1	8.5	0.54	0.81	0.54	50.3
26b	R3	254	11.6	254	11.6	0.264	12.5	LOS A	1.1	8.5	0.54	0.81	0.54	45.1
Approach		364	16.2	364	16.2	0.264	11.0	LOS A	1.1	8.5	0.54	0.78	0.54	46.5
North: Bernera Rd (160m)														
8	T1	547	14.6	547	14.6	0.240	3.7	LOS A	1.5	11.9	0.14	0.38	0.14	42.7
9a	R1	40	18.4	40	18.4	0.240	8.3	LOS A	1.5	11.9	0.14	0.48	0.14	52.7
9b	R3	93	29.5	93	29.5	0.240	10.8	LOS A	1.5	11.9	0.14	0.48	0.14	54.2
Approach		680	16.9	680	16.9	0.240	4.9	LOS A	1.5	11.9	0.14	0.40	0.14	47.1
SouthWest: Yarrawa St														
30	L2	6	50.0	6	50.0	0.194	15.2	LOS B	1.0	10.7	0.86	0.93	0.86	46.0
30a	L1	36	61.8	36	61.8	0.194	15.6	LOS B	1.0	10.7	0.86	0.93	0.86	40.1
32b	R3	20	47.4	20	47.4	0.194	22.1	LOS B	1.0	10.7	0.86	0.93	0.86	39.1
Approach		62	55.9	62	55.9	0.194	17.7	LOS B	1.0	10.7	0.86	0.93	0.86	40.7
All Vehicles		2545	13.3	2545	13.3	0.687	7.3	LOS A	5.4	40.3	0.45	0.64	0.52	49.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [[2019] Bernera x Yarrawa - Existing - PM]

Network: N1 [2019 PM]

Bernera Road x Yarrawa Street, Prestons
Site Category: 5 leg Priority-controlled
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (420m)														
1b	L3	17	43.8	17	43.8	0.448	4.3	LOS A	2.1	16.0	0.39	0.57	0.41	52.4
1a	L1	164	17.9	164	17.9	0.448	5.6	LOS A	2.1	16.0	0.39	0.57	0.41	55.3
2	T1	740	8.4	740	8.4	0.448	5.5	LOS A	2.1	15.6	0.42	0.54	0.43	53.0
Approach		921	10.7	921	10.7	0.448	5.5	LOS A	2.1	16.0	0.42	0.55	0.42	53.5
NorthEast: M7 Off-ramp														
24a	L1	82	30.8	82	30.8	0.162	8.0	LOS A	0.6	5.3	0.63	0.76	0.63	48.2
25	T1	8	37.5	8	37.5	0.162	8.7	LOS A	0.6	5.3	0.63	0.76	0.63	54.1
26	R2	13	58.3	13	58.3	0.213	13.8	LOS A	0.9	7.1	0.62	0.87	0.62	49.6
26b	R3	173	12.8	173	12.8	0.213	13.4	LOS A	0.9	7.1	0.62	0.87	0.62	44.7
Approach		276	21.0	276	21.0	0.213	11.6	LOS A	0.9	7.1	0.62	0.83	0.62	46.1
North: Bernera Rd (160m)														
8	T1	891	5.9	891	5.9	0.384	3.7	LOS A	2.8	20.5	0.19	0.39	0.19	41.9
9a	R1	33	64.5	33	64.5	0.384	8.9	LOS A	2.7	21.0	0.19	0.49	0.19	50.0
9b	R3	200	14.2	200	14.2	0.384	10.7	LOS A	2.7	21.0	0.19	0.49	0.19	54.2
Approach		1123	9.1	1123	9.1	0.384	5.1	LOS A	2.8	21.0	0.19	0.41	0.19	46.7
SouthWest: Yarrawa St														
30	L2	18	11.8	18	11.8	0.196	9.4	LOS A	1.1	8.4	0.77	0.85	0.77	50.8
30a	L1	68	10.8	68	10.8	0.196	9.0	LOS A	1.1	8.4	0.77	0.85	0.77	48.0
32b	R3	33	12.9	33	12.9	0.196	16.4	LOS B	1.1	8.4	0.77	0.85	0.77	44.9
Approach		119	11.5	119	11.5	0.196	11.1	LOS A	1.1	8.4	0.77	0.85	0.77	47.9
All Vehicles		2439	11.2	2439	11.2	0.448	6.3	LOS A	2.8	21.0	0.35	0.53	0.35	49.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [[2019] Bernera x Yarrunga - Existing - AM]

Network: N1 [2019 AM]

Bernera Road x Yarrunga Street x Yato Street, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (390m)														
1	L2	46	9.1	46	9.1	0.250	10.9	LOS A	5.3	38.1	0.45	0.44	0.45	52.1
2	T1	1245	3.4	1245	3.4	0.853	12.9	LOS A	32.2	232.7	0.68	0.69	0.75	38.8
3	R2	49	10.6	49	10.6	0.853	20.7	LOS B	32.2	232.7	0.74	0.77	0.83	45.3
Approach		1341	3.8	1341	3.8	0.853	13.1	LOS A	32.2	232.7	0.67	0.69	0.74	39.9
East: Yato Rd														
4	L2	18	47.1	18	47.1	0.126	38.1	LOS C	1.1	9.8	0.89	0.69	0.89	28.3
5	T1	13	25.0	13	25.0	0.126	32.0	LOS C	1.1	9.8	0.89	0.69	0.89	38.2
6	R2	96	59.3	96	59.3	0.884	57.8	LOS E	4.5	48.0	1.00	1.04	1.67	21.0
Approach		126	54.2	126	54.2	0.884	52.4	LOS D	4.5	48.0	0.97	0.95	1.48	23.7
North: Bernera Rd (420m)														
7	L2	129	30.9	129	30.9	0.442	11.9	LOS A	9.0	73.5	0.48	0.51	0.48	50.6
8	T1	389	14.9	389	14.9	0.442	6.0	LOS A	9.0	73.5	0.48	0.51	0.48	47.0
9	R2	78	29.7	78	29.7	0.604	34.3	LOS C	3.0	26.0	0.88	0.86	1.01	35.9
Approach		597	20.3	597	20.3	0.604	11.0	LOS A	9.0	73.5	0.54	0.55	0.55	45.3
West: Yarrunga St														
10	L2	144	27.0	144	27.0	0.702	43.4	LOS D	7.0	60.1	1.00	0.87	1.12	25.3
11	T1	17	12.5	17	12.5	0.702	37.5	LOS C	7.0	60.1	1.00	0.87	1.12	35.4
12	R2	14	30.8	14	30.8	0.702	43.4	LOS D	7.0	60.1	1.00	0.87	1.12	25.3
Approach		175	25.9	175	25.9	0.702	42.8	LOS D	7.0	60.1	1.00	0.87	1.12	26.6
All Vehicles		2239	12.8	2239	12.8	0.884	17.1	LOS B	32.2	232.7	0.68	0.68	0.76	38.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		42	34.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2 [[2019] Bernera x Yarrunga - Existing - PM]

Network: N1 [2019 PM]

Bernera Road x Yarrunga Street x Yato Street, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (390m)														
1	L2	19	27.8	19	27.8	0.157	13.7	LOS A	3.3	24.8	0.52	0.47	0.52	49.5
2	T1	638	6.6	638	6.6	0.538	18.5	LOS B	17.9	132.5	0.86	0.77	0.86	33.8
3	R2	23	13.6	23	13.6	0.538	27.6	LOS B	17.9	132.5	0.97	0.86	0.97	41.3
Approach		680	7.4	680	7.4	0.538	18.7	LOS B	17.9	132.5	0.86	0.76	0.86	34.9
East: Yato Rd														
4	L2	76	9.7	76	9.7	0.179	31.4	LOS C	2.4	18.4	0.82	0.74	0.82	29.9
5	T1	2	0.0	2	0.0	0.179	25.8	LOS B	2.4	18.4	0.82	0.74	0.82	39.7
6	R2	157	20.8	157	20.8	0.635	40.5	LOS C	6.1	50.0	0.97	0.84	1.03	26.0
Approach		235	17.0	235	17.0	0.635	37.5	LOS C	6.1	50.0	0.92	0.81	0.96	27.3
North: Bernera Rd (420m)														
7	L2	67	39.1	67	39.1	0.658	15.9	LOS B	12.6	94.3	0.62	0.58	0.62	47.9
8	T1	905	3.5	905	3.5	0.658	12.2	LOS A	12.6	94.3	0.67	0.62	0.67	40.5
9	R2	39	48.6	39	48.6	0.658	21.0	LOS B	12.1	90.2	0.74	0.66	0.74	44.3
Approach		1012	7.6	1012	7.6	0.658	12.8	LOS A	12.6	94.3	0.67	0.62	0.67	41.6
West: Yarrunga St														
10	L2	117	30.6	117	30.6	0.440	34.0	LOS C	5.4	45.8	0.89	0.79	0.89	28.9
11	T1	8	12.5	8	12.5	0.440	28.1	LOS B	5.4	45.8	0.89	0.79	0.89	38.8
12	R2	33	9.7	33	9.7	0.440	33.8	LOS C	5.4	45.8	0.89	0.79	0.89	28.9
Approach		158	25.3	158	25.3	0.440	33.7	LOS C	5.4	45.8	0.89	0.79	0.89	29.6
All Vehicles		2084	9.9	2084	9.9	0.658	19.0	LOS B	17.9	132.5	0.78	0.70	0.78	36.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		42	34.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3 [[2019] Bernera x Kurrajong - Existing - AM]

Network: N1 [2019 AM]

Bernera Road x Kurrajong Road, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd														
1	L2	147	1.4	147	1.4	0.836	41.2	LOS C	18.2	131.3	1.00	1.00	1.21	27.2
2	T1	700	4.4	700	4.4	0.836	36.2	LOS C	18.2	131.3	1.00	1.00	1.21	27.4
3	R2	118	0.9	118	0.9	0.852	53.3	LOS D	5.3	37.5	1.00	0.96	1.49	31.6
Approach		965	3.5	965	3.5	0.852	39.1	LOS C	18.2	131.3	1.00	1.00	1.25	28.2
East: Kurrajong Rd														
4	L2	77	4.1	77	4.1	0.726	41.9	LOS C	8.0	57.1	1.00	0.94	1.48	36.6
5	T1	338	1.9	338	1.9	0.726	37.8	LOS C	8.0	57.1	1.00	0.91	1.29	26.8
6	R2	203	3.6	203	3.6	0.816	48.0	LOS D	8.8	63.2	1.00	0.94	1.30	23.6
Approach		618	2.7	618	2.7	0.816	41.7	LOS C	8.8	63.2	1.00	0.92	1.31	27.3
North: Bernera Rd (390m)														
7	L2	79	9.3	79	9.3	0.318	29.4	LOS C	4.9	38.4	0.82	0.72	0.82	39.2
8	T1	225	18.7	225	18.7	0.318	25.2	LOS B	4.9	38.4	0.85	0.71	0.85	40.5
9	R2	108	15.5	108	15.5	0.865	54.8	LOS D	5.0	39.5	1.00	0.99	1.56	18.6
Approach		413	16.1	413	16.1	0.865	33.8	LOS C	5.0	39.5	0.88	0.79	1.03	34.6
West: Kurrajong Rd														
10	L2	487	3.5	487	3.5	0.717	29.5	LOS C	16.8	120.7	0.92	0.86	0.94	37.8
11	T1	373	1.1	373	1.1	0.856	40.1	LOS C	16.3	115.3	1.00	1.02	1.28	40.0
12	R2	334	1.6	334	1.6	0.808	42.5	LOS D	13.8	98.2	1.00	0.93	1.19	38.8
Approach		1194	2.2	1194	2.2	0.856	36.4	LOS C	16.8	120.7	0.97	0.93	1.12	38.9
All Vehicles		3189	4.5	3189	4.5	0.865	37.9	LOS C	18.2	131.3	0.97	0.93	1.18	33.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		42	34.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3 [[2019] Bernera x Kurrajong - Existing - PM]

Network: N1 [2019 PM]

Bernera Road x Kurrajong Road, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd														
1	L2	116	0.0	116	0.0	0.777	43.9	LOS D	10.2	73.6	1.00	0.93	1.19	25.8
2	T1	351	6.3	351	6.3	0.777	39.3	LOS C	10.2	73.6	1.00	0.93	1.20	26.2
3	R2	99	1.1	99	1.1	0.716	49.3	LOS D	4.2	29.7	1.00	0.85	1.22	32.8
Approach		565	4.1	565	4.1	0.777	42.0	LOS C	10.2	73.6	1.00	0.91	1.20	27.8
East: Kurrajong Rd														
4	L2	182	1.2	182	1.2	0.713	32.9	LOS C	13.2	93.7	0.94	0.92	1.29	40.0
5	T1	583	2.0	583	2.0	0.713	29.2	LOS C	13.4	95.2	0.96	0.88	1.12	30.5
6	R2	118	4.5	118	4.5	0.749	49.0	LOS D	5.0	36.5	1.00	0.88	1.25	23.3
Approach		883	2.1	883	2.1	0.749	32.6	LOS C	13.4	95.2	0.96	0.89	1.17	32.0
North: Bernera Rd (390m)														
7	L2	189	2.2	189	2.2	0.756	26.3	LOS B	13.7	98.1	0.85	0.80	0.90	41.1
8	T1	621	3.1	621	3.1	0.756	21.6	LOS B	13.7	98.1	0.86	0.79	0.91	42.5
9	R2	269	1.6	269	1.6	0.734	45.4	LOS D	10.9	77.3	1.00	0.86	1.06	21.0
Approach		1080	2.5	1080	2.5	0.756	28.4	LOS B	13.7	98.1	0.89	0.81	0.94	37.3
West: Kurrajong Rd														
10	L2	162	0.6	162	0.6	0.225	20.6	LOS B	4.3	30.0	0.66	0.73	0.66	42.8
11	T1	398	0.8	398	0.8	0.754	31.3	LOS C	14.8	104.0	0.97	0.89	1.05	43.1
12	R2	129	0.8	129	0.8	0.801	50.4	LOS D	5.6	39.7	1.00	0.92	1.34	36.5
Approach		689	0.8	689	0.8	0.801	32.4	LOS C	14.8	104.0	0.90	0.86	1.01	41.5
All Vehicles		3218	2.3	3218	2.3	0.801	32.8	LOS C	14.8	104.0	0.93	0.86	1.07	35.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		42	34.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 4 [[2019] Kurrajong x Kookaburra - Existing - AM]

Network: N1 [2019 AM]

Kurrajong Road x Kookaburra Road, Prestons
Site Category: 3 leg priority-controlled
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Kurrajong Rd (820m)														
5	T1	658	2.6	658	2.6	0.268	2.8	LOS A	2.2	15.9	0.16	0.05	0.19	57.9
6	R2	52	14.3	52	14.3	0.268	22.2	LOS B	2.2	15.9	0.75	0.23	0.87	48.7
Approach		709	3.4	709	3.4	0.268	4.2	NA	2.2	15.9	0.21	0.06	0.24	57.3
North: Kookaburra Rd (400m)														
7	L2	25	37.5	25	37.5	0.042	9.5	LOS A	0.1	1.3	0.51	0.71	0.51	44.0
9	R2	4	50.0	4	50.0	0.221	200.0	LOS F	0.6	5.7	0.98	1.00	1.02	15.0
Approach		29	39.3	29	39.3	0.221	36.7	LOS C	0.6	5.7	0.57	0.75	0.58	27.4
West: Kurrajong Rd (720m)														
10	L2	115	9.2	115	9.2	0.316	5.7	LOS A	0.0	0.0	0.00	0.11	0.00	57.3
11	T1	1094	1.3	1094	1.3	0.316	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.3
Approach		1208	2.0	1208	2.0	0.316	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.0
All Vehicles		1947	3.1	1947	3.1	0.316	2.5	NA	2.2	15.9	0.08	0.07	0.10	57.6

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

MOVEMENT SUMMARY

Site: 4 [[2019] Kurrajong x Kookaburra - Existing - PM]

Network: N1 [2019 PM]

Kurrajong Road x Kookaburra Road, Prestons
Site Category: 3 leg priority-controlled
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Kurrajong Rd (820m)														
5	T1	821	0.8	821	0.8	0.220	0.2	LOS A	0.2	1.5	0.02	0.01	0.03	59.8
6	R2	7	42.9	7	42.9	0.220	13.4	LOS A	0.2	1.5	0.05	0.01	0.05	56.5
Approach		828	1.1	828	1.1	0.220	0.3	NA	0.2	1.5	0.02	0.01	0.03	59.8
North: Kookaburra Rd (400m)														
7	L2	20	0.0	20	0.0	0.021	6.8	LOS A	0.1	0.5	0.37	0.59	0.37	46.8
9	R2	45	0.0	45	0.0	0.351	40.3	LOS C	1.2	8.5	0.92	1.01	1.09	37.0
Approach		65	0.0	65	0.0	0.351	30.0	LOS C	1.2	8.5	0.75	0.88	0.87	38.1
West: Kurrajong Rd (720m)														
10	L2	14	23.1	14	23.1	0.171	5.8	LOS A	0.0	0.0	0.00	0.02	0.00	57.3
11	T1	648	0.5	648	0.5	0.171	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach		662	1.0	662	1.0	0.171	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		1556	1.0	1556	1.0	0.351	1.5	NA	1.2	8.5	0.04	0.04	0.05	58.7

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

MOVEMENT SUMMARY

Site: 1 [[2019] Bernera x Yarrawa - Existing+Dev - AM]

Network: N1 [2019 w Dev AM]

Bernera Road x Yarrawa Street, Prestons
Site Category: 5 leg Priority-controlled
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (420m)														
1b	L3	35	21.2	34	19.9	0.694	5.3	LOS A	5.4	41.8	0.54	0.71	0.67	51.8
1a	L1	234	20.3	226	19.0	0.694	7.7	LOS A	5.4	41.8	0.54	0.71	0.67	53.8
2	T1	1213	8.3	1185	7.8	0.694	7.2	LOS A	5.6	41.5	0.58	0.73	0.70	51.5
Approach		1481	10.5	1445 N1	9.8	0.694	7.2	LOS A	5.6	41.8	0.57	0.73	0.70	52.0
NorthEast: M7 Off-ramp														
24a	L1	127	24.8	127	24.8	0.201	6.6	LOS A	0.8	6.4	0.56	0.71	0.56	49.9
25	T1	14	23.1	14	23.1	0.201	6.9	LOS A	0.8	6.4	0.56	0.71	0.56	55.4
26	R2	14	46.2	14	46.2	0.267	12.5	LOS A	1.1	8.6	0.55	0.82	0.55	50.2
26b	R3	254	11.6	254	11.6	0.267	12.6	LOS A	1.1	8.6	0.55	0.82	0.55	45.0
Approach		408	17.3	408	17.3	0.267	10.5	LOS A	1.1	8.6	0.55	0.78	0.55	46.8
North: Bernera Rd (160m)														
8	T1	592	15.5	592	15.5	0.256	3.7	LOS A	1.6	12.9	0.14	0.38	0.14	42.7
9a	R1	40	18.4	40	18.4	0.256	8.3	LOS A	1.6	12.9	0.14	0.47	0.14	52.9
9b	R3	93	29.5	93	29.5	0.256	10.8	LOS A	1.6	12.9	0.14	0.47	0.14	54.3
Approach		724	17.4	724	17.4	0.256	4.8	LOS A	1.6	12.9	0.14	0.40	0.14	46.9
SouthWest: Yarrawa St														
30	L2	6	50.0	6	50.0	0.198	15.4	LOS B	1.0	10.8	0.86	0.93	0.86	45.9
30a	L1	36	61.8	36	61.8	0.198	15.7	LOS B	1.0	10.8	0.86	0.93	0.86	40.1
32b	R3	20	47.4	20	47.4	0.198	22.2	LOS B	1.0	10.8	0.86	0.93	0.86	39.0
Approach		62	55.9	62	55.9	0.198	17.8	LOS B	1.0	10.8	0.86	0.93	0.86	40.6
All Vehicles		2676	14.5	2639 N1	14.7	0.694	7.3	LOS A	5.6	41.8	0.46	0.65	0.53	49.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 1 [[2019] Bernera x Yarrawa - Existing+Dev - PM]

Network: N1 [2019 w Dev PM]

Bernera Road x Yarrawa Street, Prestons
Site Category: 5 leg Priority-controlled
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (420m)														
1b	L3	17	43.8	17	43.8	0.498	4.5	LOS A	2.5	19.8	0.42	0.60	0.45	52.3
1a	L1	211	19.5	211	19.5	0.498	6.0	LOS A	2.5	19.8	0.42	0.60	0.45	55.1
2	T1	786	9.4	786	9.4	0.498	5.7	LOS A	2.5	19.3	0.44	0.57	0.47	52.8
Approach		1014	12.0	1014	12.0	0.498	5.8	LOS A	2.5	19.8	0.43	0.58	0.46	53.4
NorthEast: M7 Off-ramp														
24a	L1	103	35.7	103	35.7	0.202	8.3	LOS A	0.8	7.0	0.65	0.77	0.65	47.9
25	T1	8	37.5	8	37.5	0.202	8.7	LOS A	0.8	7.0	0.65	0.77	0.65	54.0
26	R2	13	58.3	13	58.3	0.215	13.9	LOS A	0.9	7.2	0.63	0.87	0.63	49.6
26b	R3	173	12.8	173	12.8	0.215	13.4	LOS A	0.9	7.2	0.63	0.87	0.63	44.7
Approach		297	23.4	297	23.4	0.215	11.5	LOS A	0.9	7.2	0.63	0.83	0.63	46.2
North: Bernera Rd (160m)														
8	T1	912	7.0	912	7.0	0.392	3.7	LOS A	2.9	21.6	0.19	0.39	0.19	41.8
9a	R1	33	64.5	33	64.5	0.392	8.9	LOS A	2.8	22.0	0.20	0.49	0.20	50.0
9b	R3	200	14.2	200	14.2	0.392	10.7	LOS A	2.8	22.0	0.20	0.49	0.20	54.2
Approach		1144	9.9	1144	9.9	0.392	5.0	LOS A	2.9	22.0	0.19	0.41	0.19	46.6
SouthWest: Yarrawa St														
30	L2	18	11.8	18	11.8	0.206	10.2	LOS A	1.2	9.4	0.81	0.87	0.81	50.2
30a	L1	68	10.8	68	10.8	0.206	9.8	LOS A	1.2	9.4	0.81	0.87	0.81	47.3
32b	R3	33	12.9	33	12.9	0.206	17.2	LOS B	1.2	9.4	0.81	0.87	0.81	44.1
Approach		119	11.5	119	11.5	0.206	11.9	LOS A	1.2	9.4	0.81	0.87	0.81	47.2
All Vehicles		2574	12.4	2574	12.4	0.498	6.4	LOS A	2.9	22.0	0.37	0.55	0.38	49.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [[2019] Bernera x Yarrunga - Existing+Dev - AM]

Network: N1 [2019 w Dev AM]

Bernera Road x Yarrunga Street x Yato Street, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 65 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (390m)														
1	L2	67	14.1	67	14.1	0.256	10.1	LOS A	4.0	29.2	0.42	0.43	0.42	52.4
2	T1	1245	3.4	1241	3.4	0.876	11.8	LOS A	27.7	200.0	0.65	0.70	0.76	39.9
3	R2	49	10.6	49	10.6	0.876	19.3	LOS B	27.7	200.0	0.71	0.77	0.85	46.2
Approach		1362	4.2	1357 N1	4.2	0.876	12.0	LOS A	27.7	200.0	0.64	0.69	0.75	41.3
East: Yato Rd														
4	L2	18	47.1	18	47.1	0.147	34.2	LOS C	0.9	8.4	0.91	0.70	0.91	30.1
5	T1	13	25.0	13	25.0	0.147	28.1	LOS B	0.9	8.4	0.91	0.70	0.91	39.8
6	R2	96	59.3	96	59.3	1.167	194.3	LOS F	9.3	97.7	1.00	1.62	3.70	8.0
Approach		126	54.2	126	54.2	1.167	155.0	LOS F	9.3	97.7	0.98	1.39	3.03	10.6
North: Bernera Rd (420m)														
7	L2	129	30.9	129	30.9	0.449	11.1	LOS A	7.7	62.2	0.50	0.52	0.50	51.1
8	T1	389	14.9	389	14.9	0.449	5.3	LOS A	7.7	62.2	0.50	0.52	0.50	48.1
9	R2	164	27.6	164	27.6	1.108	169.0	LOS F	15.6	135.1	1.00	1.76	3.35	14.6
Approach		683	21.0	683	21.0	1.108	45.7	LOS D	15.6	135.1	0.62	0.82	1.18	27.0
West: Yarrunga St														
10	L2	185	33.5	185	33.5	1.117	158.3	LOS F	19.4	174.3	1.00	1.79	3.20	9.7
11	T1	17	12.5	17	12.5	1.117	152.4	LOS F	19.4	174.3	1.00	1.79	3.20	16.5
12	R2	24	43.5	24	43.5	1.117	158.4	LOS F	19.4	174.3	1.00	1.79	3.20	9.7
Approach		226	33.0	226	33.0	1.117	157.9	LOS F	19.4	174.3	1.00	1.79	3.20	10.3
All Vehicles		2398	14.3	2393 N1	14.3	1.167	43.0	LOS D	27.7	200.0	0.68	0.87	1.22	24.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	26.8	LOS C	0.0	0.0	0.91	0.91
P2	East Full Crossing	11	26.8	LOS C	0.0	0.0	0.91	0.91
P3	North Full Crossing	11	26.8	LOS C	0.0	0.0	0.91	0.91
P4	West Full Crossing	11	26.8	LOS C	0.0	0.0	0.91	0.91
All Pedestrians		42	26.8	LOS C			0.91	0.91

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2 [[2019] Bernera x Yarrunga - Existing+Dev - PM]

Network: N1 [2019 w Dev PM]

Bernera Road x Yarrunga Street x Yato Street, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (390m)														
1	L2	29	35.7	29	35.7	0.167	13.7	LOS A	3.4	25.9	0.52	0.48	0.52	49.1
2	T1	638	6.6	638	6.6	0.569	20.0	LOS B	18.2	135.0	0.87	0.78	0.87	32.6
3	R2	23	13.6	23	13.6	0.569	29.4	LOS C	18.2	135.0	0.98	0.87	0.98	40.4
Approach		691	8.1	691	8.1	0.569	20.1	LOS B	18.2	135.0	0.86	0.77	0.86	34.1
East: Yato Rd														
4	L2	76	9.7	76	9.7	0.179	31.4	LOS C	2.4	18.4	0.82	0.74	0.82	29.9
5	T1	2	0.0	2	0.0	0.179	25.8	LOS B	2.4	18.4	0.82	0.74	0.82	39.7
6	R2	157	20.8	157	20.8	0.931	63.4	LOS E	8.1	66.9	1.00	1.11	1.77	19.7
Approach		235	17.0	235	17.0	0.931	52.7	LOS D	8.1	66.9	0.94	0.99	1.45	22.3
North: Bernera Rd (420m)														
7	L2	67	39.1	67	39.1	0.934	45.4	LOS D	32.7	242.0	0.72	0.97	1.13	33.7
8	T1	905	3.5	905	3.5	0.934	43.3	LOS D	32.7	242.0	0.76	1.02	1.23	22.4
9	R2	81	51.9	81	51.9	0.934	60.2	LOS E	16.7	132.4	0.89	1.15	1.54	29.0
Approach		1054	9.5	1054	9.5	0.934	44.7	LOS D	32.7	242.0	0.77	1.03	1.25	24.1
West: Yarrunga St														
10	L2	212	28.4	212	28.4	0.771	40.7	LOS C	11.2	95.8	0.99	0.92	1.15	26.1
11	T1	8	12.5	8	12.5	0.771	34.8	LOS C	11.2	95.8	0.99	0.92	1.15	36.2
12	R2	57	16.7	57	16.7	0.771	40.5	LOS C	11.2	95.8	0.99	0.92	1.15	26.1
Approach		277	25.5	277	25.5	0.771	40.5	LOS C	11.2	95.8	0.99	0.92	1.15	26.5
All Vehicles		2256	11.8	2256	11.8	0.934	37.5	LOS C	32.7	242.0	0.84	0.93	1.14	26.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		42	34.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3 [[2019] Bernera x Kurrajong - Existing+Dev - AM]

Network: N1 [2019 w Dev AM]

Bernera Road x Kurrajong Road, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 65 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd														
1	L2	147	1.4	147	1.4	1.008	80.5	LOS F	25.2	181.5	1.00	1.48	2.10	17.3
2	T1	700	4.4	700	4.4	1.008	74.3	LOS F	25.2	181.5	1.00	1.47	2.11	17.6
3	R2	118	0.9	118	0.9	0.692	40.2	LOS C	4.0	28.6	1.00	0.85	1.19	35.7
Approach		965	3.5	965	3.5	1.008	71.1	LOS F	25.2	181.5	1.00	1.39	2.00	19.7
East: Kurrajong Rd														
4	L2	77	4.1	77	4.1	0.890	47.1	LOS D	8.2	58.4	1.00	1.11	1.99	34.8
5	T1	338	1.9	338	1.9	0.890	41.2	LOS C	8.2	58.4	1.00	1.08	1.79	25.6
6	R2	215	4.9	215	4.9	0.972	63.1	LOS E	10.1	74.0	1.00	1.25	2.03	19.8
Approach		629	3.2	629	3.2	0.972	49.4	LOS D	10.1	74.0	1.00	1.14	1.90	24.8
North: Bernera Rd (390m)														
7	L2	84	12.5	84	12.4	0.383	27.6	LOS B	4.4	35.0	0.87	0.75	0.87	40.0
8	T1	225	18.7	224	18.5	0.383	23.5	LOS B	4.4	35.0	0.90	0.74	0.90	41.4
9	R2	114	17.6	113	17.5	0.742	36.4	LOS C	3.8	30.2	0.98	0.81	1.06	24.2
Approach		423	17.2	421 N1	17.0	0.742	27.8	LOS B	4.4	35.0	0.92	0.76	0.94	37.3
West: Kurrajong Rd														
10	L2	499	4.0	499	4.0	0.718	25.3	LOS B	14.2	102.9	0.91	0.87	0.96	39.9
11	T1	373	1.1	373	1.1	0.962	53.5	LOS D	17.5	123.8	1.00	1.28	1.81	36.0
12	R2	334	1.6	334	1.6	0.844	39.2	LOS C	12.1	85.6	1.00	0.99	1.33	39.8
Approach		1205	2.4	1205	2.4	0.962	37.9	LOS C	17.5	123.8	0.96	1.03	1.32	38.4
All Vehicles		3223	4.8	3221 N1	4.8	1.008	48.8	LOS D	25.2	181.5	0.97	1.12	1.59	29.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	26.8	LOS C	0.0	0.0	0.91	0.91
P2	East Full Crossing	11	26.8	LOS C	0.0	0.0	0.91	0.91
P3	North Full Crossing	11	26.8	LOS C	0.0	0.0	0.91	0.91
P4	West Full Crossing	11	26.8	LOS C	0.0	0.0	0.91	0.91
All Pedestrians		42	26.8	LOS C			0.91	0.91

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3 [[2019] Bernera x Kurrajong - Existing+Dev - PM]

Network: N1 [2019 w Dev PM]

Bernera Road x Kurrajong Road, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd														
1	L2	116	0.0	116	0.0	0.721	41.2	LOS C	9.7	70.1	0.99	0.88	1.10	26.8
2	T1	351	6.3	351	6.3	0.721	36.7	LOS C	9.7	70.1	1.00	0.88	1.11	27.2
3	R2	99	1.1	99	1.1	0.716	49.3	LOS D	4.2	29.7	1.00	0.85	1.22	32.8
Approach		565	4.1	565	4.1	0.721	39.8	LOS C	9.7	70.1	1.00	0.88	1.13	28.5
East: Kurrajong Rd														
4	L2	182	1.2	182	1.2	0.746	35.1	LOS C	13.9	98.6	0.96	0.95	1.36	39.0
5	T1	583	2.0	583	2.0	0.746	31.2	LOS C	13.9	98.6	0.97	0.91	1.18	29.5
6	R2	123	6.8	123	6.8	0.795	50.4	LOS D	5.4	39.7	1.00	0.92	1.33	22.9
Approach		888	2.5	888	2.5	0.795	34.7	LOS C	13.9	98.6	0.98	0.92	1.24	31.0
North: Bernera Rd (390m)														
7	L2	201	3.7	201	3.7	0.759	33.6	LOS C	15.4	111.0	0.91	0.86	0.98	37.6
8	T1	621	3.1	621	3.1	0.759	29.0	LOS C	15.4	111.0	0.93	0.86	1.00	38.7
9	R2	281	2.6	281	2.6	0.771	45.2	LOS D	11.4	81.8	1.00	0.87	1.08	21.1
Approach		1103	3.1	1103	3.1	0.771	34.0	LOS C	15.4	111.0	0.94	0.86	1.02	34.6
West: Kurrajong Rd														
10	L2	167	2.5	167	2.5	0.236	21.4	LOS B	4.5	32.4	0.68	0.73	0.68	42.3
11	T1	398	0.8	398	0.8	0.791	33.6	LOS C	15.4	108.5	0.98	0.93	1.12	42.2
12	R2	129	0.8	129	0.8	0.801	50.4	LOS D	5.6	39.7	1.00	0.92	1.34	36.5
Approach		695	1.2	695	1.2	0.801	33.8	LOS C	15.4	108.5	0.91	0.88	1.05	40.9
All Vehicles		3252	2.7	3252	2.7	0.801	35.1	LOS C	15.4	111.0	0.95	0.89	1.10	34.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		42	34.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 4 [[2019] Kurrajong x Kookaburra - Existing+Dev - AM]

Network: N1 [2019 w Dev AM]

Kurrajong Road x Kookaburra Road, Prestons
Site Category: 3 leg priority-controlled
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Kurrajong Rd (820m)														
5	T1	663	3.0	662	3.0	0.271	2.9	LOS A	2.2	16.3	0.16	0.05	0.19	57.9
6	R2	52	14.3	51	14.2	0.271	22.7	LOS B	2.2	16.3	0.76	0.23	0.88	48.4
Approach		715	3.8	713[N1]	3.8	0.271	4.3	NA	2.2	16.3	0.21	0.06	0.24	57.2
North: Kookaburra Rd (400m)														
7	L2	25	37.5	25	37.5	0.042	9.6	LOS A	0.1	1.3	0.51	0.71	0.51	43.9
9	R2	4	50.0	4	50.0	0.233	212.9	LOS F	0.6	6.0	0.98	1.00	1.02	14.3
Approach		29	39.3	29	39.3	0.233	38.6	LOS C	0.6	6.0	0.58	0.75	0.58	26.7
West: Kurrajong Rd (720m)														
10	L2	115	9.2	115	9.2	0.319	5.7	LOS A	0.0	0.0	0.00	0.11	0.00	57.3
11	T1	1105	1.5	1105	1.5	0.319	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.3
Approach		1220	2.2	1220	2.2	0.319	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.0
All Vehicles		1964	3.4	1962[N1]	3.4	0.319	2.5	NA	2.2	16.3	0.08	0.07	0.10	57.6

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 4 [[2019] Kurrajong x Kookaburra - Existing+Dev - PM]

Network: N1 [2019 w Dev PM]

Kurrajong Road x Kookaburra Road, Prestons
Site Category: 3 leg priority-controlled
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Kurrajong Rd (820m)														
5	T1	833	1.1	833	1.1	0.223	0.2	LOS A	0.2	1.6	0.02	0.01	0.03	59.8
6	R2	7	42.9	7	42.9	0.223	13.6	LOS A	0.2	1.6	0.05	0.01	0.05	56.5
Approach		840	1.5	840	1.5	0.223	0.3	NA	0.2	1.6	0.02	0.01	0.03	59.8
North: Kookaburra Rd (400m)														
7	L2	20	0.0	20	0.0	0.021	6.9	LOS A	0.1	0.5	0.37	0.60	0.37	46.8
9	R2	45	0.0	45	0.0	0.363	41.9	LOS C	1.3	8.8	0.92	1.01	1.10	36.5
Approach		65	0.0	65	0.0	0.363	31.2	LOS C	1.3	8.8	0.75	0.88	0.88	37.6
West: Kurrajong Rd (720m)														
10	L2	14	23.1	14	23.1	0.173	5.8	LOS A	0.0	0.0	0.00	0.02	0.00	57.3
11	T1	654	1.0	654	1.0	0.173	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach		667	1.4	667	1.4	0.173	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		1573	1.4	1573	1.4	0.363	1.5	NA	1.3	8.8	0.04	0.04	0.05	58.7

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

MOVEMENT SUMMARY

Site: 1 [[2029] Bernera x Yarrawa - Base - AM]

Network: N1 [2029 Base AM]

Bernera Road x Yarrawa Street, Prestons
Site Category: 5 leg Priority-controlled Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (420m)														
1b	L3	39	21.6	39	21.6	0.803	6.9	LOS A	8.1	61.8	0.62	0.84	0.87	50.1
1a	L1	240	16.2	240	16.2	0.803	9.8	LOS A	8.1	61.8	0.62	0.84	0.87	52.1
2	T1	1345	7.4	1345	7.4	0.803	9.1	LOS A	8.3	62.0	0.67	0.86	0.93	49.7
Approach		1624	9.0	1624	9.0	0.803	9.2	LOS A	8.3	62.0	0.66	0.86	0.92	50.2
NorthEast: M7 Off-ramp														
24a	L1	94	23.6	94	23.6	0.172	7.0	LOS A	0.6	5.3	0.57	0.72	0.57	49.4
25	T1	15	21.4	15	21.4	0.172	7.3	LOS A	0.6	5.3	0.57	0.72	0.57	55.1
26	R2	16	46.7	16	46.7	0.309	12.8	LOS A	1.3	10.3	0.58	0.83	0.58	50.1
26b	R3	287	11.7	287	11.7	0.309	12.8	LOS A	1.3	10.3	0.58	0.83	0.58	44.9
Approach		412	16.1	412	16.1	0.309	11.3	LOS A	1.3	10.3	0.58	0.80	0.58	46.3
North: Bernera Rd (160m)														
8	T1	618	14.5	618	14.5	0.271	3.7	LOS A	1.8	14.2	0.15	0.38	0.15	42.5
9a	R1	45	18.6	45	18.6	0.271	8.3	LOS A	1.7	14.2	0.16	0.47	0.16	52.6
9b	R3	104	29.3	104	29.3	0.271	10.8	LOS A	1.7	14.2	0.16	0.47	0.16	54.1
Approach		767	16.7	767	16.7	0.271	4.9	LOS A	1.8	14.2	0.15	0.40	0.15	46.9
SouthWest: Yarrawa St														
30	L2	6	50.0	6	50.0	0.280	20.4	LOS B	1.6	16.9	0.93	0.96	0.93	43.3
30a	L1	41	61.5	41	61.5	0.280	20.9	LOS B	1.6	16.9	0.93	0.96	0.93	37.1
32b	R3	22	47.6	22	47.6	0.280	27.2	LOS B	1.6	16.9	0.93	0.96	0.93	35.5
Approach		69	56.1	69	56.1	0.280	22.9	LOS B	1.6	16.9	0.93	0.96	0.93	37.4
All Vehicles		2873	13.2	2873	13.2	0.803	8.7	LOS A	8.3	62.0	0.52	0.73	0.66	48.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [[2029] Bernera x Yarrawa - Base - PM]

Network: N1 [2029 Base PM]

Bernera Road x Yarrawa Street, Prestons
Site Category: 5 leg Priority-controlled Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (420m)														
1b	L3	19	44.4	19	44.4	0.502	4.5	LOS A	2.5	19.9	0.43	0.62	0.47	52.2
1a	L1	180	18.1	180	18.1	0.502	6.2	LOS A	2.5	19.9	0.43	0.62	0.47	55.0
2	T1	807	8.5	807	8.5	0.502	5.9	LOS A	2.6	19.5	0.46	0.60	0.50	52.7
Approach		1006	10.9	1006	10.9	0.502	5.9	LOS A	2.6	19.9	0.45	0.60	0.49	53.2
NorthEast: M7 Off-ramp														
24a	L1	89	30.6	89	30.6	0.183	8.4	LOS A	0.7	6.1	0.66	0.77	0.66	47.7
25	T1	8	37.5	8	37.5	0.183	9.1	LOS A	0.7	6.1	0.66	0.77	0.66	53.8
26	R2	14	61.5	14	61.5	0.241	14.4	LOS A	1.0	8.3	0.65	0.88	0.65	49.4
26b	R3	188	12.8	188	12.8	0.241	13.7	LOS A	1.0	8.3	0.65	0.88	0.65	44.5
Approach		300	21.1	300	21.1	0.241	12.0	LOS A	1.0	8.3	0.65	0.85	0.65	45.8
North: Bernera Rd (160m)														
8	T1	971	5.9	971	5.9	0.419	3.7	LOS A	3.2	23.8	0.20	0.39	0.20	41.6
9a	R1	36	64.7	36	64.7	0.419	9.0	LOS A	3.1	24.4	0.21	0.49	0.21	49.9
9b	R3	218	14.0	218	14.0	0.419	10.7	LOS A	3.1	24.4	0.21	0.49	0.21	54.1
Approach		1224	9.0	1224	9.0	0.419	5.1	LOS A	3.2	24.4	0.21	0.41	0.21	46.5
SouthWest: Yarrawa St														
30	L2	19	11.1	19	11.1	0.229	10.5	LOS A	1.4	10.5	0.82	0.89	0.82	50.0
30a	L1	75	11.3	75	11.3	0.229	10.2	LOS A	1.4	10.5	0.82	0.89	0.82	46.9
32b	R3	35	12.1	35	12.1	0.229	17.6	LOS B	1.4	10.5	0.82	0.89	0.82	43.8
Approach		128	11.5	128	11.5	0.229	12.3	LOS A	1.4	10.5	0.82	0.89	0.82	46.9
All Vehicles		2659	11.2	2659	11.2	0.502	6.5	LOS A	3.2	24.4	0.38	0.56	0.39	49.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [[2029] Bernera x Yarrunga - Base - AM]

Network: N1 [2029 Base AM]

Bernera Road x Yarrunga Street x Yato Street, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 90 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (390m)														
1	L2	54	9.8	54	9.8	0.810	31.3	LOS C	31.8	229.6	0.97	0.91	1.01	39.5
2	T1	1444	3.4	1444	3.4	0.810	17.0	LOS B	31.8	229.6	0.72	0.69	0.76	35.1
3	R2	58	10.9	58	10.9	0.504	55.4	LOS D	2.7	20.9	1.00	0.75	1.00	29.1
Approach		1556	3.9	1556	3.9	0.810	18.9	LOS B	31.8	229.6	0.74	0.70	0.78	34.8
East: Yato Rd														
4	L2	20	47.4	20	47.4	0.220	47.7	LOS D	1.4	13.2	0.95	0.72	0.95	24.7
5	T1	14	23.1	14	23.1	0.220	41.6	LOS C	1.4	13.2	0.95	0.72	0.95	34.8
6	R2	112	59.4	112	59.4	0.855	60.2	LOS E	5.8	60.9	1.00	1.00	1.50	20.5
Approach		145	54.3	145	54.3	0.855	56.7	LOS E	5.8	60.9	0.99	0.94	1.37	22.6
North: Bernera Rd (420m)														
7	L2	151	30.8	151	30.8	0.343	18.8	LOS B	7.4	61.9	0.61	0.64	0.61	45.0
8	T1	451	14.7	451	14.7	0.343	14.0	LOS A	8.1	63.5	0.63	0.58	0.63	38.2
9	R2	91	30.2	91	30.2	0.889	63.3	LOS E	4.8	42.0	1.00	1.01	1.64	27.5
Approach		692	20.2	692	20.2	0.889	21.5	LOS B	8.1	63.5	0.68	0.65	0.76	37.2
West: Yarrunga St														
10	L2	167	27.0	167	27.0	0.727	48.0	LOS D	8.4	72.0	1.00	0.88	1.13	23.8
11	T1	19	11.1	19	11.1	0.727	42.1	LOS C	8.4	72.0	1.00	0.88	1.13	33.9
12	R2	16	33.3	16	33.3	0.105	47.6	LOS D	0.7	6.0	0.94	0.69	0.94	23.8
Approach		202	26.0	202	26.0	0.727	47.4	LOS D	8.4	72.0	1.00	0.87	1.12	25.1
All Vehicles		2595	12.8	2595	12.8	0.889	24.0	LOS B	31.8	229.6	0.76	0.71	0.83	33.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		42	39.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2 [[2029] Bernera x Yarrunga - Base - PM]

Network: N1 [2029 Base PM]

Bernera Road x Yarrunga Street x Yato Street, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (390m)														
1	L2	22	28.6	22	28.6	0.507	24.8	LOS B	10.6	79.1	0.76	0.67	0.76	42.5
2	T1	721	6.6	721	6.6	0.507	23.3	LOS B	13.2	97.9	0.87	0.76	0.87	30.5
3	R2	25	12.5	25	12.5	0.198	43.0	LOS D	0.9	7.3	0.91	0.70	0.91	32.7
Approach		768	7.4	768	7.4	0.507	24.0	LOS B	13.2	97.9	0.87	0.75	0.87	31.2
East: Yato Rd														
4	L2	85	9.9	85	9.9	0.191	29.9	LOS C	2.7	20.1	0.80	0.74	0.80	30.6
5	T1	2	0.0	2	0.0	0.191	24.3	LOS B	2.7	20.1	0.80	0.74	0.80	40.4
6	R2	177	20.8	177	20.8	0.729	44.7	LOS D	7.2	59.7	1.00	0.88	1.16	24.6
Approach		264	17.1	264	17.1	0.729	39.7	LOS C	7.2	59.7	0.93	0.84	1.04	26.5
North: Bernera Rd (420m)														
7	L2	76	38.9	76	38.9	0.732	28.3	LOS B	18.3	137.8	0.90	0.83	0.93	40.7
8	T1	1023	3.5	1023	3.5	0.732	22.6	LOS B	19.0	137.1	0.91	0.82	0.93	32.0
9	R2	43	48.8	43	48.8	0.418	48.0	LOS D	1.8	17.6	0.99	0.74	0.99	31.2
Approach		1142	7.6	1142	7.6	0.732	23.9	LOS B	19.0	137.8	0.91	0.82	0.93	32.8
West: Yarrunga St														
10	L2	132	30.4	132	30.4	0.467	37.6	LOS C	5.1	44.3	0.93	0.79	0.93	27.4
11	T1	9	11.1	9	11.1	0.467	31.7	LOS C	5.1	44.3	0.93	0.79	0.93	37.4
12	R2	37	8.6	37	8.6	0.211	43.3	LOS D	1.4	10.5	0.95	0.73	0.95	25.1
Approach		178	24.9	178	24.9	0.467	38.4	LOS C	5.1	44.3	0.93	0.78	0.93	27.7
All Vehicles		2353	9.9	2353	9.9	0.732	26.8	LOS B	19.0	137.8	0.90	0.80	0.93	30.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		42	34.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3 [[2029] Bernera x Kurrajong - Base - AM]

Network: N1 [2029 Base AM]

Bernera Road x Kurrajong Road, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 90 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd														
1	L2	171	1.2	171	1.2	0.997	86.5	LOS F	34.8	250.6	1.00	1.37	1.74	16.4
2	T1	812	4.3	812	4.3	0.997	80.8	LOS F	34.8	250.6	1.00	1.37	1.74	16.6
3	R2	137	0.8	137	0.8	0.953	71.0	LOS F	7.8	54.8	1.00	1.10	1.79	27.4
Approach		1119	3.4	1119	3.4	0.997	80.4	LOS F	34.8	250.6	1.00	1.34	1.74	18.1
East: Kurrajong Rd														
4	L2	88	3.6	88	3.6	0.872	56.9	LOS E	12.1	86.7	1.00	1.08	1.78	31.9
5	T1	392	1.9	392	1.9	0.872	51.0	LOS D	12.1	86.7	1.00	1.05	1.55	22.6
6	R2	236	3.6	236	3.6	0.976	79.1	LOS F	14.7	105.9	1.00	1.17	1.79	16.9
Approach		716	2.6	716	2.6	0.976	61.0	LOS E	14.7	105.9	1.00	1.09	1.66	21.8
North: Bernera Rd (390m)														
7	L2	92	9.2	92	9.2	0.379	36.7	LOS C	7.4	57.8	0.95	0.80	0.95	36.1
8	T1	261	18.5	261	18.5	0.379	34.2	LOS C	7.4	57.8	0.97	0.80	0.97	36.4
9	R2	125	15.1	125	15.1	0.961	74.4	LOS F	7.3	57.9	1.00	1.13	1.86	14.9
Approach		478	15.9	478	15.9	0.961	45.2	LOS D	7.4	57.9	0.97	0.89	1.20	30.3
West: Kurrajong Rd														
10	L2	565	3.4	565	3.4	0.758	31.3	LOS C	22.0	158.4	0.92	0.88	0.95	36.9
11	T1	433	1.2	433	1.2	1.006	87.5	LOS F	31.2	221.0	1.00	1.38	1.83	28.7
12	R2	387	1.6	387	1.6	0.861	48.1	LOS D	18.6	132.4	0.99	0.97	1.25	37.1
Approach		1385	2.2	1385	2.2	1.006	53.6	LOS D	31.2	221.0	0.96	1.06	1.31	33.4
All Vehicles		3698	4.4	3698	4.4	1.006	62.1	LOS E	34.8	250.6	0.98	1.13	1.49	26.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		42	39.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3 [[2029] Bernera x Kurrajong - Base - PM]

Network: N1 [2029 Base PM]

Bernera Road x Kurrajong Road, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd														
1	L2	131	0.0	131	0.0	0.879	50.9	LOS D	12.9	92.8	1.00	1.05	1.41	23.6
2	T1	397	6.4	397	6.4	0.879	45.9	LOS D	12.9	92.8	1.00	1.05	1.42	24.0
3	R2	112	0.9	112	0.9	0.806	51.4	LOS D	4.9	34.6	1.00	0.92	1.38	32.2
Approach		639	4.1	639	4.1	0.879	47.9	LOS D	12.9	92.8	1.00	1.03	1.41	25.8
East: Kurrajong Rd														
4	L2	205	1.0	205	1.0	0.805	37.7	LOS C	16.9	120.2	0.98	1.01	1.44	38.0
5	T1	659	1.9	659	1.9	0.805	33.5	LOS C	16.9	120.2	0.99	0.98	1.26	28.5
6	R2	134	4.7	134	4.7	0.850	52.7	LOS D	6.0	43.8	1.00	0.97	1.46	22.3
Approach		998	2.1	998	2.1	0.850	36.9	LOS C	16.9	120.2	0.99	0.98	1.33	30.1
North: Bernera Rd (390m)														
7	L2	215	2.5	215	2.5	0.880	24.4	LOS B	17.2	123.0	0.90	0.86	0.98	42.1
8	T1	701	3.0	701	3.0	0.880	17.8	LOS B	17.2	123.0	0.84	0.79	0.92	44.7
9	R2	305	1.7	305	1.7	0.832	44.1	LOS D	12.7	90.0	1.00	0.93	1.20	21.4
Approach		1221	2.6	1221	2.6	0.880	25.5	LOS B	17.2	123.0	0.89	0.84	1.00	38.7
West: Kurrajong Rd														
10	L2	183	0.6	183	0.6	0.269	22.3	LOS B	5.3	37.2	0.70	0.74	0.70	41.9
11	T1	449	0.7	449	0.7	0.899	42.3	LOS C	20.0	140.5	0.99	1.08	1.35	39.2
12	R2	146	0.7	146	0.7	0.905	57.0	LOS E	6.9	48.8	1.00	1.05	1.64	34.7
Approach		779	0.7	779	0.7	0.905	40.4	LOS C	20.0	140.5	0.92	0.99	1.25	38.6
All Vehicles		3637	2.3	3637	2.3	0.905	35.7	LOS C	20.0	140.5	0.94	0.94	1.22	34.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		42	34.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 4 [[2029] Kurrajong x Kookaburra - Base - AM]

Network: N1 [2029 Base AM]

Kurrajong Road x Kookaburra Road, Prestons
Site Category: 3 leg priority-controlled
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Kurrajong Rd (820m)														
5	T1	762	2.5	762	2.5	0.355	2.6	LOS A	2.6	19.1	0.10	0.04	0.12	58.2
6	R2	60	14.0	60	14.0	0.355	31.2	LOS C	2.6	19.1	0.92	0.40	1.12	43.1
Approach		822	3.3	822	3.3	0.355	4.7	NA	2.6	19.1	0.16	0.07	0.19	57.0
North: Kookaburra Rd (400m)														
7	L2	28	37.0	28	37.0	0.053	10.5	LOS A	0.2	1.7	0.54	0.76	0.54	42.7
9	R2	4	50.0	4	50.0	0.513	593.4	LOS F	1.3	12.9	1.00	1.02	1.08	6.1
Approach		33	38.7	33	38.7	0.513	85.7	LOS F	1.3	12.9	0.60	0.79	0.61	15.7
West: Kurrajong Rd (720m)														
10	L2	133	8.7	133	8.7	0.366	5.7	LOS A	0.0	0.0	0.00	0.11	0.00	57.3
11	T1	1268	1.2	1268	1.2	0.366	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.3
Approach		1401	2.0	1401	2.0	0.366	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.0
All Vehicles		2256	3.0	2256	3.0	0.513	3.3	NA	2.6	19.1	0.07	0.07	0.08	56.8

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

MOVEMENT SUMMARY

Site: 4 [[2029] Kurrajong x Kookaburra - Base - PM]

Network: N1 [2029 Base PM]

Kurrajong Road x Kookaburra Road, Prestons
Site Category: 3 leg priority-controlled
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Kurrajong Rd (820m)														
5	T1	928	0.8	928	0.8	0.249	0.3	LOS A	0.3	2.1	0.03	0.01	0.03	59.8
6	R2	8	37.5	8	37.5	0.249	14.9	LOS B	0.3	2.1	0.06	0.01	0.07	56.6
Approach		937	1.1	937	1.1	0.249	0.4	NA	0.3	2.1	0.03	0.01	0.03	59.7
North: Kookaburra Rd (400m)														
7	L2	22	0.0	22	0.0	0.024	7.1	LOS A	0.1	0.6	0.39	0.61	0.39	46.6
9	R2	52	0.0	52	0.0	0.573	69.0	LOS E	2.1	14.5	0.96	1.07	1.32	29.3
Approach		74	0.0	74	0.0	0.573	50.4	LOS D	2.1	14.5	0.79	0.93	1.04	30.9
West: Kurrajong Rd (720m)														
10	L2	15	21.4	15	21.4	0.193	5.8	LOS A	0.0	0.0	0.00	0.02	0.00	57.4
11	T1	733	0.4	733	0.4	0.193	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach		747	0.8	747	0.8	0.193	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		1758	1.0	1758	1.0	0.573	2.4	NA	2.1	14.5	0.05	0.05	0.06	58.0

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

MOVEMENT SUMMARY

Site: 1 [[2029] Bernera x Yarrawa - Base w Dev - AM]

Network: N1 [2029 Base w Dev - AM]

Bernera Road x Yarrawa Street, Prestons
Site Category: 5 leg Priority-controlled
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (420m)														
1b	L3	39	21.6	39	21.7	0.830	7.4	LOS A	8.9	69.3	0.65	0.88	0.94	49.6
1a	L1	261	19.8	260	19.8	0.830	10.6	LOS A	8.9	69.3	0.65	0.88	0.94	51.5
2	T1	1367	8.2	1363	8.2	0.830	9.7	LOS A	9.2	69.2	0.70	0.90	0.99	49.0
Approach		1667	10.3	1662[N1]	10.3	0.830	9.8	LOS A	9.2	69.3	0.69	0.90	0.99	49.6
NorthEast: M7 Off-ramp														
24a	L1	137	24.6	137	24.6	0.227	7.0	LOS A	0.9	7.3	0.59	0.73	0.59	49.4
25	T1	15	21.4	15	21.4	0.227	7.2	LOS A	0.9	7.3	0.59	0.73	0.59	55.2
26	R2	16	46.7	16	46.7	0.313	12.9	LOS A	1.3	10.5	0.59	0.84	0.59	50.1
26b	R3	287	11.7	287	11.7	0.313	12.9	LOS A	1.3	10.5	0.59	0.84	0.59	44.9
Approach		455	17.1	455	17.1	0.313	10.9	LOS A	1.3	10.5	0.59	0.80	0.59	46.5
North: Bernera Rd (160m)														
8	T1	661	15.3	661	15.3	0.287	3.7	LOS A	2.0	15.5	0.16	0.38	0.16	42.4
9a	R1	45	18.6	45	18.6	0.287	8.3	LOS A	1.9	15.4	0.16	0.47	0.16	52.7
9b	R3	104	29.3	104	29.3	0.287	10.8	LOS A	1.9	15.4	0.16	0.47	0.16	54.2
Approach		811	17.3	811	17.3	0.287	4.9	LOS A	2.0	15.5	0.16	0.40	0.16	46.7
SouthWest: Yarrawa St														
30	L2	6	50.0	6	50.0	0.296	21.9	LOS B	1.8	18.7	0.96	0.98	0.96	42.5
30a	L1	41	61.5	41	61.5	0.296	22.5	LOS B	1.8	18.7	0.96	0.98	0.96	36.3
32b	R3	22	47.6	22	47.6	0.296	28.8	LOS C	1.8	18.7	0.96	0.98	0.96	34.5
Approach		69	56.1	69	56.1	0.296	24.4	LOS B	1.8	18.7	0.96	0.98	0.96	36.6
All Vehicles		3002	14.3	2996[N1]	14.3	0.830	9.0	LOS A	9.2	69.3	0.54	0.75	0.70	48.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 1 [[2029] Bernera x Yarrawa - Base w Dev - PM]

Network: N1 [2029 Base w Dev - PM]

Bernera Road x Yarrawa Street, Prestons
Site Category: 5 leg Priority-controlled Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (420m)														
1b	L3	19	44.4	19	44.4	0.553	4.8	LOS A	3.1	24.2	0.46	0.66	0.53	51.9
1a	L1	226	19.5	226	19.5	0.553	6.6	LOS A	3.1	24.2	0.46	0.66	0.53	54.7
2	T1	854	9.4	854	9.4	0.553	6.2	LOS A	3.1	23.8	0.49	0.63	0.55	52.3
Approach		1099	12.1	1099	12.1	0.553	6.3	LOS A	3.1	24.2	0.48	0.64	0.54	52.9
NorthEast: M7 Off-ramp														
24a	L1	111	35.2	111	35.2	0.227	8.8	LOS A	0.9	8.0	0.67	0.78	0.67	47.4
25	T1	8	37.5	8	37.5	0.227	9.2	LOS A	0.9	8.0	0.67	0.78	0.67	53.6
26	R2	14	61.5	14	61.5	0.244	14.5	LOS A	1.1	8.4	0.66	0.89	0.66	49.3
26b	R3	188	12.8	188	12.8	0.244	13.7	LOS A	1.1	8.4	0.66	0.89	0.66	44.5
Approach		321	23.3	321	23.3	0.244	11.9	LOS A	1.1	8.4	0.66	0.85	0.66	45.8
North: Bernera Rd (160m)														
8	T1	992	6.9	992	6.9	0.428	3.7	LOS A	3.4	25.1	0.21	0.39	0.21	41.5
9a	R1	36	64.7	36	64.7	0.428	9.0	LOS A	3.3	25.5	0.22	0.49	0.22	49.9
9b	R3	218	14.0	218	14.0	0.428	10.7	LOS A	3.3	25.5	0.22	0.49	0.22	54.1
Approach		1245	9.8	1245	9.8	0.428	5.1	LOS A	3.4	25.5	0.21	0.41	0.21	46.4
SouthWest: Yarrawa St														
30	L2	19	11.1	19	11.1	0.246	11.5	LOS A	1.5	11.8	0.86	0.91	0.86	49.4
30a	L1	75	11.3	75	11.3	0.246	11.2	LOS A	1.5	11.8	0.86	0.91	0.86	46.1
32b	R3	35	12.1	35	12.1	0.246	18.5	LOS B	1.5	11.8	0.86	0.91	0.86	42.8
Approach		128	11.5	128	11.5	0.246	13.2	LOS A	1.5	11.8	0.86	0.91	0.86	46.0
All Vehicles		2794	12.3	2794	12.3	0.553	6.7	LOS A	3.4	25.5	0.40	0.57	0.42	49.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [[2029] Bernera x Yarrunga - Base w Dev - AM]

Network: N1 [2029 Base w Dev - AM]

Bernera Road x Yarrunga Street x Yato Street, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 90 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (390m)														
1	L2	76	13.9	75	13.9	0.898	43.7	LOS D	38.5	279.5	1.00	1.04	1.17	34.2
2	T1	1444	3.4	1438	3.4	0.898	27.5	LOS B	38.5	279.5	0.80	0.86	0.97	28.0
3	R2	58	10.9	58	10.9	0.274	50.7	LOS D	2.6	19.9	1.00	0.76	1.00	30.4
Approach		1578	4.1	1571 N1	4.1	0.898	29.1	LOS C	38.5	279.5	0.82	0.86	0.98	28.7
East: Yato Rd														
4	L2	20	47.4	20	47.4	0.215	47.6	LOS D	1.4	13.2	0.95	0.72	0.95	24.7
5	T1	14	23.1	14	23.1	0.215	41.5	LOS C	1.4	13.2	0.95	0.72	0.95	34.8
6	R2	112	59.4	112	59.4	0.962	78.3	LOS F	6.8	71.4	1.00	1.17	1.92	17.1
Approach		145	54.3	145	54.3	0.962	70.6	LOS F	6.8	71.4	0.99	1.07	1.69	19.6
North: Bernera Rd (420m)														
7	L2	151	30.8	151	30.8	0.376	21.4	LOS B	8.1	68.2	0.67	0.67	0.67	43.4
8	T1	451	14.7	451	14.7	0.376	16.7	LOS B	8.8	69.2	0.69	0.63	0.69	35.8
9	R2	178	27.8	178	27.8	0.939	69.4	LOS E	10.2	88.2	1.00	1.10	1.69	26.2
Approach		779	20.8	779	20.8	0.939	29.7	LOS C	10.2	88.2	0.76	0.74	0.92	33.4
West: Yarrunga St														
10	L2	209	33.2	209	33.2	0.750	46.0	LOS D	10.3	91.5	0.99	0.90	1.13	24.5
11	T1	19	11.1	19	11.1	0.750	40.1	LOS C	10.3	91.5	0.99	0.90	1.13	34.5
12	R2	27	42.3	27	42.3	0.216	49.9	LOS D	1.2	11.4	0.96	0.72	0.96	23.1
Approach		256	32.5	256	32.5	0.750	46.0	LOS D	10.3	91.5	0.99	0.88	1.12	25.3
All Vehicles		2758	14.1	2751 N1	14.2	0.962	33.0	LOS C	38.5	279.5	0.83	0.84	1.01	29.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		42	39.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2 [[2029] Bernera x Yarrunga - Base w Dev - PM]

Network: N1 [2029 Base w Dev - PM]

Bernera Road x Yarrunga Street x Yato Street, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd (390m)														
1	L2	32	36.7	32	36.7	0.532	25.8	LOS B	10.9	82.3	0.78	0.69	0.78	41.7
2	T1	721	6.6	721	6.6	0.532	23.8	LOS B	13.3	98.7	0.88	0.76	0.88	30.2
3	R2	25	12.5	25	12.5	0.169	40.4	LOS C	0.9	6.9	0.87	0.70	0.87	33.6
Approach		778	8.0	778	8.0	0.532	24.4	LOS B	13.3	98.7	0.87	0.76	0.87	31.1
East: Yato Rd														
4	L2	85	9.9	85	9.9	0.225	33.5	LOS C	2.8	21.6	0.86	0.75	0.86	28.9
5	T1	2	0.0	2	0.0	0.225	27.9	LOS B	2.8	21.6	0.86	0.75	0.86	38.8
6	R2	177	20.8	177	20.8	0.729	44.7	LOS D	7.2	59.7	1.00	0.88	1.16	24.6
Approach		264	17.1	264	17.1	0.729	40.9	LOS C	7.2	59.7	0.95	0.84	1.06	26.0
North: Bernera Rd (420m)														
7	L2	76	38.9	76	38.9	0.756	30.1	LOS C	19.2	143.8	0.92	0.86	0.97	39.8
8	T1	1023	3.5	1023	3.5	0.756	24.3	LOS B	19.8	142.8	0.93	0.86	0.97	30.8
9	R2	86	51.2	86	51.2	0.725	50.2	LOS D	3.7	37.6	1.00	0.89	1.26	30.5
Approach		1185	9.2	1185	9.2	0.756	26.6	LOS B	19.8	143.8	0.93	0.86	0.99	31.6
West: Yarrunga St														
10	L2	226	28.4	226	28.4	0.701	39.3	LOS C	9.1	79.0	0.97	0.87	1.06	26.7
11	T1	9	11.1	9	11.1	0.701	33.4	LOS C	9.1	79.0	0.97	0.87	1.06	36.7
12	R2	60	15.8	60	15.8	0.240	39.4	LOS C	2.2	17.1	0.92	0.75	0.92	26.5
Approach		296	25.3	296	25.3	0.701	39.1	LOS C	9.1	79.0	0.96	0.84	1.03	27.1
All Vehicles		2523	11.6	2523	11.6	0.756	28.9	LOS C	19.8	143.8	0.92	0.82	0.97	30.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		42	34.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3 [[2029] Bernera x Kurrajong - Base w Dev - AM]

Network: N1 [2029 Base w Dev - AM]

Bernera Road x Kurrajong Road, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 90 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd														
1	L2	171	1.2	171	1.2	0.997	86.5	LOS F	34.8	250.6	1.00	1.37	1.74	16.4
2	T1	812	4.3	812	4.3	0.997	80.8	LOS F	34.8	250.6	1.00	1.37	1.74	16.6
3	R2	137	0.8	137	0.8	0.953	71.0	LOS F	7.8	54.8	1.00	1.10	1.79	27.4
Approach		1119	3.4	1119	3.4	0.997	80.4	LOS F	34.8	250.6	1.00	1.34	1.74	18.1
East: Kurrajong Rd														
4	L2	88	3.6	88	3.6	0.872	56.9	LOS E	12.1	86.7	1.00	1.08	1.78	31.9
5	T1	392	1.9	392	1.9	0.872	51.0	LOS D	12.1	86.7	1.00	1.05	1.55	22.6
6	R2	246	4.7	246	4.7	1.028	105.3	LOS F	18.2	132.4	1.00	1.29	2.07	13.6
Approach		726	3.0	726	3.0	1.028	70.1	LOS E	18.2	132.4	1.00	1.13	1.75	19.8
North: Bernera Rd (390m)														
7	L2	97	12.0	97	12.0	0.385	36.8	LOS C	7.5	59.3	0.95	0.81	0.95	36.0
8	T1	261	18.5	261	18.5	0.385	34.5	LOS C	7.5	59.3	0.97	0.81	0.97	36.3
9	R2	131	16.9	131	16.9	1.013	96.4	LOS F	8.9	71.6	1.00	1.24	2.12	12.1
Approach		488	16.8	488	16.8	1.013	51.5	LOS D	8.9	71.6	0.98	0.92	1.28	28.3
West: Kurrajong Rd														
10	L2	576	3.8	576	3.8	0.775	32.3	LOS C	23.0	166.1	0.93	0.89	0.98	36.5
11	T1	433	1.2	433	1.2	1.006	87.5	LOS F	31.2	221.0	1.00	1.38	1.83	28.7
12	R2	387	1.6	387	1.6	0.861	48.1	LOS D	18.6	132.4	0.99	0.97	1.25	37.1
Approach		1396	2.4	1396	2.4	1.006	53.8	LOS D	31.2	221.0	0.97	1.06	1.32	33.4
All Vehicles		3729	4.7	3729	4.7	1.028	64.7	LOS E	34.8	250.6	0.98	1.14	1.52	25.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	11	39.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		42	39.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3 [[2029] Bernera x Kurrajong - Base w Dev - PM]

Network: N1 [2029 Base w Dev - PM]

Bernera Road x Kurrajong Road, Prestons
Site Category: 4 leg Signalised
Signals - Fixed Time Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Bernera Rd														
1	L2	131	0.0	131	0.0	0.879	50.9	LOS D	12.9	92.8	1.00	1.05	1.41	23.6
2	T1	397	6.4	397	6.4	0.879	45.9	LOS D	12.9	92.8	1.00	1.05	1.42	24.0
3	R2	112	0.9	112	0.9	0.806	51.4	LOS D	4.9	34.6	1.00	0.92	1.38	32.2
Approach		639	4.1	639	4.1	0.879	47.9	LOS D	12.9	92.8	1.00	1.03	1.41	25.8
East: Kurrajong Rd														
4	L2	205	1.0	205	1.0	0.805	37.7	LOS C	16.9	120.2	0.98	1.01	1.44	38.0
5	T1	659	1.9	659	1.9	0.805	33.5	LOS C	16.9	120.2	0.99	0.98	1.26	28.5
6	R2	138	6.1	138	6.1	0.886	55.3	LOS D	6.4	47.2	1.00	1.02	1.58	21.6
Approach		1002	2.3	1002	2.3	0.886	37.3	LOS C	16.9	120.2	0.99	0.99	1.34	29.9
North: Bernera Rd (390m)														
7	L2	225	3.3	225	3.3	0.927	27.1	LOS B	20.1	144.5	0.95	0.94	1.10	40.7
8	T1	701	3.0	701	3.0	0.927	21.1	LOS B	20.1	144.5	0.85	0.84	1.01	42.7
9	R2	316	2.3	316	2.3	0.864	46.3	LOS D	13.6	97.4	1.00	0.96	1.26	20.8
Approach		1242	2.9	1242	2.9	0.927	28.6	LOS C	20.1	144.5	0.91	0.89	1.09	37.1
West: Kurrajong Rd														
10	L2	188	2.2	188	2.2	0.270	21.7	LOS B	5.3	37.6	0.69	0.74	0.69	42.2
11	T1	449	0.7	449	0.7	0.902	43.0	LOS D	20.2	142.3	0.99	1.09	1.36	39.0
12	R2	146	0.7	146	0.7	0.905	57.0	LOS E	6.9	48.8	1.00	1.05	1.64	34.7
Approach		784	1.1	784	1.1	0.905	40.5	LOS C	20.2	142.3	0.92	1.00	1.25	38.5
All Vehicles		3667	2.6	3667	2.6	0.927	36.9	LOS C	20.2	144.5	0.95	0.96	1.25	33.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P2	East Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P3	North Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
P4	West Full Crossing	11	34.2	LOS D	0.0	0.0	0.93	0.93
All Pedestrians		42	34.2	LOS D			0.93	0.93

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 4 [[2029] Kurrajong x Kookaburra - Base w Dev - AM]

Network: N1 [2029 Base w Dev - AM]

Kurrajong Road x Kookaburra Road, Prestons
Site Category: 3 leg priority-controlled
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Kurrajong Rd (820m)														
5	T1	768	2.9	767	2.9	0.360	2.6	LOS A	2.6	19.3	0.09	0.04	0.12	58.2
6	R2	60	14.0	60	13.9	0.360	32.0	LOS C	2.6	19.3	0.92	0.41	1.13	42.7
Approach		828	3.7	827[N1]	3.7	0.360	4.7	NA	2.6	19.3	0.15	0.07	0.19	57.0
North: Kookaburra Rd (400m)														
7	L2	28	37.0	28	37.0	0.054	10.6	LOS A	0.2	1.7	0.55	0.76	0.55	42.6
9	R2	4	50.0	4	50.0	0.544	643.3	LOS F	1.4	13.7	1.00	1.02	1.09	5.7
Approach		33	38.7	33	38.7	0.544	92.2	LOS F	1.4	13.7	0.61	0.80	0.62	14.9
West: Kurrajong Rd (720m)														
10	L2	133	8.7	133	8.7	0.369	5.7	LOS A	0.0	0.0	0.00	0.11	0.00	57.3
11	T1	1280	1.5	1280	1.5	0.369	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.3
Approach		1413	2.2	1413	2.2	0.369	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.0
All Vehicles		2274	3.2	2272[N1]	3.2	0.544	3.4	NA	2.6	19.3	0.06	0.07	0.08	56.8

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

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 4 [[2029] Kurrajong x Kookaburra - Base w Dev - PM]

Network: N1 [2029 Base w Dev - PM]

Kurrajong Road x Kookaburra Road, Prestons
Site Category: 3 leg priority-controlled
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

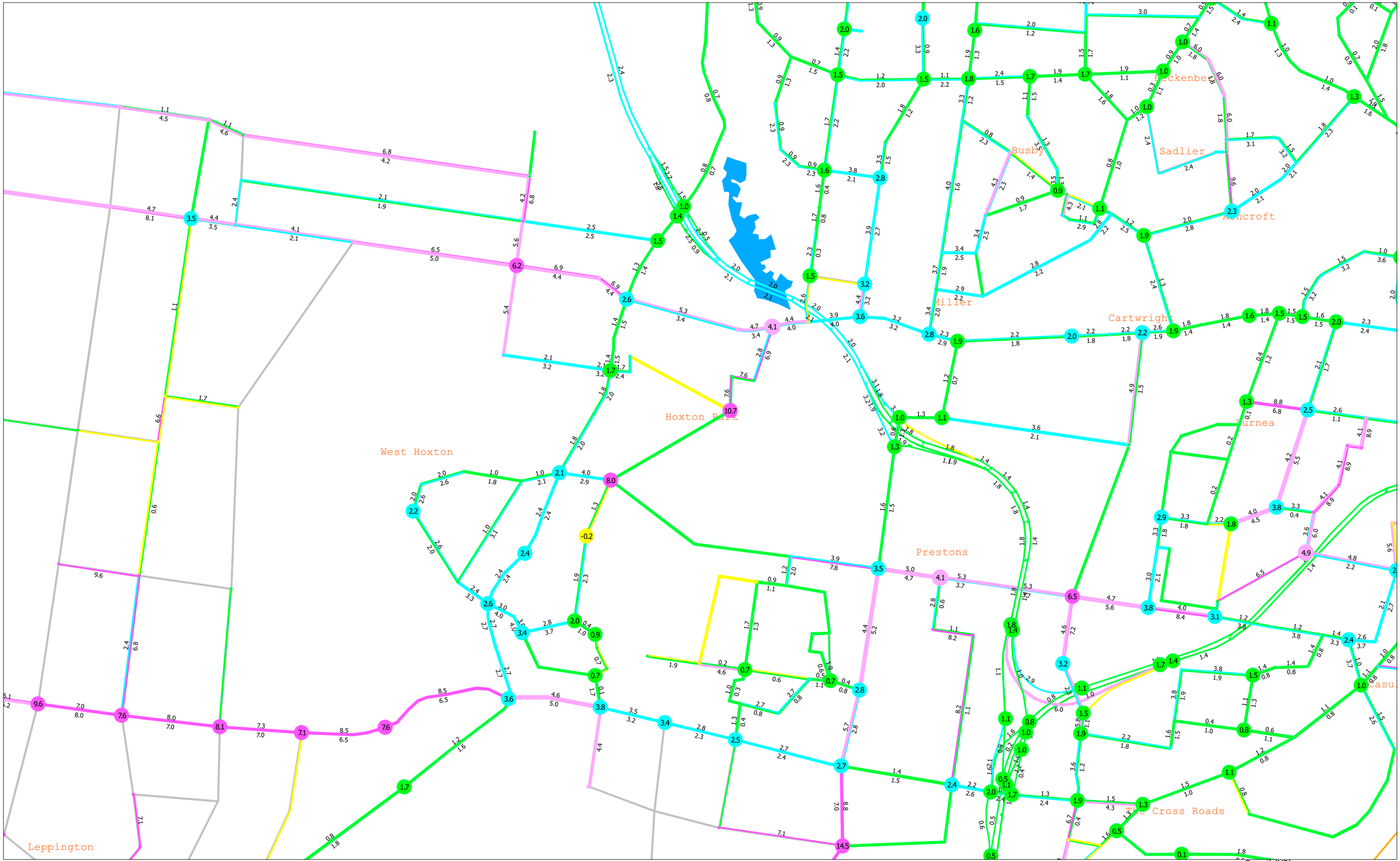
Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Kurrajong Rd (820m)														
5	T1	940	1.1	940	1.1	0.253	0.3	LOS A	0.3	2.2	0.03	0.01	0.03	59.8
6	R2	8	37.5	8	37.5	0.253	15.1	LOS B	0.3	2.2	0.06	0.01	0.07	56.5
Approach		948	1.4	948	1.4	0.253	0.4	NA	0.3	2.2	0.03	0.01	0.03	59.7
North: Kookaburra Rd (400m)														
7	L2	22	0.0	22	0.0	0.024	7.1	LOS A	0.1	0.6	0.39	0.61	0.39	46.6
9	R2	52	0.0	52	0.0	0.596	73.6	LOS F	2.2	15.1	0.97	1.07	1.35	28.4
Approach		74	0.0	74	0.0	0.596	53.7	LOS D	2.2	15.1	0.79	0.94	1.06	30.0
West: Kurrajong Rd (720m)														
10	L2	15	21.4	15	21.4	0.195	5.8	LOS A	0.0	0.0	0.00	0.02	0.00	57.4
11	T1	738	0.9	738	0.9	0.195	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach		753	1.3	753	1.3	0.195	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		1775	1.3	1775	1.3	0.596	2.5	NA	2.2	15.1	0.05	0.05	0.06	57.9

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

Appendix D

EMME Outputs

ROAD TRAFFIC GROWTH (%YR, 2HRSPK) LINKS & INTERSECTIONS

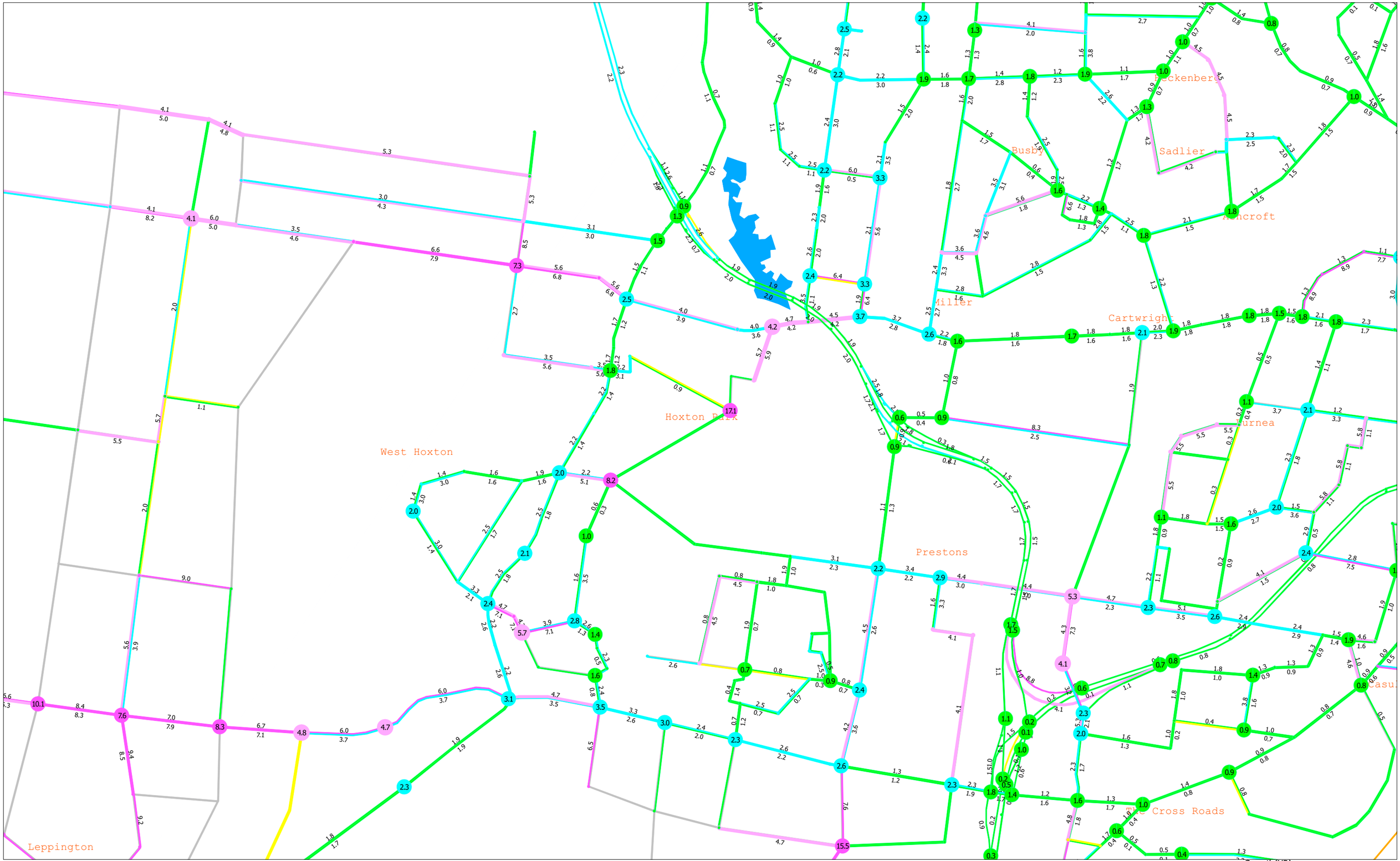


2011TZ SYDNEY GMA STRATEGIC TRAFFIC FORECASTING MODEL
Scenario 2036: 2036 SYDTRAFFICFORECASTMODELTZ11LU16V1.5STMV3.6-7-9AM(mf36)
2019-07-24 07:25

Growth(YR):

- <0
- <2.00
- 2.01-4.00
- 4.01-6.00
- >6.00
- New Links=999

ROAD TRAFFIC GROWTH (%YR, 2HRSPK) LINKS & INTERSECTIONS



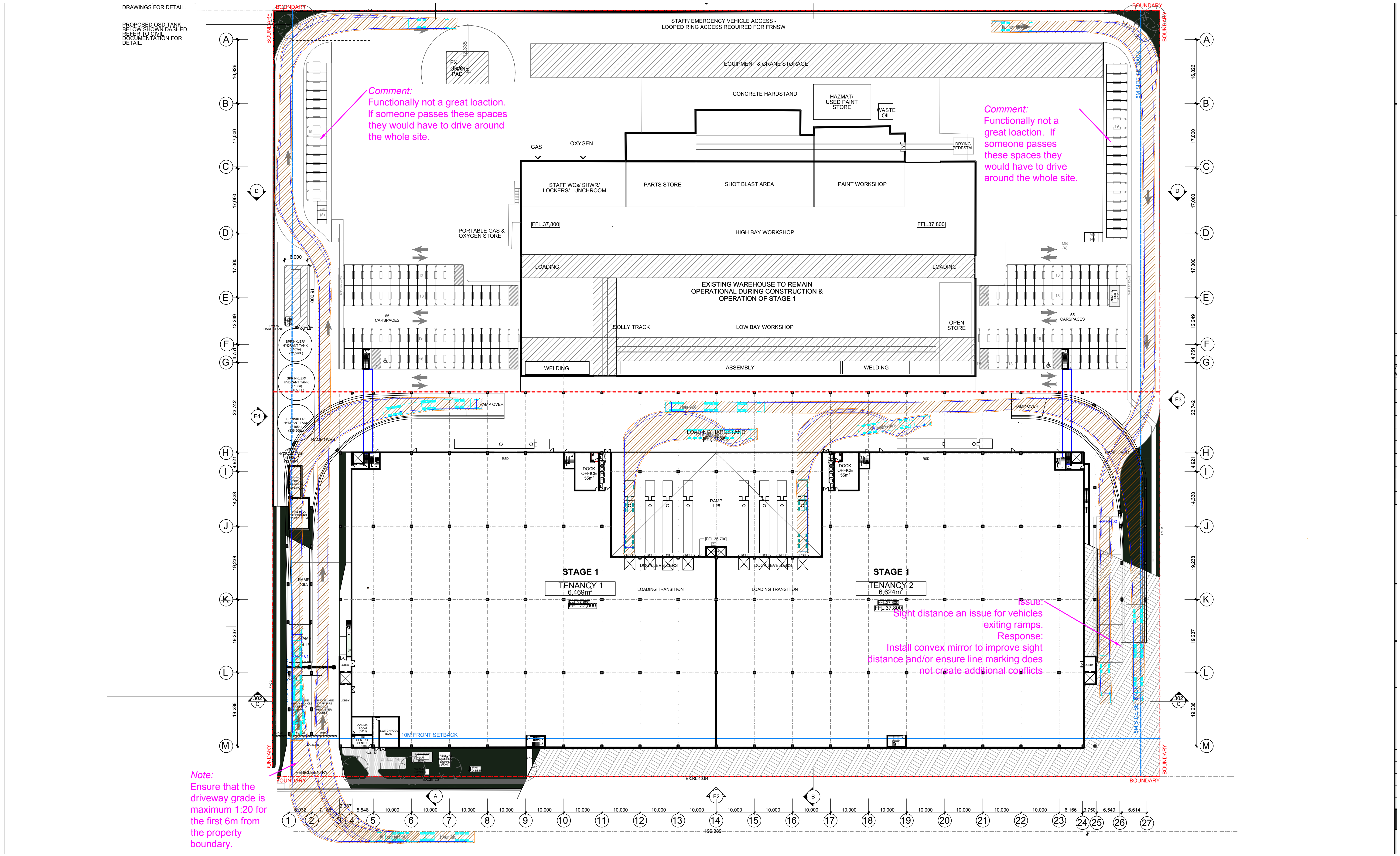
2011TZ SYDNEY GMA STRATEGIC TRAFFIC FORECASTING MODEL
Scenario 20360: 2036 SYDTRAFFICFORECASTMODELTZ11LU16V1.5STMV3.6-4-6PM(mf56)
2019-07-24 07:26

Growth(YR):

- *<0*
- *<2.00*
- *2.01-4.00*
- *4.01-6.00*
- *>6.00*
- *New Links=999*

Appendix E

Swept Path Analysis



Revision notes:

Rev:	Date:	Notes:

For information purposes only - not for construction

Drawn By: SH

Client: Bureau SRH Architecture

Project: P1004d02
28 Yarrunga Street, Preston

Drawing Title: STG - 1
Ground Floor

Date: 23/07/2019

Scale @ A3:

Drawing Number: AG01

asongroup
Suite 5.02, Level 5, 1 Castlereagh Street
Sydney NSW 2000
info@asongroup.com.au

LOADING BELOW

VOID

VOID

RAMP OVER

RAMP 02

1:16

1:8.3

RAMP 03

1:6

E3

302
C

Issue:
Sight distance an issue for vehicles exiting ramps.
Response:
Install convex mirror to improve sight distance and/or ensure line marking does not create additional conflicts

BIKES (18)

GROUND ENTRY RAMP

VOID/TO LOBBY BELOW

RAMP DOWN

BOUNDARY

BOUNDARY

E
12,249
F
4,751
G
23,742
H
4,921
I
14,338
J
19,238
K
19,237
L
19,236
M

8 9 10 11 12 13 E2 14 15 16 B 17 18 19 20 21 22 23 24 25 26 27

10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 6,166 3,750 6,549 6,614

Revision notes:

Rev:	Date:	Notes:

For information purposes only - not for construction

Drawn By: SH

Client: Bureau SRH Architecture

Project: P1004d02
28 Yarrunga Street, Preston

Drawing Title: STG - 1
Ground Mezzanine

Date: 23/07/2019

Scale @ A3:

Drawing Number: AG02

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Sydney NSW 2000
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EXISTING
WAREHOUSE

E4

E3

RAMP
1:8.3

RAMP
1:16

RAMP
1:8.3

B-DOUBLE

LOADING HARDSTAND

FFL 49.400

B-DOUBLE

RAMP
1:16

RAMP
1:8.3

DOCK
OFFICE
55m²

MRV/HRV/ SEMI

RAMP
1:25

MRV/HRV/ SEMI

DOCK
OFFICE
55m²

FFL 48.300

DOCK LEVELLERS

LOADING TRANSITION

DOCK LEVELLERS

LOADING TRANSITION

STAGE 1
TENANCY 3
6,725m²

STAGE 1
TENANCY 4
6,769m²

TENANCY 3
OFFICE SUITE
728m²

SMOKE
LOBBY

LOBBY

VOID

TENANCY
OFFICE SUITE
328m²

LOBBY

VOID

302
C

302
C

5M SIDE SETBACK

7.5M FRONT SETBACK

7.5M FRONT SETBACK

BOUNDARY

BOUNDARY

BOUNDARY

A

E2

B

6,032 | 7,188 | 3,387 | 5,548 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 6,166 | 3,750 | 6,549 | 6,614

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

Revision notes:

Rev:	Date:	Notes:

For information purposes only - not for construction

Drawn By:
SH

Client:
Bureau SRH Architecture

Project:
P1004d02
28 Yarrunga Street, Preston

Drawing Title:
STG - 1
Level 1

Date:
23/07/2019

Scale @ A3:

Drawing Number:
AG03

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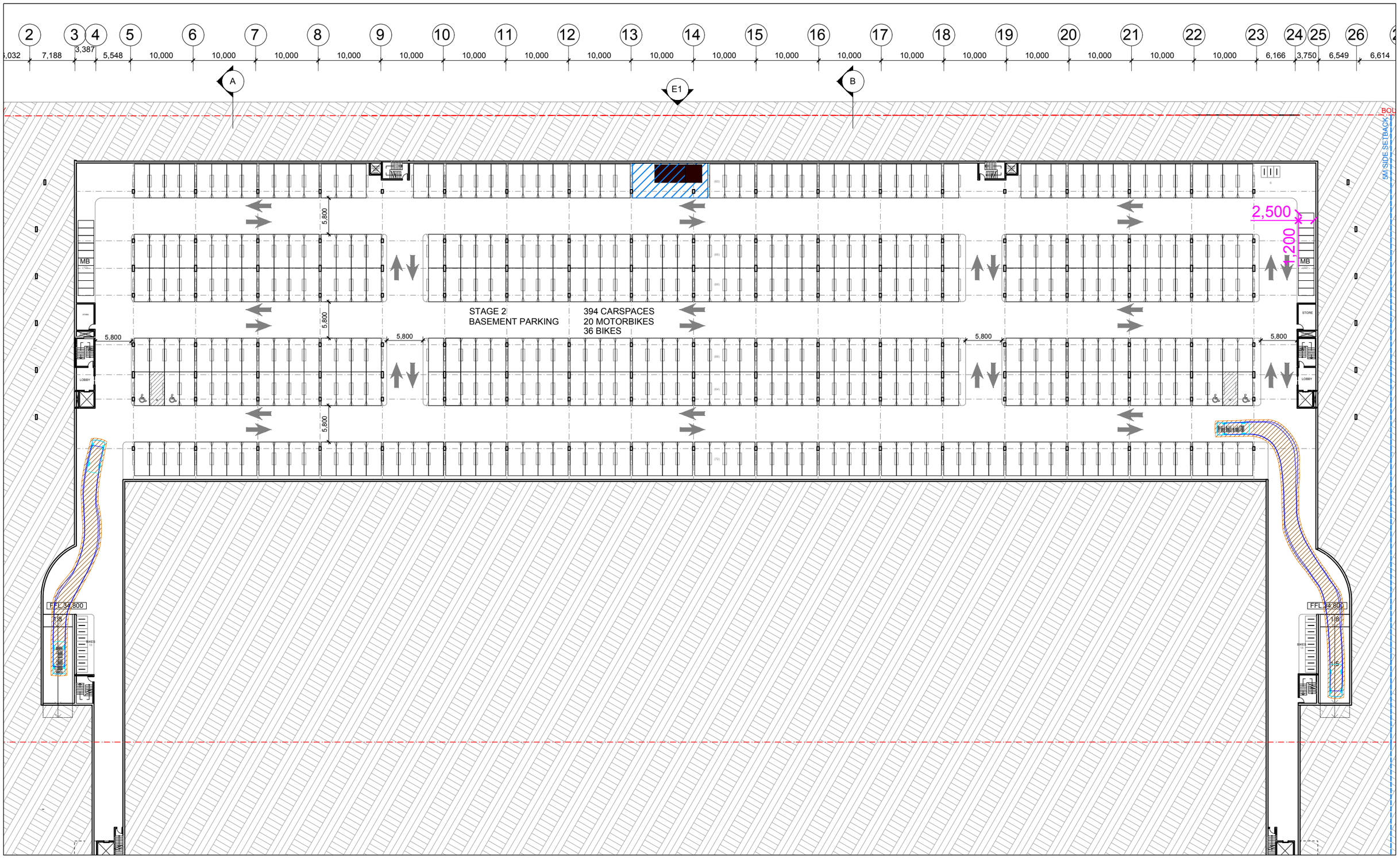

Revision notes:

Rev:	Date:	Notes:

For information purposes only - not for construction

Drawn By: SH

Client: Bureau SRH Architecture

Project: P1004d02
28 Yarrunga Street, Preston

Drawing Title: STG - 2
Basement

Date: 23/07/2019

Scale @ A3:

Drawing Number: AG04

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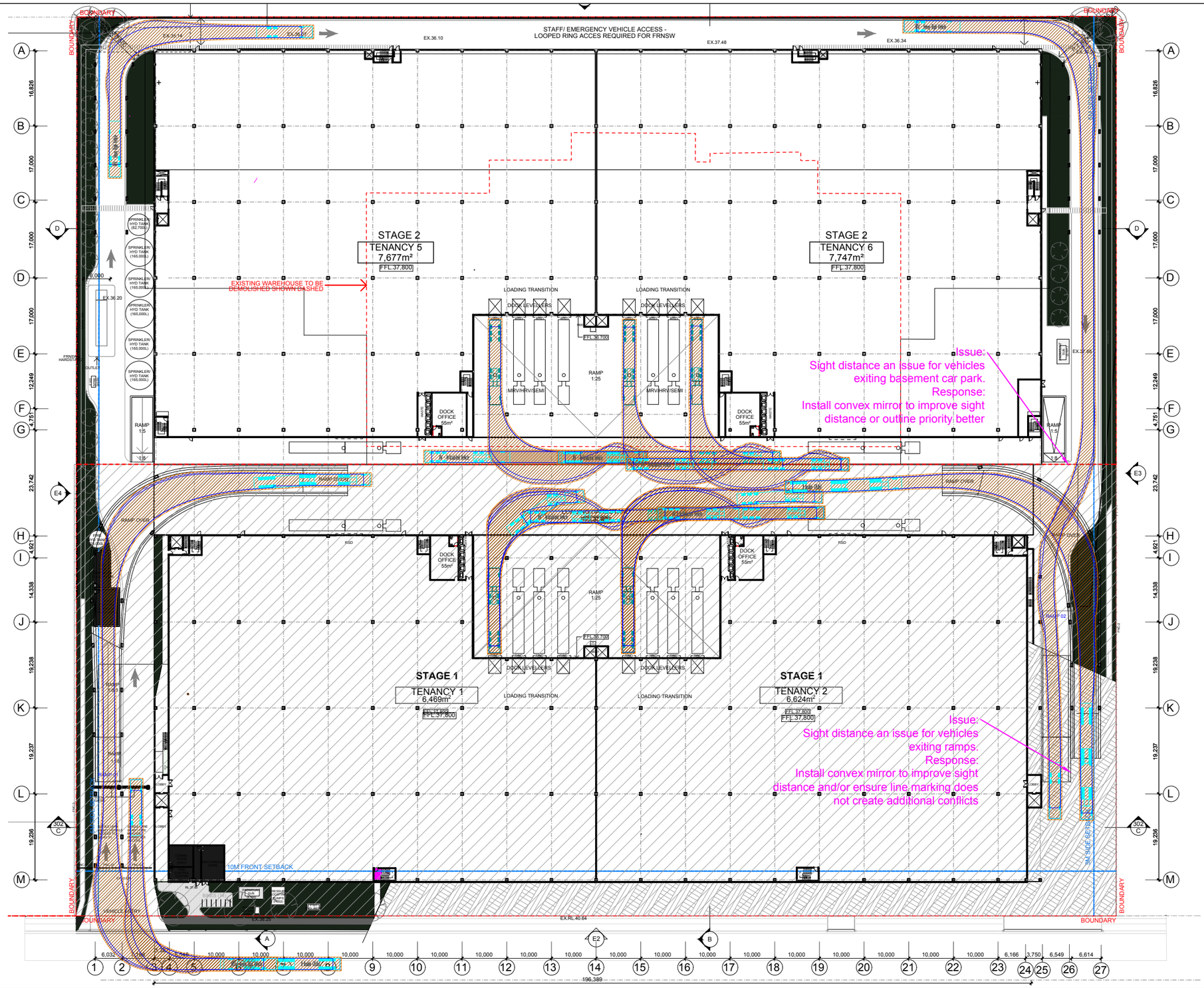

Revision notes:

Rev:	Date:	Notes:

For information purposes only - not for construction

Drawn By: SH

Client: Bureau SRH Architecture

Project: P1004d02
28 Yarrunga Street, Preston

Drawing Title: STG - 2
Ground

Date: 23/07/2019

Scale @ A3:

Drawing Number: AG05

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Sydney NSW 2000
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LOADING BELOW

LOADING BELOW

RAMP OVER

VOID

VOID

RAMP 02

1:16

1:8.3

RAMP 03

1:16

Issue:
Sight distance an issue for vehicles exiting ramps.
Response:
Install convex mirror to improve sight distance and/or ensure line marking does not create additional conflicts

BIKES (18)

BOUNDARY

BOUNDARY

E3

E2

B

302
C

F
G
H
I
J
K
L
M

4,751
23,742
4,921
14,338
19,238
19,237
19,236

10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 6,166 3,750 6,549 6,614

9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

Revision notes:

Rev:	Date:	Notes:

For information purposes only - not for construction

Drawn By: SH

Client: Bureau SRH Architecture

Project: P1004d02
28 Yarrunga Street, Preston

Drawing Title: STG - 2
Ground Mezzanine

Date: 23/07/2019

Scale @ A3:

Drawing Number: AG05

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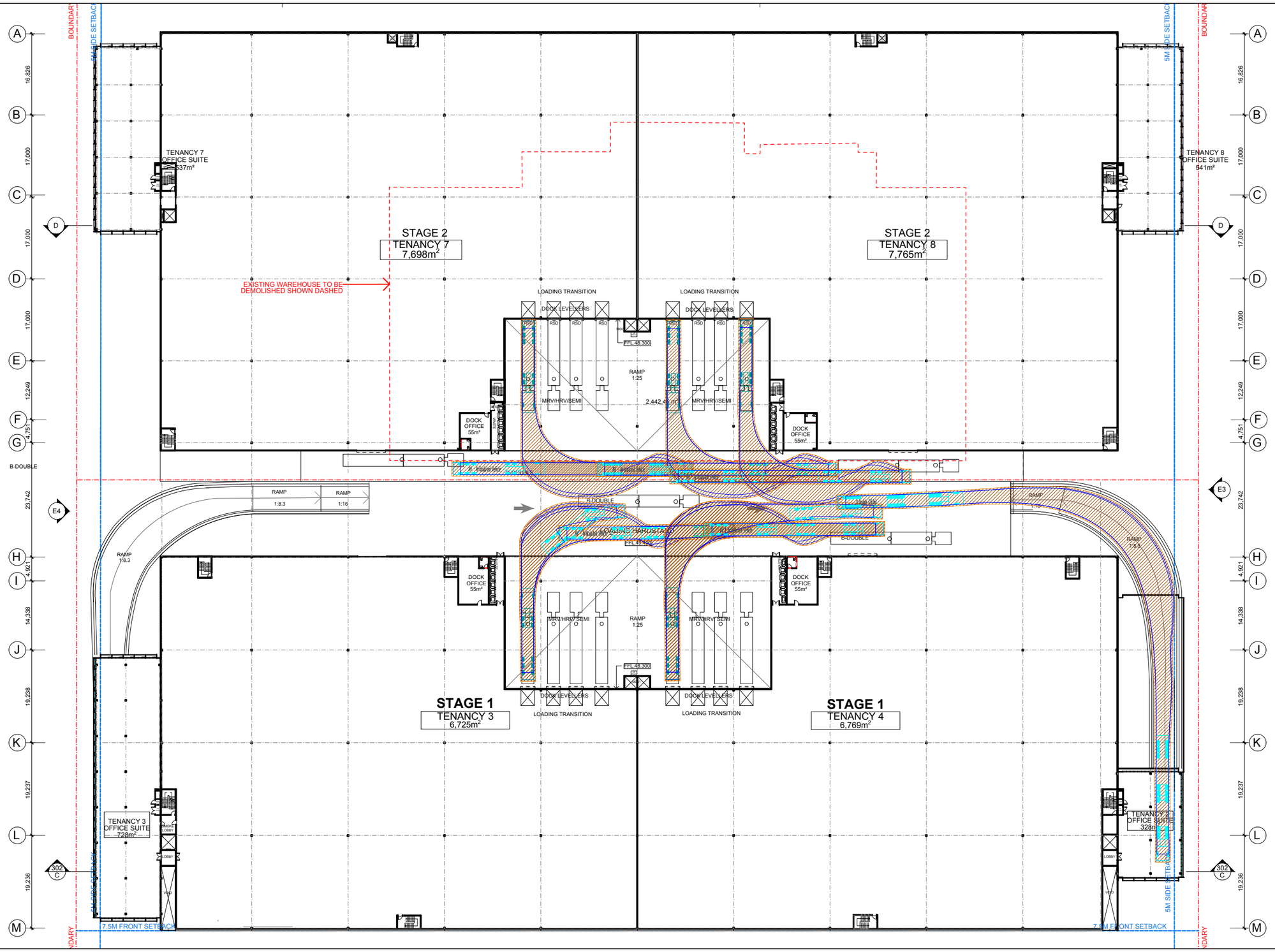

Revision notes:

Rev:	Date:	Notes:

For information purposes only - not for construction

Drawn By:
SH

Client:
Bureau SRH Architecture

Project:
P1004d02
28 Yarrunga Street, Preston

Drawing Title:
STG - 2
Level 1

Date:
23/07/2019

Scale @ A3:

Drawing Number:
AG.07

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