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RTB/bm
Ref: 191251_Let5_Rev2
06 October 2020

ATT: Traffic Team
Cumberland Council
PO Box 42
MERRYLANDS NSW 2160

E: council@cumberland.nsw.gov.au

CC: Susan Fox
Senior Environmental Assessment Officer
Industry Assessments
Department of Planning, Industry and Environment

E: Susan.Fox@planning.nsw.gov.au

Dear Sir/Madam,

Re: SSD-10407 - Yennora Liquid Waste Facility – Vehicle Maneuverability

The Department of Planning, Industry and Environment has requested following the second adequacy review that Benbow Environmental consult with Council regarding the traffic issues for the proposed development located at 14-16 Kiora Crescent, Yennora SSD-10407:

- *The Department considers access and site maneuverability to be a key issue given the limited space within the site. The Department requests the Applicant consult with Council prior to submitting the EIS to ensure Council are satisfied with the proposed access, truck maneuverability and parking arrangements at the site. The outcomes of those discussions must be documented within the EIS. The Department notes consultation is a requirement of the SEARs.*

Benbow Environmental agrees that site maneuverability is a key issue given the limited space within the site. As such the proponent has undertaken all reasonable feasible measures to improve vehicle manoeuvrability on site. Including:

- Removing the existing demountable office space;
- Connecting the driveways of the two lots to allow greater space for vehicle turning;
- Widen the driveway at 16 Kiora to allow greater space for vehicle turning;
- Bunding the rear external area at 16 Kiora for the purpose of using this as a truck waiting bay;
- 24/7 operations which will allow the trips to be spread out;
- Implementing a truck scheduling program to prevent queuing on the street.

This has allowed for vehicles to enter and leave the site in a forward direction, and truck swept paths do not interfere with car parking spaces.

The site plan is provided in Attachment 1, the traffic assessment is provided in Attachment 2, the swept paths in Attachment 3 and council SEARS comments in Attachment 4.

Please let us know if there are any other assessments you would like us to send through (including the EIS and all other supporting environmental documents).

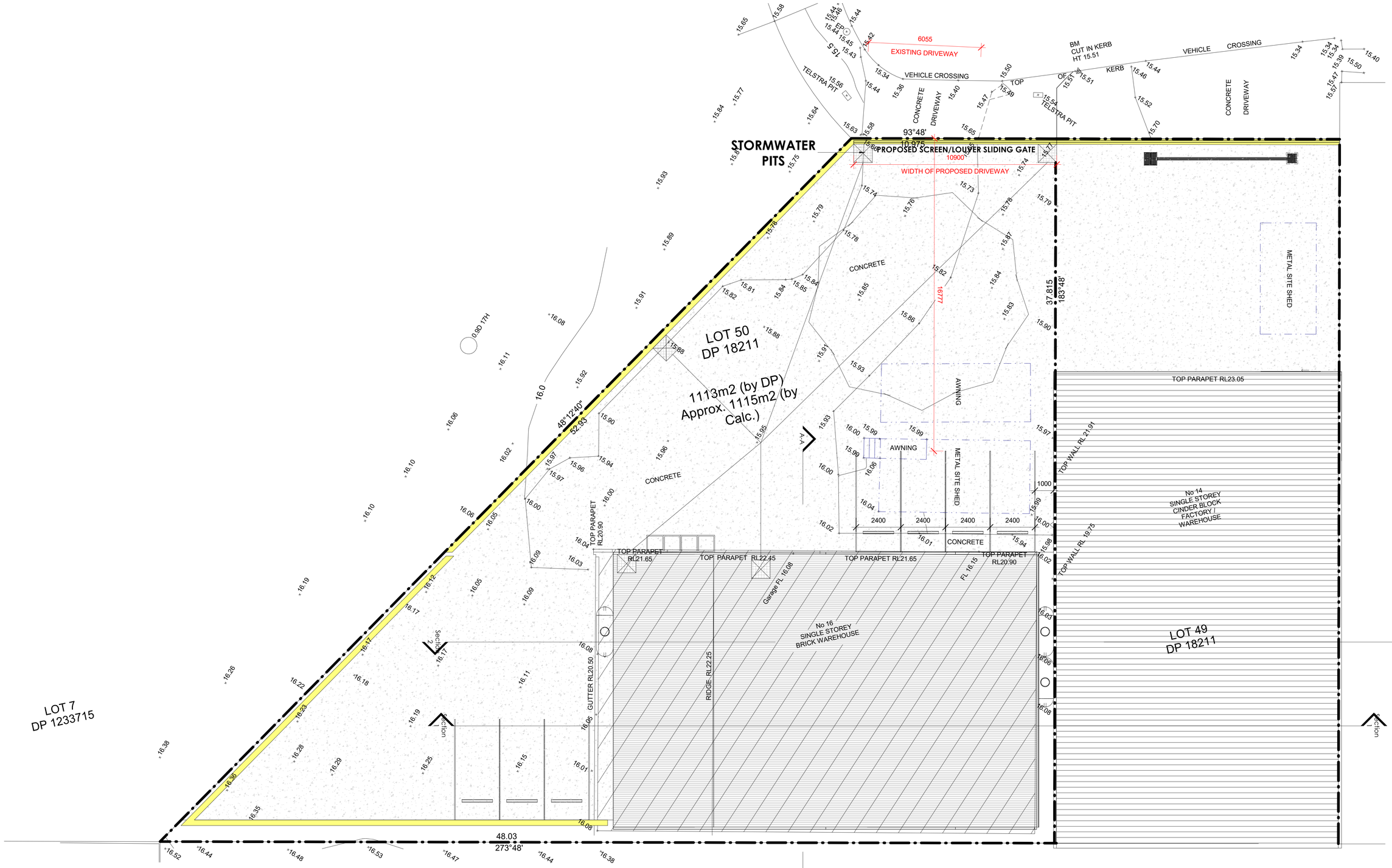
Benbow Environmental would like to arrange a meeting/conference call with council if required.

Yours faithfully,
for Benbow Environmental

Emma Hansma
Senior Engineer

ATTACHMENTS

Attachment 1: Site Plans



1 : 100 (1) SITE PLAN

REV	DESCRIPTION	DATE	BY
A	APPLICATION FOR APPROVAL	26 06 20	

FOR DA APPROVAL

BAINI DESIGN
ABN 51 068 732 593
1B Villiers street
Parramatta, NSW 2150
Sydney, Australia
Phone + 61 2 9188 8250
info@bainidesign.com.au
www.bainidesign.com.au

PROJECT TITLE
PROPOSED INDUSTRIAL ALTERATION AND ADDITION
14 - 16 Kiora Crescent, Yennora
DRAWING TITLE
SITE PLAN

PROJECT NUMBER	DRAWING NUMBER	DATE	REVISION
20097	02	06/26/20	A
	SCALE @ A1	DRAWN BY	CHECKED BY
	1 : 100	GA	CB

TRAFFIC AND PARKING IMPACT ASSESSMENT OF A PROPOSED EXPANSION OF A LIQUID WASTE PROCESSING BUSINESS

14-16 Kiora Crescent in Yennora

Traffic and Parking Impact Report

Prepared for: Enviro Waste Services Group

N1915887A (July 2020)

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1. INTRODUCTION

ML Traffic Engineers was commissioned by Enviro Waste Services Group to undertake a traffic and parking impact assessment of a proposed expansion of a liquid waste processing business at 14-16 Kiora Crescent in Yennora.

The vehicle access and egress to the car park is via Kiora Crescent. Kiora Crescent ends in cul-de-sac.

This traffic report focuses on the proposed expansion of a liquid waste processing business and changes in car usage and car park utilisation and additional trips from the proposed expansion of a liquid waste processing business.

In the course of preparing this assessment, the subject site and its environs have been inspected, plans of the development examined, and all relevant traffic and parking data collected and analysed.

2. BACKGROUND AND EXISTING CONDITIONS OF THE PROPOSED LOCATION

2.1 Location and Land Use

The proposed expansion of a liquid waste processing business is located to the North-West of Yennora Train Station and Yennora Public School respectively. Yennora Distribution Centre is located north of the site. The liquid waste processing business lies in the area which is a primarily industrial. Residential buildings are primarily located north and west to the site.

Figure 1 shows the location of the liquid waste processing business from the aerial map perspective.

Figures 2 shows the location of the liquid waste processing business from the street map perspective and assessed intersections respectively.

Figures 3 shows the existing site.

Figure 1: Location of the Subject Site on Aerial

Figure 2a: Street Map of the Location of the Liquid waste processing business and Assessed Intersections

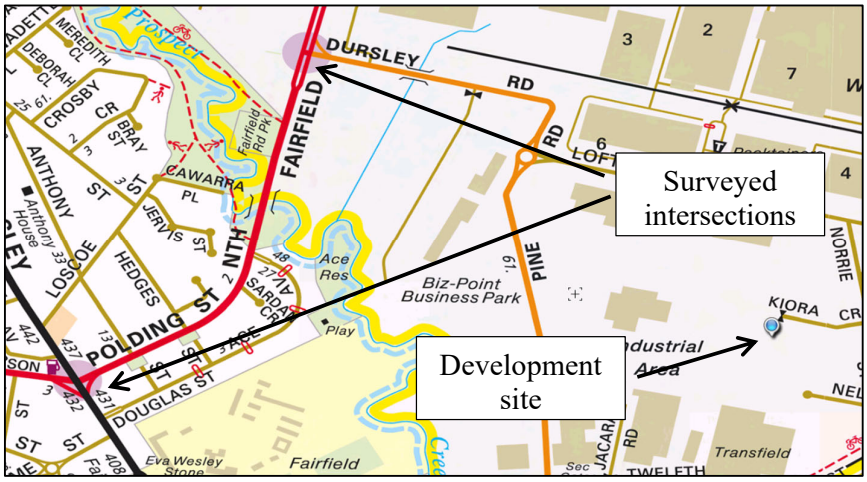

Figure 2b: surveyed signalised intersections in relation to development site

Figure 3: Liquid waste processing business (14 Kiora Crescent, Yennora)

Figure 4: Liquid waste processing business (16 Kiora Crescent, Yennora)

2.2 Road Network

This section describes the roads near the proposed expansion of a liquid waste processing business. The entrance to the liquid waste processing business is from Kiora Crescent.

Kiora Crescent is a local road with one lane each way. The default speed limit is 50km/hr. Unlimited on-street parking is permitted on both sides of the road. Kiora Crescent ends in cul de sac. Figure 4a shows the photograph of Kiora Crescent.

Norrie Street is a local road with one lane each way. The default speed limit is 50km/hr. Unlimited on-street parking is permitted on both sides of the road. Figure 4b shows the photograph of Norrie Street.

Loftus Road is a local road with one lane each way. The default speed limit is 50km/hr. Unlimited on-street parking is permitted on both sides of the road. Figure 4c shows the photograph of Loftus Road.

Dursley Road is a local road with one lane each way. The sign posted speed limit is 50km/hr. Unlimited on-street parking is permitted on both sides of the road except near the intersection of Dursley Road with Fairfield Road. Figure 4d shows the photograph of Dursley Road.

Fairfield Road is a local collector road with one lane each way. The sign posted speed limit is 60km/hr. On-street parking is not permitted on either side of the road. Figure 4e shows the photograph of Fairfield Road.

Polding Street is a local collector road with one lane each way. The sign posted speed limit is 60km/hr. On-street parking is not permitted on either side of the road. Figure 4f shows the photograph of Polding Street.

The Horsley Drive is a sub arterial road with two lane each way. The sign posted speed limit is 60km/hr. On-street parking is not permitted on either side of the road. School zone restrictions apply in the south east. Figure 4g shows the photograph of Polding Street.

Figure 4a: Kiora Crescent Facing East from liquid waste processing business

Figure 4b: Norrie Street facing North from Kiora Crescent

Figure 4c: Loftus Road facing West

Figure 4d: Dursley Road facing East

Figure 4e: Fairfield Road facing North

Figure 4f: Polding Street facing North East

Figure 4g: The Horsley Drive facing North West

2.3 Public Parking Opportunities

The liquid waste processing business is located in an industrial zone. Unlimited on-street parking is available on both sides of the Kiora Crescent and Norrie Street.

Site visits show that there are vacant car spaces on Kiora Crescent and Norrie Street.

2.4 Intersection Description

As part of this traffic impact assessment two intersections is assessed:

- Priority intersection of Norrie Street with Kiora Crescent
- Priority intersection of Loftus Road with Norrie Street
- Priority intersection of Loftus Road with Yennora Avenue
- Signalised intersection of Fairfield Road with Dursley Road
- Signalised intersection of The Horsley Drive with Polding Street

External traffic travelling to and from the site will most likely need to travel through the above intersection.

The priority intersection of Norrie Street with Kiora Crescent is a three-leg intersection with all turn movements permitted. Traffic on Kiora Crescent must give way to traffic on Norrie Street. Figure 5a shows a layout of the intersection using SIDRA (8) – an industry standard intersection assessment software.

The priority intersection of Loftus Road with Norrie Street is a three-leg intersection with all turn movements permitted. Traffic on Norrie Street must give way to traffic on Loftus Road. Figure 5b shows a layout of the intersection using SIDRA.

The priority intersection of Loftus Road with Yennora Avenue is a three-leg intersection with all turn movements permitted. Traffic on Yennora Avenue must give way to traffic on Loftus Road. Figure 5c shows a layout of the intersection using SIDRA.

The signalised intersection of Fairfield Road with Dursley Road is a three-leg intersection. All turn movements are permitted. Pedestrian crossings are provided on all approaches. Figure 5d presents the layout of the intersection using SIDRA.

The signalised intersection of The Horsley Drive with Polding Street is a four-leg intersection. All turn movements are permitted except right turn movement from north east approach of Polding Street into The Horsley Drive. Pedestrian crossings are provided on all approaches except south east approach. Figure 5e presents the layout of the intersection using SIDRA.

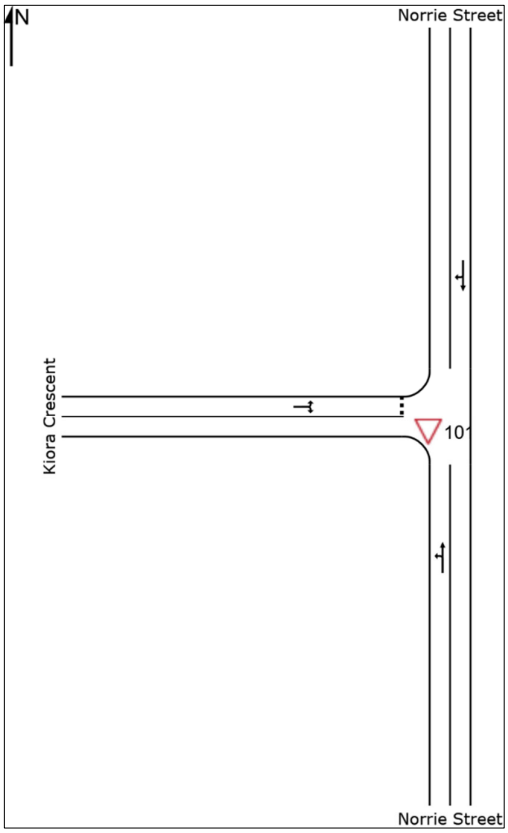

Figure 5a: Priority Intersection of Norrie Street with Kiora Crescent (SIDRA)

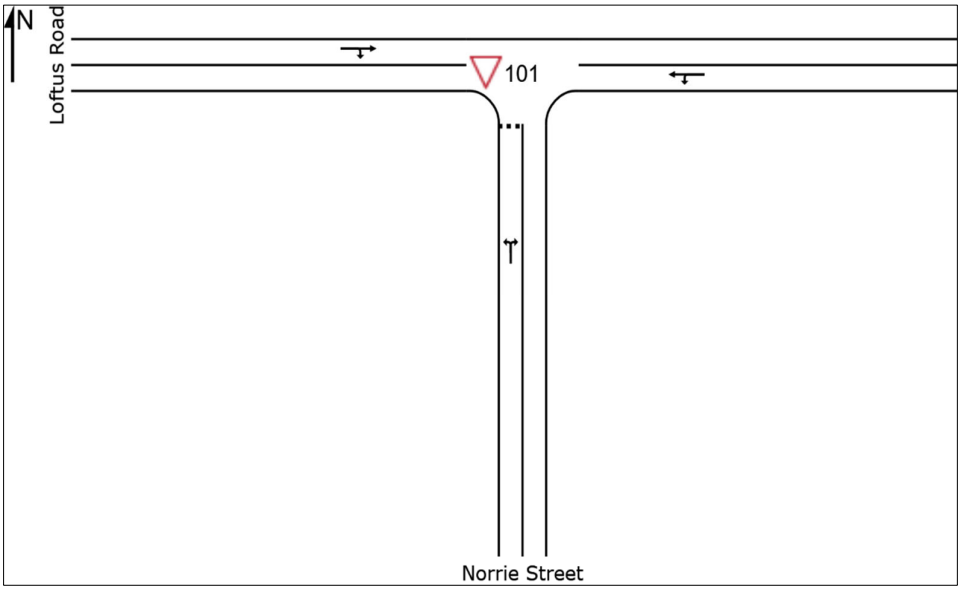

Figure 5b: Priority Intersection of Loftus Road with Norrie Street (SIDRA)

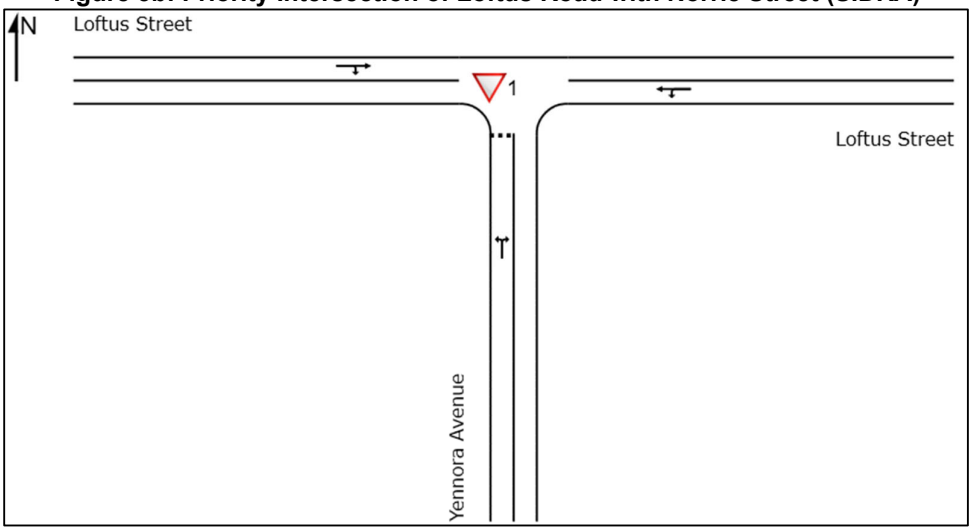

Figure 5c: Priority Intersection of Loftus Road with Norrie Street (SIDRA)

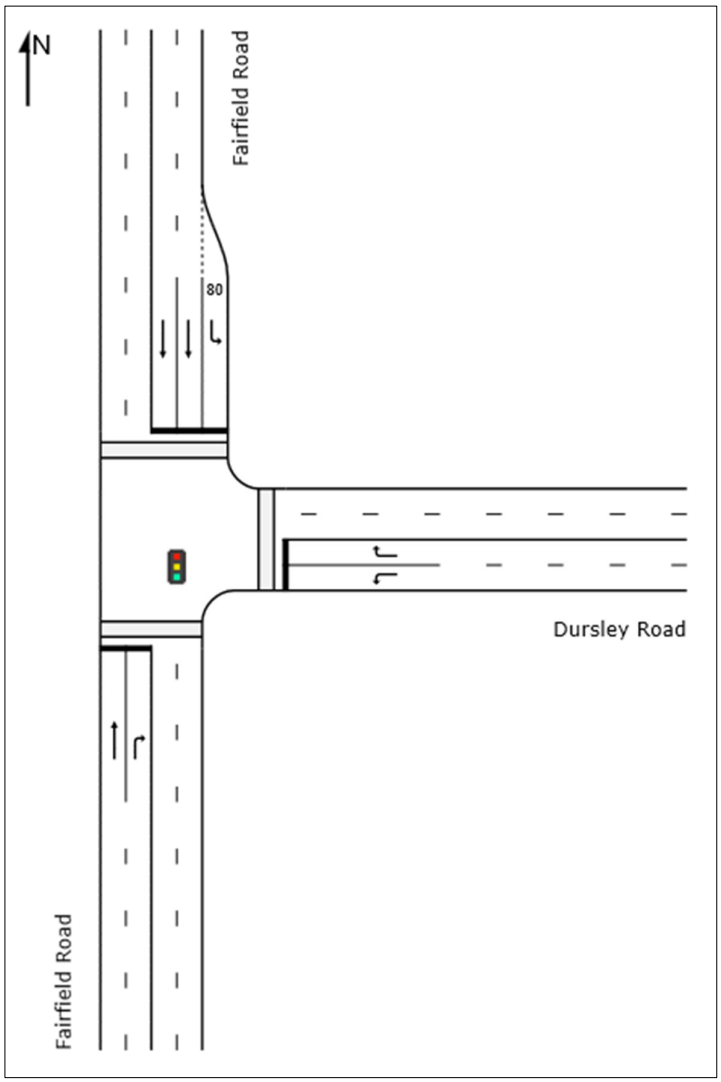

Figure 5d: Signalised Intersection of Fairfield Road with Dursley Road (SIDRA)

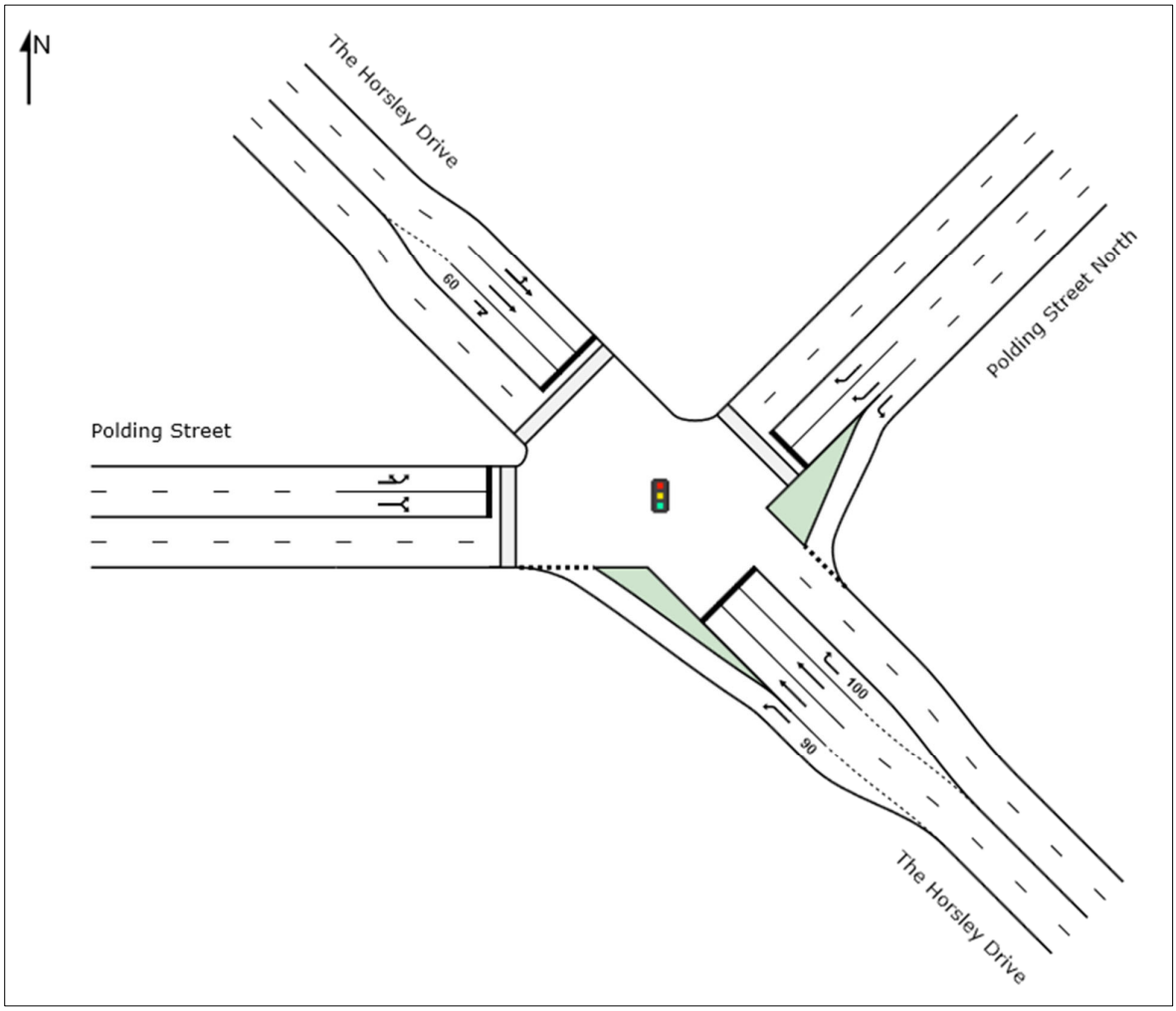

Figure 5e: Signalised Intersection of The Horsley Drive with Polding Street (SIDRA)

2.5 Existing Traffic Volumes

As part of the traffic assessment, traffic counts have been undertaken at the intersection for the weekday AM and PM peak hour periods. The peak hours are 8:00am to 9:00am and 5:00pm to 6:00pm for the weekday AM and PM peak hours respectively.

Figures 6a and 6b presents in vehicle numbers the existing weekday AM and PM peak hour traffic volumes respectively.

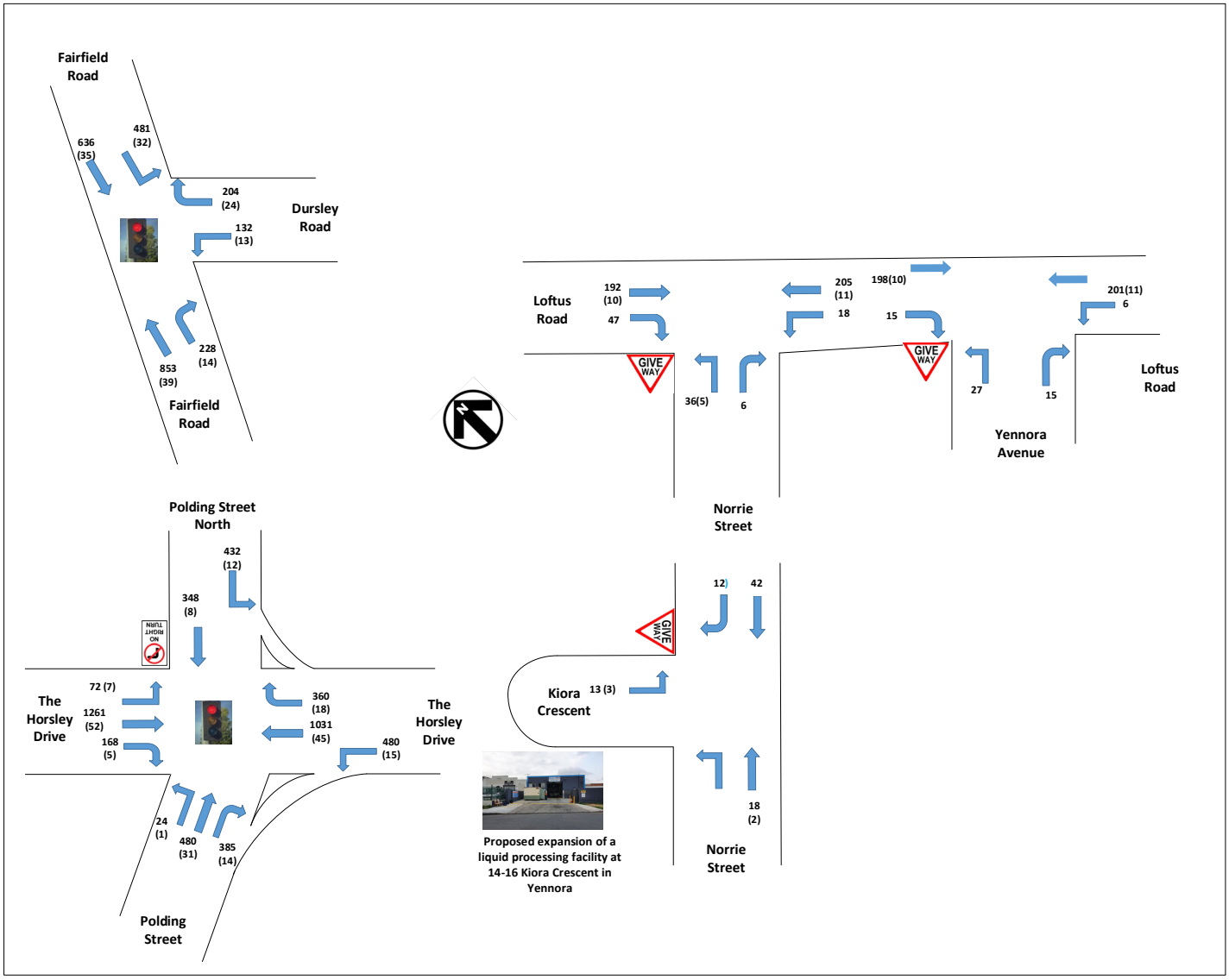

Figure 6a: Existing Weekday Traffic Volumes AM Peak Hour

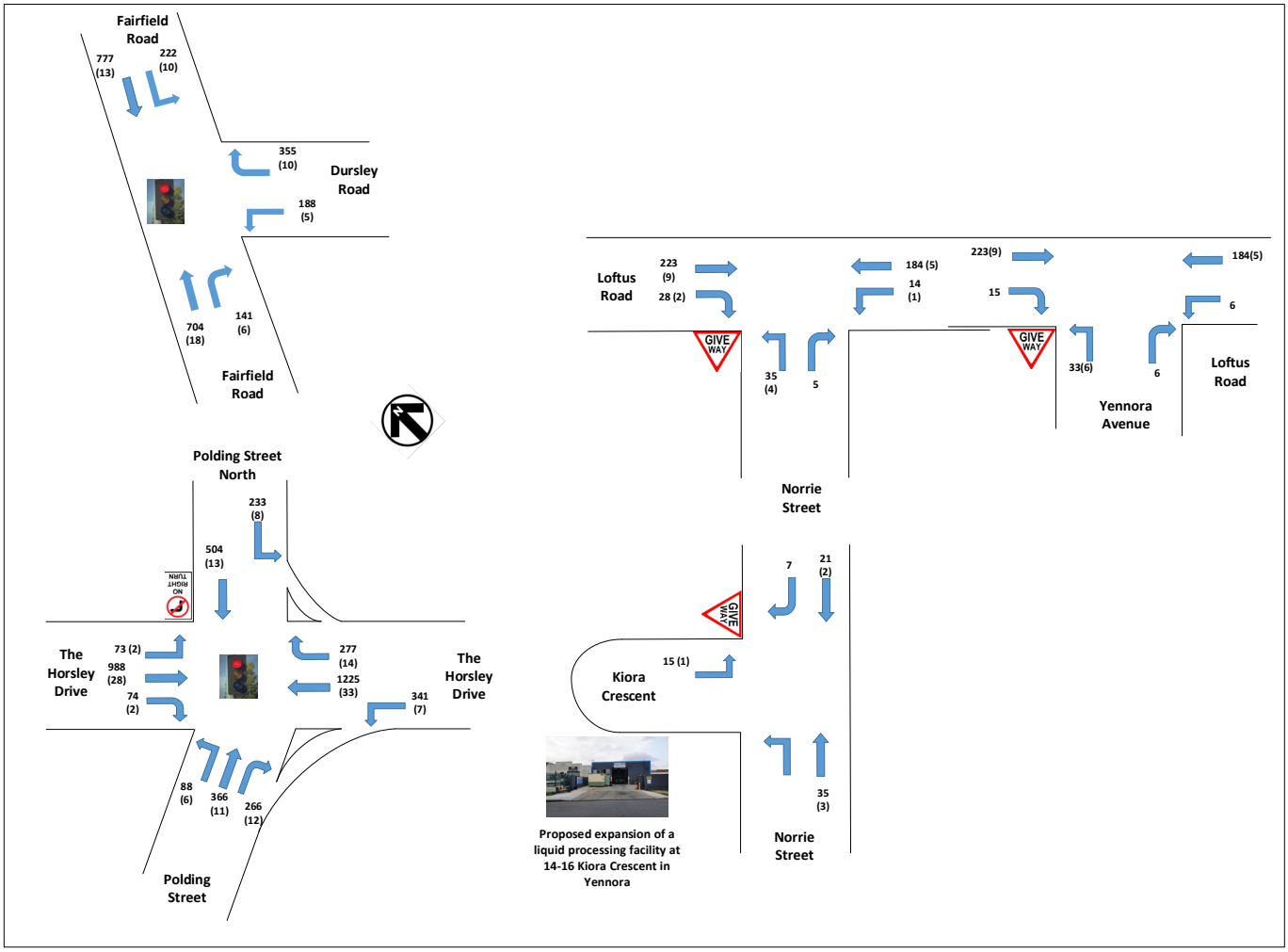

Figure7: Existing Weekday Traffic Volumes PM Peak Hour

2.6 Intersection Assessment

An intersection assessment has been undertaken for:

- Priority Intersection of Norrie Street with Kiora Crescent
- Priority Intersection of Loftus Road with Norrie Street
- Priority intersection of Loftus Road with Yennora Avenue
- Signalised intersection of Fairfield Road with Dursley Road
- Signalised intersection of The Horsley Drive with Polding Street

The existing intersection operating performance was assessed using the SIDRA software package (version 9) to determine the Degree of Saturation (DS), Average Delay (AVD in seconds) and Level of Service (LoS) at each intersection. The SIDRA program provides Level of Service Criteria Tables for various intersection types. The key indicator of intersection performance is Level of Service, where results are placed on a continuum from 'A' to 'F', as shown in Table 1.

LoS	**Traffic Signal / Roundabout**	**Give Way / Stop Sign / T-Junction control**
A	Good operation	Good operation
B	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	Satisfactory	Satisfactory, but accident study required
D	Operating near capacity	Near capacity & accident study required
E	At capacity, at signals incidents will cause excessive delays.	At capacity, requires other control mode
F	Unsatisfactory and requires additional capacity, Roundabouts require other control mode	At capacity, requires other control mode

Table 1: Intersection Level of Service

The Average Vehicle Delay (AVD) provides a measure of the operational performance of an intersection as indicated below, which relates AVD to LOS. The AVD's should be taken as a guide only as longer delays could be tolerated in some locations (i.e. inner-city conditions) and on some roads (i.e. minor side street intersecting with a major arterial route). For traffic signals, the average delay over all movements should be taken. For roundabouts and priority control intersections

(sign control) the critical movement for level of service assessment should be that movement with the highest average delay.

LoS	Average Delay per Vehicles (seconds/vehicle)
A	Less than 14
B	15 to 28
C	29 to 42
D	43 to 56
E	57 to 70
F	>70

Table 2: Intersection Average Delay (AVD)

The degree of saturation (DS) is another measure of the operational performance of individual intersections. For intersections controlled by traffic signals both queue length and delay increase rapidly as DS approaches 1. It is usual to attempt to keep DS to less than 0.9. Degrees of Saturation in the order of 0.7 generally represent satisfactory intersection operation. When DS exceed 0.9 queues can be anticipated.

The result of the intersection analysis is as follows:

Priority Intersection of Norrie Street with Kiora Crescent

- The turn movements have a LoS A for the AM and PM peak hours
- There is a spare capacity at this intersection

Priority Intersection of Loftus Road with Norrie Street

- The turn movements have a LoS A or B for the AM and PM peak hours
- There is spare capacity at this intersection.

Priority Intersection of Loftus Road with Yennora Avenue

- The turn movements have a LoS A for the AM and PM peak hours
- There is spare capacity at this intersection.

Signalised Intersection of Fairfield Road with Dursley Road

- Overall intersection has a LoS C and B for AM and PM peak hours respectively
- There is spare capacity at this intersection

Signalised Intersection of The Horsley Drive with Polding Street

- Overall intersection has a LoS D and C for the AM and PM peak hours respectively
- There is spare capacity at this intersection

The full Sidra results are presented in Appendix A.

2.7 Public Transport

The nearest bus stop to the liquid waste processing business is 550 metres away on Railway Street. This stop is serviced by Bus Route N60. This public transport service provides access to a range of suburbs including Fairfield, Merrylands, Parramatta, Lidcombe, Strathfield and City.

Yennora Train Station is within 500 metres from the liquid waste processing business. Yennora Train Station is frequently serviced by Sydney Trains T2 Inner West & Leppington and T5 Cumberland line services during both AM and PM peak hours.

Figure 11 shows public transport network map.

Overall, the site has excellent access to public transport.

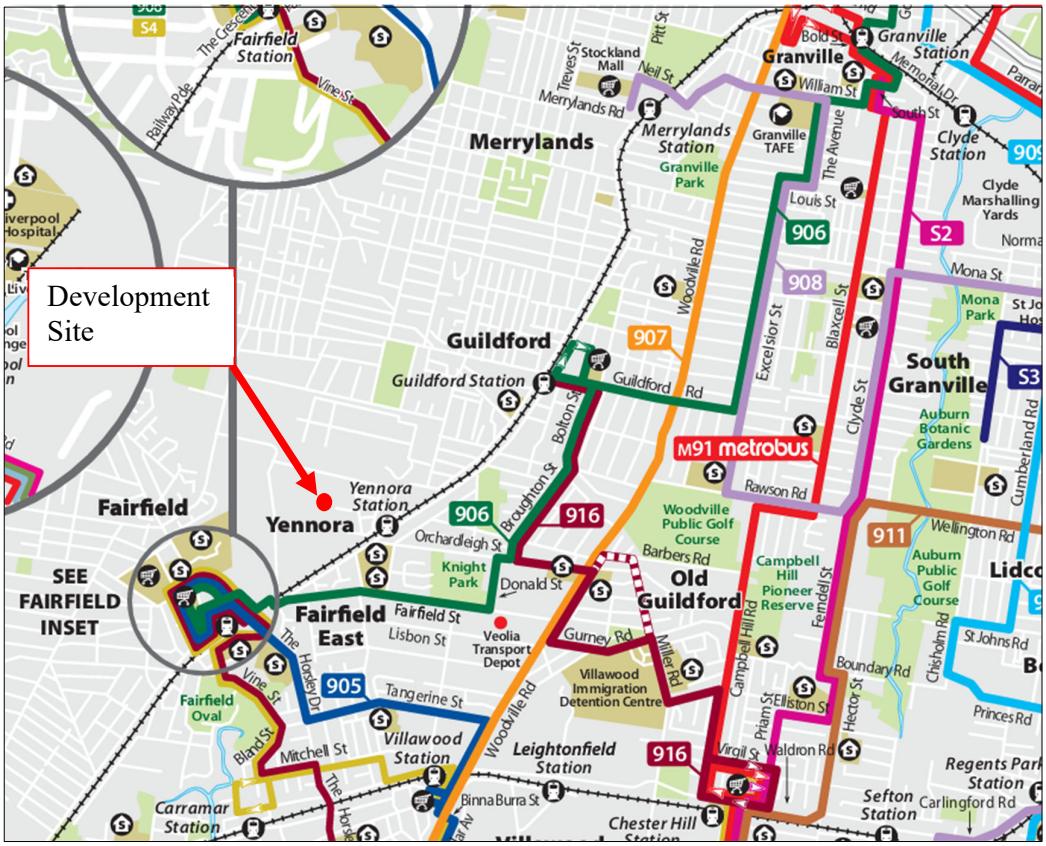

Figure 11: Public Transport Network Map

2.8 Conclusions on the Existing Conditions

The proposed expansion of a liquid waste processing business is in an area where there are vacant car spaces on Kiora Crescent and Norrie Street.

The nearby intersection performs well to accommodate additional traffic of the liquid waste processing business.

The local area is serviced by both train and bus.

3. PROPOSED EXPANSION OF A LIQUID PROCESSING FACILITY

The details of the proposed expansion of a liquid processing facility are as follows:

Infrastructure

A total of 3 car parking spaces are provided at the rear 16 Kiora Crescent. The remaining external hardstand area is proposed to be unoccupied to allow for greater vehicle manoeuvrability.

The parking is provided on the ground floor level.

The site has frontage to Kiora Crescent. The vehicle access and egress to the car park area is from Kiora Crescent.

Truck exit is via the existing driveway 16 Kiora Crescent and the exit is via the driveway on 14 Kiora Crescent.

A truck queuing area is provided on the south west area of 16 Kiora Crescent.

Operational

Currently the liquid processing facility processes 900 tonnes of liquid waste per annum.

Enviro Waste proposes to increase the processing quantity to 110,000 tonnes per annum and increase the maximum quantity to be stored at any one time to 477 tonnes. Waste processing streams and proposed quantities per location are listed below:

14 Kiora Crescent (existing facility – industrial waste treatment/disposal, liquid waste material, sewage sludge, grease trap waste etc)

Processing capacity per annum: 100,000 tonnes.
Maximum storage at any one time: 377 tonnes.

16 Kiora Crescent (additional facility - out-of-date liquid product/food waste destruction)

Processing capacity per annum: 10,000 tonnes.
Maximum storage at any one time: 100 tonnes

The liquid processing facility is proposed to operate 24 hours seven days a week.

Currently a truck arrives and departs per hour (typically). The number of staff will increase by three. The truck sizes are rigid trucks up to 10 metre.

Staff arrivals and departures are outside of the weekday peak hours.

A full scaled plan of the proposed expansion of a liquid processing facility is provided as part of the Development Application.

4. CAR AND TRUCK PARKING CONSIDERATIONS

4.1 Holroyd Council Development Control Plan 2013

The car parking requirements for the proposed expansion of a liquid processing facility is presented in the *Holroyd Council Development Control Plan August 2013* with the parking rates as follows as it applies to this development:

Factory

- 1 car parking space per 300m^2 of GFA

Office Units (ancillary)

- 1 car parking space per 40m^2 of GFA

Table 3 summarises the car parking requirements of the proposed development.

Use	Number	GFAm^2	Parking Rate	Required Car Spaces	Provided Car Spaces
Warehouse	14 Kiora	324	0.003	1	7
Office		106	0.025	3	
Warehouse	16 Kiora	318	0.003	1	
Office		78	0.025	2	
Total				7	7

Table 3: Summary of Car Parking Requirements

The proposed Liquid processing facility is provided 7 car spaces versus 7 car spacers required by Council's requirement. Therefore, it complies with car parking requirements by Council.

The liquid processing facility is an uncommon (or unique). The provision of seven on site will accommodate the expected car requirements for staff. Visitors arriving by car is a rare event. Business is generated by staff visiting the customers premises, discussions over the phone, and email etc.

The expected truck parking demand is four per hour. There is overall no peak hour for truck arrival and departures.

5. VEHICLE TRAFFIC IMPACT CONSIDERATIONS

5.1 Truck Traffic Generation

The NSW RTA Guide to Traffic Generating Development Documents does not publish truck trip generation rates for landscaping material supplies premises.

Traffic generation for the proposed development has been determined based on the annual tonnage of 110,000,000 litres per year and operation of the site 7 days per week. Material would be transported in trucks ranging from 2000 to 22000 litres in size. The average truck capacity is 10000L.

The following calculations are provided:

10000 litres trucks capacity

Average loads and truck movements using 22000L trucks for all loads.

Incoming Materials:	110,000,000/10000=	11000	Trucks p/a
Outgoing Materials:	110,000,000/10000=	11000	Trucks p/a
Totals		**22000**	**Trucks p/a**

Average annual truck trips

Using 10000 litres trucks	22000 trucks per year / 365 =	60 trucks per day

Based on the use of 10000 litres trucks, the number of truck movements expected would be between 60 truck trips per day, which will produce 30 movements in and 30 movements out per day over a 24-hour period. which equates to 3 trucks per

hour. It is most likely to have 2 arrival and 1 departure truck for the AM peak hour and 1 arrival and 2 departure truck for PM peak hour.

5.2 Car Traffic Generation

The NSW RTA Guide to Traffic Generating Development 2002 publishes car trip generation rates for warehouse and office as follows

warehouse

- 0.5 trips per 100m^2 gross floor area for AM peak hour
    - It is assumed that generated trips for PM peak hour is as same as AM peak hour

Office

- 2 trips per 100 m^2 of Gross Floor Area in the PM peak hours
    - It is assumed that generated trips for AM peak hour is as same as PM peak hour

Table 4 summarises the trip generations for the respective land uses during the peak hours.

14 Kiora				
Peak Hour	**Use**	**GFA(m^2)**	**Trip Generation Rate per 100m2**	**Trips Generated**
AM	Warehouse Unit	324	0.5	1.62
PM			0.5	1.62
AM	Office Unit	106	2	2.12
PM			2	2.12
AM	Total trip Generation			3.74
PM				3.74

16 Kiora				
Peak Hour	**Use**	**GFA(m^2)**	**Trip Generation Rate per 100m2**	**Trips Generated**
AM	Warehouse Unit	318	0.5	1.59
PM			0.5	1.59
AM	Office Unit	78	2	1.56
PM			2	1.56
AM	Total trip Generation			3.15
PM				3.15

Table 4: Trip Generations in the Weekday Peak Hours

The total car trips can be obtained as the sum of the 14 and 16 Kiora Crescent. Table 5 presents the net trip generations and distributions. The generated trips in the peak hours are modest.

Peak Hour	**Origin**	**Destination**	**Total**
AM	0	7	6.9
PM	7	0	6.9

Table 5: Net Trip Generations and Distributions in the Weekday Peak Hours

5.3 Traffic Volumes

The additional development trips are assigned onto the local traffic network. The following figures present the existing with the development trips (in red for origin and blue for destination trips) for the respective peak hours.

The additional development trips represent a low proportion of the existing traffic volumes.

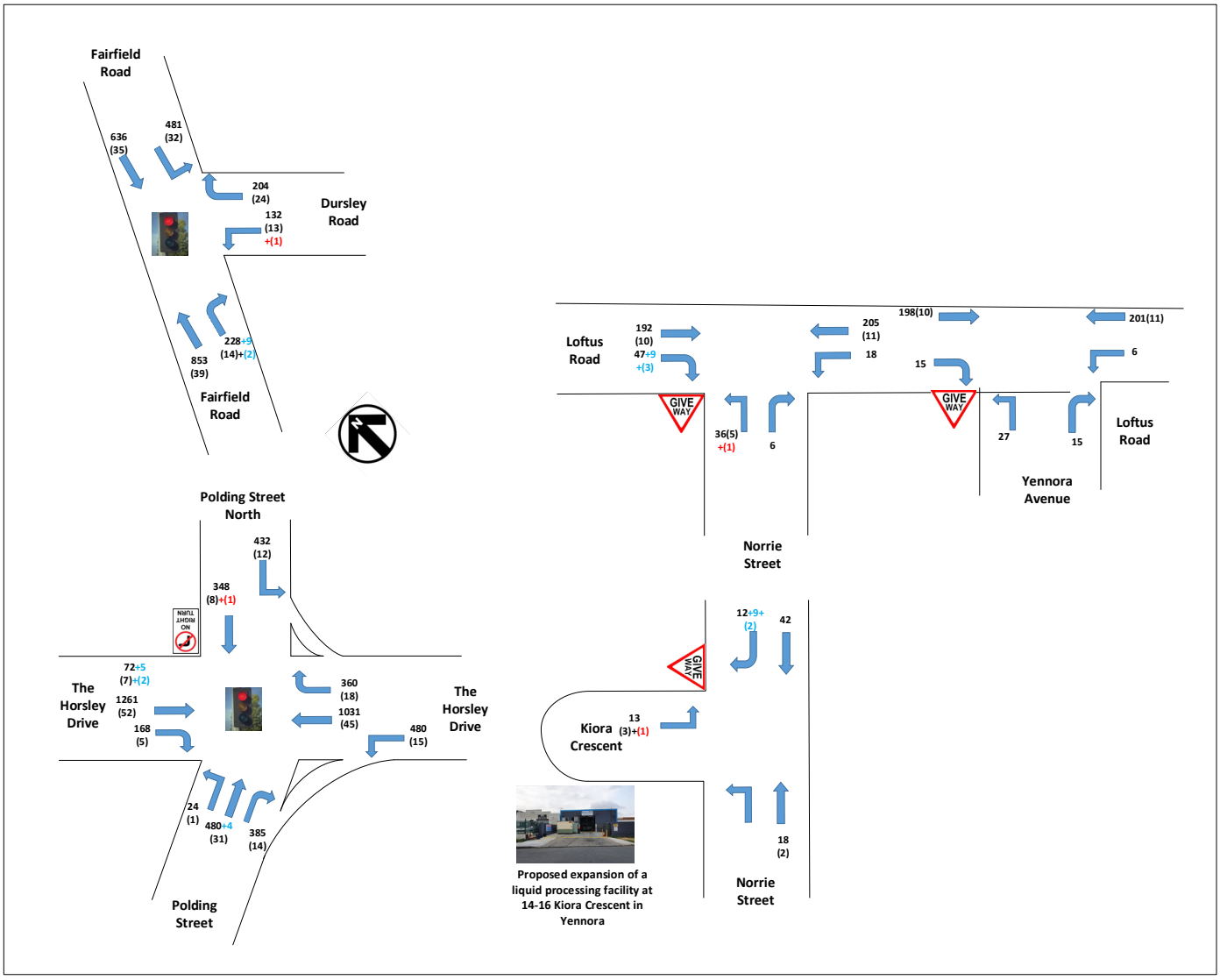

Figure 12: Weekday AM Peak Hour Traffic Volumes with Proposed Expansion Traffic

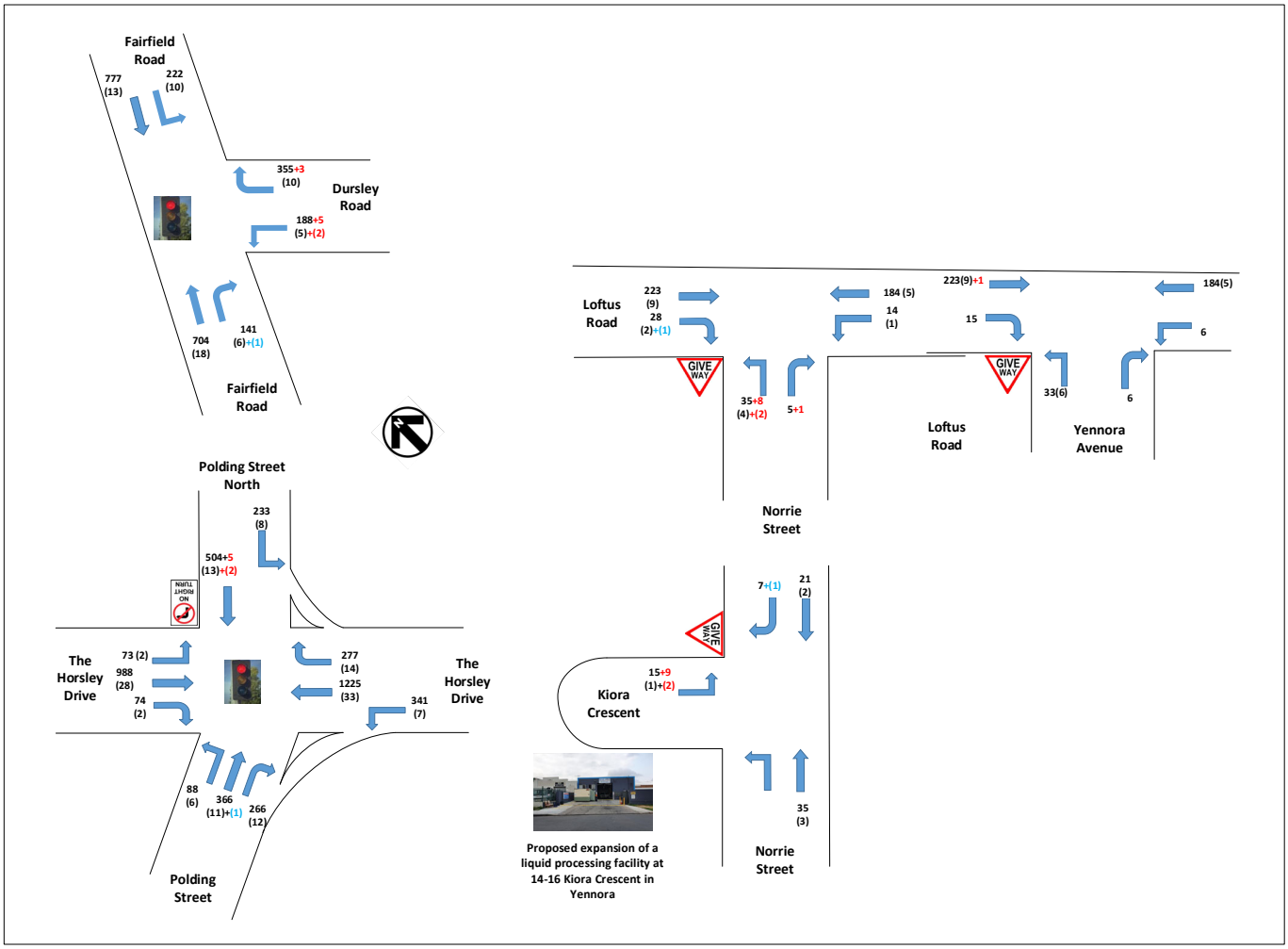

Figure 13: Weekday PM Peak Hour Traffic Volumes with Proposed Expansion Traffic

5.4 Intersection Assessment

An intersection assessment has been undertaken for the surveyed intersection.

The results of the intersection analysis are as follows:

Priority Intersection of Norrie Street with Kiora Crescent

- All turn movements have a LoS A for both the AM and PM peak hours
- The additional trips do not change the LoS for any turn movement or the overall intersection.

Priority Intersection of Loftus Road with Norrie Street

- All turn movements have a LoS A for both AM and PM peak hours
- The additional trips do not change the LoS for any turn movement or the overall intersection.

Priority Intersection of Loftus Road with Yennora Avenue

- All turn movements have a LoS A for AM and PM peak hours
- The additional trips do not change the LoS for any turn movement or the overall intersection.

Signalised intersection of Fairfield Road with Dursley Road

- The overall intersection has a LoS C and B for the AM and PM peak hours respectively
- The additional trips do not change the LoS for any turn movement or the overall intersection.

Signalised intersection of The Horsley Drive with Polding Street

- The overall intersection has a LoS D and C for the AM and PM peak hours respectively
- The additional trips do not change the LoS for any turn movement or the overall intersection.

The full SIDRA results with the development traffic are presented in Appendix B.

6. CONCLUSIONS

Based on the considerations presented in this report, it is considered that:

Parking

- The proposed expansion of the liquid processing facility provides sufficient car spaces on site

Traffic

- The proposed development is a low trip generator for the weekday AM and PM peak hours.
- The additional trips from the proposed development can be accommodated at the nearby intersection without significantly affecting intersection performance, delays or queues.
- There are no traffic engineering reasons why a development consent for the proposed expansion of a liquid processing facility at 14-16 Kiora Crescent Yennora should be refused.

APPENDIX A

SIDRA Intersection Results for Existing Traffic Conditions

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Norrie Street														
1	L2	1	0	1	0.0	0.012	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.3
2	T1	20	2	21	10.0	0.012	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		21	2	22	9.5	0.012	0.2	NA	0.0	0.0	0.00	0.03	0.00	49.8
North: Norrie Street														
8	T1	42	0	44	0.0	0.030	0.0	LOS A	0.1	0.5	0.04	0.12	0.04	49.2
9	R2	12	0	13	0.0	0.030	4.6	LOS A	0.1	0.5	0.04	0.12	0.04	48.3
Approach		54	0	57	0.0	0.030	1.0	NA	0.1	0.5	0.04	0.12	0.04	49.0
West: Kiora Crescent														
10	L2	16	3	17	18.8	0.012	4.8	LOS A	0.0	0.4	0.08	0.50	0.08	46.2
12	R2	1	0	1	0.0	0.012	4.8	LOS A	0.0	0.4	0.08	0.50	0.08	46.0
Approach		17	3	18	17.6	0.012	4.8	LOS A	0.0	0.4	0.08	0.50	0.08	46.2
All Vehicles		92	5	97	5.4	0.030	1.5	NA	0.1	0.5	0.04	0.17	0.04	48.6

Table A1: Weekday Priority Intersection Performance of Norrie Street with Kiora Crescent AM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Norrie Street														
1	L2	41	5	43	12.2	0.043	5.5	LOS A	0.2	1.2	0.32	0.55	0.32	45.7
3	R2	6	0	6	0.0	0.043	6.7	LOS A	0.2	1.2	0.32	0.55	0.32	45.5
Approach		47	5	49	10.6	0.043	5.6	LOS A	0.2	1.2	0.32	0.55	0.32	45.7
East: Loftus Road														
4	L2	18	0	19	0.0	0.131	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.2
5	T1	216	11	227	5.1	0.131	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		234	11	246	4.7	0.131	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
West: Loftus Road														
11	T1	202	10	213	5.0	0.148	0.3	LOS A	0.4	2.7	0.16	0.11	0.16	49.0
12	R2	47	0	49	0.0	0.148	5.5	LOS A	0.4	2.7	0.16	0.11	0.16	48.0
Approach		249	10	262	4.0	0.148	1.3	NA	0.4	2.7	0.16	0.11	0.16	48.8
All Vehicles		530	26	558	4.9	0.148	1.3	NA	0.4	2.7	0.10	0.12	0.10	48.9

Table A2: Weekday Priority Intersection Performance of Loftus Street with Norrie Street AM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Yennora Avenue														
1	L2	27	0	28	0.0	0.040	5.3	LOS A	0.1	1.0	0.33	0.57	0.33	45.9
3	R2	15	0	16	0.0	0.040	6.5	LOS A	0.1	1.0	0.33	0.57	0.33	45.5
Approach		42	0	44	0.0	0.040	5.7	LOS A	0.1	1.0	0.33	0.57	0.33	45.7
East: Loftus Street														
4	L2	6	0	6	0.0	0.122	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	49.4
5	T1	212	11	223	5.2	0.122	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.9
Approach		218	11	229	5.0	0.122	0.2	NA	0.0	0.0	0.00	0.02	0.00	49.8
West: Loftus Street														
11	T1	208	10	219	4.8	0.127	0.1	LOS A	0.1	0.9	0.06	0.04	0.06	49.6
12	R2	15	0	16	0.0	0.127	5.4	LOS A	0.1	0.9	0.06	0.04	0.06	48.7
Approach		223	10	235	4.5	0.127	0.4	NA	0.1	0.9	0.06	0.04	0.06	49.6
All Vehicles		483	21	508	4.3	0.127	0.8	NA	0.1	1.0	0.05	0.07	0.05	49.3

Table A3: Weekday Priority Intersection Performance of Loftus Street with Yennora Avenue AM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Fairfield Road														
11	T1	891	39	938	4.4	* 0.938	47.5	LOS D	61.1	443.9	1.00	1.11	1.23	33.7
12	R2	242	14	255	5.8	0.683	50.1	LOS D	13.0	95.4	0.98	0.84	1.00	32.3
Approach		1133	53	1193	4.7	0.938	48.1	LOS D	61.1	443.9	1.00	1.05	1.18	33.4
East: Dursley Road														
1	L2	145	13	153	9.0	0.240	30.8	LOS C	5.7	42.9	0.74	0.75	0.74	34.9
3	R2	228	24	240	10.5	0.382	32.4	LOS C	9.5	72.6	0.79	0.78	0.79	34.5
Approach		373	37	393	9.9	0.382	31.8	LOS C	9.5	72.6	0.77	0.76	0.77	34.6
North: Fairfield Road														
4	L2	513	32	540	6.2	* 0.682	19.3	LOS B	13.7	101.0	0.85	0.83	0.85	44.5
5	T1	671	35	706	5.2	0.710	40.3	LOS C	17.5	127.8	0.97	0.84	0.98	36.1
Approach		1184	67	1246	5.7	0.710	31.2	LOS C	17.5	127.8	0.92	0.84	0.92	39.3
All Vehicles		2690	157	2832	5.8	0.938	38.4	LOS C	61.1	443.9	0.93	0.92	1.01	36.0

Table A4: Weekday Signalised Intersection Performance of Fairfield Road with Dursley Road AM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Horsley Drive														
21a	L1	495	15	521	3.0	0.393	8.9	LOS A	9.1	65.4	0.42	0.70	0.42	48.5
22	T1	1076	45	1133	4.2	0.759	29.8	LOS C	29.2	211.6	0.89	0.80	0.90	40.4
23	R2	378	18	398	4.8	* 0.963	81.1	LOS F	28.4	206.7	1.00	1.08	1.51	25.1
Approach		1949	78	2052	4.0	0.963	34.4	LOS C	29.2	211.6	0.79	0.83	0.90	37.1
NorthEast: Polding Street North														
24	L2	444	12	467	2.7	0.827	41.8	LOS C	20.5	146.6	0.97	1.02	1.09	35.0
26a	R1	356	8	375	2.2	0.365	42.7	LOS D	8.5	60.6	0.89	0.78	0.89	31.2
Approach		800	20	842	2.5	0.827	42.2	LOS C	20.5	146.6	0.94	0.91	1.00	33.4
NorthWest: The Horsley Drive														
27	L2	79	7	83	8.9	0.960	68.4	LOS E	56.1	408.1	1.00	1.17	1.34	28.5
28	T1	1313	52	1382	4.0	* 0.960	62.8	LOS E	56.1	408.1	0.98	1.16	1.34	29.5
29b	R3	173	5	182	2.9	0.496	48.4	LOS D	8.8	63.0	0.93	0.81	0.93	29.1
Approach		1565	64	1647	4.1	0.960	61.5	LOS E	56.1	408.1	0.97	1.12	1.30	29.5
West: Polding Street														
10b	L3	25	1	26	4.0	0.981	87.1	LOS F	36.2	266.0	1.00	1.15	1.53	21.4
10a	L1	511	31	538	6.1	0.981	84.9	LOS F	36.9	266.9	1.00	1.15	1.53	20.9
12a	R1	399	14	420	3.5	* 0.981	84.7	LOS F	36.9	266.9	1.00	1.13	1.53	21.4
Approach		935	46	984	4.9	0.981	84.9	LOS F	36.9	266.9	1.00	1.14	1.53	21.1
All Vehicles		5249	208	5525	4.0	0.981	52.7	LOS D	56.1	408.1	0.91	0.98	1.15	30.6

Table A5: Weekday Signalised Intersection Performance of the Horsley Drive with Polding Street AM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Norrie Street														
1	L2	1	0	1	0.0	0.022	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
2	T1	38	3	40	7.9	0.022	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		39	3	41	7.7	0.022	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
North: Norrie Street														
8	T1	23	2	24	8.7	0.017	0.0	LOS A	0.0	0.3	0.06	0.13	0.06	49.1
9	R2	7	0	7	0.0	0.017	4.7	LOS A	0.0	0.3	0.06	0.13	0.06	48.1
Approach		30	2	32	6.7	0.017	1.1	NA	0.0	0.3	0.06	0.13	0.06	48.8
West: Kiora Crescent														
10	L2	16	1	17	6.3	0.012	4.7	LOS A	0.0	0.3	0.11	0.50	0.11	46.3
12	R2	1	0	1	0.0	0.012	4.8	LOS A	0.0	0.3	0.11	0.50	0.11	45.9
Approach		17	1	18	5.9	0.012	4.7	LOS A	0.0	0.3	0.11	0.50	0.11	46.3
All Vehicles		86	6	91	7.0	0.022	1.4	NA	0.0	0.3	0.04	0.15	0.04	48.8

Table A6: Weekday Priority Intersection Performance of Norrie Street with Kiora Crescent PM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Norrie Street														
1	L2	39	4	41	10.3	0.038	5.3	LOS A	0.1	1.1	0.30	0.54	0.30	45.8
3	R2	5	0	5	0.0	0.038	6.6	LOS A	0.1	1.1	0.30	0.54	0.30	45.5
Approach		44	4	46	9.1	0.038	5.5	LOS A	0.1	1.1	0.30	0.54	0.30	45.8
East: Loftus Road														
4	L2	15	1	16	6.7	0.113	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.1
5	T1	189	5	199	2.6	0.113	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		204	6	215	2.9	0.113	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
West: Loftus Road														
11	T1	232	9	244	3.9	0.152	0.1	LOS A	0.3	1.9	0.10	0.07	0.10	49.4
12	R2	30	2	32	6.7	0.152	5.5	LOS A	0.3	1.9	0.10	0.07	0.10	48.3
Approach		262	11	276	4.2	0.152	0.8	NA	0.3	1.9	0.10	0.07	0.10	49.3
All Vehicles		510	21	537	4.1	0.152	1.0	NA	0.3	1.9	0.07	0.10	0.07	49.1

Table A7: Weekday Priority Intersection Performance of Loftus Street with Norrie Street PM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Yennora Avenue														
1	L2	39	6	41	15.4	0.040	5.4	LOS A	0.2	1.2	0.30	0.54	0.30	45.7
3	R2	6	0	6	0.0	0.040	6.5	LOS A	0.2	1.2	0.30	0.54	0.30	45.5
Approach		45	6	47	13.3	0.040	5.6	LOS A	0.2	1.2	0.30	0.54	0.30	45.7
East: Loftus Street														
4	L2	6	0	6	0.0	0.107	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	49.4
5	T1	189	5	199	2.6	0.107	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.9
Approach		195	5	205	2.6	0.107	0.2	NA	0.0	0.0	0.00	0.02	0.00	49.8
West: Loftus Street														
11	T1	232	9	244	3.9	0.139	0.1	LOS A	0.1	0.9	0.05	0.03	0.05	49.7
12	R2	15	0	16	0.0	0.139	5.3	LOS A	0.1	0.9	0.05	0.03	0.05	48.7
Approach		247	9	260	3.6	0.139	0.4	NA	0.1	0.9	0.05	0.03	0.05	49.6
All Vehicles		487	20	513	4.1	0.139	0.8	NA	0.2	1.2	0.05	0.07	0.05	49.3

Table A8: Weekday Priority Intersection Performance of Loftus Street with Yennora Avenue PM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Fairfield Road														
11	T1	722	18	760	2.5	* 0.754	16.4	LOS B	23.6	168.5	0.85	0.77	0.86	47.3
12	R2	147	6	155	4.1	0.686	44.8	LOS D	6.3	45.4	1.00	0.85	1.12	34.0
Approach		869	24	915	2.8	0.754	21.2	LOS B	23.6	168.5	0.87	0.79	0.90	44.3
East: Dursley Road														
1	L2	193	5	203	2.6	0.343	26.9	LOS B	6.1	43.6	0.80	0.77	0.80	36.3
3	R2	365	10	384	2.7	0.649	29.8	LOS C	13.0	93.5	0.91	0.83	0.91	35.4
Approach		558	15	587	2.7	0.649	28.8	LOS C	13.0	93.5	0.87	0.81	0.87	35.7
North: Fairfield Road														
4	L2	232	10	244	4.3	* 0.310	13.8	LOS A	3.3	23.6	0.69	0.75	0.69	47.7
5	T1	790	13	832	1.6	0.663	25.4	LOS B	14.2	100.6	0.92	0.79	0.92	42.4
Approach		1022	23	1076	2.3	0.663	22.7	LOS B	14.2	100.6	0.87	0.78	0.87	43.5
All Vehicles		2449	62	2578	2.5	0.754	23.6	LOS B	23.6	168.5	0.87	0.79	0.88	41.7

Table A9: Weekday Signalised Intersection Performance of Fairfield Road with Dursley Road PM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Horsley Drive														
21a	L1	348	7	366	2.0	0.284	7.5	LOS A	3.8	26.8	0.42	0.68	0.42	49.7
22	T1	1258	33	1324	2.6	* 0.879	32.2	LOS C	26.0	186.4	1.00	1.07	1.26	39.3
23	R2	291	14	306	4.8	* 0.835	41.7	LOS C	11.7	85.1	1.00	0.96	1.30	34.7
Approach		1897	54	1997	2.8	0.879	29.1	LOS C	26.0	186.4	0.89	0.98	1.11	39.7
NorthEast: Polding Street North														
24	L2	241	8	254	3.3	0.356	12.6	LOS A	3.8	27.1	0.67	0.74	0.67	48.9
26a	R1	517	13	544	2.5	0.603	32.4	LOS C	8.7	62.3	0.96	0.81	0.96	35.3
Approach		758	21	798	2.8	0.603	26.1	LOS B	8.7	62.3	0.87	0.79	0.87	39.4
NorthWest: The Horsley Drive														
27	L2	75	2	79	2.7	0.785	30.1	LOS C	19.5	139.5	0.96	0.91	1.05	41.2
28	T1	1016	28	1069	2.8	0.785	24.4	LOS B	19.5	139.5	0.95	0.90	1.04	42.7
29b	R3	76	2	80	2.6	0.245	33.5	LOS C	2.4	17.3	0.89	0.76	0.89	34.4
Approach		1167	32	1228	2.7	0.785	25.4	LOS B	19.5	139.5	0.94	0.89	1.03	42.1
West: Polding Street														
10b	L3	94	6	99	6.4	0.902	47.9	LOS D	16.1	116.5	1.00	1.07	1.45	30.1
10a	L1	377	11	397	2.9	0.902	45.6	LOS D	16.7	121.2	1.00	1.07	1.45	29.8
12a	R1	278	12	293	4.3	* 0.902	45.5	LOS D	16.7	121.2	1.00	1.07	1.44	30.3
Approach		749	29	788	3.9	0.902	45.8	LOS D	16.7	121.2	1.00	1.07	1.45	30.0
All Vehicles		4571	136	4812	3.0	0.902	30.4	LOS C	26.0	186.4	0.92	0.94	1.11	38.5

Table A10: Weekday Signalised Intersection Performance of the Horsley Drive with Polding Street PM Peak Hour

APPENDIX B

SIDRA Intersection Results for Existing Conditions with Expansion Traffic

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Norrie Street														
1	L2	1	0	1	0.0	0.012	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.3
2	T1	20	2	21	10.0	0.012	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		21	2	22	9.5	0.012	0.2	NA	0.0	0.0	0.00	0.03	0.00	49.8
North: Norrie Street														
8	T1	42	0	44	0.0	0.038	0.0	LOS A	0.1	0.9	0.06	0.19	0.06	48.8
9	R2	23	2	24	8.7	0.038	4.7	LOS A	0.1	0.9	0.06	0.19	0.06	47.7
Approach		65	2	68	3.1	0.038	1.7	NA	0.1	0.9	0.06	0.19	0.06	48.4
West: Kiora Crescent														
10	L2	17	4	18	23.5	0.013	4.8	LOS A	0.1	0.4	0.08	0.50	0.08	46.1
12	R2	1	0	1	0.0	0.013	4.8	LOS A	0.1	0.4	0.08	0.50	0.08	46.0
Approach		18	4	19	22.2	0.013	4.8	LOS A	0.1	0.4	0.08	0.50	0.08	46.1
All Vehicles		104	8	109	7.7	0.038	1.9	NA	0.1	0.9	0.05	0.21	0.05	48.3

Table B1: Weekday Priority Intersection Performance of Norrie Street with Kiora Crescent AM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Norrie Street														
1	L2	42	6	44	14.3	0.044	5.5	LOS A	0.2	1.3	0.33	0.55	0.33	45.7
3	R2	6	0	6	0.0	0.044	6.8	LOS A	0.2	1.3	0.33	0.55	0.33	45.4
Approach		48	6	51	12.5	0.044	5.7	LOS A	0.2	1.3	0.33	0.55	0.33	45.6
East: Loftus Road														
4	L2	18	0	19	0.0	0.131	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.2
5	T1	216	11	227	5.1	0.131	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		234	11	246	4.7	0.131	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
West: Loftus Road														
11	T1	202	10	213	5.0	0.159	0.4	LOS A	0.5	3.5	0.19	0.13	0.19	48.8
12	R2	59	3	62	5.1	0.159	5.6	LOS A	0.5	3.5	0.19	0.13	0.19	47.8
Approach		261	13	275	5.0	0.159	1.5	NA	0.5	3.5	0.19	0.13	0.19	48.5
All Vehicles		543	30	572	5.5	0.159	1.4	NA	0.5	3.5	0.12	0.13	0.12	48.7

Table B2: Weekday Priority Intersection Performance of Loftus Street with Norrie Street AM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Yennora Avenue														
1	L2	27	0	28	0.0	0.040	5.3	LOS A	0.1	1.0	0.33	0.57	0.33	45.9
3	R2	15	0	16	0.0	0.040	6.5	LOS A	0.1	1.0	0.33	0.57	0.33	45.5
Approach		42	0	44	0.0	0.040	5.7	LOS A	0.1	1.0	0.33	0.57	0.33	45.7
East: Loftus Street														
4	L2	6	0	6	0.0	0.122	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	49.4
5	T1	212	11	223	5.2	0.122	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.9
Approach		218	11	229	5.0	0.122	0.2	NA	0.0	0.0	0.00	0.02	0.00	49.8
West: Loftus Street														
11	T1	208	10	219	4.8	0.127	0.1	LOS A	0.1	0.9	0.06	0.04	0.06	49.6
12	R2	15	0	16	0.0	0.127	5.4	LOS A	0.1	0.9	0.06	0.04	0.06	48.7
Approach		223	10	235	4.5	0.127	0.4	NA	0.1	0.9	0.06	0.04	0.06	49.6
All Vehicles		483	21	508	4.3	0.127	0.8	NA	0.1	1.0	0.05	0.07	0.05	49.3

Table B3: Weekday Priority Intersection Performance of Loftus Street with Yennora Avenue AM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Fairfield Road														
11	T1	891	39	938	4.4	* 0.938	47.5	LOS D	61.1	443.9	1.00	1.11	1.23	33.7
12	R2	253	16	266	6.3	0.717	51.2	LOS D	13.8	102.2	0.99	0.86	1.04	32.0
Approach		1144	55	1204	4.8	0.938	48.4	LOS D	61.1	443.9	1.00	1.05	1.19	33.3
East: Dursley Road														
1	L2	146	14	154	9.6	0.243	30.8	LOS C	5.7	43.4	0.74	0.75	0.74	34.9
3	R2	228	24	240	10.5	0.382	32.4	LOS C	9.5	72.6	0.79	0.78	0.79	34.5
Approach		374	38	394	10.2	0.382	31.8	LOS C	9.5	72.6	0.77	0.76	0.77	34.6
North: Fairfield Road														
4	L2	513	32	540	6.2	* 0.682	19.3	LOS B	13.7	101.0	0.85	0.83	0.85	44.5
5	T1	671	35	706	5.2	0.710	40.3	LOS C	17.5	127.8	0.97	0.84	0.98	36.1
Approach		1184	67	1246	5.7	0.710	31.2	LOS C	17.5	127.8	0.92	0.84	0.92	39.3
All Vehicles		2702	160	2844	5.9	0.938	38.6	LOS C	61.1	443.9	0.93	0.92	1.02	35.9

Table B4: Weekday Signalised Intersection Performance of Fairfield Road with Dursley Road AM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Horsley Drive														
21a	L1	495	15	521	3.0	0.397	8.9	LOS A	8.6	61.8	0.44	0.70	0.44	48.5
22	T1	1076	45	1133	4.2	0.743	27.6	LOS B	23.3	168.7	0.90	0.80	0.90	41.4
23	R2	378	18	398	4.8	* 1.007	97.1	LOS F	30.0	218.6	1.00	1.18	1.76	22.5
Approach		1949	78	2052	4.0	1.007	36.3	LOS C	30.0	218.6	0.80	0.85	0.95	36.3
NorthEast: Polding Street North														
24	L2	444	12	467	2.7	0.817	37.7	LOS C	18.2	130.6	0.96	1.00	1.08	36.4
26a	R1	357	9	376	2.5	0.362	39.1	LOS C	7.7	55.4	0.89	0.77	0.89	32.5
Approach		801	21	843	2.6	0.817	38.4	LOS C	18.2	130.6	0.93	0.90	1.00	34.8
NorthWest: The Horsley Drive														
27	L2	86	9	91	10.5	0.984	77.2	LOS F	56.9	414.6	1.00	1.28	1.49	26.6
28	T1	1313	52	1382	4.0	* 0.984	71.6	LOS F	56.9	414.6	0.99	1.29	1.50	27.6
29b	R3	173	5	182	2.9	0.519	45.7	LOS D	8.1	58.3	0.94	0.81	0.94	30.0
Approach		1572	66	1655	4.2	0.984	69.1	LOS E	56.9	414.6	0.98	1.23	1.44	27.7
West: Polding Street														
10b	L3	25	1	26	4.0	0.973	79.1	LOS F	33.0	242.6	1.00	1.15	1.55	22.7
10a	L1	515	31	542	6.0	0.973	76.9	LOS F	33.7	243.5	1.00	1.15	1.55	22.3
12a	R1	399	14	420	3.5	* 0.973	76.7	LOS F	33.7	243.5	1.00	1.14	1.54	22.8
Approach		939	46	988	4.9	0.973	76.8	LOS F	33.7	243.5	1.00	1.15	1.54	22.5
All Vehicles		5261	211	5538	4.0	1.007	53.6	LOS D	56.9	414.6	0.91	1.02	1.21	30.3

Table B5: Weekday Signalised Intersection Performance of the Horsley Drive with Polding Street AM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Norrie Street														
1	L2	1	0	1	0.0	0.022	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
2	T1	38	3	40	7.9	0.022	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach		39	3	41	7.7	0.022	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
North: Norrie Street														
8	T1	23	2	24	8.7	0.019	0.0	LOS A	0.0	0.4	0.07	0.14	0.07	49.0
9	R2	8	1	8	12.5	0.019	4.8	LOS A	0.0	0.4	0.07	0.14	0.07	47.9
Approach		31	3	33	9.7	0.019	1.3	NA	0.0	0.4	0.07	0.14	0.07	48.7
West: Kiora Crescent														
10	L2	27	3	28	11.1	0.020	4.8	LOS A	0.1	0.6	0.11	0.50	0.11	46.2
12	R2	1	0	1	0.0	0.020	4.8	LOS A	0.1	0.6	0.11	0.50	0.11	45.9
Approach		28	3	29	10.7	0.020	4.8	LOS A	0.1	0.6	0.11	0.50	0.11	46.2
All Vehicles		98	9	103	9.2	0.022	1.8	NA	0.1	0.6	0.05	0.19	0.05	48.4

Table B6: Weekday Priority Intersection Performance of Norrie Street with Kiora Crescent PM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Norrie Street														
1	L2	49	6	52	12.2	0.048	5.4	LOS A	0.2	1.4	0.30	0.54	0.30	45.8
3	R2	6	0	6	0.0	0.048	6.7	LOS A	0.2	1.4	0.30	0.54	0.30	45.5
Approach		55	6	58	10.9	0.048	5.5	LOS A	0.2	1.4	0.30	0.54	0.30	45.7
East: Loftus Road														
4	L2	15	1	16	6.7	0.113	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.1
5	T1	189	5	199	2.6	0.113	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		204	6	215	2.9	0.113	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.7
West: Loftus Road														
11	T1	232	9	244	3.9	0.153	0.2	LOS A	0.3	2.0	0.10	0.07	0.10	49.4
12	R2	31	3	33	9.7	0.153	5.5	LOS A	0.3	2.0	0.10	0.07	0.10	48.2
Approach		263	12	277	4.6	0.153	0.8	NA	0.3	2.0	0.10	0.07	0.10	49.2
All Vehicles		522	24	549	4.6	0.153	1.1	NA	0.3	2.0	0.08	0.11	0.08	49.0

Table B7: Weekday Priority Intersection Performance of Loftus Street with Norrie Street PM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Yennora Avenue														
1	L2	39	6	41	15.4	0.040	5.4	LOS A	0.2	1.2	0.30	0.54	0.30	45.7
3	R2	6	0	6	0.0	0.040	6.5	LOS A	0.2	1.2	0.30	0.54	0.30	45.5
Approach		45	6	47	13.3	0.040	5.6	LOS A	0.2	1.2	0.30	0.54	0.30	45.7
East: Loftus Street														
4	L2	6	0	6	0.0	0.107	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	49.4
5	T1	189	5	199	2.6	0.107	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.9
Approach		195	5	205	2.6	0.107	0.2	NA	0.0	0.0	0.00	0.02	0.00	49.8
West: Loftus Street														
11	T1	233	9	245	3.9	0.140	0.1	LOS A	0.1	0.9	0.05	0.03	0.05	49.7
12	R2	15	0	16	0.0	0.140	5.3	LOS A	0.1	0.9	0.05	0.03	0.05	48.7
Approach		248	9	261	3.6	0.140	0.4	NA	0.1	0.9	0.05	0.03	0.05	49.6
All Vehicles		488	20	514	4.1	0.140	0.8	NA	0.2	1.2	0.05	0.07	0.05	49.3

Table B8: Weekday Priority Intersection Performance of Loftus Street with Yennora Avenue PM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Fairfield Road														
11	T1	722	18	760	2.5	* 0.754	16.4	LOS B	23.6	168.5	0.85	0.77	0.86	47.3
12	R2	148	7	156	4.7	0.694	45.0	LOS D	6.3	46.1	1.00	0.85	1.13	33.9
Approach		870	25	916	2.9	0.754	21.3	LOS B	23.6	168.5	0.87	0.79	0.90	44.3
East: Dursley Road														
1	L2	200	7	211	3.5	0.358	27.1	LOS B	6.4	45.8	0.81	0.77	0.81	36.2
3	R2	368	10	387	2.7	0.654	29.9	LOS C	13.2	94.4	0.91	0.83	0.91	35.4
Approach		568	17	598	3.0	0.654	28.9	LOS C	13.2	94.4	0.88	0.81	0.88	35.7
North: Fairfield Road														
4	L2	232	10	244	4.3	* 0.310	13.8	LOS A	3.3	23.6	0.69	0.75	0.69	47.7
5	T1	790	13	832	1.6	0.663	25.4	LOS B	14.2	100.6	0.92	0.79	0.92	42.4
Approach		1022	23	1076	2.3	0.663	22.7	LOS B	14.2	100.6	0.87	0.78	0.87	43.5
All Vehicles		2460	65	2589	2.6	0.754	23.6	LOS B	23.6	168.5	0.87	0.79	0.88	41.6

Table B9: Weekday Signalised Intersection Performance of Fairfield Road with Dursley Road PM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Horsley Drive														
21a	L1	348	7	366	2.0	0.284	7.6	LOS A	3.8	26.8	0.42	0.68	0.42	49.7
22	T1	1258	33	1324	2.6	* 0.879	32.2	LOS C	26.0	186.4	1.00	1.07	1.26	39.3
23	R2	291	14	306	4.8	* 0.835	41.7	LOS C	11.7	85.1	1.00	0.96	1.30	34.7
Approach		1897	54	1997	2.8	0.879	29.1	LOS C	26.0	186.4	0.89	0.98	1.11	39.7
NorthEast: Polding Street North														
24	L2	241	8	254	3.3	0.356	12.6	LOS A	3.8	27.1	0.67	0.74	0.67	48.9
26a	R1	524	15	552	2.9	0.613	32.4	LOS C	8.9	63.5	0.96	0.81	0.96	35.2
Approach		765	23	805	3.0	0.613	26.2	LOS B	8.9	63.5	0.87	0.79	0.87	39.3
NorthWest: The Horsley Drive														
27	L2	75	2	79	2.7	0.785	30.1	LOS C	19.5	139.5	0.96	0.91	1.05	41.2
28	T1	1016	28	1069	2.8	0.785	24.4	LOS B	19.5	139.5	0.95	0.90	1.04	42.7
29b	R3	76	2	80	2.6	0.245	33.5	LOS C	2.4	17.3	0.89	0.76	0.89	34.4
Approach		1167	32	1228	2.7	0.785	25.4	LOS B	19.5	139.5	0.94	0.89	1.03	42.1
West: Polding Street														
10b	L3	94	6	99	6.4	0.904	48.2	LOS D	16.2	117.3	1.00	1.08	1.46	30.0
10a	L1	378	12	398	3.2	0.904	45.9	LOS D	16.8	121.9	1.00	1.08	1.46	29.7
12a	R1	278	12	293	4.3	* 0.904	45.7	LOS D	16.8	121.9	1.00	1.07	1.45	30.2
Approach		750	30	789	4.0	0.904	46.1	LOS D	16.8	121.9	1.00	1.08	1.45	29.9
All Vehicles		4579	139	4820	3.0	0.904	30.5	LOS C	26.0	186.4	0.92	0.94	1.11	38.5

Table B10: Weekday Signalised Intersection Performance of the Horsley Drive with Polding Street PM Peak Hour

ML
Traffic Engineers

CARPARK CERTIFICATION OF AN EXPANSION OF A LIQUID WASTE PROCESSING FACILITY

14-16 Kiora Crescent in Yennora

Prepared for: Enviro Waste Services Group

N1915887A (Version 1b)

July 2020

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ABN 69 981 485 197

1. INTRODUCTION

ML Traffic Engineers was commissioned by Enviro Waste Services Group to prepare a car parking certification report of the proposed liquid waste processing facility at 14-16 Kiora Crescent in Yennora.

Vehicle access and egress to the car parking areas is via Kiora Crescent.

Parking is provided on the ground level.

Reference is made to AS2890.1 (2002) and AS2890.2 (2018) and Council's Development Control Plan for compliance.

2. DRIVEWAY

The details of the driveway from Kiora Crescent to ground level parking area are as follows from the perspective of the inbound movement for descriptive purposes only:

- The width of the two-way driveway is 6.1 metres at the property line
- Gradients are less than 5 percent.

3. CAR SPACES

The details of the car parking area are as follows:

- The general 90-degree car spaces are 2.4 metres wide and 5.4 metres long
- Car space adjacent to the wall has one metre clearance.
- Wheel stop with compliant setbacks are provided within the car space.

4. TRUCK PARKING

Truck parking is in the parking aisle and within the building. Truck entry is forward in and forward out. The driveway and site is at the cul-de-sac end of Kiora Crescent and where there is low vehicle traffic volumes as well as low pedestrian volumes. The largest truck is a 10 metre long rigid truck.

Given the truck entry and exit circumstances, it is recommended that staff be trained in traffic control and a traffic control plan be prepared and implemented to manage truck reverse movements.

5. SWEPT PATHS

Swept Paths analysis has been done using 10 metres long truck to confirm that the vehicle movements are adequate. The following Swept Paths have been performed:

- 10 metres long truck forward inbound and forward out

The swept paths show adequate manoeuvrability.

The swept paths are provided in Appendix A.

6. VEHICLE SIGHT DISTANCE

The car driver's sight distance requirement to enter the external road is stated in Figure 3.2 of AS2890.1.

The sight distance varies according to the speed of the external road. Kiora Crescent has a default speed limit of 50km/hr.

The minimum sight distance required is 45 metres. The minimum vehicle sight distance is met.

The pedestrian sight distance triangle is met as set out in Figure 3.3 of AS2890.1 with convex safety mirrors.

7. TRUCK SIGHT DISTANCE

The car driver's sight distance requirement to enter the external road is stated in Figure 3. of AS2890.2.

The sight distance varies according to the speed of the external road. Kiora Crescent has a default speed limit of 50km/hr.

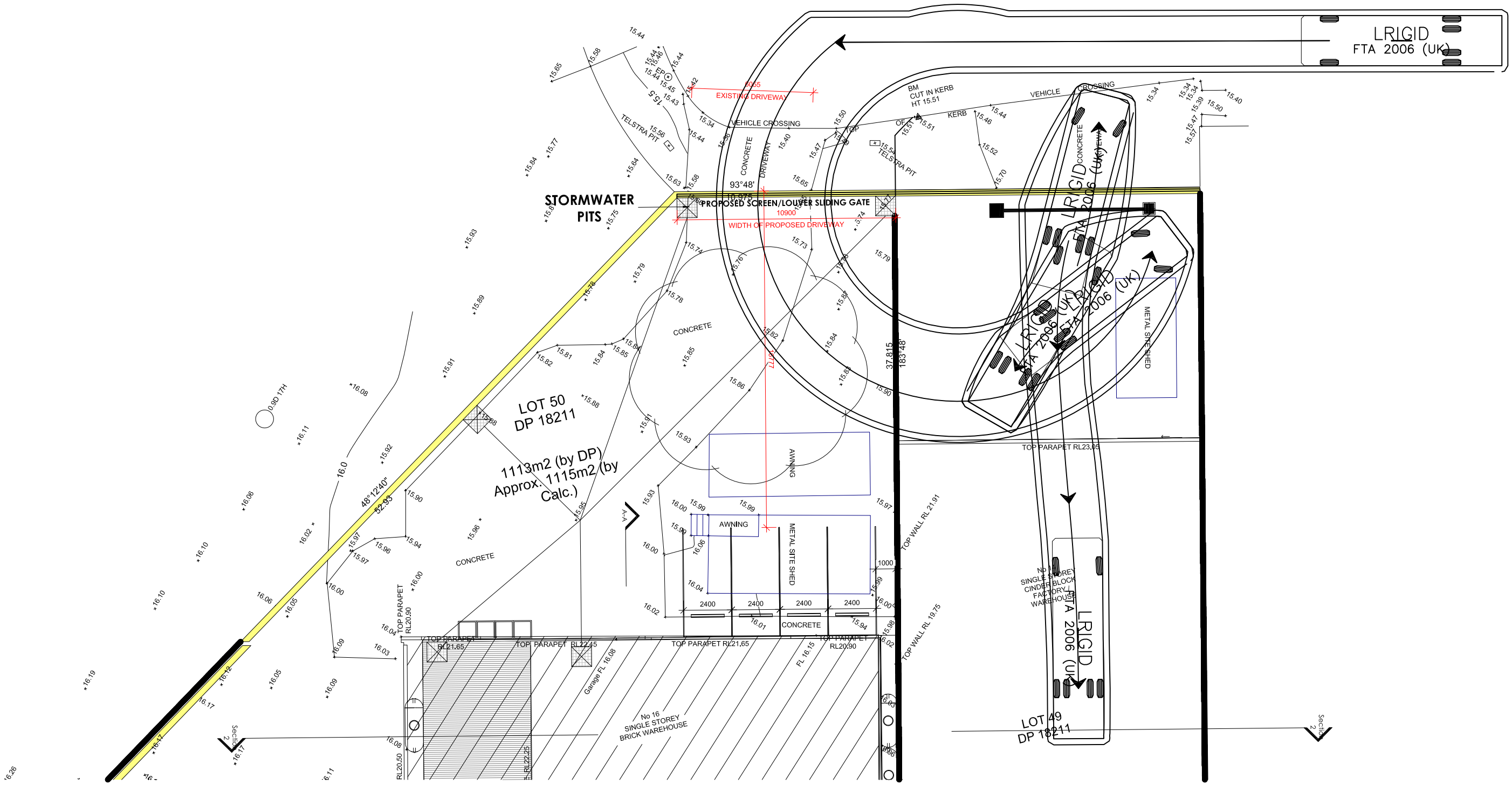
The minimum sight distance required is 69 metres. Site measurements showed that the minimum sight distance looking left or right is met without permanent obstructions (for a forward out movement_.

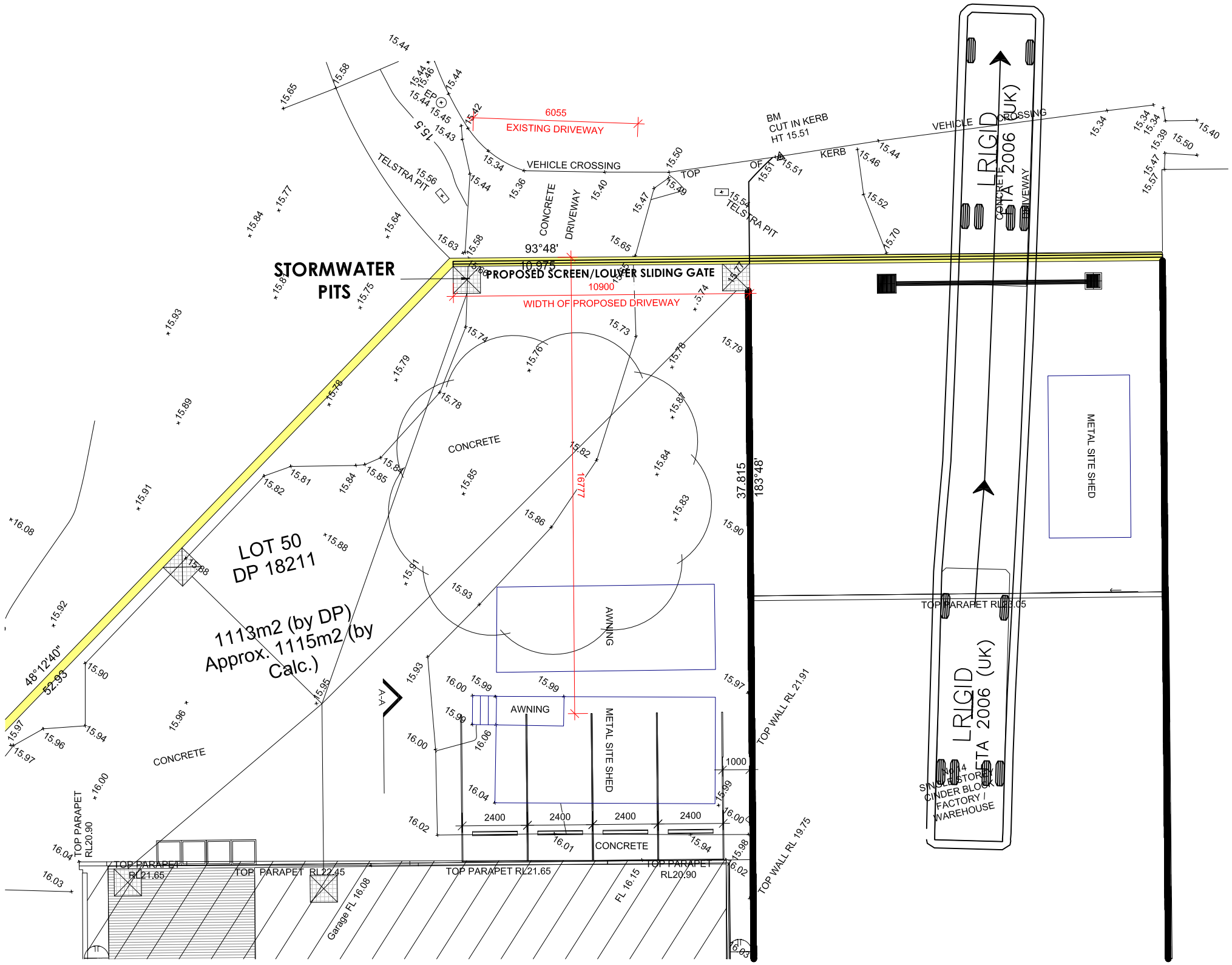
The pedestrian sight triangle (as set out in Figure 3.3) is met as well.

8. CONCLUSIONS AND RECOMMENDATIONS

The car parking area and driveway is overall compliant with Australian Standards and Council's DCP.

Attachment 3: Swept Paths


LRIGID
FTA 2006 (UK)
EXISTING DRIVEWAY
6955
VEHICLE CROSSING
TELSTRA PIT
CONCRETE
DRIVEWAY
93°48'
10°575
STORMWATER PITS
PROPOSED SCREEN/LOUVER SLIDING GATE
10900
WIDTH OF PROPOSED DRIVEWAY
BM CUT IN KERB HT 15.51
KERB
VEHICLE CROSSING
LRIGID CONCRETE FTA 2006 (UK)
METAL SITE SHED
37.815
183°48'
LOT 50 DP 18211
1113m2 (by DP)
Approx. 1115m2 (by Calc.)
48°12'40"
52.93
AWNING
TOP WALL RL 21.91
TOP WALL RL 19.75
TOP PARAPET RL23.05
TOP PARAPET RL20.90
TOP PARAPET RL21.65
TOP PARAPET RL22.45
Garage FL 16.08
FL 16.15
No 16 SINGLE STOREY BRICK WAREHOUSE
No 14 SINGLE STOREY CINDER BLOCK FACTORY / WAREHOUSE
LOT 49 DP 18211
2400
1000
Section 2
Section 3


STORMWATER PITS
PROPOSED SCREEN/LOUVER SLIDING GATE
10900
WIDTH OF PROPOSED DRIVEWAY
6055
EXISTING DRIVEWAY
VEHICLE CROSSING
TOP OF KERB
BM CUT IN KERB HT 15.51
TELSTRA PIT
CONCRETE DRIVEWAY
93°48'
10.975
183°48'
37.815
16.777
LOT 50
DP 18211
1113m2 (by DP)
Approx. 1115m2 (by Calc.)
48°12'40"
52.93
AWNING
METAL SITE SHED
CONCRETE
TOP PARAPET RL20.90
TOP PARAPET RL21.65
TOP PARAPET RL22.45
TOP PARAPET RL21.65
TOP PARAPET RL20.90
TOP WALL RL 21.91
TOP WALL RL 19.75
TOP PARAPET RL23.05
Garage FL 16.08
FL 16.15
2400
2400
2400
2400
1000
LRIGID
ISUZU NQR 2006 (UK)
SINGLE STOREY CINDER BLOCK FACTORY / WAREHOUSE
METAL SITE SHED

STORMWATER PITS

PROPOSED SCREEN/LOUVER SLIDING GATE
10900
WIDTH OF PROPOSED DRIVEWAY

6065
EXISTING DRIVEWAY

VEHICLE CROSSING

BM CUT IN KERB HT 15.51

KERB

CONCRETE DRIVEWAY

TELSTRA PIT

93°48'

LOT 50
DP 18211

1113m2 (by DP)
Approx. 1115m2 (by Calc.)

48°12'40"
52.93

LRIGID
FTA 2006 (UK)

CONCRETE

AWNING

METAL SITE SHED

TOP PARAPET RL23.05

TOP WALL RL 21.91

TOP WALL RL 19.75

No 14
SINGLE STOREY
CINDER BLOCK
FACTORY /
WAREHOUSE

No 16
SINGLE STOREY
BRICK WAREHOUSE

TOP PARAPET RL21.65

TOP PARAPET RL22.45

TOP PARAPET RL21.65

TOP PARAPET RL20.90

TOP PARAPET RL20.90

Garage FL 16.08

FL 16.15

GUTTER RL20.50

RIDGE RL22.25

Section 2

LOT 49
DP 18211

48.03
273°48'

STORMWATER PITS

6055
EXISTING DRIVEWAY

PROPOSED SCREEN/LOUVER SLIDING GATE
10900
WIDTH OF PROPOSED DRIVEWAY

BM CUT IN KERB HT 15.51

VEHICLE CROSSING

TELSTRA PIT

CONCRETE DRIVEWAY

93°48'
10.975

183°48'
37.815

16777

CONCRETE

METAL SITE SHED

AWNING

TOP PARAPET RL23.05

LRIGID STA 2006 (UK)

LOT 50
DP 18211

1113m2 (by DP)
Approx 1115m2 (by Calc.)

48°12'40"
52.93

TOP PARAPET RL20.90

TOP PARAPET RL21.65

TOP PARAPET RL22.45

Garage FL 16.08

No 16
SINGLE STOREY
BRICK WAREHOUSE

GUTTER RL20.50

RIDGE RL22.25

FL 16.15

TOP WALL RL 21.91

TOP WALL RL 19.75

No 14
SINGLE STOREY
CINDER BLOCK
FACTORY
WAREHOUSE

LOT 49
DP 18211

LOT 7
1233715

48.03
273°48'

Attachment 4: SEARs

CUMBERLAND COUNCIL

Dear Sir/Madam,

Re: Major Projects – New Request for Advice - Yennora Liquid Waste Treatment Plant (SSD-10407)

Please find below comments from Cumberland Council below:

Environmental Health Unit:

A Scoping Report has been prepared by Benbow Environmental (report reference - 191251_Scoping_Rev4, dated November 2019). The Consultant has advised the following:

The applicant seeks approval for the following additions to an existing liquid waste treatment facility:

Increase the waste processing capacity to 100,000 Tonnes of waste per year – This requires changes to their existing EPA License and is considered integrated development under the EP&A Act and Regulation.
Increase the maximum waste storage capacity to 200 tonnes per year.
Increase operating hours to 24 hours per day/7 days per week.
No construction work will allegedly take place. The applicant proposes that the existing equipment on site and the proposed changes to the hours of operation is enough to cater to the increased processing capacity of 100,000 tonnes of waste per year.

Note: The business currently has approval to process 900 tonnes per year with a maximum storage capacity of 110 tonnes per year.

Noise Impact Assessment

Benbow Environmental have advised in their scoping report that a Noise impact assessment was undertaken and found that the proposed changes to the site activity will not have an impact on surrounding receivers. I could not locate a copy of the report on Council's file and as such, an assessment of the report could not be undertaken. It is requested that a copy of the report be provided to Council for further review. It is expected that the report will be submitted as part of the EIS.

The applicant must ensure that the acoustic assessment makes reference to the EPA's Noise Policy for Industry. The report must include although is not limited to:

Long term unattended background noise monitoring at the closest sensitive receivers. The consultant must also refer to the impact of the premises on neighbouring industrial receivers in addition to residential receivers. The background noise monitoring should be conducted at times where the current equipment used on site is not in operation.
It should include all noise from the site including additional vehicle movements and the use of equipment/machinery on site on a 24/7 basis.

Environmental Impact Statement (EIS)

The Scoping Report prepared by Benbow Environmental (report reference - 191251_Scoping_Rev4, dated November 2019) states that Benbow Environmental has been engaged by Enviro Waste Services Group Pty Ltd (Enviro Waste) to undertake an Environmental Impact Statement (EIS). It is understood that the current scoping report sets out the relevant matters to be addressed in the EIS, and that an EIS will be provided to Council once the Department has issued the SEARs. A more detailed review of the issues raised in this memo will be undertaken once the EIS has been provided to Council for review and comment, along with the other technical reports alluded to in previous comments.

Waste Management Plan and Contaminated Waste

A Waste Management Plan will need to be prepared and submitted to Council for review. The waste management plan must include although is not limited to reporting on the type of waste received, how it is processed, transported, managed and stored/stockpiled on site and include all measures that the business aims to manage the environmental impact of these activities.

The consultant has advised that contaminated waste is brought and processed on site. Details of this contaminated waste and how it is managed must also be included in the EIS so that an assessment can be made of the potential risk/mitigation measures to be installed at the facility. It is understood that contaminants which are currently processed on site include:

Residues from industrial waste treatment/disposal operations – landfill leachates;
Liquid waste material in glass, plastic or aluminium containers;
Surface active agents (surfactants) containing principally organic constituents and which may contain metals and inorganic materials;
Waste oil/hydrocarbons mixtures/emulsions in water;
Sewage sludge & residues; and
Grease trap waste

Odour Impact Assessment and Dust Control

The consultant has advised that “A full quantitative odour assessment (OIA) has been conducted for the operation of the proposed liquids waste recycling facility in accordance with the “Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales” (EPA 2016).”

A copy of the odour impact assessment could not be located on Council’s file. EHU can therefore not comment on the report to determine the odour/air quality impact on surrounding sensitive receivers. It is recommended that this is submitted to the EHU for review. It is expected that the report will be submitted as part of the EIS.

The consultant also stated that “Dust is not considered as a potential emission that would be generated from the proposed development and therefore was not assessed.” Given the site is a waste facility and will store to an extent, some solid wastes. It is recommended that an assessment be undertaken on the presence of airborne dust and its management if

applicable. Wherever possible dust should be controlled through the use of physical means (such as a physical building structure) and dust should not create in external areas of the premises with only mechanical means of control such as water sprays.

Environmental Management Plan

An environmental management plan (EMP) should be prepared and submitted to Council for review. It is expected that the report will be submitted as part of the EIS. The EMP must be written in accordance with the Department of Environment – Environmental Management Plan Guidelines 2014.

The EMP must include although is not limited to how the following pollution risks will be managed:

Stormwater pollution;
Acoustic amenity;
Air/odour pollution including dust mitigation measures;
Emergency management and spill response procedures;
Any required contamination management/control measures required to be installed at the site; and
Any other source of pollution that is identified as a risk onsite.

Trade Waste Agreement

It is unclear whether the current trade waste agreement with Sydney Water accurately reflects the waste water predicted to enter the sewer system with the new proposal. Information should be submitted demonstrating the trade waste agreement will cover all of the new loads.

Site Plans

The scoping report states that the applicant does not propose any constructional changes to the site and advises that the existing setup will accommodate for the additional waste. It is advised that the business submit to Council processing details and a site layout plan as to how the business will be able to accommodate for the additional 99,100 tonnes of additional waste per year without the addition of new equipment used for processing or additional space.

Detailed existing and future site plans should be submitted to demonstrate the location of all equipment/machinery (and details as to what this equipment/machinery is used for), as well as the details of any stockpile locations of waste/material, parking of vehicles/trucks and any other equipment internally or externally used at this site.

Stormwater Pollution

Details of the site's entire stormwater management and drainage plan setup should be submitted to Council for review. In addition to this, the location of any waste processing, storage, transportation of waste, parking of vehicles which will be carried out in close proximity to the sites stormwater system should be outlined on the plans.

Other information which must be provided:

Are all operations restricted to inside the buildings onsite? I.e. will there be any activities carried out outside the buildings, such as the need to have trucks waiting on the street prior to entry to the site. This could impact on whether any contaminated material to be processed onsite could enter the roadway area.

Traffic

The applicant is to liaise with RMS in accordance with Schedule 3 – Traffic Generating under the Infrastructure SEPP.

Onsite Inspection

A site inspection at 14 Kiora Crescent was completed on 6 January 2020 at approximately 10:15am. I spoke with the operations manager on site John Paul Hawach.

At the time of the inspection, all activities pertaining to waste disposal were carried out inside a shed at the premises. The site consisted of a large shed (where all equipment used to filter and dispose of liquid waste was located) and a concrete hardstand.

Odours, dust, waste, excessive noise was not observed at the road at the time of the inspection. Upon entering the premises, there was a strong odour present as well as noise from vehicles and machinery in use at the time.

It should be noted that an additional property across the road located at 5 Kiora Crescent Yennora (Lot 10/DP 1233715) was used to store IBC's (large plastic containers) some of which were empty although some of which contained some oils and other products used to service their trucks. The operations manager advised that this area was also used to park and service the business's vehicles as needed. The site consisted of some sealed areas however there were also some unsealed areas which were used to park vehicles. This site is also leased out to two other companies. EHU advises that this site be assessed as a part of the application.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14 Kiora Crescent Yennora NSW 2161 AU
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envi WASTE SERVICES GROUP PTY. LTD.
Liquid Waste Facility
PH. 9721 2028


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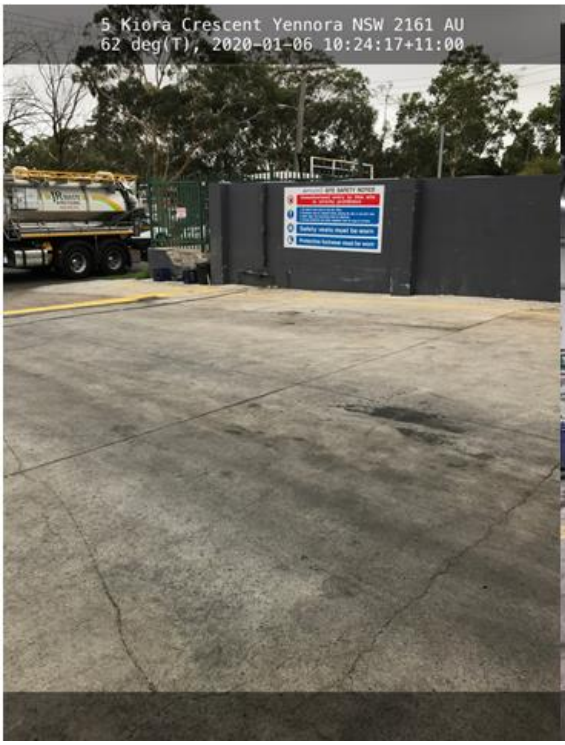
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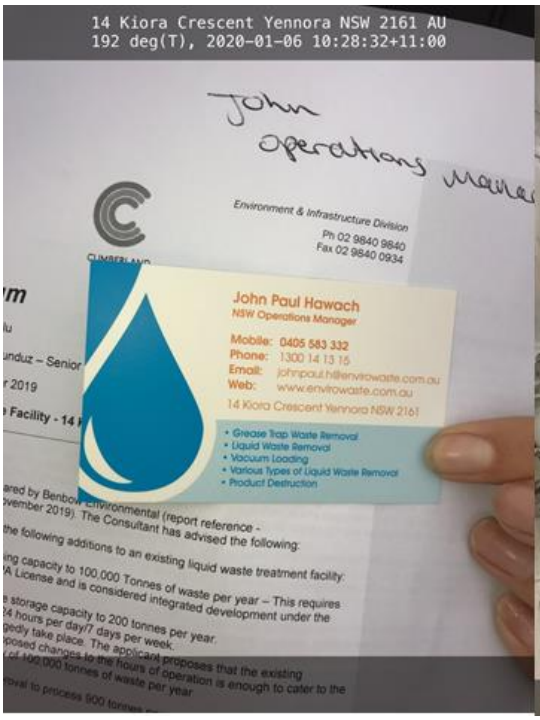
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John
operations
Environment & Infrastructure Division
Ph 02 9840 9840
Fax 02 9840 0934
John Paul Hawach
NSW Operations Manager
Mobile: 0405 583 332
Phone: 1300 14 13 16
Email: johnpaul.h@envirowaste.com.au
Web: www.envirowaste.com.au
14 Kiora Crescent Yennora NSW 2161
• Grease Trap Waste Removal
• Liquid Waste Removal
• Vacuum Loading
• Various Types of Liquid Waste Removal
• Product Destruction


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Strategic:

The site is identified as having a flood risk (floor level control building requirement). It is also in proximity to an area of stormwater overflow flood risk. This flood risk should be addressed in the EIS including, as appropriate, any measures to manage and mitigate this risk should a flood event occur.
The documentation does not confirm if any additional external lighting, for security or to support safety of operations including vehicle movements, will be required. This should be addressed and, if required, to assess the impact of the external lighting.
There is expected to be a considerable increase in traffic movements for the site (including outside current operational hours), and it is noted there are other transport/logistics businesses nearby and this is a dead-end street having one access point off Norie St. The individual and cumulative traffic & parking impacts of the proposal should be assessed as part of the detailed traffic & parking assessment (noted as to be undertaken in the submitted scoping report).

Background / Proposed development

The subject site is zoned IN1 General Industrial and located on the south of the Yennora Intermodal Terminal, approx. 260m away. An additional permitted use for sex service premises applies to the certain precinct area within this IN1 General Industrial in Yennora. The proposed development consists of increasing a capacity of the waste processing quantity to 100,000 tonnes per annum (from 900 tonnes p.a) and store up to a maximum of 200 tonnes (from 110 tonnes) of liquid at any one time. No construction work is proposed for the expansion of the existing waste management facility. It is proposed to utilise the existing equipment with an increased capacity to the extended operational hours. The facility proposes to operate 24 hours a day, seven days a week. The proposal does not propose a change of use or a rezoning of the land.

Alignment to the strategic planning framework

(Greater Sydney Region Plan, Central City District Plan and Cumberland 2030: Our Local Strategic Planning Statement)

The existing and proposed development (waste management) is generally aligned to region, district plan and Cumberland LSPS. See details below.

- The Greater Sydney Region Plan (p.130) recommends safeguarding industries (such as waste handling facilities and freight activities) from residential encroachment which are impacted by noise, light and odours. Note that there is no residential development adjacent to the site. Its Objective 23 supports retention of local recycling and waste management facilities that are within industrial and urban services land. And at the same time it requires to address ongoing environmental issues such as odour, noise, truck movement and dust. Strategy 35.1 also recommends a protection of existing and identify new locations for waste recycling and management.

- The Central City District Plan encourages initiatives for re-use and recycle to support a circular economy and innovative solutions to reduce the volume of waste and waste transport requirements.

- The draft LSPS (p. 80), the Central City District Plan and the Cumberland Employment and Innovation Lands Strategy (EILS) identify the Yennora Intermodal Terminal as a protected freight corridor, with an opportunity for improved accessibility. Note that a future Western Sydney Freight through this industrial precinct is planned under the Future Transport Strategy, to improve accessibility for freight, warehousing and logistics businesses.

Consistency of the proposed development with SEPP

SEPP No 33 – Hazardous and Offensive Development
Issue – The proposed greater increase in waste management capacity can be considered as a potentially hazardous industry. A preliminary hazard analysis may be required. See comments below.

- The current use of the site is a waste management facility that can process 900 tonnes per annum of waste liquids, with a maximum of 110 tonnes of liquid that can be stored at any one time. The proposal is to increase the processing quantity to 100,000 tonnes per annum and increase the maximum quantity to be stored at any one time to 200 tonnes.

- The proposed increase in capacity of the site can be viewed as a potentially hazardous industry. This greater increase in capacity could potentially pose a significant risk to its locality (to human health, life or property or to the biophysical environment) if such measures are not mitigated or monitored. The preparation of a preliminary hazard analysis is required for site if identified as a potentially hazardous industry.

SEPP No 55 – Remediation of Land
Issue – State 1 Preliminary Investigation may be required. See comments below.

Given the site's existing use as a waste management facility involving a waste treatment and a disposal, and its proposal to increase the capacity, the site can be potentially considered as a contaminated land. Whilst the proposal does not involve a rezoning or a change of use, the proposed greater increase in capacity of waste management, could further impact on the subject land or land immediately adjacent to the site. As per the contaminated land planning guidelines, Stage 1 – Preliminary Investigation may be required to determine whether the proposed greater increase in capacity for the subject site is adequate.

SEPP (Infrastructure) 2007s
Proposal needs to be referred to RMS.
According to this SEPP, Schedule 3 – 'Waste or resource management facility' that involves with any size or capacity increase under the Traffic-generating development, the proposal need to be referred to Roads and Maritime Services.

SEPP (State and Regional Development) 2011
Schedule 1 State significant development – general, Clause 23
According to this SEPP, the proposal is determined as a State significant development (SSD) under Clause 23, Schedule 1.

Development Engineering:

Flooding

Subject site is affected by flooding. In this regard, flood advice letter from Council shall be obtained. Development shall comply with flood advice letter.

Traffic

Submitted information is not adequate for the assessment. It appears proposed modification will have adverse impact on the street traffic and on street parking. Following matters shall be addressed:

Proposed swept path analysis is not acceptable. The swept path analysis shows that the turning path encroaches into Council footpath and nature strip.

Reverse manoeuvring in Council's land is not acceptable. It will compromise the safety. Vehicles should enter and leave the site in a forward direction.

Proposed 4 point turn truck manoeuvring movement is not acceptable. Manoeuvring shall be limited to three point turn.

Truck swept path interferes with the car parking space.

Parking space not available within the site for the delivery trucks to prevent any queuing or on street parking of trucks/delivery vehicles. Increase in traffic movement will have adverse impact on street traffic and the adjoining developments.

Parking and loading design shall comply with Australian standard AS2890.1 and AS2890.2.
Stormwater

Existing and proposed stormwater details have not been submitted for assessment.

Development shall demonstrate compliance with Part a Section 7.0 Stormwater Management of Council DCP 2013.

Should you require any further information on this matter, please contact Sohail Faridy on 8757 9915 or Sohail.faridy@cumberland.nsw.gov.au

Regards,

Sohail Faridy
Coordinator Development Assessment

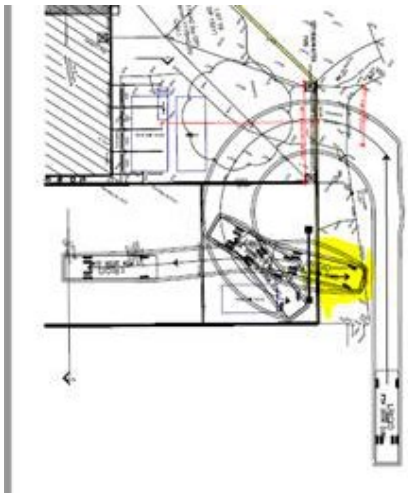
From:	Bala Sudarson
To:	Belinda Middleton; Michael Lawani
Cc:	Susan.Fox@planning.nsw.gov.au; Emma Hansma
Subject:	RE: ATT: TRAFFIC TEAM - SSD-10407 - Yennora Liquid Waste Facility – Vehicle Maneuverability
Date:	Thursday, 15 October 2020 11:13:29 AM
Attachments:	image104953.png 191251_Let5_Rev2.pdf

Hi Belinda

Reference is made to attached documents submitted in response to Council's Traffic comments. Please note the following:

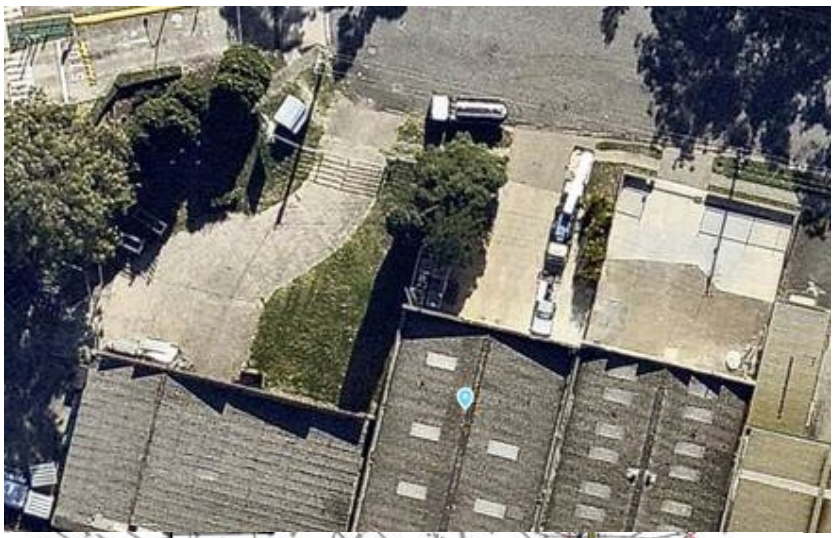
a) The 10.0m truck used in the swept path analysis is a not a standard truck that is defined in Australian standard AS2890.1.

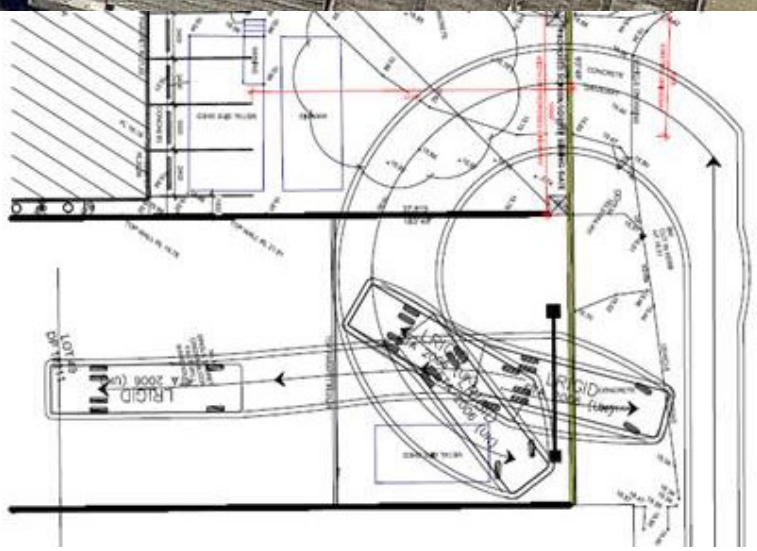
b) The swept path analysis shows that the turning path encroaches into Council' s land (footpath and nature strip).



c) Reverse manoeuvring in Council's land is not acceptable. It will compromise the safety. Vehicles should enter and leave the site in a forward direction.

d) Proposed 4 point turn truck manoeuvring movement is not acceptable. Manoeuvring shall be limited to three point turn.





The above comments relates to traffic matters only.

Regards
Bala Sudarson

BALA SUDARSON
SENIOR DEVELOPMENT ASSESSMENT ENGINEER

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E Bala.Sudarson@cumberland.nsw.gov.au
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From: Belinda Middleton [mailto:belinda@benbowenviro.com.au]
Sent: 6 October 2020 3:06 PM
To: Records Department <council@cumberland.nsw.gov.au>
Cc: Susan.Fox@planning.nsw.gov.au; Emma Hansma <ehansma@benbowenviro.com.au>
Subject: ATT: TRAFFIC TEAM - SSD-10407 - Yennora Liquid Waste Facility – Vehicle Maneuverability

Dear Sir/Madam,

Please see attached letter regarding SSD-10407 - Yennora Liquid Waste Facility – Vehicle Maneuverability letter and attachments prepared by Emma Hansma.

Do not hesitate to call if you have any questions.

Kind Regards

Belinda Middleton
Senior Word Processor
On behalf of

email: belinda@benbowenviro.com.au
website: www.benbowenviro.com.au

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