APPENDIX 3

Traffic Impact Assessment P4062.003R – 27 May 2019

14 RAYBEN STREET, GLENDENNING
LIQUID WASTE FACILITY
TRAFFIC IMPACT ASSESSMENT

FOR

DUGGAN AND HEDE PTY LTD

Gold Coast
Suite 26, 58 Riverwalk Avenue
Robina QLD 4226
P: (07) 5562 5377
W: www.bitziosconsulting.com.au

Brisbane
Level 2, 428 Upper Edward Street
Spring Hill QLD 4000
P: (07) 3831 4442
E: admin@bitziosconsulting.com.au

Sydney
Studio 203, 3 Gladstone Street
Newtown NSW 2042
P: (02) 9557 6202

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CONTENTS

Tables

Figures

Appendices

1. INTRODUCTION

1.1 BACKGROUND

Bitzios Consulting was commissioned by Duggan and Hede Pty Ltd to undertake a traffic impact assessment for proposed production upgrade scenarios to a JJ Richards liquid waste processing facility located at 14 Rayben Street, Glendenning. The location of the subject site is depicted in Figure 1.1.

SOURCE: Google Maps

Figure 1.1: Location of Subject Site

1.2 FACILITY DETAILS

The facility currently comprises two (2) waste transfer stations totalling approximately 1,070m^2 Gross Floor Area (GFA) with an administration building of approximately 200m^2 GFA. The development provides a total of 28 parking spaces on-site for passenger vehicles, including one (1) Persons With Disability (PWD) bay. The site is accessed from Rayben Street via two (2) separated entry and exit crossovers.

Detailed site plans are provided in Appendix A. Figure 1.2 overleaf depicts the site layout. Further, Table 1.1 below displays the existing waste volumes (incoming and outgoing) for the existing facility.

Table 1.1: Waste per Year Treated On-site

Type	Receipts (tonnes)	Discharge (tonnes)	
	By Vehicle	By Vehicle	To Sewer
Organics	42,000	26,400	15,600
Oils	10,000	8,200	1,800
TOTAL	52,000	34,600	17,400

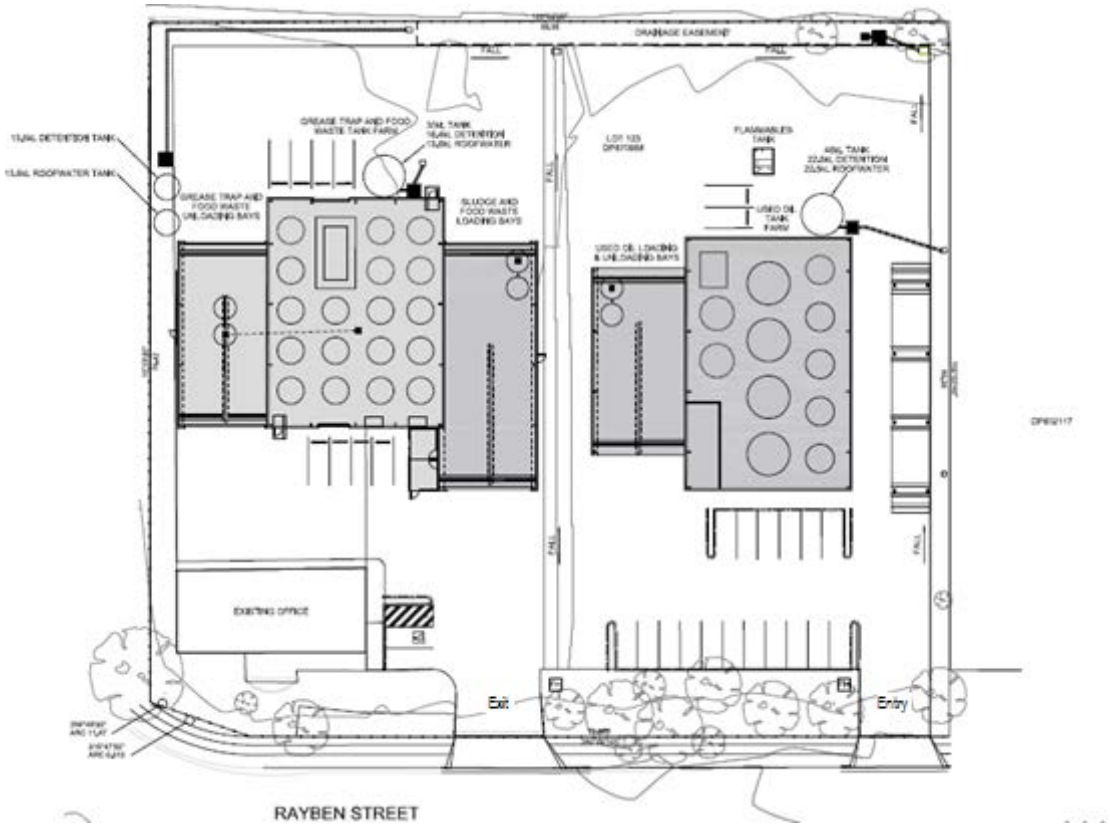


Figure 1.2: Site Layout

1.3 PROPOSED UPGRADES

The existing facility is proposed to be upgraded, with increases to the facility production. The upgrades include an approximate 20% increase in total volume processed on site. This is comprised entirely of an increase in oils processed on site to 20,000 tonnes per annum, which compared to the existing operation is an additional 10,000 tonnes of oils processed per annum.

Table 1.2 shows the comparison of the proposed upgrades to the facility with the existing operation capacity of the facility.

Table 1.2: Proposed Upgrades – Facility Production

Material Type	Processed Volume per Year (Tonnes)	
	Existing	Proposed
Organics	42,000	42,000
Oils	10,000	20,000

1.4 SCOPE OF ASSESSMENT

The scope of this traffic impact assessment includes:

- Undertaking AM and PM peak period turning movement surveys at the Owen Street / Power Street intersection
- Assessing the on-site parking requirements in accordance with Blacktown City Council's (BCC's) *Development Control Plan* (*DCP*)
- Assessing the general manoeuvring requirements for passenger and refuse collection vehicles required within the site including checks using AutoTURN software for servicing vehicles
- Assessing the servicing requirements associated with the development including catering for service vehicle access, manoeuvring, ability to perform the necessary tasks and analysis of potential impacts
- Analysing the adequacy of the heavy vehicle routes to and from the site, including any restricted access vehicles (RAV)

- Estimating the facility upgrade-related traffic generation and distribution onto the external road network
- Undertaking an assessment of the site's traffic impact on the Owen Street / Power Street intersection including using SIDRA intersection software
- Assessing the site's accessibility to and from active and public transport modes
- Assessing the traffic implications of an extension of operating hours to 24/7 from the existing weekday work days.

2. EXISTING CONDITIONS

2.1 SUBJECT SITE

The subject site is located at 14 Rayben Street in Glendenning. The site of approximately 7,214m^2 has a frontage of approximately 90 metres to Rayben Street. The site currently operates as a liquid waste processing facility, with ancillary offices on-site. The surrounding developments consist of industrial uses. An aerial view of the subject site and surrounding developments can be seen in Figure 2.1.

Source: SIX Maps

Figure 2.1: Location of Subject Site

2.2 ROAD NETWORK

Table 2.1 presents a summary of the key roads within the surrounding road network.

Table 2.1: Summary of Surrounding Road Network

Road Name	Jurisdiction	Road Hierarchy	No. of Lanes	Speed Limit[1]	Comments
Rayben Street	BCC	Local Access Road	2 (two-way)	50km/h	Cul-de-sac providing access to the site and a number of surrounding industrial developments. Orientated in an approximate east to west direction. Forms a priority controlled T-junction with Owen Street.
Owen Street	BCC	Local Access Road	2 (two-way)	60km/h	Provides access to a number of industrial developments. Orientated in an approximate north to south direction. Forms a priority controlled intersection at its southern end with Power Street and a private access driveway.
Power Street	BCC	Sub – Arterial Road	4 (two-way)	60km/h	Dual carriageways separated by a raised central median. Orientated in an approximate east to west direction. Forms a signalised intersection with Knox Road.
Knox Road	BCC	Sub - Arterial Road	4 (two-way)	60km/h	Dual carriageways separated by a raised central median. Orientated in an approximate north to south direction. Forms a signalised intersection with Power Street.

[1] Where a posted speed limit is not provided the road is subject to the default urban speed limit of 50km/h

The following Figures depict the typical cross-sections of the roads described in Table 2.1.

SOURCE: Google Maps (Streetview)

Figure 2.2: Rayben Street typical cross-section – looking east

SOURCE: Google Maps (Streetview)

Figure 2.3: Owen Street typical cross-section – looking north

SOURCE: Google Maps (Streetview)

Figure 2.4: Power Street typical cross-section – looking west

SOURCE: Google Maps (Streetview)

Figure 2.5: Knox Road typical cross-section – looking north

2.3 BACKGROUND TRAFFIC VOLUMES

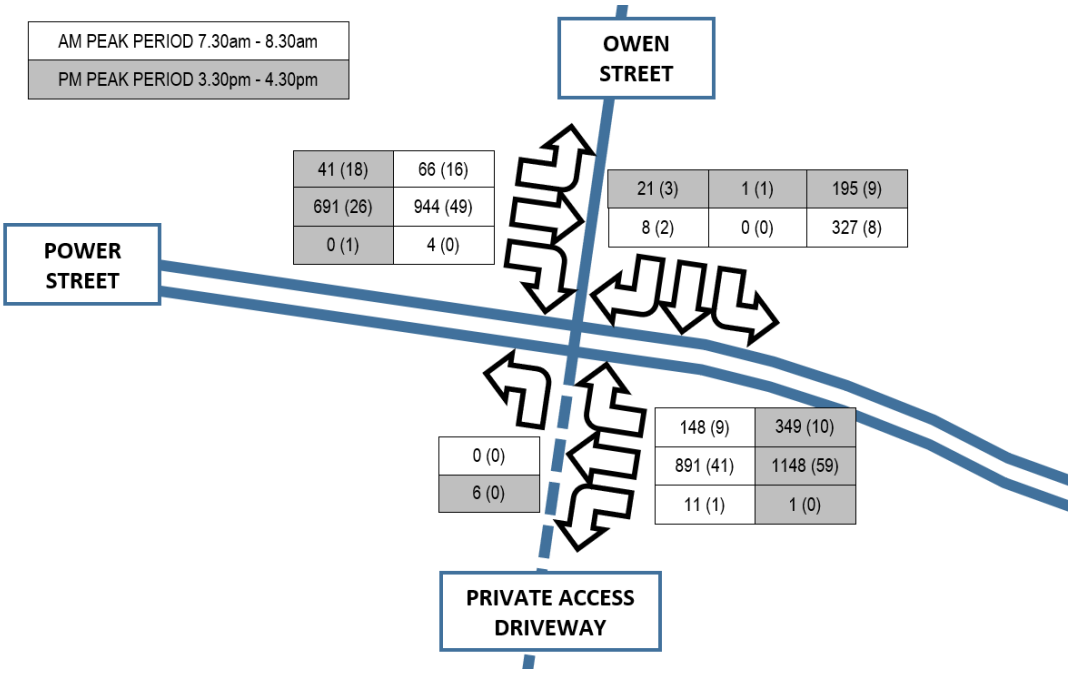
2.3.1 Traffic Surveys

Traffic surveys were undertaken by Traffic Data and Control at the Owen Street / Power Street / private access driveway priority-controlled intersection on Wednesday 20th of March 2019 during the following time periods:

- 7.00am to 9.00am – typical AM commuter peak period; and
- 3.00pm to 6.00pm – typical PM commuter peak period.

The results of all of the traffic surveys are displayed in Appendix B.

Figure 2.6 below presents the 2019 AM and PM peak hour background traffic volumes at the Owen Street / Power Street / private access driveway intersection. Power Street along the East-West direction is the primary direction of travel.



Passenger Vehicles (Commercial Vehicles)

Figure 2.6: Background Traffic Volumes 2019

2.3.2 Background Traffic Volumes

The existing operation of the site is included within the 2019 background traffic volumes surveyed. A 10-year design horizon (i.e. 2029) was considered, with an estimated 2% compounding annual growth rate (CAGR) of background traffic volumes over the 10 years. This CAGR is typical of moderate growth and considered suitable for the surrounding area.

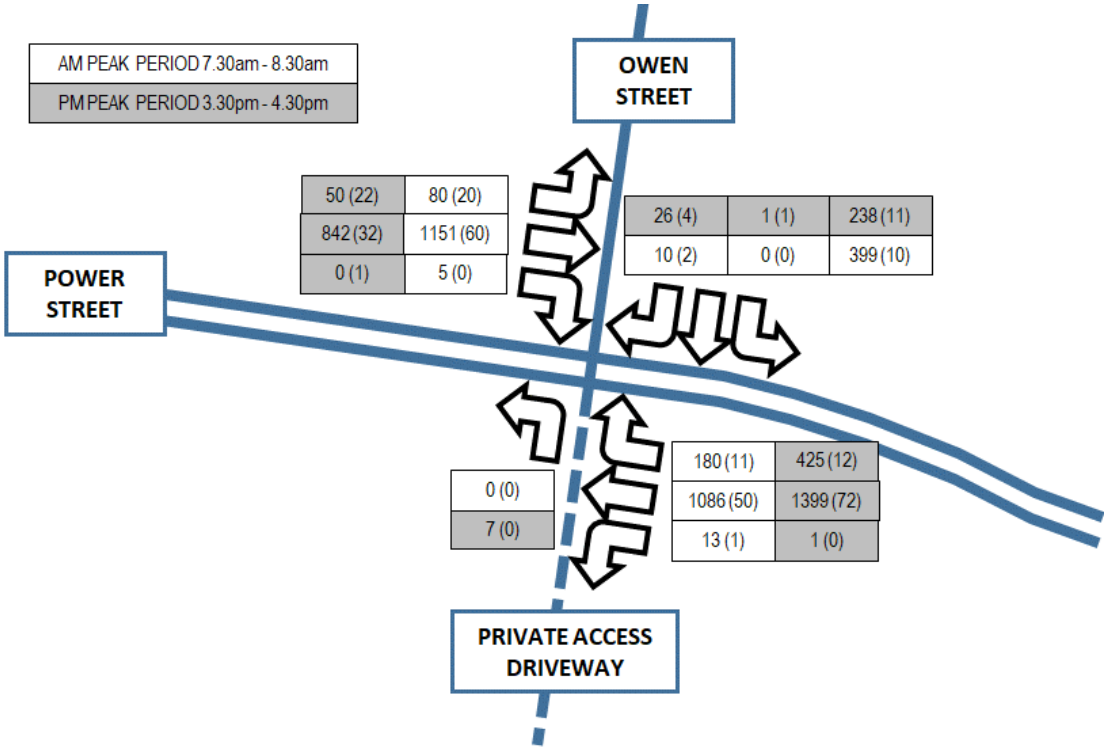
Traffic survey data from 2015 at the Power Street / Owen Street intersection was analysed in conjunction with the 2019 traffic survey data to determine the suitability of the estimated CAGR. The findings are summarised in Table 2.2.

Table 2.2: Background Traffic Annual Growth Rate

Year	Peak Hour	Intersection Traffic Volumes (vehicles)	Rate of Growth from 2015 (%)
2015	AM	2357	-
	PM	2376	-
2019	AM	2525	1.74%
	PM	2580	2.08%

The historical data shows that in the four-year period since 2015, there has been an annual growth of background traffic volumes by 1.74% in the AM peak period and 2.08% in the PM peak period. While four (4) years can be considered too short of a period to draw a meaningful statistical conclusion, the analysis provides an indication that the estimated 2% CAGR is appropriate for the purpose of this assessment.

Accordingly, Figure 2.7 depicts the future 2029 background traffic volumes at the intersection in question.



Passenger Vehicles (Commercial Vehicles)

Figure 2.7: Background Traffic Volumes 2029 (10-year design horizon)

3. PARKING ASSESSMENT

3.1 PARKING REQUIREMENTS

The development's car parking requirements are contained within BCC's *DCP*. Table 3.1 presents the relevant parking rates and subsequent car parking requirements.

Table 3.1: Car Parking Requirements

Land Use	Component	Size	Car Parking Rate	Car Parking Requirement
Industry	Factory / Warehouse & Bulk Storage	1,070m^2	1 space per 75m^2	15
	Commercial / Office Component	200m^2	1 space per 40m^2	5
			TOTAL	20

The Table above indicates the development is required to provide 20 parking spaces to satisfy the requirements within BCC's *DCP*.

Notwithstanding the above, given the primary purpose of the site is to treat liquid waste, use of the broad "industry" land use is not considered representative. Accordingly, a 'first-principles' parking assessment has been undertaken to estimate the parking demands of the development.

The development is currently served by the following staff members:

- 8 administration / management / operator staff to operate the site
- 14 truck drivers (approximate operating hours of 4am – 9pm).

Accordingly, the development is required to provide a minimum of 22 on-site parking spaces for use by employees. Further, given the development is unlikely to attract a large number of visitors, the provision of an additional two (2) customer / visitor parking spaces is considered sufficient to cater for any likely visitor demand.

On the basis of the above, the first-principles assessment indicates the existing development will require 24 spaces, including 22 staff and two (2) visitor parking spaces to accommodate the needs of the development.

As a part of the proposed upgrade, no increase in staff members is proposed, therefore no changes to the parking requirements are anticipated.

3.2 PARKING PROVISION

The facility currently provides a total of 42 parking spaces as follows:

- 28 passenger vehicle spaces for use by administration / management / operation staff and visitors including one (1) PWD parking space
- 14 commercial heavy rigid vehicle (HRV) parking spaces including:
  - 12 to be located within loading / unloading bays
  - two (2) to be located centrally on-site between facilities.

Based on this, the parking provision is sufficient to meet the parking demand for the existing site and the requirements contained within BCC's *DCP*.

4. SERVICING ASSESSMENT

4.1 COMMERCIAL VEHICLE PARKING AREAS

Based on information previously received from Duggan and Hede Pty Ltd, it is understood that the facility currently accommodates up to 14, 12.5m long Heavy Rigid Vehicles (HRV's).

The site provides 14 HRV parking bays as follows:

- 12 parking bays within the loading / unloading bays of the waste transfer stations
- Two (2) parking bays between the two (2) waste transfer stations.

The parking bays provided are capable of accommodating 12.5m long heavy rigid vehicles (HRV) and are a minimum of 12.5 metres long by 3.5 metres wide (as per *AS2890.2*). Figure 4.1 shows the location of the 14 HRV bays.

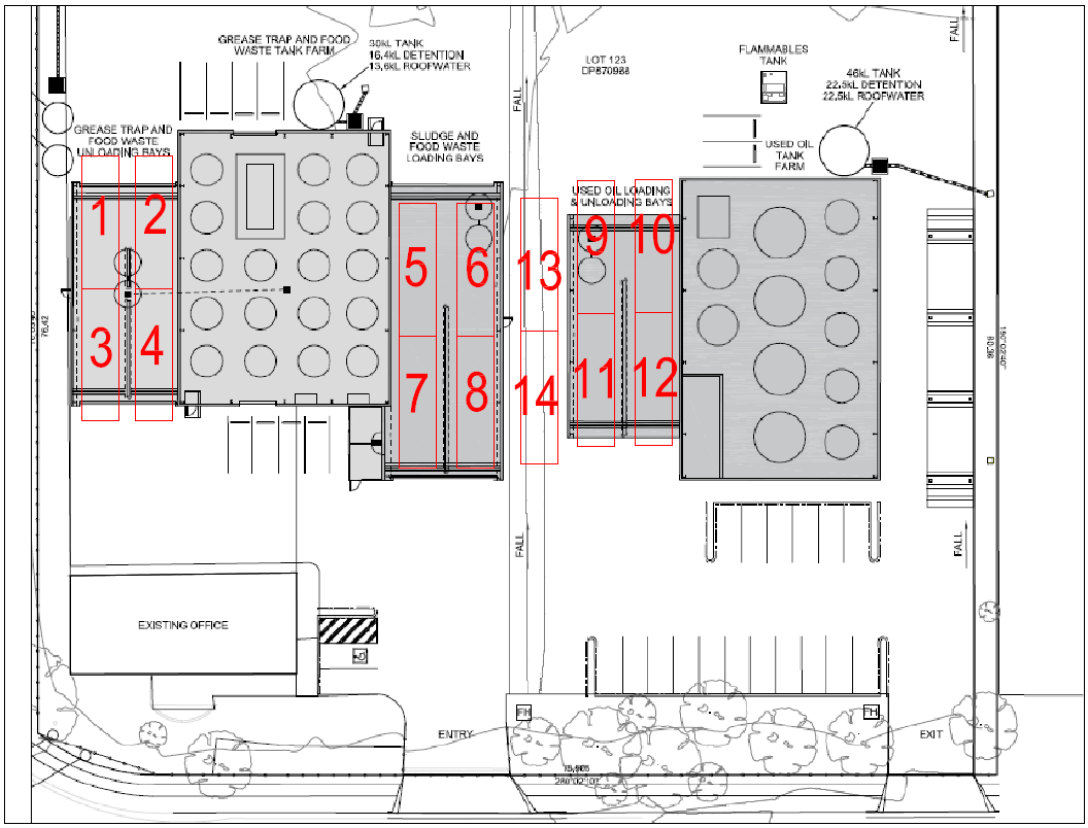


Figure 4.1: Commercial Vehicle Bays

The facility's site layout is not proposed to be changed as a part of the upgrade. As such, the existing layout must demonstrate capability in servicing the proposed future facility.

4.2 INCOMING AND OUTGOING WASTE ROUTES

Incoming and outgoing waste is transported to / from the site via a combination of HRV's, semi-trailers and B-Doubles. It is understood that 90% of incoming waste vehicles will utilise the Westlink (M7) via Quakers Hill Parkway / Knox Road, Power Street and Owen Street to travel to and from the site while the remaining 10% incoming waste will be associated with areas in close proximity to the site attributed to local collections. It is understood that 100% of the outgoing waste will travel along the Westlink (M7) via Quakers Hill Parkway / Knox Road, Power Street and Owen Street.

The above routes are approved for 26m B-Double, as per the National Heavy Vehicle Regulator (NHVR), and thus are considered appropriate for the transportation of waste to / from the development.

The additional trucks required to accommodate the higher volumes of material in the proposed upgrade will follow the same routes as those of the existing vehicles.

4.3 Site Access and Service Bays

All vehicle access to and from the site occurs via Rayben Street. Vehicles entering the site utilise the crossover located on the eastern boundary of the site. Vehicles perform the necessary duties and exit the site in a forward direction via the existing crossover located centrally along the site's frontage.

The site contains two (2) waste transfer stations which service the following:

- Liquid grease trap and food waste
- Used oil and industrial oily water.

The average vehicle that will access the above transfer stations is an HRV. However, the transfer stations will on occasion service larger commercial vehicles. Table 4.1 below shows the largest denominations of trucks used for each specific site use.

Table 4.1: Largest Design Vehicle

Waste	Incoming	Outgoing
Liquid Grease Trap and Food Waste	19m semi-trailer	26m B-Double
Used Oil	19m semi-trailer	26m B-Double

Swept path diagrams were prepared to demonstrate the adequacy of the site in allowing each specified design vehicle to perform its necessary duties and enter the required areas. Figure 4.2 and Figure 4.3 demonstrate swept path diagram snapshots of vehicles entering and exiting the site via Rayben Street. The full set of swept path diagrams can be seen in Appendix C.

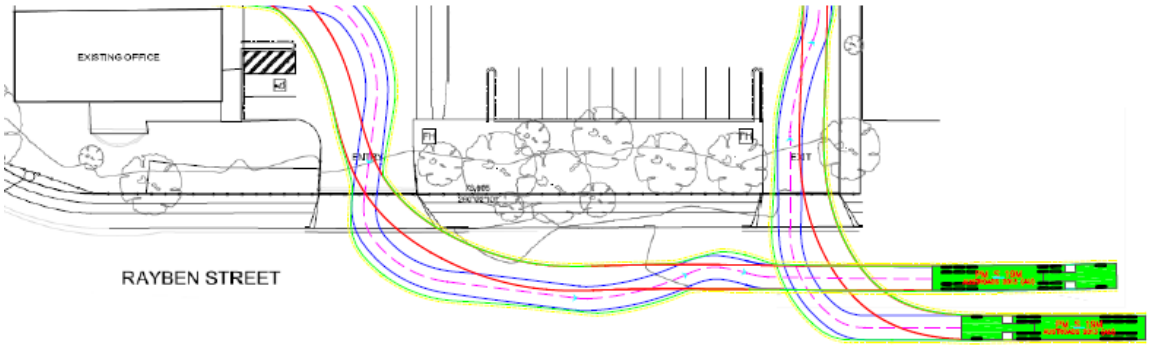


Figure 4.2: Semi-trailer Entering / Exiting the Site

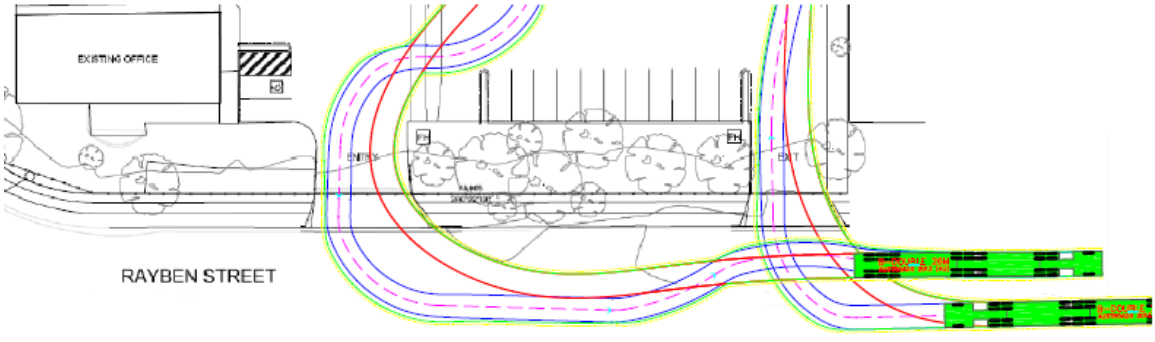


Figure 4.3: B-Double Entering / Exiting the Site

The swept path diagrams indicate that the access and site layout has been suitably designed to accommodate the manoeuvring requirements of all design vehicles and is therefore considered appropriate.

4.4 Refuse Collection Assessment

It is understood that the refuse collection will be serviced by a typical refuse collection vehicle (RCV). RCVs are typically 12.5m long or less and given the results of the swept path diagrams and assessment above they are expected to be able to enter the site in a forward gear, perform the necessary duties and exit in a forward direction.

5. TRAFFIC ASSESSMENT

5.1 DEVELOPMENT TRAFFIC

5.1.1 Traffic Generation

A first-principles assessment based on the known operation of the development has been used to estimate the likely site traffic generation during peak hour periods. Trip generation is comprised of the following three (3) categories.

Staff Traffic

The existing staff members travelling to and from the site each day include:

- Eight (8) administration / operation staff
- 14 truck drivers.

The existing travel behaviour of the admin/operations staff members include:

- Two (2) staff members that start at around 4:00 AM and finish at around 4:00 PM
- Four (4) staff members that start at around 7:00 AM and finish at around 4:00 PM
- Two (2) staff members that start at around 10:00 AM and finish at around 7:00 PM.

It is noted that the staff arrival and departures do not follow a strict schedule and can vary on a day-to-day basis. For the purpose of this assessment, the above timetabling is utilised in determining the likely network peak hour movements. Therefore, it is assumed that there is currently a total of four (4) inbound trips during the AM peak hour, and six (6) outbound trips during the PM peak hour.

The proposed upgrades do not include an increase to staff members, therefore there is no additional traffic generation associated with the upgrades.

The truck driver arrival and departure from site (not as a part of truck pick-up or delivery movements) is also subject to variance. The operating hours for the truck movements are described as follows:

- Organics: 4:00 AM to 4:00 PM
- Oil: 7:00 AM to 7:00 PM.

It is recognised that it is highly unlikely that all truck drivers will arrive to begin their shift or leave at the end of their shift during the network peak hour periods. For the purpose of this assessment, a conservative assumption was made that 20% of the daily truck drivers will arrive / depart during the network peaks – i.e. three (3) truck driver staff members will arrive and leave the facility during the network peak hour periods.

There are currently no proposed changes to the truck driver arrivals and departures as a part of the proposed upgrade.

Table 5.1 shows the peak-hour staff passenger vehicle movements during existing conditions and the proposed upgrade scenario.

Table 5.1: Staff Passenger Vehicle Movements Summary

Type	Existing (vehicles)		Proposed Upgrades (vehicles)	
	AM	PM	AM	PM
Administration / Operations	4	6	4	6
Truck Drivers	3	3	3	3
TOTAL	7	9	7	9

Waste Traffic

To facilitate the transportation of raw liquid waste, treated material and sludge, commercial truck movements will comprise the majority of vehicle trips to and from the site. The types and purposes of the trucks include:

- Tankers carrying Organics – Inbound
- Oil Collection Vehicles – Inbound
- Sludge Tankers – Outbound
- Oil Tankers – Outbound

The number of trucks required has been calculated based on the daily volume of each type of waste to be received and discharged, and the capacity of the different types of trucks. As noted above, the operating hours for truck movements are on a 12-hour cycle each day.

A conservative assumption was made that 20% of the daily trucks will arrive / depart during the AM or PM peak hour period, with 10% of the daily truck movements in each peak. The assumption of 20% daily truck movements during the network peaks is considered conservative, as it exceeds the even distribution of trucks through the daily 12-hour truck operation period (which assumes 8.33% of daily vehicles in each hour). It is unlikely that this amount will be exceeded during site operations, as it would be inefficient scheduling (queued vehicles) and will exceed processing capacity of the site.

For the purpose of this assessment, any part truck calculated has been rounded up to the nearest full truck, and different materials were assumed to not be carried on the same truck (different storage conditions and destinations).

Table 5.2: Commercial Vehicle One-way Movements Summary

Type	Existing (vehicles)		Proposed Upgrades (vehicles)	
	Daily	Each Peak	Daily	Each Peak
Organic Tankers (IN)	14	2	14	2
Oil Collection Vehicles (IN)	6	1	11	2
Sludge Tankers (OUT)	6	1	6	1
Oil Tankers (OUT)	1	1	2	1
TOTAL	27	5	33	6

Therefore:

- The proposed upgrade will necessitate an additional five (5) inbound oil tankers and one (1) outbound oil tanker per day
- There will be an increase of one (1) inbound truck during each network peak hour period.

The numbers outlined in Table 5.2 above indicate one-way directionality of the commercial vehicle movements. There is a corresponding opposite direction trip for each trip to account for empty delivery vehicles leaving the site after unloading, and empty trucks arriving on-site to load up. The existing operation of the facility informs:

- 0.5 hour unloading time for organic trucks
- 1 hour unloading time for oil trucks.

As there may be 'left-over' vehicles from before the start of the peak hour, for the purpose of this assessment, it is conservatively assumed that each inbound or outbound truck movement during the peak hour periods has a corresponding outbound or inbound truck movement. This amounts to a 50% in, 50% out directional split.

The generated truck trips are highly conservative in nature and represent a notable peak in truck movements during the network peaks. Furthermore, the capacity of the site allows for two (2) vehicles of each type (organics and oils) to be parked and loaded / unloaded simultaneously, with on-site queueing / waiting areas. Any further concentration of trucks during the peak hour periods is not anticipated as it undesirable from all perspectives (operational efficiency as well as traffic).

Parking Traffic

The site has provision for commercial vehicle parking on-site, allowing for 14 trucks to park on site overnight. These parked vehicles are ancillary to the operation of the waste facility and comprise a separate group of trips.

It is understood that the daily departure and arrival times for these vehicles are as follows:

- Site Departure: 5:00 AM – 7:00 AM
- Site Arrival: 2:00 PM – 4:00 PM.

As the departure of the vehicles occurs outside of the network AM peak hour (7:30 AM – 8:30 AM), these vehicles do not affect the morning peak hour traffic in vicinity to the facility.

As the arrival period of the vehicles has a 25% (half an hour) overlap with the network PM peak hour (3:30 PM – 4:30 PM), it is assumed that 25% of the commercial parking vehicles will be inbound to the site during the PM peak period.

The proposed upgrades to the liquid waste processing facility do not include an adjustment to the amount of parking vehicles for the upgrade, therefore there is no upgrade-related traffic generation associated with this group of site-related traffic.

5.1.2 Traffic Distribution

The distribution of traffic to and from the site has been based on the likely routes of employee trips, the access location, the configuration of the surrounding road network and the known haulage routes for incoming and outgoing waste. The estimated traffic distributions are as follows:

- 90% of passenger vehicle traffic will be associated with areas to the east of the facility
- 10% of passenger vehicle traffic will be associated with areas to the west of the facility
- 90% of incoming commercial vehicle traffic will be associated with the M7 approaching from the east
- 100% of outgoing commercial vehicle traffic will be associated with the M7 departing to the east.

Condition B32(h) of the original facility Development Consent requires that "*heavy vehicles do not leave the site via a right turn movement onto Power Street".* This condition will apply also to the new heavy vehicle traffic associated with this upgrade. All truck drivers employed by the facility are to be kept informed on the restrictions to truck turning movements and approved travel routes.

5.1.3 Directional Split

Table 5.3 presents the directional splits of the traffic generated by the proposed upgrade.

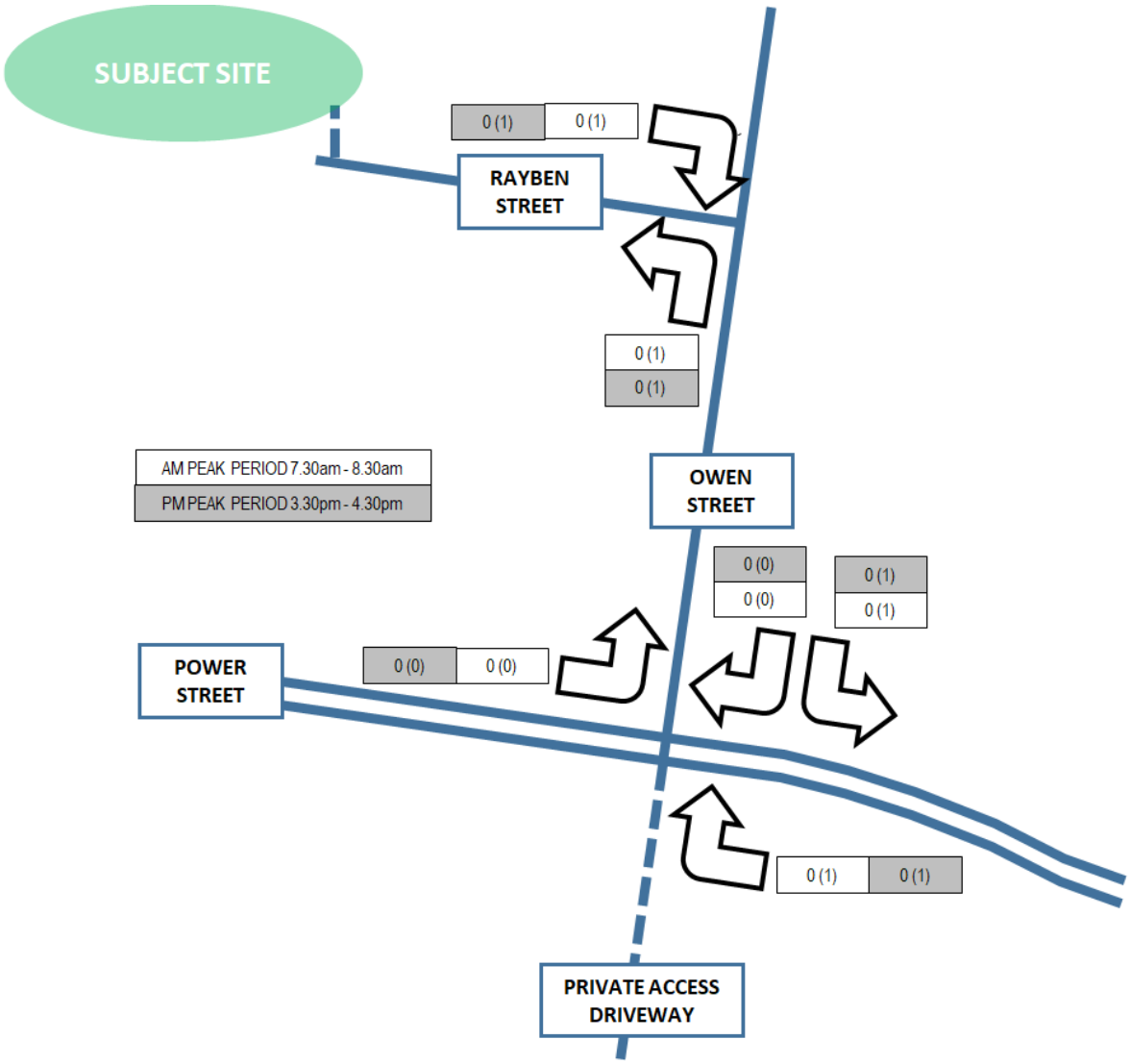
Table 5.3: Additional Traffic Directional Split

	PASSENGER VEHICLES				HEAVY VEHICLES			
	Split (%)		Trips (vph)		Split (%)		Trips (vph)	
Peak Period	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
AM Peak Hour	100	0	0	0	50	50	1	1
PM Peak Hour	0	100	0	0	50	50	1	1

5.2 DEVELOPMENT TRAFFIC VOLUMES

5.2.1 Traffic Generation

The traffic generated by the proposed upgrades is shown in Figure 5.1.

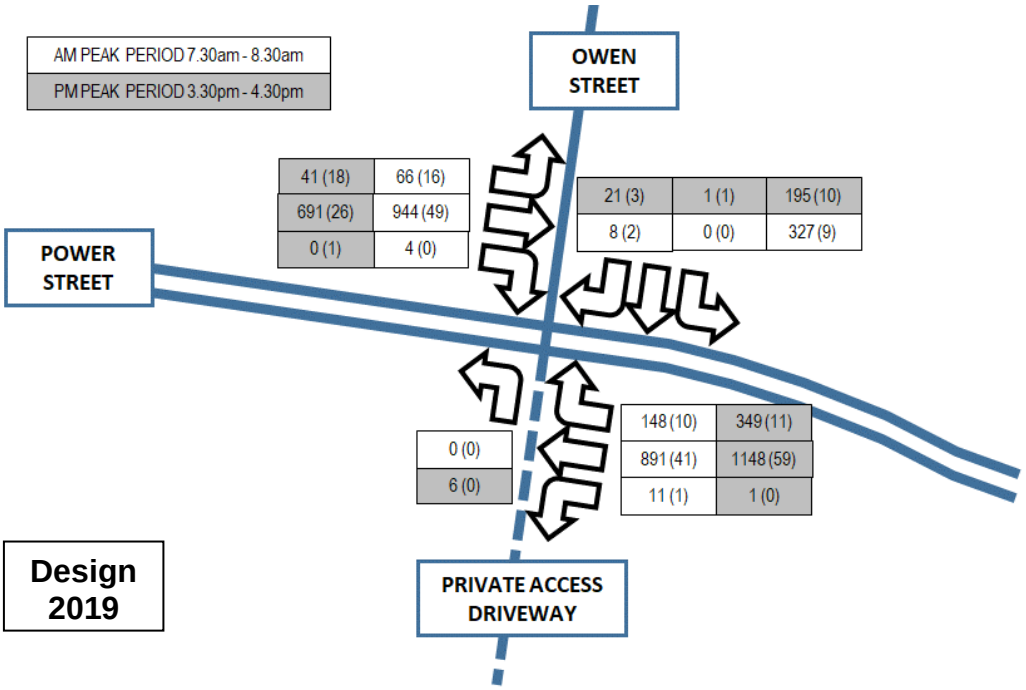


Passenger Vehicles (Commercial Vehicles)

Figure 5.1: Proposed Upgrades - Generated Traffic

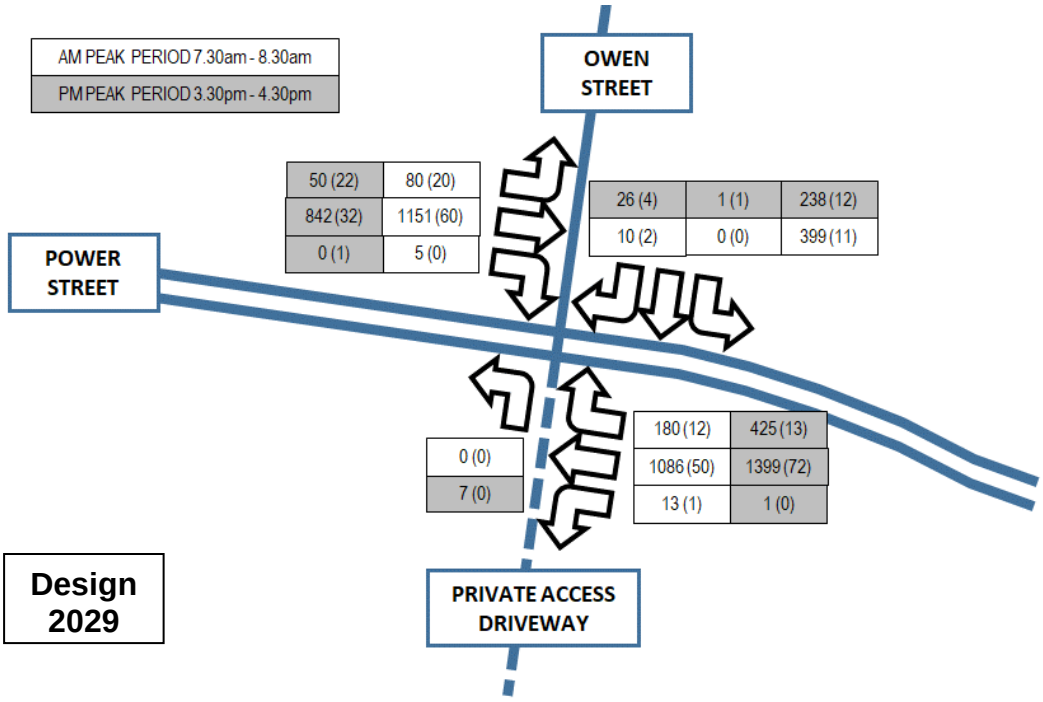
5.2.2 Design Traffic Volumes

The design traffic volumes (i.e. background + development) at the Owen Street / Power Street / private access drive intersection for the 2019 (current year) and 2029 (10-year design horizon) can be seen in Figure 5.2 and Figure 5.3 for the 2019 (current year) and 2029 (10-year design horizon).



Passenger Vehicles (Commercial Vehicles)

Figure 5.2: Proposed Upgrades – 2019 Design Traffic Volumes



Passenger Vehicles (Commercial Vehicles)

Figure 5.3: Proposed Upgrades – 2029 Design Traffic Volumes

6. INTERSECTION PERFORMANCE ASSESSMENT

6.1 MODEL DEVELOPMENT

In order to assess the traffic impact of the development, the Owen Street / Power Street / private access driveway intersection was modelled using SIDRA Intersection network software for the "without" (background) and "with" (design) traffic volumes for the current year (2019) and 10-year design horizon (2029).

The intersection geometry modelled is shown in the Figure 6.1 below and represents the existing intersection configuration.

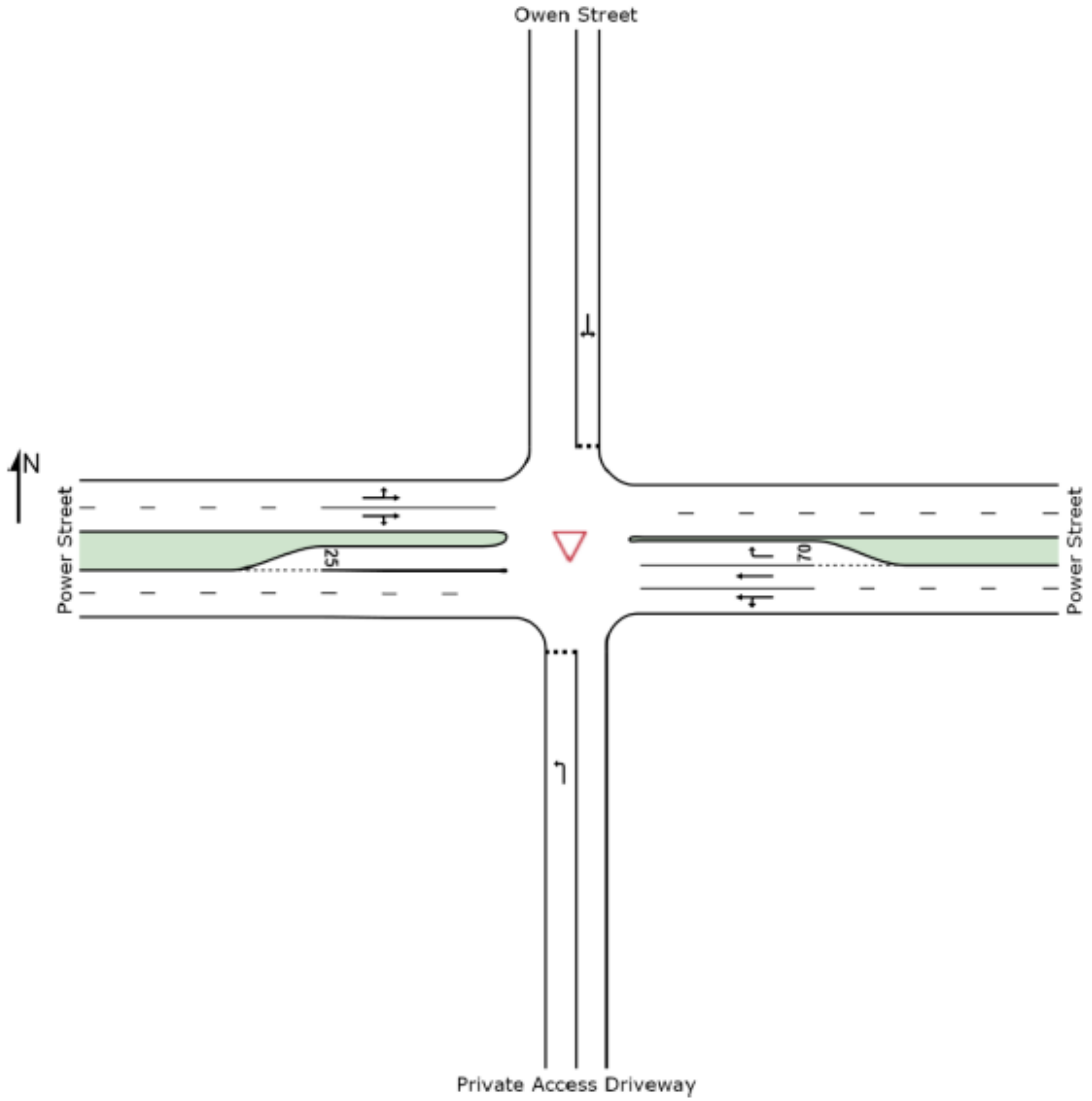


Figure 6.1: Owen Street / Power Street / private access driveway intersection layout

It is noted that SIDRA models assume the northern approach to be a single lane approach, whilst aerials of the intersection show that vehicles occasionally use the available width to form two (2) turning lanes. Due to the volume of commercial vehicles at the northern approach this was not added to the SIDRA model as it is considered unsafe.

The existing base 2019 model was validated to 95th percentile back-of-queue data from queue length surveys during the identified network peak hour periods. The surveys were undertaken for the North Approach, along Owen Street. Where possible, a maximum difference of two (2) vehicles between observed and modelled queues. The primary factor used for calibration was Gap Acceptance, which was increased above default

values to reflect the surveyed driver behaviour (high percentage of heavy vehicles, potentially giving way to both lanes of traffic when merging, etc).

Due to the necessity of modelling the intersection as a staged crossing in network analysis to replicate the median storage provided in the 'seagull' intersection arrangement, manual calculations considering cumulative results from both network sites were undertaken to determine the overall intersection results.

For reporting on model result outputs, the following approaches were adopted for a priority-controlled intersection:

- Degree of Saturation (DOS) was reported as the worst (highest) DOS from all movements on each approach
- Average Delay was reported as the worst (highest) average delay from all movements on each approach
- Level of Service (LOS) was determined via the RMS NSW Method for LOS, based on the worst movement delay
- While LOS can be indicated as 'N/A' for all movements on the major road as approach average delay is not meaningful due to there being no delay associated with the major through vehicle movement. For this assessment it was reported as the LOS of the worst movement on each approach (based on the corresponding movement's Average Delay).

6.2 MODEL RESULTS

Table 6.1 presents a summary of the SIDRA model results with detailed results available in Appendix D.

Table 6.1: Proposed Upgrades - Intersection Performance

Intersection Approach	'Without' Development				'With' Development (Proposed)			
	DOS (v/c)	Avg. Delay (sec)	LOS	95% Back of Queue (m)	DOS (v/c)	Avg. Delay (sec)	LOS	95% Back of Queue (m)
2019 AM Peak Results								
South: Private Access	0.001	1.7	LOS A	0.0	0.001	1.7	LOS A	0.0
East: Power Street	0.522	21.6	LOS B	17.7	0.529	21.8	LOS B	18.2
North: Owen Street	0.684	46.7	LOS D	47.3	0.687	47.0	LOS D	48.0
West: Power Street	0.302	5.8	LOS A	0.0	0.302	5.8	LOS A	0.0
2019 PM Peak Results								
South: Private Access	0.008	2.7	LOS A	0.2	0.008	2.7	LOS A	0.2
East: Power Street	0.694	17.3	LOS B	37.6	0.698	17.4	LOS B	38.2
North: Owen Street	0.443	31.7	LOS C	21.7	0.446	31.8	LOS C	22.1
West: Power Street	0.217	5.9	LOS A	0.0	0.217	5.9	LOS A	0.0
2029 AM Peak Results								
South: Private Access	0.001	2.3	LOS A	0.0	0.001	2.3	LOS A	0.0
East: Power Street	1.022	112.8	LOS F	95.6	1.036	120.2	LOS F	103.6
North: Owen Street	1.093	178.4	LOS F	293.3	1.099	182.4	LOS F	301.0
West: Power Street	0.368	5.8	LOS A	0.0	0.368	5.8	LOS A	0.0
2029 PM Peak Results								
South: Private Access	0.011	3.9	LOS A	0.3	0.011	3.9	LOS A	0.3
East: Power Street	1.111	137.3	LOS F	295.5	1.116	141.5	LOS F	304.1
North: Owen Street	0.700	55.4	LOS D	47.7	0.704	55.7	LOS D	48.5
West: Power Street	0.265	5.9	LOS A	0.0	0.453	5.9	LOS A	0.0

Green shading indicates the intersection is operating below the practical operating capacity for a priority controlled intersection (i.e. DOS<0.8)
Orange shading represents operating over practical capacity but within operating capacity (i.e. 0.8<DOS<1.0)
Red represents over-capacity (i.e. DOS>1).

6.2.1 2019 Scenario

It is clear from the model results shown in the Table above that the intersection is currently performing below the practical operating capacity (i.e. DOS < 0.8) of a priority-controlled intersection during the current-year 2019 scenarios. It is observed that there are only marginal increases in performance measures with the addition of the proposed upgrade-related traffic, including:

- Less than 0.010 change in DOS
- Less than 0.5 seconds change in Average Delay
- No change in LOS for any approach
- Less than 1m change in 95th percentile back of queue.

As such, the proposed upgrades are observed to have a negligible impact on the road network during current-year conditions.

6.2.2 2029 Scenario

During the future 'without development' 2029 scenario, it is observed that intersection failure occurs under background conditions as a result of traffic volume increases due to annual background growth. The critical movements include the northern approach on Owen Street and the right-turn into Owen Street from the eastern approach on Power Street, which report a level of service F.

The addition of the proposed upgrade traffic for the 2029 peak hour periods has the following impact on the intersection performance measures:

- Maximum increase in DOS of 0.014
- Maximum increase in Average Delay of around 8 seconds
- No change in LOS for any approach
- Maximum increase in 95th percentile back of queue of around 10m.

Given that the intersection itself exhibits poor conditions prior to the introduction of the facility upgrade-related traffic, it is not considered that the above increases are significant. Even under the overly saturated traffic conditions, the additional traffic from upgrades only enact a very minor impact on the intersection performance. The upgrade traffic represents less than 1% of the existing traffic movements, therefore the low volume of traffic generated is not expected to compromise the function or safety of the road and associated intersections beyond background levels.

6.3 SUMMARY

The above analysis finds that the proposed upgrade results in a minor increase in the traffic at the Power Street / Owen Street intersection relative to the existing network movements.

During the current-year 2019 conditions, the performance of the intersection is not unduly impacted by the introduction of generated traffic.

During the future 2029 conditions, the intersection is observed to have poor performance due to background growth, prior to the introduction of generated traffic.

Due to the very low number of vehicles introduced, the impacts to intersection performance are negligible, with minimal increases to DOS, delay and queueing.

All planning for future truck movements should incorporate Condition B32(h) of the original facility Development Consent, requiring that "*heavy vehicles do not leave the site via a right turn movement onto Power Street".* The modelled traffic distribution assumes that the outgoing commercial vehicle traffic will be associated with the M7 departing to the east, accessible via a left turn onto Power Street, travelling to Richmond Road via Knox Road. Truck drivers employed by the liquid waste facility should be informed of and kept up to date on approved travel routes during training and information sessions.

The BCC's *Works Improvement Program (WIP)* for 2018/19 nominates road facility improvements at the Power Street / Owen Street intersection. The construction of a landscaped roundabout at this intersection is proposed as a future solution to current capacity issues, however there is currently no approval or timeline for the proposed upgrade to the intersection.

On the basis of the above, it is considered unnecessary for additional mitigation measures to be put in place at the existing intersection as a result of the proposed upgrades, given the low traffic volumes generated by the upgrades and BCC's existing consideration of future upgrades to the intersection. It is deemed that once the intersection upgrade has been completed the proposed upgrades will have a "no net worsening" effect on the existing Owen Street / Power Street intersection.

7. OPERATING HOURS

7.1 EXISTING

The existing operating hours of the facility for staff members are reported as follows:

- Two (2) staff members start at around 4:00 AM and finish at around 4:00 PM
- Four (4) staff members start at around 7:00 AM and finish at around 4:00 PM
- Two (2) staff members start at around 10:00 AM and finish at around 7:00 PM.

The existing operating hours for the truck movements are described as follows:

- Organics: 4:00 AM to 4:00 PM
- Oil: 7:00 AM to 7:00 PM.

Therefore, the site is essentially in operation between 4:00 AM and 7:00 PM during the week.

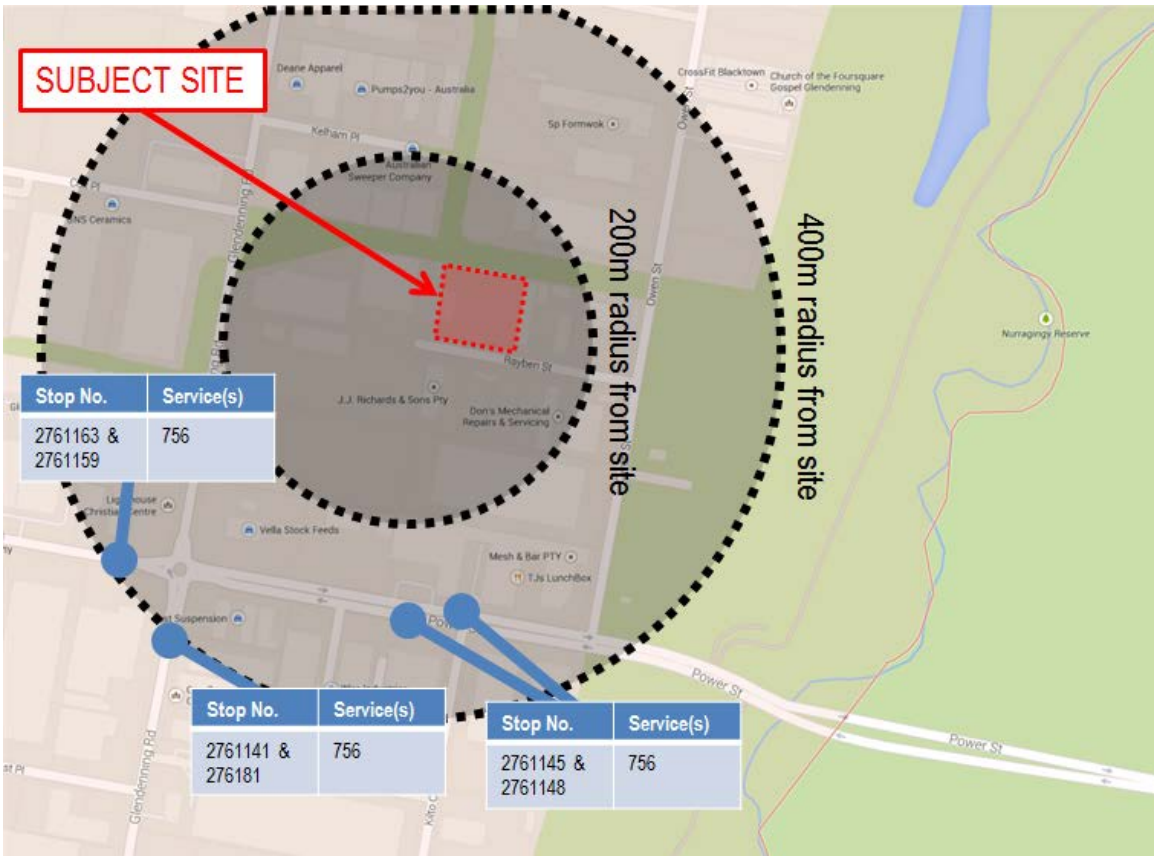
7.2 PROPOSED

There are no proposed changes to operating hours.

8. ALTERNATE TRANSPORT MODES

8.1 PUBLIC TRANSPORT SERVICES

The available public transport services in close proximity to the subject site are shown in Figure 8.1.



SOURCE: Google Maps

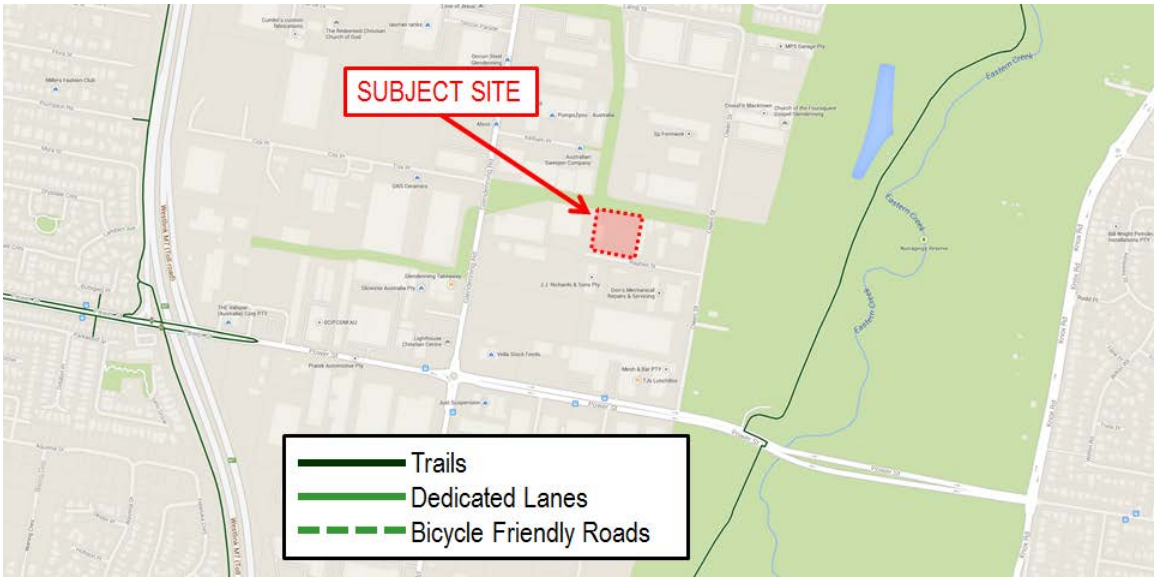
Figure 8.1: Accessible Public Transport Services

The Figure above indicates that the Route 756 bus service which operates between Blacktown, Rooty Hill, Plumpton, Woodcroft and Mt Druitt runs within close proximity to the subject site. The typical service frequencies occur at 20 and 30 minute intervals during the peak and off-peak periods.

This service is accessible for use by employees of the development and could be expected to reduce the number of private vehicle trips to and from the site.

8.2 CYCLING INFRASTRUCTURE

Given the nature of the development, should bicycle parking be required it is envisaged that employees will be able to securely store their bicycles within the development. The subject site is located in close proximity to existing bicycle infrastructure, as shown in Figure 8.2 overleaf.



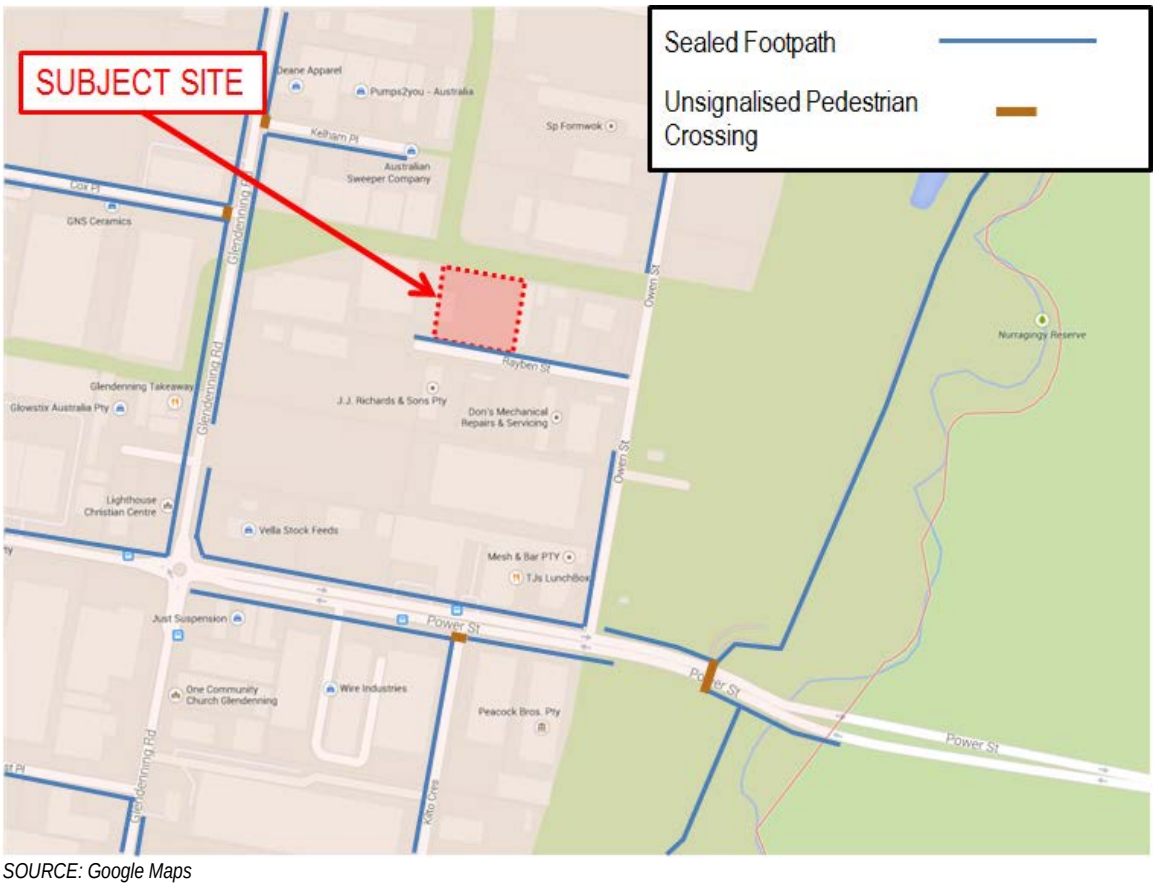
SOURCE: Google Maps

Figure 8.2: Accessible Bicycle Infrastructure

The Figure above shows that there are a number of available bicycle trails in close proximity to the subject site that offer good connectivity to the greater bicycle network. The trails, in conjunction with the development's capability to provide ample bicycle facilities (given the large site area), are likely to encourage employees and their visitors to cycle to and from the development.

8.3 PEDESTRIAN INFRASTRUCTURE

There is a high level of pedestrian infrastructure within a close proximity to the site. Rayben Street contains a sealed footpath along its northern side. Owen Street contains a sealed footpath along its western side starting 100m south of the Rayben Street intersection and connecting up with the sealed footpath along Power Street. Figure 8.3 below shows the pedestrian infrastructure in the vicinity of the subject site.



SOURCE: Google Maps

Figure 8.3: Accessible Pedestrian Infrastructure

9. SUMMARY AND CONCLUSION

The key findings from this traffic impact assessment of the proposed upgrades to the liquid waste facility at 14 Rayben Street in Glendenning are as follows:

- The facility generates a car parking requirement of 20 parking spaces based on the parking rates stipulated in the Blacktown City Council's *DCP*
- A first-principles parking assessment indicates the development is required to provide 24 parking spaces to accommodate the estimated staff and visitor needs of the development
- The development provides a total of 28 passenger vehicle parking spaces on-site, including one (1) PWD parking space and an additional 14 commercial vehicle parking spaces for use by the truck drivers
- Vehicle access to the site is via two (2) crossovers to Rayben Street, which duly caters for B-Doubles (i.e. the largest design vehicles)
- Swept path diagrams have been prepared to show safe site access and manoeuvrability for B-Doubles and semi-trailers whilst performing their necessary duties on-site
- Based on a first-principles traffic assessment with consideration of provided forecast daily truck movements, the proposed upgrade is expected to generate two (2) heavy vehicle trips during the peak hour periods

2019 Scenario

- A SIDRA intersection analysis on the Owen Street / Power Street intersection indicates that the intersection is currently performing below the practical operating capacity (i.e. DOS < 0.8) for a priority-controlled intersection during both AM and PM peak hour periods, with optimal LOS on the majority of the approaches
- The trips generated by the proposed upgrade have a negligible effect on intersection performance, with minimal increases in delay and level of saturation
- As such, the upgrade is shown to be well-accommodated within the existing road geometry under current-year road conditions.

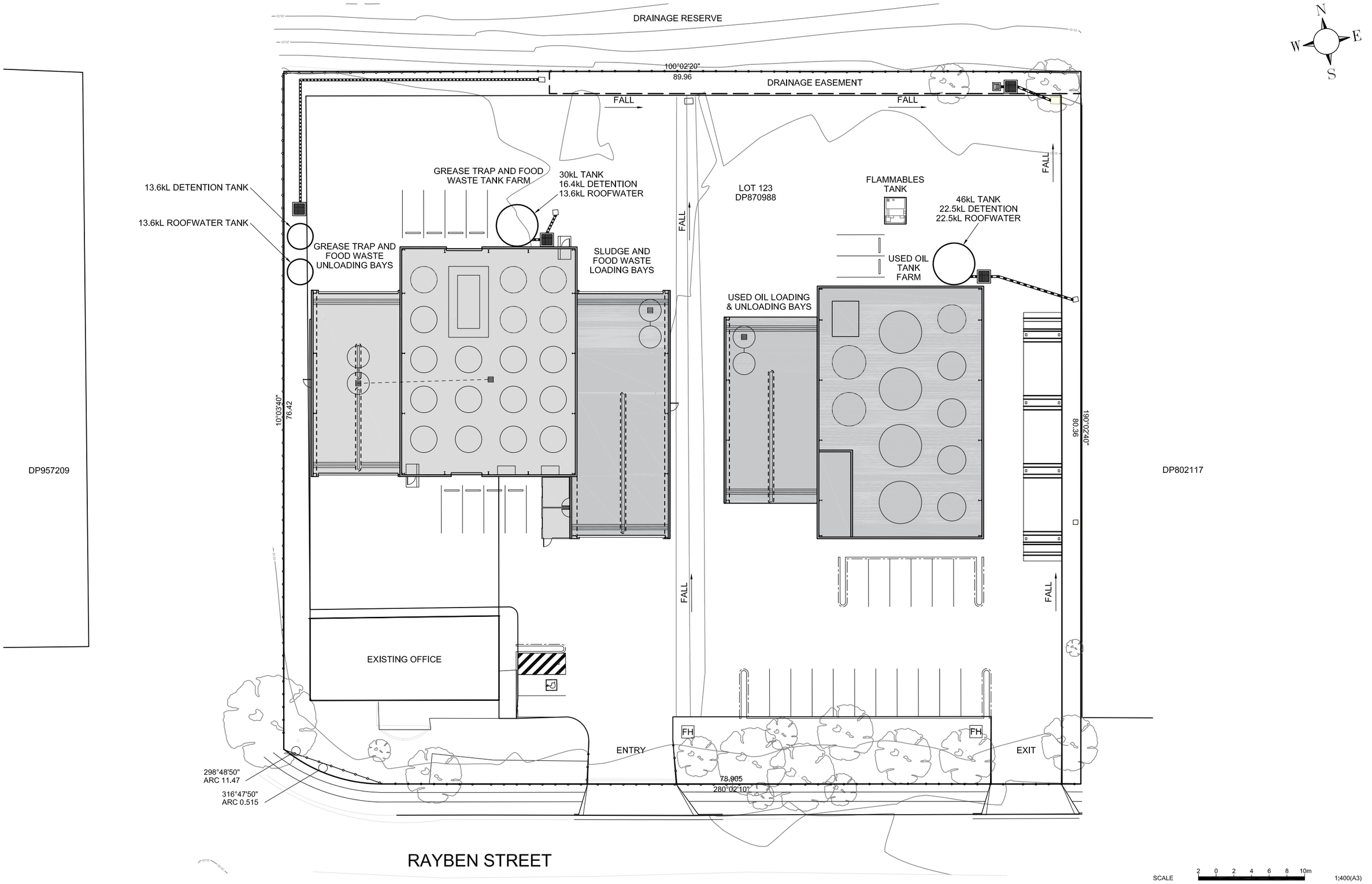
2029 Scenario

- The results show that the base intersection performance decreases significantly under an annual background growth of 2% for a 10-year design horizon to 2029, with level of service dropping to LOS F on the northern and eastern approaches
- Significant delays and queueing are predicted for the future 2029 Owen Street / Power Street intersection, suggesting that the capacity of the intersection is unable to accommodate the traffic growth *prior to introduction of development upgrade traffic*
- The trips generated by the proposed upgrade have a negligible effect on intersection performance despite this, with minimal increases in delay and level of saturation
- It is noted that the introduction of additional vehicles into an oversaturated road network can cause detrimental impacts to performance indicators due to instability of the intersection model under heavily loaded scenarios
- As the development traffic represents under 5% of the existing traffic along Owen Street, the low volume of traffic generated by the proposed upgrades are not expected to compromise the function or safety of the road and associated intersections
- While mitigation measures on behalf of the development are not required on the basis of the above, additional measures should be implemented to improve the overall intersection operation in future years
- It is understood that there are existing considerations for intersection upgrades (including an option for installation of a landscaped roundabout), as outlined in BCC's WIP
- As the site has access to nearby public and active transport services and infrastructure, there may be opportunity to mitigate some staff journey to work trips via alternative travel options.

As a result of these findings, we conclude that the proposed upgrade scenario does not introduce any significant traffic or transport impacts that would preclude its approval and relevant conditioning by Council.

APPENDIX A

SITE LAYOUT PLANS



REVISIONS							
No.	BY	DATE	DESCRIPTION	DWG. CHK.			
				DES. CHK.			
				DRAWN	S.M.	11/15	
				DESIGN	R.D.	11/15	
				PLOT FILE	RI456-DO-Base.dwg	DATE	

TECHNICALLY APPROVED:

DUGGAN & HEDE PTY LTD
ACN 077 618 663
Professional Engineers, Planners and Environmental Consultants
PO Box 496 Clayfield Qld 4011
Telephone (07) 3357 3666
Facsimile (07) 3857 6233
e_mail dh@dhenv.com.au

JJ RICHARDS & SONS PTY LTD

LIQUID WASTE FACILITY & DEPOT
14 RAYBEN ST, GLENDENNING
PROPOSED SITE LAYOUT

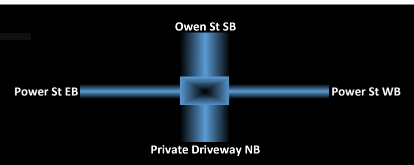
SCALE	AS SHOWN
SHEET	01 of
DRG No.	REVISION
	RI456-D0-02

APPENDIX B

TRAFFIC SURVEY RESULTS

Site ID: 1
Location: Power St & Owen St, Glendenning
Date: 20-Mar-2019
Period 1 Time: 7:00 AM to 9:00 AM
Weather: Fine

Period 1 Peak Hour: 7:30 AM to 8:30 AM



TOTALS AND PEAKS

Owen St SB

Time Starting	Left Light Vehicles	Left Trucks	Left Bicycles on Road	Through Light Vehicles	Through Trucks	Through Bicycles on Road	Right Light Vehicles	Right Trucks	Right Bicycles on Road	U-turn Light Vehicles	U-turn Trucks	U-turn Bicycles on Road	Cross 1 Pedestrians
Period 1 Total	596	19	0	0	0	0	17	5	0	0	0	0	0
Period 1 Peak Hr	327	8	0	0	0	0	8	2	0	0	0	0	0
07:00	66	5	0	0	0	0	2	1	0	0	0	0	0
07:15	76	2	0	0	0	0	3	1	0	0	0	0	0
07:30	87	1	0	0	0	0	1	0	0	0	0	0	0
07:45	77	3	0	0	0	0	3	1	0	0	0	0	0
08:00	79	2	0	0	0	0	0	0	0	0	0	0	0
08:15	84	2	0	0	0	0	4	1	0	0	0	0	0
08:30	69	1	0	0	0	0	1	0	0	0	0	0	0
08:45	58	3	0	0	0	0	3	1	0	0	0	0	0

Power St WB

Time Starting	Left Light Vehicles	Left Trucks	Left Bicycles on Road	Through Light Vehicles	Through Trucks	Through Bicycles on Road	Right Light Vehicles	Right Trucks	Right Bicycles on Road	U-turn Light Vehicles	U-turn Trucks	U-turn Bicycles on Road	Cross 1 Pedestrians
Period 1 Total	22	1	0	1553	76	0	301	18	0	0	0	0	0
Period 1 Peak Hr	11	1	0	891	41	0	148	9	0	0	0	0	0
07:00	1	0	0	121	2	0	32	1	0	0	0	0	0
07:15	2	0	0	141	3	0	35	5	0	0	0	0	0
07:30	0	0	0	198	8	0	27	3	0	0	0	0	0
07:45	3	1	0	242	10	0	38	4	0	0	0	0	0
08:00	3	0	0	223	16	0	42	2	0	0	0	0	0
08:15	5	0	0	228	7	0	41	0	0	0	0	0	0
08:30	5	0	0	195	12	0	41	3	0	0	0	0	0
08:45	3	0	0	205	18	0	45	0	0	0	0	0	0

Private Driveway NB

Time Starting	Left Light Vehicles	Left Trucks	Left Bicycles on Road	Through Light Vehicles	Through Trucks	Through Bicycles on Road	Right Light Vehicles	Right Trucks	Right Bicycles on Road	U-turn Light Vehicles	U-turn Trucks	U-turn Bicycles on Road	Cross 1 Pedestrians
Period 1 Total	1	0	0	0	0	0	0	0	0	0	0	0	5
Period 1 Peak Hr	0	0	0	0	0	0	0	0	0	0	0	0	3
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30	0	0	0	0	0	0	0	0	0	0	0	0	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45	1	0	0	0	0	0	0	0	0	0	0	0	0

Power St EB

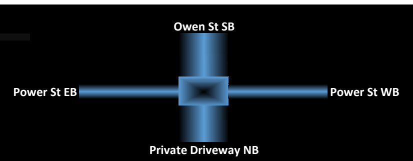
Time Starting	Left Light Vehicles	Left Trucks	Left Bicycles on Road	Through Light Vehicles	Through Trucks	Through Bicycles on Road	Right Light Vehicles	Right Trucks	Right Bicycles on Road	U-turn Light Vehicles	U-turn Trucks	U-turn Bicycles on Road	Cross 1 Pedestrians
Period 1 Total	110	35	0	1733	114	1	12	0	0	0	0	0	4
Period 1 Peak Hr	66	16	0	944	49	0	4	0	0	0	0	0	3
07:00	10	1	0	160	19	1	0	0	0	0	0	0	0
07:15	9	2	0	210	18	0	0	0	0	0	0	0	0
07:30	17	5	0	235	11	0	1	0	0	0	0	0	2
07:45	19	2	0	229	12	0	2	0	0	0	0	0	0
08:00	16	4	0	229	12	0	1	0	0	0	0	0	0
08:15	14	5	0	251	14	0	0	0	0	0	0	0	1
08:30	12	6	0	225	15	0	2	0	0	0	0	0	1
08:45	13	10	0	194	13	0	6	0	0	0	0	0	0

Totals

Time Starting	GRAND TOTAL TOTALS	Owen St SB TOTAL All Classes	Power St WB TOTAL All Classes	Private Driveway NB TOTAL All Classes	Power St EB TOTAL All Classes
Period 1 Total	4614	637	1971	1	2005
Period 1 Peak Hr	2525	345	1101	0	1079
07:00	**422**	74	157	0	191
07:15	**507**	82	186	0	239
07:30	**594**	89	236	0	269
07:45	**646**	84	298	0	264
08:00	**629**	81	286	0	262
08:15	**656**	91	281	0	284
08:30	**587**	71	256	0	260
08:45	**573**	65	271	1	236

Site ID: 1
Location: Power St & Owen St, Glendenning
Date: 20-Mar-2019
Period 2 Time: 3:00 PM to 6:00 PM
Weather: Fine

Period 2 Peak Hour: 3:30 PM to 4:30 PM



TOTALS AND PEAKS

Owen St SB

Time Starting	Left Light Vehicles	Left Trucks	Left Bicycles on Road	Through Light Vehicles	Through Trucks	Through Bicycles on Road	Right Light Vehicles	Right Trucks	Right Bicycles on Road	U-turn Light Vehicles	U-turn Trucks	U-turn Bicycles on Road	Cross 1 Pedestrians
Period 2 Total	625	24	1	1	1	0	40	8	0	0	0	0	0
Period 2 Peak Hr	195	9	1	1	1	0	21	3	0	0	0	0	0
15:00	61	5	0	0	0	0	1	1	0	0	0	0	0
15:15	57	4	0	0	0	0	7	3	0	0	0	0	0
15:30	50	5	0	0	0	0	6	2	0	0	0	0	0
15:45	34	2	1	1	0	0	8	0	0	0	0	0	0
16:00	67	1	0	0	0	0	6	0	0	0	0	0	0
16:15	44	1	0	0	1	0	1	1	0	0	0	0	0
16:30	47	0	0	0	0	0	2	0	0	0	0	0	0
16:45	49	0	0	0	0	0	3	0	0	0	0	0	0
17:00	57	2	0	0	0	0	3	0	0	0	0	0	0
17:15	60	1	0	0	0	0	1	1	0	0	0	0	0
17:30	54	1	0	0	0	0	1	0	0	0	0	0	0
17:45	45	2	0	0	0	0	1	0	0	0	0	0	0

Power St WB

Time Starting	Left Light Vehicles	Left Trucks	Left Bicycles on Road	Through Light Vehicles	Through Trucks	Through Bicycles on Road	Right Light Vehicles	Right Trucks	Right Bicycles on Road	U-turn Light Vehicles	U-turn Trucks	U-turn Bicycles on Road	Cross 1 Pedestrians
Period 2 Total	5	0	0	3241	152	0	1023	30	0	0	0	0	0
Period 2 Peak Hr	1	0	0	1148	59	0	349	10	0	0	0	0	0
15:00	0	0	0	229	8	0	58	6	0	0	0	0	0
15:15	0	0	0	253	30	0	73	1	0	0	0	0	0
15:30	0	0	0	303	23	0	85	1	0	0	0	0	0
15:45	0	0	0	289	11	0	92	2	0	0	0	0	0
16:00	1	0	0	275	11	0	90	4	0	0	0	0	0
16:15	0	0	0	281	14	0	82	3	0	0	0	0	0
16:30	1	0	0	302	10	0	90	4	0	0	0	0	0
16:45	3	0	0	268	9	0	79	1	0	0	0	0	0
17:00	0	0	0	261	13	0	87	1	0	0	0	0	0
17:15	0	0	0	294	7	0	97	2	0	0	0	0	0
17:30	0	0	0	243	8	0	95	3	0	0	0	0	0
17:45	0	0	0	243	8	0	95	2	0	0	0	0	0

Private Driveway NB

Time Starting	Left Light Vehicles	Left Trucks	Left Bicycles on Road	Through Light Vehicles	Through Trucks	Through Bicycles on Road	Right Light Vehicles	Right Trucks	Right Bicycles on Road	U-turn Light Vehicles	U-turn Trucks	U-turn Bicycles on Road	Cross 1 Pedestrians
Period 2 Total	33	0	0	0	0	0	0	0	0	0	0	0	3
Period 2 Peak Hr	6	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	6	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	4	0	0	0	0	0	0	0	0	0	0	0	0
16:45	8	0	0	0	0	0	0	0	0	0	0	0	0
17:00	11	0	0	0	0	0	0	0	0	0	0	0	3
17:15	3	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	1	0	0	0	0	0	0	0	0	0	0	0	0

Power St EB

Time Starting	Left Light Vehicles	Left Trucks	Left Bicycles on Road	Through Light Vehicles	Through Trucks	Through Bicycles on Road	Right Light Vehicles	Right Trucks	Right Bicycles on Road	U-turn Light Vehicles	U-turn Trucks	U-turn Bicycles on Road	Cross 1 Pedestrians
Period 2 Total	109	54	2	2016	73	0	1	4	0	1	0	0	0
Period 2 Peak Hr	41	18	1	691	26	0	0	1	0	0	0	0	0
15:00	8	12	0	165	6	0	0	1	0	1	0	0	0
15:15	9	7	0	162	5	0	1	1	0	0	0	0	0
15:30	8	7	0	171	5	0	0	0	0	0	0	0	0
15:45	11	5	0	163	5	0	0	1	0	0	0	0	0
16:00	13	3	0	184	8	0	0	0	0	0	0	0	0
16:15	9	3	1	173	8	0	0	0	0	0	0	0	0
16:30	7	4	0	172	5	0	0	1	0	0	0	0	0
16:45	4	2	0	150	5	0	0	0	0	0	0	0	0
17:00	11	3	0	213	6	0	0	0	0	0	0	0	0
17:15	11	3	0	161	8	0	0	0	0	0	0	0	0
17:30	8	3	0	158	4	0	0	0	0	0	0	0	0
17:45	10	2	1	144	8	0	0	0	0	0	0	0	0

Totals

Time Starting	GRAND TOTAL TOTALS	Owen St SB TOTAL All Classes	Power St WB TOTAL All Classes	Private Driveway NB TOTAL All Classes	Power St EB TOTAL All Classes
Period 2 Total	7444	700	4451	33	2260
Period 2 Peak Hr	2582	231	1567	6	778
15:00	**562**	68	301	0	193
15:15	**613**	71	357	0	185
15:30	**666**	63	412	0	191
15:45	**625**	46	394	0	185
16:00	**669**	74	381	6	208
16:15	**622**	48	380	0	194
16:30	**649**	49	407	4	189
16:45	**581**	52	360	8	161
17:00	**668**	62	362	11	233
17:15	**649**	63	400	3	183
17:30	**578**	56	349	0	173
17:45	**562**	48	348	1	165

Location Power St & Owen St, Glendenning
Date Wednesday 20th March 2019
Survey Period 7:00am-9:00am

	Owen St	
	Southbound	
Time	Left	Right
7:00 AM	3	0
7:01 AM	2	0
7:02 AM	3	0
7:03 AM	3	0
7:04 AM	4	0
7:05 AM	4	0
7:06 AM	4	0
7:07 AM	2	0
7:08 AM	3	0
7:09 AM	4	0
7:10 AM	4	0
7:11 AM	2	0
7:12 AM	2	0
7:13 AM	3	0
7:14 AM	3	0
7:15 AM	3	0
7:16 AM	3	0
7:17 AM	2	0
7:18 AM	2	0
7:19 AM	1	0
7:20 AM	3	0
7:21 AM	3	0
7:22 AM	3	0
7:23 AM	5	0
7:24 AM	4	0
7:25 AM	7	1
7:26 AM	3	1
7:27 AM	4	1
7:28 AM	5	0
7:29 AM	5	2
7:30 AM	7	2
7:31 AM	6	2
7:32 AM	5	1
7:33 AM	5	0
7:34 AM	3	1
7:35 AM	3	1
7:36 AM	3	0
7:37 AM	5	0
7:38 AM	4	0
7:39 AM	4	0
7:40 AM	5	0
7:41 AM	5	0
7:42 AM	3	0
7:43 AM	2	0
7:44 AM	2	0
7:45 AM	5	0
7:46 AM	5	0
7:47 AM	3	0
7:48 AM	2	0
7:49 AM	3	0
7:50 AM	3	1
7:51 AM	3	0
7:52 AM	3	0
7:53 AM	4	0
7:54 AM	4	0
7:55 AM	5	2
7:56 AM	5	0
7:57 AM	5	1
7:58 AM	5	1
7:59 AM	4	0
8:00 AM	5	2
8:01 AM	5	2
8:02 AM	5	2
8:03 AM	6	2
8:04 AM	6	2
8:05 AM	8	1
8:06 AM	6	1
8:07 AM	7	0
8:08 AM	2	0
8:09 AM	4	0
8:10 AM	5	0
8:11 AM	5	0
8:12 AM	6	0
8:13 AM	6	0
8:14 AM	7	0
8:15 AM	9	2
8:16 AM	6	2
8:17 AM	7	1
8:18 AM	5	1

Location Power St & Owen St, Glendenning
Date Wednesday 20th March 2019
Survey Period 3:00pm-6:00pm

	Owen St	
	Southbound	
Time	Left	Right
3:00 PM	4	0
3:01 PM	0	0
3:02 PM	2	1
3:03 PM	4	0
3:04 PM	0	0
3:05 PM	2	0
3:06 PM	4	0
3:07 PM	3	0
3:08 PM	1	0
3:09 PM	1	0
3:10 PM	5	0
3:11 PM	7	0
3:12 PM	4	0
3:13 PM	2	0
3:14 PM	3	2
3:15 PM	1	1
3:16 PM	1	1
3:17 PM	1	0
3:18 PM	4	2
3:19 PM	4	3
3:20 PM	1	3
3:21 PM	5	2
3:22 PM	1	3
3:23 PM	2	2
3:24 PM	2	0
3:25 PM	1	0
3:26 PM	2	0
3:27 PM	1	0
3:28 PM	5	1
3:29 PM	3	2
3:30 PM	3	0
3:31 PM	0	0
3:32 PM	1	0
3:33 PM	6	1
3:34 PM	2	1
3:35 PM	1	0
3:36 PM	1	1
3:37 PM	3	3
3:38 PM	3	0
3:39 PM	2	0
3:40 PM	2	0
3:41 PM	0	0
3:42 PM	1	1
3:43 PM	1	2
3:44 PM	1	0
3:45 PM	1	1
3:46 PM	0	0
3:47 PM	2	0
3:48 PM	1	0
3:49 PM	1	1
3:50 PM	1	1
3:51 PM	3	1
3:52 PM	4	1
3:53 PM	1	0
3:54 PM	1	2
3:55 PM	1	2
3:56 PM	2	2
3:57 PM	1	1
3:58 PM	1	1
3:59 PM	1	0
4:00 PM	1	1
4:01 PM	1	1
4:02 PM	1	0
4:03 PM	1	1
4:04 PM	3	0
4:05 PM	3	1
4:06 PM	1	0
4:07 PM	3	0
4:08 PM	1	0
4:09 PM	5	0
4:10 PM	2	0
4:11 PM	2	0
4:12 PM	1	0
4:13 PM	5	0
4:14 PM	2	0
4:15 PM	6	0
4:16 PM	1	0
4:17 PM	1	0
4:18 PM	1	0

Location Power St & Owen St, Glendenning
Date Wednesday 20th March 2019
Survey Period 7:00am-9:00am

	Owen St	
	Southbound	
Time	Left	Right
8:19 AM	6	2
8:20 AM	7	2
8:21 AM	6	2
8:22 AM	4	1
8:23 AM	7	1
8:24 AM	6	1
8:25 AM	10	1
8:26 AM	7	0
8:27 AM	7	0
8:28 AM	5	0
8:29 AM	5	0
8:30 AM	8	1
8:31 AM	8	1
8:32 AM	1	1
8:33 AM	4	0
8:34 AM	5	2
8:35 AM	6	2
8:36 AM	6	2
8:37 AM	6	1
8:38 AM	5	0
8:39 AM	4	0
8:40 AM	5	0
8:41 AM	5	0
8:42 AM	4	0
8:43 AM	3	0
8:44 AM	4	1
8:45 AM	3	1
8:46 AM	2	1
8:47 AM	0	0
8:48 AM	4	0
8:49 AM	5	0
8:50 AM	4	1
8:51 AM	3	1
8:52 AM	2	0
8:53 AM	4	0
8:54 AM	2	0
8:55 AM	6	0
8:56 AM	4	0
8:57 AM	5	1
8:58 AM	6	0
8:59 AM	4	0

Location Power St & Owen St, Glendenning
Date Wednesday 20th March 2019
Survey Period 3:00pm-6:00pm

	Owen St	
	Southbound	
Time	Left	Right
4:19 PM	2	0
4:20 PM	1	0
4:21 PM	1	1
4:22 PM	1	0
4:23 PM	1	0
4:24 PM	1	1
4:25 PM	1	1
4:26 PM	2	2
4:27 PM	2	0
4:28 PM	1	0
4:29 PM	1	0
4:30 PM	0	0
4:31 PM	1	0
4:32 PM	1	1
4:33 PM	3	0
4:34 PM	2	1
4:35 PM	3	0
4:36 PM	4	0
4:37 PM	2	0
4:38 PM	1	0
4:39 PM	1	0
4:40 PM	1	0
4:41 PM	2	0
4:42 PM	1	1
4:43 PM	1	1
4:44 PM	2	1
4:45 PM	1	0
4:46 PM	0	0
4:47 PM	2	1
4:48 PM	1	0
4:49 PM	1	0
4:50 PM	1	0
4:51 PM	0	0
4:52 PM	2	1
4:53 PM	1	1
4:54 PM	0	1
4:55 PM	1	0
4:56 PM	3	0
4:57 PM	2	0
4:58 PM	3	1
4:59 PM	0	0
5:00 PM	4	0
5:01 PM	2	0
5:02 PM	2	0
5:03 PM	1	0
5:04 PM	1	0
5:05 PM	1	0
5:06 PM	1	1
5:07 PM	2	0
5:08 PM	3	1
5:09 PM	2	1
5:10 PM	1	2
5:11 PM	1	2
5:12 PM	1	2
5:13 PM	1	2
5:14 PM	1	0
5:15 PM	2	1
5:16 PM	5	1
5:17 PM	1	0
5:18 PM	1	0
5:19 PM	4	0
5:20 PM	3	0
5:21 PM	4	0
5:22 PM	1	0
5:23 PM	1	1
5:24 PM	1	1
5:25 PM	1	0
5:26 PM	1	0
5:27 PM	1	0
5:28 PM	3	0
5:29 PM	2	0
5:30 PM	1	0
5:31 PM	1	0
5:32 PM	2	0
5:33 PM	3	0
5:34 PM	2	0
5:35 PM	4	1
5:36 PM	8	0
5:37 PM	3	0

Location Power St & Owen St, Glendenning
Date Wednesday 20th March 2019
Survey Period 7:00am-9:00am

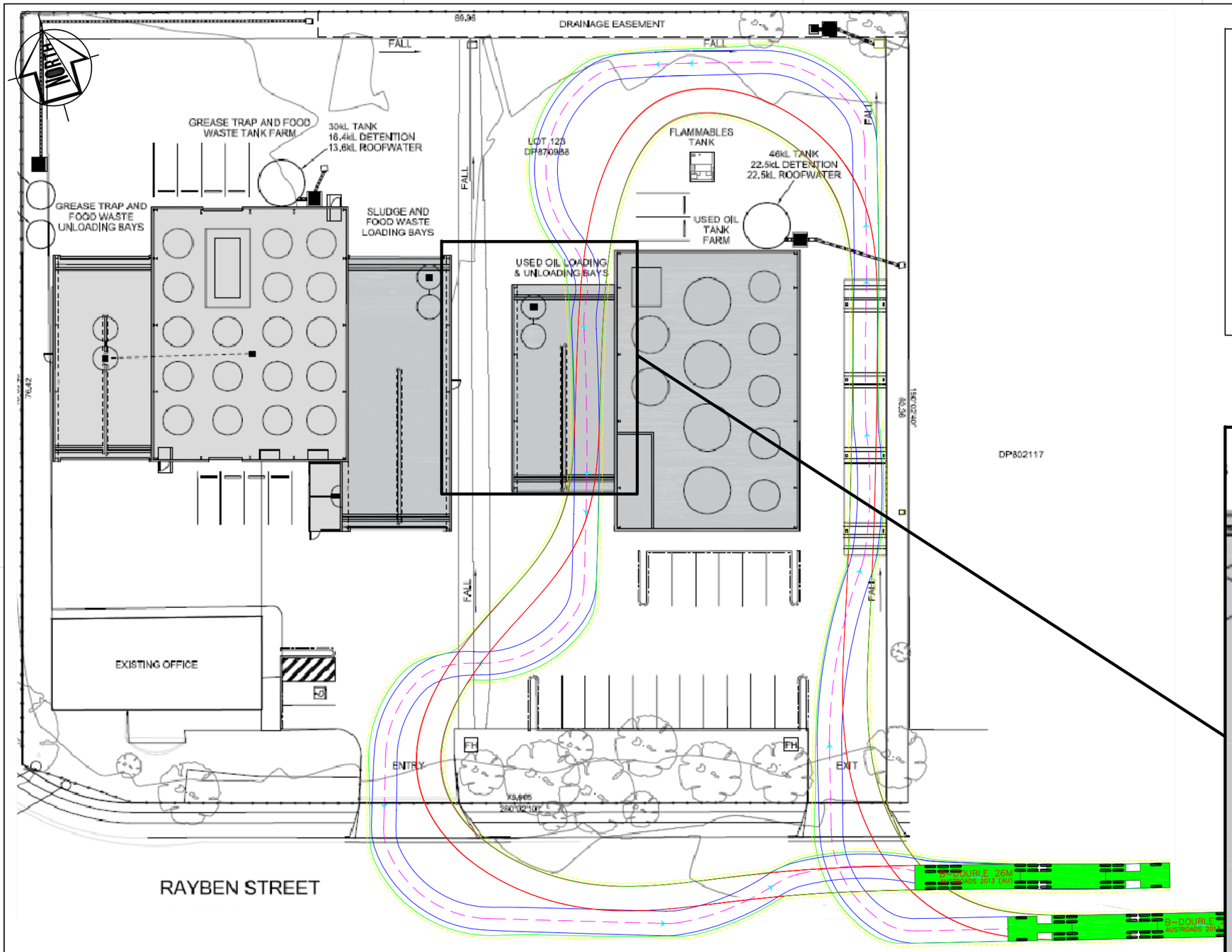
	Owen St	
	Southbound	
Time	Left	Right

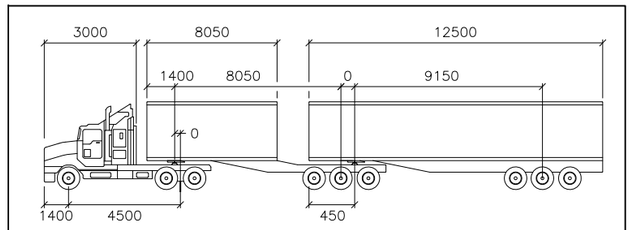
Location Power St & Owen St, Glendenning
Date Wednesday 20th March 2019
Survey Period 3:00pm-6:00pm

	Owen St	
	Southbound	
Time	Left	Right
5:38 PM	2	1
5:39 PM	2	0
5:40 PM	1	0
5:41 PM	1	0
5:42 PM	1	0
5:43 PM	2	0
5:44 PM	2	0
5:45 PM	2	0
5:46 PM	2	0
5:47 PM	1	0
5:48 PM	1	0
5:49 PM	0	1
5:50 PM	1	0
5:51 PM	1	0
5:52 PM	1	0
5:53 PM	1	0
5:54 PM	1	0
5:55 PM	1	0
5:56 PM	2	0
5:57 PM	2	0
5:58 PM	2	0
5:59 PM	7	0

APPENDIX C

SWEPT PATH DIAGRAMS

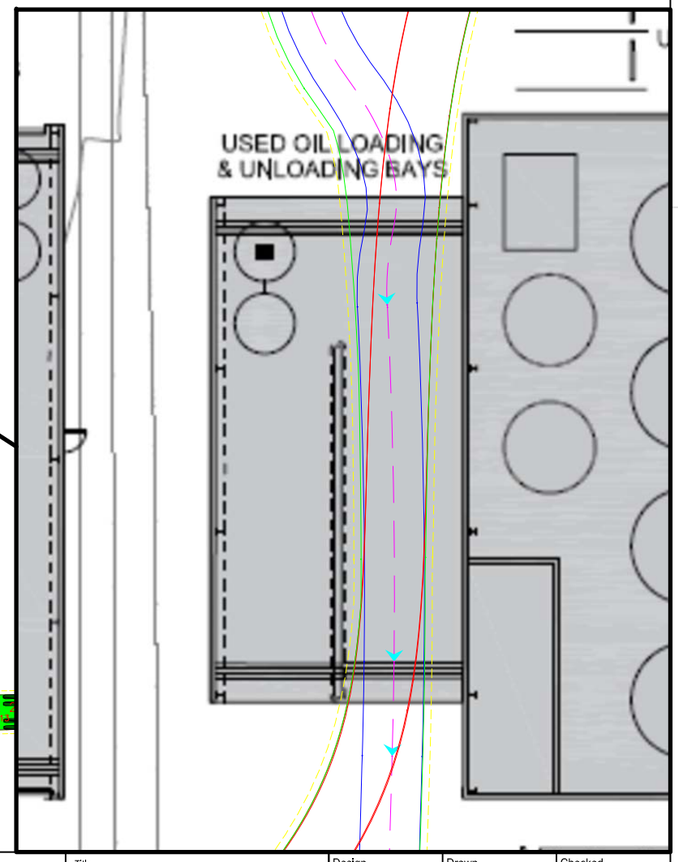




B–DOUBLE 26M mm

Tractor Width	: 2500	Lock to Lock Time	: 6.0
Trailer Width	: 2500	Steering Angle	: 23.4
Tractor Track	: 2500	Articulating Angle	: 70.0
Trailer Track	: 2500		

DESIGN VEHICLE



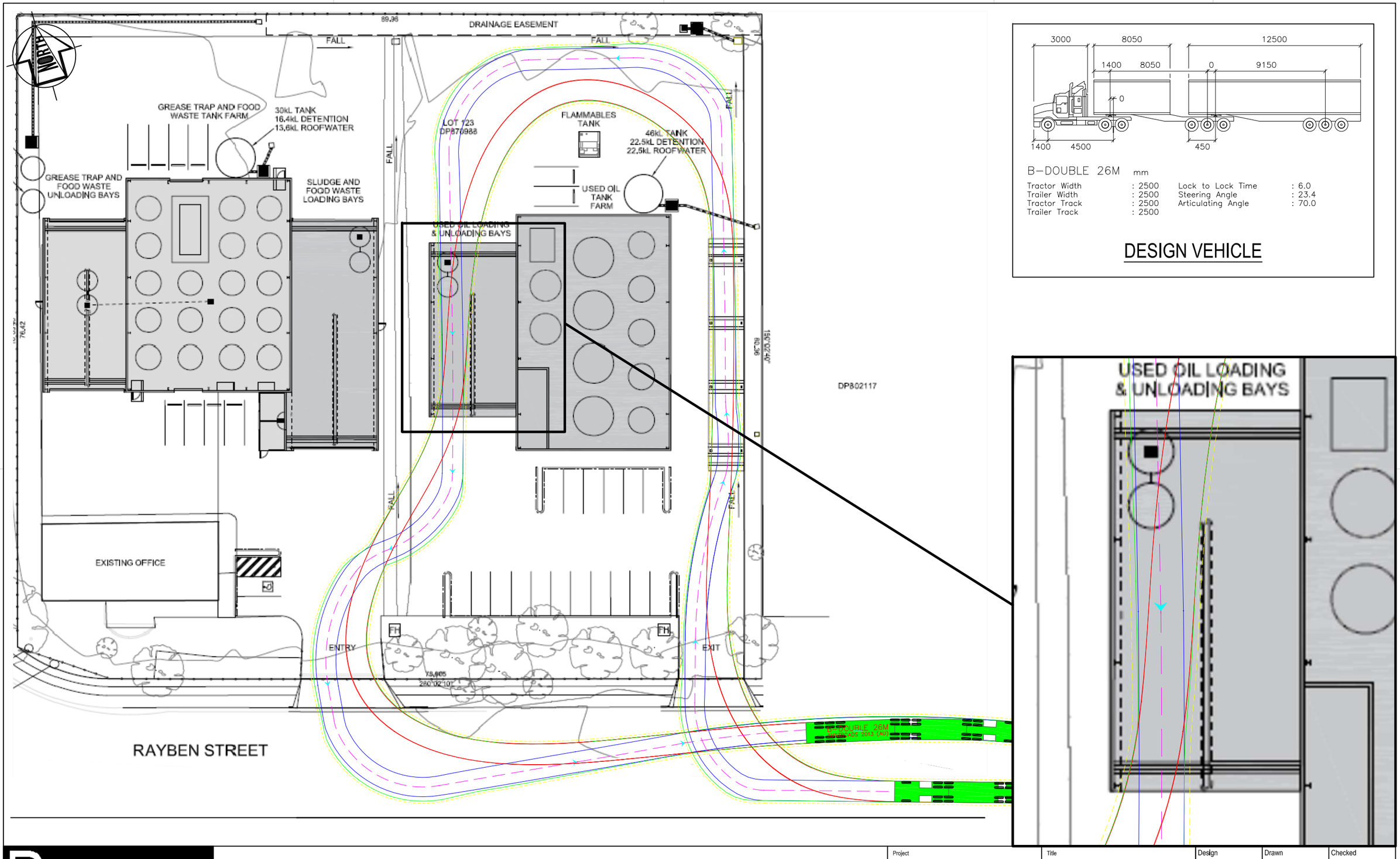
BITZIOS consulting
traffic engineering ■ transport planning

Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au

Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au

Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

Project: 14 Rayben Street, Glendenning Proposed Industrial Development	Title: Used Oil Loading / Unloading - 1 26m B Double	Design: M.D	Drawn: M.D	Checked: A.P
		NOT FOR CONSTRUCTION	Date: 12/02/2016	
		Project Number / Sheet: P1987 / 001	Issue: A	



B–DOUBLE 26M mm

Tractor Width	: 2500	Lock to Lock Time	: 6.0
Trailer Width	: 2500	Steering Angle	: 23.4
Tractor Track	: 2500	Articulating Angle	: 70.0
Trailer Track	: 2500		

DESIGN VEHICLE

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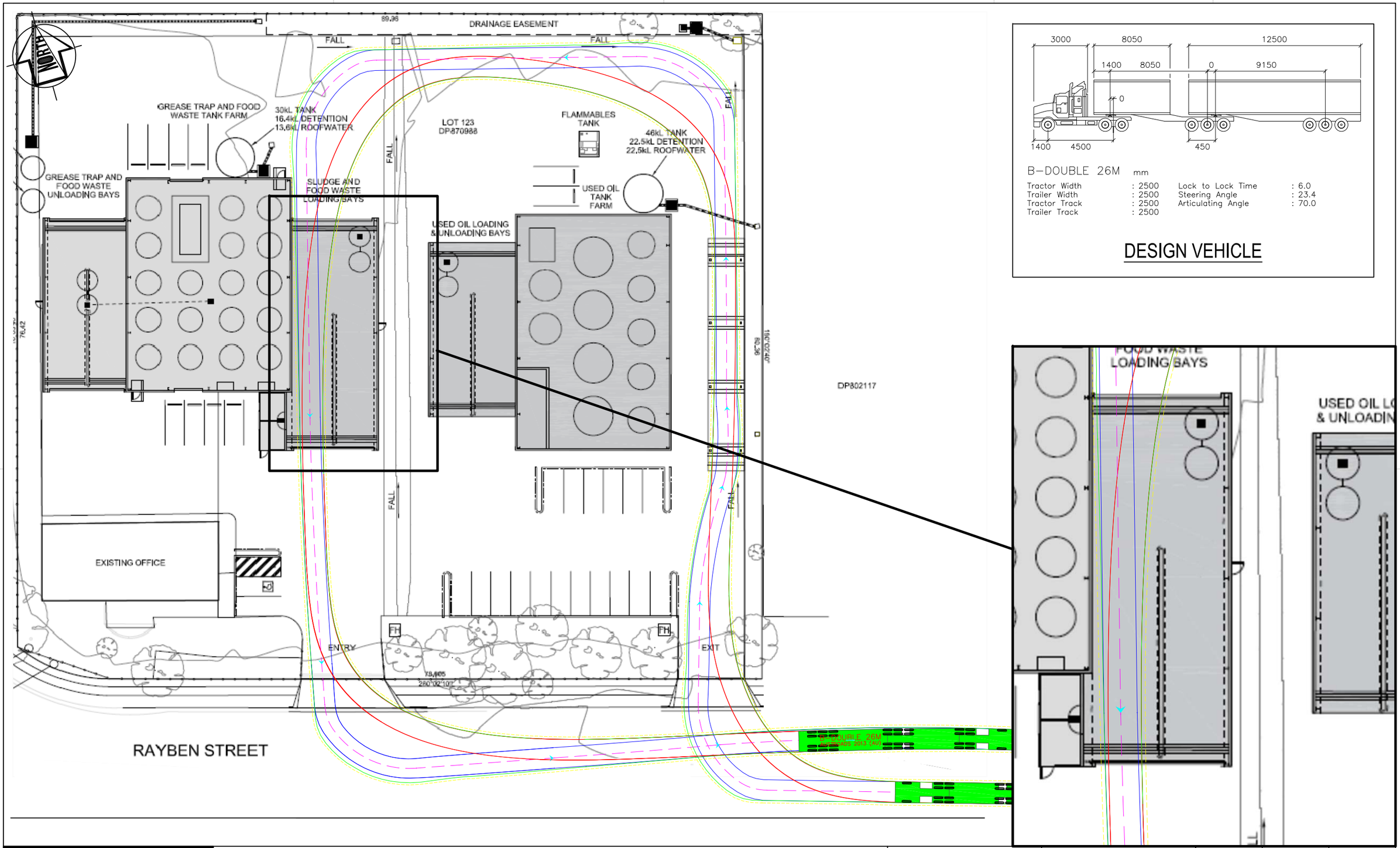
W: www.bitziosconsulting.com.au

Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au

Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

Project: 14 Rayben Street, Glendenning Proposed Industrial Development			
Title: Used Oil Loading / Unloading - 2 26m B Double			
Design: M.D	Drawn: M.D	Checked: A.P	
NOT FOR CONSTRUCTION		Date: 12/02/2016	
Project Number / Sheet: P1987 /002		Issue: A	



B–DOUBLE 26M mm

Tractor Width	: 2500	Lock to Lock Time	: 6.0
Trailer Width	: 2500	Steering Angle	: 23.4
Tractor Track	: 2500	Articulating Angle	: 70.0
Trailer Track	: 2500		

DESIGN VEHICLE

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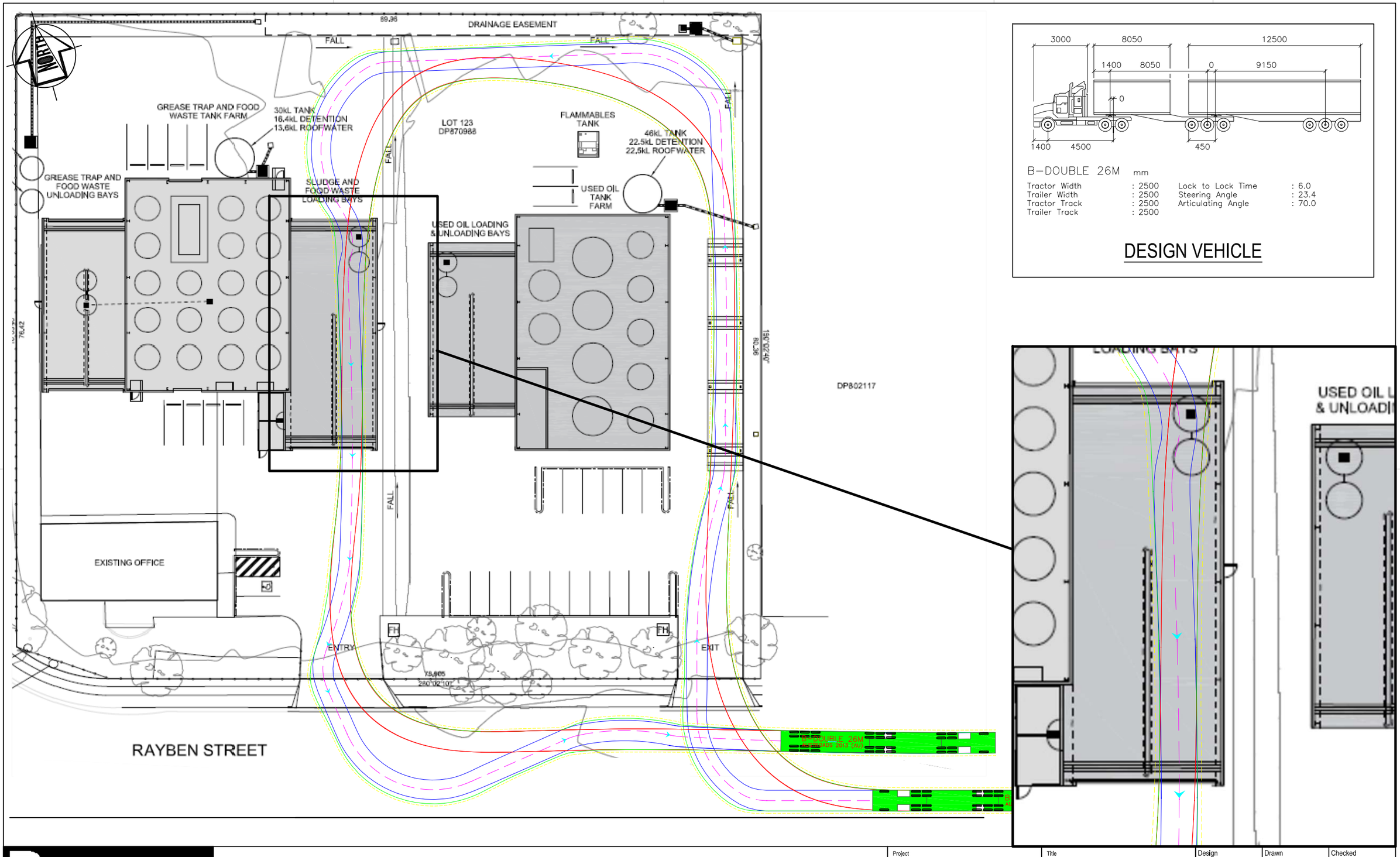
W: www.bitziosconsulting.com.au

Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au

Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

Project: 14 Rayben Street, Glendenning Proposed Industrial Development	Title: Sludge and Food Waste Loading Bays - 1 26m B Double	Design: M.D	Drawn: M.D
		Checked: A.P	
		NOT FOR CONSTRUCTION	Date: 12/02/2016
		Project Number / Sheet: P1987 /003	Issue: A



B–DOUBLE 26M mm

Tractor Width	: 2500	Lock to Lock Time	: 6.0
Trailer Width	: 2500	Steering Angle	: 23.4
Tractor Track	: 2500	Articulating Angle	: 70.0
Trailer Track	: 2500		

DESIGN VEHICLE

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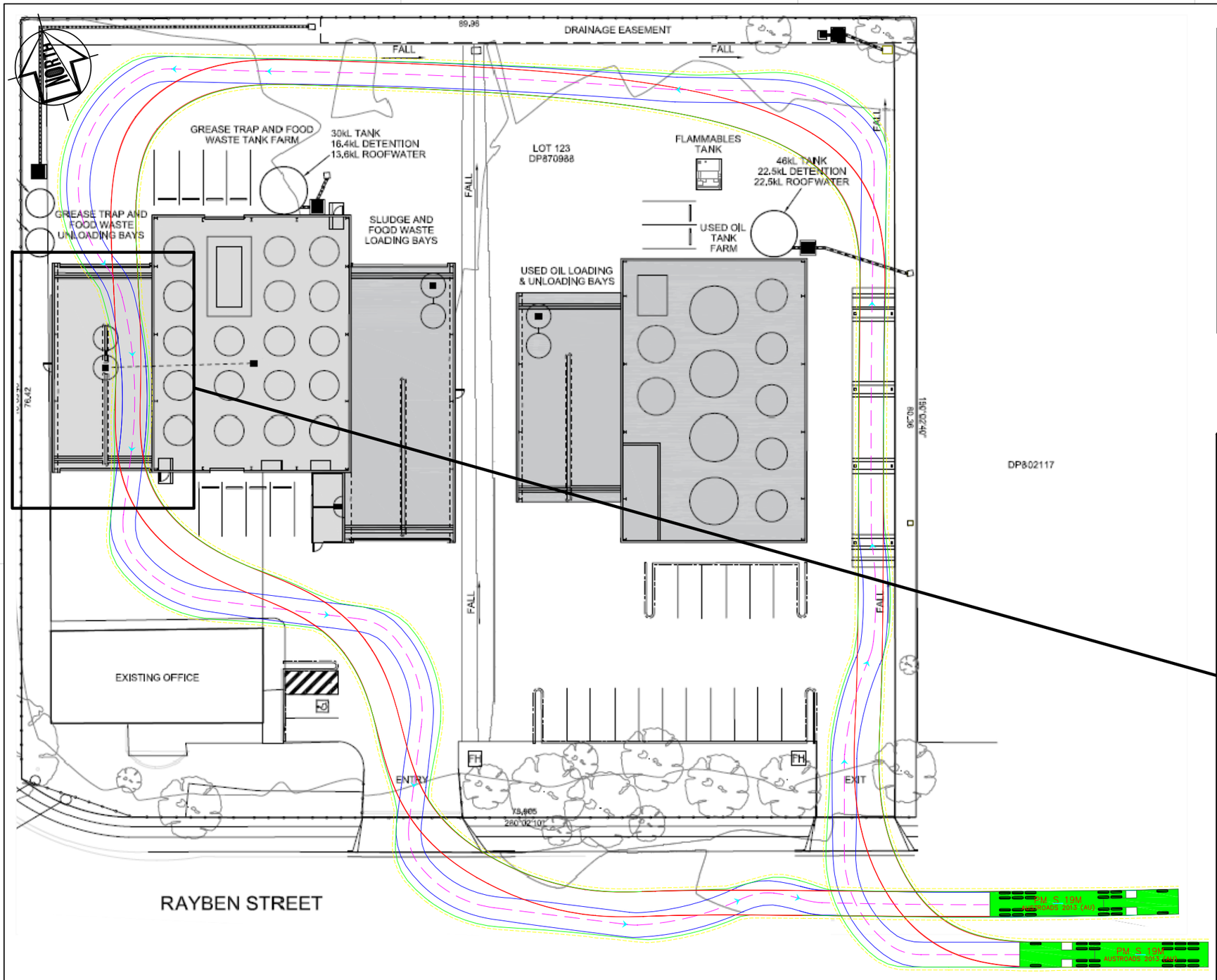
Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au

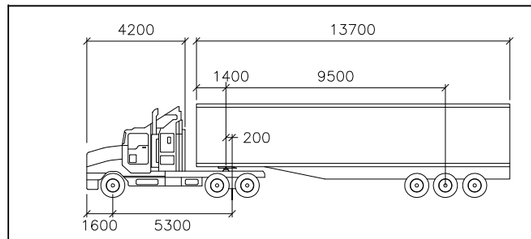
Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au

Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

Project: 14 Rayben Street, Glendenning Proposed Industrial Development	Title: Sludge and Food Waste Loading Bays - 2 26m B Double	Design: M.D	Drawn: M.D
		Checked: A.P	
		NOT FOR CONSTRUCTION	Date: 12/02/2016
		Project Number / Sheet: P1987 /004	Issue: A



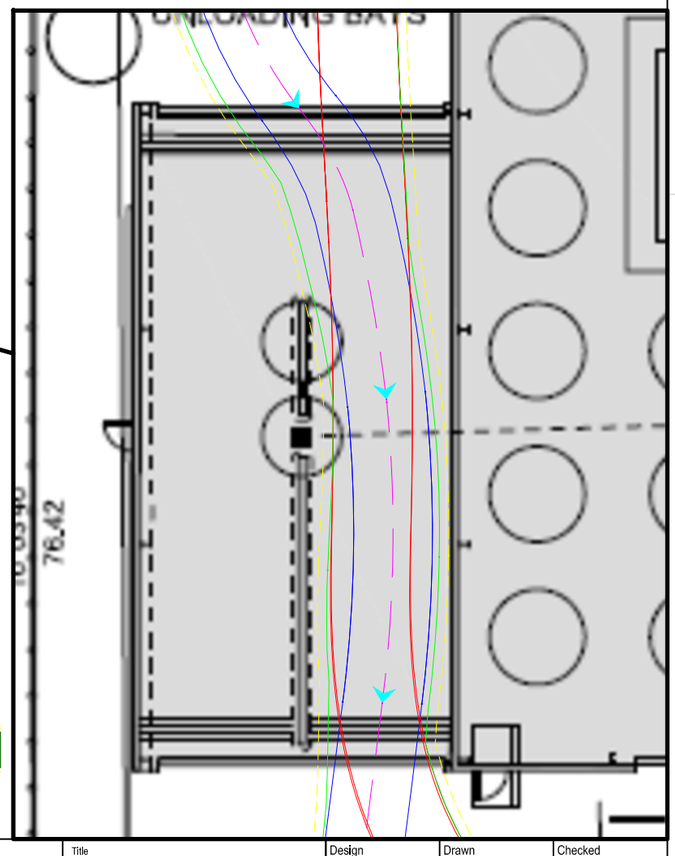
DP802117



PM S 19M mm

Tractor Width	: 2500	Lock to Lock Time	: 6.0
Trailer Width	: 2500	Steering Angle	: 27.8
Tractor Track	: 2500	Articulating Angle	: 70.0
Trailer Track	: 2500		

DESIGN VEHICLE



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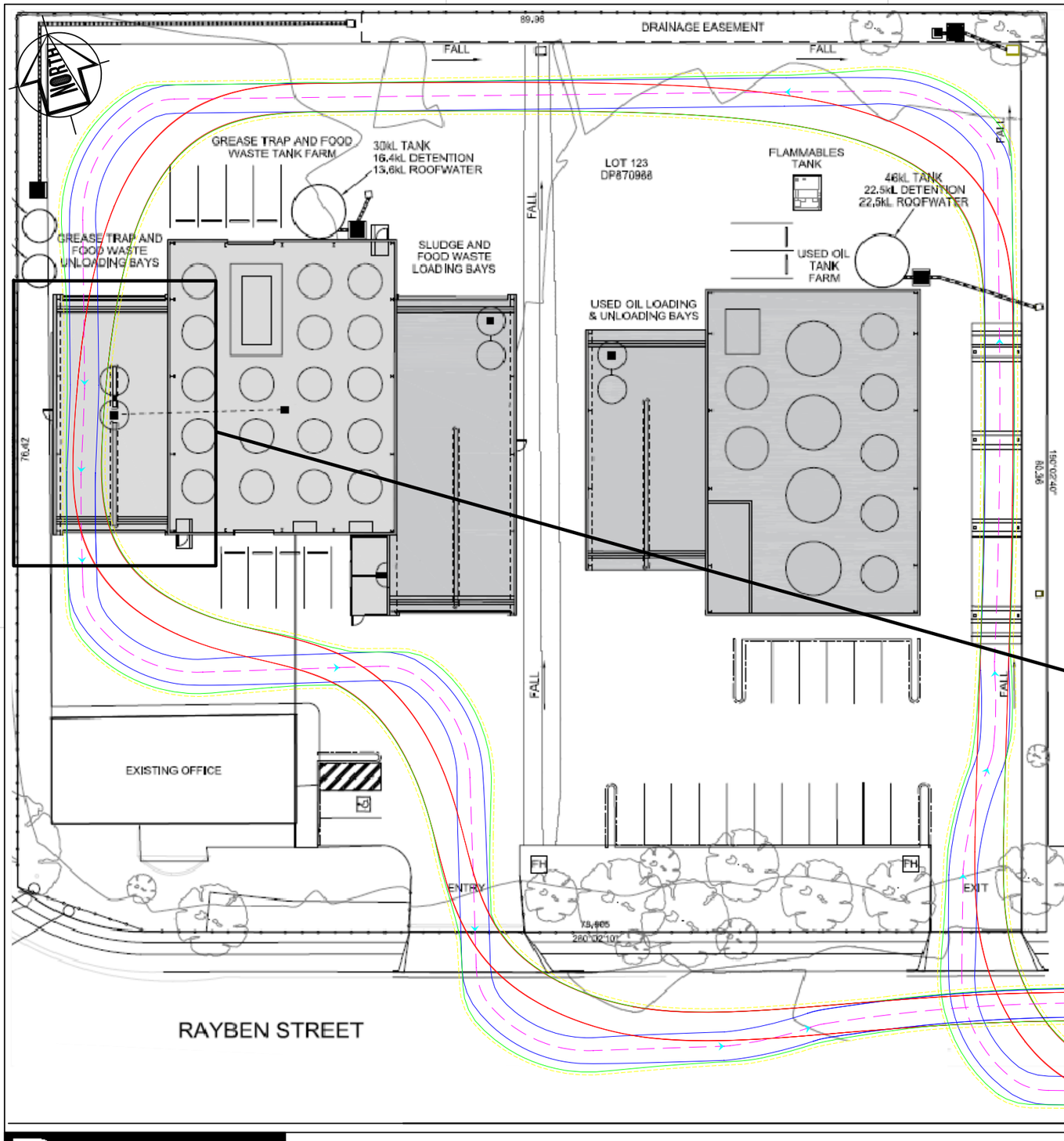
Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au

Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au

Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

Project: 14 Rayben Street, Glendenning Proposed Industrial Development	Title: Sludge and Food Waste Unloading Bays - 1 19m Semi-trailer	Design: M.D	Drawn: M.D
		Checked: A.P	
		NOT FOR CONSTRUCTION	Date: 12/02/2016
		Project Number / Sheet: P1987 /005	Issue: A



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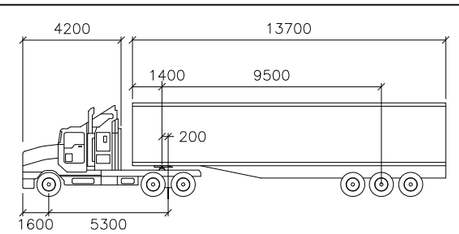
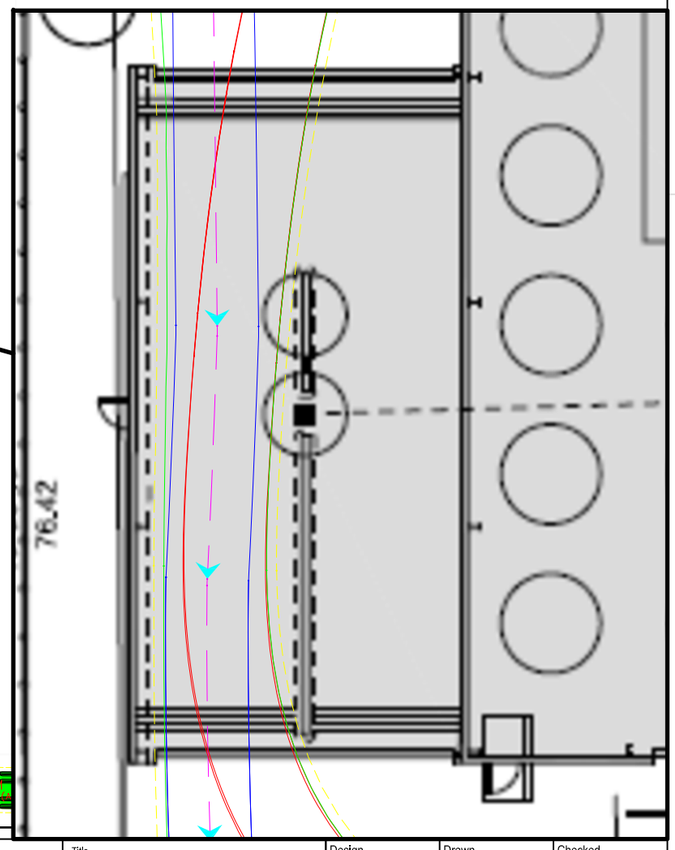


PM S 19M mm

Tractor Width	: 2500	Lock to Lock Time	: 6.0
Trailer Width	: 2500	Steering Angle	: 27.8
Tractor Track	: 2500	Articulating Angle	: 70.0
Trailer Track	: 2500		

DESIGN VEHICLE



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Gold Coast
Suite 26, 58 Riverwalk Avenue, Robina QLD 4226.
P: (07) 5562-5377
W: www.bitziosconsulting.com.au

Brisbane
Level 2, 428 Upper Edward Street, Spring Hill 4000.
P: (07) 3831-4442
E: admin@bitziosconsulting.com.au

Sydney
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202

Project: 14 Rayben Street, Glendenning Proposed Industrial Development	Title: Sludge and Food Waste Unloading Bays - 2 19m Semi-trailer	Design: M.D / Drawn: M.D / Checked: A.P	
		NOT FOR CONSTRUCTION	Date: 12/02/2016
		Project Number / Sheet: P1987 /006	Issue: A

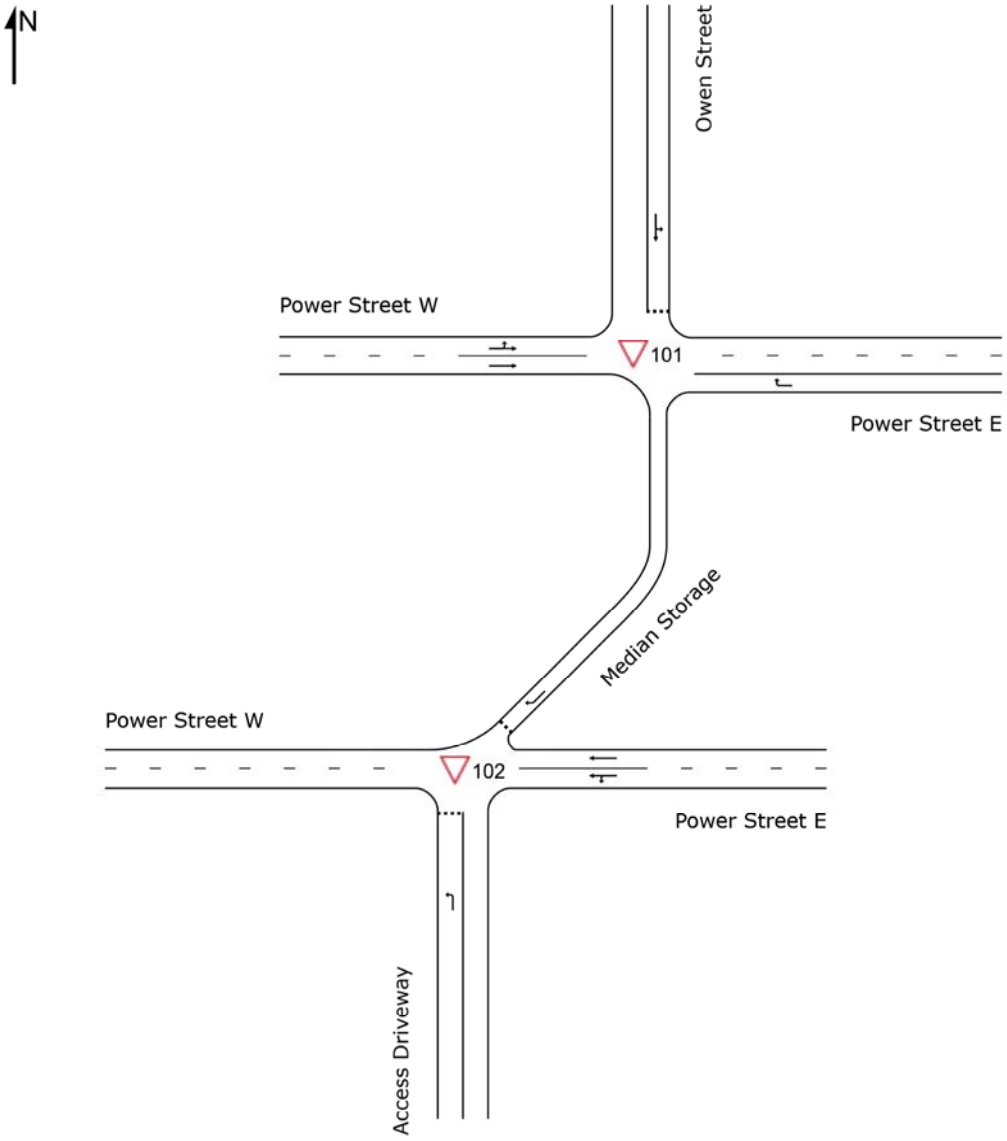
APPENDIX D

SIDRA OUTPUT SHEETS

NETWORK LAYOUT

Network: N101 [2019 AM - Existing]

2019 AM - Existing
Network Category: (None)



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
▽101	NA	2019 AM Existing - Power Street / Owen Street / Access Driveway
▽102	NA	2019 AM Existing - Power Street / Owen Street / Access Driveway - 2

MOVEMENT SUMMARY

Site: 101 [2019 AM Existing - Power Street / Owen Street / Access Driveway]

Network: N101 [2019 AM - Existing]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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: Power Street E														
6	R2	165	5.7	165	5.7	0.522	21.6	LOS B	2.4	17.7	0.88	1.06	1.31	35.9
Approach		165	5.7	165	5.7	0.522	21.6	NA	2.4	17.7	0.88	1.06	1.31	35.9
North: Owen Street														
7	L2	353	2.4	353	2.4	0.684	19.7	LOS B	6.6	47.3	0.82	1.23	1.73	44.0
8	T1	11	20.0	11	20.0	0.684	41.5	LOS C	6.6	47.3	0.82	1.23	1.73	36.2
Approach		363	2.9	363	2.9	0.684	20.3	LOS B	6.6	47.3	0.82	1.23	1.73	43.9
West: Power Street W														
10	L2	86	19.5	86	19.5	0.302	5.8	LOS A	0.0	0.0	0.00	0.09	0.00	56.4
11	T1	1045	4.9	1045	4.9	0.302	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.6
Approach		1132	6.0	1132	6.0	0.302	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
All Vehicles		1660	5.3	1660	5.3	0.684	6.9	NA	6.6	47.3	0.27	0.41	0.51	52.7

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: 102 [2019 AM Existing - Power Street / Owen Street / Access Driveway - 2]

Network: N101 [2019 AM - Existing]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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
South: Access Driveway														
1	L2	1	0.0	1	0.0	0.001	1.7	LOS A	0.0	0.0	0.46	0.24	0.46	27.9
Approach		1	0.0	1	0.0	0.001	1.7	LOS A	0.0	0.0	0.46	0.24	0.46	27.9
East: Power Street E														
4	L2	13	8.3	13	8.3	0.261	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	57.8
5	T1	981	4.4	981	4.4	0.261	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		994	4.4	994	4.4	0.261	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
NorthEast: Median Storage														
26a	R1	11	20.0	11	20.0	0.014	5.2	LOS A	0.0	0.4	0.55	0.69	0.55	46.2
Approach		11	20.0	11	20.0	0.014	5.2	LOS A	0.0	0.4	0.55	0.69	0.55	46.2
All Vehicles		1005	4.6	1005	4.6	0.261	0.2	NA	0.0	0.4	0.01	0.02	0.01	59.7

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: 101 [2019 PM Existing - Power Street / Owen Street / Access Driveway]

Network: N101 [2019 PM - Existing]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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: Power Street E														
6	R2	378	2.8	378	2.8	0.694	17.3	LOS B	5.3	37.6	0.84	1.20	1.74	38.9
Approach		378	2.8	378	2.8	0.694	17.3	NA	5.3	37.6	0.84	1.20	1.74	38.9
North: Owen Street														
7	L2	232	4.4	232	4.4	0.443	11.6	LOS A	3.0	21.7	0.68	0.92	0.95	48.1
8	T1	32	12.5	32	12.5	0.443	24.7	LOS B	3.0	21.7	0.68	0.92	0.95	42.1
Approach		264	5.4	264	5.4	0.443	13.2	LOS A	3.0	21.7	0.68	0.92	0.95	47.6
West: Power Street W														
10	L2	62	30.5	62	30.5	0.217	5.9	LOS A	0.0	0.0	0.00	0.09	0.00	56.0
11	T1	755	3.6	755	3.6	0.217	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.6
Approach		817	5.7	817	5.7	0.217	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.4
All Vehicles		1459	4.9	1459	4.9	0.694	7.1	NA	5.3	37.6	0.34	0.50	0.62	51.9

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.

MOVEMENT SUMMARY

Site: 102 [2019 PM Existing - Power Street / Owen Street / Access Driveway - 2]

Network: N101 [2019 PM - Existing]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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
South: Access Driveway														
1	L2	6	0.0	6	0.0	0.008	2.7	LOS A	0.0	0.2	0.53	0.38	0.53	27.7
Approach		6	0.0	6	0.0	0.008	2.7	LOS A	0.0	0.2	0.53	0.38	0.53	27.7
East: Power Street E														
4	L2	1	0.0	1	0.0	0.335	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.3
5	T1	1271	4.9	1271	4.9	0.335	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1272	4.9	1272	4.9	0.335	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
NorthEast: Median Storage														
26a	R1	32	12.5	32	12.5	0.056	7.0	LOS A	0.2	1.3	0.68	0.84	0.68	44.6
Approach		32	12.5	32	12.5	0.056	7.0	LOS A	0.2	1.3	0.68	0.84	0.68	44.6
All Vehicles		1310	5.0	1310	5.0	0.335	0.2	NA	0.2	1.3	0.02	0.02	0.02	59.3

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.
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: 101 [2029 AM Existing - Power Street / Owen Street / Access Driveway]

Network: N101 [2029 AM - Existing]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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: Power Street E														
6	R2	201	5.8	201	5.8	1.022	112.8	LOS F	13.0	95.6	1.00	1.99	4.95	14.0
Approach		201	5.8	201	5.8	1.022	112.8	NA	13.0	95.6	1.00	1.99	4.95	14.0
North: Owen Street														
7	L2	431	2.4	431	2.4	1.093	132.5	LOS F	40.9	293.3	1.00	3.30	8.40	18.5
8	T1	13	16.7	13	16.7	1.093	172.2	LOS F	40.9	293.3	1.00	3.30	8.40	11.2
Approach		443	2.9	443	2.9	1.093	133.7	LOS F	40.9	293.3	1.00	3.30	8.40	18.3
West: Power Street W														
10	L2	105	20.0	105	20.0	0.368	5.8	LOS A	0.0	0.0	0.00	0.09	0.00	56.4
11	T1	1275	5.0	1275	5.0	0.368	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.6
Approach		1380	6.1	1380	6.1	0.368	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
All Vehicles		2024	5.4	2024	5.4	1.093	40.8	NA	40.9	293.3	0.32	0.95	2.33	34.2

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.
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: 102 [2029 AM Existing - Power Street / Owen Street / Access Driveway - 2]

Network: N101 [2029 AM - Existing]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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
South: Access Driveway														
1	L2	1	0.0	1	0.0	0.001	2.3	LOS A	0.0	0.0	0.51	0.29	0.51	27.8
Approach		1	0.0	1	0.0	0.001	2.3	LOS A	0.0	0.0	0.51	0.29	0.51	27.8
East: Power Street E														
4	L2	15	7.1	15	7.1	0.318	5.7	LOS A	0.0	0.0	0.00	0.01	0.00	57.8
5	T1	1196	4.4	1196	4.4	0.318	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		1211	4.4	1211	4.4	0.318	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
NorthEast: Median Storage														
26a	R1	13	16.7	12	16.7	0.019	6.5	LOS A	0.1	0.5	0.65	0.78	0.65	44.9
Approach		13	16.7	12[N1]	16.7	0.019	6.5	LOS A	0.1	0.5	0.65	0.78	0.65	44.9
All Vehicles		1224	4.6	1223[N1]	4.6	0.318	0.2	NA	0.1	0.5	0.01	0.01	0.01	59.7

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.

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

MOVEMENT SUMMARY

Site: 101 [2029 PM Existing - Power Street / Owen Street / Access Driveway]

Network: N101 [2029 PM - Existing]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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: Power Street E														
6	R2	460	2.7	460	2.7	1.111	137.3	LOS F	41.2	295.5	1.00	3.54	10.01	12.0
Approach		460	2.7	460	2.7	1.111	137.3	NA	41.2	295.5	1.00	3.54	10.01	12.0
North: Owen Street														
7	L2	283	4.4	283	4.4	0.700	20.0	LOS B	6.5	47.7	0.80	1.26	1.78	42.5
8	T1	40	13.3	40	13.3	0.700	45.4	LOS D	6.5	47.7	0.80	1.26	1.78	34.3
Approach		323	5.5	323	5.5	0.700	23.2	LOS B	6.5	47.7	0.80	1.26	1.78	41.8
West: Power Street W														
10	L2	76	30.6	76	30.6	0.265	5.9	LOS A	0.0	0.0	0.00	0.09	0.00	56.0
11	T1	920	3.7	920	3.7	0.265	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.6
Approach		996	5.7	996	5.7	0.265	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
All Vehicles		1779	4.9	1779	4.9	1.111	40.0	NA	41.2	295.5	0.40	1.17	2.91	33.3

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.
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: 102 [2029 PM Existing - Power Street / Owen Street / Access Driveway - 2]

Network: N101 [2029 PM - Existing]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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
South: Access Driveway														
1	L2	7	0.0	7	0.0	0.011	3.9	LOS A	0.0	0.3	0.59	0.47	0.59	27.4
Approach		7	0.0	7	0.0	0.011	3.9	LOS A	0.0	0.3	0.59	0.47	0.59	27.4
East: Power Street E														
4	L2	1	0.0	1	0.0	0.408	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.2
5	T1	1548	4.9	1548	4.9	0.408	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1549	4.9	1549	4.9	0.408	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
NorthEast: Median Storage														
26a	R1	40	13.3	40	13.3	0.103	10.0	LOS A	0.3	2.3	0.79	0.89	0.79	41.2
Approach		40	13.3	40	13.3	0.103	10.0	LOS A	0.3	2.3	0.79	0.89	0.79	41.2
All Vehicles		1597	5.1	1597	5.1	0.408	0.3	NA	0.3	2.3	0.02	0.02	0.02	59.2

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.
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: 101 [2019 AM Upgrade - Power Street / Owen Street / Access Driveway]

Network: N101 [2019 AM - Upgrade]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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: Power Street E														
6	R2	166	6.3	166	6.3	0.529	21.8	LOS B	2.5	18.2	0.88	1.07	1.33	35.7
Approach		166	6.3	166	6.3	0.529	21.8	NA	2.5	18.2	0.88	1.07	1.33	35.7
North: Owen Street														
7	L2	354	2.7	354	2.7	0.687	19.9	LOS B	6.7	48.0	0.82	1.24	1.75	43.9
8	T1	11	20.0	11	20.0	0.687	41.7	LOS C	6.7	48.0	0.82	1.24	1.75	36.1
Approach		364	3.2	364	3.2	0.687	20.5	LOS B	6.7	48.0	0.82	1.24	1.75	43.8
West: Power Street W														
10	L2	86	19.5	86	19.5	0.302	5.8	LOS A	0.0	0.0	0.00	0.09	0.00	56.4
11	T1	1045	4.9	1045	4.9	0.302	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.6
Approach		1132	6.0	1132	6.0	0.302	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
All Vehicles		1662	5.4	1662	5.4	0.687	7.0	NA	6.7	48.0	0.27	0.41	0.52	52.7

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: 102 [2019 AM Upgrade - Power Street / Owen Street / Access Driveway - 2]

Network: N101 [2019 AM - Upgrade]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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
South: Access Driveway														
1	L2	1	0.0	1	0.0	0.001	1.7	LOS A	0.0	0.0	0.46	0.24	0.46	27.9
Approach		1	0.0	1	0.0	0.001	1.7	LOS A	0.0	0.0	0.46	0.24	0.46	27.9
East: Power Street E														
4	L2	13	8.3	13	8.3	0.261	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	57.8
5	T1	981	4.4	981	4.4	0.261	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		994	4.4	994	4.4	0.261	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
NorthEast: Median Storage														
26a	R1	11	20.0	11	20.0	0.014	5.2	LOS A	0.0	0.4	0.55	0.69	0.55	46.2
Approach		11	20.0	11	20.0	0.014	5.2	LOS A	0.0	0.4	0.55	0.69	0.55	46.2
All Vehicles		1005	4.6	1005	4.6	0.261	0.2	NA	0.0	0.4	0.01	0.02	0.01	59.7

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: 101 [2019 PM Upgrade - Power Street / Owen Street / Access Driveway]

Network: N101 [2019 PM - Upgrade]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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: Power Street E														
6	R2	379	3.1	379	3.1	0.698	17.4	LOS B	5.3	38.2	0.84	1.21	1.76	38.8
Approach		379	3.1	379	3.1	0.698	17.4	NA	5.3	38.2	0.84	1.21	1.76	38.8
North: Owen Street														
7	L2	233	4.9	233	4.9	0.446	11.7	LOS A	3.0	22.1	0.68	0.93	0.96	48.0
8	T1	32	12.5	32	12.5	0.446	24.9	LOS B	3.0	22.1	0.68	0.93	0.96	42.0
Approach		265	5.8	265	5.8	0.446	13.3	LOS A	3.0	22.1	0.68	0.93	0.96	47.6
West: Power Street W														
10	L2	62	30.5	62	30.5	0.217	5.9	LOS A	0.0	0.0	0.00	0.09	0.00	56.0
11	T1	755	3.6	755	3.6	0.217	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.6
Approach		817	5.7	817	5.7	0.217	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.4
All Vehicles		1461	5.0	1461	5.0	0.698	7.2	NA	5.3	38.2	0.34	0.51	0.63	51.8

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: 102 [2019 PM Upgrade - Power Street / Owen Street / Access Driveway - 2]

Network: N101 [2019 PM - Upgrade]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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
South: Access Driveway														
1	L2	6	0.0	6	0.0	0.008	2.7	LOS A	0.0	0.2	0.53	0.38	0.53	27.7
Approach		6	0.0	6	0.0	0.008	2.7	LOS A	0.0	0.2	0.53	0.38	0.53	27.7
East: Power Street E														
4	L2	1	0.0	1	0.0	0.335	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.3
5	T1	1271	4.9	1271	4.9	0.335	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1272	4.9	1272	4.9	0.335	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
NorthEast: Median Storage														
26a	R1	32	12.5	32	12.5	0.056	7.0	LOS A	0.2	1.3	0.68	0.84	0.68	44.6
Approach		32	12.5	32	12.5	0.056	7.0	LOS A	0.2	1.3	0.68	0.84	0.68	44.6
All Vehicles		1310	5.0	1310	5.0	0.335	0.2	NA	0.2	1.3	0.02	0.02	0.02	59.3

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.
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: 101 [2029 AM Upgrade - Power Street / Owen Street / Access Driveway]

Network: N101 [2029 AM - Upgrade]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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: Power Street E														
6	R2	202	6.3	202	6.3	1.036	120.2	LOS F	14.0	103.6	1.00	2.06	5.22	13.3
Approach		202	6.3	202	6.3	1.036	120.2	NA	14.0	103.6	1.00	2.06	5.22	13.3
North: Owen Street														
7	L2	432	2.7	432	2.7	1.099	136.3	LOS F	41.9	301.0	1.00	3.35	8.55	18.2
8	T1	13	16.7	13	16.7	1.099	175.9	LOS F	41.9	301.0	1.00	3.35	8.55	10.9
Approach		444	3.1	444	3.1	1.099	137.5	LOS F	41.9	301.0	1.00	3.35	8.55	18.0
West: Power Street W														
10	L2	105	20.0	105	20.0	0.368	5.8	LOS A	0.0	0.0	0.00	0.09	0.00	56.4
11	T1	1275	5.0	1275	5.0	0.368	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.6
Approach		1380	6.1	1380	6.1	0.368	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
All Vehicles		2026	5.5	2026	5.5	1.099	42.4	NA	41.9	301.0	0.32	0.97	2.40	33.6

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: 102 [2029 AM Upgrade - Power Street / Owen Street / Access Driveway - 2]

Network: N101 [2029 AM - Upgrade]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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
South: Access Driveway														
1	L2	1	0.0	1	0.0	0.001	2.3	LOS A	0.0	0.0	0.51	0.29	0.51	27.8
Approach		1	0.0	1	0.0	0.001	2.3	LOS A	0.0	0.0	0.51	0.29	0.51	27.8
East: Power Street E														
4	L2	15	7.1	15	7.1	0.318	5.7	LOS A	0.0	0.0	0.00	0.01	0.00	57.8
5	T1	1196	4.4	1196	4.4	0.318	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		1211	4.4	1211	4.4	0.318	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
NorthEast: Median Storage														
26a	R1	13	16.7	11	16.7	0.019	6.5	LOS A	0.1	0.5	0.65	0.78	0.65	44.9
Approach		13	16.7	11[N1]	16.7	0.019	6.5	LOS A	0.1	0.5	0.65	0.78	0.65	44.9
All Vehicles		1224	4.6	1223[N1]	4.6	0.318	0.2	NA	0.1	0.5	0.01	0.01	0.01	59.7

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.

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

MOVEMENT SUMMARY

Site: 101 [2029 PM Upgrade - Power Street / Owen Street / Access Driveway]

Network: N101 [2029 PM - Upgrade]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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: Power Street E														
6	R2	461	3.0	461	3.0	1.116	141.5	LOS F	42.4	304.1	1.00	3.60	10.22	11.7
Approach		461	3.0	461	3.0	1.116	141.5	NA	42.4	304.1	1.00	3.60	10.22	11.7
North: Owen Street														
7	L2	284	4.8	284	4.8	0.704	20.3	LOS B	6.6	48.5	0.80	1.26	1.80	42.4
8	T1	40	13.3	40	13.3	0.704	45.7	LOS D	6.6	48.5	0.80	1.26	1.80	34.2
Approach		324	5.9	324	5.9	0.704	23.4	LOS B	6.6	48.5	0.80	1.26	1.80	41.7
West: Power Street W														
10	L2	76	30.6	76	30.6	0.265	5.9	LOS A	0.0	0.0	0.00	0.09	0.00	56.0
11	T1	920	3.7	920	3.7	0.265	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.6
Approach		996	5.7	996	5.7	0.265	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
All Vehicles		1781	5.0	1781	5.0	1.116	41.2	NA	42.4	304.1	0.40	1.19	2.97	32.8

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: 102 [2029 PM Upgrade - Power Street / Owen Street / Access Driveway - 2]

Network: N101 [2029 PM - Upgrade]

Power Street / Owen Street / Access Driveway
Site Category: (None)
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
South: Access Driveway														
1	L2	7	0.0	7	0.0	0.011	3.9	LOS A	0.0	0.3	0.59	0.47	0.59	27.4
Approach		7	0.0	7	0.0	0.011	3.9	LOS A	0.0	0.3	0.59	0.47	0.59	27.4
East: Power Street E														
4	L2	1	0.0	1	0.0	0.408	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.2
5	T1	1548	4.9	1548	4.9	0.408	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1549	4.9	1549	4.9	0.408	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
NorthEast: Median Storage														
26a	R1	40	13.3	40	13.3	0.103	10.0	LOS A	0.3	2.3	0.79	0.89	0.79	41.2
Approach		40	13.3	40	13.3	0.103	10.0	LOS A	0.3	2.3	0.79	0.89	0.79	41.2
All Vehicles		1597	5.1	1597	5.1	0.408	0.3	NA	0.3	2.3	0.02	0.02	0.02	59.2

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.
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.