# APPENDIX 14

# Traffic Impact Assessment

# 14 RAYBEN STREET, GLENDENNING
# PROPOSED LIQUID WASTE FACILITY
# TRAFFIC IMPACT ASSESSMENT

**FOR**

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# 1. INTRODUCTION

## 1.1 BACKGROUND

Bitzios Consulting was commissioned by Duggan and Hede Pty Ltd to undertake a traffic impact assessment for the proposed liquid waste facility to be located at 14 Rayben in Glendenning. The location of the subject site can be seen in Figure 1.1.


*SOURCE: Google Maps*

Figure 1.1: Location of Subject Site

## 1.2 DEVELOPMENT DETAILS

The proposed development is to comprise of the construction of two (2) waste transfer stations totalling approximately 1,070m$^2$ Gross Floor Area (GFA) while maintaining the existing administration building of approximately 200m$^2$ GFA. Additionally, the development will provide a total of 28 parking spaces on-site for passenger vehicles, including one (1) Persons With Disability (PWD) bay. Access to the site will be via two (2) separated entry and exit crossovers to Rayben Street.

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

Table 1.1: Waste per Year Treated On-site

| Material | Receipts (tonnes) | Discharge (tonnes) | |
|---|---|---|---|
| | By Vehicle | By Vehicle | To Sewer |
| Grease Trap Waste | 24,000 | 8,400 | 15,600 |
| Liquid Food Waste | 18,000 | 18,000 | 0 |
| Used Oil | 8,000 | 8,000 | 0 |
| Industrial Oily Water (future) | 2,000 | 200 | 1,800 |
| TOTAL | 52,000 | 34,600 | 17,400 |

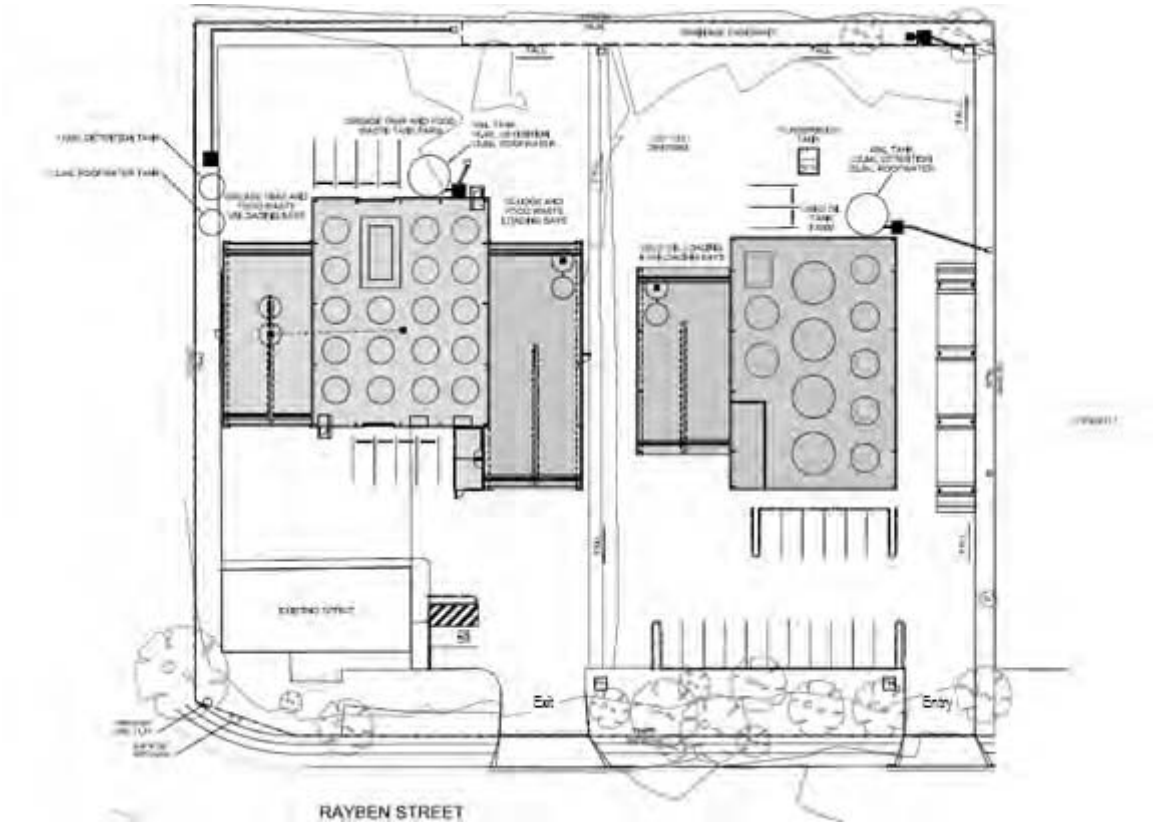



Figure 1.2: Site Layout

## 1.3 SCOPE OF ASSESSMENT

The scope of this traffic impact assessment includes the following:

- 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*);
- reviewing the on-site parking layout for compliance with BCC's *DCP* and the *Australian Standards* (*AS2890*);
- 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 proposed heavy vehicle routes to and from the site, including any restricted access vehicles (RAV);
- estimating the proposed site's traffic generation and traffic 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 parking supply and layout during the construction period, including the ability for the site to cater for the manoeuvring requirements of construction vehicles;
- analysing the adequacy of the proposed construction vehicle routes to and from the site, including any RAV's; and
- estimating the development's construction traffic generation, distribution and impact to the external road network.

# 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 truck maintenance workshop and truck holding yard 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: Google Earth & NSW Globe*

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 east

*SOURCE: Google Maps (Streetview)*

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

## 2.3 BACKGROUND TRAFFIC VOLUMES

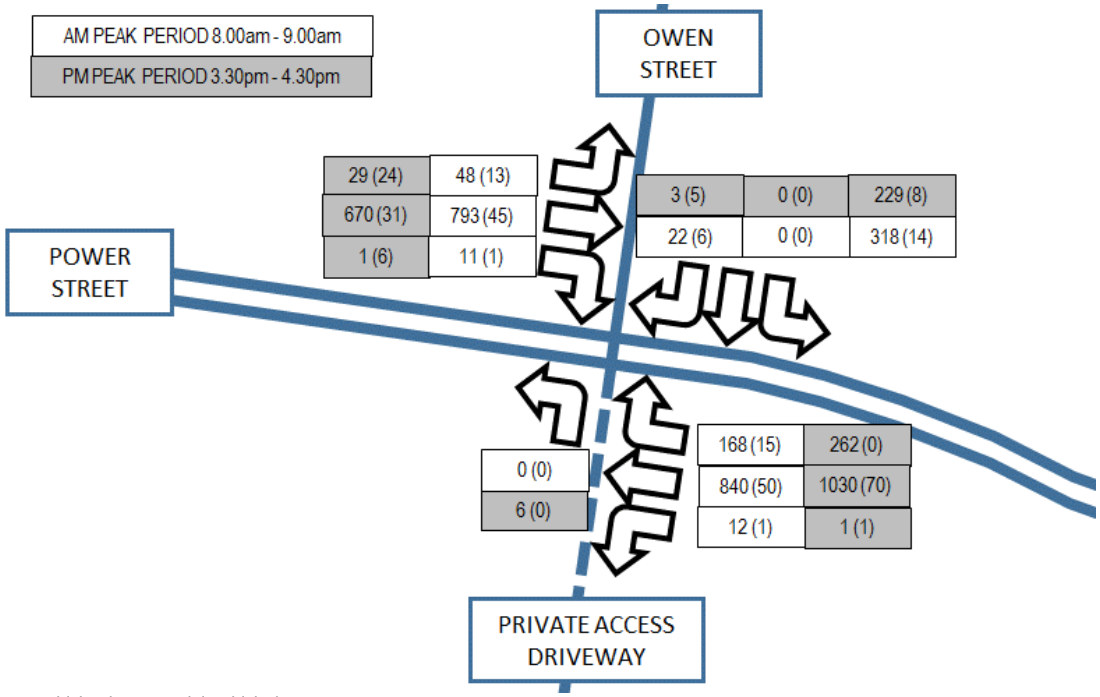
### 2.3.1 Traffic Surveys

Traffic surveys were undertaken by Traffic Data and Control at the Owen Street / Power Street / private access driveway priority controlled intersection on Tuesday the 4th of March 2015 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 presents the 2015 AM and PM peak hour background traffic volumes at the Owen Street / Power Street / private access drive intersection.



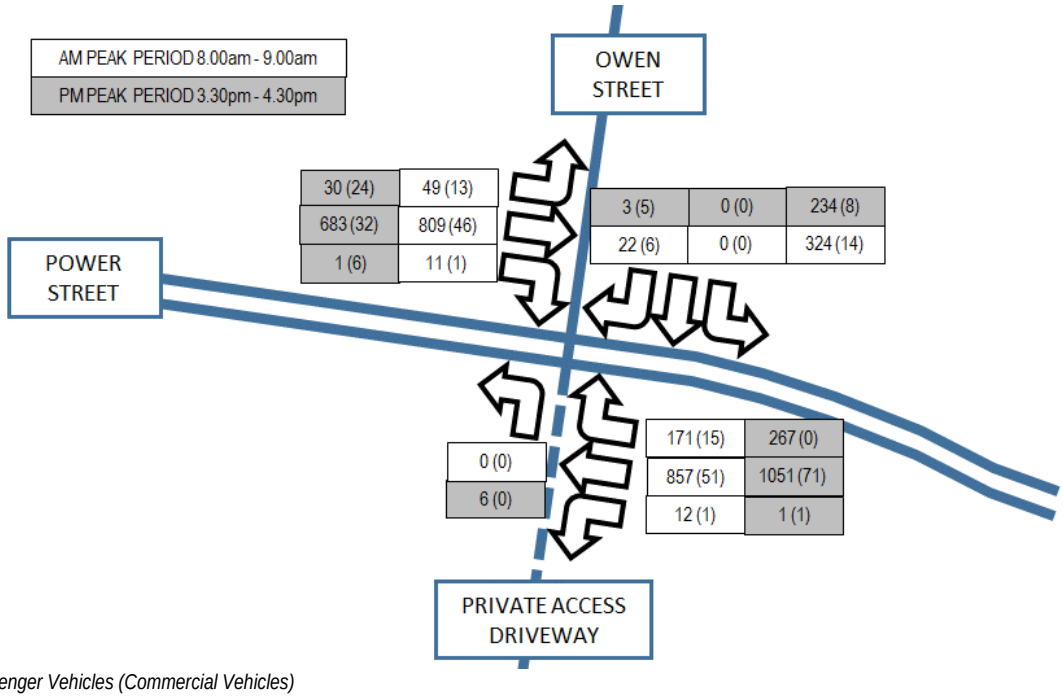

*Passenger Vehicles (Commercial Vehicles)*

Figure 2.6: Background Traffic Volumes 2015

### 2.3.2 Background Traffic Volumes

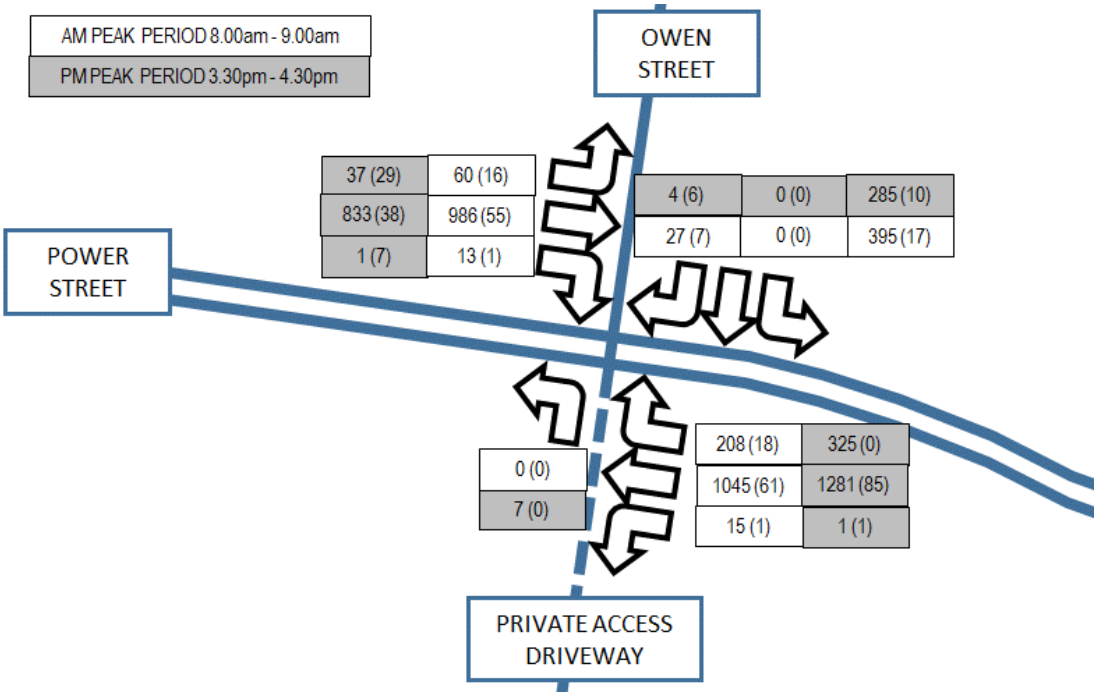
In order to forecast the year of opening (i.e. 2016) background traffic volumes and the 10-year design horizon (i.e. 2026) background traffic volumes, a 2% compounding annual growth rate (CAGR) was applied. This

CAGR is typical of moderate growth and considered suitable for the surrounding area. Accordingly, Figure 2.7 and Figure 2.8 depict the estimated 2016 and 2026 background traffic volumes respectively.




*Passenger Vehicles (Commercial Vehicles)*

Figure 2.7: Background Traffic Volumes 2016 (year of opening)




*Passenger Vehicles (Commercial Vehicles)*

Figure 2.8: Background Traffic Volumes 2026 (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 will be 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 likely parking demands of the development.

The development is anticipated to ultimately require the following:

- 10 administration / management / operator staff to operate the site; and
- 14 truck drivers (shifts ranging from 8-12 hours across the operating hours of 4am – 9pm).

Accordingly, the development is required to provide a minimum 24 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 development will require 26 spaces, including 24 staff and two (2) visitor parking spaces to accommodate the needs of the development.

## 3.2 PARKING PROVISION

The development will provide 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; and
- 14 commercial heavy rigid vehicle (HRV) parking spaces including;
  - 12 to be located within loading / unloading bays; and
  - two (2) to be located centrally on-site between facilities.

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

## 3.3 PARKING LAYOUT

The parking layout has generally been designed in accordance with the *Australian Standards* (*AS2890.1, AS2890.2* and *AS2890.6*). The following is noted:

- the passenger vehicle parking bays will be a minimum 2.4 metres wide which meets the minimum requirements of User Class 1A (*AS2890.1)*;
- the passenger vehicle parking bays will be a minimum 5.4 metres long which meets the minimum dimensions of User Class 1A (*AS2890.1)*;
- the PWD parking bay and adjoining shared space will be a minimum 2.4 metres wide by 5.4 metres long, which meets the minimum dimensions in *AS2890.6*;
- the passenger vehicle parking bays will be accessible via a 7.0 metre wide aisle which meets the requirements of BCC's *DCP* and exceeds the minimum dimensional standards within *AS2890.1*; and

- the commercial vehicle parking bays will be a minimum 3.5 metres wide by 12.5 metres long which meets the minimum requirements of *AS2890.2.*

On the basis of the above, the parking layout is in accordance with BCC's *DCP* and *Australian Standards* and is expected to operate safely and efficiently.

# 4. SERVICING ASSESSMENT

## 4.1 COMMERCIAL VEHICLE PARKING AREAS

Based on information received from Duggan and Hede Pty Ltd it is understood that the site will be required to accommodate up to 14, 12.5m long Heavy Rigid Vehicles (HRV's).

The site will provide 14 HRV parking bays as follows:

- 12 parking bays will be provided within the loading / unloading bays of the waste transfer stations; and
- two (2) will be provided outside between the two (2) waste transfer stations.

The parking bays provided are capable of accommodating 12.5 metre long heavy rigid vehicles (HRV) and will be 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.

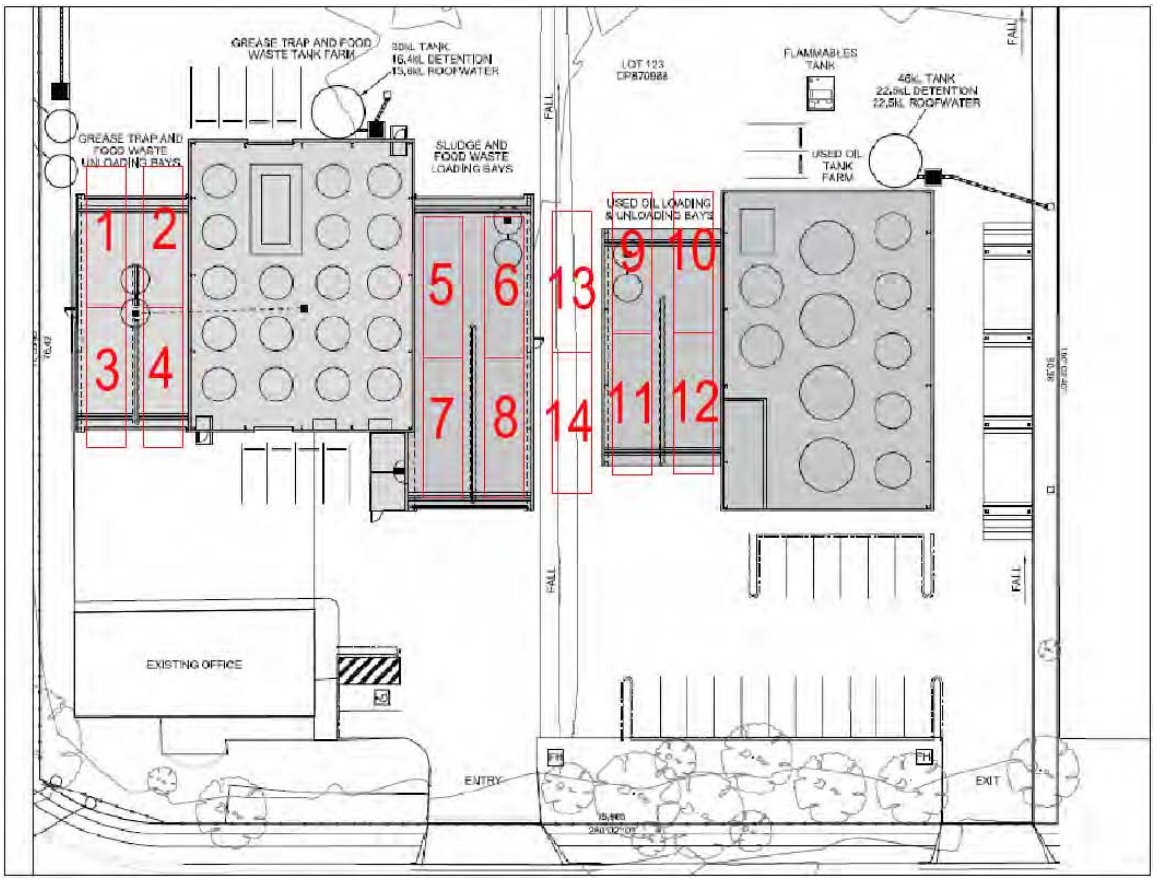



Figure 4.1: Commercial Vehicle Bays

## 4.2 INCOMING AND OUTGOING WASTE ROUTES

Incoming and outgoing waste will be 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.

## 4.3 SITE ACCESS AND SERVICE BAYS

All vehicle access to and from the site will be via Rayben Street. Vehicles entering the site will utilise the proposed new crossover located on the eastern boundary of the site. Vehicles will then perform the

necessary duties and exit the site in a forward direction via the existing crossover located centrally along the sites frontage.

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

- liquid grease trap and food waste; and
- used oil and industrial oily water.

The average vehicle that will access the above transfer stations is a 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 have been 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.

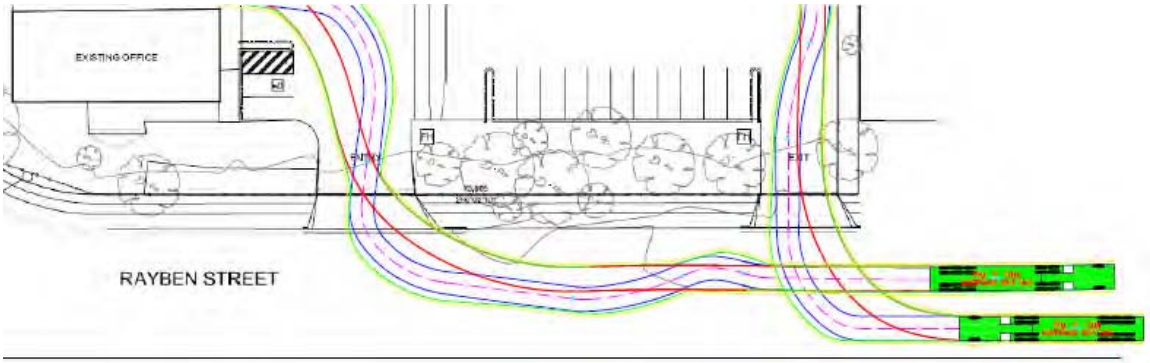



Figure 4.2: Semi-trailer Entering / Exiting the Site

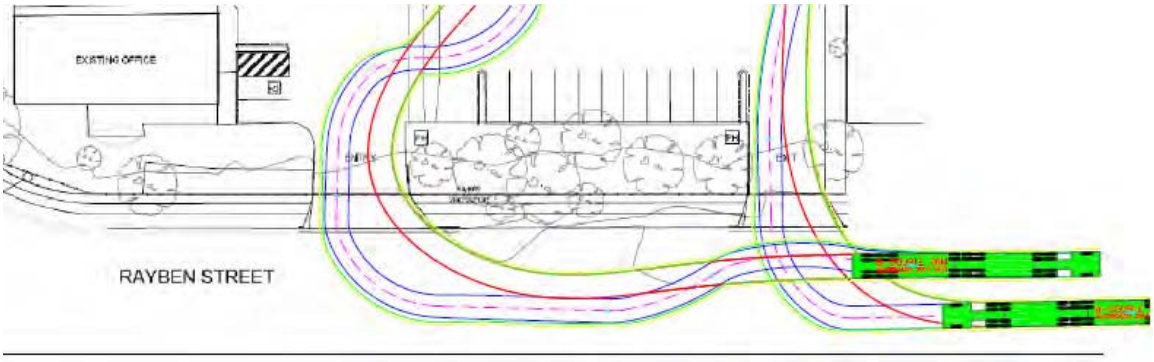



Figure 4.3: B-Double Entering / Exiting the Site

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 12.5 metres 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.

Given that the parking spaces will primarily be used by staff, it is assumed that each staff parking space will require one (1) arrival and departure trip per day. It is unlikely that all truck drivers will arrive / leave during the peak hour, due to operating hours of 4am - 9pm. As such, the site is estimated to generate 13 vehicle trips per hour (vph) during the peak periods including 10 vehicle trips from administration / waste treatment staff and three (3) trips from truck drivers (*conservatively assumes 20% of the daily truck drivers will arrive / depart during the peak periods*).

The commercial vehicle (CV) movements to and from the site are based on the estimated production of the site which has been provided by Duggan and Hede Pty Ltd. Table 5.1 presents a summary of all development generated commercial vehicle movements.

Table 5.1: Daily Vehicle Movement Summary

| Waste | Daily Commercial Vehicles Required | Daily Commercial Vehicle Movements | Peak Hour Commercial Vehicle Movements[1] |
|---|---|---|---|
| Incoming (Raw) | 10 | 19 | 4 |
| Outgoing (Treated) | 3 | 6 | 2 |
| TOTAL | | 26 | 6 |

[1] *Conservatively assumes 20% of the daily Heavy Vehicle trips will occur during the peak periods.*

Based on this first-principles assessment, combining the passenger vehicle trips and commercial vehicle trips, the proposed development is anticipated to generate a total of 19 vehicles per hour during the peak periods including 13 light vehicles and six (6) heavy vehicles.

Given that the proposed operating hours of the liquid waste facility are to be 4am to 9pm Monday - Saturday with office hours on these days of 7am to 6pm, it is likely that the staff arrival / departure trips will occur outside the typical AM and PM peak hour periods (which occur from 8-9am and 3.30-4.30pm respectively). Hence the above traffic generation estimates are considered to represent a worst-case scenario.

### 5.1.2 Directional Split

Table 5.2 presents the estimated development traffic directional splits.

Table 5.2: 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 | 13 | 0 | 60 | 40 | 4 | 2 |
| PM Peak Hour | 0 | 100 | 0 | 13 | 40 | 60 | 2 | 4 |

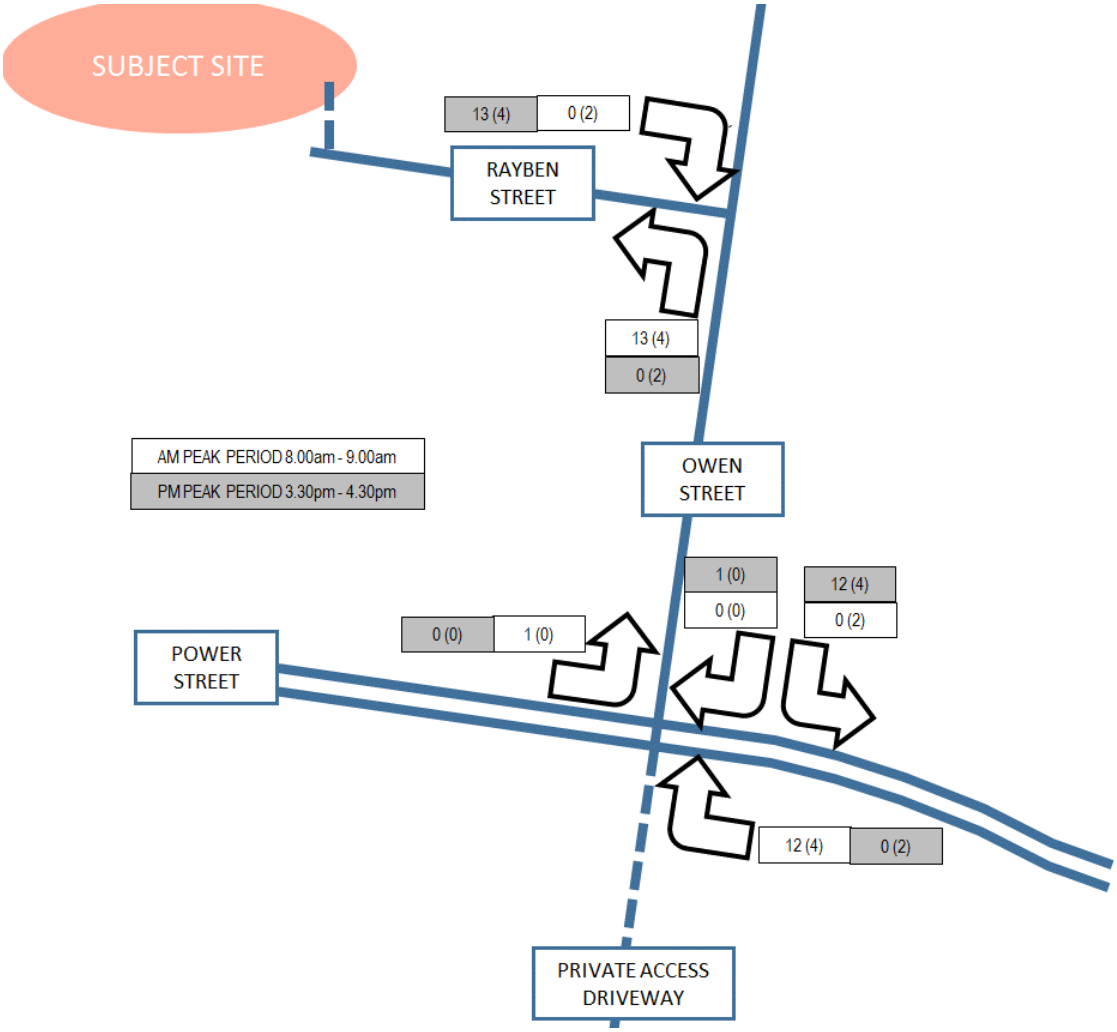
### 5.1.3 Traffic Distribution

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 development;
- 10% of passenger vehicle traffic will be associated with areas to the west of the development;
- 90% of commercial vehicle traffic will be associated with areas to the east of the development; and
- 10% of commercial vehicle traffic will be associated with areas to the west of the development.

### 5.1.4 Development Traffic Volumes

On the basis of the above, Figure 5.1 shows the development traffic volumes.

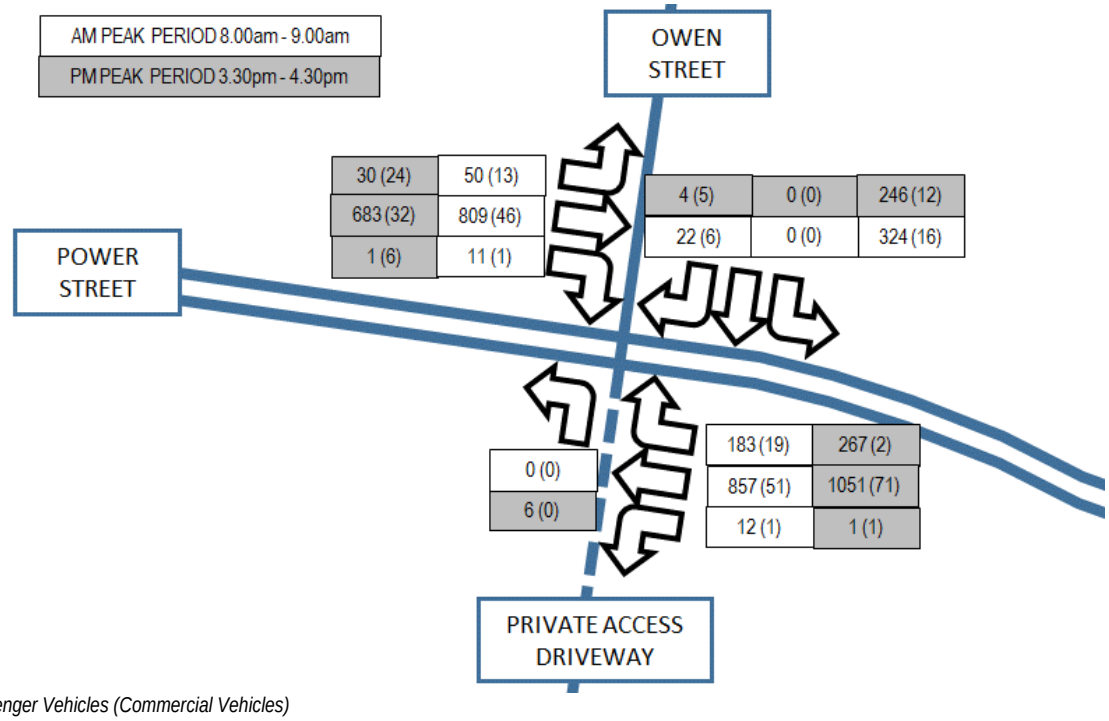



*Passenger Vehicles (Commercial Vehicles)*

Figure 5.1: Development Generated Traffic

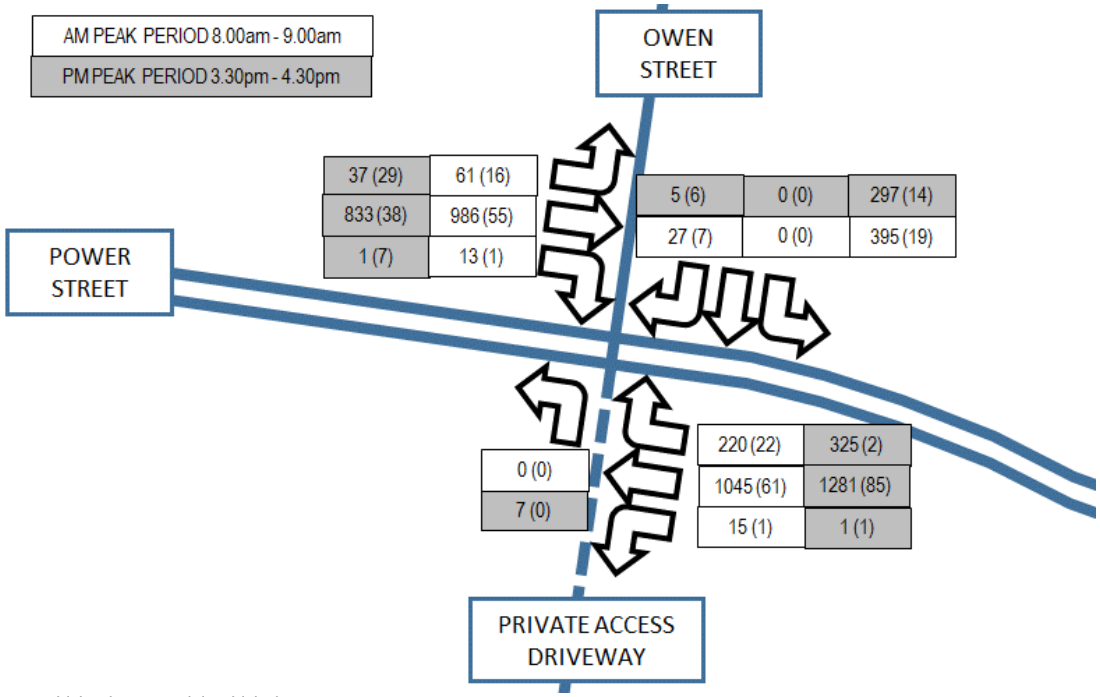
## 5.2 DESIGN TRAFFIC VOLUMES

The design traffic volumes (i.e. background + development) at the Owen Street / Power Street / private access drive intersection for years 2016 and 2026 can be seen overleaf in Figure 5.2 and Figure 5.3 respectively.




*Passenger Vehicles (Commercial Vehicles)*

Figure 5.2: Design Traffic Volumes 2016 (Year of Opening)




*Passenger Vehicles (Commercial Vehicles)*

Figure 5.3: Design Traffic Volumes 2026 (10-year design horizon)

# 6. INTERSECTION PERFORMANCE ASSESSMENT

In order to assess the traffic impact of the development, the Owen Street / Power Street / private access driveway intersection was modelled using SIDRA intersection software for the "without" (background) and "with" (design) traffic volumes for the year of opening (2016) and 10-year design horizon (2026).

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

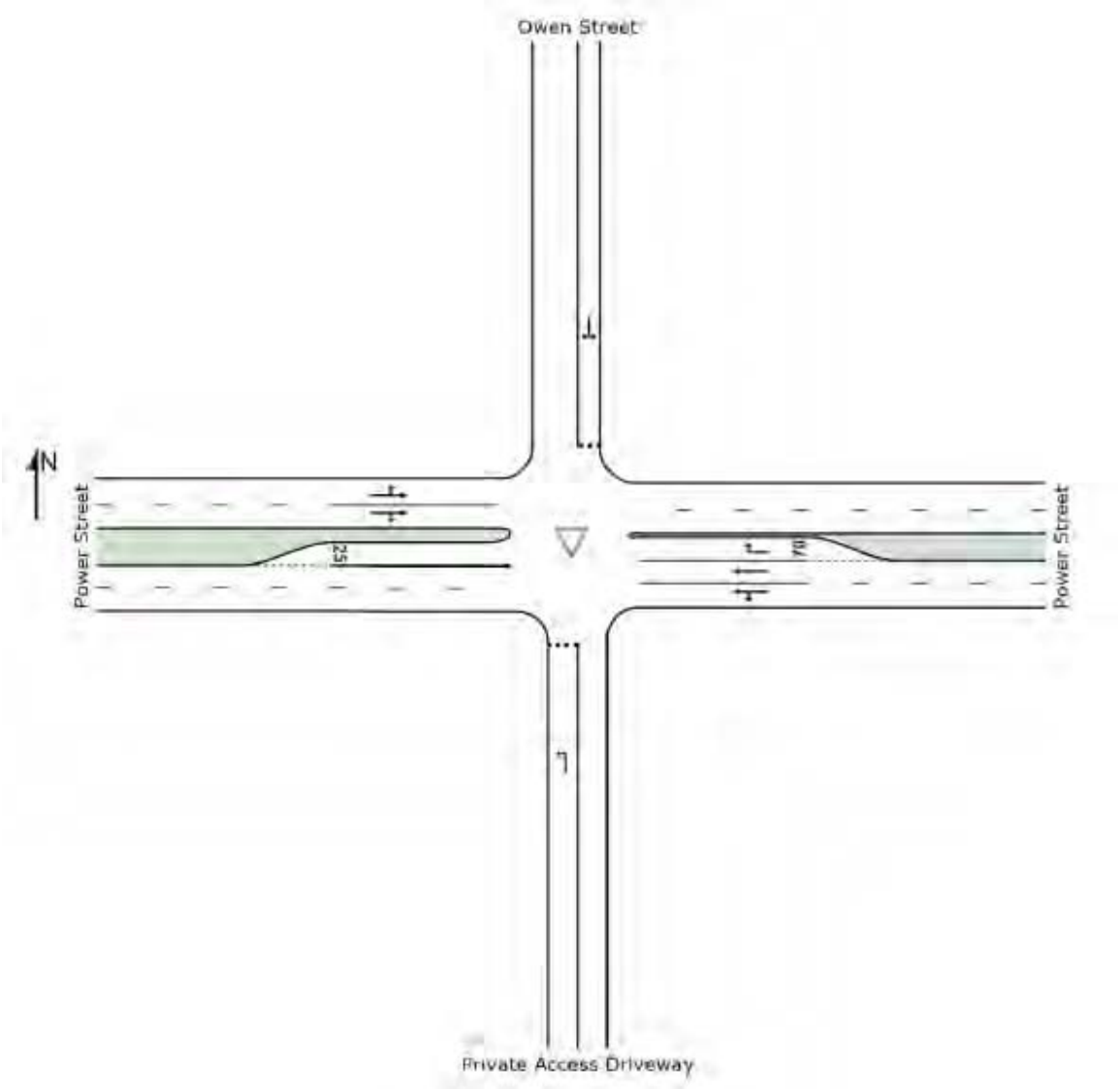



Figure 6.1: Owen Street / Power Street / private access driveway intersection layout

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.

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

Table 6.1: Owen Street / Power Street / Private Access Driveway Intersection Performance

| Intersection Approach | 'Without' Development | | | | 'With' Development | | | |
|---|---|---|---|---|---|---|---|---|
| | DOS (v/c) | Avg. Delay (sec) | LOS | 95% Back of Queue (m) | DOS (v/c) | Avg. Delay (sec) | LOS | 95% Back of Queue (m) |
| 2016 AM Peak Results | | | | | | | | |
| South: Private Access | 0.001 | 2.2 | LOS A | 0.0 | 0.001 | 2.2 | LOS A | 0.0 |
| East: Power Street | 0.663 | 4.5 | N/A | 26.3 | 0.734 | 5.4 | N/A | 32.6 |
| North: Owen Street | 0.904 | 34.9 | LOS D | 74.5 | 0.915 | 36.9 | LOS E | 79.5 |
| West: Power Street | 0.280 | 1.4 | N/A | 6.4 | 0.280 | 1.4 | N/A | 6.4 |
| 2016 PM Peak Results | | | | | | | | |
| South: Private Access | 0.009 | 3.3 | LOS A | 0.2 | 0.009 | 3.3 | LOS A | 0.2 |
| East: Power Street | 0.679 | 4.0 | N/A | 29.9 | 0.690 | 4.1 | N/A | 31.0 |
| North: Owen Street | 0.504 | 14.4 | LOS B | 19.4 | 0.544 | 15.0 | LOS C | 22.3 |
| West: Power Street | 0.268 | 6.9 | N/A | 98.1 | 0.268 | 7.0 | N/A | 98.2 |
| 2026 AM Peak Results | | | | | | | | |
| South: Private Access | 0.003 | 7.8 | LOS A | 0.1 | 0.003 | 8.0 | LOS A | 0.1 |
| East: Power Street | 1.256 | 50.6 | N/A | 277.2 | 1.370 | 70.7 | N/A | 374.3 |
| North: Owen Street | 1.574 | 545.3 | LOS F | 839.5 | 1.592 | 561.1 | LOS F | 861.2 |
| West: Power Street | 0.358 | 3.1 | N/A | 18.7 | 0.359 | 3.1 | N/A | 18.9 |
| 2026 PM Peak Results | | | | | | | | |
| South: Private Access | 0.029 | 12.3 | LOS B | 0.6 | 0.029 | 12.4 | LOS B | 0.6 |
| East: Power Street | 1.281 | 55.8 | N/A | 381.2 | 1.300 | 59.4 | N/A | 402.6 |
| North: Owen Street | 0.887 | 36.3 | LOS E | 59.1 | 0.947 | 48.7 | LOS E | 84.8 |
| West: Power Street | 0.452 | 24.3 | N/A | 143.0 | 0.453 | 24.2 | N/A | 142.2 |

*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).*

It is clear from the model results shown in the Table above that the intersection is currently performing above the practical operating capacity (i.e. DOS > 0.8) of a priority-controlled intersection which is observed at the northern approach during the AM peak hour period ("without" development traffic). The overall increase in performance measures on the road network due to development traffic are marginal as failure occurs under background conditions (without development traffic) during the AM peak. The addition of the proposed development traffic for the 2016 AM peak increases the following performance measures on the northern approach:

- DOS by 0.011;
- average delay by 2 seconds; and
- 95th percentile queue length by 5 metres.

These increases are minimal and given that the development traffic represents approximately 3.5% of existing traffic along Owen Street, the low volume of traffic generated by the proposed development is not expected to compromise the function or safety of the road and associated intersections beyond existing levels. As a result of the above analysis it is clear that measures are required to improve the operation of the intersection under background conditions.

As such, it is noted that BCC's *Works Improvement Program (WIP)* for 2013/2014, 2014/2015 and 2015/2016 indicates that roadwork improvements to the Power Street / Owen Street intersection is an ongoing priority. 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 mitigation measures to be put in place at the existing intersection as a result of the proposed development given BCC's proposed future upgrades to the intersection. It is deemed that once the intersection upgrade has been completed the proposed development will have a "no net worsening" effect on the existing Owen Street / Power Street intersection. As such no mitigating measures are considered necessary as a result of the proposed development.

# 7. CONSTRUCTION TRAFFIC IMPACT ASSESSMENT

## 7.1 CONSTRUCTION DETAILS

The construction of the proposed liquid waste treatment facility is understood to take approximately 20 weeks. Construction activities will include the transportation of material (as required) such as; earth, concrete and gravel to / from the site and construction of the waste treatment buildings.

It is also understood that the construction of the site's facilities will be conducted by an average of six (6) workers per day.

## 7.2 VEHICLE ROUTE ASSESSMENT

It is understood that raw materials (i.e. earth, concrete, gravel etc) will be transported to and from the site via HRVs and "Truck and Dog" vehicles. The breakdown of the routes of these vehicles is as follows:

- 80% of traffic will come from / leave to the M7 via Quakers Hill Parkway / Knox Road, Power Street and Owen Street; and
- 20% of traffic will associated with the local area.

As previously mentioned (refer to Section 4.2), Power Street, Quakers Hill Parkway / Knox Road and the M7 are all approved B-Double routes (as per NHVR). As such, given that the largest vehicle used during construction (Truck and Dog) is shorter than a B-Double, it is expected that the proposed routes to / from the site are sufficient for construction purposes.

## 7.3 TRAFFIC GENERATION

A first-principles assessment based on the approximate construction activity provided by Duggan and Hede Pty Ltd has been used to approximate the likely site traffic generation during the construction phase.

As mentioned above, it is understood that an average of six (6) construction workers will be required on-site. Accordingly, it is assumed that the site will generate six (6) inbound and six (6) outbound passenger vehicle trips during the AM and PM peak hour periods respectively. However, it should be noted that due to typical construction hours it is unlikely that construction workers will travel during peak periods and hence this is considered a worst case scenario.

Additionally, information provided by Duggan and Hede Pty Ltd indicates that the site is expected to generate an average of seven (7) inbound and seven (7) outbound commercial vehicle trips per day as a result of construction material deliveries. For the purposes of analysis it is assumed that two (2) commercial vehicles will travel to and from the site during the AM and PM peak hour periods respectively (*conservatively assumes 20% of the daily commercial vehicle deliveries will occur during the peak periods*). It should be noted that commercial vehicles are typically scheduled outside of peak hour periods, therefore the following analysis is considered conservative and to represent a worst-case scenario.

Accordingly, it is estimated that the development is anticipated to generate an average of 26 vehicle trips per day (i.e. 12 passenger vehicle trips and 14 commercial vehicle trips) and up to 8 vehicle trips during peak hours (i.e. six (6) passenger vehicles and two (2) commercial vehicles).

## 7.4 TRAFFIC IMPACT ANALYSIS

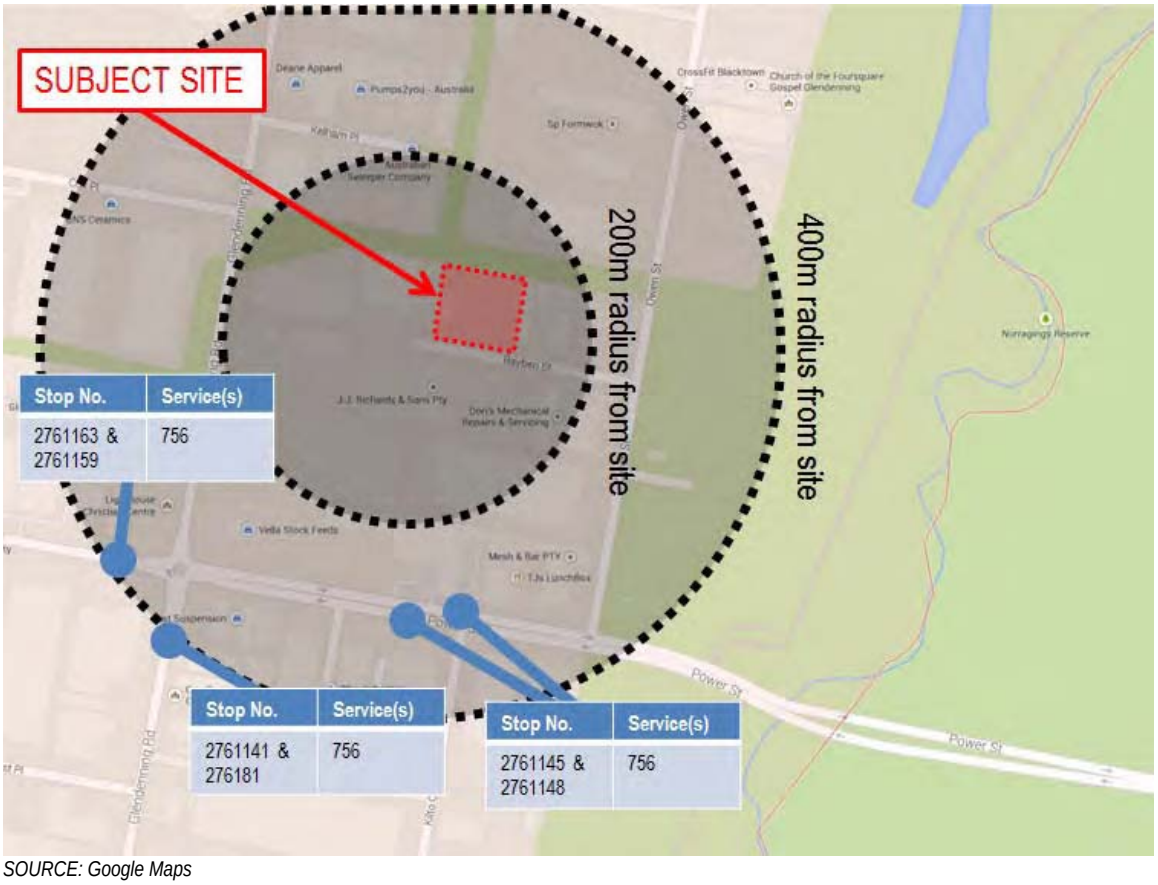
The existing traffic volumes at the Owen Street / Power Street intersection (detailed in Section 2.3) are shown to be quite high during the peak periods. The addition of 26 vehicle trips per day (of which eight (8) vehicle trips are expected to occur in each of the AM and PM peak periods) is not expected to have any adverse effect on the existing intersections and network. The traffic generated as a result of the construction activities is less than the development generated traffic (see Section 5.1) and therefore the impacts of the construction traffic are expected to be less than the development traffic once operation has begun.

On this basis the provision of any mitigating measures are not considered warranted as the net impacts of the generated traffic volumes during the construction phase are minimal.

# 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*

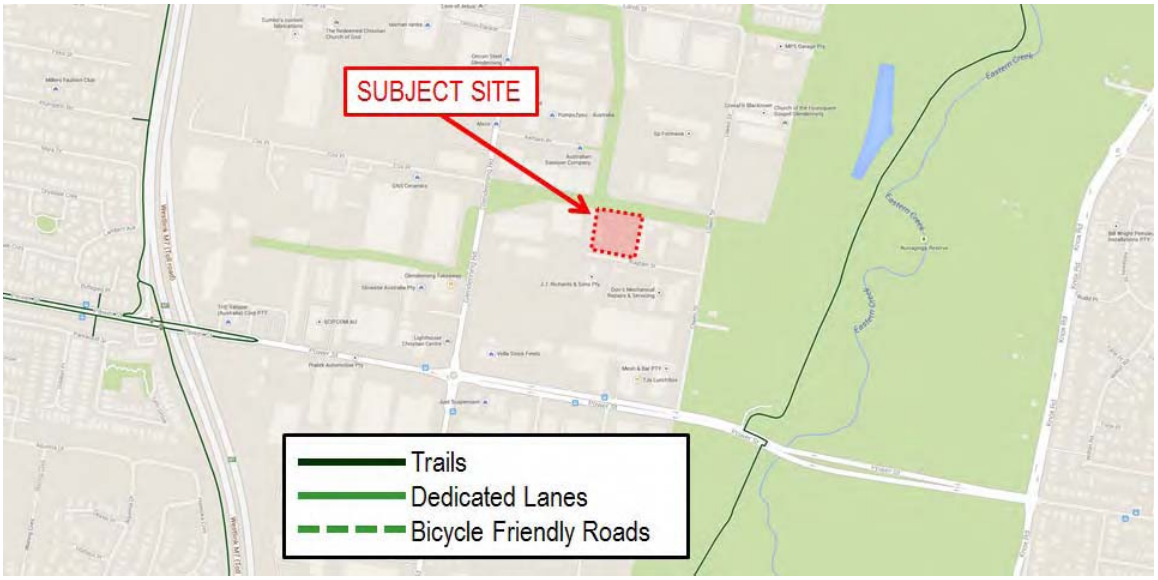
Figure 8.1: Accessible Public Transport Services

The Figure above indicates that the 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 a number of existing bicycle infrastructure as shown in Figure 8.2 overleaf.



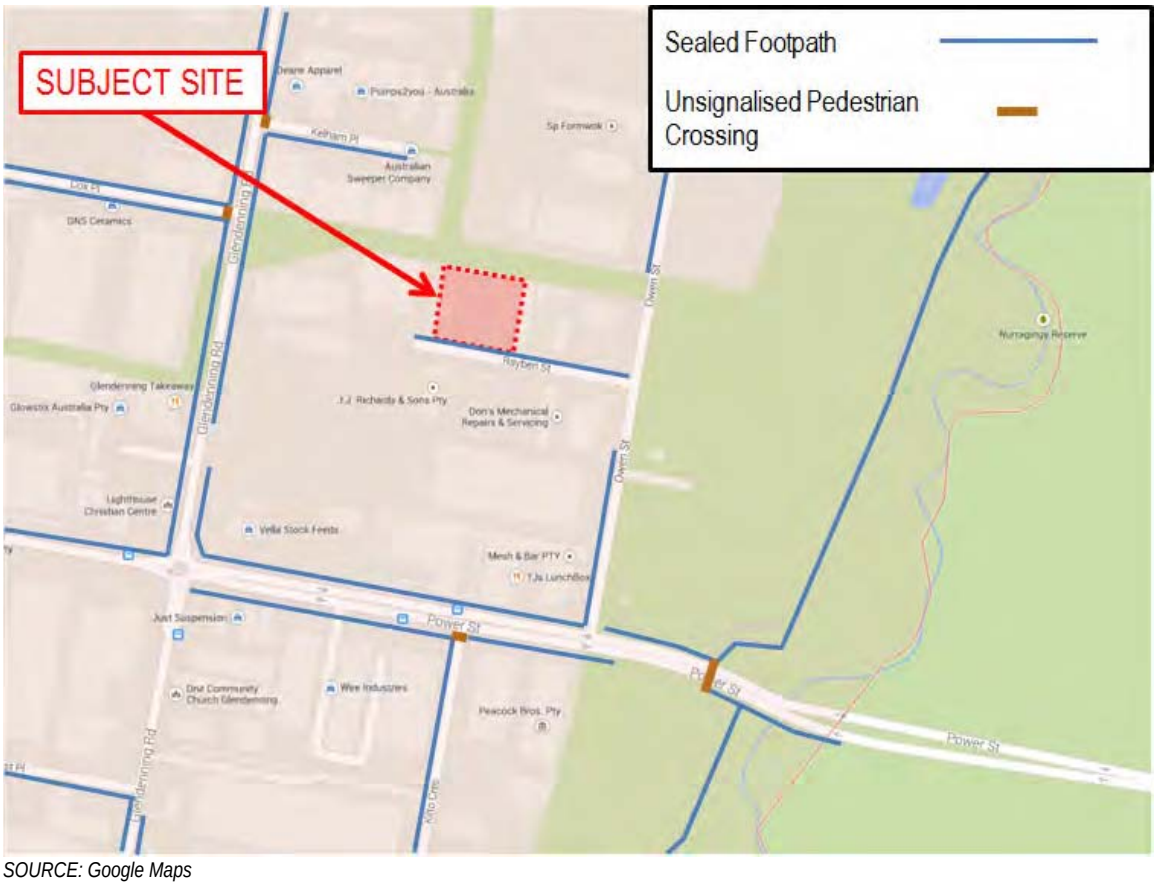

*SOURCE: Google Maps*

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 the traffic impact assessment for the proposed liquid waste facility to be located at 14 Rayben Street in Glendenning are as follows:

- the development generates a car parking requirement of 20 parking spaces based on the parking rates provided within the BCC'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 will provide 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;
- the provision of 42 parking spaces is considered sufficient to meet the demand of the development and exceeds the requirements within BCC's *DCP*;
- the parking layout has been designed in accordance with the *Australian Standards (AS2890.1, AS2890.2 and AS2890.6)* and is expected to operate safely and efficiently;
- vehicle access will be 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, the development is expected to generate 19 vehicle trips during the AM and PM peak hour periods;
- a SIDRA intersection analysis on the Owen Street / Power Street intersection indicates that the intersection is currently performing above the practical operating capacity (i.e. DOS > 0.8) for a priority-controlled intersection during the AM peak hour period ("without" development traffic);
- the estimated queue lengths and delays at the Owen Street / Power Street intersection suggest that the capacity of the intersection is unable to accommodate the *existing* traffic volumes, accordingly additional measures are required to improve the operation of the intersection;
- the development traffic represents approximately 3.5% of existing traffic along Owen Street, the low volume of traffic generated by the proposed development is not expected to compromise the function or safety of the road and associated intersections. As such mitigation measures are not required on the basis of the above and due to the proposed future upgrades to the existing intersection outlined in BCC's WIP;
- the site has access to nearby public and active transport services and infrastructure;
- construction activities are expected to generate up to 26 trips per day; and
- the level of traffic generated by the construction activities is low, and given the industrial nature of the area construction traffic is not expected to compromise the operation or function of any surrounding streets or intersections.

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

# APPENDIX A

# SITE LAYOUT PLANS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JJ RICHARDS & SONS PTY LTD

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

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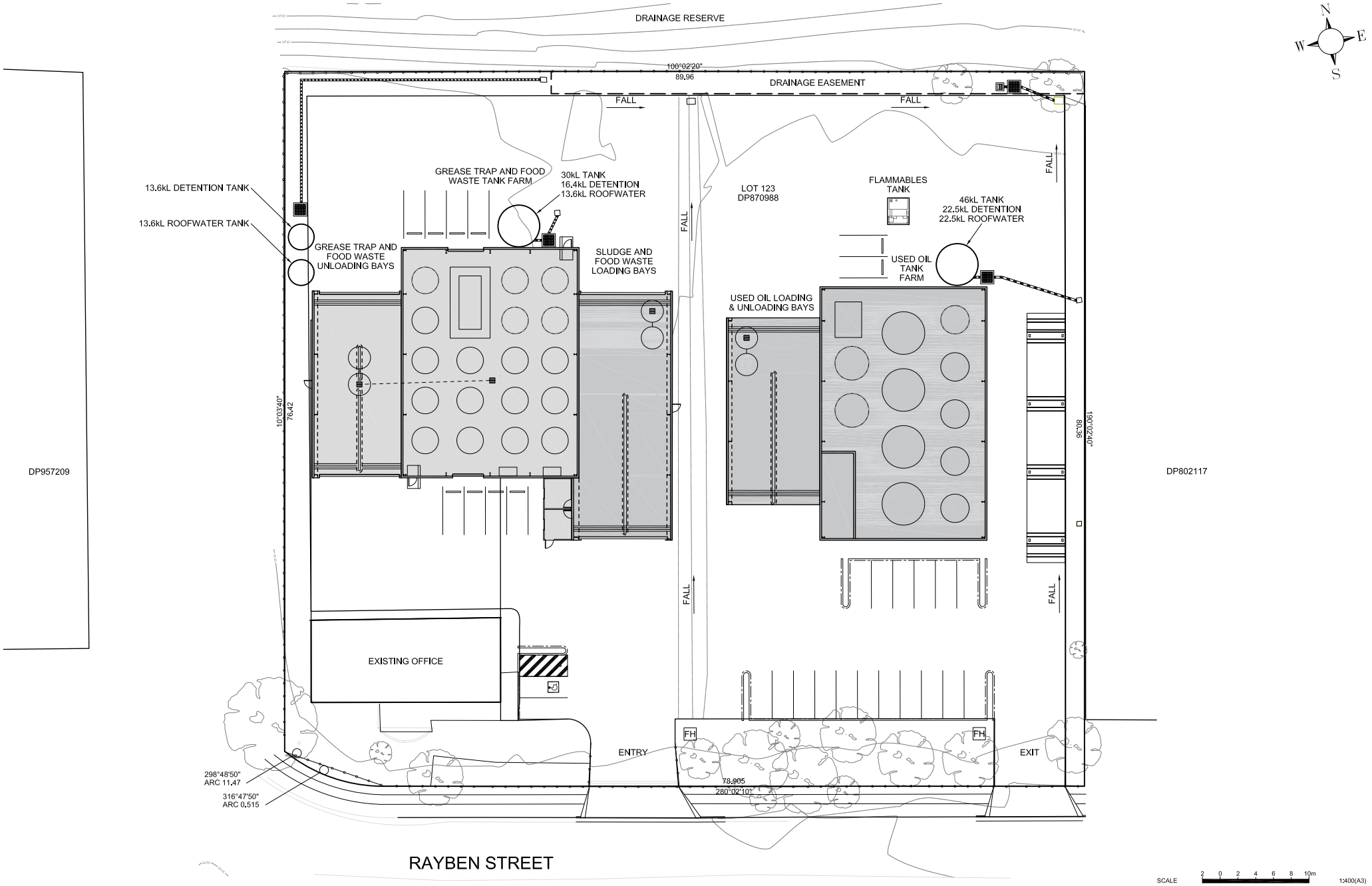


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LIQUID WASTE FACILITY & DEPOT
14 RAYBEN ST, GLENDENNING
PROPOSED SITE LAYOUT

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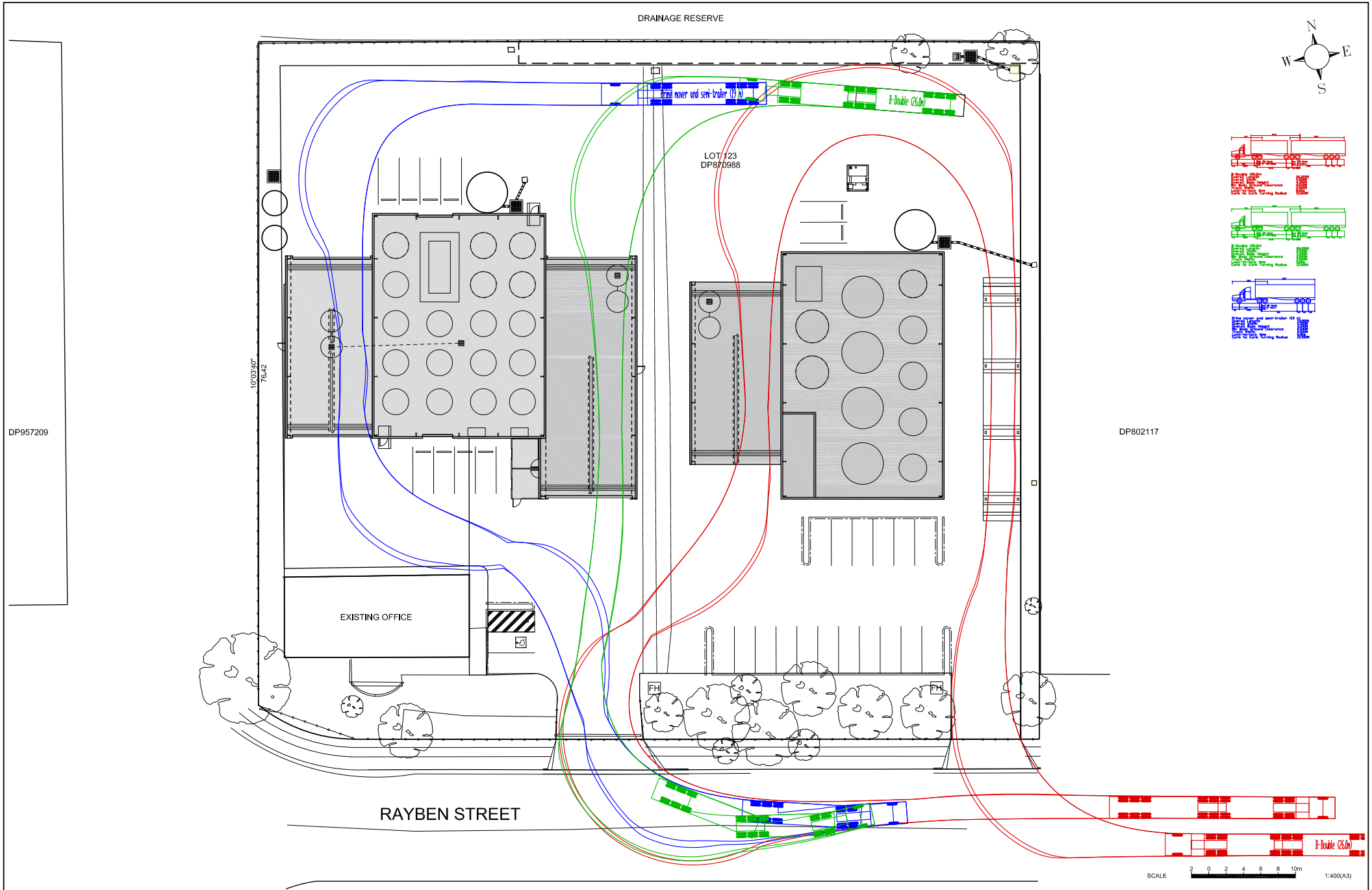


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LIQUID WASTE FACILITY & DEPOT
14 RAYBEN ST, GLENDENNING
TRAFFIC SWEEP PATHS

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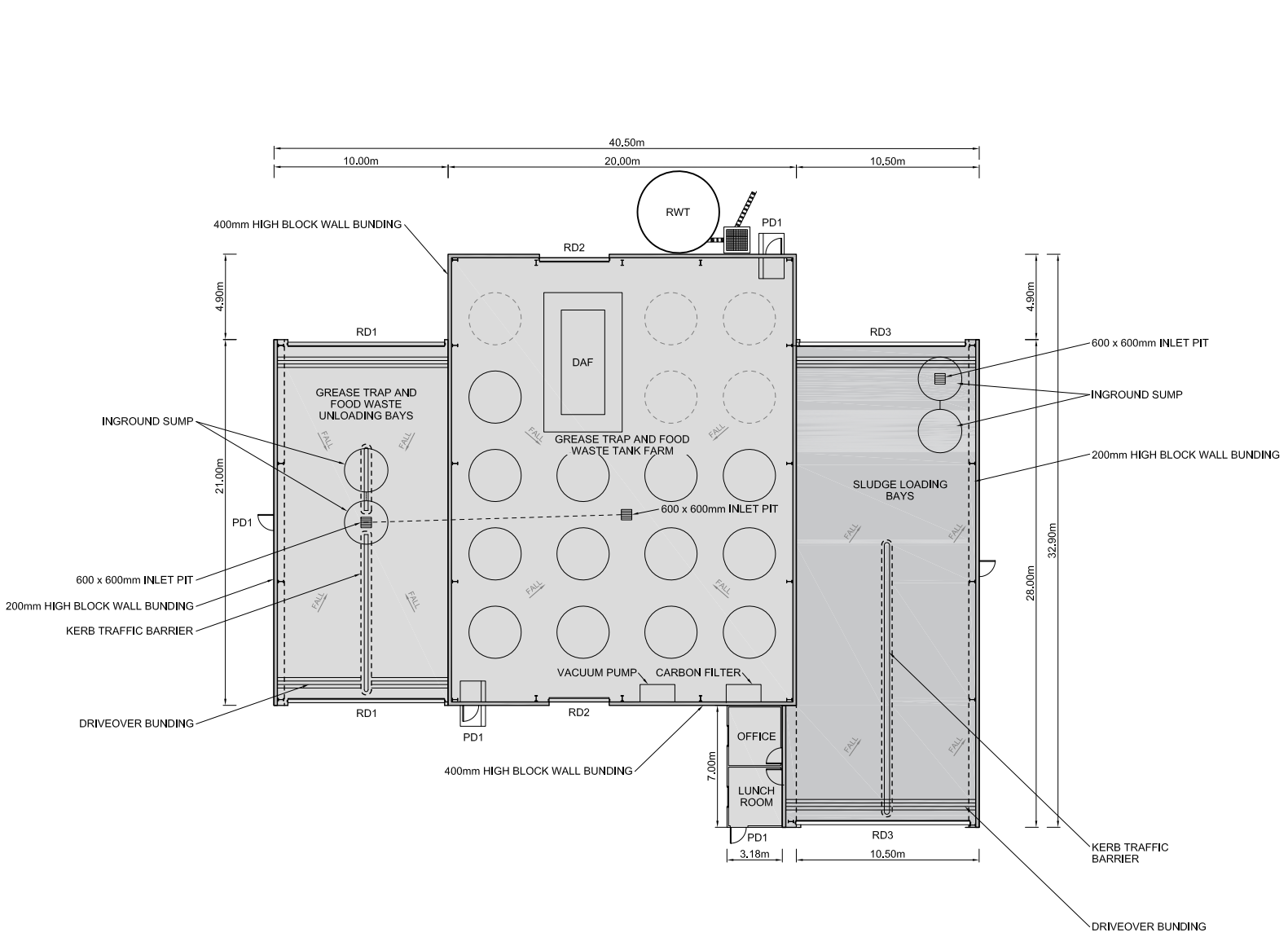


RD1 9mW x 5mH ROLLER SHUTTER
RD2 4mW x 5mH ROLLER SHUTTER
RD3 10mW x 5mH ROLLER SHUTTER
PD1 920W x 2040H PERSONNEL DOOR

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14 RAYBEN ST, GLENDENNING
ORGANICS BUILDING - PLAN

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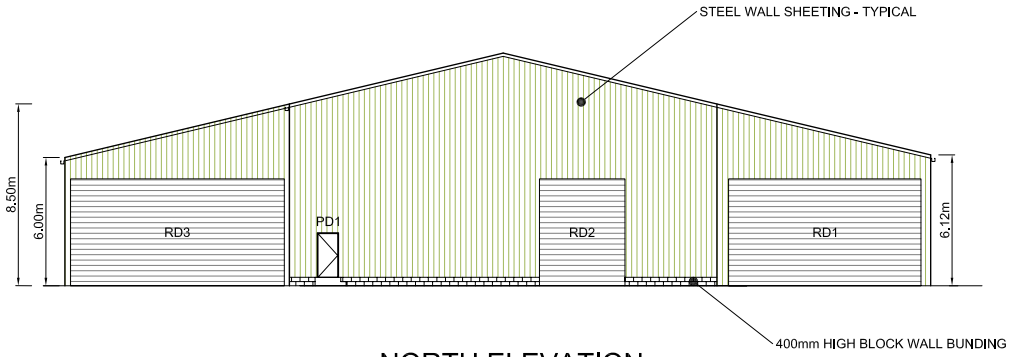


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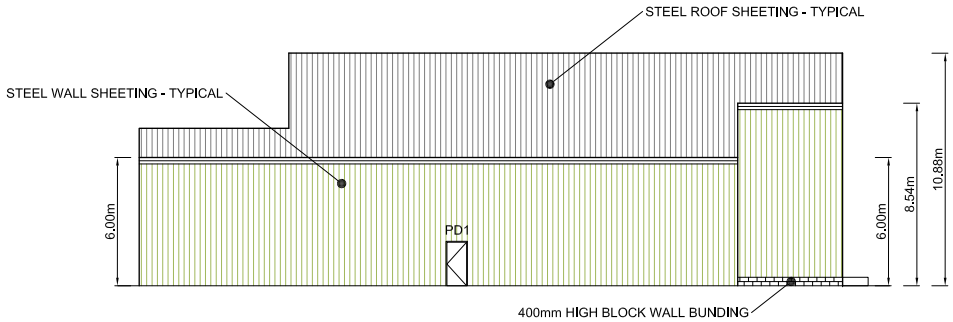


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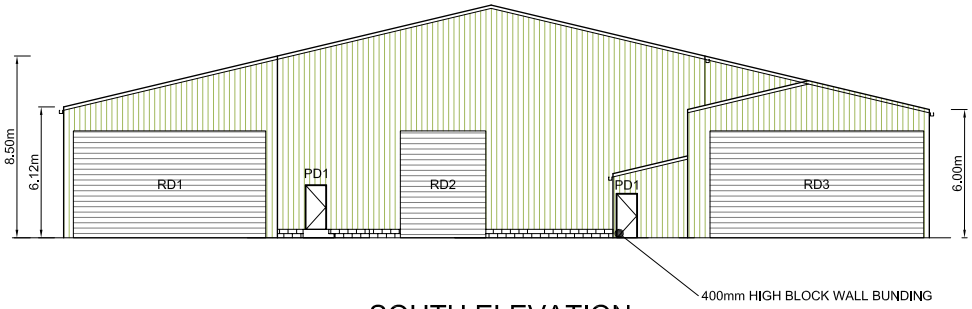


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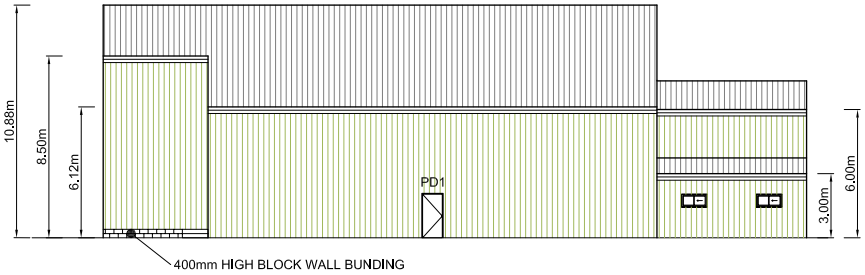


## WEST ELEVATION

SCALE 1:250

RD1 9mW x 5mH ROLLER SHUTTER
RD2 4mW x 5mH ROLLER SHUTTER
RD3 10mW x 5mH ROLLER SHUTTER
PD1 920W x 2040H PERSONNEL DOOR

SCALE 1:250(A3)

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ORGANICS BUILDING - ELEVATIONS

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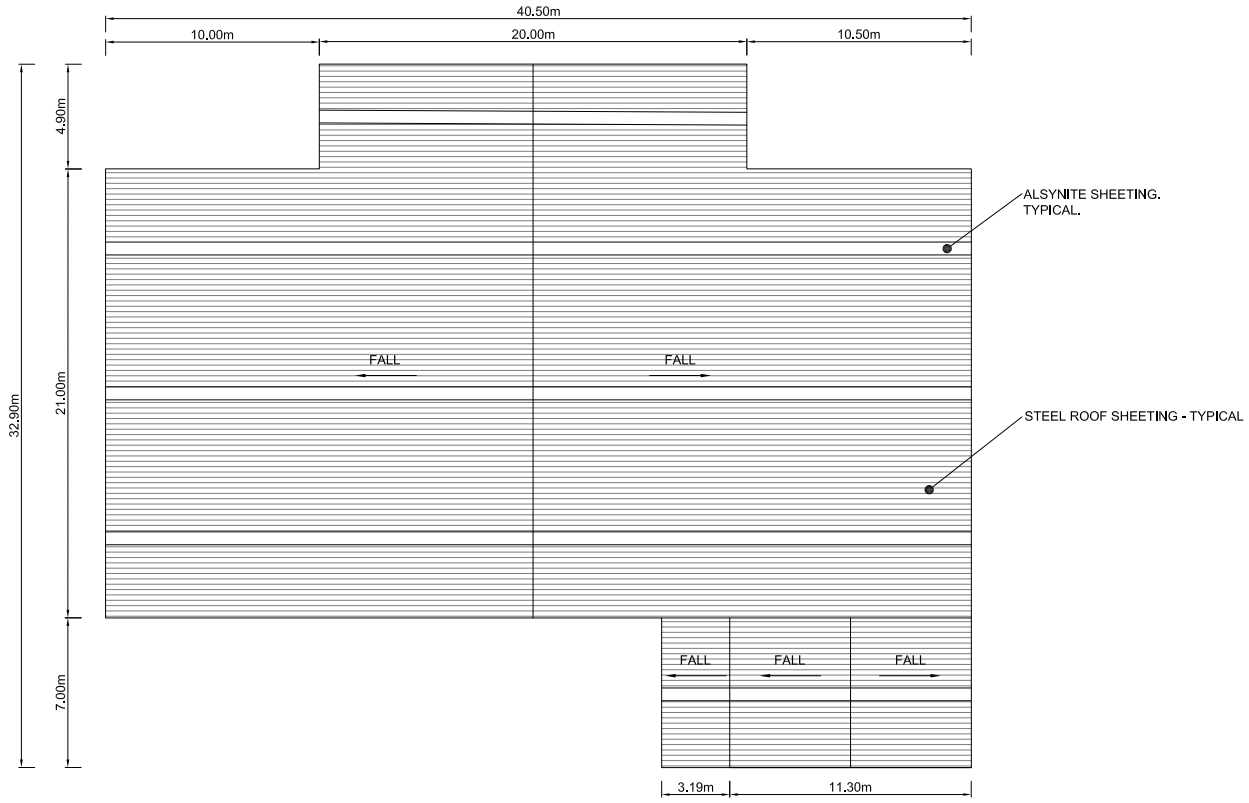


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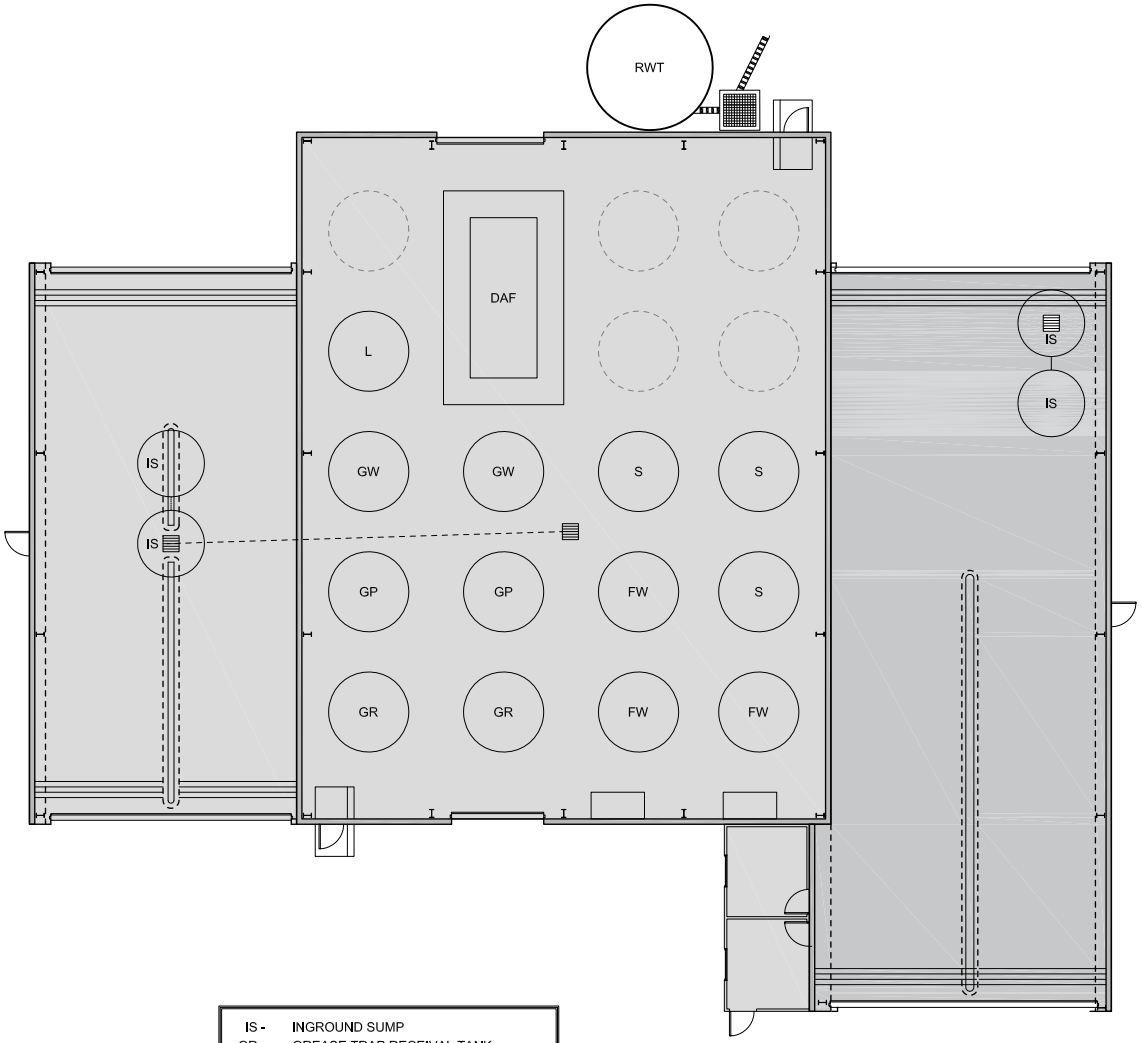


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| FW - | FOOD WASTE TANK |
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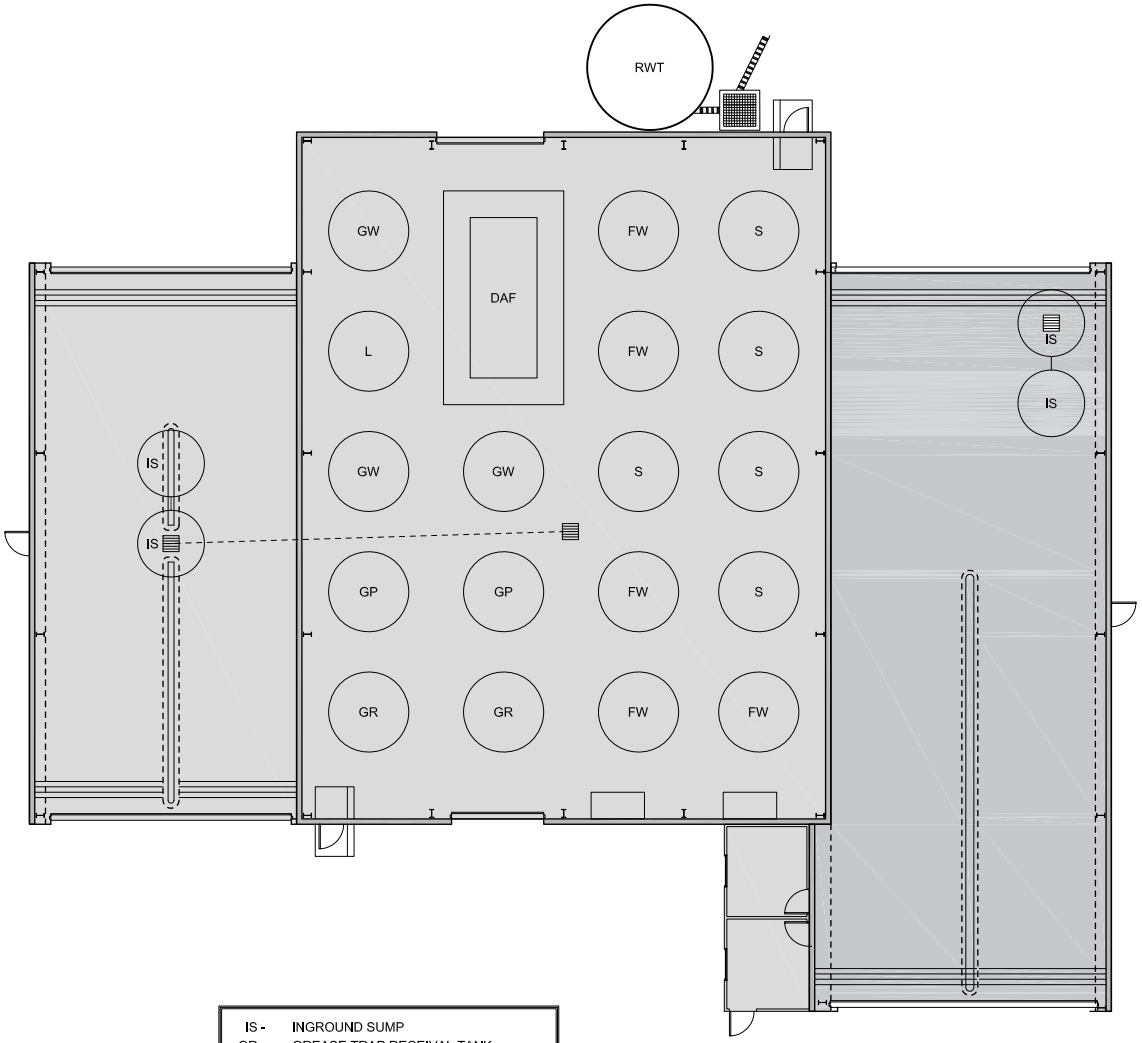


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| S - | SLUDGE TANK |
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| DAF - | DISSOLVED AIR FLOTATION UNIT |

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LIQUID WASTE FACILITY & DEPOT
14 RAYBEN ST, GLENDENNING
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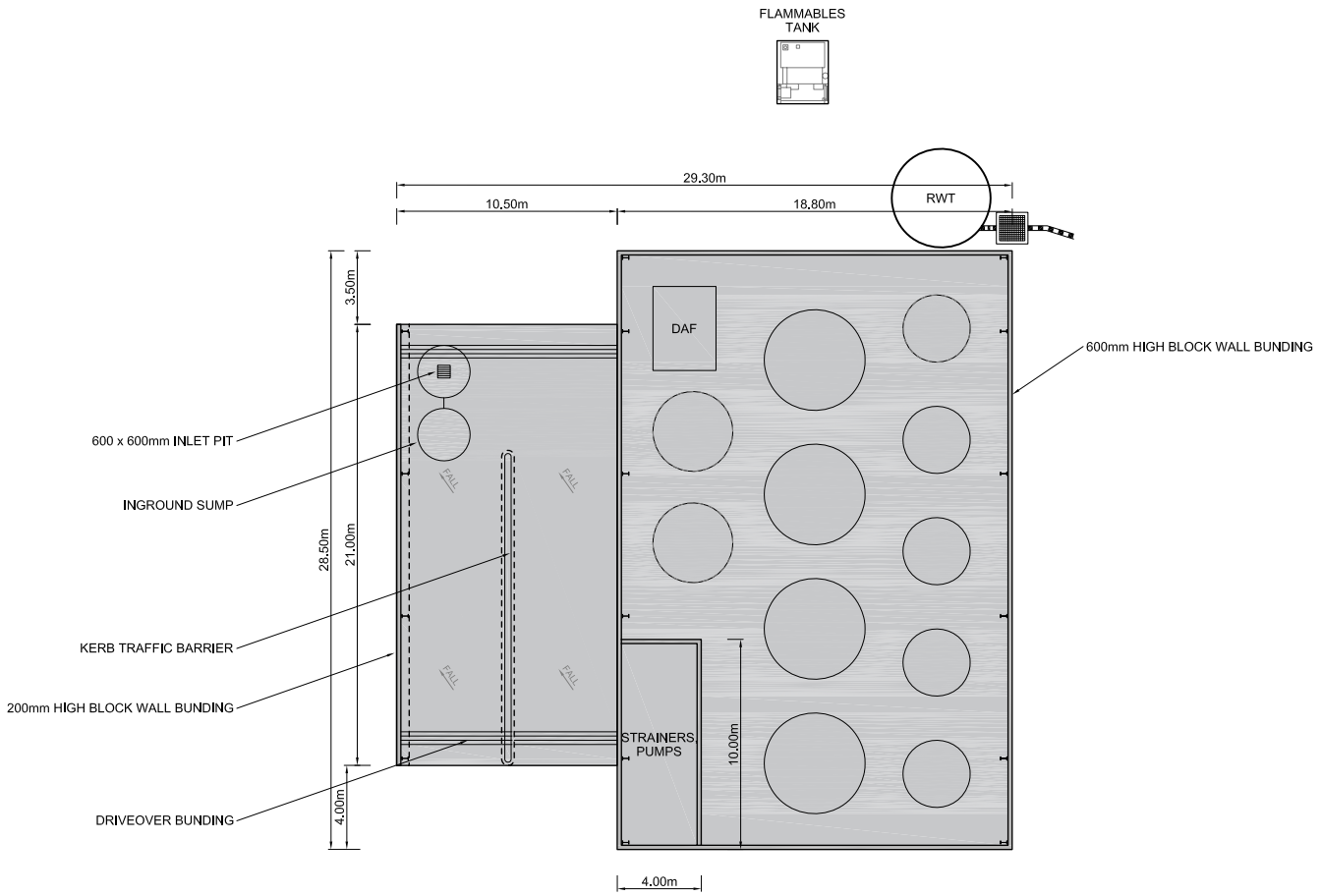


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LIQUID WASTE FACILITY & DEPOT
14 RAYBEN ST, GLENDENNING
OIL STORAGE ROOF STRUCTURE - PLAN

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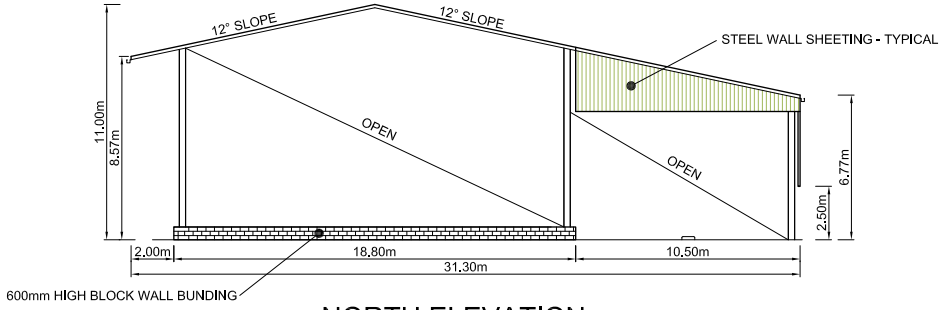


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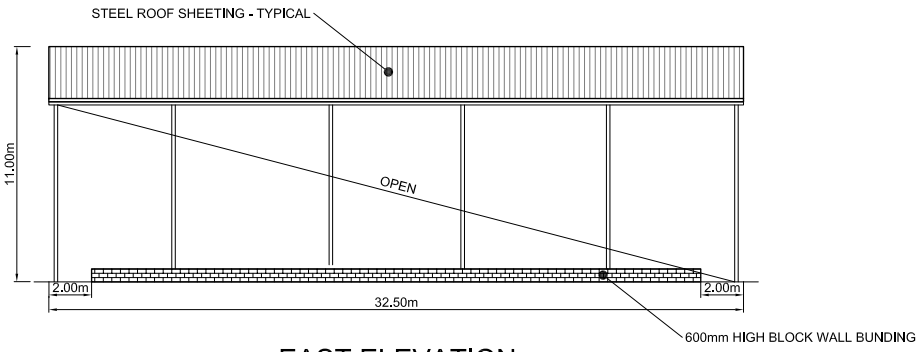


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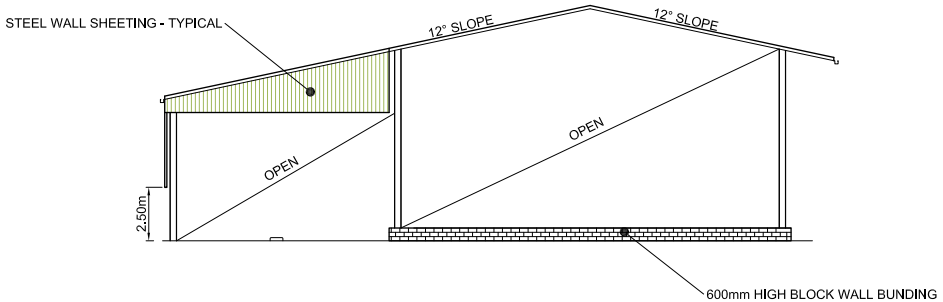


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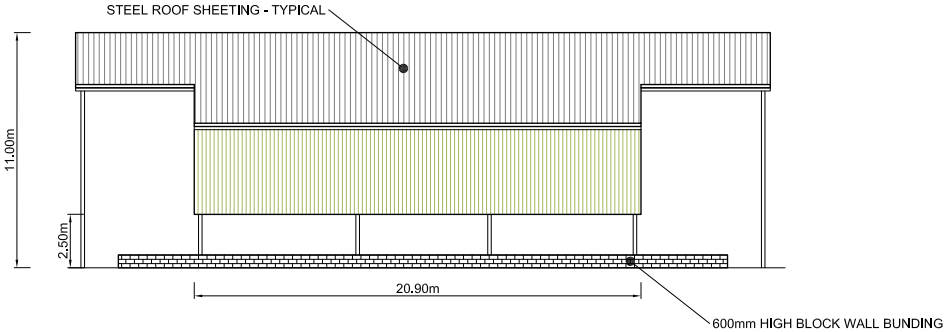


## WEST ELEVATION

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LIQUID WASTE FACILITY & DEPOT
14 RAYBEN ST, GLENDENNING
OIL STORAGE ROOF STRUCTURE - ELEVATIONS

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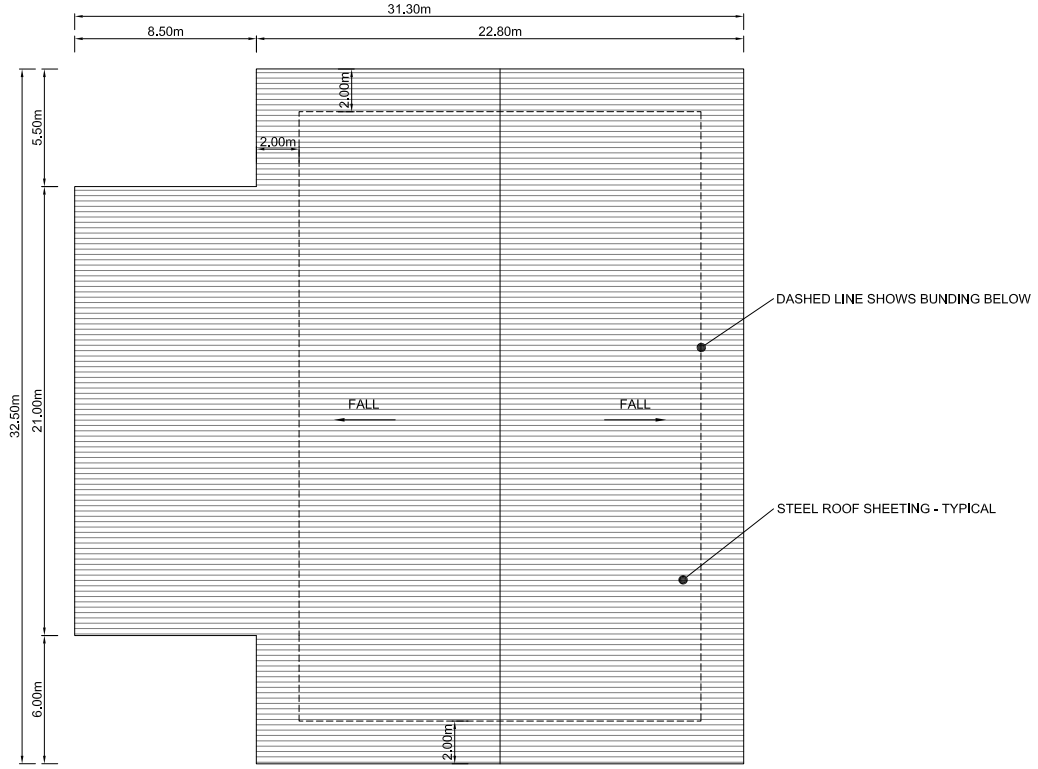


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| REVISIONS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | PLOT FILE | RI456-D0-Base.dwg | DATE | TECHNICALLY APPROVED: |
| | | | | | DESIGN | R.D. | 11/15 | |
| | | | | | DRAWN | S.M. | 11/15 | |
| | | | | | DES. CHK. | | | |
| No. | BY | DATE | DESCRIPTION | | DWG. CHK. | | | |

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*Professional Engineers, Planners and Environmental Consultants*
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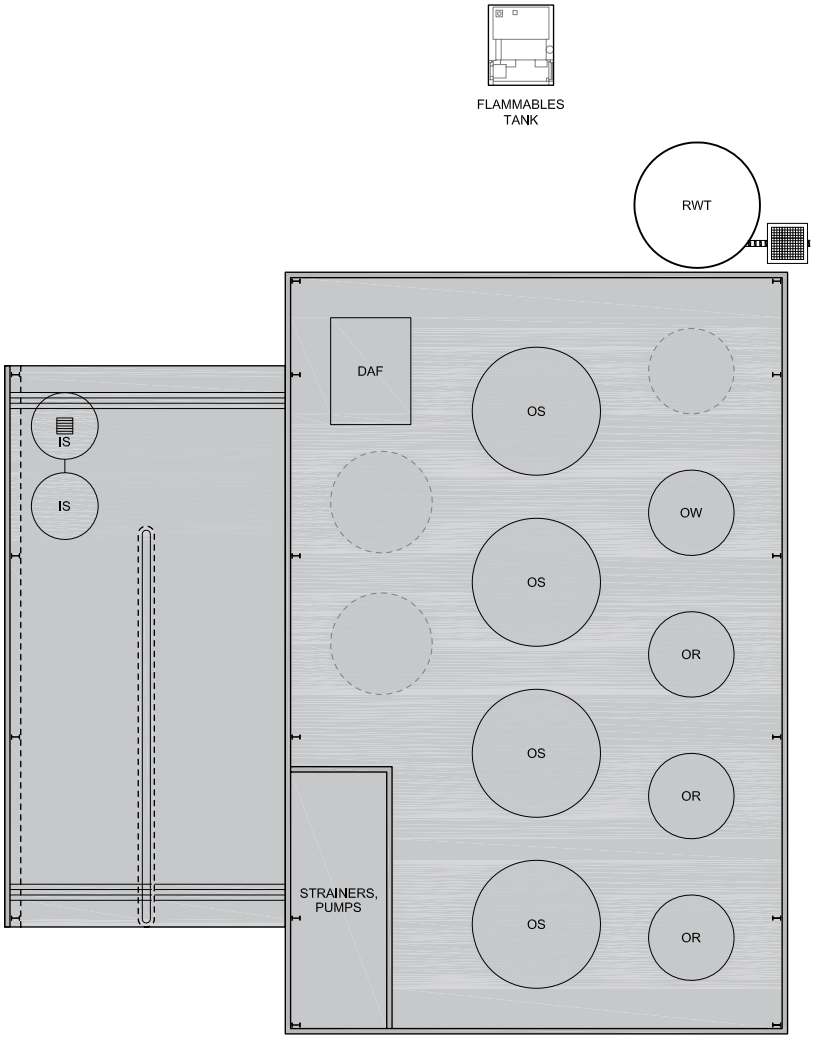
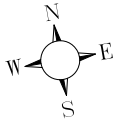
Telephone (07) 3357 3666
Facsimile (07) 3857 6233
e_mail dh@dhenv.com.au

JJ RICHARDS & SONS PTY LTD

LIQUID WASTE FACILITY & DEPOT
14 RAYBEN ST, GLENDENNING
OIL STORAGE ROOF STRUCTURE - ROOF PLAN

| | |
|---|---|
| SCALE | AS SHOWN |
| SHEET | 01 of |
| DRG No. | REVISION<br>RI456-D0-23 |




| | |
|---|---|
| IS - | INGROUND SUMP |
| IOW - | INDUSTRIAL OILY WATER TANK |
| OR - | USED OIL RECEIVAL TANK |
| OS - | USED OIL STORAGE TANK |
| OW - | OILY WATER TANK |
| DAF - | DISSOLVED AIR FLOTATION UNIT |

SCALE 1:250(A3)

| REVISIONS | | | | | | | |
|---|---|---|---|---|---|---|---|
| No. | BY | DATE | DESCRIPTION | PLOT FILE | RI456-D0-Base.dwg | DATE | TECHNICALLY APPROVED: |
| | | | | DESIGN | R.D. | 11/15 | |
| | | | | DRAWN | S.M. | 11/15 | |
| | | | | DES. CHK. | | | |
| | | | | DWG. CHK. | | | |

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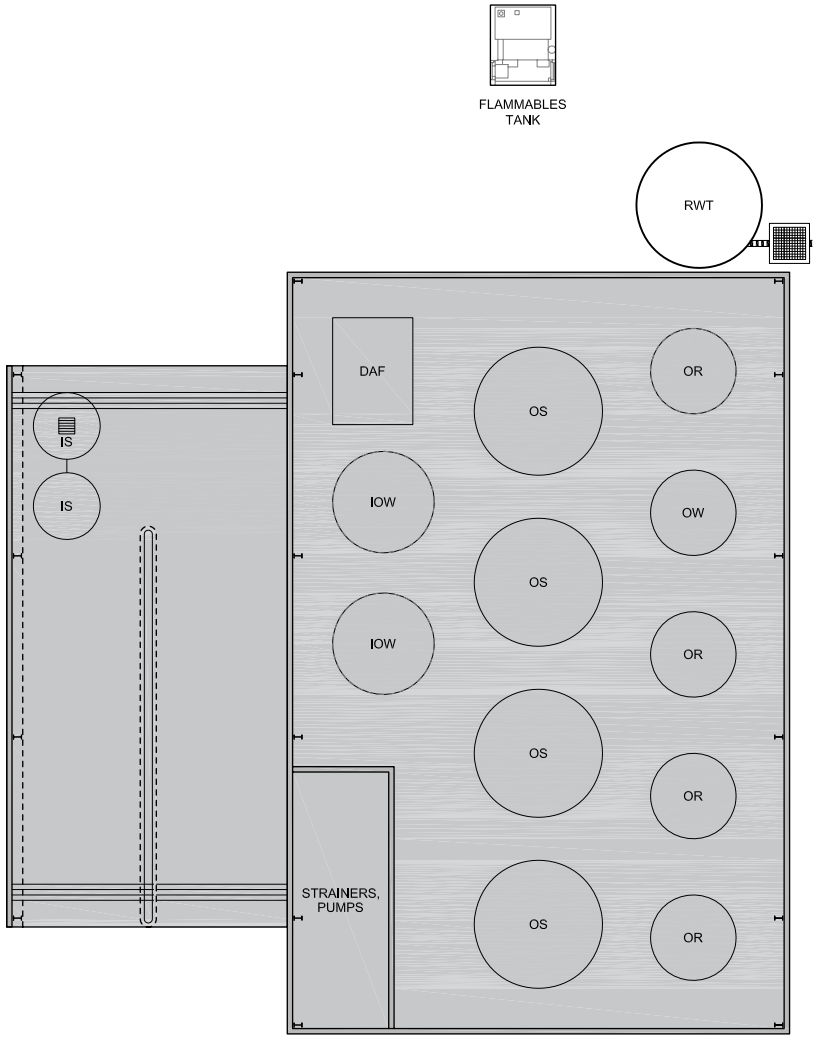
JJ RICHARDS & SONS PTY LTD

LIQUID WASTE FACILITY & DEPOT
14 RAYBEN ST, GLENDENNING
OIL STORAGE TANK FARM - INITIAL

| | |
|---|---|
| SCALE | AS SHOWN |
| SHEET | 01 of |
| DRG No. | REVISION RI456-D0-24 |




| | |
|---|---|
| IS - | INGROUND SUMP |
| IOW - | INDUSTRIAL OILY WATER TANK |
| OR - | USED OIL RECEIVAL TANK |
| OS - | USED OIL STORAGE TANK |
| OW - | OILY WATER TANK |
| DAF - | DISSOLVED AIR FLOTATION UNIT |

SCALE 1:250(A3)

| REVISIONS | | | | | | | |
|---|---|---|---|---|---|---|---|
| No. | BY | DATE | DESCRIPTION | DWG. CHK. | | | |
| | | | | DES. CHK. | | | |
| | | | | DRAWN | S.M. | 11/15 | |
| | | | | DESIGN | R.D. | 11/15 | |
| | | | | PLOT FILE | RI456-D0-Base.dwg | DATE | |

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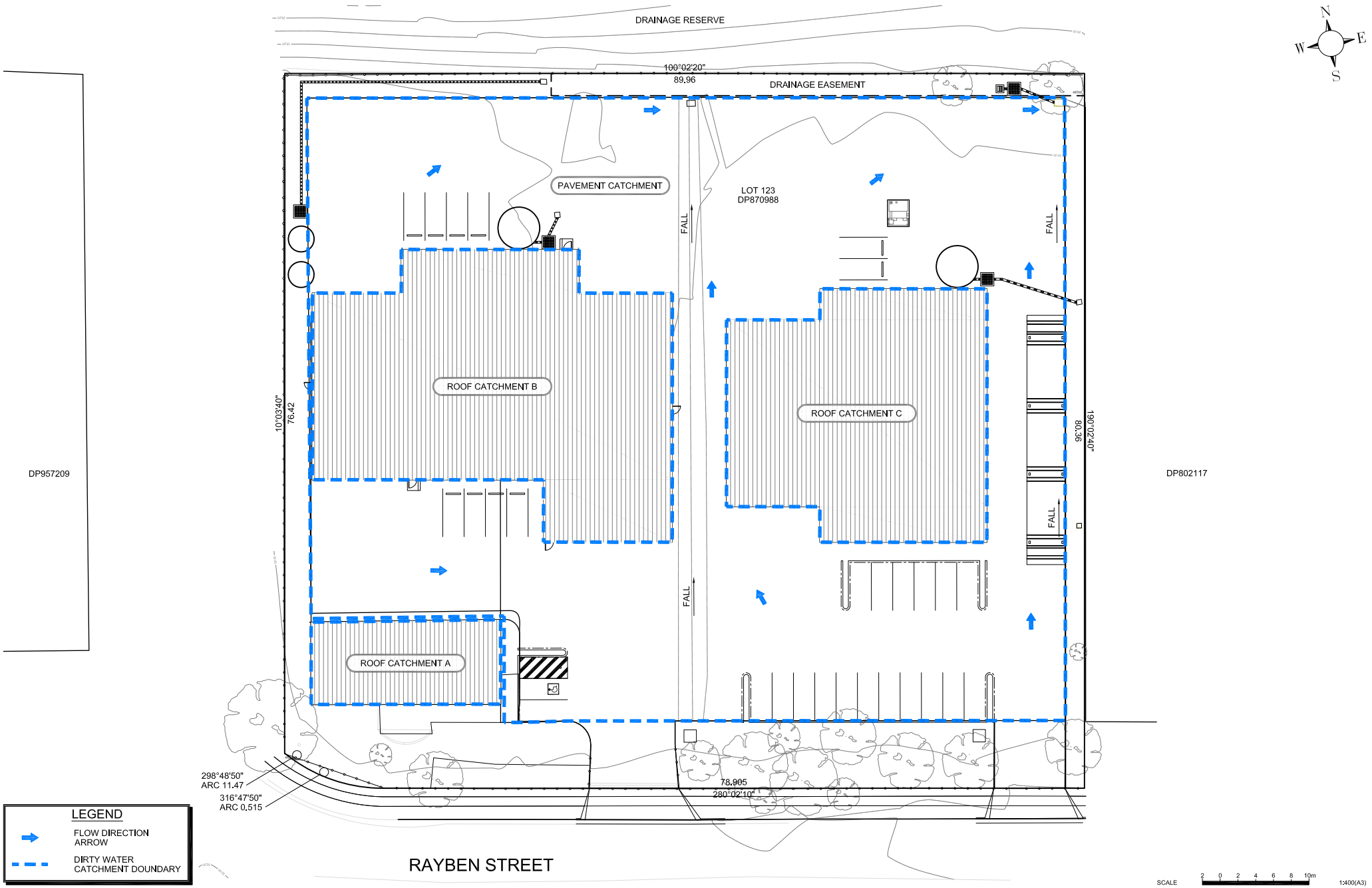
JJ RICHARDS & SONS PTY LTD

LIQUID WASTE FACILITY & DEPOT
14 RAYBEN ST, GLENDENNING
OIL STORAGE TANK FARM - FINAL

| | |
|---|---|
| SCALE | AS SHOWN |
| SHEET | 01 of |
| DRG No. | REVISION RI456-D0-25 |




| REVISIONS | | | | | | | | |
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| | | | | | PLOT FILE | RI456-D0-Base.dwg | DATE | |
| | | | | | DESIGN | R.D. | 11/15 | |
| | | | | | DRAWN | S.M. | 11/15 | |
| | | | | | DES. CHK. | | | |
| No. | BY | DATE | DESCRIPTION | | DWG. CHK. | | | |

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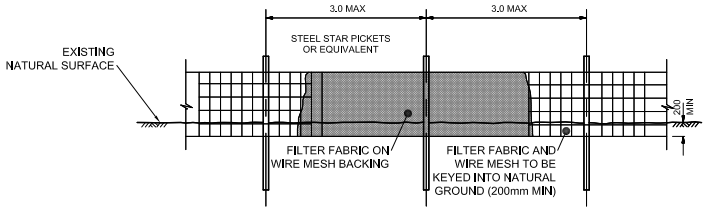
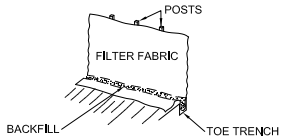
LIQUID WASTE FACILITY & DEPOT
14 RAYBEN ST, GLENDENNING
EROSION AND SEDIMENT CONTROL PLAN

| | |
|---|---|
| SCALE | AS SHOWN |
| SHEET | 01 of |
| DRG No. | REVISION RI456-D0-50 |




MAINTENANCE PROGRAM FOR SILT FENCES

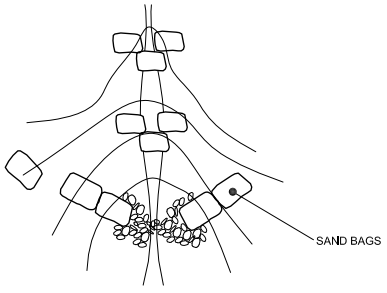
1. REGULAR INSPECTIONS WILL BE REQUIRED TO CONTROL DAMAGE CAUSE BY ON SITE VEHOCLES OR MOVEMENT OF STOCKPILES.
2. INSPECTED AFTER EACH STORM EVENT THAT RESULTS IN RUN-OFF.
3. REMOVE EXCESS SEDIMENT DEPOSITS.
4. INVESTIGATE THE SOURCE OF ANY EXCESSIVE SEDIMENT. (REFER B.C.C. EBMP GROUP 5 FIG.5.6).

NOTE : SILT MANAGEMENT

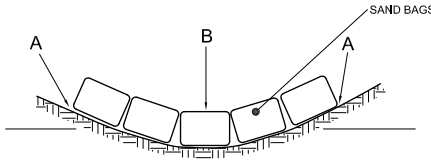
SILT FENCES ARE TO BE EMPLOYED WHERE CONDITIONS DURING CONSTRUCTION REQUIRE THE CONTROL OF ANY POSSIBLE SILT MOVEMENT ON THE SITE AS DIRECTED BY THE SUPERVISOR.

## TYPICAL SEDIMENT FENCE DETAIL

NTS




PLAN

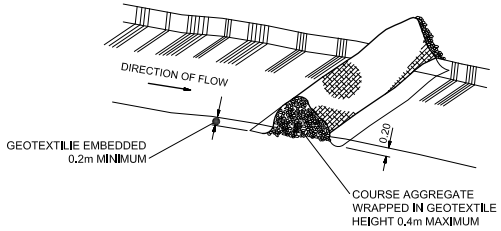



SECTION

'A' TO BE HIGHER THAN 'B' TO PREVENT SEDIMENT BYPASS

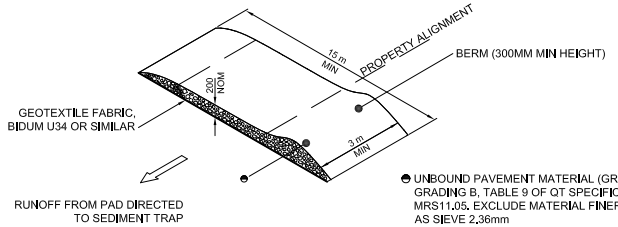
## CHECK DAM DETAIL

NTS




## TYPICAL SECTION ROCK CHECK DAM

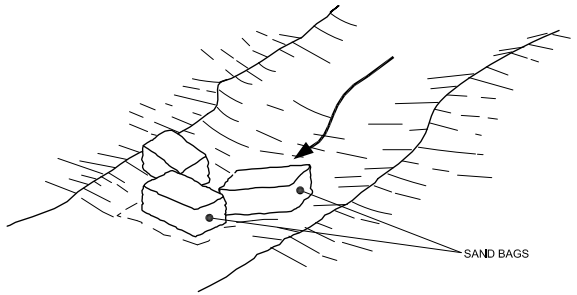
NTS




◓ UNBOUND PAVEMENT MATERIAL (GRAVEL TO GRADING B, TABLE 9 OF QT SPECIFICATION MRS11.05. EXCLUDE MATERIAL FINER THAN AS SIEVE 2.36mm

## VEHICLE SHAKEDOWN

NTS




## SAND BAG OPEN DRAIN DETAIL

NTS

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

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14 RAYBEN ST, GLENDENNING
EROSION AND SEDIMENT CONTROL DETAILS

| | |
|---|---|
| SCALE | AS SHOWN |
| SHEET | 01 of |
| DRG No. | REVISION RI456-D0-51 |

# APPENDIX B

# TRAFFIC SURVEY RESULTS

Site ID: 1

Location: Power Street & Owen Street, Doonside

Date: 4-Mar-2015

Period 1 Time: 7:00 AM to 9:00 AM

Weather: Fine

Period 1 Peak Hour: 8:00 AM to 9:00 AM


TDC Traffic Data & Control

**TOTALS AND PEAKS**

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Period 1 Total** | 630 | 32 | 1 | 0 | 34 | 11 | 0 | 0 | 5 | 22 | 1 | 1489 | 94 | 299 | 20 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 81 | 24 | 1496 | 125 | 19 | 1 | 0 | 0 | 0 | 4380 | 708 | 1925 | 1 | 1746 |
| **Period 1 Peak Hr** | 318 | 14 | 0 | 0 | 22 | 6 | 0 | 0 | 5 | 12 | 1 | 840 | 50 | 168 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 48 | 13 | 793 | 45 | 11 | 1 | 0 | 0 | 0 | 2357 | 360 | 1086 | 0 | 911 |

| | Owen Street N | Owen Street N | Owen Street N | Owen Street N | Owen Street N | Owen Street N | Owen Street N | Owen Street N | Owen Street N | Power Street E | Power Street E | Power Street E | Power Street E | Power Street E | Power Street E | Power Street E | Power Street E | Power Street E | Driveway S | Driveway S | Driveway S | Driveway S | Driveway S | Driveway S | Driveway S | Driveway S | Power Street W | Power Street W | Power Street W | Power Street W | Power Street W | Power Street W | Power Street W | Power Street W | Power Street W | GRAND TOTAL | Owen Street N | Power Street E | Driveway S | Power Street W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Left | Through | Through | Right | Right | U-turn | U-turn | Cross 1 | Left | Left | Through | Through | Right | Right | U-turn | U-turn | Cross 1 | Left | Left | Through | Through | Right | Right | U-turn | U-turn | Cross 1 | Left | Left | Through | Through | Right | Right | U-turn | U-turn | Cross 1 | | TOTAL | TOTAL | TOTAL | TOTAL |
| Time Starting | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Pedestrians | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Pedestrians | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Pedestrians | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Pedestrians | TOTALS | All Classes | All Classes | All Classes | All Classes |
| 07:00 | 79 | 6 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 141 | 9 | 31 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 4 | 179 | 29 | 0 | 0 | 0 | 0 | 0 | **489** | 87 | 185 | 0 | 217 |
| 07:15 | 77 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 142 | 6 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 3 | 167 | 26 | 1 | 0 | 0 | 0 | 0 | **465** | 80 | 181 | 0 | 204 |
| 07:30 | 85 | 8 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 162 | 13 | 35 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 3 | 195 | 14 | 3 | 0 | 0 | 0 | 0 | **534** | 96 | 211 | 1 | 226 |
| 07:45 | 71 | 3 | 1 | 0 | 7 | 3 | 0 | 0 | 0 | 7 | 0 | 204 | 16 | 33 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 1 | 162 | 11 | 4 | 0 | 0 | 0 | 0 | **535** | 85 | 262 | 0 | 188 |
| 08:00 | 90 | 4 | 0 | 0 | 4 | 2 | 0 | 0 | 3 | 3 | 0 | 221 | 12 | 33 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 1 | 231 | 16 | 3 | 0 | 0 | 0 | 0 | **636** | 100 | 275 | 0 | 261 |
| 08:15 | 85 | 2 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 216 | 10 | 31 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 218 | 10 | 0 | 0 | 0 | 0 | 0 | **597** | 90 | 266 | 0 | 241 |
| 08:30 | 77 | 4 | 0 | 0 | 5 | 2 | 0 | 0 | 1 | 3 | 1 | 172 | 16 | 47 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 6 | 196 | 7 | 2 | 0 | 0 | 0 | 0 | **552** | 88 | 241 | 0 | 223 |
| 08:45 | 66 | 4 | 0 | 0 | 11 | 1 | 0 | 0 | 1 | 4 | 0 | 231 | 12 | 57 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 6 | 148 | 12 | 6 | 1 | 0 | 0 | 0 | **572** | 82 | 304 | 0 | 186 |

Site ID: 1

Location: Power Street & Owen Street, Doonside

Date: 4-Mar-2015

Period 2 Time: 3:00 PM to 6:00 PM

Weather: Fine

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


TDC Traffic Data & Control

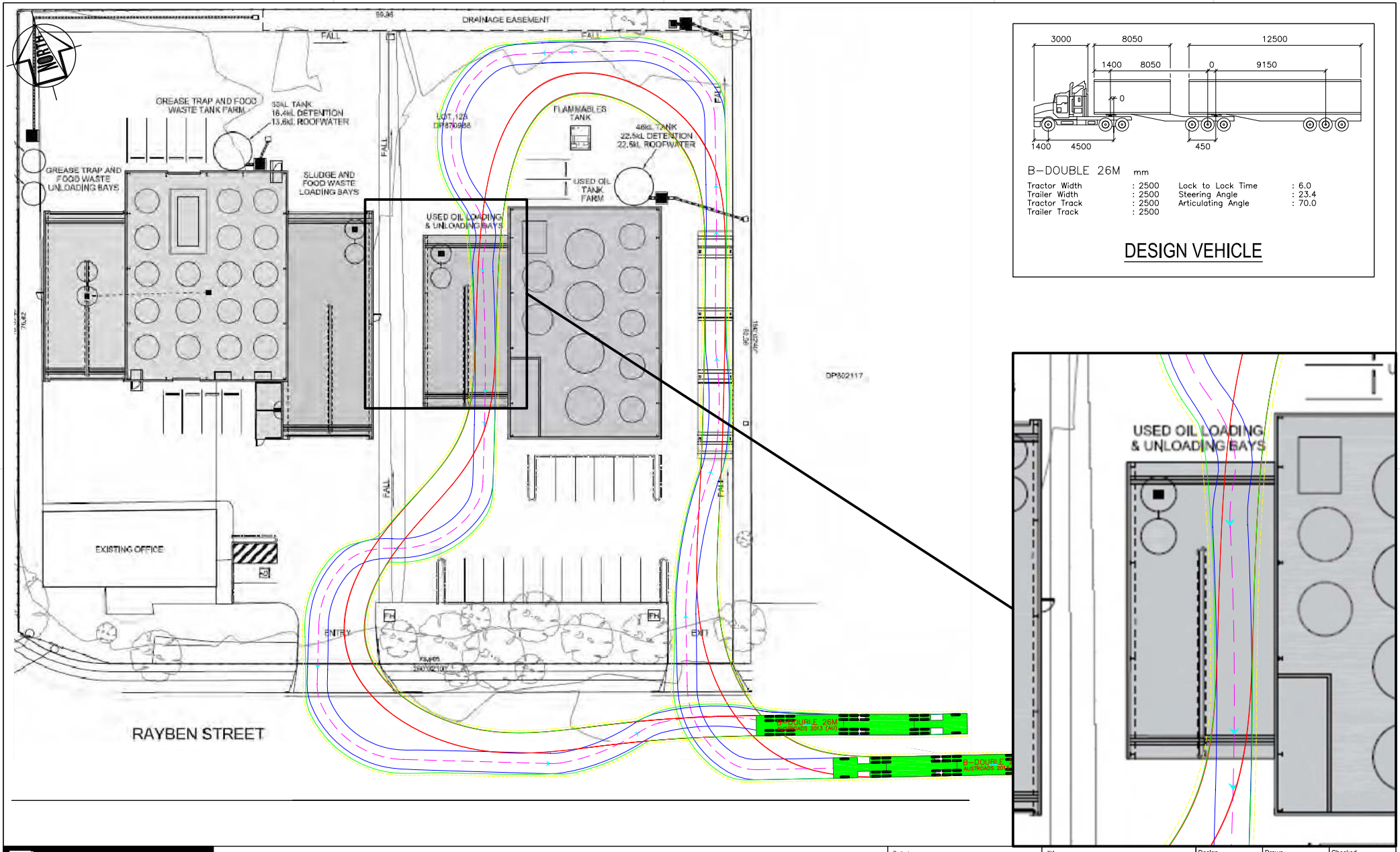
**TOTALS AND PEAKS**

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Period 2 Total** | 693 | 20 | 0 | 0 | 89 | 11 | 0 | 0 | 3 | 4 | 0 | 2923 | 176 | 806 | 24 | 0 | 0 | 0 | 31 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 86 | 63 | 1874 | 81 | 2 | 10 | 0 | 0 | 0 | 6897 | 813 | 3933 | 35 | 2116 |
| **Period 2 Peak Hr** | 229 | 8 | 0 | 0 | 33 | 5 | 0 | 0 | 2 | 1 | 0 | 1030 | 70 | 262 | 11 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 24 | 670 | 31 | 1 | 6 | 0 | 0 | 0 | 2419 | 275 | 1374 | 9 | 761 |

| | Owen Street N | Owen Street N | Owen Street N | Owen Street N | Owen Street N | Owen Street N | Owen Street N | Owen Street N | Owen Street N | Power Street E | Power Street E | Power Street E | Power Street E | Power Street E | Power Street E | Power Street E | Power Street E | Power Street E | Driveway S | Driveway S | Driveway S | Driveway S | Driveway S | Driveway S | Driveway S | Power Street W | Power Street W | Power Street W | Power Street W | Power Street W | Power Street W | Power Street W | Power Street W | Power Street W | GRAND TOTAL | Owen Street N | Power Street E | Driveway S | Power Street W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Left | Through | Through | Right | Right | U-turn | U-turn | Cross 1 | Left | Left | Through | Through | Right | Right | U-turn | U-turn | Cross 1 | Left | Left | Through | Through | Right | Right | U-turn | U-turn | Cross 1 | Left | Left | Through | Through | Right | Right | U-turn | U-turn | Cross 1 | | TOTAL | TOTAL | TOTAL | TOTAL |
| Time Starting | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Pedestrians | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Pedestrians | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Pedestrians | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Light Vehicles | Trucks | Pedestrians | TOTALS | All Classes | All Classes | All Classes | All Classes |
| 15:00 | 74 | 3 | 0 | 0 | 7 | 3 | 0 | 0 | 0 | 1 | 0 | 189 | 16 | 57 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 6 | 183 | 17 | 0 | 0 | 0 | 0 | 0 | **564** | 87 | 265 | 1 | 211 |
| 15:15 | 56 | 4 | 0 | 0 | 9 | 1 | 0 | 0 | 0 | 1 | 0 | 207 | 13 | 56 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 7 | 157 | 11 | 0 | 1 | 0 | 0 | 0 | **529** | 70 | 280 | 0 | 179 |
| 15:30 | 68 | 1 | 0 | 0 | 11 | 2 | 0 | 0 | 1 | 0 | 0 | 288 | 26 | 78 | 1 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 5 | 174 | 6 | 0 | 1 | 0 | 0 | 0 | **671** | 82 | 393 | 3 | 193 |
| 15:45 | 48 | 2 | 0 | 0 | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 258 | 22 | 60 | 6 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 4 | 164 | 8 | 0 | 4 | 0 | 0 | 0 | **597** | 64 | 346 | 2 | 185 |
| 16:00 | 62 | 1 | 0 | 0 | 8 | 0 | 0 | 0 | 1 | 1 | 0 | 246 | 12 | 59 | 2 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 4 | 193 | 8 | 1 | 1 | 0 | 0 | 0 | **613** | 71 | 320 | 4 | 218 |
| 16:15 | 51 | 4 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 238 | 10 | 65 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 11 | 139 | 9 | 0 | 0 | 0 | 0 | 0 | **538** | 58 | 315 | 0 | 165 |
| 16:30 | 82 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 1 | 0 | 280 | 18 | 54 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 4 | 181 | 6 | 0 | 2 | 0 | 0 | 0 | **649** | 90 | 356 | 2 | 201 |
| 16:45 | 36 | 0 | 0 | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 198 | 13 | 67 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 7 | 121 | 4 | 1 | 0 | 0 | 0 | 0 | **462** | 43 | 278 | 5 | 136 |
| 17:00 | 62 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 1 | 0 | 0 | 315 | 18 | 83 | 1 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 9 | 152 | 4 | 0 | 1 | 0 | 0 | 0 | **688** | 70 | 417 | 15 | 186 |
| 17:15 | 45 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 189 | 5 | 65 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 131 | 2 | 0 | 0 | 0 | 0 | 0 | **457** | 53 | 261 | 2 | 141 |
| 17:30 | 61 | 0 | 0 | 0 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 268 | 16 | 88 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 139 | 5 | 0 | 0 | 0 | 0 | 0 | **594** | 70 | 373 | 0 | 151 |
| 17:45 | 48 | 1 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 247 | 7 | 74 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 140 | 1 | 0 | 0 | 0 | 0 | 0 | **535** | 55 | 329 | 1 | 150 |

# 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





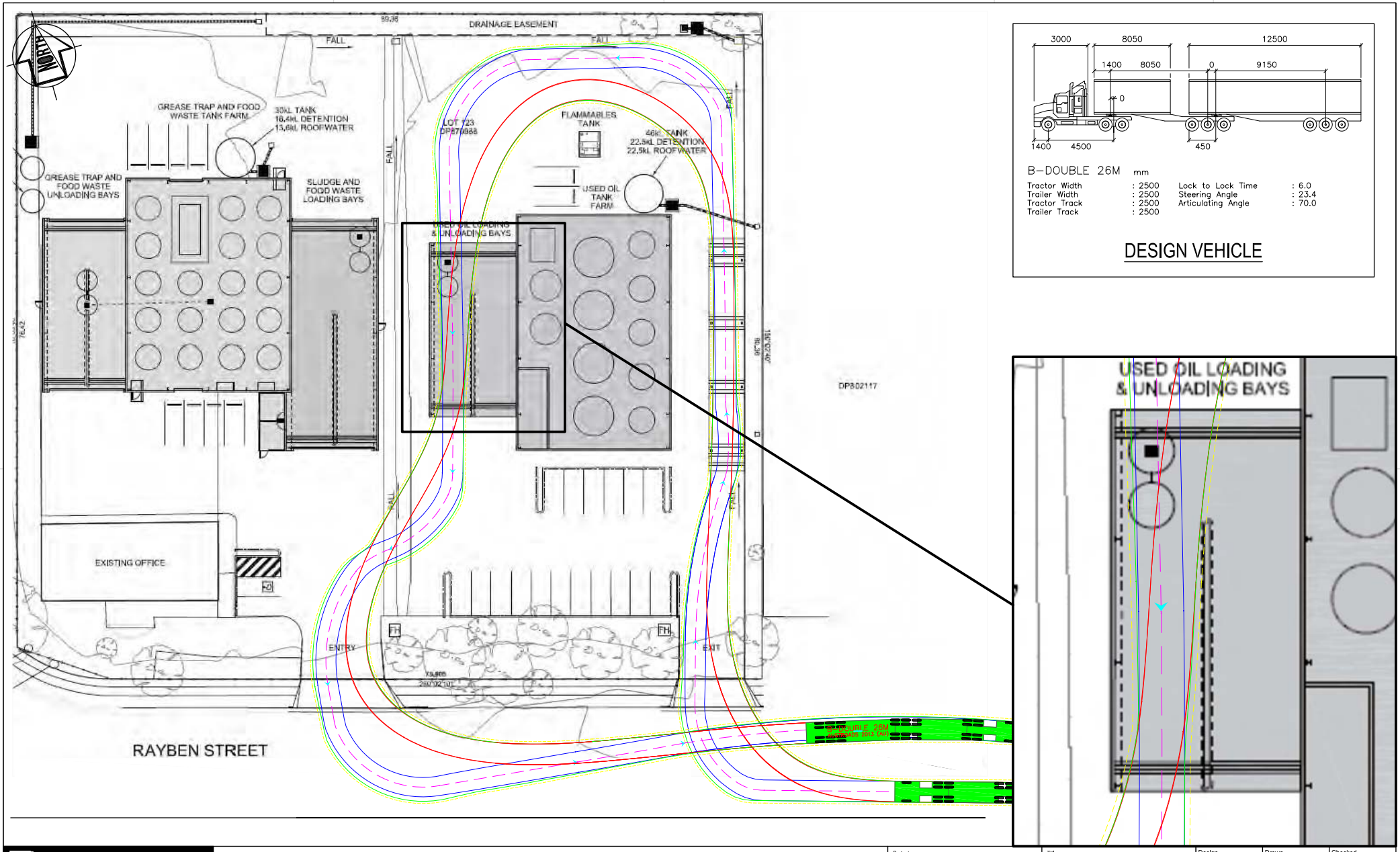
**BITZIOS consulting**
traffic engineering ■ transport planning

**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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traffic engineering ■ transport planning

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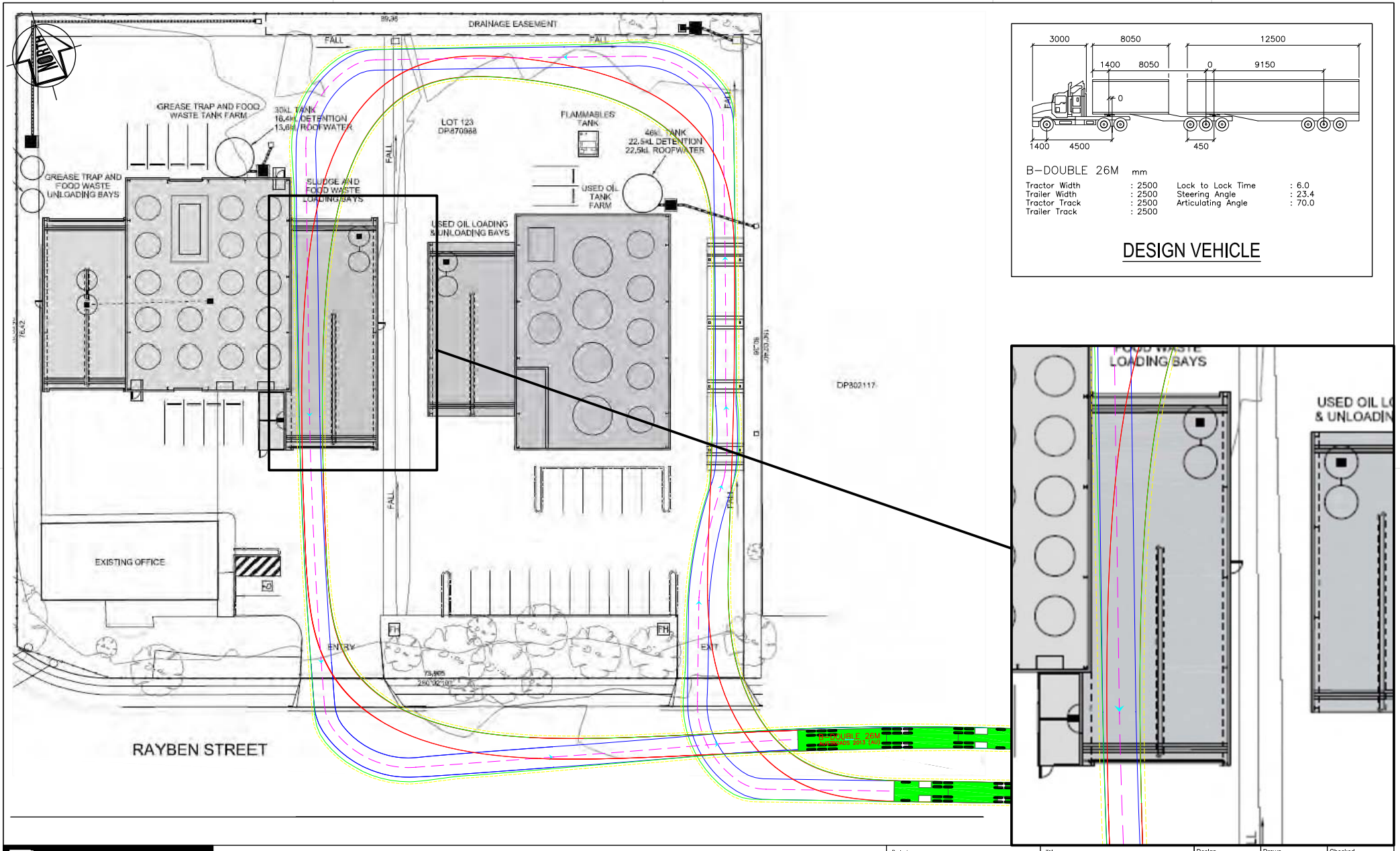
E: admin@bitziosconsulting.com.au

**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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**Gold Coast**
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W: www.bitziosconsulting.com.au

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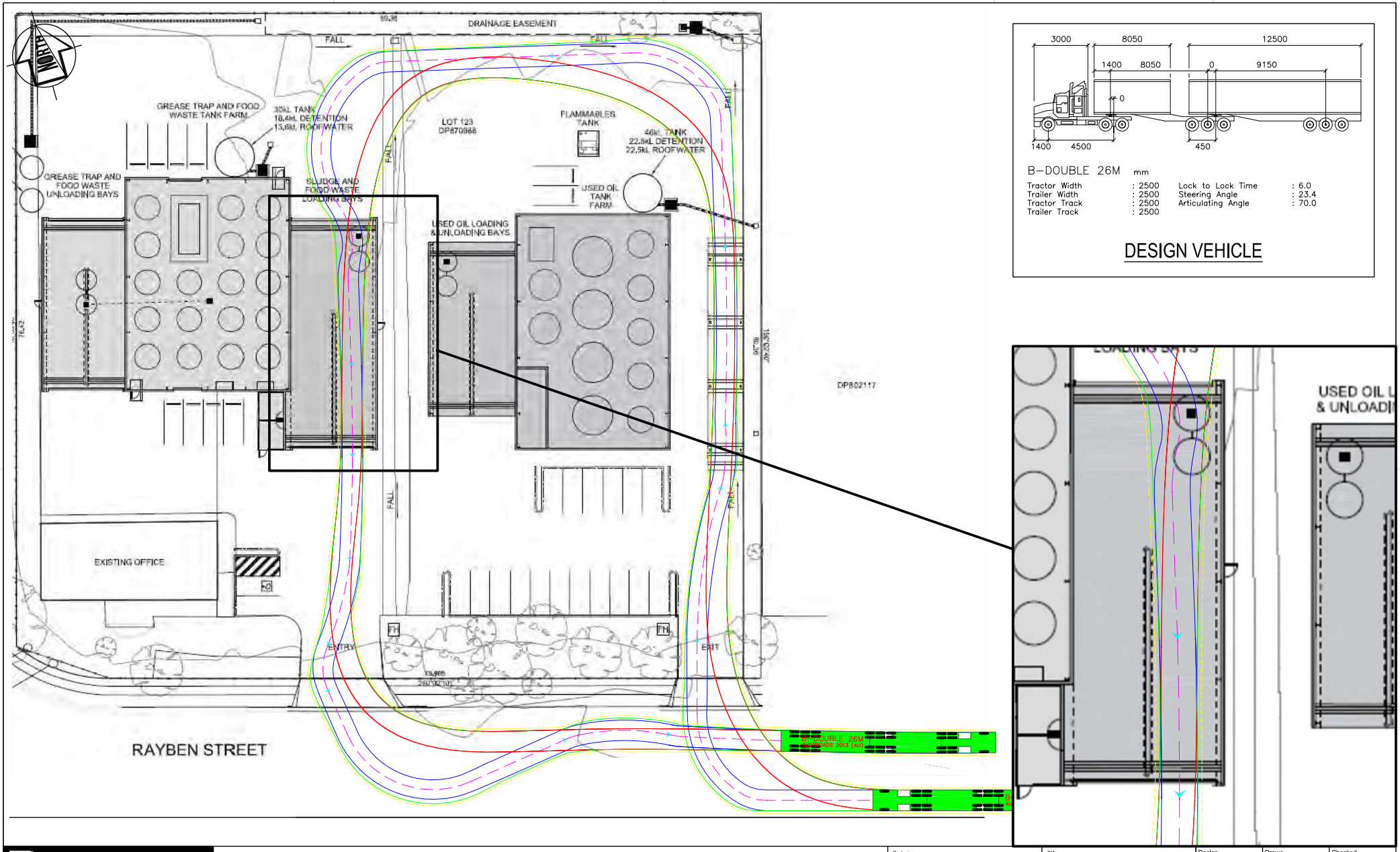
**Sydney**
Studio 203, 3 Gladstone Street, Newtown NSW 2042.
P: (02) 9557 6202


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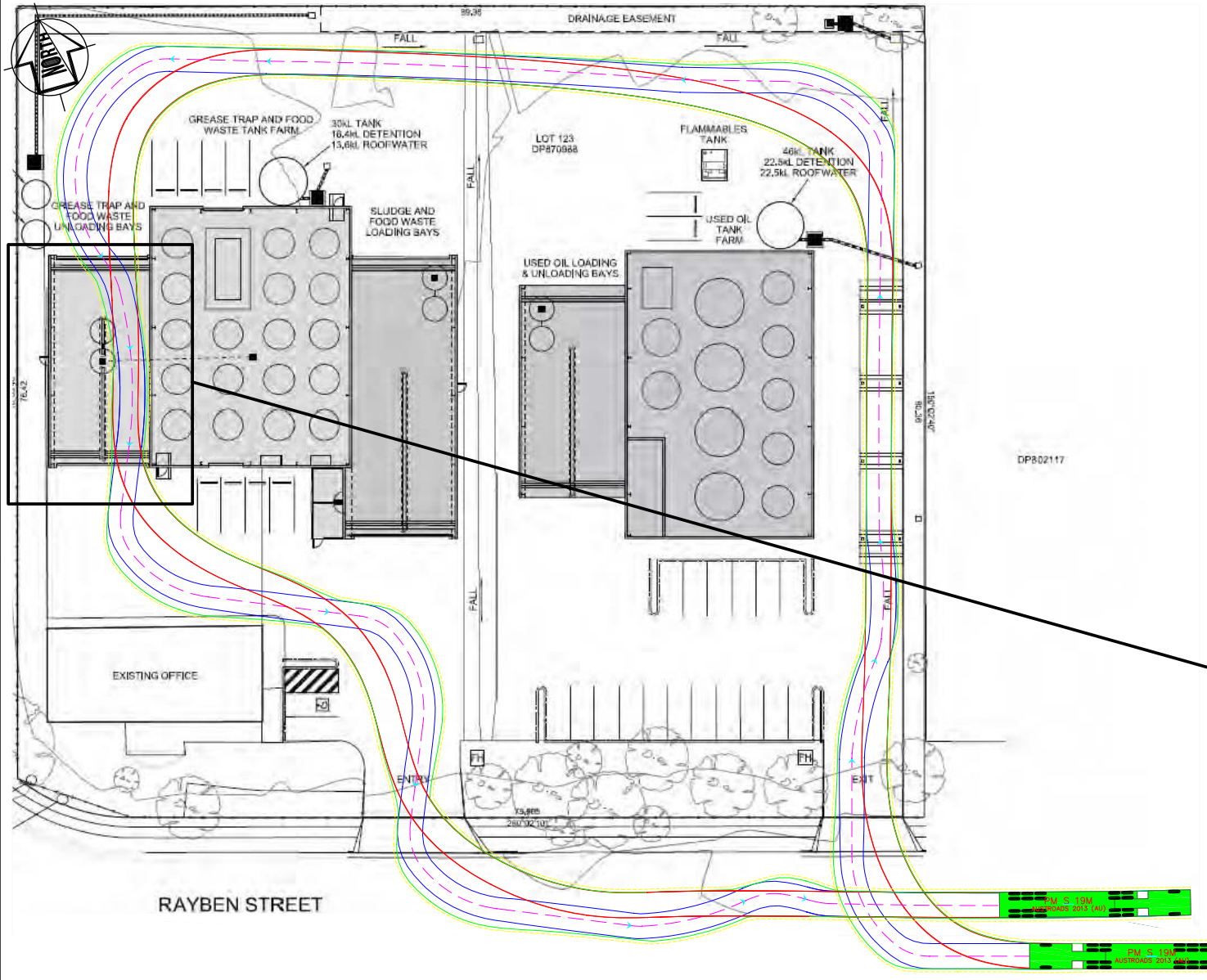
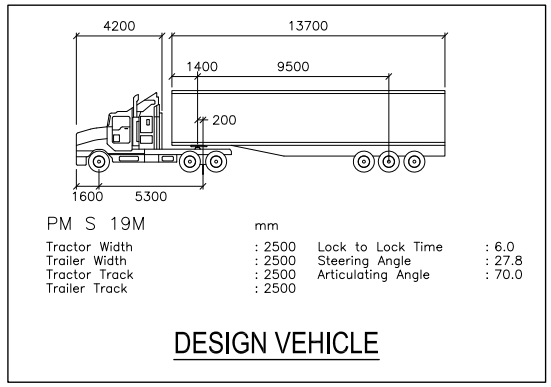
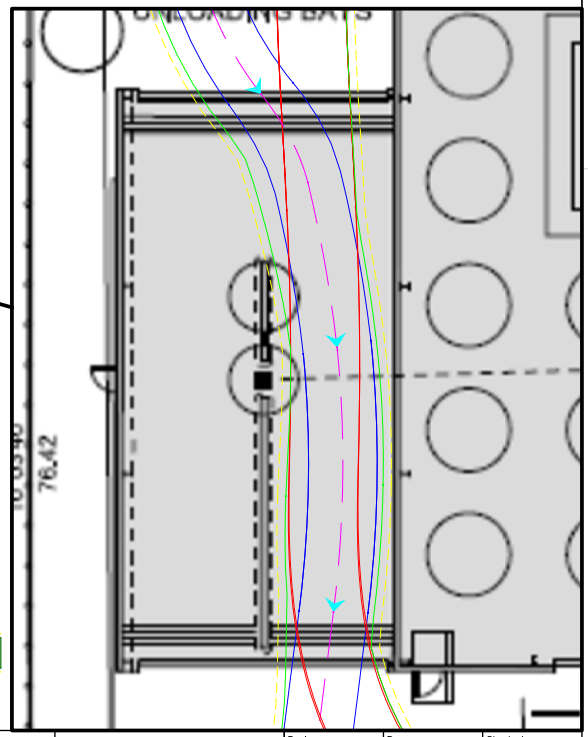
| | | | |
|---|---|---|---|
| Project: 14 Rayben Street, Glendenning Proposed Industrial Development | Title: Sludge and Food Waste Loading Bays - 2 26m B Double | Design: M.D | Drawn: M.D |
| | | Checked: A.P | |
| | | NOT FOR CONSTRUCTION | Date: 12/02/2016 |
| | | Project Number / Sheet: P1987 /004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





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**Sydney**
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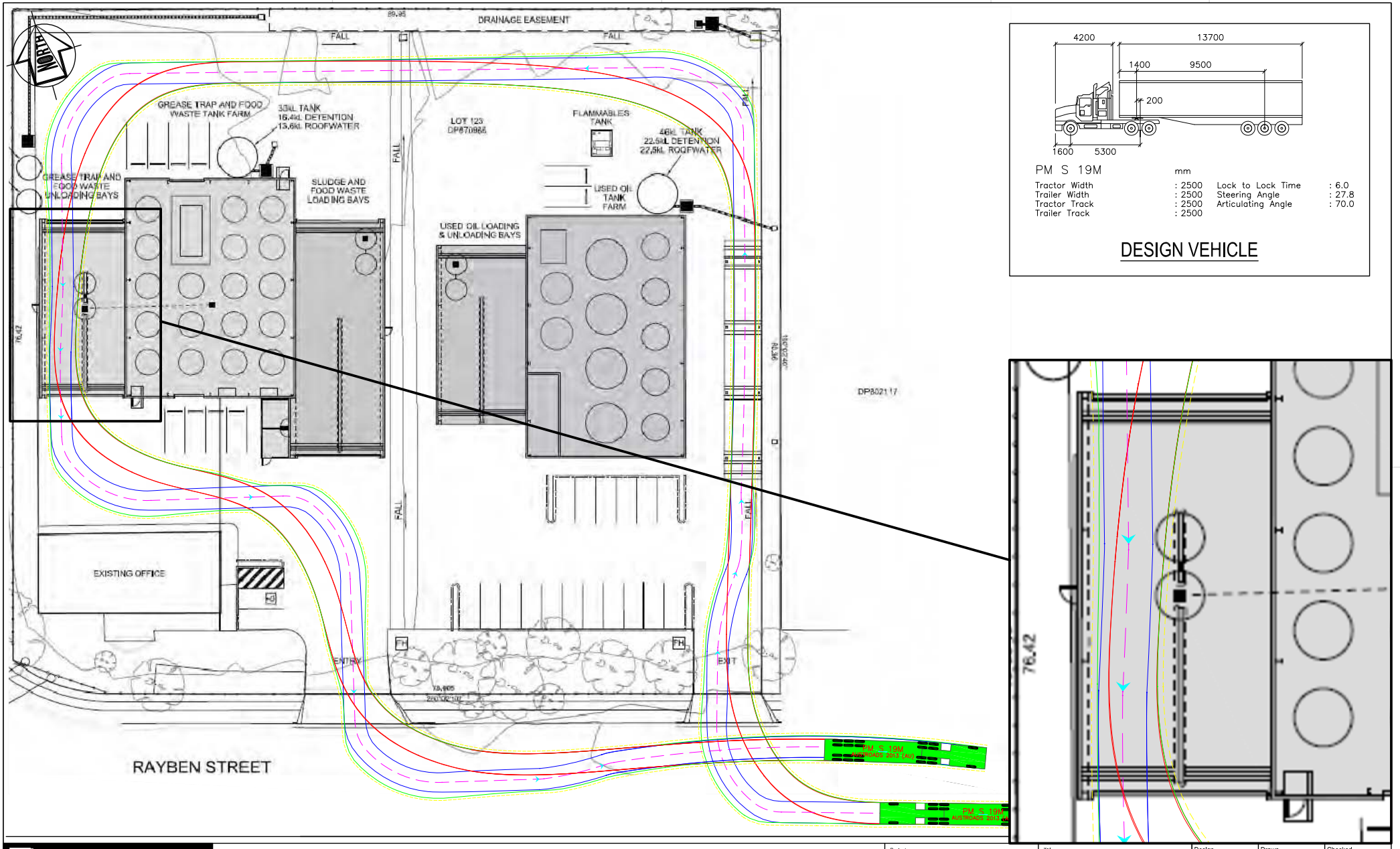
P: (02) 9557 6202


| | | | |
|---|---|---|---|
| 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 |







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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**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 |

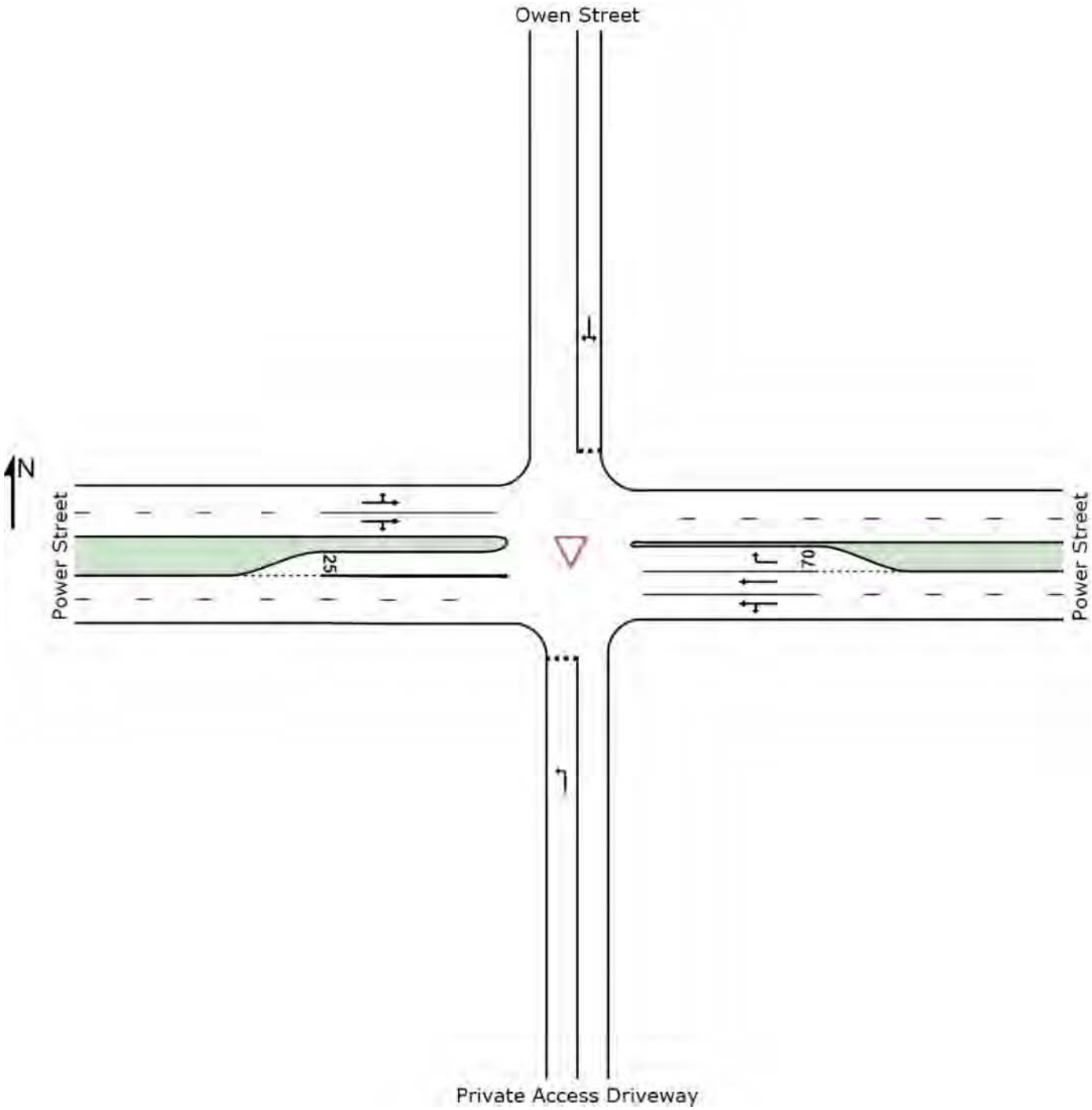
# APPENDIX D

# SIDRA OUTPUT SHEETS

# SITE LAYOUT

## Site: LAYOUT

Owen Street / Power Street / Private Access Driveway
Giveway / Yield (Two-Way)



# MOVEMENT SUMMARY

## Site: 2016 AM Peak Existing

Owen Street / Power Street / Private Access Driveway
Giveway / Yield (Two-Way)

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand 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 per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Private Access Driveway | | | | | | | | | | | |
| 1 | L2 | 1 | 0.0 | 0.001 | 2.2 | LOS A | 0.0 | 0.0 | 0.46 | 0.26 | 28.8 |
| Approach | | 1 | 0.0 | 0.001 | 2.2 | LOS A | 0.0 | 0.0 | 0.46 | 0.26 | 28.8 |
| East: Power Street | | | | | | | | | | | |
| 4 | L2 | 14 | 7.7 | 0.260 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 57.8 |
| 5 | T1 | 956 | 5.6 | 0.260 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.01 | 59.9 |
| 6 | R2 | 196 | 8.1 | 0.663 | 26.4 | LOS D | 3.5 | 26.3 | 0.90 | 1.16 | 40.9 |
| Approach | | 1165 | 6.1 | 0.663 | 4.5 | NA | 3.5 | 26.3 | 0.15 | 0.20 | 55.5 |
| NorthEast: Median Storage | | | | | | | | | | | |
| 26a | R1 | 29 | 21.4 | 0.077 | 13.3 | LOS B | 0.3 | 2.2 | 0.76 | 0.88 | 48.1 |
| Approach | | 29 | 21.4 | 0.077 | 13.3 | LOS B | 0.3 | 2.2 | 0.76 | 0.88 | 48.1 |
| North: Owen Street | | | | | | | | | | | |
| 7 | L2 | 356 | 4.1 | 0.904 | 35.0 | LOS D | 10.2 | 74.5 | 0.96 | 1.71 | 37.4 |
| 9 | R2 | 29 | 21.4 | 0.904 | 34.5 | LOS D | 10.2 | 74.5 | 0.96 | 1.71 | 37.1 |
| Approach | | 385 | 5.5 | 0.904 | 34.9 | LOS D | 10.2 | 74.5 | 0.96 | 1.71 | 37.4 |
| West: Power Street | | | | | | | | | | | |
| 10 | L2 | 65 | 21.0 | 0.280 | 5.8 | LOS A | 0.0 | 0.0 | 0.00 | 0.07 | 56.7 |
| 11 | T1 | 900 | 5.4 | 0.280 | 0.8 | LOS A | 0.9 | 6.4 | 0.06 | 0.05 | 58.7 |
| 12 | R2 | 13 | 8.3 | 0.280 | 20.7 | LOS C | 0.9 | 6.4 | 0.13 | 0.02 | 30.3 |
| Approach | | 978 | 6.5 | 0.280 | 1.4 | NA | 0.9 | 6.4 | 0.06 | 0.05 | 57.8 |
| All Vehicles | | 2559 | 6.3 | 0.904 | 8.0 | NA | 10.2 | 74.5 | 0.24 | 0.38 | 52.4 |

Level of Service (LOS) Method: Delay (HCM 2000).
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: 2016 PM Peak Existing

Owen Street / Power Street / Private Access Driveway
Giveway / Yield (Two-Way)

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand 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 per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Private Access Driveway | | | | | | | | | | | |
| 1 | L2 | 6 | 0.0 | 0.009 | 3.3 | LOS A | 0.0 | 0.2 | 0.52 | 0.39 | 28.6 |
| Approach | | 6 | 0.0 | 0.009 | 3.3 | LOS A | 0.0 | 0.2 | 0.52 | 0.39 | 28.6 |
| East: Power Street | | | | | | | | | | | |
| 4 | L2 | 2 | 50.0 | 0.319 | 6.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 55.8 |
| 5 | T1 | 1181 | 6.3 | 0.319 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| 6 | R2 | 281 | 0.0 | 0.679 | 20.5 | LOS C | 4.3 | 29.9 | 0.86 | 1.17 | 44.0 |
| Approach | | 1464 | 5.2 | 0.679 | 4.0 | NA | 4.3 | 29.9 | 0.16 | 0.23 | 56.0 |
| NorthEast: Median Storage | | | | | | | | | | | |
| 26a | R1 | 8 | 62.5 | 0.060 | 30.2 | LOS D | 0.2 | 2.0 | 0.89 | 0.95 | 38.8 |
| Approach | | 8 | 62.5 | 0.060 | 30.2 | LOS D | 0.2 | 2.0 | 0.89 | 0.95 | 38.8 |
| North: Owen Street | | | | | | | | | | | |
| 7 | L2 | 255 | 3.3 | 0.504 | 14.2 | LOS B | 2.7 | 19.4 | 0.75 | 1.02 | 47.4 |
| 9 | R2 | 8 | 62.5 | 0.504 | 18.0 | LOS C | 2.7 | 19.4 | 0.75 | 1.02 | 45.7 |
| Approach | | 263 | 5.2 | 0.504 | 14.4 | LOS B | 2.7 | 19.4 | 0.75 | 1.02 | 47.3 |
| West: Power Street | | | | | | | | | | | |
| 10 | L2 | 57 | 44.4 | 0.268 | 6.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.07 | 55.8 |
| 11 | T1 | 753 | 4.5 | 0.268 | 6.4 | LOS A | 13.3 | 98.1 | 0.42 | 0.04 | 53.7 |
| 12 | R2 | 7 | 85.7 | 0.268 | 67.2 | LOS F | 13.3 | 98.1 | 1.00 | 0.00 | 27.1 |
| Approach | | 817 | 8.0 | 0.268 | 6.9 | NA | 13.3 | 98.1 | 0.39 | 0.04 | 53.4 |
| All Vehicles | | 2559 | 6.3 | 0.679 | 6.1 | NA | 13.3 | 98.1 | 0.30 | 0.25 | 54.0 |

Level of Service (LOS) Method: Delay (HCM 2000).
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: 2026 AM Peak Existing

Owen Street / Power Street / Private Access Driveway
Giveway / Yield (Two-Way)

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand 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 per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Private Access Driveway | | | | | | | | | | | |
| 1 | L2 | 1 | 0.0 | 0.003 | 7.8 | LOS A | 0.0 | 0.1 | 0.73 | 0.58 | 27.6 |
| Approach | | 1 | 0.0 | 0.003 | 7.8 | LOS A | 0.0 | 0.1 | 0.73 | 0.58 | 27.6 |
| East: Power Street | | | | | | | | | | | |
| 4 | L2 | 17 | 6.3 | 0.505 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.01 | 57.8 |
| 5 | T1 | 1164 | 5.5 | 0.505 | 3.9 | LOS A | 4.3 | 31.3 | 0.20 | 0.01 | 56.4 |
| 6 | R2 | 238 | 8.0 | 1.256 | 282.5 | LOS F | 37.1 | 277.2 | 1.00 | 3.35 | 10.6 |
| Approach | | 1419 | 5.9 | 1.256 | 50.6 | NA | 37.1 | 277.2 | 0.33 | 0.57 | 32.7 |
| NorthEast: Median Storage | | | | | | | | | | | |
| 26a | R1 | 36 | 20.6 | 0.163 | 21.3 | LOS C | 0.5 | 4.3 | 0.87 | 0.94 | 43.6 |
| Approach | | 36 | 20.6 | 0.163 | 21.3 | LOS C | 0.5 | 4.3 | 0.87 | 0.94 | 43.6 |
| North: Owen Street | | | | | | | | | | | |
| 7 | L2 | 434 | 4.1 | 1.574 | 545.4 | LOS F | 114.6 | 839.5 | 1.00 | 6.54 | 6.0 |
| 9 | R2 | 36 | 20.6 | 1.574 | 544.3 | LOS F | 114.6 | 839.5 | 1.00 | 6.54 | 6.0 |
| Approach | | 469 | 5.4 | 1.574 | 545.3 | LOS F | 114.6 | 839.5 | 1.00 | 6.54 | 6.0 |
| West: Power Street | | | | | | | | | | | |
| 10 | L2 | 80 | 21.1 | 0.358 | 5.8 | LOS A | 0.0 | 0.0 | 0.00 | 0.07 | 56.7 |
| 11 | T1 | 1096 | 5.3 | 0.358 | 2.4 | LOS A | 2.6 | 18.7 | 0.10 | 0.05 | 57.1 |
| 12 | R2 | 15 | 7.1 | 0.358 | 36.5 | LOS E | 2.6 | 18.7 | 0.22 | 0.02 | 29.3 |
| Approach | | 1191 | 6.4 | 0.358 | 3.1 | NA | 2.6 | 18.7 | 0.10 | 0.05 | 56.4 |
| All Vehicles | | 3116 | 6.2 | 1.574 | 106.6 | NA | 114.6 | 839.5 | 0.35 | 1.27 | 21.7 |

Level of Service (LOS) Method: Delay (HCM 2000).
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: 2026 PM Peak Existing

Owen Street / Power Street / Private Access Driveway
Giveway / Yield (Two-Way)

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand 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 per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Private Access Driveway | | | | | | | | | | | |
| 1 | L2 | 7 | 0.0 | 0.029 | 12.3 | LOS B | 0.1 | 0.6 | 0.81 | 0.81 | 26.7 |
| Approach | | 7 | 0.0 | 0.029 | 12.3 | LOS B | 0.1 | 0.6 | 0.81 | 0.81 | 26.7 |
| East: Power Street | | | | | | | | | | | |
| 4 | L2 | 2 | 50.0 | 0.576 | 6.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 55.7 |
| 5 | T1 | 1438 | 6.2 | 0.576 | 0.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.5 |
| 6 | R2 | 342 | 0.0 | 1.281 | 290.0 | LOS F | 54.5 | 381.2 | 1.00 | 4.17 | 10.4 |
| Approach | | 1782 | 5.1 | 1.281 | 55.8 | NA | 54.5 | 381.2 | 0.19 | 0.80 | 31.1 |
| NorthEast: Median Storage | | | | | | | | | | | |
| 26a | R1 | 11 | 60.0 | 0.198 | 75.3 | LOS F | 0.6 | 5.9 | 0.97 | 0.99 | 26.3 |
| Approach | | 11 | 60.0 | 0.198 | 75.3 | LOS F | 0.6 | 5.9 | 0.97 | 0.99 | 26.3 |
| North: Owen Street | | | | | | | | | | | |
| 7 | L2 | 311 | 3.4 | 0.887 | 36.1 | LOS E | 8.1 | 59.1 | 0.96 | 1.59 | 36.9 |
| 9 | R2 | 11 | 60.0 | 0.887 | 42.4 | LOS E | 8.1 | 59.1 | 0.96 | 1.59 | 35.9 |
| Approach | | 321 | 5.2 | 0.887 | 36.3 | LOS E | 8.1 | 59.1 | 0.96 | 1.59 | 36.9 |
| West: Power Street | | | | | | | | | | | |
| 10 | L2 | 69 | 43.9 | 0.452 | 6.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.05 | 55.9 |
| 11 | T1 | 917 | 4.4 | 0.452 | 24.0 | LOS C | 19.0 | 143.0 | 0.15 | 0.04 | 42.7 |
| 12 | R2 | 8 | 87.5 | 0.452 | 201.6 | LOS F | 19.0 | 143.0 | 1.00 | 0.01 | 13.1 |
| Approach | | 995 | 7.8 | 0.452 | 24.3 | NA | 19.0 | 143.0 | 0.15 | 0.04 | 42.6 |
| All Vehicles | | 3116 | 6.1 | 1.281 | 43.7 | NA | 54.5 | 381.2 | 0.26 | 0.64 | 34.6 |

Level of Service (LOS) Method: Delay (HCM 2000).
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.
The results of iterative calculations indicate a somewhat unstable solution. See the Diagnostics section in the Detailed Output report.

# MOVEMENT SUMMARY

## Site: 2016 AM Peak Proposed

Owen Street / Power Street / Private Access Driveway
Giveway / Yield (Two-Way)

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Private Access Driveway | | | | | | | | | | | |
| 1 | L2 | 1 | 0.0 | 0.001 | 2.2 | LOS A | 0.0 | 0.0 | 0.46 | 0.26 | 28.8 |
| Approach | | 1 | 0.0 | 0.001 | 2.2 | LOS A | 0.0 | 0.0 | 0.46 | 0.26 | 28.8 |
| East: Power Street | | | | | | | | | | | |
| 4 | L2 | 14 | 7.7 | 0.260 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 57.8 |
| 5 | T1 | 956 | 5.6 | 0.260 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.01 | 59.9 |
| 6 | R2 | 213 | 9.4 | 0.734 | 29.8 | LOS D | 4.3 | 32.6 | 0.92 | 1.24 | 39.4 |
| Approach | | 1182 | 6.3 | 0.734 | 5.4 | NA | 4.3 | 32.6 | 0.16 | 0.23 | 54.7 |
| NorthEast: Median Storage | | | | | | | | | | | |
| 26a | R1 | 29 | 21.4 | 0.079 | 13.6 | LOS B | 0.3 | 2.2 | 0.76 | 0.88 | 48.0 |
| Approach | | 29 | 21.4 | 0.079 | 13.6 | LOS B | 0.3 | 2.2 | 0.76 | 0.88 | 48.0 |
| North: Owen Street | | | | | | | | | | | |
| 7 | L2 | 358 | 4.7 | 0.915 | 37.0 | LOS E | 10.8 | 79.5 | 0.96 | 1.77 | 36.7 |
| 9 | R2 | 29 | 21.4 | 0.915 | 36.4 | LOS E | 10.8 | 79.5 | 0.96 | 1.77 | 36.4 |
| Approach | | 387 | 6.0 | 0.915 | 36.9 | LOS E | 10.8 | 79.5 | 0.96 | 1.77 | 36.6 |
| West: Power Street | | | | | | | | | | | |
| 10 | L2 | 66 | 20.6 | 0.280 | 5.8 | LOS A | 0.0 | 0.0 | 0.00 | 0.07 | 56.8 |
| 11 | T1 | 900 | 5.4 | 0.280 | 0.8 | LOS A | 0.9 | 6.4 | 0.06 | 0.05 | 58.7 |
| 12 | R2 | 13 | 8.3 | 0.280 | 20.7 | LOS C | 0.9 | 6.4 | 0.13 | 0.02 | 30.3 |
| Approach | | 979 | 6.5 | 0.280 | 1.4 | NA | 0.9 | 6.4 | 0.06 | 0.05 | 57.8 |
| All Vehicles | | 2579 | 6.5 | 0.915 | 8.7 | NA | 10.8 | 79.5 | 0.25 | 0.40 | 51.8 |

Level of Service (LOS) Method: Delay (HCM 2000).
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: 2016 PM Peak Proposed

Owen Street / Power Street / Private Access Driveway
Giveway / Yield (Two-Way)

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Private Access Driveway | | | | | | | | | | | |
| 1 | L2 | 6 | 0.0 | 0.009 | 3.3 | LOS A | 0.0 | 0.2 | 0.52 | 0.39 | 28.6 |
| Approach | | 6 | 0.0 | 0.009 | 3.3 | LOS A | 0.0 | 0.2 | 0.52 | 0.39 | 28.6 |
| East: Power Street | | | | | | | | | | | |
| 4 | L2 | 2 | 50.0 | 0.319 | 6.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 55.8 |
| 5 | T1 | 1181 | 6.3 | 0.319 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| 6 | R2 | 283 | 0.7 | 0.690 | 20.9 | LOS C | 4.4 | 31.0 | 0.86 | 1.18 | 43.7 |
| Approach | | 1466 | 5.3 | 0.690 | 4.1 | NA | 4.4 | 31.0 | 0.17 | 0.23 | 55.9 |
| NorthEast: Median Storage | | | | | | | | | | | |
| 26a | R1 | 9 | 55.6 | 0.062 | 28.1 | LOS D | 0.2 | 2.0 | 0.89 | 0.94 | 39.8 |
| Approach | | 9 | 55.6 | 0.062 | 28.1 | LOS D | 0.2 | 2.0 | 0.89 | 0.94 | 39.8 |
| North: Owen Street | | | | | | | | | | | |
| 7 | L2 | 272 | 4.7 | 0.544 | 14.9 | LOS B | 3.0 | 22.3 | 0.77 | 1.05 | 47.0 |
| 9 | R2 | 9 | 55.6 | 0.544 | 17.9 | LOS C | 3.0 | 22.3 | 0.77 | 1.05 | 45.5 |
| Approach | | 281 | 6.4 | 0.544 | 15.0 | LOS C | 3.0 | 22.3 | 0.77 | 1.05 | 46.9 |
| West: Power Street | | | | | | | | | | | |
| 10 | L2 | 57 | 44.4 | 0.268 | 6.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.07 | 55.8 |
| 11 | T1 | 753 | 4.5 | 0.268 | 6.4 | LOS A | 13.3 | 98.2 | 0.42 | 0.04 | 53.7 |
| 12 | R2 | 7 | 85.7 | 0.268 | 67.3 | LOS F | 13.3 | 98.2 | 1.00 | 0.00 | 27.1 |
| Approach | | 817 | 8.0 | 0.268 | 7.0 | NA | 13.3 | 98.2 | 0.39 | 0.04 | 53.4 |
| All Vehicles | | 2580 | 6.4 | 0.690 | 6.3 | NA | 13.3 | 98.2 | 0.31 | 0.26 | 53.8 |

Level of Service (LOS) Method: Delay (HCM 2000).
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: 2026 AM Peak Proposed

Owen Street / Power Street / Private Access Driveway
Giveway / Yield (Two-Way)

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Private Access Driveway | | | | | | | | | | | |
| 1 | L2 | 1 | 0.0 | 0.003 | 8.0 | LOS A | 0.0 | 0.1 | 0.73 | 0.59 | 27.6 |
| Approach | | 1 | 0.0 | 0.003 | 8.0 | LOS A | 0.0 | 0.1 | 0.73 | 0.59 | 27.6 |
| East: Power Street | | | | | | | | | | | |
| 4 | L2 | 17 | 6.3 | 0.510 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.01 | 57.8 |
| 5 | T1 | 1164 | 5.5 | 0.510 | 3.8 | LOS A | 4.2 | 30.6 | 0.19 | 0.01 | 56.4 |
| 6 | R2 | 255 | 9.1 | 1.370 | 380.6 | LOS F | 49.6 | 374.3 | 1.00 | 3.91 | 8.2 |
| Approach | | 1436 | 6.2 | 1.370 | 70.7 | NA | 49.6 | 374.3 | 0.33 | 0.70 | 27.7 |
| NorthEast: Median Storage | | | | | | | | | | | |
| 26a | R1 | 36 | 20.6 | 0.169 | 22.1 | LOS C | 0.5 | 4.5 | 0.88 | 0.94 | 43.2 |
| Approach | | 36 | 20.6 | 0.169 | 22.1 | LOS C | 0.5 | 4.5 | 0.88 | 0.94 | 43.2 |
| North: Owen Street | | | | | | | | | | | |
| 7 | L2 | 436 | 4.6 | 1.592 | 561.2 | LOS F | 117.2 | 861.2 | 1.00 | 6.62 | 5.9 |
| 9 | R2 | 36 | 20.6 | 1.592 | 560.0 | LOS F | 117.2 | 861.2 | 1.00 | 6.62 | 5.9 |
| Approach | | 472 | 5.8 | 1.592 | 561.1 | LOS F | 117.2 | 861.2 | 1.00 | 6.62 | 5.9 |
| West: Power Street | | | | | | | | | | | |
| 10 | L2 | 81 | 20.8 | 0.359 | 5.8 | LOS A | 0.0 | 0.0 | 0.00 | 0.07 | 56.8 |
| 11 | T1 | 1096 | 5.3 | 0.359 | 2.4 | LOS A | 2.6 | 18.9 | 0.10 | 0.05 | 57.0 |
| 12 | R2 | 15 | 7.1 | 0.359 | 36.7 | LOS E | 2.6 | 18.9 | 0.22 | 0.02 | 29.3 |
| Approach | | 1192 | 6.4 | 0.359 | 3.1 | NA | 2.6 | 18.9 | 0.10 | 0.05 | 56.4 |
| All Vehicles | | 3136 | 6.3 | 1.592 | 118.2 | NA | 117.2 | 861.2 | 0.35 | 1.35 | 20.3 |

Level of Service (LOS) Method: Delay (HCM 2000).
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: 2026 PM Peak Proposed

Owen Street / Power Street / Private Access Driveway
Giveway / Yield (Two-Way)

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand 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 per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Private Access Driveway | | | | | | | | | | | |
| 1 | L2 | 7 | 0.0 | 0.029 | 12.4 | LOS B | 0.1 | 0.6 | 0.81 | 0.81 | 26.7 |
| Approach | | 7 | 0.0 | 0.029 | 12.4 | LOS B | 0.1 | 0.6 | 0.81 | 0.81 | 26.7 |
| East: Power Street | | | | | | | | | | | |
| 4 | L2 | 2 | 50.0 | 0.578 | 6.3 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 55.7 |
| 5 | T1 | 1438 | 6.2 | 0.578 | 0.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.5 |
| 6 | R2 | 344 | 0.6 | 1.300 | 307.2 | LOS F | 57.2 | 402.6 | 1.00 | 4.30 | 9.9 |
| Approach | | 1784 | 5.2 | 1.300 | 59.4 | NA | 57.2 | 402.6 | 0.19 | 0.83 | 30.2 |
| NorthEast: Median Storage | | | | | | | | | | | |
| 26a | R1 | 12 | 54.5 | 0.200 | 69.9 | LOS F | 0.6 | 5.8 | 0.96 | 0.99 | 27.4 |
| Approach | | 12 | 54.5 | 0.200 | 69.9 | LOS F | 0.6 | 5.8 | 0.96 | 0.99 | 27.4 |
| North: Owen Street | | | | | | | | | | | |
| 7 | L2 | 327 | 4.5 | 0.947 | 48.6 | LOS E | 11.5 | 84.8 | 0.98 | 1.89 | 32.8 |
| 9 | R2 | 12 | 54.5 | 0.947 | 53.7 | LOS F | 11.5 | 84.8 | 0.98 | 1.89 | 32.1 |
| Approach | | 339 | 6.2 | 0.947 | 48.7 | LOS E | 11.5 | 84.8 | 0.98 | 1.89 | 32.8 |
| West: Power Street | | | | | | | | | | | |
| 10 | L2 | 69 | 43.9 | 0.453 | 6.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.05 | 55.9 |
| 11 | T1 | 917 | 4.4 | 0.453 | 24.0 | LOS C | 18.8 | 142.2 | 0.15 | 0.04 | 42.8 |
| 12 | R2 | 8 | 87.5 | 0.453 | 202.7 | LOS F | 18.8 | 142.2 | 1.00 | 0.01 | 13.0 |
| Approach | | 995 | 7.8 | 0.453 | 24.2 | NA | 18.8 | 142.2 | 0.15 | 0.04 | 42.7 |
| All Vehicles | | 3137 | 6.3 | 1.300 | 47.0 | NA | 57.2 | 402.6 | 0.27 | 0.69 | 33.6 |

Level of Service (LOS) Method: Delay (HCM 2000).
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.
The results of iterative calculations indicate a somewhat unstable solution. See the Diagnostics section in the Detailed Output report.

# APPENDIX E

# SEARS RESPONSE

## Table of Contents

# 1. DEPARTMENT OF PLANNING AND ENVIRONMENT

| | |
|---|---|
| **Application Number** | SSD 6767 |
| **Development** | Glendenning Liquid Waste Facility up to 50 megalitres per year |
| **Location** | 14 Rayben Street, Glendenning |
| **Applicant** | Mr Kurt Whalan, JJ Richards & Sons Pty Ltd |
| **Date of Issue** | December 2014 |

| Heading | Requirements | Applicant's Reference |
|---|---|---|
| **General Requirements** | *The Environmental Impact Statement (EIS) must meet the minimum form and content requirements in clauses 6 and 7 of Schedule 2 the Environmental Planning and Assessment Regulation 2000. The EIS must include:* | |
| | • *Detailed assessment, where relevant, of the key issues below, and any other potential significant issues identified in the risk assessment, must include:*<br>*(a) A description of the existing environment, using adequate baseline data;*<br>*(b) Consideration of potential cumulative impacts due to other development in the vicinity; and*<br>*(c) Measure to avoid, minimise and if necessary, offset the predicted impacts, including detailed contingency plans for managing any significant risks to the environment;* | |
| | • *Consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments included* | |

| | | |
|---|---|---|
| | *in the EIS;* | |
| **Key Issues** | *The EIS must include an assessment of the potential impacts of the proposal (including cumulative impacts) and develop appropriate measures to avoid, mitigate, manage and / or offset these impacts. The EIS must address the following specific matters:*<br>• **Transport and Road Traffic** – including:<br>*(a) Details of all road transport routes;*<br>*(b) Access to the site from the road network including intersection location, design and sight distance;*<br>*(c) Road traffic predictions for the development during construction and operation;*<br>*(d) An assessment of predicted impacts on road safety and the capacity of the transport network, including an appraisal of any impact mitigation measures;*<br>*(e) A description and plans of any road upgrades required for the development; and*<br>*(a) Plans for the layout of the internal roads and parking;* | (a) Refer to Traffic Impact Assessment (TIA) report Sections 4.2, 5.1.3 and 7.3<br>(b) Refer to TIA report Section 4.3 - vehicles will utilise the proposed new crossover for ingress and the existing site access for egress which is considered appropriate<br>(c) Refer to TIA report Sections 5 and 7 - a conservative assessment indicates the development is expected to generate 19 vehicle trips in the AM and PM peak hour periods. Construction is expected to generate eight (8) vehicle trips during the AM and PM peak hour periods. A Construction Transport Management Plan can be provided at a later date if required.<br>(d) Refer to TIA report Section 6 - the intersection of Owen Street / Power Street fails to meet performance criteria under background conditions. The development traffic represents 3.5% of the existing traffic volume along Owen Street. It is considered unnecessary for mitigation measures to be put in place at the existing intersection as a result of the proposed development and given BCC's proposed future upgrades to the intersection.<br>(e) Refer to TIA report Section 6 - no road upgrades are proposed or considered warranted when considering the level of traffic generated by the proposed development<br>(f) Refer to TIA report Section 3.3, and 4.1 |

## 2. NSW EPA REQUIREMENTS – (NOTICE NO. 1526211)

| Heading | Requirements | Applicant's Reference |
|---|---|---|
| **Executive Summary** | *The executive summary should include a brief discussion of the extent to which the proposal achieves identified environmental outcomes.* | |
| **The Location** | **General**<br>• *Provide an overview of the affected environment to place the proposal in its local and regional environmental context including:*<br>*(a) Meteorological data (eg rainfall, temperature and evaporation, wind speed and direction);*<br>*(b) Topography (landform element, slope type, gradient and length);*<br>*(c) Surrounding land uses (potential synergies and conflicts);*<br>*(d) Geomorphology (rates of landform change and current erosion and deposition processes);*<br>*(e) Soil types and properties (including erodibility; engineering and structural properties; dispersibility; permeability; presence of acid sulphate soils and potential acid sulphate soils);*<br>*(f) Ecological information (water system habitat, vegetation, fauna);*<br>*(g) Availability of services and the accessibility of the site for passenger and freight transport;* | |
| **The Environmental Issues** | **Assess Impacts**<br>• *For the assessment of existing and future traffic noise, details of data for the road should be* | Refer to TIA report Sections 2 and 5 |

| | | |
|---|---|---|
| | *included such as assumed traffic volume; percentage heavy vehicles by time of day; and details of the calculation process. These details should be consistent with any traffic study carried out in the EIS;* | |
| | **Describe Management and Mitigation Measures**<br>• *For traffic noise impacts, provide a description of the ameliorative measures considered (if required), reasons for inclusion, or exclusion, and procedures for calculation of noise levels including ameliorative measures. Also include, where necessary, a discussion of any potential problems associated with the proposed ameliorative measures, such as overshadowing effects from barriers. Appropriate ameliorative measures may include:*<br>*a) use of alternative transportation modes, alternative routes, or other methods of avoiding the new road usage;*<br>*b) control of traffic (eg: limiting times of access or speed limitations);*<br>*c) resurfacing of the road using a quiet surface;*<br>*d) use of (additional) noise barriers or bunds;*<br>*e) treatment of the facade to reduce internal noise levels buildings where the night-time criteria is a major concern;*<br>*f) more stringent limits for noise emission from vehicles (i.e. using specially designed "quiet" trucks and / or trucks to use air bag suspension;*<br>*g) driver education;* | |

| | | |
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| | *h) appropriate truck routes;*<br>*i) limit usage of exhaust brakes;*<br>*j) use of premium mufflers on trucks;*<br>*k) reducing speed limits for trucks;*<br>*l) ongoing community liaison and monitoring of complaints;*<br>*m) phasing in the increased road use;* | |
| | **Cumulative impacts**<br>• *Identify the extent that the receiving environment is already stressed by existing development and background levels of emissions to which this proposal will contribute;* | |
| | • *Assess the impact of the proposal against the long term air, noise and water quality objectives for the area or region;* | |
| | • *Identify infrastructure requirements flowing from the proposal (eg water and sewerage services, transport infrastructure upgrades);* | No transport infrastructure upgrades are required as a result of the proposal |
| | • *Assess likely impacts from such additional infrastructure and measures reasonably available to the proponent to contain such requirements or mitigate their impacts (eg travel demand management strategies).* | No transport infrastructure upgrades are required therefore no impacts are expected |

## 3. BLACKTOWN CITY COUNCIL REQUIREMENTS (MC-14-2158)

| Heading | Requirements | Applicant's Reference |
|---|---|---|
| **Planning** | *Statement of Environmental Effects to include operational details including the proposed used (if known) hours of operation, staff number, delivery times. The types of trucks to be used – the trucks are to ensure they are covered;* | |
| **Traffic** | *1. A traffic report should be submitted with the application to address traffic implication of the proposal and an evening / night time (8pm – 7am) route plan to determine the impacts on residential amenity. All travel route shall limit night time routes between the hours of 8pm and 7am near residential areas.* | TIA Report has been prepared and submitted as required. |

## 4. NSW TRANSPORT ROADS & MARITIME SERVICES REQUIREMENTS (SYD14/01287 (A7884645)

| Heading | Requirements | Applicant's Reference |
|---|---|---|
| **Roads & Maritime Services Requirements** | *Roads and Maritime require the following issues to be included in the transport and traffic impact assessment of the proposed development:* | |
| | *1. Daily and peak traffic movements likely to be generated by the proposed development including the impact on nearby intersections and the need/associated funding for upgrading or road improvement works (if required);* | Refer to TIA report Sections 5 and 6 - the intersection of Owen Street / Power Street fails to meet performance criteria under background conditions. The development traffic represents 3.5% of the existing traffic volume along Owen Street. It is considered unnecessary for mitigation measures to be put in place at the existing intersection as a result of the proposed development given BCC's proposed future upgrades to the intersection. |
| | *2. Details of the proposed accesses and the parking provisions associated with the proposed development including compliance with the requirements of the relevant Australian Standards (ie: turn paths, sight distance requirements, aisle widths, etc);* | Refer to TIA report Sections 3.2, 3.3 and 4 - parking layout and provision meets the requirements of BCC and AS2890 |
| | *3. Proposed number of car parking spaces and compliance with the appropriate parking codes;* | Refer to TIA report Section 3 - a first-principles parking assessment was undertaken based on the known employment and operation levels. The development will provide 28 passenger and 14 commercial vehicle parking spaces which meets the requirements of BCC and the anticipated demand. |
| | *4. Details of service vehicle movements (including vehicle type and likely arrival and departure times);* | Refer to TIA report Sections 4 and 5 - the largest design vehicle is expected to be a 26.0 metre long B double. The site will generally operate between the hours of 4.00am and 9.00pm with vehicle arrival and departure during this period. |
| | *5. Roads and Maritime will require in due course the provision of a traffic management plan for all* | The site will utilise some existing infrastructure on the existing site, therefore construction activities will be minimal. However, a |

| | | |
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| | *demolition/construction activities, detailing vehicle routes, number of trucks, hours of operation, access arrangements and traffic control measure;* | Construction Traffic Management Plan (CTPM) can be provided at a later date if required. |
| | *6. Roads and Maritime requires an assessment of the likely toxicity levels of loads transported on arterial and local roads to / from the site and, consequently, the preparation of an incident management strategy for crashes involving such loads, if relevant.* | |