RESPONSE TO SUBMISSION (RTS)
Padstow Resource Recovery Facility
81 Gow Street, Padstow (SSD 10450)

Prepared for: Gow Street Recycling Centre
Department of Planning Industry and Environment

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1. INTRODUCTION

Benbow Environmental have been engaged by Gow Street Recycling Centre to undertake response to submission report for the establishment and operation of a new proposed liquid waste dewatering plant at the existing recycling facility located at 81 Gow Street, Padstow (SSD 10450). This report responds to comments made by a number of government agencies including:

- Department of Planning Industry and Environment (DPIE);
- Environment, Energy and Science Group (EES);
- NSW EPA; and
- Canterbury Bankstown Council.

In addition, the response to submission includes the response to objectors. Two objections have been received from Endeavour Education and an anonymous objector.

The following agencies reported no additional comment:

- Heritage NSW – Aboriginal Cultural Heritage
- Transport for NSW.

1.1 HERITAGE NSW

"Heritage NSW has reviewed Aboriginal Cultural Heritage Assessment (ACHA), prepared by McCardle Cultural Heritage Pty Ltd, on behalf of the proponent (Gow Street Recycling Centre), for the proposed liquid waste dewatering facility at their existing recycling centre located at 81-87 Gow Street, Padstow NSW 2211, dated 31 March 2021, with respect to Aboriginal cultural heritage. Heritage NSW notes that the proposed development will not impact Aboriginal heritage site or values, and as such, Heritage NSW has no additional comments in relation to the Padstow Resource Recovery Facility (SSD-10450)."

1.2 TRANSPORT FOR NSW

"TfNSW has reviewed the EIS and has no comments regarding the proposed development as it is unlikely to impact the surrounding transport network."

2. DEPARTMENT OF PLANNING INDUSTRY AND ENVIRONMENT

This section addresses the comments raised by the Department of Planning, Industry & Environment (DPIE). DPIE have provided a list of additional information required to finalise the Department assessment. This is addressed in this section.

2.1 GENERAL

- *SSD-10450 is seeking approval for the installation and operation of a dewatering facility with the processing capacity of up to 250,000 tpa of liquid waste. However, the Department notes that that the impacts of the existing C&D waste facility, which was approved under Council consent DA-51/1997, has also been assessed by the EIS. The relevant technical assessments require updating to ensure the approved development is not included as part of the assessment of the proposed development except in relation to cumulative impacts. No management measures for the existing development can be considered as part of this proposal.*

Response: Noted, technical assessments have been revised to ensure that only the proposed development is included in air quality modelling as per communication received from DPIE on the 7th April 2022. The noise impact assessment provides scenarios presenting impacts from the dewatering plant only, and a scenario assessing impacts of simultaneous operation of the dewatering plant and the existing C&D facility. All noise modelling scenarios comply with the relevant criteria. It is noted that the air and the technical reports have been revised.

- *Clarify:*
  - *how many construction jobs the development would generate*

Response: 5 construction jobs.

  - *the time of the two operational shifts*
  - *the number of staff per shift*

Response:

Dewatering Plant:
Day Shift: 6am-6pm: 6 staff
Night Shift: 6pm-6am: 4 staff

  - *how much waste would be stored at any one time (there are different amounts referenced throughout the EIS)*

Response: 8,760 tonnes of waste would be stored on site at any one time. Of this 7,300 tonnes is associated with the existing C&D plant and 1,460 tonnes (revised total) is associated with the dewatering plant. Details of all on-site waste storage are provided below. This information provides the capacity of each storage area, thereby giving the maximum quantity of waste that can be stored at any one time. Separate tables are provided for waste storage associated with the existing C&D plant and that associated with the dewatering plant. Please note that the capacity of the dust storage bay (Area 6 Bunker 5) has been updated to accommodate the B

Double swept paths. Therefore, Table 8-11 in Section 8.5.4 of the EIS has been updated for Area 6 Bunker 5.

Table 2-1: C&D Facility Existing Waste Storage Bunker Details

Area	Bunker	Material Description	Width (m)	Length (m)	Volume (m^3)
1	1	Incoming C&D waste (Processing area	12	18	864
2	1	Waste receivals – uncrushed material – Bick/tile/concrete	14	12.09	677
3	1	Uncrushed concrete	6	12.09	290
4	1	10 mm Aggregate	4.04	6.654	108
	2	20 mm Aggregate	35.289	7.825	1105
	3	30-100 mm Aggregate	4.121	4	66
	4	Fine aggregates	8.542	7.825	267
5	1	ENM/VENM/GSW – Screened	5.337	9.225	197
	2	ENM/VENM/GSW – Screened	3.96	5.967	95
	3	ENM/VENM/GSW – Screened	6.087	12.886	314
6	1	Sand	4.725	6.654	126
	2	Topsoil	4.019	6.654	107
	3	Turf Underlay	3.954	6.654	105
	4	Organic garden mix (soil)	4.042	6	97
	5	Dust (triangle bay)	7.455	7.825	116
				Total Maximum Capacity	4534 m^3 7300 tonnes

The existing site C&D facility waste storage currently has approval to store 7,300 tonnes of waste at any one time.

The storage bunkers in Areas 1-6 have a total maximum capacity of 7,300 tonnes.

Waste storage quantities associated with the new dewatering facility will require storage of 1,460 tonnes of waste on site at any one time. Details are provided in Section 8.5.4 of the EIS and replicated in the table below.

Table 2-2: Dewatering Facility Storage Area Details

Area	Storage Type	Material Description	Volume (m^3)	Estimated Tonnes
7	Inground Pit 7	Dirty water pit accepting drilling mud and concrete washout waste	108	108
	Inground Pit 6		32.4	32.4
	Inground Pit 5		32.4	32.4
8	Inground Pit 4	Flocc plant dirty water	23.6	23.6
	Inground Pit 3		14.2	14.2
	Inground Pit 2	Clean/treated water	21.3	21.3
	Inground Pit 1	Sump Pit	11.3	11.3
9	Stainless steel silos	Two cylindrical tanks each with a capacity of 60,000 L for processing of liquid waste	120	120

Table 2-2: Dewatering Facility Storage Area Details

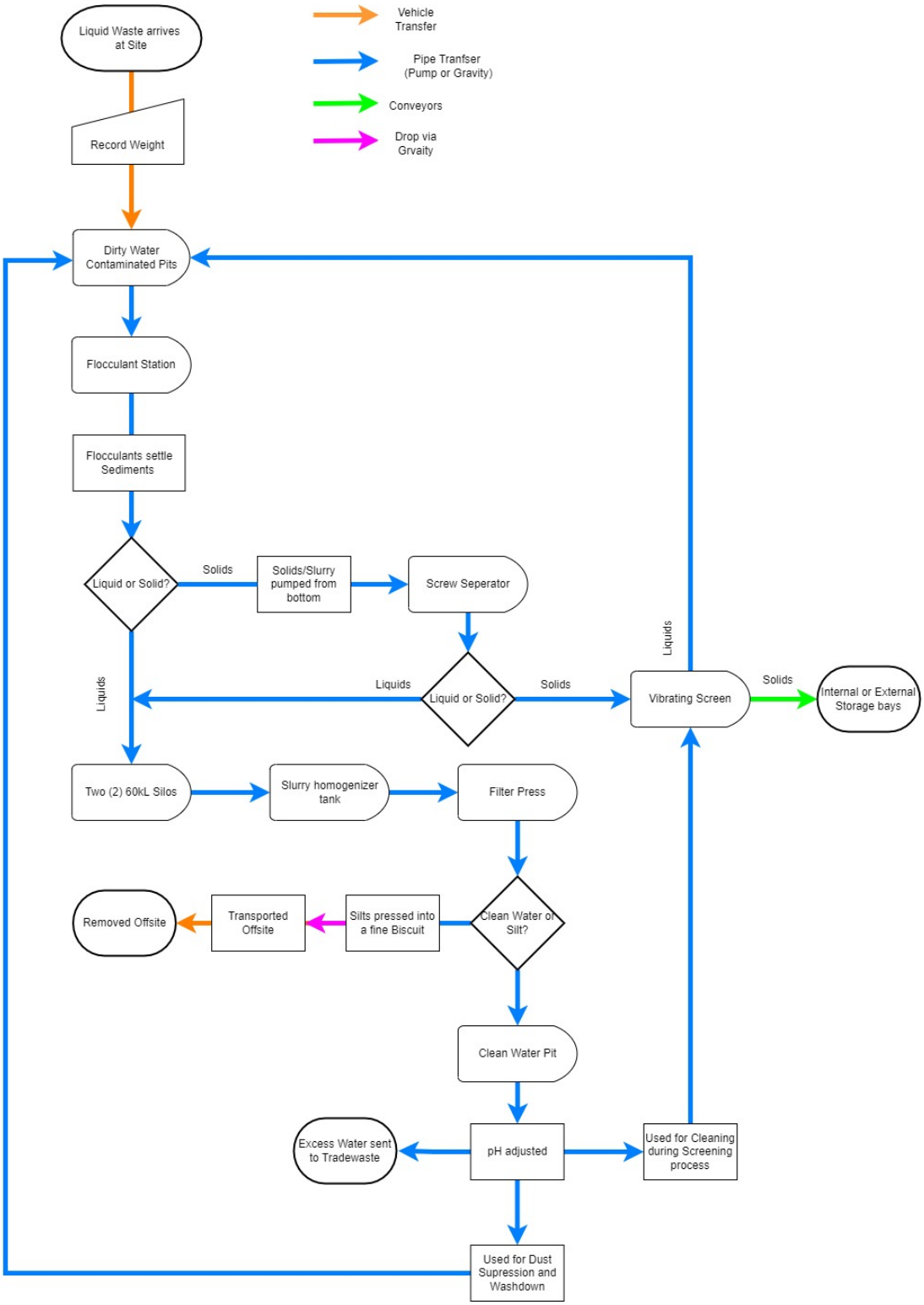
Area	Storage Type	Material Description	Volume (m^3)	Estimated Tonnes
10	Bunker (1)	Aggregate – external bunker	99.2	148.8
	Bunker (2)	Aggregate – external bunker	99.2	148.8
	Bunker (3)	Fine aggregate/sand – internal bunker	117.7	176.6
	Bunker (4)	Fine aggregate/sand – internal bunker	122.9	184.4
	Bunker (5)	Fine aggregate/sand – internal bunker	144.5	216.8
	Bunker (6)	Filter press waste – internal bunker	146.5	219.8
		Total Maximum Storage Capacity		**1458.4**

Therefore, the site requires approval to store a maximum of 8,760 tonnes of waste at any one time.

- *how waste would be transferred between each process step.*

Response: The diagram below shows how the material would be transferred between each process step.

Figure 2-1: Waste Transfer Process Diagram



- *According to the EIS, bunker 1 is filter cake and bunker 2 is sand but elsewhere it is stated that these bunkers would contain aggregates. What material/product would be stored in the external bunkers?*

Response: The EIS has been revised to ensure all bunker numbering is consistent. Bunker 1 and bunker 2 are the external aggregate storage bunkers. The sand and filter cake will be stored inside the building within bunkers 3, 4, 5 and 6.

- Bunker 1: Aggregate, 6.2 x 4.0 m
- Bunker 2: Aggregate, 6.2 x 4.0 m
- Bunker 3: Sand 5.07 x 5.805 m
- Bunker 4: Sand 5.295 x 5.805 m
- Bunker 5: Sand 5.295 x 5.805 m
- Bunker 6: Filter cake 6.7 x 8.9 m

- *What are the tanks currently located on the eastern boundary of the site?*

Response: These are the silos intended for the future dewatering plant, they are currently not installed or in operation.

2.2 PLANS

- *On the Floor Plan (sheet number A03), or a similar plan, label:*
  - *the proposed waste storage areas, 7, 8, 9 and 10*
  - *the bunkers and areas adjacent the receival pit*
  - *all six pits.*

Response: Labels are provided in the revised plans.

- *Provide plans of the plant to be installed.*

Response: These are provided in Drawing A07 of the architectural plant set and are considered to be sufficient. A07 presents details of the proposed plant to be installed including the screw conveyor, floc plant, silos and slurry homogeniser feed tank, filter press, conveyors, screens, screen separators, storage bunkers, pits, sumps and safety features of the plant including stairs, platforms and handrails.

2.3 PROCESS DESCRIPTION

- *Would waste contaminated with Chromium VI require any additional treatment?*

Response: No. Chromium VI was identified in the EIS as possibly being present in trace concentrations within concrete washout water. These trace concentrations are a result of the use of Portland Cement within the concrete mix. Current best practice for reuse of concrete washout water is recycling of the water and solid material within the concrete batching plant or re-processing the solid material into gravel or sand for use in quarries or to be mixed with other materials to become roadbase or fill products. The potential presence of trace concentrations of chromium VI within this wastewater would not require additional treatment.

- *What quality control process would ensure treated water is suitable for reuse?*

Response: A dewatering plant effluent characterisation assessment will be undertaken after the commencement of operations in consultation with the NSW EPA (see section 4.2.1 of this report). After the completion of this characterisation assessment an ongoing testing regime will be implemented to ensure treated water is suitable for reuse. Prior to the effluent characterisation assessment all treated water will be sent to tradewaste.

- *Describe how the internal pump would operate.*

Response: There are a number of pumps located within the dewatering plant that will pump the liquid from the pits to the equipment which is at a higher elevation. The "internal pump" specified in the Noise Impact Assessment would be a rotary vane pump, which connects to the discharge outlet of the tanker truck replacing the external diesel engine pump on the trucks.

- *How is the waste mixture stirred in the homogeniser?*

Response: With a motorised stirrer.

2.4 WASTE

- *Pages 8 and 9 of the Waste Management Plan state drilling mud and concrete washout water are residue from industrial or manufacturing processes but elsewhere it is stated that the waste will be sourced from construction sites. Please clarify where the waste will be sourced from and whether the incoming waste would be both liquid C&D and C&I waste.*

Response: The drilling mud waste will be sourced from construction sites and the concrete washout water will be sourced from both construction and commercial/industrial facilities. This is referenced throughout the EIS and Waste Management Plan.

- *What types of industrial or manufacturing industries would the waste be sourced from?*

Response: The drilling mud waste will be sourced from construction sites and the concrete washout water will be sourced from both construction and commercial/industrial facilities such as concrete batching plants.

- *The Services and Utilities impact assessment states that there would be up to 120,000 tonnes of liquid stored at any one time, elsewhere it is stated 300,000 litres of liquid waste would be stored, please clarify.*

Response: The service and utilities report has been updated to be consistent with 300,000 litres of storage.

- *The Waste Management Plan describes the waste acceptance procedures, one of which is to confirm that the drill mud is not odourous, synthetic based or contains barium sulphate. Describe how this procedure is undertaken.*

Response: This is detailed in section 5 of the waste report, specifically sections 5.4.2 and 5.4.3. The main documentation required to be obtained at the weighbridge for the receipt of loads of drilling mud include:

- A signed waste specification document from the waste generator confirming the source and nature of the drilling mud (See Section 5.4.3 of the waste report); and
- A copy of the site assessment (and if applicable soil test results) confirming the source of the drilling mud is from an uncontaminated site.

This will ensure that the drilling mud is of a classification suitable for treatment at the site. If the above two documents are not provided, the driver will be directed to leave the site.

- *Where would waste be stored if it is identified as non-compliant after it is accepted?*

Response: This waste would be received in the receival pit if the incoming waste procedure failed to identify non-compliant waste prior to receival. This would be immediately sucked back out via vacuum tanker trucks and taken offsite to an appropriate licenced facility.

- *Two trucks appear to be unloading in Figure 3-3 of the Traffic Management Plan, however, there is only one receivals pit, what is the second truck unloading?*

Response: This has been revised. There is one designated truck unloading area, and one designated loading area from the dewatering plant to solid removal from Bunker 6.

2.5 TRAFFIC

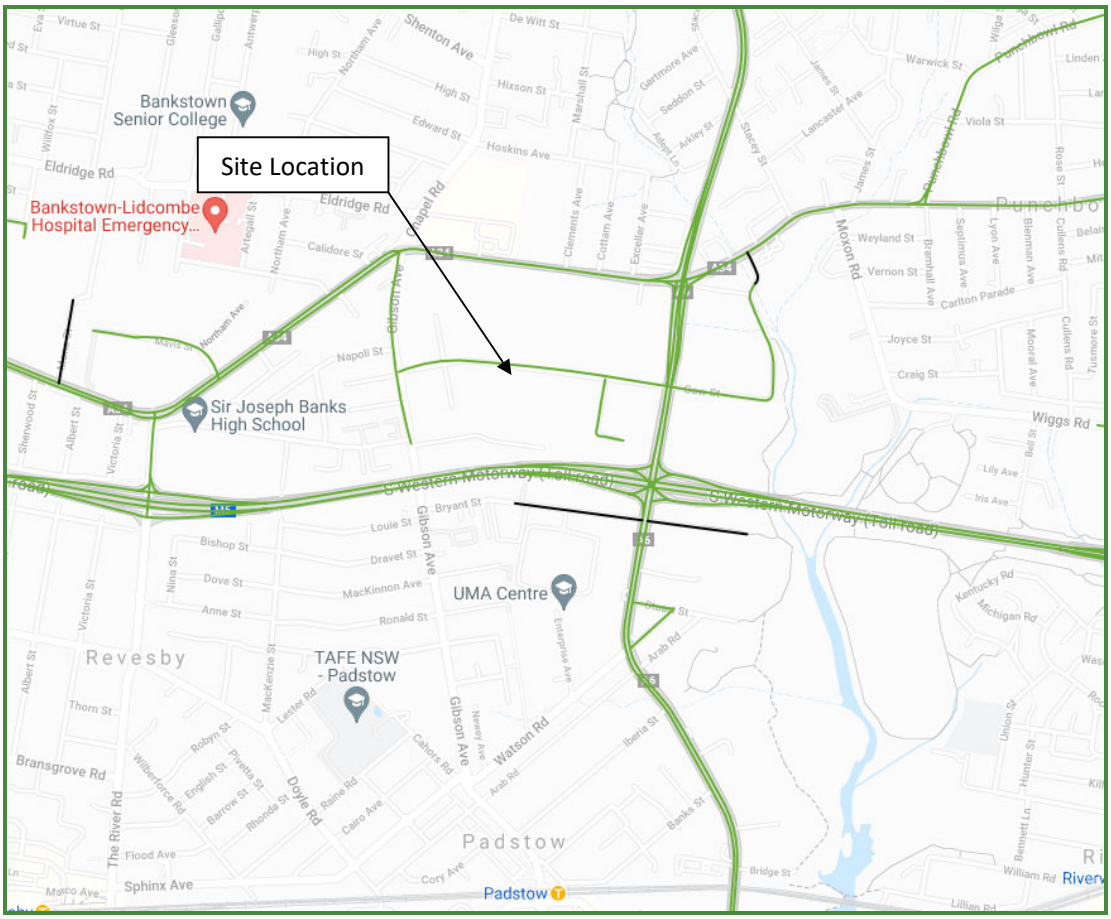
- *The Department has concerns about the ability of heavy vehicles to move safely through the site. due to the potential conflict between vehicles and with obstructions. Further information is required on how vehicle movement will be managed.*

Response: Truck movement paths and swept paths are always kept clear from obstructions. There is ample room on site for trucks to manoeuvre safely. Smooth, safe throughput of vehicles is essential to the business at Gow Street. The traffic management plan addresses traffic management in detail. There will be staff on site at all times to manage potential conflict between vehicles and obstructions. The updated TIA provides an example of truck distribution over a standard 24-hour period.

- *Provide a plan showing heavy vehicle routes to and from the main road network and describe the expected trip distribution.*

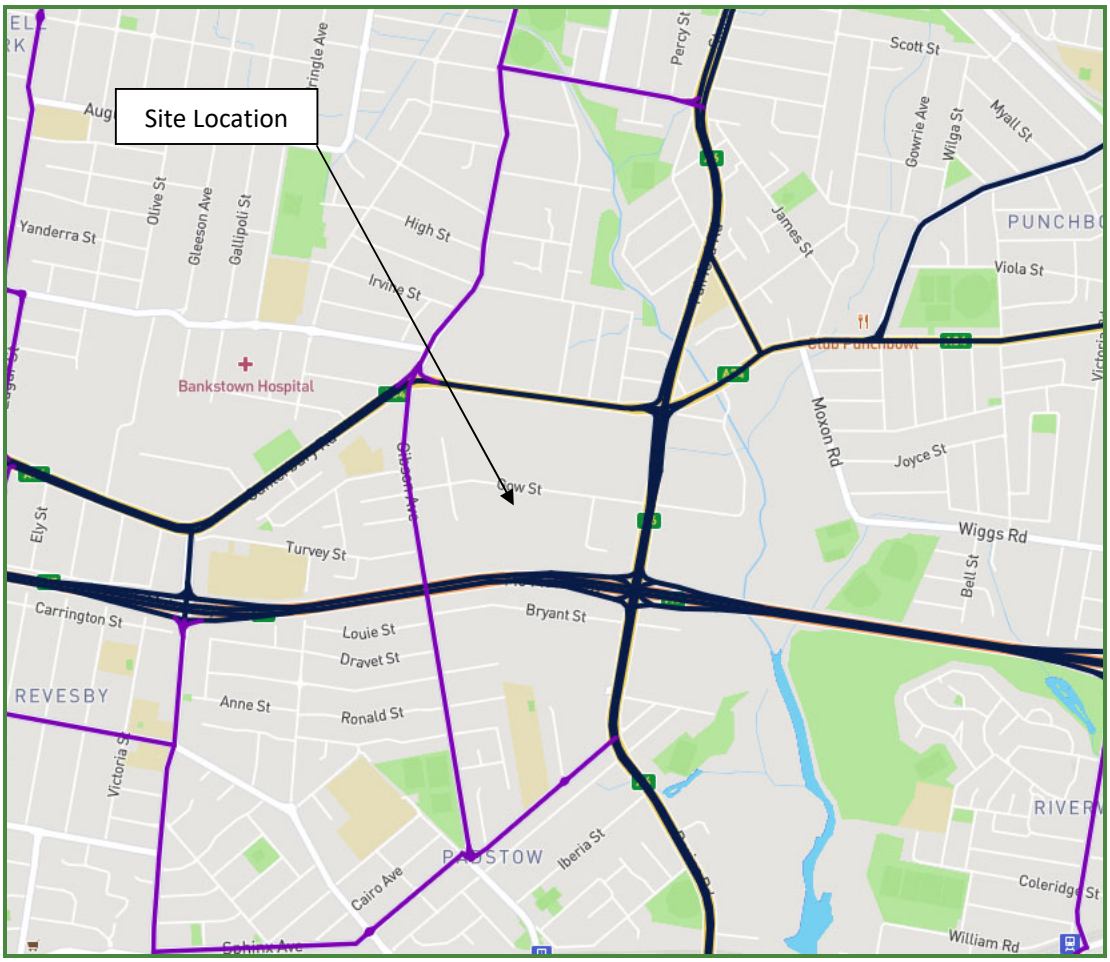
Response: The map below shows vehicles routes for 19 m B-doubles (over 50 tonnes), 23 m B-doubles, and 25/26 m B-doubles. All of the surrounding roads (the South Western Motorway, Fairford Rd, Canterbury Rd, Gibson Ave) connecting to and including Gow St are possible routes for heavy vehicles. This has been included in the updated Traffic Impact Assessment.

Figure 2-2: Heavy Vehicle Routes.



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Figure 2-3: NSW Road Network Classifications.



© Mapbox © OpenStreetMap © Transport for NSW 2021

- *Undertake a queuing analysis to determine how many queuing spots would be required noting that one heavy vehicle takes between 10-25 min to unload and, at peak, the dewatering facility would generate 2 deliveries per 15 minutes. Please also take into consideration unloading and loading requirements of the C&D facility which must comply with the tip and spread requirements described in the EPA's* Standards for Managing Construction Waste.

Response: Truck queuing and waiting areas along with swept paths on site are provided in the updated TMP. This shows that there is ample space on site for simultaneously occurring truck movements and truck waiting/loading/unloading. The truck queuing plan shows 5 trucks spots available for entry queuing and 7 truck spots for exit queuing.

- *Are waste deliveries scheduled? If so, what scheduling system is used?*

Response: The waste delivery scheduling system proposed to be implemented will be a computerised booking program called "Wastedge" or similar which enables truck trips to be managed with respect to timing and routes taken. Truck routes can be planned to avoid congestion.

- *Please explain why the Rigid Truck Queueing Plan provided on page 9 of the Architectural Plans shows seven vehicles queuing to exit the facility and how queueing to exit would reduce queueing requirements onsite.*

Response: Available queueing spaces does not reduce queueing requirements; these are the available queuing spaces for vehicles exiting the site. As stated above there are 5 spots for entry, 7 spots for exit, 5 onsite waiting spots and 5 unloading and loading spots. This is ample for satisfying the site's operational queuing needs.

- *Table 3-1 in the Traffic Management Plan (TMP) doesn't appear to have considered that the dewatering facility would have an unloading time of 10-25 minutes. The table also states that up to two vehicles can wait behind the weighbridge at any one time where elsewhere it states seven vehicles. Please address.*

Response: The table has been revised for greater clarity regarding the number of vehicles that can wait before the entrance and exit weighbridges. This table has also been revised to clarify loading and unloading times.

- *The Traffic Impact Assessment (TIA) states that additional trips may occur due to truck size variation and the EIS states the existing facility accounts for 44 vehicles on average. Please note the TIA must assess worst case scenario, please ensure that the maximum number of expected vehicles has been assessed for both the proposed dewatering facility (for network capacity and onsite queueing) and the approved C&D facility (for onsite queueing) and revise the TIA accordingly.*

Response: The Traffic Impact Assessment considers the worst-case peak hour impacts. Travelling in peak hour is inefficient since sitting in peak hour queue is unproductive time and is generally avoided. The numbers utilised in the assessment are higher than the hourly average and are considered suitably representative of the worst-case number of vehicles during peak hour.

2.5.1 Swept Path Analysis

- *The B-Double swept path on p 51 of the TIA indicates that a B-Double egressing would drive through the existing dust bunker, please demonstrate the longest heavy vehicle proposed to be used by the dewatering facility can egress without impacting the existing facility.*

Response: Quantities of dust stored in this area are small, the plans have been updated to show the existing dust bunker does not conflict with the swept path.

- *The first swept path analysis in Appendix A of the TIA shows a B-Double inside the dewatering facility. Please clarify why the truck requires access to this area and provide a plan showing how it would fit around the plant and bunkers.*

Response: Trucks are not required to drive into the building. Trucks drive up to the dirty water pit to unload.

- *Clarify why some of the heavy vehicle swept paths in Appendix A of the TIA show a vehicle entering and exiting without dropping or picking something up.*

Response: The swept paths are intended to show the paths taken on site to demonstrate that vehicles can enter and exit in the forward direction. There is ample space for vehicles to manoeuvre in the open yard areas as required to drop material off or pick material up.

- *Provide additional swept path analysis showing:*
  - *a heavy vehicle reversing into the queuing spots adjacent to the dewatering facility while another vehicle is queueing*
  - *a heavy vehicle backing into and egressing from the dirty water pit*
  - *a heavy vehicle unloading into the dirty water pit and egressing while other trucks are queueing.*
  - *a heavy vehicle loading from the filter cake bunker on the northern side of the development and exiting while other trucks are queueing*
  - *a heavy vehicle picking up aggregates from the dewatering facility.*

Response: Additional swept paths have been provided in the TMP

2.6 AIR

- *The Air Quality Impact Assessment (AQIA) does not appear to have considered the proposed development on its own. Revise the AQIA to reflect operation the proposed development only, with consideration of the existing development in the cumulative assessment only, the AQIA must not model any additional mitigation measures for the existing facility.*

Response: The technical assessment has been revised to include the proposed development only. Modelling does not include any assessment of the existing sources on site. Cumulative assessment refers only to background levels of dust from NSW EPA monitoring stations as per the requirements of the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW (NSW EPA 2016).* This is in accordance with requests by DPIE communicated on 7th April 2022. The assessment has been revised.

- *Remove reference to the existing facility from the operations description (Section 6.2).*

Response: As above, clarity has been provided regarding the cumulative assessment.

- *Figure 7-1 of the AQIA shows the sources modelled, however, the aggregate bays should be further south, please address.*

Response: These modelled sources are within 10 m of their correct location. Minor variations to this location, especially given the magnitude of the emission rate compared to the other sources would result in no change to the outcome of the air quality assessment.

- *Describe the conditions under which chemical suppression would be used on the aggregate bays.*

Response: Water sprays would be used when visible dust is generated and during dust generating activities. This comprises of a fine water mist which does not contain chemicals.

- *Clarify if the GHG Assessment assesses the proposal only, if not, please update to assess impacts of the proposal.*

Response: The GHG assessment has been revised to assess the proposal only.

2.7 SOIL AND WATER

- *Explain how Sydney Water's pipes, the stormwater pits and Council's easement are related and describe how the existing system operates and how it would be integrated with the proposal.*

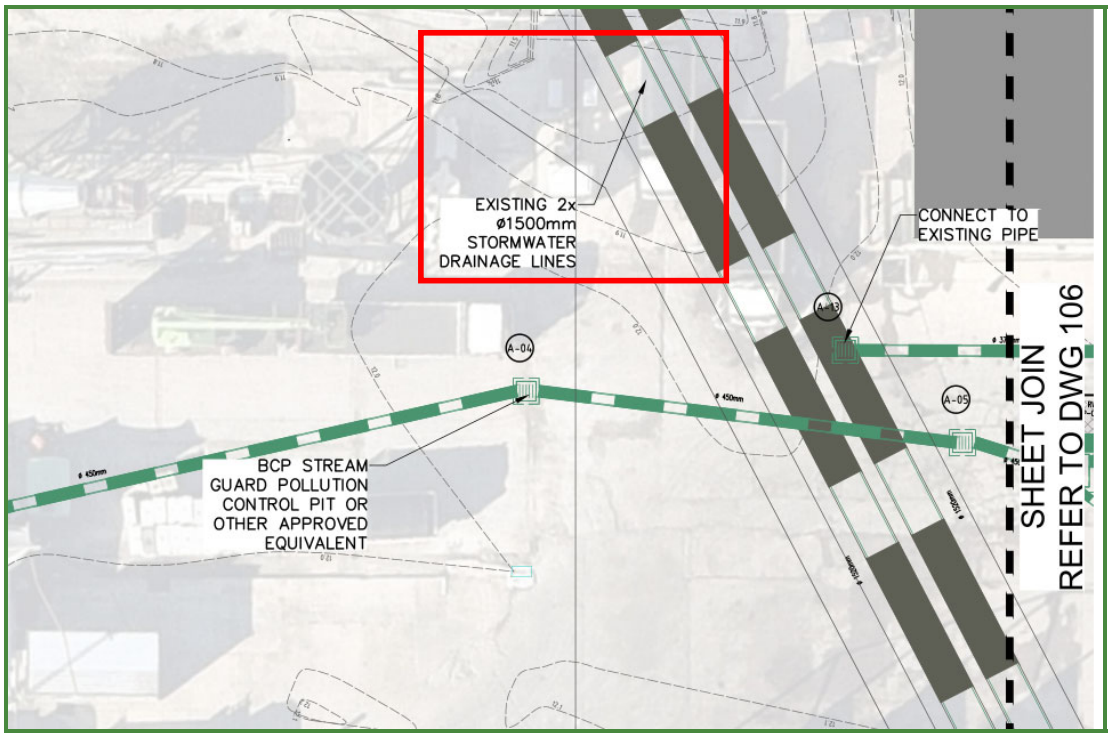
Response: The existing system works as follows: rainwater runs into the stormwater pits, then into the existing underground stormwater pipelines, and then into the two drainage pipelines within the council easement stormwater pipelines before going offsite. Sydney water only manages mains water supply and sewerage in the existing development.

In the proposed development, rainwater will run through BCP stream guard pollution control into stormwater pits, then to stormwater lines, then into a silt arrestor, then into the 200 kL Rocla Plastream underground detention tank (UDT). This is connected to an existing stormwater drainage line that is connected to the central drainage pipeline (easement). All other drainage lines are to be decommissioned. A stormwater isolation valve will be used in line after the UDT to contain contaminated stormwater by isolating the system. The system would capture first flush (First 25 mm of rainwater) site stormwater (leachate) which would initially be treated through an arrestor and detained within the two underground storage tanks before being then treated through the dewatering plant. All water directed to the underground detention tank would be processed by the dewatering facility. After the first flush is captured and pumped to the dewatering facility, the remaining clean overflow generated during a heavy rainfall event would be discharged into the stormwater system through the existing stormwater easement connection. Sydney water continues to manage mains water supply and sewerage, and in addition, excess recycled water from the dewatering plant would be discharged to sewer under a Tradewaste Agreement with Sydney Water.

- *Clearly label Council's easement and pipes on a plan.*

Response: The excerpt below from the site plans provided in Appendix 8 of the EIS shows where the council easement stormwater drainage lines are marked as "Existing 2 x Ø1500 mm stormwater drainage lines" (red square).

Figure 2-4: Council easement stormwater drainage lines



- *Describe what is currently discharged through the drainage pits to Sydney water's pipe line.*

Response: There is no existing discharge to Sydney water with the exception of sewerage for office and amenities.

Stormwater is discharged via council stormwater pipelines.

- *Page 10 of the Waste Management Plan, Section 2.6.1.1.3, states 'any clean overflow would be captured on site through a silt arrestor before being discharged to the street stormwater system'. Where is the clean overflow coming from? Please provide a plan showing the clean and dirty water catchments.*

Response: The site is predominantly a 'dirty water catchment' all stormwater collected goes through one discharge point. To clarify, the "clean overflow" referred to in this statement is any additional rainwater from rain events exceeding 25mm beyond the first 25mm. The first 25mm of rainfall would be captured by the first flush system to be treated in the dewatering plant and any additional rainfall from heavy rainfall events would be discharged via the Council stormwater system.

- *P 122 of the EIS states that the first 20mm of rainwater is captured and directed to a silt arrester and detention tank. Clarify:*
  - ► *whether the detention tanks form part of the dewatering facility or are they shown on the Proposed Stormwater Plan Drawing No. 106.*

Response: The detention tanks are shown on the Proposed Stormwater Plan Drawing No. 106.

- *where the rain is directed after 20mm is captured including the water discharge point*

Response: To clarify, the first 25 mm of rain is captured and any additional rainwater is directed to stormwater, the discharge point is where the stormwater connects to the council stormwater pipeline. The discharge point is shown in Figure 2-5 below.

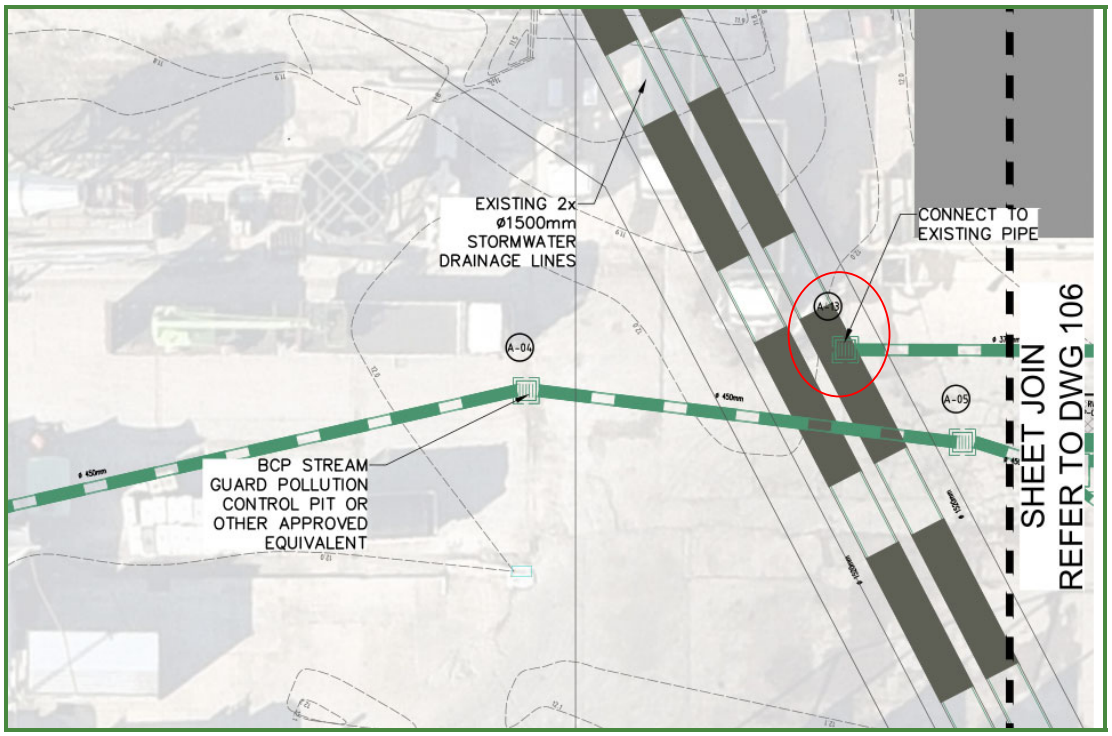
- *what stormwater event the system is designed to capture.*

Response: Total storage capacity of the stormwater system proposed is 200 kL, and this is designed to capture a 25 mm rainfall event.

- *Characterise any water discharged from the site, show the point of discharge on a plan and describe frequency and volume of the discharge.*

Response: Stormwater currently discharged from the site has been characterised in the Soil and Water Assessment as "slightly-moderately disturbed." As the proposed development involves a first flush system and upgraded stormwater pollution control the concentrations of all pollutants of concern are expected to be below the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018) default guideline values for 95% protection, or where not available the Australian and New Zealand Environment and Conservation Council (ANZECC) Water Quality Guidelines (2000). A water monitoring program detailed in the soil and water report will be implemented to confirm this and suitably characterise the stormwater post commencement of facility operation. The point of discharge is shown in the figure below. According to Bureau of Meteorology Design Rainfall Data System the site will discharge to stormwater approximately 12 times per year for rainfall events greater than 25 mm/day.

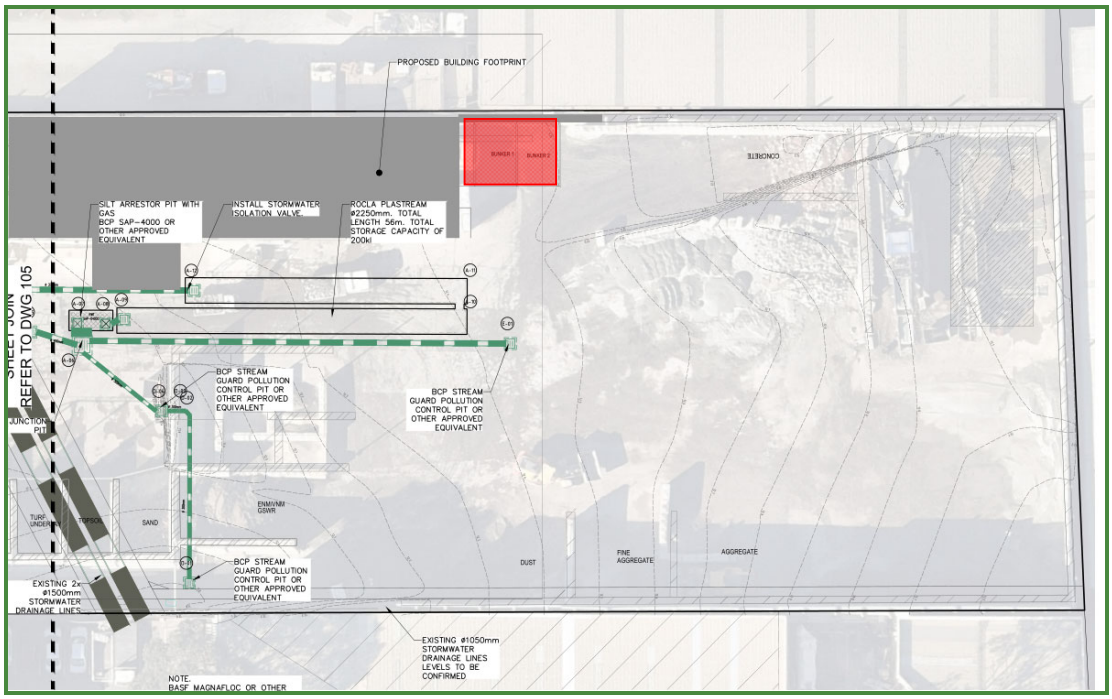
Figure 2-5: Stormwater Discharge Point



- *Show on a plan where the ASS treatment pad would be located during construction, including the location of the excavated drain surrounding it.*

Response: The proposed dewatering plant aggregate bunkers (red square in Figure below) would be utilised as the treatment pad as they only require temporary bunding on one side and would be covered by an awning so that drainage would not be required. A contingency drainage trough would be located in front of the temporary bunding.

Figure 2-6: ASS Treatment Pad Location



2.8 NOISE AND VIBRATION

- *Assess the impact of the proposed development only, as per previous comments.*

Response: The Noise Impact Assessment has been revised to include scenarios for the proposed dewatering plant only and a cumulative scenario of the existing C&D facility and the proposed dewatering plant operating simultaneously in accordance with the noise policy for industry. All scenarios comply with the relevant criteria.

- *It would appear that the suburban category has been selected for the residential noise amenity but urban has been used in table 5.1 and table 5-2, please address.*

Response: The urban amenity criteria is applicable to the site. This has been revised.

- *Describe what the front end loaders would be doing at night.*

Response: Unloading aggregates/sands from the dewatering plant into trucks.

- *In the modelled scenario 1, the trucks are not shown unloading or loading, or backing into the dewatering building, they are also not modelled idling. Please address.*

Response: The truck path modelled in the scenario 1 is considered suitably representative of vehicle movements, periods of necessary idling accelerating and slowing down. Noise from trucks are not dominant noise sources for scenario 1 and changes to truck source locations and assumptions would not change the results of the assessment.

- *Explain why a screen and crusher in the C&D facility would be operating at night when they facility's consent only permits operation until 6 pm?*

Response: This has been updated in the revised NIA. C&D facility will not operate at night.

- *Update the road traffic noise assessment which assumes 15 movements per hour whereas the TMP identifies 20 movements vehicles per hour.*

Response: This has been updated.

- *In the assumptions in Section 6.1.3 of the Noise Impact Assessment it is stated that 2 truck movements are assumed to enter and leave the site every 15 minutes. Please clarify whether this is supposed to be two trucks, four movements? Please ensure the numbers are consistent with the road traffic noise assessment and Traffic Management Plan.*

Response: This represents 2 trucks entering and 2 trucks leaving the site in a 15 minute period (4 truck movements). The NIA has been revised for clarity.

- *Clarify what is meant by 'the main building'.*

Response: The dewatering facility building. NIA has been revised.

- *The 'main building' has been modelled as brick, however, it would appear that the majority of the dewatering building would be colorbond, please address.*

Response: This has been revised, the building has been modelled with R_w 22 dB – colorbond.

- *Assess construction noise impacts including the dewatering facility pits, the new office and the upgraded stormwater system.*

Response: Updated in revised assessment.

2.9 Fire and Incident Management

Determine how much contaminated firewater would be generated and require to be stored in the case of a worst-case fire with primary containment having a net capacity not less than the total hydraulic discharge of the worst-case fire scenario. The total hydraulic discharge is the discharge from both the fire hydrant system and automatic fire sprinkler system for a duration of four hours.

Response: The site does not have a sprinkler system or hydrants. Fire services are shown in Figure 8-3 of the EIS. Fire requirements are to be determined in consultation with FRNSW prior to the construction stage, as per FRNSW request.

2.10 BIODIVERSITY

Describe the proposed landscaping.

Response: No landscaping is proposed.

3. ENVIRONMENT, ENERGY AND SCIENCE GROUP (EES)

The Environment, Energy and Science Group (EES) has reviewed the EIS and provides the following recommendations and comments on site landscaping and habitat improvement.

The EIS states that "landscaping would be provided at the site frontage as shown in the Landscape Plan provided" (page viii) but no Landscape Plan appears to have been provided. It is unclear where planting at the site frontage is to occur.

Table 4.3 in the EIS implies EES's comments provided in the request for input on the Secretary's environmental assessment requirements (SEARs), which relate to a site landscape plan/ landscaping/planting, are addressed in Section 8.4 of the EIS. However, Section 8.4 does not address site landscaping and planting. Section 8.4.1 only states "there is no vegetation present on site as the site is fully developed and is covered in a concrete hardstand". The RtS should confirm if a landscaping plan is to be provided for the frontage of the site as stated in the EIS and will address EES's recommendation from its SEARs submission that the plan:

- *includes details on the native vegetation community (or communities) and native plant species that once occurred in this locality*
- *specifies that any landscaping will use a diversity of local provenance species (trees, shrubs and groundcovers) from the native vegetation community (or communities) that once occurred on the site to improve biodiversity*
- *includes a list of local provenance species (trees, shrubs and groundcovers) to be used in the site landscaping*
- *uses advanced sized trees, providing sufficient area/space to allow any planted trees to grow to maturity on the site.*

If any landscaping is proposed on site it is recommended a condition of consent is included to prepare and implement a landscape plan and the plan includes details on:

a. the type, species, size, quantity and location of trees
b. the species, quantity and location of shrubs and groundcover plantings
c. the plan includes details on *the native vegetation community (or communities) and native plant species that once occurred in this locality and demonstrates that the plant species consist of local provenance*
d. a list of local provenance species to be used
e. the quantity and location of plantings
f. the pot size of the trees to be planted
g. the area/space required to allow the planted trees to grow to maturity
h. plant maintenance regime. The planted vegetation must be regularly maintained and watered for 12 months following planting. Should any plant loss occur during the maintenance period the plants should be replaced by the same plant species

- *Any planting/ landscaping on the site or street associated with the SSD shall use a diversity of local provenance native trees, shrubs and groundcover species (rather than exotic species or non-local native species) from the relevant native vegetation community that once occurred in this locality.*
- *Tree planting shall use advanced and established local native trees with a minimum plant container pot size of 100 litres, or greater for local native tree species which are commercially*

available. Other local native tree species which are not commercially available may be sourced as juvenile sized trees or pre-grown from provenance seed.

- *Enough area/space is provided to allow the trees to grow to maturity.*

Response: No landscaping is proposed and no landscaping plan is to be provided for the site frontage. The application for the dewatering facility does not require any changes to the street frontage of the site. The site is fully developed as an industrial site and all surfaces are sealed. No grassed areas are present. There is very little space at the street frontage for opportunities for landscaping to significantly improve the tree canopy or impacts of stormwater runoff and potential heat island effects. Additional landscaping within the site is not feasible as it is likely to impact vehicle movements and the benefit does not outweigh the costs.

4. NSW EPA

The EPA has reviewed as part of providing this advice the following documents:

- EIS Main Report *(Version 7)* ***(EIS)*** *– Benbow Environmental – 31st August 2021*
- EIS Appendix 2 – Noise Impact Assessment *(Version 4)* ***(NIA)*** *– Benbow Environmental – 30th July 2021*
- EIS Appendix 4 – Stormwater, Erosion & Sediment Control Assessment *(Version 1)* ***(SESCA)*** *– Indesco – June 2021*
- EIS Appendix 6 – Soil & Water Assessment *(Version 4)* ***(SWA)*** *– Benbow Environmental – 24th August 2021*
- EIS Attachment 2 – SEARS – *(Version 1)* – EPA – *20th April 2020* ***(SEARS)***

The EPA understand the Proposal is for:

Expansion of the existing resource recovery facility (which currently processes and stores up to 80,000 tonnes per annum (tpa) of construction and demolition waste to include a liquid waste treatment plant to process up to 250,000 tpa of drilling mud with a maximum storage capacity of 120,000 tonnes of liquid waste at any one time.

Based on the information provided, the Proposal is subject to an Environment Protection Licence (Licence) under section 47 of the Protection of the Environment Operations Act 1997 (POEO Act) for scheduled activity of Resource Recovery under clause 34 of Schedule 1 of the POEO Act. As the Premises already holds a Licence for other scheduled activities that are being conducted at the Premises if approved the Applicant will need to apply to vary the existing Licence to incorporate these new activities.

The POEO Act makes clear that environmental performance is to be continuously improving. The EPA therefore seeks best practice in all new facilities or activities. The need for best practice can be linked to the following elements of the POEO Act:

- *Section 3 of the POEO Act sets out the objects of the act which includes:*
  (d) to reduce risks to human health and prevent the degradation of the environment by the use of mechanisms that promote the following –
  (ii) the reduction to harmless levels of the discharge of substances likely to cause harm to the environment; and
  (iv) the making of progressive environmental improvements, including the reduction of pollution at source.
- *Section 45 of the POEO Act sets out the matters to be taken into consideration in licensing functions which includes:*
  (d) the practical measures that could be taken:
  (i) to prevent, control, abate, or mitigate that pollution; and
  (ii) to protect the environment from harm as a result of that pollution.

The EPA is concerned that the Proposal in its current form is not meeting the objectives of the POEO Act or taking all practical measures to prevent, control, abate, or mitigate pollution.

The EPA requires the Applicant to provide additional information to enable to EPA to adequately assess the Proposal and the potential environmental impacts. The required additional information is detailed below.

Response: The proposal for the dewatering plant has been designed to enable operation of this activity in conjunction with the existing C&D facility on site. The proposed development includes extensive mitigation measures that are expected to significantly improve the overall environmental management of the site as a whole. While the development focuses on the proposed dewatering facility, many of the mitigation measures would reduce impacts from the existing C&D Plant. Some of these mitigation measures proposed include:

- Upgrades to the existing stormwater infrastructure including BCP Stream Guard Pollution Control Pit or equivalent at stormwater pits; a silt arrestor; 200 kL underground containment and stormwater isolation valve. This would capture the first 25 mm of water from a rain event with overflow from heavy rain events expected 12 times per year.

- A dust suppression system which would be applied to all storage bunkers and dust generating activities. This would be a Coolfog or similar misting system that would use suitable treated wastewater (sampled and tested) from the dewatering plant for dust suppression purposes on site. The environmental benefits of this are twofold in reusing the treated water and reducing dust impacts from external storage.

As the proponent is making significant site improvements through this DA and providing a facility able to treat liquid wastes, the development should be supported. The EPA issues raised have been addressed below and the responses serve to improve the application in terms of environmental management of the site as a whole.

4.1 NOISE AND VIBRATION

4.1.1 A. Assessment for Annoying Noise Characteristics

The EPA recommends that the NIA assess the applicability of any modifying factor corrections for annoying noise characteristics such as low frequency noise or tonality.

The Proponent should assess whether any modifying factors are applicable to noise emissions from the proposed activities, in accordance with Fact Sheet C of the Noise Policy for Industry.

The EPA considers that there is the potential for appreciable low frequency and/or tonal noise emissions from some items of plant and equipment, such as the vibrating screen, crusher and pumps.

Response: An assessment of annoying noise characteristics has been provided in the revised Noise Impact Assessment. The revised assessment found that annoying characteristics are not a site feature.

4.1.2 B. Assessment of Road Traffic Noise Impacts

The EPA recommends that the road traffic noise impacts in Section 7 of the NIA have not been carried out in accordance with the NSW Road Noise Policy (RNP) and should be revised by the Proponent.

Assessing the site-generated traffic noise only against the criteria in Table 7-1 is not satisfactory, and the assessment should follow the steps in Section 3.4.1 of the RNP, assessing both existing and site-related traffic against the criteria.

Response: Benbow Environmental has revised the road noise assessment based on monitoring on Gibson Ave due to high existing road noise levels the proposed development causes a 0 dB increase to the existing road noise level, complying with the 2 dB increase criteria. Details are provided in the revised Noise Impact Assessment.

4.1.3 C. Assessment of Vibration Impacts

The EPA recommends that the Proponent should assess the potential for any operational vibration impacts from the use of items of equipment such as the crusher and screens, particularly at adjoining premises.

The Proponent should consider all feasible and reasonable mitigation measures to address the potential for any cumulative impacts given the combination of existing operations with the proposed de-watering facility.

Response: The operational equipment utilised for the dewatering plant will not generate vibration impacts therefore a detailed vibration impact assessment is not considered warranted.

A vibration assessment (Pulse White Noise Acoustics – Ref: 210578 – 81 Gow Street, Padstow – Vibration Survey) has been undertaken and shows the measured vibration levels from the existing C&D facility's equipment (including the crusher and screens) are within the accepted limits.

4.2 WATER

4.2.1 D. Assessment of the suitability of dewatering effluent

The EPA recommends that the Proponent assesses the suitability of the effluent for the proposed end uses.

If reuse of the dewatering plant effluent outside the dewatering facility building is proposed, it is recommended the Proponent:

- *Specify the volumes of effluent that would be reused for each end use including typical through to maximum rates (this should be consistent with the water balance assumptions discussed below).*
- *Characterise the effluent in terms of the concentrations of all pollutants expected to be present at non-trivial levels under typical through to worst case conditions (This should be informed by the expected qualities of the influents [liquid wastes to be received] and the expected treatment performance.).*
- *Compare the expected effluent pollutant levels to relevant benchmarks to screen for potential pollutants of concern (e.g.* Australian and New Zealand Guidelines for Fresh and Marine Water Quality [ANZG, 2018]*).*
- *Propose mitigation measures to address any identified risks.*

The EIS indicates that some of the effluent from the dewatering plant would be discharged to sewer, via a trade waste agreement, but proposes reusing some for dust suppression, materials processing and within the wheel wash outside the dewatering facility building.

The EPA is concerned regarding the use of dewatering plant effluent outside the dewatering facility as the EIS does not characterise the expected quality of the effluent or demonstrate that it would be suitable for the end use.

The effluent could potentially contain a range of pollutants. For example, pollutants in drilling mud could potentially include surfactants, polymers, 'proprietary' chemicals, and natural contaminants such as hydrocarbons, phenols and metals. Concrete washout waste is likely to have elevated salinity and could potentially contain sulfates/sulfides, metals, polycyclic aromatic hydrocarbons, and chemicals from admixtures such as surfactants, methylphenols, nitrates, cyanide, and supplementary cementitious materials. Residual flocculants or flocculant by-products (e.g. dissolved aluminium) from the dewatering process could also potentially be present in the effluent.

There is a risk that reuse of the dewatering plant effluent outside the dewatering facility building could result in contaminated discharges to waterways.

If the Applicant is not proposing to reuse the dewatering plant effluent outside the dewatering facility building, (i.e. the dewatering facility will be a closed system, only discharging to sewer) an assessment of the suitability of the effluent for reuse is not required.

Response: It is not considered practical to undertake a characterisation assessment prior to the commencement of operations. Therefore, it is proposed that during the commissioning stage a dewatering plant effluent classification assessment be undertaken. Prior approval of the scope and relevant criteria for the characterisation assessment would be obtained from the NSW EPA. Until it is demonstrated that the dewatering plant effluent complies with the relevant criteria the site will discharge all effluent to sewer under a tradewaste agreement. It is requested that this requirement be provided in the general terms of approval and/or consent conditions. The scope of the sampling for the characterisation assessment and ongoing monitoring will be agreed upon with the NSW EPA, this will include relevant benchmarks, pollutant analytes, frequency of sampling and sample locations.

4.2.2 E. Pollution Impact Assessment

The EPA recommends that the Proponent assesses the potential water pollution impacts of the proposed discharge to water.

It is recommended that the Proponent assesses the potential impact of the proposed discharges on the environmental values of the receiving waterways. The water pollution impact assessment should include:

- *Details of the practical measures that would be implemented to avoid discharges (e.g. roofing; increased storage capacity and reuse) and minimise pollution (e.g. treatment of discharges).*

Response: Details of the measures included to avoid discharges and minimise pollution are provided in the soil and water report. Measures include, enclosing/roofing of the dewatering

plant and upgrading the stormwater infrastructure. New stormwater infrastructure includes an increased storage capacity for stormwater by installing new underground detention tanks and treatment of discharges by BCP stream guard pollution control in stormwater pits and a silt arrestor.

- *Specify the expected frequency and volume of the proposed discharge based on the revised water balance.*

Response: The expected volume of the proposed discharge would depend on the size of the rain event. As the NSW EPA states below in their submission comments: according to Bureau of Meteorology Design Rainfall Data System the frequency of proposed discharges to stormwater would be approximately 12 times per year.

- *Characterise the expected quality of the proposed discharge in terms of the concentrations of all pollutants expected to be present at non-trivial levels based on:*
  - *Sampling of stormwater from representative sites at the existing facility under a range of conditions, with samples analysed for all pollutants potentially present at non-trivial levels.*

Response: As the proposed development involves implementation of a first flush system and upgraded stormwater infrastructure, the concentrations of all pollutants of concern within the proposed discharge are expected to be below the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018) default guideline values for 95% protection, or where not available the Australian and New Zealand Environment and Conservation Council (ANZECC) Water Quality Guidelines (2000). Stormwater sample collection and analysis for the purposes of characterisation of water quality and providing baseline data was undertaken on 27 October 2020. Results of stormwater characterisation showed that the sample below LOR or within the adopted and selected ANZECC criteria for all parameters except pH, indicating the stormwater is of a quality for “slightly-moderately disturbed ecosystems”.

Additional stormwater characterisation for the existing facility is considered unjustified due to the extensive modifications proposed for the site’s stormwater infrastructure which are expected to significantly improve the quality of the stormwater discharge. In addition, the proposed discharge is only expected to occur on average 12 times per year. The proposed water monitoring program detailed in the soil and water report will confirm the quality ofd the discharge and suitably characterise the stormwater post commencement of facility operation.

- *The characterisation of the dewatering plant effluent (if proposed for reuse outside the dewatering facility building).*

Response: See section 4.2.1 above.

- *The predicted performance of any proposed treatment measures.*

Response: The predicted performance of the stormwater controls is that all stormwater discharge will comply with the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018) default guideline values for 95% protection, or where not available the Australian and New Zealand Environment and Conservation Council (ANZECC) Water Quality Guidelines (2000).

- *Assess the potential impact of the discharges on the environmental values of the receiving waterways consistent with the* Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018).

Response: The soil and water assessment demonstrates the risk is low. The site stormwater will be monitored to ensure stormwater discharges comply with the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018) default guideline values for 95% protection, or where not available the Australian and New Zealand Environment and Conservation Council (ANZECC) Water Quality Guidelines (2000). This will ensure negligible impacts to the environmental values of the receiving waters.

- *Where relevant, propose practical measures to address identified impacts.*

Response: Practical measures have been adopted to address identified impacts. These are the first flush system and upgraded stormwater infrastructure. Details are included in the Water Reuse and Drainage Upgrade Plans provided in Appendix 4 of the EIS.

The EIS states that there would be no water discharge points. However, the proposed water management system appears to be designed to discharge more than 12 times per year. Furthermore, the EIS does not identify the location of the proposed discharge point or the flow path to the receiving waterway and it is unclear whether discharges would bypass the silt arrestor.

Response: There is 1 proposed water discharge point as shown in Figure 2-5, this is shown in the stormwater plans in Appendix 4 of the EIS. The stormwater flows into the stormwater pits, through the silt arrestors and then underground detention tanks. From the detention tanks, stormwater is reused in the dewatering plant and any overflow during heavy rain events flows into the existing stormwater easement pipe.

The EIS does not characterise the proposed discharge but presents results of a single sample from a stormwater pit at the Premises. It is unclear:

- *Where the sample was collected and whether this is representative of runoff from the entire existing site.*
- *What the weather and operational conditions were during sampling.*
- *Whether the analytical suite adopted for the stormwater sample reflects the range of pollutants potentially present.*

Response: The sample was taken at the stormwater pit located adjacent to the north western corner of the dewatering plant. This pit is the last accessible location prior to discharge to stormwater. It has captured the majority of runoff from the C&D processing area at the rear of the site. The sampling was undertaken during normal operations on 27 October 2020 after a rain event, that morning received approximately 3.2 mm of rain (AWS 66137).

As indicated in the EIS, the site stormwater is leachate as the catchment includes waste storage and processing areas.

Response: Terminology noted.

Please note that additional sampling events and sites would be required to characterise the existing stormwater/leachate quality under a range of conditions and screen the sample for all pollutants potentially present at non-trivial levels. This information is needed to inform a characterisation of the proposed discharges (in combination with the characterisation of the dewatering plant effluent [if this is proposed to be reused in external areas of the site] and the expected performance of the proposed stormwater/leachate management system).

Response: Further sampling of the stormwater discharge is not considered warranted, as it is not directly related to the proposed dewatering facility. Results of stormwater characterisation showed that the sample taken was below the limit of reporting (LOR) or within the adopted and selected ANZECC criteria for all parameters except pH. Treated water from the dewatering plant would be sampled and tested, and only reused on site if it meets the relevant criteria. The risk to stormwater is low and the proposed controls would significantly improve the stormwater discharge quality.

4.2.3 F. Appropriate Water Management System

The EPA recommends that the Proponent considers practical measures to avoid discharges to waters and minimise pollution.

It is recommended the Proponent:

- *Installs roofing over pollutant source areas, such as waste storage and processing areas.*

Response: Roofing the existing C&D facility has been investigated and found to be infeasible. The proposed dewatering plant is roofed/enclosed. Additionally, the proposed upgrades to the site's stormwater system are expected to significantly improve the quality of stormwater discharge from the site which is only expected to occur 12 times a year.

- *Additional and/or alternative treatment measures targeting pollutants of concern potentially identified through the discharge characterisation and water pollution impact assessment.*

Response: It is not considered warranted. The proposed upgrade to the stormwater system will improve the site's stormwater performance. The proposed dewatering plant is enclosed/roofed. Stormwater monitoring is proposed and will serve to characterise the site's stormwater discharge, which is expected to comply with the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018) default guideline values for 95% protection, or where not available the Australian and New Zealand Environment and Conservation Council (ANZECC) Water Quality Guidelines (2000).

- *Increases the proposed design storm capacity of the stormwater/leachate tanks.*
- *Maximises reuse of captured stormwater/leachate to maintain capacity within the onsite storages (e.g. by not reusing the dewatering plant effluent outside the dewatering plant building).*

Response: This is not considered warranted. The site currently has no stormwater detention. The proposed tanks proposed of 200 kL are a significant improvement. The application of the treated water used for dust suppression will only occur after it has been characterised and meets NSW EPA approved pollutant limits. Where treated water does not meet limits, this will be discharged to the sewer under a tradewaste agreement. The detention tanks will have a float sensor

installed and a buzzer so that site management will be alerted that first flush water requires processing. Other mitigation measures and monitoring procedures outlined in the EMP are also proposed to ensure impacts to stormwater are adequately controlled.

Managing Urban Stormwater, Soils and Construction Vol. 1 *(Landcom, 2004) and* Vol. 2E Waste Landfills *(DECC, 2008) provide relevant guidance on managing uncontaminated stormwater. DECC (2008) recommends that, for disturbance >3 years with standard receiving waterways, sediment basins should be designed to achieve the required water quality up to the 90th percentile five-day rainfall event. Landcom (2004) indicates that the 90th percentile five-day rainfall event at Bankstown is 42.6mm.*

The EIS does not include the design storm duration for the underground tank, but states "The system is designed to only discharge rainwater after a heavy rain event (>25 mm) which according to the BoM Bankstown Airport automatic weather station (ID #: 066137), occurs on average 8.5 times per year (1968-2020)."

However, the Bureau of Meteorology Design Rainfall Data System indicates that the 24-hour rainfall total would exceed 25mm more than 12 times per year at the site[1]. Consequently, the system is likely to overflow more than 12 times per year, several times more frequent than the 2-4 spills per year expected for the 90th percentile 5-day storm event according to DECC (2008).

Furthermore, given the uncovered waste processing and storage areas and the proposed reuse of dewatering plant effluent in external areas of the site, runoff could potentially contain a range of pollutants, including dissolved contaminants.

Response: It is noted that the *Bureau of Meteorology Design Rainfall Data System indicates that the 24-hour rainfall total would exceed 25 mm more than 12 times per year at the site.* The first flush system was designed for 25 mm as 20 mm is an industry standard for first flush systems to acceptably capture sediment laden runoff. Regardless of frequency, the stormwater discharge is expected to comply with comply with the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018) default guideline values for 95% protection, or where not available the Australian and New Zealand Environment and Conservation Council (ANZECC) Water Quality Guidelines (2000) and will be monitored accordingly.

4.2.4 G. Appropriate Water Balance

The EPA recommends that the response to submissions (RtS) includes a daily time-step water balance.

It is recommended the daily time-step water balance be based on:

- *rainfall data,*
- *temporally variable water reuse rates (seasonal and weather dependant), and*
- *seasonal evaporation rates.*

The water balance assumptions should be reviewed with reference to the best available information (e.g. current site water usage; evaporation data) to ensure they accurately reflect the likely conditions under the Proposal.

[1] *http://www.bom.gov.au/water/designRainfalls/revised-ifd/*

The Soil and Water Assessment *(Appendix 6 of the EIS) includes a steady state water balance, representing average conditions, that is based on flawed assumptions and does not reflect the likely range of conditions at the site.*

The water balance assumptions do not reflect likely conditions under the Proposal:

- *The EIS states, "The dust suppression requirements are based on an assumption of 1.5L per square meter per 20 minute period typically used for haul road dust suppression. Assuming this application is done 75% of the time for 60% of the site area this would result in an approximate maximum water usage quantity of 13,000kL/month for dust suppression."*
  - *This equates to approximately 50mm of irrigation per day across the whole site or 80mm per day across the 60% where dust suppression is assumed to be applied. Over a year this would amount to 17,700mm of irrigation across the site, more than 20 times the average annual rainfall.*
    - *Noting that Figure 3-1 indicates that the monthly site rainfall volume is 722kL, the proposed reuse rate (13,000kL/month) is not possible unless mostly comprised of effluent from the dewatering facility.*
    - *Reuse at the assumed rate would result in substantial pooling and runoff.*

- *Figure 3-1 of the EIS appears to assume that up to 13.6ML of water would be lost to evaporation per month (dust suppression + site washdown + wheel wash).*
  - *This equates to approximately 44mm/day across the entire site and appears much higher than would be expected based on typical evaporation rates.*
  - *For comparison, at the nearest Bureau of Meteorology weather station with evaporation data (Prospect Reservoir), mean evaporation ranges from 1.6mm/day in June to 5.6mm/day in December.*
- *The EIS states, "Treated water from the dewatering process would be reused on site for dust suppression purposes on the existing external storage bunkers."*
  - *This appears inconsistent with the water balance at Appendix 6 which assumes reuse over 60% of the site area.*

Given the potential for frequent discharges, a daily time-step water balance would be more appropriate to demonstrate that capacity can be managed within the storages and predict the frequency and volume of discharges. This would reflect the variable water demand, rainfall and evaporation conditions. For example, dust suppression water requirements and evaporation rates would decrease during wetter than average conditions, potentially resulting in more frequent overflows.

Response: Not all the water used for dust suppression is expected to evaporate. As the majority of material stored is porous sands and aggregates, it is expected the water mist would also soak into the material as well as evaporate. Additional material is constantly placed on the top of a stockpile, thereby adding another layer of dry material which is then required to be moistened for dust control. There are considerable material movements on site for the existing C&D facility. Obviously when it is raining there will be no requirement for dust suppression and during windy and dry conditions, a lot more water will be used. 80 mm or 8 cm across the site per day considering there will be layers of changing materials requiring dust suppression is considered to be a suitable assumption for the water used in dust suppression provided in the water balance would come primarily from water reuse (as shown in the water balance). Dust suppression of stockpiled material is known to be a water intensive process and in this case, reuse of treated water for this purpose would also have the added effect of reducing dust emissions and

improving the site's performance in terms of air quality. Any pooling on site can be managed by sending excess treated water to tradewaste and the use of a misting system that only emits a fine mist that is applied depending on weather conditions, whilst the proposed first flush system will capture any site runoff.

The site's existing water use was reviewed when establishing the assumptions utilised in the water balance diagram. A daily time-step water balance is not considered warranted as eWater's Australian Water Balance Model (AWBM) is inappropriate given the complexity of the site's operations including the incoming and outgoing C&D materials, changing state of stockpiles, first flush system and dynamic dust suppression system. The water balance provided is considered sufficient to convey water use information for the site.

4.3 DIESEL TANK

4.3.1 H. Detail Regarding Diesel Fuel Tank

- *The EPA is concerned there is a lack of available detail regarding the design of the bunded diesel fuel tank.*
- *This includes but is not limited to the dimensions of the fuel tank, the materials used for construction and a detailed schematic of the tank itself.*
- *The EPA also requests that detail regarding mitigation measures to protect the fuel tank (such as a concrete barricade) be provided, including dimensions and materials used for the barricade.*
- *The EPA is concerned about the position of the diesel fuel tank as it appears to be situated in a high traffic area and would therefore be more prone to accidental rupture or there is higher likelihood of damage to the bund that is required to contain any discharge should the tank become compromised for any reason. Given this risk, the EPA suggests consideration be put into moving the tank to another location on site and/or splitting the tank into several smaller tanks to reduce risk of spill, fire or any other event that cause environmental harm.*

Response: The type of self-bunded diesel tank to be installed is provided in the following link: *https://www.globalengmfg.com/self-bunded-bulk.html*. The size of the tank has been revised to reduce its footprint. The tank proposed capacity is 33 kL which is 6 m x 2.5 m x 2.5 m. Concrete barricades will be installed to protect the tank.

4.4 EPA ADDITIONAL ADVICE

The EPA has reviewed as part of providing this advice the following documents:

- *EIS Main Report (Version 7) (EIS) – Benbow Environmental – 31st August 2021*
- *EIS Appendix 1 – Air Quality Impact Assessment (Version 4) (AQIA) – Benbow Environmental – 7th July 2021*
- *EIS Appendix 3 – Waste Management Plan (Version 3) (WMP) – Benbow Environmental – 24th August 2021*
- *EIS Attachment 2 – SEARS – (Version 1) – EPA – 20th April 2020 (SEARS)*

The EPA is concerned that the Proposal in its current form is not meeting the objectives of the POEO Act or taking all practical measures to prevent, control, abate, or mitigate pollution.

The EPA requires the Applicant to provide additional information to enable the EPA to adequately assess the Proposal and the potential environmental impacts. The required additional information is detailed below.

4.5 DIESEL FUEL TANK

The EPA has significant concerns around the safety of the 65,000L bunded diesel fuel tank as outlined in Sections 5.6 & 5.7.2 of the EIS. Given the petroleum product is classified as a dangerous goods, the EPA requests justification for the size and position of the tank as shown on the site plan, as part of the proponent's documentation, including:

- *Detail about the reason that the Applicant is proposing to store 65,000 litres of diesel at the premises.*
- *Detail around mitigation procedures must be included as part of the justification for the design and volume of the bunded fuel tank as outlined in the proposal.*

Response: The size of the tank has been revised to reduce its footprint. The tank proposed capacity is 33 kL which is 6 m x 2.5 m x 2.5 m. The diesel will be used for mobile vehicles such as the front-end loaders on site. The type of self-bunded diesel tank is provided in the following link: *https://www.globalengmfg.com/self-bunded-bulk.html*. Concrete barricades will be installed to protect the tank. The tank will be installed in accordance with AS1940-2017: Storage and Handling of Flammable and Combustible Liquids. Mitigation procedures are provided in procedure 4 – *Storage and Handling of Hazardous Materials* of the EMP procedures.

4.6 AIR

4.6.1 A. Mitigation measures are unclear

The EPA recommends that the AQIA be revised to include further detailed information on the proposed mitigation measures (plans, process flow diagrams, descriptions) that clearly identify and explain the mitigation measures proposed. This should include but is not limited to:

- *Location and design of wet suppression system/s,*
- *Description of the hood extraction system, operating principals and how emission reductions are achieved (i.e. particle filters, multiclones, scrubbers), and*
- *Further details on enclosures for stockpile.*

Incremental dust impacts from the development are predicted to be significant at a number of industrial receptors for modelled scenario 1. Lower ground level concentration, but still appreciable, impacts are predicted under scenario 2, with the incorporation of mitigation measures. Examples include;

- *Incremental PM10 (24-hour) impacts at the industrial receptor (R14) are predicted to be 43.0 ug/m^3 (scenario 1) and 12.1 ug/m^3 (scenario 2).*
- *Incremental PM10 (24-hour) impacts at the industrial receptor (R11) are predicted to be 19.8 ug/m^3 (scenario 1) and 16.2 ug/m^3 (scenario 2).*

To mitigate potential current and future dust emissions off-site, the Licensee proposes to construct a custom-built hood and vacuum enclosure to be applied to the crusher and screener. Results of air impact modelling for both scenario 1 and scenario 2 claim that incremental dust

levels were reduced with the inclusion of a custom hood covering applied to the crusher/screener by ~12-46% at the most heavily impacted receptor (R11). No details regarding the hooded extraction system have been provided to support the applied control factors.

The EIS states that the development will include provision for additional dust suppression by implementing water sprayers on stockpiles. It is planned to use treated water from the proposed dewatering plant for this purpose however no details on the water spray system have been provided.

A control factor of 0.1 has been applied for use of enclosures for stockpile storage. However, the level of applied control has not been justified (refer to issue 2). The enclosure heights and stockpile heights, during operations, have not been provided.

Response: The technical assessment has been revised to include the proposed development only. Modelling does not include any assessment of the existing sources on site. Cumulative assessment refers only to background levels of dust from NSW EPA monitoring stations as per the requirements of the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW (NSW EPA 2016).* This is in accordance with requests by DPIE communicated on 7th April 2022.

The suppression system to be applied at all dust generating activities and all stockpiled materials as indicated by the AQIA. This would include misting sprays applied along all bunker walls to suppress dust from stockpiles.

All enclosures on stockpiles modelled in the AQIA are the existing 2-3 sided storage bay walls. The control factor of 0.1 has been applied and justified in the AQIA (previously section 7.3.1). Reduction factors for the facility have been based on the *Emission Estimation Technique Manual for Concrete Batching and Concrete Product Manufacturing* (NPI DEH, 1999).

4.6.2 B. Emission control efficiencies require justification

The EPA recommend that the AQIA be revised to;

1) Be based on appropriate control factors that are consistent with the mitigation measures proposed with robust justification.

2) Include detail regarding the calculation methods used for estimating emission rates for identified emission sources.

The EPA advises that there are significant issues with the quantitative assessment, including but not necessarily limited to:

- *Multiple use of emission reduction factors being applied to emission estimates for a single control measure (i.e. wet suppression); without robust justification. For example, the AQIA has adopted a control efficiency for wet suppression of 50% in multiple instances for individual sources. TA-Air do not agree with the use of multiple control emission reductions, for the same source for a single control measure.*
- *The AQIA, in some instances, adopts a reduction factor of 0.1. The EPA interprets this to be a 90% emission reduction being applied to the emission estimation which is commensurate with reductions that may be achieved with complete enclosure, however complete enclosure is not proposed.*

- *The AQIA has made reference to the NPI* Emission Estimation Technique Manual for Concrete Batching and Concrete Product Manufacturing*, however the site operations are associated with material handling and not concrete batching. No justification is provided for use of these factors.*

The EPA considers the methodology applied in the preparation of the AQIA to be inconsistent with established methodologies for assessing impacts from this type of facility. Furthermore, The EPA has been unable to replicate the calculated emission rates presented in the AQIA (Tables 7-6 and 7-7).

Response: Various NPI EETM support the multiplicative effect of reduction factors from additional control measures. There is no indication that multiple applications of the same type of control measure is not approved or is unsupported by the literature. Benbow disagrees with the TA-Air position that it is not appropriate. In the professional experience of Benbow Environmental, we have seen numerous scenarios where multiple control measures were simultaneously implemented on sites across NSW and have observed a multiplying effect.

The control factor of 0.1 has been applied and rigorously justified in the AQIA (previously section 7.3.1). Reduction factors for the facility have been based on the *Emission Estimation Technique Manual for Concrete Batching and Concrete Product Manufacturing* (NPI DEH, 1999). The NPI EETM supports a reduction factor of 0.1 on enclosures with 2-3 walls for both materials handling and materials storage. The use of the materials handling and materials storage reduction factors within this NPI EETM is considered applicable to this assessment as the materials are similar in nature to those handled and stored at concrete batching plants (aggregates and sands). It can be noted that these reduction factors are similar to those used in the NPI EETM of other industries such as mining.

The AQIA has been updated to include the emission rate derivation calculation in Section 8.3. The remainder of Section 8.3 provides the adopted emission factors, reduction factors and assumptions regarding source quantity, size, operation times and processing quantities. Should further clarification be required for replicating emission rates, Benbow Environmental welcomes further discussion with TA-Air at the EPA.

4.6.3 C. Daily peak processing rate for estimating emissions is unclear

The EPA recommends the AQIA be revised to include further clarification on the peak daily throughput utilised for emission estimation.

The AQIA utilised a peak daily processing rate of 48,048 tonnes (see section 7.4.1), which is greater than 50% of the proposed annual tonnage. This is a significant quantity for a daily throughput, and it is not clear how this value is representative of actual operations proposed at the premises.

Response: This was a typing error. The correct quantity and the quantity used for the assessment was 480 tonnes/day The technical assessment has been revised to include the proposed development only. Modelling does not include any assessment of the existing sources on site. Cumulative assessment refers only to background levels of dust from NSW EPA monitoring stations as per the requirements of the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW (NSW EPA 2016).* This is in accordance with requests by DPIE communicated on 7th April 2022.

4.6.4 D. Additional exceedances of the impact assessment criteria

The EPA recommends the AQIA be revised to demonstrate:

- *Emissions are minimised as far as practical.*
- *No additional exceedances of the impact assessment criteria are predicted. This may include the adoption of additional management measures, mitigation measures, and/or reduced throughputs to achieve compliance.*

The AQIA predicts exceedances of the impact assessment criteria contained in the Approved Methods for Modelling and Assessment of Air Pollutants in NSW *at neighbouring industrial receptors. As per section 5.1.3, it must be demonstrated that where exceedances are predicted at receptors, due to elevated background concentrations, the proponent must demonstrate that there are no additional exceedances of the impact assessment will occur as a result of the proposed activities and that best management practices will be implemented to minimise emissions of air pollutants as far as is practical. The AQIA has not demonstrated that there are no additional exceedances of the impact assessment criteria for identified sensitive receptors.*

Response: The technical assessment has been revised to include the proposed development only. Modelling does not include any assessment of the existing sources on site. Cumulative assessment refers only to background levels of dust from NSW EPA monitoring stations as per the requirements of the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW (NSW EPA 2016).* This is in accordance with requests by DPIE communicated on 7th April 2022.

No additional days of exceedance occur due to the proposed development. This is provided in the updated assessment.

4.6.5 E. Nominating contingency measures for odour

The EPA recommends the AQIA be revised to include specific contingency measures for minimising odour emission, should unexpected odour emissions occur once operational.

The AQIA does not include a quantitative assessment of odour impacts. Justification provided in the AQIA includes;

- *No odour is expected to be generated from the proposed development.*
- *The drilling mud to be received by the facility is non-destructive digging waste, which is a water-based drilling mud containing clay (usually bentonite) and various non-odorous chemicals.*
- *Odorous drilling mud types (including oil-based muds and synthetic based muds) would not be received by the facility.*
- *Drilling mud containing barium sulphate would not be accepted at the facility.*

The Licensee has obligations under section 129 of the Protection of the Environment Operations Act *(**Act**) to not cause or permit the emission of any offensive odour from the premises. Drilling mud has the potential to be odorous and appropriate management measures should be employed to minimise the risk of odour impacts occurring and ensure compliance with the Act.*

Response: When drilling bud is oil-based is has the potential to be odorous. The site will only be accepting non-destructive digging waste, which is a water-based drilling mud containing clay

(usually bentonite) and various non-odorous chemicals. Furthermore, an procedure to ensure incoming loads do not contain odorous material would be implemented. This includes two documents that are required to be obtained – a signed waste specification confirming the nature and source of the drilling mud and a site assessment (and if applicable soil test results) confirming the source of the drilling mud is from an uncontaminated site. It is therefore unlikely that the facility will cause odour impacts. In addition, due to the type and size of the development, it has been possible to fully enclose the de-watering facility. It is generally considered that an enclosed building will achieve a 90% or higher reduction in odours. This is considered a sufficient mitigation measure. If the site receives an odour complaint, it is recommended that a suitably qualified consultant is engaged to conduct a review of the de-watering facility operations.

4.7 WASTE

The EPA has the following additional comments and questions for Waste:

4.7.1 A

Page i in the EIS states "The maximum quantity of liquid waste that can be processed through the dewatering plant in a 24-hour period is approximately 1,500 tonnes. Approximately 450 tonnes of clean water would be generated each day". The EIS, page vii, then states "Little waste requiring disposal is expected to be generated by the dewatering process". Clarification is required to:

- *Explain what the remaining 1,050 tonnes of waste will comprise of and its end use if it is not to be disposed of.*

Response: This is aggregates and sand that can be reused in road base, construction, concrete etc.

- *Section 5.1.5 of the EIS then states that approximately 60% of the 250,000 tonnes accepted per annum of liquid waste will be water. If this is correct, then the figures (ie 30% of the liquid waste will be water) outlined in page i of the EIS are inconsistent with section 5.1.5 of the EIS.*

Response: 1,500 tonnes of liquid waste per day is the maximum processing capacity of the plant. The average quantity of liquid waste received per day is 750 tonnes, approximately 60% of this will be water, 450 tonnes.

4.7.2 B

The EIS, page viii, states that the Proposal is for "on-site storage of an estimated additional 1,400 tonnes of waste at the site". Clarification is required as to what this waste will comprise of and how this additional storage requirement has been calculated as it doesn't align with the per day generation amount of water versus residual waste amounts once the dewatering has occurred as described in page i of the EIS.

Response: Waste storage associated with the proposed dewatering plant is primarily aggregates and sands (approximately 1,095 tonnes) with the remainder being liquid stored within pits and tanks. Waste storage quantities are calculated based on the size of the storage area and the maximum volume of waste this area is capable of storing. Storage capacity is not related to the processing quantities or the rate of generation of waste. Waste can accumulate over time prior to it being sent off site. Storage of waste is approximately 365 tonnes, this is because it can be piped

to water reuse application on site or discharged to trade waste without significant requirements for onsite storage. If 1,500 tonnes were to be theoretically processed in a 24 hour period, approximately 900 tonnes of this would be water which would be reused on site or discharged to trade waste where necessary as it was generated. However, it is unlikely this will occur in practice at these quantities.

4.7.3 C

The EIS, page viii, also states that "Materials recovered from the proposed dewatering plant would include treated water, recycled aggregates and biscuit (filter cake) resulting from the filter pressing of the sediments/silt in the liquid waste.", "Aggregates would be recycled under the relevant resource recovery exemption and order" and "Filter cake would be applied to land under a resource recovery exemption or sent to a licensed landfill". The EPA requires clarification on:

- *The quantity of each waste type generated, as outlined by this statement, at the end of the processing.*

Response: Estimated quantities of waste types to be generated are provided in Table 8-10 of the EIS. An excerpt from this table is provided below:

Excerpt from Table 8-10: Recovered Waste Types, Quantities & Classification for Dewatering Facility

Waste Type	Estimated Maximum Quantity	EPA Waste Classification
Treated water	150,000 tpa	Liquid waste
Aggregates & Sand	95,000 tpa	General soil waste (non-putrescible)
Filter cake (biscuit)	5,000 tpa	General soil waste (non-putrescible)

- *If aggregates are being recycled, i.e processed on site, it is unclear why reference is made to a resource recovery exemption? The purpose of the exemption is for the end use of the material off site. Is it the Applicants intention to land apply material produced under the relevant resource recovery order at the same premises?*

Response: It is the applicant's intention to sell the product for reuse or application to land, the recovery exemption orders provide clear processor requirements that the applicant must adhere to. The applicant will not apply any of the waste generated to land on the site, this site is concreted.

4.7.4 D

Section 5.1 of the EIS refers to Appendix 8 having a site plan but there is just a heading at Appendix 8 and no site plan.

- *Page 2 of the WMP, section 2 – Waste Management, point 7 comment states "see site plan". Section 4.7 and 4.7.2 of the WMP also refers to storage areas being shown on the site plan. Section 2.2 of the WMP states that a proposed site plan and equipment layout are provided in Appendix 8. There is no Appendix 8 in the WMP and there are no plans or diagrams in the WMP so it is unclear what plan the WMP refers to.*
- *The WMP should include a site plan that clearly shows the site layout and onsite transport flow paths for the existing and proposed operations.*

Response: Appendix 8 refers to Appendix 8 of the EIS – the architectural drawing set (Site Plans). It should be noted that the appendices were uploaded to the portal separately from the EIS document.

4.7.5 E

e) Section 5.1.2.1 of the EIS and section 2.6.1.1.1 of the WMP states that "This site would <u>not</u> receive oil-based or synthetic-based muds" and "drilling mud containing barium sulphate will NOT be accepted". What procedures will the Applicant be undertaking to ensure this occurs?

Response: Please see section 5 of the WMP for the incoming waste procedure where this is addressed.

- *Section 2.6.1.1.1 of the WMP also states that the "chemical additives listed above are all known to be odourless as stated in relevant safety data sheets". It is not clear what chemical additives this statement is referring to and at what point the chemicals referred to enter the waste. Section 2.6.1.1.1 appears to relate to defining the drilling mud to be received but then outlines additives. Clarification is needed in this section regarding the reference to chemical additives.*

Response: The "chemical additives" refer to the additives to the drilling mud prior to receipt at the site. The most common additive is bentonite. There are hundreds of proprietary based chemicals that can be added to drilling mud to improve performance, the vast majority of these are only used for deep offshore drilling and will not be accepted at the site. The incoming waste procedure and drilling mud waste specification have been revised to include a requirement to check all incoming drilling mud for additive use and the SDS's of any additives used.

- *The EPA requires that the Proponent provide a detailed flow diagram of how different types of waste will be delineated on site. Currently, there is no clear description of how different wastes will not be accidentally combined and therefore this poses a serious risk of cross-contamination. This diagram should include how waste will be processed, kept segregated where appropriate and stored on site, and appropriate measures to prevent cross contamination, especially for the aggregate from the dewatering process that will be then processed alongside the construction and demolition processing operation at the premises.*

- *Section 5.1.3 of the EIS states that it is intended that aggregates from the dewatering process of the concrete washout waste would be processed through the existing recycling plant. The*

EPA is concerned that there is potential for the cross contamination of wastes if aggregates from the dewatering plant process are potentially going to be added to the aggregate processing and after processing storage that occurs as part of the construction and demolition existing operation.

Response: All liquid wastes processed through the dewatering facility would be received in the one pit and processed through the same equipment. Concrete washout water and drilling mud have very similar properties, they both contain sand aggregates and water, and they differ as drilling mud would contain silt/clay and concrete washout water contains cement. Aggregates and sands from the dewatering process will be stored in dedicated bays attached to the facility, classified, loaded directly onto a front-end loader weighed and sent offsite. All waste bays are labelled in the architectural drawings, the waste storage bays are used to separate waste. The risk of cross contamination between waste streams is low. No hazardous waste is stored on site, so even if due to unforeseen circumstances aggregates 'cross contaminated' they will be classified and do not pose a serious risk regarding potential for environmental harm or violating requirements of the recovered aggregates order/waste classification guidelines. Section 5.1.3 has been revised for clarity, the "biscuit" from the filter press can be applied to land under the Treated drilling mud exemption 2014 or sent to landfill. The recovered aggregates would need to comply with the recovered aggregate order 2014.

- *Section 2.6.1.1.2 of the WMP then states that concrete wash out water may contain traces of toxic metals such as Chromium VI and is caustic and corrosive, with a pH of around 12. It is also stated that there is a treatment option to reduce the pH levels but does not state if the Applicant intends to undertake that treatment. Are the aggregates to be tested prior to processing through the existing recycling plant to ensure there are not chemical levels of concern or other contamination? Is it intended that once aggregates are extracted from the concrete washout waste that this waste is processed and stored with aggregates from the existing operations?*

Response: Yes, pH dosing will be undertaken. Less than 10% of the recycled aggregates and fines (9,500 tpa) would require crushing, these represent the large rocks that come through from non-destructive digging. These do not represent a contamination risk and will not be tested. Smaller sized aggregates such as those extracted from concrete washout waste will not be processed or stored with aggregates from the existing operations. These aggregates will be stored within the storage bay adjoining the proposed dewatering plant and will be sent directly offsite.

- *In addition, the construction and demolition waste that is currently permitted to be accepted, processed and stored on site must maintain compliance with* the Standards for managing construction waste in NSW *(**C&D Waste Standards**) with regards to initial inspection protocols and storage requirements. It is unclear from the Proposal how the liquid waste will remain segregated both before and after processing at the Premises from the existing activities on site given part of the dewatered liquid waste will be processed in the same area as the existing construction and demolition waste types.*

Response: The majority of the solids from the dewatering plant with remain segregated as they will be stored within their respective storage bays within the dewatering facility and be removed from the site following testing. Only the large rocks from non-destructive digging will not be segregated, and these do not represent a contamination risk due to the strict incoming waste procedures to be implemented. The treated water will either be sent to trade waste or if of

suitable quality, will be used for dust suppression following a dewatering plant effluent classification assessment.

4.7.6 F

Section 5.1.5 of the EIS states that less than 10% of the recycled aggregates and fines would require crushing. The EIS does not state that the liquid waste will only come from a specific source but just states the liquid waste will be sourced from construction sites in section 8.5.1 of the EIS. Section 2.6.11 of the WMP states that the drilling mud will be sourced from construction sites across NSW. How has this recycled aggregate and fines percentage been determined if the liquid waste is to be accepted on site from different sources?

Response: These will vary from load to load, however 10% is provided as an estimated average guide based on professional industry experience with dewatering plants.

4.7.7 G

Section 5.1.5 of the EIS also states that the recycled aggregates and fines produces from the dewatering plant would be processed through the site's existing C&D plant which is licensed to process 80,000 tonnes per annum. The existing licence states, "The amount of waste for processing, storage or resource recovery at the premises must not exceed 80,000 tonnes per year" and condition L2.2 states "The authorised amount of waste permitted on the premises cannot exceed 7,300 tonnes at any one time". The 80,000 tonnes per annum limit does not just relate to processing activities at the premises. Section 5.1.5 of the EIS should address not only reference to processing but how the additional activities will meet the processing, storage and resource recovery limit of 80,000 tonnes per annum and the authorised amount limit if this component of the proposal intends to incorporate the additional processing of aggregate from the proposed dewatering plant to the existing licensed operations on site.

Response: A licence variation will be sought following approval for the acceptance of the liquid waste and the waste storage associated with the dewatering plant. Less than 10% of the recycled aggregates and fines (9,500 tpa) are expected to require crushing. This material would be processed through the site's currently operating C&D plant which is licenced to process 80,000 tpa. As the plant currently processes <70,000 tpa, this additional volume of approximately 9,500 tpa can be included in the 80,000 tpa without exceeding the existing licence limit. The 7,300 tonnes of existing storage capacity will also easily handle this waste as it would represent less than 15% increase in processing throughput.

4.7.8 H

Section 5.8.3 of the EIS states that any excess treated water that is generated and cannot be reused onsite will be sent to trade waste in accordance with a trade waste agreement. Does the premises currently hold a trade waste agreement? If not is it possible to obtain a trade waste agreement for the premises?

Response: The premises does not currently hold a trade waste agreement. It is considered more appropriate to obtain a trade waste agreement prior to construction, in consultation with Sydney Water to ensure all the appropriate infrastructure is installed in accordance with Sydney water's requirements. Benbow attempted to consult with Sydney Water as part of the consultation process, however, no response was received.

Section 2.2 of the WMP also states "Connection to Sydney Water trade waste under an agreement". It is unclear if the Applicant has an existing trade waste agreement with Sydney Water. Section 2.2.1 of the WMP then states "the clean water pit would be pH adjusted and then used for cleaning aggregates and sand during the screening process, dust suppression and washdown onsite. Excess water would be sent to trade waste under a trade waste agreement." The WMP should outline disposal options that will be used until a trade waste agreement is approved for the facility if there is currently no agreement. Trade waste agreements usually stipulate the maximum amount of liquid that will be accepted under the agreement. The Applicant should outline contingency plans if the excess water cannot be disposed of through a trade waste agreement and/or the quantity of excess water exceeds the limits set by a trade waste agreement.

Response: The premises does not currently hold a trade waste agreement. The site will obtain a trade waste agreement prior to commencing operations. In the event excess water cannot be disposed of through trade waste the water will be removed by a licence waste contractor.

4.7.9 I

The Recovered Aggregate Resource Recovery Order 2014 defines that wastes that apply to the order are material comprising of concrete, brick, ceramics, natural rock and asphalt processed into an engineered material. Table 8-10 of the EIS has "Soils" as a waste type and relevant Resource Recovery Order as "The Recovered Aggregate Order 2014". Soils does not meet the definition of recovered aggregate. Table 8-10 of the EIS also lists Aggregate including sand generated from the dewatering process will be sold for reuse off site under the Recovered Aggregate Resource Recovery Order 2014. "Sand" does not meet the definition of recovered aggregate under the order. The Applicant should accurately document what the intended end use of the sand is.

Response: The correct order for soil and sand is *The "batch process" recovered fines order 2014*. Under this order, the definition of "batch process" recovered fines is:

"a soil or sand substitute with a typical maximum particle size of 9.5mm that is derived from the batch processing or mixed construction and demolition waste including residues from the processing of skip bin waste."

Soils and sands meet the above definition. The EIS has been updated accordingly.

4.7.10 J

Section 8.5.6.1 of the EIS refers to an incoming waste procedure that would be implemented and that liquid waste loads would be managed in similar manner to construction and demolition loads that need to be complied with. Liquid waste characteristics are different to construction and demolition waste i.e one is considered a liquid and the other a solid form of waste. If the liquid waste arrives at the site in a liquid waste tanker, for example, how is the load to be inspected? Further details regarding the incoming waste procedures for the liquid wastes should be documented in the EIS.

Response: 8.5.6.1 of the EIS has been revised to reflect the incoming waste procedure which includes separate sections in the procedure for C&D waste and liquid waste.

4.7.11 K

Section 10.5 of the EIS states that a number of safeguards and management measures would continue to be implemented at the site in order to prevent accidental release of any waste. It is unclear what these management measures are that would continue to be implemented.

Response: The stormwater controls are the primary mechanism for the prevention of the release of any waste. As the stormwater system will be upgraded this section of the EIS has been revised to better reflect the changes to the stormwater system.

4.7.12 L

Page 2 of the WMP, section 2 – Waste Management, dot point 5 comment states "Section Error! Reference source not found". It is unclear from this table what section of the WMP is providing a description of waste processing procedures for each waste type.

Response: Noted this has been revised.

4.7.13 M

Section 2 of the WMP states that additions will include construction of the dewatering facility, process 250,000 tonnes of liquid waste per year and storage of up to 900 tonnes of waste. It is unclear what time period the storage of 900 tonnes of waste is for.

- *The EIS, page viii, states that the Proposal is for "on-site storage of an estimated additional 1,400 tonnes of waste at the site".*

- *Section 4.7.2, Table 4-6, of the WMP outlines that the dewatering facility aggregate storage bay requirements are maximum capacity of 730 m^3 and that converts to 1095 tonnes. There is no justification on the conversion rate that was used to convert the m^3 quantity to tonnes. Below table 4-6 it then states a total of approximately 1,393.4 tonnes of waste would require storage for the dewatering plant with a factor of safety it has been rounded up to 1,400 tonnes of waste would be stored on the site at any time in relation the dewatering facility. If the maximum storage capacity is 1095 tonnes how is the statement that 1393.4 tonnes would be required to be stored justified when the maximum storage capacity is stated to be 1095 tonnes and Section 2 of the WMP states a quantity of 900 tonnes will be stored?*

Response: The aggregate storage bays would have a capacity of 730m^3. With a factor of 1.5 t/m^3 applied (Waste levy guideline 4) this converts to 1095 tonnes. The total waste storage capacity for the dewatering plant including the tanks and aggregate storage bays has been revised and is now estimated to be 1,458.4 tonnes. A summary table is provided below and the WMP has been updated to include this.

Table 4-1: Dewatering Facility Proposed Waste Storage Area Summary

Area	Description	Capacity (tonnes)
7	Dirty Water Receival Pits	172.8
8	Flocculant processing pits	70.4
9	Stainless Steel Silos	120
10	New Aggregate Bays	1095
	Total:	**1,458.4**

- *Clarification is needed as to why there is inconsistency in the quantity outlined in the EIS that is different to the quantity outlined in Section 2 and section 4.7.2 of the WMP.*

Response: Section 2 of the WMP has been revised to reflect the correct proposed tonnage of 1,460 tonnes.

4.7.14 N

Section 2 of the WMP states that the addition of the dewatering facility would result in the maximum total storage quantity of 8,700 tonnes of waste at any one time. The authorised amount limit that is currently a condition on the environment protection licence is for an authorised amount of 7,300. This authorised amount was based on what was deemed by the EPA, in consultation with the Licensee, to be appropriate for the size of the operational part of the site with consideration to height and size of waste stockpiles. The EIS, page viii, and Section 2.4 of the WMP, states that the Proposal is for "on-site storage of an estimated additional 1,400 tonnes of waste at the site". As stated above it is unclear how this additional storage requirement has been calculated as it doesn't align with per day generation amount of water versus residual once the dewatering has occurred. The authorised amount also relates to incoming waste that will be onsite during processing not just waste that has been through the dewatering process. The EIS, page i, states "The maximum quantity of liquid waste that can be processed through the dewatering plant in a 24-hour period is approximately 1,500 tonnes. This amount does not align with the estimated maximum total storage of 1,400 stated in section 2 of the WMP.

Section 2.1 of the WMP states that it is a fully developed industrial premises with a total area of approximately 10,115 m^2. The Applicant should add in a statement about how much of the 10,115 m^2 is used for the operational part of the facility i.e areas such as the site office are not considered part of the operational area of the facility for the purpose of calculating an appropriate authorised amount should the proposal be approved.

Response: Waste storage associated with the proposed dewatering facility is primarily for aggregates and sands (approximately 1,095 tonnes). This is practical as it makes sense that waste would accumulate over time prior to it being tested and sent off site. Storage of liquid waste is approximately 365 tonnes, this is because it can be piped to water reuse application on site or discharged to trade waste without significant requirements for onsite storage. If 1,500 tonnes were to be theoretically processed in a 24 hour period, approximately 900 tonnes of this would be water that could potentially be reused on site or discharged to trade waste as it was generated. However, it is unlikely this will occur in practice at these maximum quantities. In practice an average of 750 tonnes per day would be processed, of which 450 tonnes would be water that could potentially be reused onsite or discharged to tradewaste.

The proposed facility takes up approximately 630 m^2 of site area. Dimensions of the aggregate and sand bunkers are bunders are:

- Bunker 1: Aggregate, 6.2 x 4.0 m
- Bunker 2: Aggregate, 6.2 x 4.0 m
- Bunker 3: Sand 5.07 x 5.805 m
- Bunker 4: Sand 5.295 x 5.805 m
- Bunker 5: Sand 5.295 x 5.805 m
- Bunker 6: Filter cake 6.7 x 8.9 m

A height of 4 m was assumed to calculate the volumes in Table 8-12 and conversion to tonnes was estimated based on 1.5 kg/L (Waste Levy Guidelines).

4.7.15 O

Section 2 of the WMP, and the unlabelled table at the end of Section 2, also refers to a term "residues of rejects". The text in this section states, "residues of rejects" and the table states "residues or rejects". Correct terminology should be used. Section 2.6 of the WMP then refers to waste streams and types as defined under the NSW Waste Levy Guidelines.

- *Waste is required to be classified under the* Protection of the Environment Operations Act 1997 and the Waste Classification Guidelines 2014 *when it is removed from a site, transported and/or accepted at a site. The NSW Waste Levy Guideline outlines waste streams and types only for the purpose of meeting waste levy requirements. Section 3.5 of the WMP states that only the existing construction and demolition waste storage and processing operation has waste levy requirements. It is unclear therefore why section 2 and 2.6 refers to NSW Waste Levy Guidelines definitions and types of waste. If the purpose is to define in the WMP what additional wastes are to be brought onto site under this proposal then a waste classification under the* Protection of the Environment Operations Act 1997 *and/or the* Waste Classification Guidelines 2014 *should be used.*

Response: It is noted the SEARs requested a description of the waste streams which has been provided. The correct terminology, being waste classifications are all clearly stipulated in Tables 4-2 and 4-3 of the WMP for all wastes to be received and generated on site. Wastes to be accepted, processed and stored under this proposal are highlighted in each table.

Reference to "residues and rejects" has been removed from the WMP.

4.7.16 P

Section 3.5 of the WMP refers to only the construction and demolition waste being required to be recorded using the weighbridge. The EPA requires that all waste be recorded that is imported to and/or exported from the premises. This is not just for waste levy purposes but for tracking types and quantities of waste moving through the facility at any time and for the purpose of ensuring the licensee is meeting the limits on their licence. It also provides a tracking mechanism should there be any issues with a load of waste that was accepted at the premises. The weighbridge data should be coded so that it is clear what waste types are arriving and leaving the premises and the associated quantities at all times. This will be particularly important as the Proposal outlines that the intention is that material will be moved from the premises under resource recovery orders and

exemptions. The Applicant is responsible to ensure that any material leaving the premises ensures that it goes to a lawful place once it leaves the premises. Record keeping is important part of that.

- *The EPA acknowledges that at Section 4.10.2 of the WMP it is stated that each vehicle entry and exit will be recorded at the weighbridge however from other sections throughout the WMP it is not clear that this is actually what will occur.*

Response: Noted. Details of all loads entering and leaving the site will be recorded at the weighbridge. This is described in Section 5.5.1 of the WMP. The EIS and WMP have been updated to reflect this requirement throughout.

4.7.17 Q

Section 4.9.1 of the WMP states that part of the quality control for incoming waste includes suppliers of waste would be from authorised reputable companies whose details would be recorded with all incoming loads. How will this be recorded if the Applicant does not consider it a requirement to record incoming loads using the weighbridge (as stated in Section 3.5 of the WMP)? Additionally, who will be authorising a company as reputable and approving waste loads? Will waste loads be booked in prior to arrival at the premises so the appropriate checks can be made as to the quality of the liquid waste? If not, what are the procedures that will occur to check documentation relating to the quality of the waste, such as sampling results, while the waste is waiting to be cleared to enter the premises?

Response: All incoming loads would be recorded using the weighbridge. It was not explicitly stated in section 3.5 that the applicant does not consider it a requirement to record incoming loads using the weighbridge. All loads will be recorded.

Furthermore the use of authorised reputable companies means known concrete batching plants and construction companies with experience in non-destructive digging excavation services, and not the general public. The companies will need to provide relevant documentation for the load to ensure the liquid waste is compliant with specifications.

4.7.18 R

Section 4.10.2 of the WMP then states that the site has a current system of tracking waste which includes a paper trail of waste dockets. The EPA requires clarification as to what paper waste dockets this would be for? Are they incoming loads or outgoing loads? The EIS and WMP indicate that the liquid waste will be coming from construction sites. Most construction sites do not have a weighbridge therefore if the paper waste dockets refer to the incoming waste then it is not clear who is generating the paper waste dockets.

Response: The paper dockets are generated by the site for incoming and outgoing loads. All incoming and outgoing loads will be recorded at the weighbridges on site using the existing docket system.

4.7.19 S

Section 3.6 of the WMP states that the C & D Waste Standards is not applicable to this proposal. The EPA disagrees with this statement. The C & D Waste Standards require labelling of stockpiles and requirements of how the construction and demolition waste is to be stored on site. The

proposal states that aggregate from the liquid waste will, once dewatered, be processed in the same area as the existing construction and demolition processing and storage operation. Therefore, the aggregate component of the proposal would need to meet the C & D Waste Standards once it is moved to the processing area of the existing operation.

Response: Noted. The standards as applied to the aggregate component of the proposal are detailed in the table below.

Table 4-2: Compliance with Standards for managing construction waste in NSW

No.	Standard	Comment
1	**Inspection requirements** 1.1 Inspection point 1 – verified Weighbridge inspection 1.2 Inspection point 2 – Tip and spread inspection area 1.3 Training requirements for personnel 1.4 Rejected loads register	1.1 An inspection point is located at the existing weighbridge 1.2 There is no tip and spread area as the aggregate is generated from the dewatered waste. 1.3 Training requirements are detailed in the EMP 1.4 Rejected loads are recorded.
2	**Sorting requirements** Loads not rejected under Standard 1 must be sorted and classified into individual listed waste types before being transferred to the waste storage area referred to in Standard 4.	Aggregate is removed from the liquid waste via the dewatering plant and released into the aggregate storage bunkers.
3	**No mixing of waste** C&D waste that has been inspected and sorted in accordance with Standards 1 and 2 must not be mixed with any other waste at the facility unless: • That other waste has been inspected and sorted at the facility in accordance with Standards 1 and 2; and • It is of the same listed waste type as the other waste; or • The mixing is carried out to meet the requirements of an RRO or the recovered fines specifications.	Mixing is undertaken in accordance with relevant RRO's. Aggregate from the dewatering plant can be mixed with aggregate from the C&D facility as this waste would comply with Standards 1 and 2 and is of the same listed waste type.
4	**Waste storage requirements** 4.1 Waste storage area 4.2 Inspection point 3 – waste storage area	Waste storage at the facility would comply with this standard as described in Section 4.7 of the Waste Report.

Table 4-2: Compliance with Standards for managing construction waste in NSW

No.	Standard	Comment
5	**Transport requirements** Construction waste must not be transported from the facility unless it has been inspected, sorted and stored in accordance with these standards and the load of waste consists solely of a single listed waste type or waste that meets the requirements of a resource recovery exemption or the recovered fines specification. (Except where waste is rejected at inspection points 1 or 2)	The facility would comply with this standard as described in Section 4.8 of the waste report.

4.7.20 T

Table 4.2 of the WMP shows that the Weekly Quantity of Liquid Waste incoming to the premises is 4808 tonnes per week. This equates to 686.86 tonnes per day. The EIS and earlier sections of the WMP state that the estimated daily quantity of liquid waste incoming to the premises is 1,500 tonnes. EPA requires clarification as to the why the estimates are different through the EIS and WMP.

Response: The reports have been updated for clarity. The maximum processing **capacity** for the dewatering facility is 1,500 tonnes in a 24-hour period. The average quantity received on a typical weekday will be 750 tonnes, an average of 4808 tonnes per week (considering less for weekends).

4.7.21 U

Section 4.6 of the WMP states "the C&D component of the facility is already licensed, and management is already established as described in Section 2.1. The process description provided in Section Error! Reference source not found, describes the receipt….". The EPA recommends that this reference be amended.

Response: Reference error corrected. The correct section is 2.2.1.

4.7.22 V

Section 4.6 of the WMP states that "Appropriate documentation would be obtained at the receipt of liquid waste at the weighbridge and this would be source from known and reputable customers". EPA requires clarification regarding what documentation this refers to and what is it meant by known and reputable customers? Who is making that determination? What is the expertise or qualification requirements of the person assessing the documentation?

Response: The documentation required for loads of drilling mud includes:

- A signed waste specification document from the waste generator confirming the source and nature of the drilling mud (See Section 5.4.3 of the waste report); and
- A copy of the site assessment (and if applicable soil test results) confirming the source of the drilling mud is from an uncontaminated site.

All suppliers of drilling mud will need to confirm that the waste meets this specification as detailed in Section 5.4.3 of the WMP. Known and reputable customers would be those with non-destructive digging experience with operators that hold a MSMWJ303 Certificate or similar.

Site personnel assessing the documentation and inspecting or accepting incoming loads of drilling mud must have knowledge of the waste specifications as required for acceptance at the site. The site personnel would require tertiary qualifications and specific internal training as well as training courses in waste management undertaken with a certified training body.

4.7.23 W

The proposal means that there will be a large volume of liquid wastes from various sources being brought onto, processed, stored and combined on-site.

- *Unless this is done under a comprehensive and rigorous management plan with strictly documented, implemented and audited processes and procedures there is a significant risk that the wrong wastes will be brought onto site, the management of the wastes will cause off-site impacts such as dust, odours, water pollution, and/or wastes will be sent off site for reuse that do not meet the requirements of a resource recovery order or exemption.*

- *Therefore, the EIS should include that such a management plan will be developed to the EPA's satisfaction by an independent expert in this field agreed in writing by the EPA, and that the implementation of the plan will be audited every 6 months by an independent auditor with expertise in this field agreed in writing by the EPA.*

Response: The proponent is committed to implementation of a rigorous management plan with strict documented procedures and welcomes an external audit of the plan every 6 months. It is also expected that independent environmental audits would be required as part of the consent conditions at least every 3 years and this would also confirm compliance with the procedures. It is requested that this management plan and audits be included in the General Terms of Approval, to be conditioned within the EPL.

5. CANTERBURY BANKSTOWN COUNCIL

5.1 AIR QUALITY

1. The development has been the subject of recent complaints regarding dust and air quality from construction and demolition waste recycling operations. It is noted that these emissions are caused by current construction and demolition waste recycling operations and that dewatering facilities on the site would likely have a negligible impact on these emissions.

2. Council notes the NSW Environmental Protection Authority (EPA) comment on this proposal states that the EPA is "reluctant to approve any changes if the proposal does not include enclosing the facility" *and encouraged the applicant to consider the full or partial enclosure of construction and demolition waste recycling operations.*

3. Notwithstanding, Council notes that there is a strong need to reduce the air quality impact of the current operations on surrounding area. Council considers this issue must be addressed by the proposal.

4. It is noted that odour impacts are proposed to be controlled by customers complying with certain criteria, prior to the acceptance of drilling mud deliveries on site i.e. Odorous drilling mud types (including oil-based muds and synthetic based muds) would not be received by the facility. Council is not satisfied that this will be sufficient to prevent drilling mud free from detectable offensive odour from entering the site.

5. The Air Quality Impact Assessment submitted with the SSDA does not include an assessment of odour impacts. A detailed odour assessment has not been included as part of this application.

Recommendation:

a. That the applicant undertakes all mitigation measures outlined in the EIS including:

- *Upgrade to the water misting system to provide improved coverage and more effective suppression of dust particles; and*
- *Covering the crusher and screen with a flexible hood and vacuum ducting to capture dust emissions directly from each process.*

b. The applicant should consider options to enclose or partially enclose facilities onsite as raised by the NSW EPA.
c. A detailed odour assessment is undertaken by the applicant and submitted for review and comment by Council before the assessment of the SSDA is completed.

Response:
The technical assessment has been revised to include the proposed development only. Modelling does not include any assessment of the existing sources on site. Cumulative assessment refers only to background levels of dust from NSW EPA monitoring stations as per the requirements of the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW (NSW EPA 2016).* This is in accordance with requests by DPIE communicated on 7th April 2022.
A detailed odour assessment is not considered warranted as the development is not bringing in odorous liquid waste. The only liquid types are drilling mud and concrete washout, these are not

considered odorous. Strict procedures would be implemented and audited every 6 months to ensure that drilling mud accepted at the site complies with the waste specification. This would form part of the EPL and consent conditions.

5.2 NOISE, VIBRATION AND HOURS OF OPERATION

6. The existing construction and demolition waste recycling facility on the site operates between 6am and 6pm Monday to Friday and 7am to 6pm Saturday and Sunday. These hours of operation are in place to protect the amenity of nearby residential areas from noise and emissions associated with the construction and demolition (C&D) waste recycling operations.

7. The dewatering facilities are proposed to operate 24 hour a day, seven days a week. If the SSDA is approved as proposed, this would result in separate consent notices approving multiple hours of operation for the same site, which is not supported by Council.

8. Council acknowledges that the Noise Assessment demonstrates the development can meet relevant residential noise criteria during day operations, and subject to certain types of equipment being used and certain activities not being undertaken between 10pm and 6am, the exceedance of night-time noise criteria for residential receivers is not anticipated.

9. However, any operations beyond 6pm would contravene the existing consent on the site. The application should be clear that an extension to these existing approved operating hours is sought.

Response: The NIA has been revised to include 24 hour a day for the dewatering facility and existing operations for the C&D facility.

10. It is noted that the noise monitoring took place in March 2019 which now represents data that is over two years old.

Response: The surrounding noise amenity of the area has not changed significantly since the logging was undertaken in 2019. Any changes to the background noise levels unlikely to alter the outcomes of the assessment as the elevated background levels indicate the criteria falls well within urban amenity criteria which is adopted for the assessment.

11. The noise mitigation measures described have not been incorporated into the Environmental Management Plan, Procedure Number 2.

Response: The noise mitigations measures have been adopted in the revised EMP.

Recommendation:

d. That the hours of operation be rationalised for the entire development and that the plan of management include detailed description of the types of activities proposed to be undertaken outside of the current hours of operation.

Response: The NIA has been revised to include 24 hour a day for the dewatering facility and existing operations for the C&D facility.

e. Noise mitigation measures be incorporated into the Environmental Management Plan Procedure Number Two.

Response: The noise mitigations measures have been adopted in the revised EMP.

5.3 TRANSPORT, PARKING AND ACCESSIBILITY

12. Internal truck circulation and onsite queuing arrangements have been submitted as part of the Traffic Impact Assessment (TIA).

13. Council notes that the secondary access point proposed is for the entry/egress of service vehicles and will not be used by trucks or heavy vehicles. However, it is not clear that the secondary driveway will allow a service vehicle to enter and leave in a forward direction.

14. The number of off-street parking spaces proposed is fifteen (15), and the EIS and TIA state that the proposed dewatering facility requires eight (8) spaces. However, it is not clear that the existing C&D facilities have been included in these calculations.

15. Council also notes that the existing consent requires the provision of sixteen (16) car spaces. A reduction of on-site parking with an intensification of the land use is not supported. Any deviation from the parking rates required by the Bankstown DCP 2015 should be appropriately justified.

16. The dimensions of the car parking spaces and aisle width have not been indicated on the architectural plans provided. These should be shown to indicate compliance with AS2890.1:2004.

17. The number of heavy vehicle movements expected during the operation of the development has been provided: 44 per day for the C&D facility and 128 per day for the dewatering facility. The traffic generation for the proposed development is considered acceptable.

18. The TIA has assessed and modelled the following intersections:
a. Fairford Road with Gow Street; and
b. Gibson Avenue, Gow Street and Stiles Avenue.

It is noted that the TIA concluded that based on the modelling undertaken no significant change in Level of Service (LoS), queueing distance or intersection saturation is expected, and that additional trips from the proposed liquid waste facility can be accommodated at the modelled intersections without affecting intersection performance.

19. However, in the context of the current traffic arrangement (no left turn out of Gow St onto Fairford Road) the TIA has not adequately demonstrated the expected primary and secondary routes for heavy vehicles to and from the site. This is necessary for the assessment of the traffic impacts of the proposal and whether additional heavy vehicle traffic may impact nearby residential properties. Council notes that in their response to the SEARS TfNSW requested that the TIA include a description of haul route origins and destinations.

20. TfNSW also requested that the TIA provide an inbound/outbound vehicle profiles by time of day and day of week. The TIA submitted has modelled the AM/PM peaks but has also noted that liquid waste peak hour is not expected to occur during commuter peak hour with the majority of liquid waste pickups anticipated to occur from 7am onwards. Further information on the expected freight volumes to and from the site is needed to ascertain the potential impacts of heavy vehicle movements, particularly as the application seeks to extend operating hours beyond those permitted under the current consent.

21. Ordinarily, the construction phase of a development would involve the consideration of the heavy vehicles and potential for damage to the adjacent road network. However, in the case of this development, the operational phase will entail a much more significant level of exposure to heavy vehicles than the construction phase, with resultant detrimental impacts on local road infrastructure. The load on the receiving road network can only be accurately determined through the interrogation of the vehicles used and the associated axle loadings.

22. Given the nature of the activities and the significant loads generated on Council's road network by the operation of the proposed dewatering facility, Council requests that the applicant prepare additional Traffic Management Plans: A Construction Traffic Management Plan (CTMP) and an Operational Traffic Management Plan (OTMP) (see recommendations (k)-(m) below).

23. Ongoing monitoring of the impact of the development on the road network will be required. This should take the form of an annual Dilapidation report on the heavy vehicle routes to be provided to Council's City Asset Division. This report will be used to ascertain the damage that could be attributed to the operation of the facility.

Recommendation:

Request for Additional Information

f. The TIA be amended to include a description of haul routes for heavy vehicle traffic with potential origins and destinations, and whether residential areas may be impacted by these movements.
g. The TIA be amended to include a profile of inbound and outbound vehicle movement by time of day and day of week.
h. A swept path assessment showing a service vehicle entering and leaving the eastern driveway in a forward direction should be referred to the Traffic Unit for review.
i. On-site parking rates should be calculated in accordance with the Bankstown DCP based on the existing C&D operations and the proposed dewatering facility. Any deviation from these rates should be appropriately justified on environmental planning grounds.
j. The architectural plans should be amended to indicate the dimensions of the car parking spaces to demonstrate compliance with AS2890.1:2004.

Response: The information regarding inbound and outbound time of day is already provided in the Traffic Management Plan. Additional information has been provided in the updated TIA regarding hauls routes for heavy vehicle traffic. The additional information regarding swept paths has been included in the updated TMP.

The TIA assesses the GFA of the proposed dewatering facility and the proposed new office building which is used for both the dewatering and the C&D facility. According to the Bankstown

DCP a total of 8 car spaces are required. The existing facility has 9 spaces, and the proposed changes allow for an additional 3 uncovered and 3 covered spaces. A total of 15 spaces will be provided and exceeds the requirements of the local DCP. Car spaces on site will be 2.5m wide and 5.5m long, this is indicated on the updated plans, which complies with AS 2890.1.2004.

Conditions to be included of any Development Consent Granted:

*k. Before construction commences, a **Construction Traffic Management Plan** should be prepared and forwarded to Council for consideration as the road authority. The report shall reference the Council approved Heavy Vehicle Route. The developer shall provide Council's City Asset Division a Dilapidation report on the Heavy Vehicle Route, between the site and the TfNSW road network.*

*l. Prior to operation commencing, a detailed **Operational Traffic Management Plan** should be prepared and submitted to Council for review and comment. This plan should include the type of vehicles being utilised, with the tare and gross vehicle mass determined.*

m. This information is then to be incorporated into Equivalent Axle Impact Report (EAIR) of the receiving road network which is requested to be provided to Council's City Assets Division annually. This EAIR should reference the recorded weigh bridge readings and routes taken to access the site (from the nearest TfNSW road) or the TfNSW road network, of all trucks servicing the site for the following categories

- *In bound delivery trucks*
- *Out bound empty delivery trucks*
- *In bound empty outbound trucks*
- *Outbound full trucks*

n. The Heavy Vehicle routes shall be determined and approved by the relevant authority for accessing the site.

o. The developer shall provide Council's City Asset Division an annual Dilapidation Report on the Heavy Vehicle Route, between the site and the TfNSW road network.

Response: Noted and agreed.

5.4 FLOODING, DRAINAGE AND STORMWATER

24. Council notes that the results of the flood assessment generally indicate that the proposed development:

- *Does not generate flooding issues at the subject site due to overland flow;*
- *Does not lead to adverse flooding impacts on the surrounding areas; and*

a. Does not create safety issues at the subject site and the surrounding areas.

25. One of Council's key concerns is for the application to demonstrate that the existing drainage easement and pipe are not impacted by the development. The architectural plans show that there are no permanent structures proposed to be constructed over the width of the easement and that access has been retained from Gow Street.

26. Council's Asset Management Team reviewed the Flood Assessment Report, Stormwater Easement Drainage Survey and the Stormwater, Erosion and Sediment Control reports and

raised concerns that the details of the connection to the existing Council pipe has not been provided.

Recommendation:

p. Prior to the issue of a final certificate the following is to be undertaken:

- *Prior to the connection of the proposed stormwater system to the existing Council stormwater pipe, photos shall be taken to show the existing condition of the pipe.*
- *Photos shall be taken from the opening to the Council pipe. After the connection and before the backfilling, clear and enough photos shall be taken to show the general condition of the pipe after connection.*
- *After the connection, the pipe shall be flushed with a high-pressure water jet.*
- *After pipe being flushed, CCTV footage shall be provided to confirm the quality of the connection of the 375 mm stormwater pipe to the Council 1500mm pipe.*
- *The applicant engineer supervisor to supervise the whole process and to review the CCTV report and to certify that no damage has occurred to Council assets.*

A copy of all photos, CCTV report and engineer supervisor certificate are to be submitted to the Principal Certifying Authority and to Council's Customer Support – Public Domain and Works Team for approval.

Response: Agree. We request that these recommendations be conditioned in the development consent.

5.5 ACID SULFATE SOILS

27. An Acid Sulfate Soils Management Plan has been prepared for the proposal in accordance with the Acid Sulfate Soils Manual*. The management plan provides detailed information for the identification, screening and testing of ASS onsite. The plan also provides procedures for the correct handling and treatment of ASS in the event they are found onsite. The ASS Management Plan appears to have adequately addressed these issues.*

Recommendation:

q. Implementation of the Construction Environmental Management Plan that includes:

- *an Acid Sulfate Soil Management Plan; and*
- *Erosion and Sediment Control Plan;*

r. Implementation of the Environmental Management Plan including the water monitoring program described in the Soil and Water Report.

Response: Agree. We request that these recommendations be condition in the development consent.

5.6 WASTE MANAGEMENT

28. Council's Waste Management team acknowledge that the development will positively impact the management of waste in Canterbury Bankstown Local Government Area (LGA), particularly as the LGA population is expected to increase to 500,000 people by 2036 and greater quantities of commercial waste product, that will be treated by the proposed facility, is generated.

Recommendation:

s. All waste on-site is managed in accordance with the recommendations of the Waste Management Plan submitted with the SSDA.

Response: Agree.

5.7 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

29. Council notes that the application proposes to include the following environmental measures in line with the principles of ecologically sustainable development:

a. Implementation of air quality controls;
b. Stormwater pollution controls, including fully contained process and storage areas.
c. Fire protection services;
d. Storage and handling of hazardous chemicals including hardstand area integrity management and maintenance of hazardous chemicals and liquid waste storage area;
e. Waste management and stringent procedures to manage the incoming and outgoing waste; and
f. Environmental Management Plan (EMP).

30. However, while the EIS states that there is "No net reduction in the existing landscaping of the site" it is not clear that the proposal has considered opportunities for additional landscaping on the site as part of the development. Further landscaping of the site would be favourable to the area as it will increase tree canopy, may assist in minimising the impacts of stormwater runoff and potential heat island effects.

Recommendation:

t. The application considers opportunities for additional landscaping as part of the proposal.

Response: The application for the dewatering facility does not require any changes to the street frontage of the site. There is very little space at the street frontage for opportunities for landscaping to significantly improve the tree canopy or impacts of stormwater runoff and potential heat island effects. Additional landscaping within the site is not feasible as it is likely to impact vehicle movements and it the benefit does not outweigh the costs.

5.8 URBAN DESIGN

31. In the feedback Council provided on the SEARS several urban design issues were raised including:

a. Clear articulation of pedestrian and vehicle entries and frontages with vehicular entries visible from at least 100m away.
b. Use of landscaping (as noted above).
c. Interface Impact to surrounding land uses.
d. Accessible paths of travel to enter and move through the site.

It is not clear from the submitted plans how these comments have been addressed and whether the proposed design.

Recommendation:

u. The submitted plans are to address the urban design issues raised in Council's previous submission to the SEARs.

Response: The proposed development is for a dewatering facility at the rear of the site, and will not require changes to the frontage, landscaping, or interface between surrounding uses. Pedestrian pathways have been considered and provided in the plans.

Urban design issues are considered in the site plans as follows:

- **Entries & frontage: Design to clearly articulate pedestrian and vehicle entries & frontages. Vehicular entries should be seen from at least 100m away.**

Vehicle entries and frontages as well as pedestrian pathways have been considered in the plans.

- **Use of landscaping.**

Landscaping was considered for the site frontage, however the site is fully developed with no green space. In addition, this area needs to be free of obstructions to enable clear sight distances for vehicles entering and leaving the site. Therefore no landscaping is proposed.

- **Interface Impact to surrounding land uses.**

The site is currently surrounded on three sides adjoining neighbouring industrial properties with high walls. This prevents views of the site from these properties and provides security and allows for minimisation of noise.

- **Accessible paths of travel to enter and move through the site.**

Paths of travel are considered in detail and marked on swept path diagrams, the truck loading and unloading plan and queuing plans.

5.9 ENVIRONMENTAL SITE ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PLAN

32. This assessment was restricted to two operational areas, the drive over pit and structural footings for the mixing and concrete batching plant and the in-ground water pit location for the drilling mud dewatering plant.

33. Contaminants of concern results were below the adopted NEPM criteria for commercial/industrial sites. Samples were not tested for asbestos and no ACM was encountered during sampling.

34. Procedure 1 – Air Quality management indicates that if results of inspections indicate visual emissions of dust more stringent controls should be enforced.

35. Procedure has not provided detail as to what these stringent controls are.

36. Procedure 2 – Noise and Vibration Management has not included measures from the acoustic assessment.

37. Procedure 6 – Spill Procedure indicates that site will hold 65,000 L of diesel in a self-bunded diesel tank. Additionally, the site will also hold other various chemicals that are used for trucks and machinery, including degreaser, oils and lubricants. Small quantities of a flocculant will be stored on site to aid in recovery of mineral ores and remove suspended material from wastewater. All of these chemicals are to be stored inside on bunded pallets.

38. The spill procedure does not specifically mention the above chemicals and whether any specific monitoring or additional training for staff is required. Clarification is also sought on whether these chemicals would be flammable or pose a safety risk.

Recommendation:

v. The EMP be amended to include:

- *More stringent procedures on dust control should visual emissions of dust be identified;*
- *Mitigation measures from the acoustic assessment as per recommendation (e); and*
- *Clarification on whether any of the above chemicals require any specific training or monitoring.*
- *Clarification regarding whether chemicals or other materials on the site pose a fire safety risk and appropriate measures to manage such materials.*

- **Response:** Air quality management procedure within the EMP states: *activities are ceased where levels of dust cannot be controlled using available means.* Further stringency is not considered feasible. The Noise and Vibration Management procedure has been updated in the revised EMP. EMP's Section 4.2.4 – Specific Environmental Training has been updated to include: Dangerous goods and hazardous chemicals training –including storage and handling of diesel, spill kit use; understanding SDS's in relation to incoming drilling mud waste additives. Diesel is a non-dangerous good, a class 1 combustible liquid and does not pose a significant fire risk provided it is stored in accordance with AS1940-2017: Storage and Handling of Flammable and Combustible Liquids. Other materials on site do not pose a fire safety risk.

6. ENDEAVOUR EDUCATION PTY LTD

Gow St is lined with warehouses and parked truck and employee cars.

Traffic is heavy semi and waste removal trucks.

Project will add 20,000 heavy truck movements/year.

Road surface is constantly being repaired due to heavy vehicle damage.

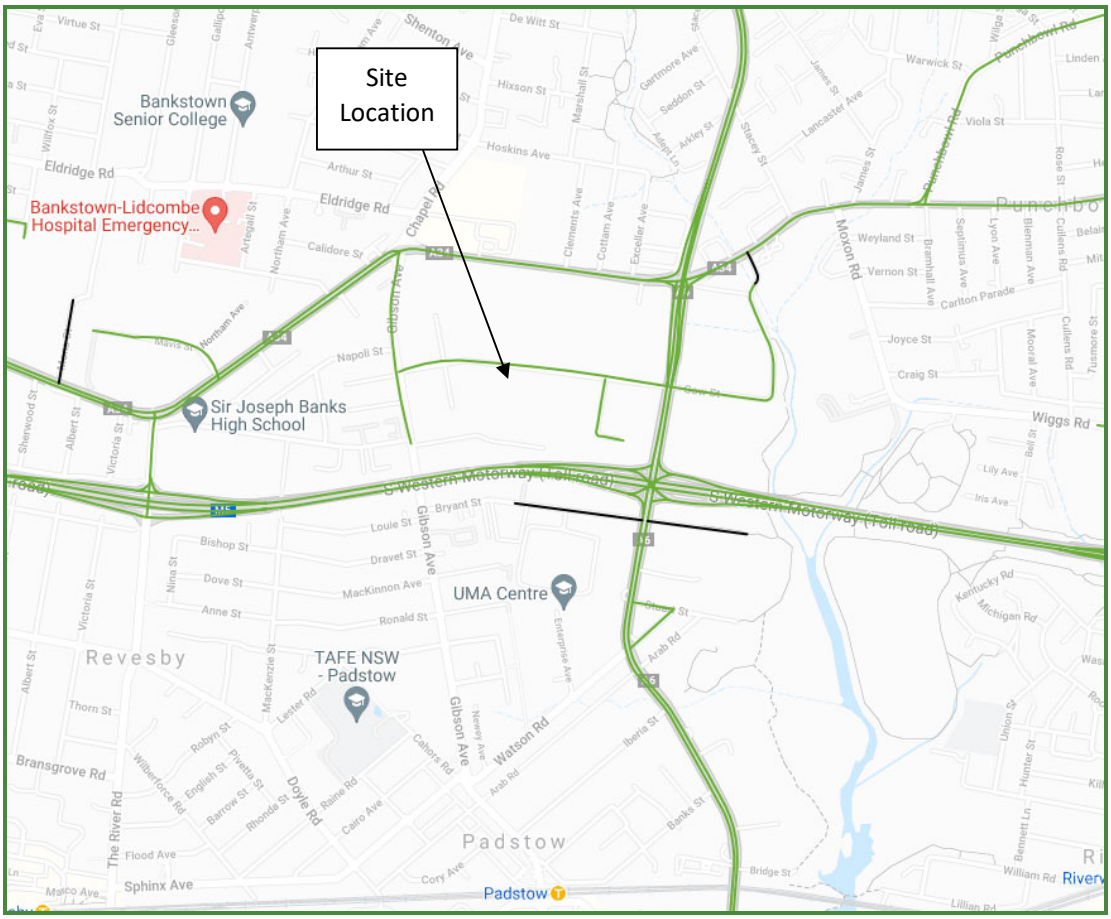
Response: The site is located centrally to enable trucks to access the M5 Western Motorway via Fairford Road, Canterbury Road and The River Road.

A traffic impact assessment was undertaken by ML Traffic Engineers. The report focuses on the proposed liquid waste facility and how the additional trips will impact on the operating performance of priority intersections as a result of operation of the facility. SIDRA analysis shows both priority intersections will have spare capacity.

The map below shows vehicles routes for 19 m B-doubles (over 50 tonnes), 23 m B-double, and 25/26 m B-double routes. All of the surrounding roads (the South Western Motorway, Fairford Rd, Canterbury Rd, Gibson Ave) connecting to and including Gow St are possible routes for heavy vehicles.

Legislatively, Gow St and the other roads surrounding and connecting to the site are heavy vehicle routes and typically appropriate for the vehicles proposed for the site. The management of the road condition is the responsibility of the road service provider, not the proponent.

Figure 6-1: Heavy Vehicle Routes



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7. NAME WITHHELD

I've been complaining for a few months about GSRC, to the EPA, over the last few months. They have been running machinery including a machine called an 'impact crusher' that has caused physical damage to my warehouse and the internal an [sic] external walls of half a dozen warehouses inside the same property, all directly behind and sharing a property line with GSRC. Every time there's a small gust of wind, dust and concrete particles come over the fence and through the large cracks in the wall and cover everything.

If GSRC are allowed to house this water, my fear is that the dirty water will sit, become stagnant, and the smell will make working in my warehouse intolerable.

GSRC shows careless disregard to their neighbours every day. My warehouse has been vibrating like a small earthquake every time they switch on their 41ton impact crusher. (which crushes large slabs of concrete less than 20M from my office).

At the moment, alongside the vibration, frequent dust raining from the air from over the fence, we are also getting flies from their compost heap.

I'm certain that if GSRC is allowed to store dirty mud water, they won't care about the smell from the stagnant water, they are selfish, profit driven and psychopathic in their attitude towards the environment and the neighbouring offices and warehouses.

If there is water stored on their property, it will become stagnant and the air, just like the dust, will make it's [sic] way through to our side and force people to leave and restart their business from a different location. There are many small offices where people work surrounding the GSRC property. I am currently making medical parts in my warehouse to fight coronavirus and after the lockdowns can't afford to move my equipment to another location. With my tall roof, I'm constantly collecting concrete dust/powder from their earthworks, the smell of stagnant water will come through.

After complaining to the EPA, I've noticed GSRC workers coming to our lot and spying on us. They are fully aware that they are causing issues to their surrounds, and have done nothing to date to rectify the issues.

The second risk is that of an accident. GSRC uses many large vehicles (driven carelessly at times) high speeds in a small area, and if one of these vehicles comes into contact with the water containment barrier, our warehouses will be flooded. No matter where the water is kept on their property, our warehouses will be down hill and under the flood line.

They are very careless with their machinery, and have already and continue to cause damage to our property. Allowing GSRC to keep large amounts of water is a disaster waiting to happen.

Response:

Vibration:
The construction work proposed would not use the type of equipment expected to cause vibration impacts. The equipment utilised for the dewatering plant will not generate vibration impacts therefore a detailed vibration impact assessment is therefore not considered warranted.

A vibration assessment (Pulse White Noise Acoustics – Ref: 210578 – 81 Gow Street, Padstow – Vibration Survey) has been undertaken and shows the measured vibration levels from the existing C&D facility's equipment are within the accepted limits.

Dust:
The proposed dewatering plant will have minimal dust impacts. The water from the process can be utilised for improved dust suppression. Ongoing dust management of the site's C&D facility is required.

Odour:
The site will not receive odorous materials. An incoming waste procedure will be implemented to prevent this from occurring.

Water storage and management:
Water storage on site would be limited to the liquid waste tanks and pits within the enclosed dewatering plant that would be connected to tradewaste, and the stormwater detention tanks. The new stormwater detention tanks have been designed to improve the stormwater flow across the site and would minimise the risk of flooding by capturing the first 25 mm of any rainfall event.

This concludes the Response to Submissions.

Emma Hansma
Senior Engineer

R T Benbow
Principal Consultant

Linda Zanotto
Senior Environmental Engineer

Kate Barker
Senior Environmental Scientist

ATTACHMENTS

Attachment 1: Amended Environmental Impact Statement Main Report

ENVIRONMENTAL IMPACT STATEMENT
GOW STREET RECYCLING CENTRE
81 GOW STREET, PADSTOW NSW 2211

Prepared for: Gow Street Recycling Centre
Department of Planning, Industry and Environment (DPIE)

Prepared by: Emma Hansma, Senior Engineer
Linda Zanotto, Senior Environmental Engineer
Kate Barker, Senior Environmental Scientist
Victoria Hale, Senior Environmental Scientist
Damien Thomas, Environmental Scientist
Matthew Taylor, Environmental Scientist
R T Benbow, Principal Consultant

Report No: 191290_EIS_Rev8
March 2022
(Released: 14 March 2022)

Benbow ENVIRONMENTAL

Engineering a Sustainable Future for Our Environment

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Form 2

Submission of
environmental impact statement (EIS)
prepared under the Environmental Planning and Assessment Act 1979 Section 78(A)

EIS prepared by

name	Richard T Benbow
qualifications	Bachelor of Science (Engineering) With Merit
address	Benbow Environmental 25-27 Sherwood Street Northmead NSW 2152

in respect of

development application

applicant name	Gow Street Recycling Centre
applicant address	81 Gow Street, Padstow NSW 2211
land to be developed: address	81 Gow Street, Padstow NSW 2211
lot no, DP/MPS, vol/fol etc	Lot A DP103140
proposed development	Construct a liquid waste dewatering facility. Process 250,000 tonnes of liquid waste per year. Operate 24/7

or
☐ map(s) attached

environmental impact statement

☑ an environmental impact statement (EIS) is attached

certificate

I certify that I have prepared the contents of this Statement and to the best of my knowledge

- it is in accordance with Schedule 2 of the Environmental Planning and Assessment Regulation 2000,
- contains all available information that is relevant to the environmental assessment of the development, activity or infrastructure to which the statement relates, and
- the information contained in the statement is neither false nor misleading.

signature 

name	Richard T Benbow
date	14/03/2022

LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of Gow Street Recycling Centre, as per our agreement for providing environmental services. Only Gow Street Recycling Centre is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

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Kate Barker	Environmental Scientist		14 March 2022
Victoria Hale	Environmental Scientist		14 March 2022
R T Benbow	Principal Consultant		14 March 2022
Reviewed by:	**Position:**	**Signature:**	**Date:**
Linda Zanotto	Senior Environmental Engineer		14 March 2022
Approved by:	**Position:**	**Signature:**	**Date:**
R T Benbow	Principal Consultant		14 March 2022

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3	7-9-2020	Rev 3	L Zanotto	R T Benbow
4	12-7-2021	Rev4	L Zanotto	R T Benbow
5	30-7-2021	Rev5	L Zanotto	R T Benbow
6	24-8-2021	Rev6	L Zanotto	R T Benbow
7	31-8-2021	Rev7	L Zanotto	R T Benbow
8	14-3-2022	Rev8	L Zanotto	R T Benbow

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4	12-7-2021	Gow Street Recycling Centre, DPIE	Benbow Environmental
5	30-7-2021	Gow Street Recycling Centre, DPIE	Benbow Environmental
6	24-8-2021	Gow Street Recycling Centre, DPIE	Benbow Environmental
7	31-8-2021	Gow Street Recycling Centre, DPIE	Benbow Environmental
8	14-3-2022	Gow Street Recycling Centre, DPIE	Benbow Environmental

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STUDY TEAM

R.T. Benbow	Benbow Environmental	Consultation, Alternatives, Description of Proposal, Environmental Impact Statement Compilation, Internal Review
Emma Hansma	Benbow Environmental	Project Management, Executive Summary, Justification, Description of the Proposed Development, Hazards and Risk, Soil and Water Assessment, Consultation, Environmental Impact Statement
Linda Zanotto	Benbow Environmental	Project Management, Waste Management, Planning Assessment, Key Issue Risk Assessment, Consultation, Internal Review
Kate Barker	Benbow Environmental	Air Quality Assessment, Emergency Plan, Traffic Management Plan, Environmental Impact Statement Compilation
Matthew Taylor	Benbow Environmental	Air Quality Assessment, Description of the existing environment, Site History, Greenhouse Gas Assessment, ESD, Cumulative Impacts, Summary of Impacts & Mitigation Measures, Health, Socio-economic impacts, Visual, Environmental Impact Statement Compilation, Phase II Detailed Site Investigation, Environmental Management Plan, Construction Environmental Management Plan
Damien Thomas	Benbow Environmental	Soil and Water Assessment, Phase II Detailed Site Investigation, Acid Sulfate Soil Management Plan
Victoria Hale	Benbow Environmental	Noise Impact Assessment, BDAR waiver, Flora and Fauna, Heritage, Environmental Impact Statement Compilation
Benny Chen	ML Traffic	Traffic Impact Assessment, Car Park Certification, Swept Path Analysis
Penny McCardle	McCardle Cultural Heritage	Aboriginal Cultural Heritage Assessment

	Indesco	Stormwater Drainage Design and Flood Modelling
	C & A Surveyors	Survey Plan
	Abode Design	Office Building Plans
Giulio Ranieri	Style Developments Pty Ltd	Existing Site Plan, Proposed Site Plan and Equipment Layout
	Motec	Machinery Plant Design

ABBREVIATIONS

ABL	Assessment background level
ABS	Australian Bureau of Statistics
AEP	Annual Exceedance Probability
AMMAAP	Approved Methods for the Modelling and Assessment of Air Pollutants in NSW
ASS	Acid Sulfate Soil
ASSMP	Acid Sulfate Soil Management Plan
BDAR	Biodiversity Development Assessment Report
BOM	Bureau of Meteorology
C&D	Construction and Demolition
CEMP	Construction Environmental Management Plan
DA	Development Application
DCP	Development Control Plan
DECC	Department of Environment and Climate Change (now NSW EPA)
DEWHA	Department of the Environment, Water, Heritage and the Arts
DPI	Department of Primary Industry
DPIE	Department of Planning, Industry and Environment
DoP	Department of Planning
EES	Environment Energy and Science Group
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EP	Emergency Plan
EPA	Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development
FR NSW	Fire and Rescue New South Wales
LEP	Local Environmental Plan
LPG	Liquefied Petroleum Gas
Mbgl	Metres below ground level
NES	National Environmental Significance
NIA	Noise Impact Assessment
NPI	National Pollutant Inventory
NPfI	Noise Policy for Industry
NRC	Natural Resources Commission
NOW	New South Wales Office of Water
NSW	New South Wales
NSW EPA	New South Wales Environment Protection Authority
NSW RNP	New South Wales Road Noise Policy
PASS	Potential Acid Sulfate Soil
PHA	Preliminary Hazard Analysis
$PM_{2.5}$	Particulate matter less than 2.5 μm in aerodynamic equivalent diameter
PM_{10}	Particulate matter less than 10 μm in aerodynamic equivalent diameter
POEO	Protection of Environment Operations Act (1997)
RAP	Reclaimed asphalt pavement
RBL	Rating background level
RNP	NSW EPA Road Noise Policy
ROW	Right of Way
RTA	Roads and Traffic Authority

SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
TfNSW	Transport For NSW
TMP	Traffic Management Plan
Tpa	Tonnes per annum
TSC Act	Threatened Species Conservation Act 1995
TSP	Total suspended particulates
VENM	Virgin Excavated Natural Material

UNITS OF MEASUREMENT

°C	degree centigrade	(unit of temperature)
dB(A)	A-weighted decibels	(unit of noise)
dB(lin)	Linear-weighted decibels	(unit of noise)
g	gram	(unit of mass)
kg	kilogram	(unit of mass)
kL	kilolitre	(unit of volume)
KPa	kilopascal	(unit of pressure)
m	metre	(unit of length)
m^3	cubic meter	(unit of volume)
T	Tonne (1000 kg)	(unit of mass)
μg	microgram	(10^{-6} gm – unit of mass)
$\mu g/m^3$	microgram/cubic meter	(concentration)
ODU	odour detection unit	(unit of odour)

EXECUTIVE SUMMARY

Benbow Environmental has been engaged by Gow Street Recycling Centre to undertake an Environmental Impact Statement (EIS) to support the establishment and operation of a new proposed liquid waste dewatering plant at the existing recycling facility located at 81 Gow Street, Padstow NSW.

The proposed development seeks approval to:

- Establish a liquid waste dewatering facility;
- Process 250,000 tonnes of liquid waste per year through the dewatering facility; and
- Operate the dewatering facility 24/7.

The maximum quantity of liquid waste that can be processed through the dewatering plant in a 24-hour period is approximately 1,500 tonnes. An average quantity of waste received per day will be 750 tonnes, out of which approximately 450 tonnes of clean water would be generated.

The proposed dewatering plant will be located within an existing building that will require additions and alterations, be fully enclosed with aggregate storage bays to be covered and walled. The proposed dewatering plant is expected to generate negligible additional environmental impacts. Instead, this development is expected to significantly improve environmental impacts due to the proposed stormwater system upgrade and improved dust controls.

Tanker trucks and concrete trucks would bring the liquid waste from construction sites around Sydney.

The proposed dewatering facility is the subject of this application. The existing C&D recycling facility would continue to operate under the existing development consent DA-51/1997 at the approved capacity of 80,000 tonnes per annum. The existing facility is not and will not be part of the development and will continue to operate under the existing consent.

The site holds an environment protection licence (10943) for resource recovery and waste storage for building and demolition waste and asphalt waste (including asphalt resulting from road construction and waterproofing works), with a processing capacity of 80,000 tonnes per year, and a maximum storage quantity of 7,300 tonnes at any one time.

This EIS provides an assessment of all potential impacts of the proposed development on the existing environment and provides for appropriate measures to avoid, minimise, mitigate and/or manage these potential impacts.

A summary of the detailed assessments is included below:

STRATEGIC CONTEXT

The site is situated within an industrial zone (IN1 - General Industrial) under the Bankstown Local Environmental Plan 2015. The surrounding area consists primarily of general industry and includes some low-density residential areas, with the nearest residential area located 330 m

South East of the site. The proposal is for a waste or resource management facility which falls under the definition of "general industry" and is permissible with consent in the IN1 zone.

The site currently has consent DA-51/1997 to operate the existing 80,000 tpa capacity C&D recycling facility and this activity would continue to operate under this consent. The EIS demonstrates that the proposed dewatering plant would not prevent compliance with the existing consent.

The proposal constitutes State significant development under the State Environmental Planning Policy (State and Regional Development) 2011 as a "Waste and resource management facility" as it involves the handling of more than 1,000 tonnes per year of other aqueous waste.

The existing EPL licence (10943) for resource recovery and waste storage at the site will need to be updated to include waste processing (non-thermal treatment) for non-thermal treatment of liquid waste and the storage of liquid waste. Hence this proposal is an integrated development.

JUSTIFICATION

With the growing number of NSW Government Infrastructure projects located in Western Sydney, the demand for treatment facilities to deal with dewatering drilling mud and concrete washout waste generated by the construction industry is continuing to increase in this area. Furthermore, a demand exists for facilities to treat liquid waste, as disposal is costly to industry and water is increasingly becoming a more precious resource, yet few facilities are presently available to recycle such waste. While not available at this point in time, the potential exists to recycle the treated water resulting from the dewatering process as an alternative to discharging it to tradewaste.

The proposed development would establish a dewatering plant to process drilling mud and concrete washout waste into reusable products. The proposed new plant would provide improved resource recovery systems resulting in an increased rate of recovery and a higher quality reusable product. The facility would also provide a means to increase recycling, and indirectly divert waste from landfill and reduce illegal dumping. In this way, the proposal supports and is consistent with a number of statutory policies including the "Waste Avoidance and Resource Recovery Act, 2001" (WARR Act), the "NSW Waste Avoidance and Resource Recovery Strategy 2014-21" and the "National Waste Policy 2018".

Although not a legal requirement, the EPA are now requiring waste facilities to be enclosed. The proposed dewatering plant will be fully enclosed with aggregate bays covered and walled. The existing and approved C&D operations will continue to operate under the current consent and licence.

SITE SUITABILITY

The justifications for selecting the subject site and for establishing the dewatering plant are listed as follows:

- The site is already developed and has consent to accept drilling mud;

- The site previously operated a dewatering/washing plant that processed drilling mud and the new dewatering plant would be an improved upgrade to what previously existed;
- The proposal is considered to be the most cost-effective process with minimal environmental impact;
- The site is not in a sensitive land use area;
- The development is a permitted use with consent;
- The development generates local employment;
- Transport routes are readily available and the local road network is capable of handling the additional truck movements;
- The site has sufficient room for on-site parking and truck manoeuvring;
- Local markets for construction materials will become more competitive, leading to fiscal returns for consumers and developers;
- The site's ability to recycle C&D waste will reduce the amount of raw materials extracted for new developments, consequently reducing environmental impacts of new local developments;
- The site's ability to recycle multiple types of waste will reduce the quantity of waste that is deposited to landfill, which will increase the sustainability of future construction projects;
- The site is located in a suitable location to serve current and future infrastructure and construction projects; and
- The proposed development will have extensive environmental safeguards to provide assurance in regards to the expected degree of environmental impacts.

AIR QUALITY

An Air Quality Impact Assessment (AQIA) has been undertaken for the proposed development. A full copy of the AQIA is provided as Appendix 1.

The assessment determined the predicted dust and particulate matter contribution from the existing and proposed site operations for particle sizes $PM_{2.5}$, PM_{10} and total suspended particulates (TSP). It also determines the impacts associated with greenhouse gas (GHG) emissions from the site.

The assessment does not include an assessment of odour impacts, as no odour is expected to be generated from the proposed development.

The AQIA was prepared in accordance with:

- NSW EPA *"Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales"* (2016); and
- Australian Government *Department of the Environment and Energy, August 2019 Australian National Greenhouse Accounts – National Greenhouse Accounts Factors*.

A brief summary of the findings is presented below:

Dust Impact Assessment

Dewatering processes were not included in dispersion modelling as they are completely enclosed in a wet environment and do not generate dust. However, stockpiled recovered aggregates from processed water has been included as this has the potential to generate airborne dust (via wind

erosion) where not managed correctly. It is noted that the dust from these stockpiles represent negligible emissions as the total dust emissions proposed development are several orders of magnitude less that more significant existing sources assessed in the cumulative dust impact assessment.

Cumulative Dust Impact Assessment

The air dispersion model AERMOD was used for the prediction of off-site dust impacts associated with the air emissions from the proposed operations. Two scenarios were included in the air dispersion modelling:

> Scenario 1 – modelled emission sources with general mitigation measures recommended and
> Scenario 2 – modelled emission sources with an additional custom flexible hood and vacuum ducting applied to the crusher/screen.

The assessment aimed to demonstrate the predicted dust impacts from site activities on neighbouring receptors with and without the use of the flexible hood and vacuum ducting applied to the crusher/screener. Preliminary dust monitoring undertaken on- and off-site demonstrate that current dust emissions from site activities exceed NSW EPA criteria.

Results of air impact modelling for both scenario 1 and scenario 2 demonstrate that incremental dust levels were reduced with the inclusion of a custom hood covering applied to the crusher/screener by ~12-46% at the most heavily impacted receptor (R11; 89 Gow Street, Padstow). It is recommended that all controls listed for Scenario 2 be applied onsite on site to ensure continued compliance and further reduce dust impacts from the proposed development on all nearest receptors, both industrial and sensitive.

In cases of elevated background concentrations, the NSW EPA requires a demonstration that no additional exceedances of the impact assessment criteria will occur as a result of the proposed site activities. Contemporaneous additions assessment was conducted for the most impacted receptor (R11; 89 Gow Street, Padstow). The 24 hour averaging period for PM_{10} showed 2 additional days of exceedance, however this is attributed to the elevated background concentration levels of 48.23 µg/$m^3$and 46.21 µg/m^3. The 24 hour averaging period for $PM_{2.5}$ demonstrated no additional days of exceedance.

It is noted that the dust from the dewatering plant stockpiles represent negligible emissions as they are several orders of magnitude less then more significant sources.

With the proposed site activities and additional dust controls in place, it is considered that emissions to air from the site's operation are unlikely to cause harm to resident's health or the environment.

Greenhouse Gas (GHG) Assessment

Scope 1 GHG emissions from the proposed development are limited to diesel fuel consumption from plant and equipment operation on site. Scope 2 GHG emissions are limited to electricity consumption during site operations. Scope 3 emissions encompass a wide range of potential sources which are expected to be negligible for the proposed development. Therefore, Scope 3 GHG emissions were not assessed any further.

Annual GHG emissions for Scope 1 and Scope 2 GHG emissions for the operation of the C&D and drilling mud dewatering facilities are estimated to be 955 t CO_2-e.

Australia's total GHG emissions as at December 2019 (the most recent inventory update) was estimated to be 532.5 Mt CO_2-e (Australian Government, Quarterly Update of Australia's National Greenhouse Gas Inventory: December 2019). In comparison, the estimated annual GHG emission for proposed development is 0.00096 Mt CO_2-e. Therefore, the annual contribution of GHG emissions from the proposed development in comparison to the Australian greenhouse emissions in 2019 is approximately 0.0000018%.

GHG contributions from the proposed development are considered negligible.

NOISE AND VIBRATION

A full Noise Impact Assessment (NIA) has been undertaken for the proposed development and is provided in Appendix 2. The noise impact assessment was undertaken in accordance with the following guidelines:

- NSW Environmental Protection Authority, Noise Policy for Industry (EPA, 2017);
- Department of Environment, Climate Change and Water NSW, Road Noise Policy (DECCW, 2011);

The nearest receivers were identified and project specific noise criteria were established. The site operations were modelled using the predictive noise software, Sound Plan V7.3.

Cumulative operational noise levels are predicted to comply with the project specific criteria at all residential receivers during all time periods. During the night from 10pm – 6am the existing crusher, excavator and proposed vacuum truck pump should not be used. An internal pump can be used at night such that the tanker truck vacuum pump is not needed.

Sleep disturbance was assessed during the night time period and compliance with the criteria is achieved at all residential receivers. Compliance with the guidelines set out in the NSW Road Noise Policy was predicted at all considered receptors.

While further noise mitigation measures are not required, the following noise mitigation measures are recommended in order to proactively further reduce noise levels at surrounding receivers:

- Prohibition of extended periods of on-site revving/idling;
- Keeping the roller shutter door closed where possible;
- Minimisation of the use of truck exhaust brakes on site;
- Enforcement of low on-site speed limits; and
- Onsite vehicles and machinery to be maintained in accordance with a preventative maintenance program to ensure optimum performance and early detection of wearing or noisy components.

WATER

The proposed development is expected to generate negligible additional stormwater impacts. The proposed development is expected to significantly reduce impacts to stormwater as the stormwater

system will be upgraded and the collected first flush water from the site will be processed through the dewatering plant, preventing the majority of stormwater from leaving the site.

The site contains a drainage easement that runs across the site with existing stormwater pits connecting the two drainage pipelines within the easement via existing underground pipelines. Overland flooding is an issue with this existing arrangement and has resulted in sediment laden runoff from the site on occasions.

The proposed development involves upgrading the stormwater system to enable adequate management of leachate and on-site stormwater which has been designed to Council requirements. The proposed stormwater system will provide onsite detention and water quality treatment and include BCP stream guard pollution control at stormwater pits, then a silt arrestor followed by the 200 kL Rocla Plastream underground detention tank and stormwater isolation valve.

The system would capture first flush (25mm) site stormwater (leachate) which would initially be treated through an arrestor and detained within the two underground storage tanks before being treated through the dewatering plant.

The proposed development would require mains water for use in the office and amenities. All other water usage would be recycled water sourced from the dewatering facility and rainwater tanks on site. Recycled water would be used for dust suppression purposes through water sprayers to suppress dust on the existing external C&D storage bays, in the existing wheel wash and for washing down purposes. Excess recycled water from the dewatering plant would be discharged to sewer under a Tradewaste Agreement with Sydney Water.

Baseline data obtained through sampling and characterisation of existing site stormwater found that the results matched water quality for a “slightly to moderately disturbed system”. Modifications to the existing stormwater system are expected to improve stormwater quality.

An Erosion and Sediment Control Plan has been developed for implementation during construction to minimise potential impacts to waters. Erosion and sediment controls include geotextile inlet filters for existing stormwater pits, sediment fence for the perimeter of the construction zone and a shaker pad for stabilised site access by trucks.

The proposed development does not involve discharges to waterways. The stormwater system upgrade has been designed to only discharge rainwater after a heavy rain event (>25mm) with the first flush water being treated. A water monitoring program would be implemented to ensure stormwater discharge meets relevant ANZECC criteria.

FLOODING

Consultation with Canterbury-Bankstown Council in relation to flooding issues was undertaken and it is noted that Council advised that NO flood / overland flood study was necessary providing requirements were to be complied with.

However, due to changes in the development as part of the retaining wall design, a flood assessment is required. Indesco have prepared this assessment based on the site’s proposed stormwater system design to the site and in consultation with Council. Flood modelling was

carried out and found that the proposed development would not generate any considerable flood impacts with respect to the local overland flow.

SOIL

The proposal would involve soil disturbance during construction. Implementation of erosion and sediment controls would adequately manage any onsite soil excavation. Soil sampling undertaken as part of a Phase II Detailed Site Investigation confirmed that no contamination is present. However, due to the discovery of acid sulfate soils, an ASS Management Plan is required for the excavation works and has been submitted with the application.

TRAFFIC AND PARKING

The proposed development would generate additional truck movements associated with operation of the dewatering plant. Truck types that will access the site include medium rigid trucks, liquid tankers and B-doubles. At maximum proposed capacity, heavy vehicle trips per day are expected to include 44 on average for the C&D facility and 128 for the dewatering plant. Site layout plans demonstrate there is ample room on site for trucks to manoeuvre, weigh their loads upon entry and exit, unload and/or load, wait, and enter and exit the site in a forward direction. A traffic management plan has been prepared that provides operational measures to manage on-site traffic on a daily basis would be implemented at the site.

Vehicles unloading at the dewatering plant typically take 10-25 minutes to unload. Trucks picking up solid materials via FEL typically take around 15 minutes to load and vehicles dropping off solid materials typically take 1-2 minutes to unload.

The site layout would be altered and result in a total of fifteen (15) car parking spaces. This is compliant with the Canterbury-Bankstown Council and provides sufficient parking for expected staff numbers.

A traffic impact assessment was undertaken by Motion Traffic Engineers (Appendix 9) and a brief summary of findings is provided below.

The proposed liquid waste facility is a moderate trip generator for the weekday AM and PM peak hours. The additional trips from the proposed liquid waste facility can be accommodated at the nearby intersection without significantly affecting intersection performance, delays or queues. The forecast modelling for years 2021 to 2036 at priority intersections demonstrates that there will be no significant change in level of service, queuing distance nor the degree of saturation. There are no traffic engineering reasons why a planning permit for the proposed liquid waste facility at 81-87 Gow Street in Padstow should be refused.

WASTE MANAGEMENT

The site is an existing resource recovery facility for construction and demolition waste. The addition of the dewatering plant would allow for liquid waste such as drilling mud and concrete washout waste to be treated resulting in some recovery of material, with the resulting water treated to a standard suitable to reuse on site. All proposed liquid waste processing activities would be undertaken within an enclosed building. Little waste requiring disposal is expected to be generated by the dewatering process.

The site has approval to process 80,000 tpa of C&D waste and store 7,300 tonnes of C&D waste at any one time. The proposed development would result in processing of 250,000 tonnes per year of liquid waste and require on-site storage of an estimated additional 1,460 tonnes of waste at the site. The additional waste storage would be within an enclosed building or within covered and walled storage bunkers.

The recovered materials generated from the existing C&D facility include aggregates, soils and sands that are sold to the public from the site.

Materials recovered from the proposed dewatering plant would include treated water, recycled aggregates and biscuit (filter cake) resulting from the filter pressing of the sediments/silt in the liquid waste. Aggregates would be recycled under the relevant resource recovery exemption and order. The treated water would be reused on-site for cleaning purposes or for dust suppression. Any remaining treated water would be discharged to tradewaste. Filter cake would be applied to land under a resource recovery exemption or sent to a licensed landfill.

Waste would be managed in accordance with relevant waste legislation and guidelines under an Environmental Management Plan which includes an Incoming Waste Procedure and waste specification for drilling mud, as demonstrated in the Waste Management Report accompanying this EIS.

HAZARDS AND RISK

The site will store 33,000 L of diesel in a self-bunded diesel tank. Additionally, the site will also hold other various chemicals that are used for trucks and machinery, including degreaser, oils and lubricants. Small quantities of a flocculant will be stored on site to aid in recovery of mineral ores and remove suspended material from wastewater. All of these chemicals will be stored inside on bunded pallets.

A preliminary risk screening of the proposed development in accordance *with State Environment Planning Policy No. 33 – Hazardous and Offensive Development* (SEPP 33) found the quantities of dangerous goods onsite do not exceed the threshold quantities for applying SEPP 33 and therefore a Preliminary Hazard Analysis (PHA) is not required.

In order to identify and characterise the nature of potential fire events, a series of Hazard Identification Charts have been compiled to assess any potential fire events for the proposed development. Fire risk is relatively low at this facility. The FR NSW 'Fire safety guideline – Fire safety in waste facilities', and dated February 2020 does not apply to the site due to the minimal combustible materials stored.

BIODIVERSITY

There is no vegetation present on site as the site is fully developed and is covered in a concrete hardstand. Current structures on site are not used as a habitat by any endangered species. The site does not impact habitat connectivity or flight path integrity.

A biodiversity assessment waiver was completed and emphasises that the site will cause negligible disruption to the surrounding environment.

HERITAGE

A search of the NSW State Heritage Inventory found no Aboriginal places or items of heritage on, or within the vicinity of the site and that the site is fully concreted with no vegetation. However, planned excavations may result in ground disturbance and therefore a full Aboriginal cultural heritage assessment report has been prepared by McCardle Cultural Heritage.

No archaeological sites or Potential Archaeological Deposits (PADs) were identified during the survey. The following recommendations were made:

1) The persons responsible for the management of onsite works will ensure that all staff, contractors and others involved in construction and maintenance related activities are made aware of the statutory legislation protecting sites and places of significance. Of particular importance is the National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010, under the National Parks and Wildlife Act 1974; and
2) Should any Aboriginal objects be uncovered during works, all work will cease in that location immediately and the Environmental Line contacted.

CONSULTATION

The EIS addresses issues raised through the consultation process with local government, statutory authorities, the proponent, adjoining properties and nearest sensitive receptors. Extensive consultation was undertaken with regulatory authorities including a number of meetings and follow up emails. Topics of discussion and outcomes of these meetings are provided in detail in this EIS.

A community consultation leaflet was prepared and sent to selected surrounding landowners and occupiers via post on 30th June, 2020. Upon feedback from the DPIE in the adequacy review of the draft EIS, this leaflet was revised and re-sent on 12 November 2020 to surrounding landowners and occupiers which included those receivers identified in the noise and air reports. These locations were based on the nearest affected industrial receivers and the nearest residential areas. No objections or issues of concern were raised.

CONCLUSIONS

The environmental assessment process has enabled the potential impacts of the proposed development to be evaluated, and control strategies to be devised in order to ensure compliance with regulatory standards.

To ensure the impacts of the proposed development are kept low, Gow Street Recycling Centre have prepared the following plans: Traffic Management Plan, Emergency Plan, Construction Environmental Management Plan (CEMP) and Environmental Management Plan (EMP) which accompany this application.

A Statement of Commitments is provided as Section 14. The Statement of Commitments summarises the commitment made by Gow Street Recycling Centre to implement the environmental controls designed into the development. The size and nature of the proposed

increase in capacity are considered to be suited to this site and the request is made that approval be granted.

Approval is requested.

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1. INTRODUCTION

Benbow Environmental has been engaged by Gow Street Recycling Centre to prepare an Environmental Impact Statement (EIS) for the proposed liquid waste dewatering plant at the recycling facility located at 81 Gow Street, Padstow NSW. The proposal is State significant development and integrated development.

The site holds an environment protection licence (10943) for resource recovery and waste storage for building and demolition waste and asphalt waste (including asphalt resulting from road construction and waterproofing works), with a processing capacity of 80,000 tonnes per year, and a maximum storage quantity of 7,300 tonnes at any one time.

The proposed development seeks approval to:

- Establish a new liquid waste dewatering facility;
- Process 250,000 tonnes of liquid waste per year; and
- Operate 24/7.

Outcomes of discussions with the Department indicate that the proposed development would operate under an SSD approval and the existing C&D facility would remain under the existing Council approval.

The purpose of this EIS is to satisfy the requirements outlined in Schedule 2 of the Environmental Planning and Assessment Regulation 2000. Additionally, this EIS will support the variation to an Environment Protection Licence (EPL) in order for Gow Street Recycling to operate the liquid waste dewatering plant at the site.

1.1 INTRODUCTION TO THE PROPONENT

Gow Street Recycling Centre (GSRC) is a small family owned and operated business, established in 2016 when the Padstow facility was purchased. GSRC are a specialist resource recovery centre for building and demolition waste which provides an alternative to landfill by recycling various types of waste and recovering that material into a recycled, reusable product for use in building and construction.

Their Padstow site is well positioned to cater for both Sydney Metro and South West region waste streams. Gow Street Recycling Centre is committed to providing high-quality products and services to the public and takes great pride in building strong relationships with the community.

The site operates under Council approval DA-51/1997 obtained on 29 August 1997 for the use of the site as a transfer station handling 80,000 tonnes per annum of road waste material. This approval has been amended twice as follows:

DA-51/1997/2 - 24 September 2013 which is a S91(1A) amendment that authorises the transfer station handling 80,000 tonnes per annum of road waste material and clarifies the material permitted and 24-hr operation. Under this amendment, the facility is authorised to process general solid waste including glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal, VENM, building and demolition waste, asphalt waste, cured concrete waste, any mix of the above materials and drilling mud. Changes to car parking were also included.

DA-51/1997/3 – 17 February 2015, a S96(1A) amendment to extend trial period to operate 24/7 for another 12 months.

Copies of these consent conditions are provided in Attachment 4.

It should be noted that under DA-51/1997/2, drilling mud is authorised as a waste material on site. Clause 16 of the approval allows the following:

16) For the purposes of a transfer station operating on site, the types of materials permitted to be brought to the site under the term "road waste material" and resulting purely from roadworks, are limited to the following:

a) General solid waste (non-putrescible):
- *i) Glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal;*
- *ii) Virgin excavated material;*
- *iii) Building and Demolition waste;*
- *iv) Asphalt waste;*
- *v) Cured concrete waste;*
- *vi) Any mixture of the wastes referred to above.*

b) Drilling mud, meaning a mixture of naturally occurring rock and soil, including but not limited to materials such as sandstone, shale and clay, and drilling fluid generated during drilling operations such as horizontal or directional drilling or potholing. This does not included drilling mud that has been generated by:

- *i) Deep drilling for mineral, gas or coal exploration; or*
- *ii) Drilling through contaminated soils, acid sulphate soils (ASS) or potential acid sulphate soils (PASS).*

As the site has operated since 1997, the approval is still applicable, however, drilling mud was never added to the EPL as an approved incoming waste.

A dewatering/washing facility at the site was built between 2007 and 2009, and was in operation from 2009 to late 2016 before being demolished and replaced with aggregate bays (2017).

A new improved dewatering plant is proposed as part of this application.

1.1.1 Relationship with other Industries or Facilities

The proponent has a strong professional relationship with industry members, and related waste facilities as well as subcontractors in the construction industry across Sydney. The proponent is committed to a "ZERO HARM" approach in their business. This approach employs safety and sustainability practices to create awareness and build strong relationships with their various stakeholders.

1.2 PROJECT OVERVIEW

The proposed development will take place at 81 Gow Street, Padstow, and will consist of establishment and operation of a liquid waste dewatering plant within an existing building on site, with an annual processing capacity of 250,000 tonnes which includes 300,000 litres of liquid storage in tanks and inground pits.

Approval is being sought to add the liquid waste dewatering plant and operate this simultaneously with the C&D activities which will remain under the existing development consent DA-51/1997 and continue to operate at the approved capacity of 80,000 tonnes per annum.

Alterations and additions to the existing building on site would be undertaken for the installation of the dewatering plant and would require inground pits, sumps and bunkers, filter press, slurry homogeniser tanks, flocculant station, screw separator and screen, and conveyors.

The dewatering plant would operate separately from the existing C&D facility. There would, however, be some cross-over between operations as follows:

- Less than 10% of the recycled aggregates and fines produced from the dewatering plant (9,500 tpa) would require crushing. This material would be processed through the site's existing C&D plant which is licenced to process 80,000 tpa.
- Treated water from the dewatering process would be reused on site for dust suppression purposes on the existing external storage bunkers.
- The weighbridges and the existing wheel wash would be utilised by trucks associated with the C&D facility and proposed dewatering plant.
- Site offices and car parking would be used for site employees for both the existing C&D activities and the proposed dewatering activities.

The operation of the facility involves the following activities to be undertaken on site:

Liquid Waste Dewatering Plant

- Receive liquid waste including drilling mud and concrete washout waste from tanker trucks and concrete trucks into the 108,000 L inground pits which is transferred to the floc (flocculant) plant;
- The floc plant settles sands and aggregates to the bottom and transfers this mixture to the screens;
- The screens remove the sands and aggregates, these are then recycled under the relevant resource recovery exemption and order;
- Remaining suspended silts and clays from the screening process are transferred to the slurry homogeniser which stirs the silt to avoid settling and maintains a homogenous mixture of suspended silts for filtrations purposes. This mixture is sent to the filter press.
- Silt and clays are dewatered using a filter press. The solids are disposed of at a licenced landfill. Clean water is removed for reuse within the dewatering plant or on-site or sent to tradewaste;

The dewatering plant would also process the first 25 mm on-site stormwater that is captured within a 200 kL underground tank. The stormwater system will be upgraded, the proposed system consists of BCP stream guard pollution control at stormwater pits, then a silt arrestor followed by the 200 kL Rocla Plastream underground detention tank. After the first 25 mm of

stormwater is captured within the underground tank, the remaining clean overflow generated during a heavy rainfall event would be discharged into the stormwater system through the existing stormwater easement connection.

A stormwater isolation valve will be installed after the 200 kL underground containment to be used to contain contaminate stormwater.

1.2.1 Objectives of the Proposal

The main objective of the proposal is to install a dewatering facility that improves the efficacy of Gow Street Recycling's operations. Secondary objectives include:

- Creating a facility to efficiently process liquid waste, reducing likelihood of illegal dumping; and
- To operate the facility to a high environmental standard and ensure cleaner production principles are implemented.

1.2.2 Staging of the Proposal

The proposal will be undertaken in one stage.

1.2.3 Need for Development

Waste generated from construction and demolition (C&D) activities historically ends up in landfill. Increasingly, businesses are seeing waste as a potential resource which has resulted in a growth of recycling facilities to repurpose waste C&D in NSW. A similar demand exists for facilities to treat liquid waste, as disposal is costly to industry and water is increasingly becoming a more precious resource, yet few facilities are presently available to recycle such waste. Gow Street Recycling Centre wishes to capitalise on this need by expanding their recycling centre to include a liquid waste dewatering plant that treats drilling mud and concrete washout water.

Padstow is a suburb located in south-western Sydney. This location and the surrounding suburbs is a rapidly growing area of NSW. Current infrastructure projects within close proximity to the site include:

- Bankstown Station Precinct, including the Sydenham to Bankstown Urban Renewal Corridor; and
- The new Bankstown-Lidcombe Hospital

In addition, the construction of Badgerys Creek airport, employment and growth centres and the associated infrastructure projects as well as the increasing demand for residential developments means this region is generating significant quantities of liquid waste associated with this construction activity. This proposed development is needed to provide an additional process specifically to treat liquid waste from such projects and convert them into usable products.

1.3 DEVELOPMENT ALTERNATIVES

This section of the EIS discusses alternatives to the proposed development in regards to both the site location and the proposed methods of operation.

1.3.1 Alternative Locations

As the site's existing recycling facility has been able to operate without detriment to both the surrounding community and the environment, installation of the liquid waste treatment facility at this site is considered to be the most viable option.

1.3.2 Alternative Design and Processes

The proposed method of treating liquid waste utilises a number of techniques including rotating and vibrating screens for the removal of large sands and aggregates. Flocculants for the concentrating the large sands and aggregates to increase the efficiency of the screens. Slurry homogenisers to ensure a homogenous silt density which ensures efficient and effective filtering using the filter press and reduces maintenance from settling of silts and clays, some of which could solidify within the system if not constantly stirred.

The proposed method of treating liquid waste is dewatering which is considered to be one of the more conventional approaches. Other methods are available; however, no specific environmental and economic benefits have been identified in the current literature which would warrant a change in current production methodologies.

The proposed development is considered to be the most cost-effective process with minimal environmental impact.

1.3.3 Site Selection

The subject site has been chosen for the liquid waste dewatering facility for the following reasons:

- The subject site has ample room available to cater for the proposed operations.
- The subject site is located in a well-established industrial area with adequate services.
- The subject site is not in a sensitive land use area and has adequate separation distance from residential areas and ecologically sensitive receivers (i.e. waterways).
- The proposed development is a permitted use with consent at the subject site.
- The proposed development would service areas throughout NSW and, therefore, the subject site is well positioned when compared to alternative locations.
- The existing facility at the subject site has extensive environmental safeguards, some of which can be utilised for the proposed development, providing assurance in regards to expected degree of environmental impacts.

In conclusion, the proposed development has been selected as the preferred option due to its ability to satisfy the objectives of the proposal, the advantages of utilising this current site and the reliability of proposed environmental impact mitigation measures, and those already available at the existing facility.

1.3.4 Alternative Site Layout & Dust Control Measures

In response to EPA's request that options be considered as part of this proposal for enclosing C&D operations, a number of alternatives were investigated to reduce cumulative dust impacts including:

- Enclose the C&D operations in a building in the current location. This option resulted in too much disruption to current activities and loss of business and was considered financially unviable.
- Enclosing the C&D operations in a building in the current location in stages. Again, construction activities could not be carried out safely whilst operations take place, and moving the crusher and screen to a different location on site would likely result in non-compliances. This option cannot be done without stopping current work activities during each stage.
- Moving the C&D operations to the front of the site and constructing a building in this location. There is insufficient room in this area.

Other options to partially enclose the operations were also considered including:

- Erecting shade sails over the C&D operations;
- Use of an inflexible material or awning to cover the C&D operations.

As an alternative to an enclosure, additional dust control measures were considered including:

- Upgrade to the water misting system to provide improved coverage and more effective suppression of dust particles;
- Covering the crusher and screen with a flexible hood and vacuum ducting to capture dust emissions directly from each process.

The above alternative dust control measures are considered feasible options. Air modelling shows with these measures in place, the proposed site activities and additional dust controls in place, it is considered that emissions to air from the site's operation are unlikely to cause harm to resident's health or the environment.

1.3.5 "No project" Option

The consequences of not proceeding with the project would be to deny the wider community of the benefits resulting from the increase in waste recycling.

If the 'no project' option was implemented, the demand for liquid waste recycling would only rise, increasing the cost of this service across NSW, incentivising illegal dumping of waste.

1.4 EIS FUNCTION AND STRUCTURE

1.4.1 EIS Function

The EIS report has two main functions. Firstly, the EIS is required to document the existing built and natural environment and assess all potential impacts that the proposal may have on various environmental and social aspects. Based on the impact assessment, the EIS discusses the

management and control measures required by the proposed development to mitigate negative impacts and to achieve compliance with any criteria that applies to the proposal or site.

Secondly, the other function of the EIS is to provide all necessary information needed by the consent authority, the community, the various government authorities and the applicant to make informed decisions in relation to the proposed development, including its approval.

1.4.2 EIS Structure

The EIS is organised into the following three main sections:

- **Executive Summary**
  This summarises the proposed development, justification and the environmental assessment of the proposal.

- **Main Contents of the EIS**
  The main contents of the EIS describe the proposed development in detail, including the location and settings, the planning framework, the process description and other operational details. Then, the existing environment and the identification of issues are presented, followed by all necessary assessments of the potential environmental and, to a minor extent, social impacts. For each issue, safeguards and mitigation measures are addressed. The need and justification for the project are also included, together with a statement of commitments prepared for the proponent.

- **Appendices and Attachments**
  The Appendices contain the site plans and technical support documents, the Attachments include the requirements of the Secretary's Environmental Assessment Requirements (SEARs) and community consultation leaflet.

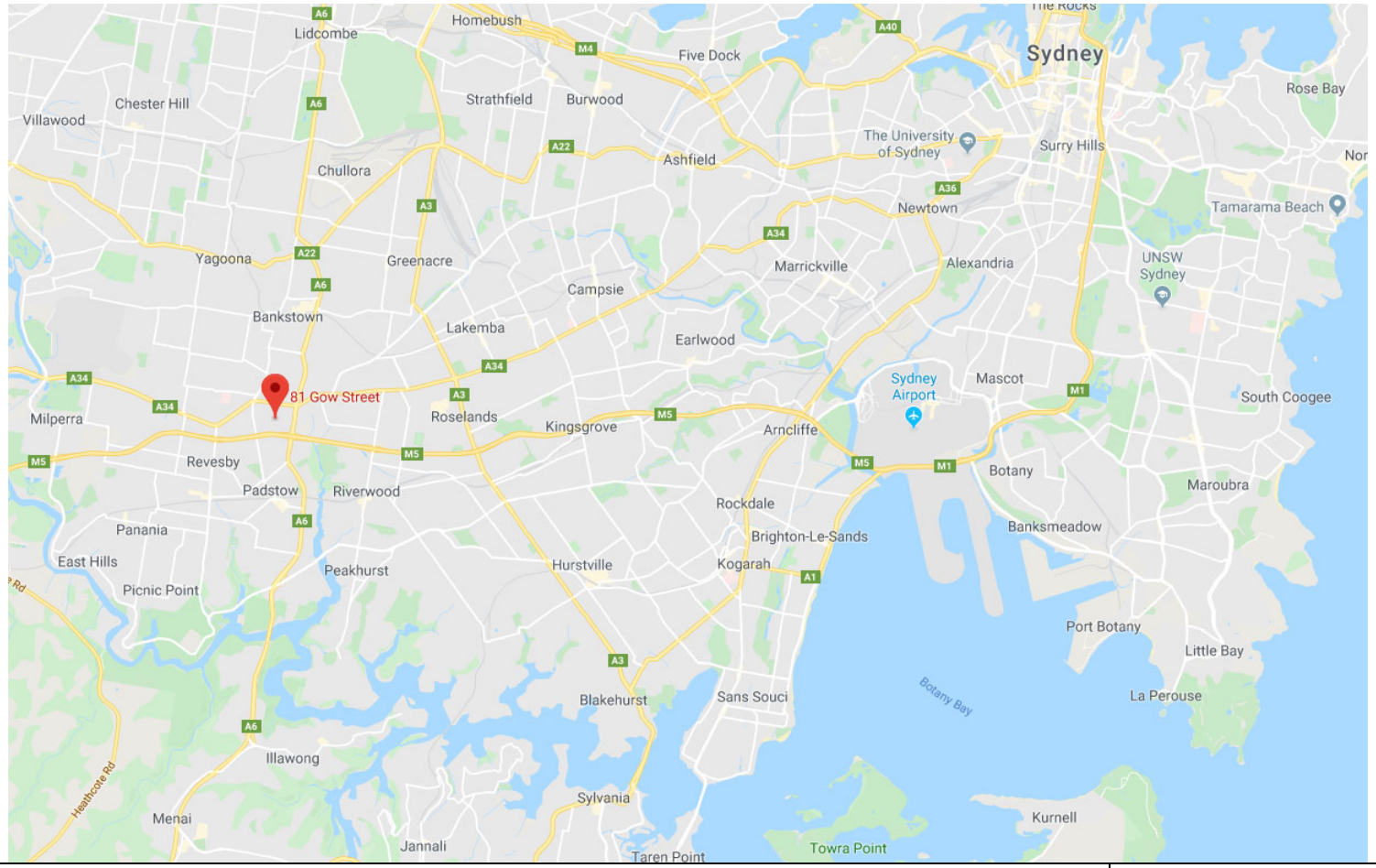
2. LOCATION AND SETTINGS

This section describes the existing site and location of the development. The site's surrounds are characterised and a general description of the environment likely to be affected, is provided.

2.1 SITE LOCATION

The development is located on a 575 m^2 section at 81 Gow Street, Padstow ("the subject site"), Lot A, DP103140. Figure 2-1 shows the site location in a regional context, with the site's local context shown in Figure 2-2. The site's current layout is shown in Figure 2-3.

Figure 2-1: Site Location in a Regional Context



↑N

Source: Google Maps 2019

Legend: Site location

Benbow Environmental
25-27 Sherwood Road
Northmead NSW 2152

Figure 2-2: The Site Location in a Local Context

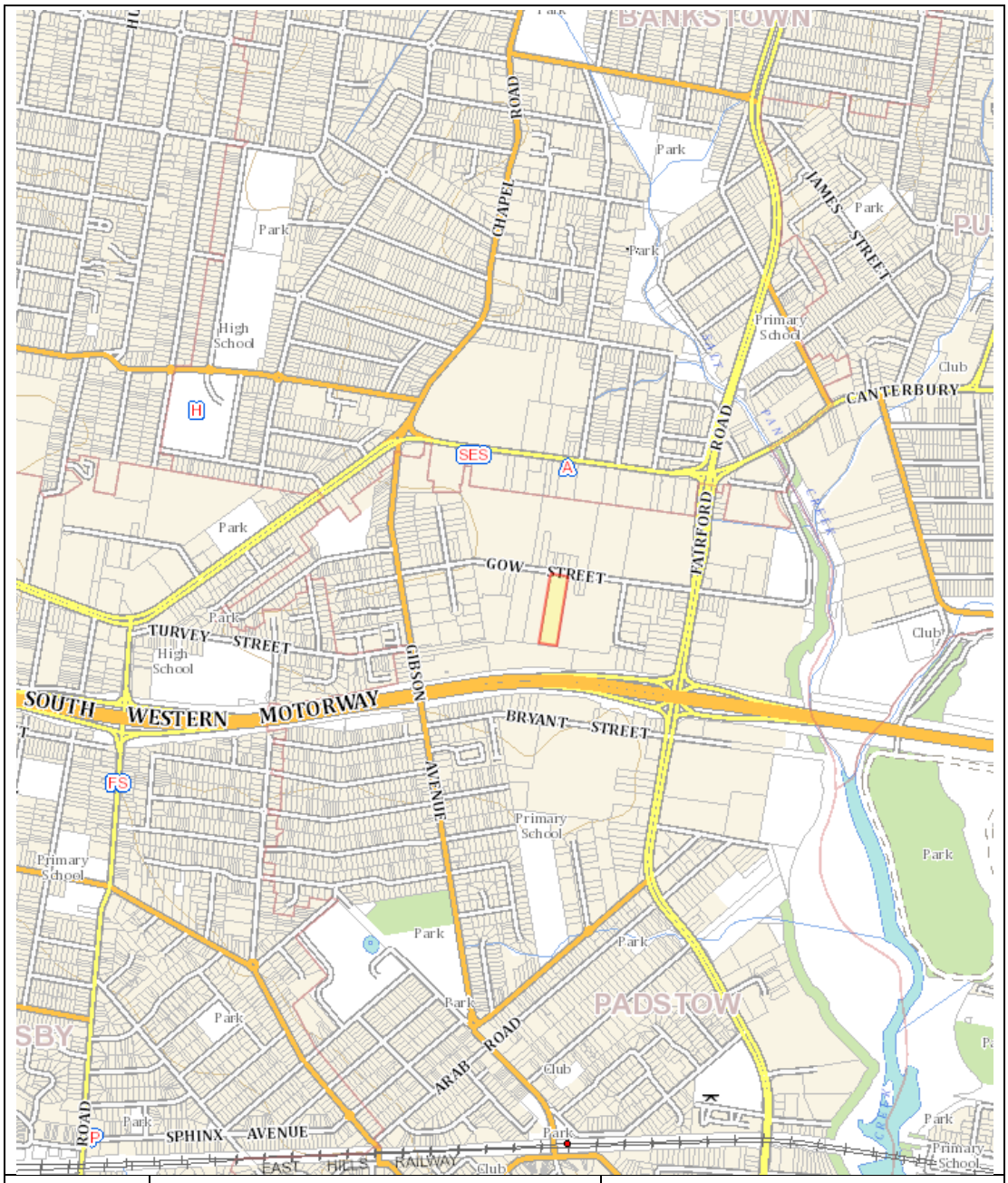


Figure 2-3: Aerial Photograph of The Site's Current Layout



2.2 SITE DESCRIPTION

The existing development site is a fully developed industrial premises with a total area of approximately 10,115 m^2. The entire site consists of sealed concrete hardstand.

There is currently no existing vegetation or landscaping on the site. Existing vehicle access to the site is via two driveways from Gow Street. Vehicles currently enter and exit via the western driveway. The eastern driveway is a service driveway. There are 9 car spaces located adjacent to the western entry driveway that are used by staff.

There are currently two weighbridges at the site. Trucks are required to be weighed upon entry and exit to the site. A wheel wash is located along the western boundary prior to the

weighbridge on the exit driveway. All trucks currently leave the site after passing through the wheel wash.

A 6 metre drainage easement runs through the centre of the site and is shown on the existing site plan in Figure 2-4 as dashed lines.

The site contains three existing buildings. An existing warehouse that is to be extended and is the proposed location for the new dewatering plant. An existing office and amenities building that is to be demolished and a demountable that is used as a lunchroom that is to be removed. There is also an existing awning located to the east of the car parking spaces that is to be removed. A diesel tank is located in this area.

The majority of the C&D activities take place on the southern half of the site. The southern boundary contains an 8.5 metre high wall that extends approximately 50 metres along the eastern boundary and 80 metres along the western boundary. This wall provides protection to surrounding areas from noise and dust and also provides a visual shield to the site from adjoining properties. The bottom 4.5 metres of the wall is made of precast concrete blocks while the top 4 metres is metal cladding. The existing crusher and conveyors are located in the south-eastern corner of the site and surrounded on three sides with concrete walls. Storage bunkers are located predominantly on the western side of the site and consist of precast concrete blocks. The contents of the bunkers consist of various sized aggregates, soil, sand, turf, concrete and garden mix. The existing site plan in Figure 2-4 shows the contents of each storage bunker.

Two large stormwater drainage pipe lines (diameter 1,500 mm), traverse underground in the centre of the site. Eight existing onsite stormwater pits connect to these two main lines via 1,050 mm, 450 mm, 300 mm and 250 mm diameter underground pipelines.

2.2.1 Existing Resource Recovery Facility

The site contains an existing resource recovery facility with approval under DA-51/1997 to process up to 80,000 tonnes per year and store tpa of construction and demolition (C&D) waste and has a storage capacity of 7,300 tonnes at any one time. The existing facility is not and will not be part of the development and will continue to operate under the existing consent. The facility is authorised to accept the following wastes:

- General solid waste (non-putrescible) including:
  - Glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal;
  - Virgin excavated material;
  - Building and Demolition waste;
  - Asphalt waste;
  - Cured concrete waste;
  - Any mixture of the wastes referred to above.

- Drilling mud, meaning a mixture of naturally occurring rock and soil, including but not limited to materials such as sandstone, shale and clay, and drilling fluid generated during drilling operations such as horizontal or directional drilling or potholing. This does not included drilling mud that has been generated by:
  - Deep drilling for mineral, gas or coal exploration; or
  - Drilling through contaminated soils, acid sulphate soils (ASS) or potential acid sulphate soils (PASS).

It should be noted that the facility currently does not accept drilling mud and this waste type is currently not included on the Site's EPL.

The site is fully developed and consists of two weighbridges, a wheel wash, a warehouse building, demountable office and a demountable lunchroom. Crushing and screening equipment are located in the south-east corner and there are 12 pre-cast concrete external storage bunkers for the storage of incoming wastes and recovered materials. A detailed description of the existing facility and an existing site plan is provided in Sections 2.2 and 2.2.1.

The existing development site is a fully developed industrial premises with a total area of approximately 10,115 m^2. The entire site consists of sealed concrete hardstand.

Approved hours of operation of the existing resource recovery facility are between 6.00am - 6.00pm on weekdays and 7.00 am - 6.00 pm weekends.

A description of the existing processes is provided in the following section.

2.2.1.1 Existing Process Description

The following steps are undertaken at the existing approved resource recovery facility:

- Incoming waste is received pre-sorted from skip bin facilities and is inspected at the weighbridge upon arrival at the site.
- Acceptable waste is weighed and recorded.
- Trucks unload the waste at the pre-crushed storage area.
- Material is crushed and screened to suitable sizes.
- Recovered material is stored in designated external storage bunkers.
- Materials are loaded onto trucks and weighed before leaving the site via the wheel wash for off-site reuse as road-base material.

Waste dockets are maintained for record keeping purposes.

2.2.1.2 Existing Waste Storage

Waste storage bunkers are shown on the existing and proposed site plan.

A summary of the waste type, storage area dimensions and storage capacity is provided in the table below:

Table 2-1: Existing Bunker Dimensions and Storage Capacity

Type	Width (m)	Length (m)	Height (m)	Volume m^3
Sand	4.725	6.654	4	126
Topsoil	4.019	6.654	4	107
Turf underlay	3.954	6.654	4	105
Natural 10 mm aggregates	4.04	6.654	4	108
Organic garden mix	4.042	6	4	97
30-100 mm aggregates	4.121	4	4	66

Table 2-1: Existing Bunker Dimensions and Storage Capacity

Type	Width (m)	Length (m)	Height (m)	Volume m^3
ENM/VNM/GSW (1)	5.337	9.225	4	197
ENM/VNM/GSW (2)	3.96	5.967	4	95
ENM/VNM/GSW (3)	6.087	(15.291+10.481)/2 =12.886	4	314
Concrete	6	12.09	4	290
Waste receivals	14	12.09	4	677
20 mm aggregates	35.289	7.825	4	1105
Fine aggregates	8.542	7.825	4	267
Dust (triangle bay)	7.455	7.825	4	116
Processing area	12	18	4	864
			Volume total	4593
			Tonnes total	7300

2.2.1.3 External C&D Operations Justification

The NSW EPA typically require all waste processing and storage to occur inside a building, for any new developments or modifications to developments. As such, the SEARs have requested strong justification for the on-going operations of the C&D facility externally.

The key reasons for the NSW EPA requirements are:

- Noise — Enclosing noisy operations reduces noise impacts.
- Air Quality — Enclosing dust generating operations or other air pollutant generating operations significantly reduces offsite impacts, as pollutants that become airborne are less likely to leave the building, the majority settling within.
- Water — Enclosing wastes prevents rain water from coming in contact with the waste, mobilising pollutants that may enter stormwater and leave the site, to potentially contaminate rivers/creeks/streams etc.

However, despite this requirement there is no governing NSW legislation that mandates waste be processed and stored inside.

This is an ongoing issue with waste facilities across NSW and the world at large.

Most wastes are not very valuable as a cost per tonne and constructing buildings that are capable of handling the quantities needed to be cost effective and are safe from a fire safety perspective is frequently cost prohibitive for a development.

In NSW this is particularly apparent, especially in the Sydney Basin because the cost per square meter of land is higher than most places on the planet. This is further exacerbated by parking requirements, reducing allowable productive space.

For waste facilities that process combustible materials the cost is further increased by the NSW FR Guidelines where the stockpiling, requirements reduce allowable productive space and the automated sprinkler requirements increase costs of operating within buildings.

All of these factors tend to culminate in an increased demand to export waste overseas where the legislation is less stringent. Of course the people living and working in and nearby these facilities, would be inherently subject to much greater risks of fire, air, noise and water pollution. Also significantly increasing CO_2 emissions per tonne of waste recycled.

It is therefore of paramount importance that the EPA work with NSW recycling businesses, particularly small businesses on cost effective case-by-case environmental solutions for waste facilities.

This particular site in Padstow NSW is one of the few facilities available to process C&D waste in the area. It is prohibitively expensive to build a building necessary to process the quantities of wastes required. This cost is significantly increased by the downtime the existing C&D facility would have to undertake as well as the substantial loss of business due to the interruption to regular clients that take their waste to Gow Street.

The proposed development will significantly reduce environmental impacts:

- Water generated from the dewatering plant will be used as dust suppression to reduce dust impacts.
- Shade sails will be constructed, at significant expense which will reduce dust impacts.
- New stormwater system will be constructed which will significantly reduce stormwater impacts, especially compared with the existing stormwater infrastructure on-site.

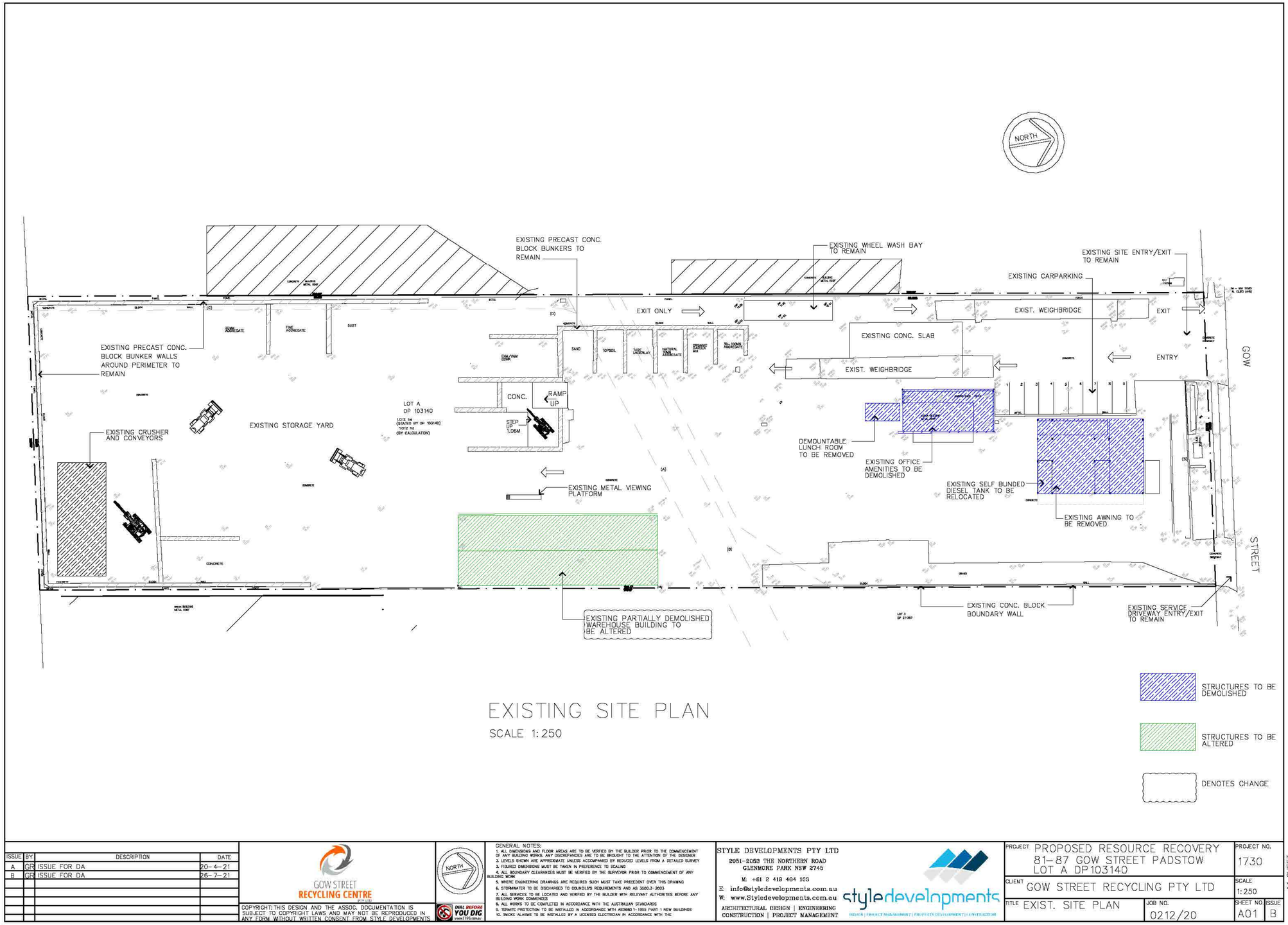
At this stage, there will be no increase to C&D quantities received on-site. Therefore the impacts will be substantially reduced.

Gow Street Recycling and Benbow Environmental commit to validating the efficiency of these controls before seeking any further stages in the development.

2.3 EXISTING SITE LAYOUT

Figure 2-4 shows the existing site plan of the development.

Figure 2-4: Existing Site Plan

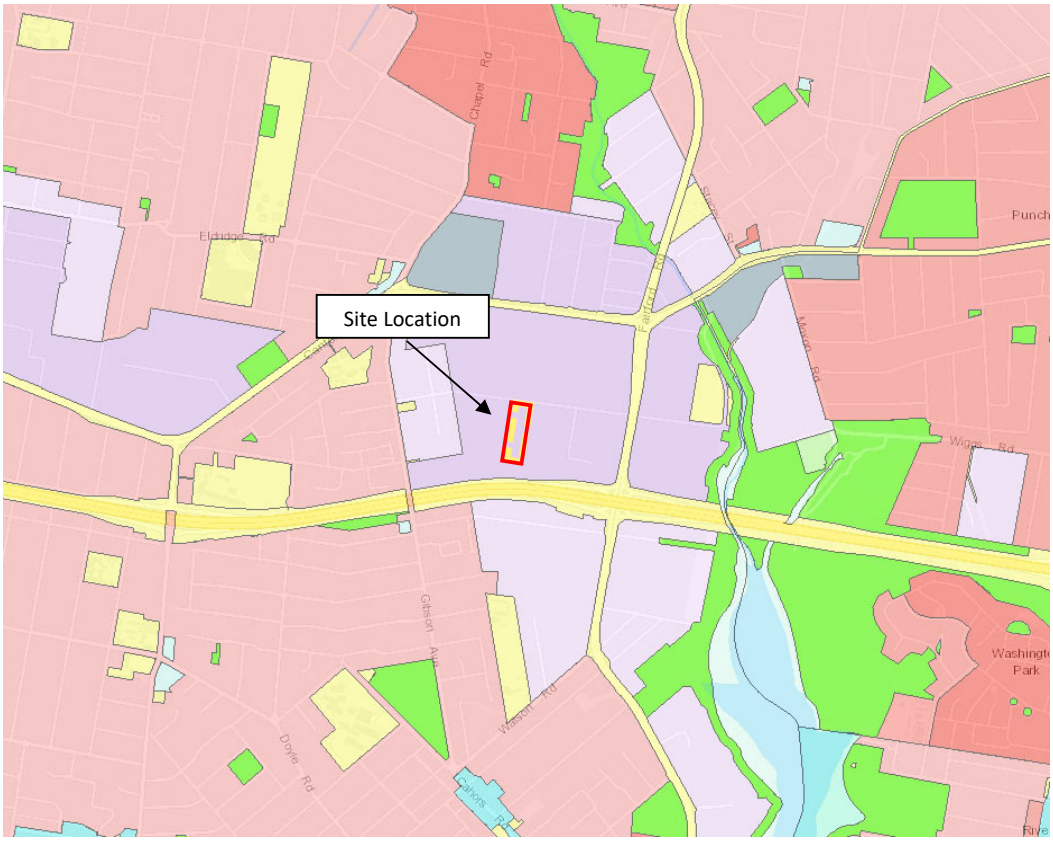


2.4 LAND USE

The site is situated within zone IN1, General Industrial, under the Bankstown Local Environmental Plan (LEP) 2015 as shown in Figure 2-4. The surrounding zonal land classes include: to the South, SP2, Special Infrastructure (the South Western Motorway), to the far west, IN2 (Light Industrial) and to the south-west, west, north and east, R2 (Low Density Residential) and RE1 (Public Recreation).

Salt Pan Creek, a natural waterway, lies approximately 760 m due east. The T8 – Airport and South Rail line is located 1.6 km south of the site. The closest residential areas are to the south west (200 m) and west (380 m). The surrounding land zoning is shown in Figure 2-4.

Figure 2-4: Surrounding Land Use Zoning



Source: https://www.planningportal.nsw.gov.au not to scale

Legend:

Site location:

- B1 - Neighbourhood Centre
- B2 - Local Centre
- B3 - Commercial Core
- B4 - Mixed Use
- B5 - Business Development
- B6 - Enterprise Corridor
- B7 - Business Park
- B8 - Metropolitan Centre
- E1 - National Parks and Nature Reserves
- E2 - Environmental Conservation
- E3 - Environmental Management
- E4 - Environmental Living
- IN1 - General Industrial
- IN2 - Light Industrial
- IN3 - Heavy Industrial
- IN4 - Working Waterfront
- R1 - General Residential
- R2 - Low Density Residential
- R3 - Medium Density Residential
- R4 - High Density Residential
- R5 - Large Lot Residential
- RE1 - Public Recreation
- RE2 - Private Recreation
- RU1 - Primary Production
- RU2 - Rural Landscape
- RU3 - Forestry
- RU4 - Primary Production Small Lots
- RU5 - Village
- RU6 - Transition
- SP1 - Special Activities
- SP2 - Infrastructure
- SP3 - Tourist
- W1 - Natural Waterways
- W2 - Recreational Waterways
- W3 - Working Waterways

2.5 LOCAL COMMUNITY

2.5.1 Padstow and the Surrounding Area

The suburb of Padstow is located approximately 22 km south-west of Sydney's Central Business District. It is within the Canterbury-Bankstown Council. Surrounding suburbs include; Bankstown, Revesby, Peakhurst, Riverwood and Punchbowl.

Padstow has five primary schools (four public and one Catholic) and no secondary schools.

Padstow Railway Station is the main public transport route through the suburb and lies on the Sydney Trains Airport and South Line. Additionally, there are several bus routes that travel through Padstow, all of which are operated by Transdev NSW.

2.5.2 Population Demographics

The Australian Bureau of Statistics (ABS) conducts a national census every 4 years. Data presented below has been sourced from the last census survey conducted in 2016.

At the time of the 2016 census, the population within the suburb of Padstow consisted of 13,306 people, of which 50.8 % were males and 49.2 % female. Of the total persons residing in Padstow, 5,804 people reported as being employed, of which approximately 70 % worked full-time and 30 % part-time. The largest occupation representation is professionals 21.4 %, followed by %, clerical and administrative workers 18.8 %, technicians and trade workers 13.5 %, managers 11.1 %, sales workers 9.1 %, community and personal service workers 8.7 %, labourers 8.2 % and machinery operators and drivers 7.3 % (ABS 2016).

2.6 NEAREST SENSITIVE RECEIVERS

The closest residential receivers are detailed in Table 2-2 and shown in Figure 2-5. The nearest residences are located 240 m southeast of the site along Bryant Street. Padstow Primary School is the nearest school located approximately 485 m south of the site.

The nearest waterway is Salt Pan Creek, approximately 760 m east of the site. Salt Pan Creek flows through Bankstown, Padstow and connects to Georges River at Padstow Heights.

The nearest ecological receiver is Salt Pan Creek Reserve, which is 685 m to the east of the site.

Table 2-2: Nearest Sensitive Residential and Non-Residential Receivers

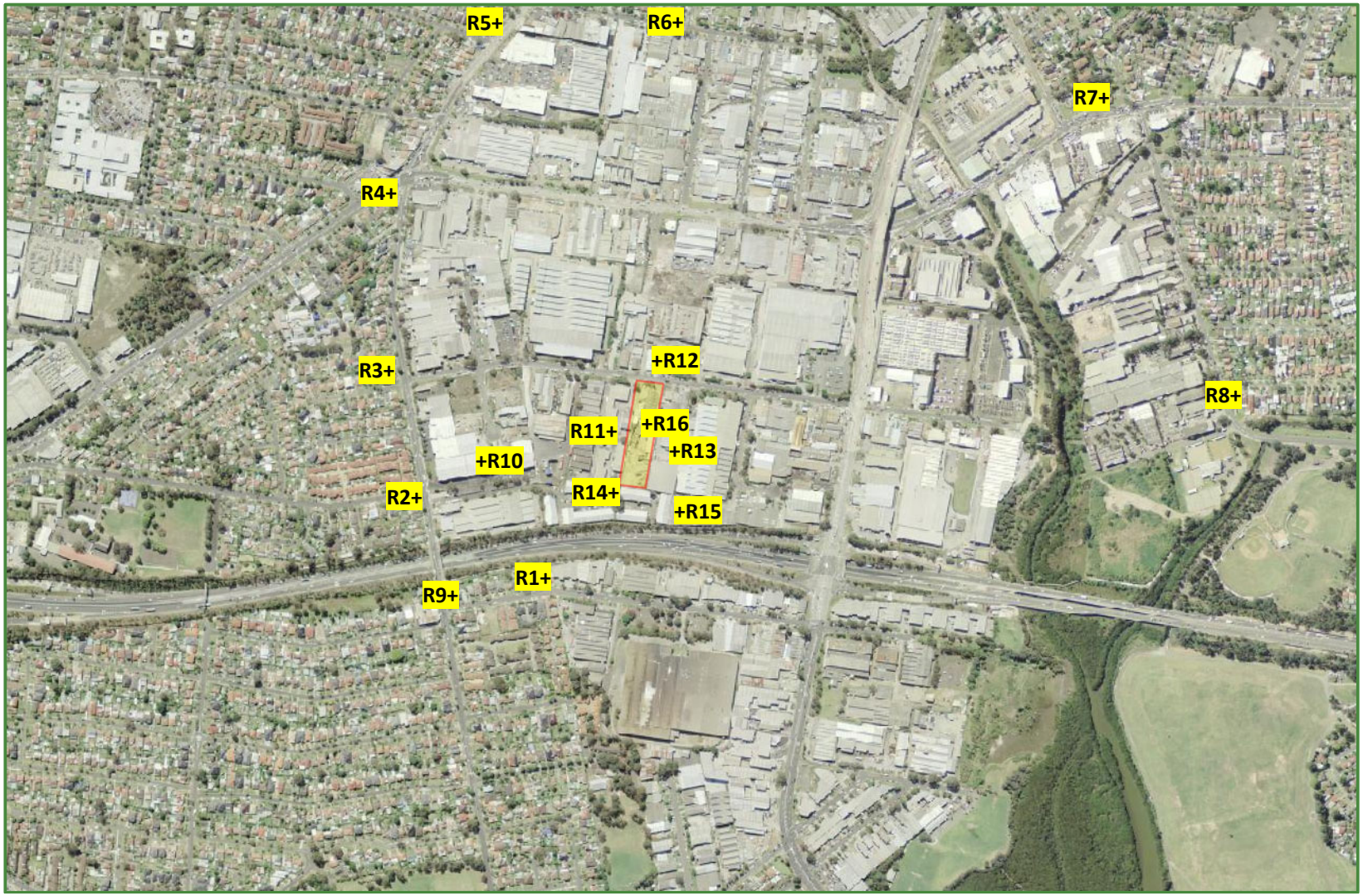
Receptor ID	Address	Direction from Site	Lot & DP	Approx. Distance from Proposed Development	Type of Receptor
R1	24 Bryant Street, Padstow	SW	17 DP 18539	240 m	Residential
R2	59 Gibson Avenue, Padstow	W	1 DP 18270	430 m	Residential
R3	39 Gibson Avenue, Padstow	W	2 DP 26399	500 m	Residential

Table 2-2: Nearest Sensitive Residential and Non-Residential Receivers

Receptor ID	Address	Direction from Site	Lot & DP	Approx. Distance from Proposed Development	Type of Receptor
R4	168 Canterbury Road, Bankstown	NW	3 DP 10428	610 m	Residential
R5	76 Chapel Road, Bankstown	NW	6 DP 132453	780 m	Residential
R6	61 Marshall Street, Bankstown	N	4 DP 13275	700 m	Residential
R7	26 John Street, Punchbowl	NE	1 DP 36047	900 m	Residential
R8	62 Moxon Road, Punchbowl	E	1 DP 1129073	1030 m	Residential
R9	98-100 Gibson Avenue, Padstow	SW	11 DP 1208760	390 m	School Classroom
R10	9 Gatwood Close, Padstow	W	71 DP 1163243	290 m	Place of Worship
R11	89 Gow Street, Padstow	W	A SP 103140	Adjacent	Industrial
R12	82 Gow Street, Padstow	N	2 DP 392634	Adjacent	Industrial
R13	79 Gow Street, Padstow	E	3 DP 371357	Adjacent	Industrial
R14	78 Gibson Avenue, Padstow	S	SP 22907	Adjacent	Industrial
R15	9 Wordie Place, Padstow	SW	12 DP 242730	Adjacent	Industrial
R16	81 Gow Street, Padstow (on-site)	-	-	On-site	Dust monitor location

Note: distances measured from the boundaries of the site

Figure 2-5: Receptor Map



2.7 SITE HISTORY

2.7.1 DA History

The development history of the site is presented in the table below. This provides the history of approvals obtained for the site.

Table 2-3: Council's Development and Building Application and Consent Records from 81 Gow Street, Padstow

Year	Number	Description
2019	CD-91/2019	Demolition of Existing Warehouse/Storage Shed
2016	DA-818/2016	Installation of a weighbridge
2016	CC-603/2016	Installation of a weighbridge
2014	DA-51/1997/3	Transfer Station Handling 80,000 Tonnes Per Annum of Road Waste Material S96(1A)
2013	DA-844/2013	Use of material crushing plant within existing waste management facility
2012	DA-51/1997/2	Transfer Station Handling 80,000 Tonnes Per Annum of Road Waste Material S96(1A)
2007	DA-478/2007	Partial use of premises as a metal recycling depot
2005	DA-202/2005	Use of premise for storage
2004	DA34/-2004	Subdivision into 2 lots
2000	DA-968/2000	Inclusion of crushing and screening works at existing transfer station
1999	DA-799/1999	Construction of storage bins and use of crusher/sorter
1999	DA-51/1997/1	Transfer Station Handling 80,000 Tonnes Per Annum of Road Waste Material S96(2)
1998	BA-1237/1998	Concrete Slab and Waste Bin
1998	DA-207/1998	Subdivision into 2 lots
1998	DA-19/1989	Annex at side of building; Concrete and roof rear loading areas & add
1997	DA-51/1997	Transfer Station Handling 80,000 Tonnes Per Annum of Road Waste Material
1997	DA-67/1997	Proposed Torrens Title Subdivision into 2 lots
1994	DA-373/1994	Parking of trucks and storage of freight and mechanical repairs
1994	BA-962/1994	Partition Wall
1993	BA-1719/1993	Warehouse
1993	DA-573/1993	Construction of a warehouse
1992	BA-566/1992	Partial Enclosure Existing Support
1991	DA-3/1991	Construction of a new warehouse UNIT 2
1988	BA-557/1988	Concrete over existing driveways
1986	DA-561/86	Use of factory for the purpose of polystyrene foam moulding, cutting and fabrication.
1986	DA-528/86	Alterations and additions to existing premises for the use of the rear part of the site as a transport terminal.
1985	DA-126/85	Use of existing factory premises for the collection, shredding and baling of paper.
1978	DA-120/78	Dismantle, rebuild and sell new, used and re-conditioned automotive parts and accessories and for the wholesale of used motor vehicles.
1967	BA-1451/67	Erection of a framed brick factory.

Copies of these development approvals were requested from Council and can be found in Attachment 4.

2.7.2 Aerial Photographs

Aerial photographs obtained from the NSW Department of Lands and Google Earth for the following years were reviewed to describe the site features and surrounding areas at various timelines:

- 1955;
- 1986;
- 1991;
- 2004;
- 2016; and
- 2019.

The historical aerial photographs have been included in Attachment 5. The site boundaries are shown on the close up photographs. A summary of the review is presented in Table 2-4.

Table 2-4: Site History

Year	Site	Surrounding Areas
1955	A residence and adjacent shed are located in the north-western corner of the site. The remainder of the site is cleared of vegetation and a small watercourse traverses the centre of the site, east-west.	Residences and large shed structures are located on lots north and east of the site. Surrounding lots are mostly undeveloped, with vegetation and small structures located west, south and east of the site. Beyond the immediate surrounds of the site, numerous residential suburbs have been established in Punchbowl (east) and Revesby (south-west).
1986	The site has been fully developed and sealed, no vegetation remains. Two (2) structures – a large warehouse near the north boundary and a smaller shed south of this – are established. Numerous shipping containers and vehicles are present in the rear (southern) yard (in line with DA-528/86).	Immediate surrounding lots north, south and west are developed. The adjoining lot in the west is undeveloped. Numerous large warehouse structures are present on many lots surrounding the site. Further growth and development in the residential suburbs surrounding the site.

Table 2-4: Site History

Year	Site	Surrounding Areas
1991	Existing structures are still on the site. A number of shipping and transport containers remain in the rear yard. The remainder of the site remains unchanged.	Further development and growth in all surrounding lots (larger warehouses/structures in place). The lot west of the site has been developed and contains a number of unit structures. The future M5 South-West Motorway area south of the site has been cleared and is being prepared for construction. The future A6 Davies/Fairford Road east of the site has been cleared also.
2004	An additional shed structure can be seen located along the eastern boundary. The rear yard is free of shipping and transport containers. A crusher/screener can be seen in the rear yard and material stockpiles are visible along the western boundary (in line with DA-51/1997, DA-799/1999 and DA-968/2000).	Further development and growth in all surrounding lots. The industrial estate surrounding the site has grown considerably, as have the residential areas/suburbs at all points surrounding the site. The M5 has been completed and is now fully functional. The A6 has also been completed as an arterial road servicing north-south.
2016	The smaller shed is being utilised as a washing/dewatering plant and the rear of the yard has stockpile bays installed along the east and west boundary.	Minimal changes to the surrounding area. Further development and growth in all surrounding lots.
2019	Addition of weighbridge on site towards entry (in line with DA-818/2016 or CC-603/2016). The washing/dewatering shed has been demolished and external material bays are now in its place along the western boundary. Additional stockpile bays are located at the rear of the site. The remainder of the site remains unchanged.	Minimal changes, development and growth in all surrounding lots.

3. PLANNING FRAMEWORK

This section provides an assessment of the proposed development in accordance with all relevant statutory planning controls.

3.1 COMMONWEALTH CONTROLS

3.1.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) would apply to the development of the subject land. The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places – defined in the EPBC Act as matter of national environmental significance.

The proposed development would not have a significant impact on matters of national environmental significance and it is not on Commonwealth land. Therefore, the Provisions of the Act do not have application and the approval of the Minister is not required.

3.2 STATE CONTROLS

3.2.1 Environmental Planning and Assessment Act and Regulation

The *Environmental Planning and Assessment Act 1979 (EP&A Act)* and the *Environmental Planning and Assessment Regulation 2000 (EP&A Regulation)* provide the framework for environmental planning in NSW. The EP&A Act and the Regulation include provisions to ensure that proposals, which have the potential to impact on the environment, are subject to detailed assessment. Under this legislation the proposed development is defined as integrated development.

3.2.1.1 Designated development

32 Waste management facilities or works

(1) Waste management facilities or works that store, treat, purify or dispose of waste or sort, process, recycle, recover, use or reuse material from waste and:

(a) that dispose (by landfilling, incinerating, storing, placing or other means) of solid or liquid waste:

(i) that includes any substance classified in the Australian Dangerous Goods Code or medical, cytotoxic or quarantine waste, or

(ii) that comprises more than 100,000 tonnes of "clean fill" (such as soil, sand, gravel, bricks or other excavated or hard material) in a manner that, in the opinion of the consent authority, is likely to cause significant impacts on drainage or flooding, or

(iii) that comprises more than 1,000 tonnes per year of sludge or effluent, *or*

(iv) that comprises more than 200 tonnes per year of other waste material, or

(b) that sort, consolidate or temporarily store waste at transfer stations or materials recycling facilities for transfer to another site for final disposal, permanent storage, reprocessing, recycling, use or reuse and:

(i) that handle substances classified in the Australian Dangerous Goods Code or medical, cytotoxic or quarantine waste, or

(ii) that have an intended handling capacity of more than 10,000 tonnes per year of waste containing food or livestock, agricultural or food processing industries waste or similar substances, or

(iii) that have an intended handling capacity of more than 30,000 tonnes per year of waste such as glass, plastic, paper, wood, metal, rubber or building demolition material, or

(c) that purify, recover, reprocess or process more than 5,000 tonnes per year of solid or liquid organic materials, or

(d) that are located:

(i) in or within 100 metres of a natural waterbody, wetland, coastal dune field or environmentally sensitive area, or

(ii) in an area of high watertable, highly permeable soils, acid sulphate, sodic or saline soils, or

(iii) within a drinking water catchment, or

(iv) within a catchment of an estuary where the entrance to the sea is intermittently open, or

(v) on a floodplain, or

(vi) within 500 metres of a residential zone or 250 metres of a dwelling not associated with the development and, in the opinion of the consent authority, having regard to topography and local meteorological conditions, are likely to significantly affect the amenity of the neighbourhood by reason of noise, visual impacts, air pollution (including odour, smoke, fumes or dust), vermin or traffic.

(2) This clause does not apply to:

(a) development comprising or involving any use of sludge or effluent if:

(i) the dominant purpose is not waste disposal, and

(ii) the development is carried out in a location other than one listed in subclause (1) (d), above, or

(b) development comprising or involving waste management facilities or works specifically referred to elsewhere in this Schedule, or

(c) development for which State Environmental Planning Policy No 52—Farm Dams and Other Works in Land and Water Management Plan Areas requires consent.

The proposed development will process more than 1,000 tonnes per year of sludge or effluent and is defined as designated development under Clause 32. However, under Clause 4.10(2) of the Environmental Planning and Assessment Act 1979, *Designated development does not include State significant development despite any such declaration*.

The proposed development is State Significant Development under The State Environmental Planning Policy (State and Regional Development) 2011, as shown in Section 3.2.5.5.

3.2.1.2 Integrated development

Part 4, Division 4.8, Section 4.46 of the EP&A Act defines what constitutes an "Integrated development". Integrated development is development (not being State significant development or complying development) that requires development consent and one or more of the following licenses or approvals listed in Table 3-1.

Table 3-1: Licence/Approval Requirements as Integrated Development

Legislation	Require License or Approval
Coal Mine Subsidence Compensation Act 2017	No
Fisheries Management Act 1994	No
Heritage Act 1977	No
Mines Subsidence Compensation Act 1961	No
Mining Act 1992	No
National Parks and Wildlife Act 1974	No
Petroleum (Onshore) Act 1991	No
Protection of the Environment Operations Act 1997	**Yes**
Roads Act 1993	No
Rural Fires Act 1997	No
Water Management Act 2000	No

The site currently holds an EPL licence (10943) for resource recovery and waste storage. The EPL will need to be varied to include the liquid waste dewatering activities and storage.

Hence this proposal is integrated development.

3.2.1.3 Section 4.15 (1) – Matters for Consideration

Under Section 4.15 of the EP&A Act, in determining a development application a consent authority is to take into consideration such of the following matters as are relevant to the development, the subject of the development application.

(a) The provisions of:

(i) Any environmental planning instrument

The *Bankstown Local Environmental Plan 2015* applies to the subject land. The subject land is zoned IN1 General Industrial. Under the provisions of this zone the proposed use is permitted with consent as demonstrated in Section 3.3.1.1.

(ii) Any draft environmental planning instruments that have been placed on public exhibition.

None at this stage.

(iii) Any Development Control Plans

The proposed use has been assessed in accordance with the Bankstown DCP 2015 in Section 3.3.2.

(iv) Any matters prescribed by the regulations.

None at this stage.

(b) The likely impact of the development including environmental impacts in both the natural and built environment and social and economic impacts in the locality.

- *Context and Setting*

The proposed use will complement the surrounding area and strengthen the overall economic development of the area.

- *Potential Impact on Adjoining Properties*

There will be no negative impact on the adjoining or surrounding industrial or other adjoining properties as demonstrated throughout this report and supporting technical assessments.

- *Access, Transport and Traffic*

A traffic and parking assessment has been undertaken and found that the proposed design of the development is acceptable in all aspects of its traffic design. The nearby intersections perform well to accommodate additional traffic of the development site. There are no public parking opportunities near the development, all parking demand would be contained on site.

- *Public Domain*

The proposed use will have a positive contribution to the public domain.

- *Utilities*

The existing utilities are available to service the proposed development. Connection to Sydney Water's Tradewaste system will be required.

- *Heritage*

A search of the NSW Heritage Register and Council's LEP found no heritage items on or close to the site. However, an Aboriginal cultural heritage assessment was a requirement of the EES SEARs due to the need to excavate as part of the proposal. No archaeological sites or Potential Archaeological Deposits (PADs) were identified during the survey.

- *Other Land Resources*

The proposed development will take waste products from construction sites and recycle them into valuable resources for reuse.

- *Critical Habitat*

The land does not include or comprise critical habitat.

- *Air and Microclimate*

There are no microclimate issues. An air quality impact assessment has been conducted and found that there will be no significant impacts from the operation of the dewatering plant.

- *Waste*

The site is an existing resource recovery facility for construction and demolition waste. The addition of the dewatering plant would allow for liquid waste such as drilling mud and concrete washout waste to be treated resulting in some recovery of material and wastewater of a standard suitable to reuse on site. Little waste requiring disposal is expected.

- *Energy*

The proposed operation would not involve energy intensive activities therefore there are no energy issues.

- *Noise*

Detailed noise impact assessments have been conducted in accordance with the NSW Noise Policy for Industry, Interim Construction Noise Guideline and the NSW Road Noise Policy. The noise assessments concluded that the proposed development will not generate significant noise impacts.

- *Natural Hazards*

Flooding was identified as a potential natural hazard. A flood assessment was undertaken to ensure no impacts would result from the proposed development.

- *Social Impact in the Locality*

No negative social impacts have been identified.

- *Economic Impact in the Locality*

The proposed use will contribute to the economic development of the area.

- *Site Design and Building Form*

The site is already developed and consists of infrastructure for the C&D resource recovery facility. The proposed dewatering facility would be located inside a new purpose-built building that will replace an existing building. A new office is proposed to be constructed adjacent to the existing weighbridge and has been designed in accordance with relevant DCP requirements and the Building Code of Australia (NCC 2019). These changes are not expected to significantly impact on the existing site design and building form. A discussion of visual amenity is provided in the EIS.

- *Construction*

Construction of the office, and fit out and extension of the existing building for the dewatering plant is expected to be completed within a four-month timeframe.

The construction works involve some excavations for the inground water containment pits and sumps, stormwater system upgrade and footings for the equipment installation. Due to the presence of acid sulfate soils, an Acid Sulfate Soil Management Plan provided with this development application is required to be implemented.

- *Cumulative Impacts*

There are no cumulative impact issues given the nature of this locality.

(c) The suitability of the site for the development.

The proposed development is appropriate for this site.

(d) Any submissions made in accordance with the Act.

No submissions at this stage.

(e) The public interest

There are no aspects of the proposed use that would be contrary to the public interest.

3.2.2 Protection of the Environment Operations Act 1997

Part 1 in Schedule 1 of the *Protection of the Environment Operations Act 1997* (POEO Act) lists premise-based activities that are scheduled activities and, as such, that require a licence under the Act. The facility already holds an Environment Protection Licence (#10943) for resource recovery and waste storage of building and demolition waste including asphalt waste. This includes a processing capacity of 80,000 tpa, and a maximum storage quantity of 7,300 tonnes at any one time.

The proposed development includes the processing of liquid waste which is defined by the following scheduled activity under Clause 41 of Schedule 1 of the Act:

> ***41 Waste processing (non-thermal treatment)***
>
> *(1) This clause applies to the following activities:*
>
> *"**non-thermal treatment of general waste**", meaning the receiving of waste (other than hazardous waste, restricted solid waste, liquid waste or special waste) from off site and its processing otherwise than by thermal treatment.*
>
> *"**non-thermal treatment of hazardous and other waste**", meaning the receiving of hazardous waste, restricted solid waste or special waste (other than asbestos waste or waste tyres) from off site and its processing otherwise than by thermal treatment.*
>
> *"**non-thermal treatment of liquid waste**", meaning the receiving of liquid waste (other than waste oil) from off site and its processing otherwise than by thermal treatment.*
>
> *"**non-thermal treatment of waste oil**", meaning the receiving of waste oil from off site and its processing otherwise than by thermal treatment.*
>
> *"**non-thermal treatment of waste tyres**", meaning the receiving of waste tyres from off site and their processing otherwise than by thermal treatment.*

(2) However, this clause does not apply to the processing of any of the following:

a) stormwater,

b) contaminated soil,

c) contaminated groundwater,

d) sewage within a sewage treatment system (whether or not that system is licensed).

(3) Each other activity referred to in Column 1 of the Table to this clause is declared to be a scheduled activity if—

(a) it meets the criteria set out in Column 2 of that Table, and

(b) 50% or more by weight of the total amount of waste received per year requires disposal after processing.

Comment:
The proposal involves the non-thermal treatment of liquid waste and would have on site at any one time more than 200 kilograms of liquid waste thus Clause 41 applies.

42 Waste storage

*(1) This clause applies to **waste storage**, meaning the receiving from off site and storing (including storage for transfer) of waste.*

Comment:
The proposed development will receive waste from off site and will store more than 5 tonnes of liquid waste on site at any one time, thus Clause 42 applies.

In summary, the proposed development requires a variation to the existing EPL to add the following scheduled activities:

- 41 – Waste Processing (Non-thermal treatment) – for Non-thermal treatment of liquid waste; and
- 42 – Waste storage (storage of liquid waste).

3.2.3 Biodiversity Conservation Act 2016

The subject land is not biodiversity certified land within the meaning of Part 8 of the *Biodiversity Conservation Act 2010*. There is no element of the Biodiversity Offsets Scheme that applies to the land under Part 8 of the same Act. The subject land does not contain threatened species.

3.2.4 NSW Heritage Act 1977

The subject land does not contain an item of environmental heritage and there are no items of environmental heritage in the immediate vicinity of the subject land that would be impacted by its proposed use. Therefore, there are no issues in relation to the *NSW Heritage Act 1977*.

3.2.5 State and Regional Environmental Planning Policies

A number of State Environmental Planning Policies (SEPPs) and Deemed SEPPs (previously knowns as Regional Environmental Plans) as well as Draft SEPPs, apply to the subject land and are listed in below in Table 3-2. The most relevant SEPPs are then discussed in greater detail.

Table 3-2: State and Regional Environmental Planning Policies

Policy	Comments
GMREP No 2 – Georges River Catchment	**No application: Discussed below**
SEPP (Affordable Rental Housing) 2009	No application
SEPP (Coastal Management) 2018	**No application: Discussed below**
SEPP (Building Sustainability Index: BASIX) 2004	No application
SEPP (State Significant Precincts) 2005	**No application: Discussed below**
SEPP (Miscellaneous Consent Provisions) 2007	No application
SEPP (State and Regional Development) 2011	**No application: Discussed below**
SEPP (Exempt and Complying Development Codes) 2008	No application
SEPP (Housing for Seniors or People with a Disability) 2004	No application
SEPP (Infrastructure) 2007	**Applies. Discussed below.**
SEPP (Mining, Petroleum Production and Extractive Industries) 2007	No application
SEPP No 1 – Development Standards	No application
SEPP No 19 – Bushland in Urban Areas	No application
SEPP No 21 – Caravan Parks	No application
SEPP No 33 – Hazardous and Offensive Development	**No application: Discussed below**
SEPP No 44 – Koala Habitat Protection	No application
SEPP No 50 – Canal Estate Development	No application
SEPP No 55 – Remediation of Land	**Applies: Discussed below**
SEPP No 62 – Sustainable Aquaculture	No application
SEPP No 64 – Advertising and Signage	No application
SEPP No 65 – Design Quality of Residential Apartment Development	No application
SEPP No 70 – Affordable Housing	No application
SEPP (Primary Production and Rural Development) 2019	No application
SEPP (Vegetation in Non-Urban Areas) 2017	No application
Draft SEPP – Integrating Land Use and Transport	No application
Draft SEPP (Environment) 2017	No application

3.2.5.1 State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

The proposed development does not trigger the thresholds listed in SEPP No. 33 – Hazardous and Offensive Development and would not fit the definition of 'potentially hazardous industry' or 'hazardous storage establishment'. This is demonstrated in Section 8.6.2.

3.2.5.2 State Environmental Planning Policy No. 55 – Remediation of Land

The proposed development does require some excavation; therefore SEPP No. 55 – Remediation of Land applies. This includes the excavation of an area for the liquid waste dewatering plant receiving pit.

A limited Phase II ESA was performed by Benbow Environmental, with soil sampling undertaken in February 2020, found the areas proposed for excavation, are free from contamination. The investigation also revealed the presence of acid sulfate soils (ASS) and as such, any future excavations require an ASS management plan before commencement of earth works.

3.2.5.3 State Environmental Planning Policy (Infrastructure) 2007

Waste management and resource recovery facilities are permitted with consent on land zoned IN1 – General Industrial under Clause 121 of Division 23, Part 3, of the *State Environmental Planning Policy* (SEPP) *(Infrastructure) 2007*, as reported below.

> ***121 Development permitted with consent***
> *(1) Development for the purpose of waste or resource management facilities, other than development referred to in subclause (2), may be carried out by any person with consent on land in a prescribed zone.*
>
> Where:
> ***prescribed zone** means any of the following land use zones or a land use zone that is equivalent to any of those zones:*
> *(a) RU1 Primary Production,*
> *(b) RU2 Rural Landscape,*
> ***(c) IN1 General Industrial,***
> *(d) IN3 Heavy Industrial,*
> *(e) SP1 Special Activities,*
> *(f) SP2 Infrastructure.*
>
> ***waste or resource management facility** means a waste or resource transfer station, a resource recovery facility or a waste disposal facility.*
>
> ***resource recovery facility** means a facility for the recovery of resources from waste, including such works or activities as separating and sorting, processing or treating the waste, composting, temporary storage, transfer or sale of recovered resources, energy generation from waste gases and water treatment, but not including re-manufacture of material or goods or disposal of the material by landfill or incineration.*
>
> ***waste or resource transfer station** means a facility for the collection and transfer of waste material or resources, including the receipt, sorting, compacting, temporary storage and distribution of waste or resources and the loading or unloading of waste or resources onto or from road or rail transport.*

Under Clause 8 of the SEPP (infrastructure) 2007, where there is an inconsistency between this Policy and other environmental planning instruments, this Policy prevails.

Therefore, the development for the purposes of the resource recovery facility is permissible with consent.

3.2.5.4 State Environmental Planning Policy (State Significant Precincts) 2005

The development is not within a state significant precinct and the provisions of the SEPP (State Significant Precincts) 2005 do not apply.

3.2.5.5 State Environmental Planning Policy (State and Regional Development) 2011

The aims of SEPP (State and Regional Development) 2011 is to identify development that is state significant development, state significant infrastructure or critical state significant infrastructure. Under Clause 8 (1) of the *State Environmental Planning Policy (State and Regional Development) 2011*, development is potentially state significant development if it is specified in Schedule 1 or Schedule 2. Clause 23(3) of Schedule 1 is relevant to the proposed activities:

> ***23 Waste and resource management facilities***
> *(1) Development for the purpose of regional putrescible landfills or an extension to a regional putrescible landfill that:*
> *(a) has a capacity to receive more than 75,000 tonnes per year of putrescible waste, or*
> *(b) has a capacity to receive more than 650,000 tonnes per year of putrescible waste over the life of the site, or*
> *(c) is located in an environmentally sensitive area of State significance.*
>
> *(2) Development for the purpose of waste or resource transfer stations in metropolitan areas of the Sydney region that handle more than 100,000 tonnes per year of waste.*
>
> *(3) Development for the purpose of resource recovery or recycling facilities that handle more than 100,000 tonnes per year of waste.*
>
> *(4) Development for the purpose of waste incineration that handles more than 1,000 tonnes per year of waste.*
>
> *(5) Development for the purpose of hazardous waste facilities that transfer, store or dispose of solid or liquid waste classified in the Australian Dangerous Goods Code or medical, cytotoxic or quarantine waste that handles more than 1,000 tonnes per year of waste.*
>
> ***(6) Development for the purpose of any other liquid waste depot that treats, stores or disposes of industrial liquid waste and:***
> *(a) handles more than 10,000 tonnes per year of liquid food or grease trap waste, or*
> ***(b) handles more than 1,000 tonnes per year of other aqueous or non-aqueous liquid industrial waste.***

The proposed development **is state significant** as it involves the handling of more than 1,000 tonnes per year of other aqueous waste. An Environmental Impact Statement (EIS) is required to accompany an application for state significant development. Additionally, the subject site is not an identified site under Schedule 2 of the SEPP.

3.2.5.6 Greater Metropolitan Regional Environmental Plan No 2 – Georges River Catchment

The following provides an assessment of the proposed development in accordance with Greater Metropolitan Regional Environmental Plan No 2 – Georges River Catchment (REP2).

The general aims and objectives of the REP2 is to:

> *1a) to maintain and improve the water quality and river flows of the Georges River and its tributaries and ensure that development is managed in a manner that is in keeping with the national, State, regional and local significance of the Catchment,*

b) to protect and enhance the environmental quality of the Catchment for the benefit of all users through the management and use of the resources in the Catchment in an ecologically sustainable manner,
c) to ensure consistency with local environmental plans and also in the delivery of the principles of ecologically sustainable development in the assessment of development within the Catchment where there is potential to impact adversely on groundwater and on the water quality and river flows within the Georges River or its tributaries,
d) to establish a consistent and coordinated approach to environmental planning and assessment for land along the Georges River and its tributaries and to promote integrated catchment management policies and programs in the planning and management of the Catchment,
e) (Repealed)
f) to provide a mechanism that assists in achieving the water quality objectives and river flow objectives agreed under the Water Reform Package.

As demonstrated throughout this EIS, the proposed development does not involve the removal of water from the river system or groundwater. Nor will the development release wastewater and/or wastes into surface or groundwater receptors. The site would employ safeguards to prevent the release of potential contaminants. Therefore, the proposed development is consistent with the aim of the SEPP.

Clause 11(22) includes particular Provisions in respect of Waste management facilities or works being:

22 WASTE MANAGEMENT FACILITY OR WORKS

Definition
Development for the purpose of waste management facilities or works described in Schedule 3 (Designated Development) to the Environmental Planning and Assessment Regulation 1994.

Planning controls
Development consent required unless on flood liable land, in which case it is prohibited.
Advertised.

Specific matters for consideration
A system is to be required to manage leachate surface controls on the land on which the waste management facility or works is or are proposed.
A site management plan is to be required for the land on which the waste management facility or works is or are proposed.
The likelihood of groundwater contamination.
The adequacy of the proposed leachate management system and surface water controls.
The long-term stability of the final landform and the adequacy of the site management plan.
Where the proposed development involves extraction of material, whether an adverse impact on the Georges River or its tributaries will result.

These matters for consideration have been addressed in this EIS, relevant sections are:

- Leachate would not be generated as part of the dewatering activities as the process is enclosed. However a system has been designed to manage leachate from the site as a whole which includes C&D activities, as part of this development.
- An environmental management plan will be implemented at the site.
- Groundwater contamination is addressed in Section 6.3.2.
- Surface water controls are addressed in Section 8;
- Site rehabilitation is addressed in Section 5.10; and
- No extraction of material is proposed.

It can be determined that the proposed use is not inconsistent with the Aims and Objectives of the Policy, whilst the matters for consideration are satisfied.

The subject property is not 'flood liable land' for the purposes of cl.11 of REP 2 and the proposed development is permissible development with consent.

Note: if an inconstancy arose between REP 2 and SEPP 2007 the later would prevail to the extent of the inconsistency.

3.2.5.7 State Environmental Planning Policy (Coastal Management) 2018

Division 1 Coastal wetlands and littoral rainforests area
10 Development on certain land within coastal wetlands and littoral rainforests area

1) The following may be carried out on land identified as "coastal wetlands" or littoral rainforest on the Coastal Wetlands and Littoral Rainforests Area Map only with development consent:

(a) the clearing of native vegetation within the meaning of Part 5A of the Local Land Services Act 2013,

(b) the harm of marine vegetation within the meaning of Division 4 of Part 7 of the Fisheries Management Act 1994,

(c) the carrying out of any of the following:

(i) earthworks (including the depositing of material on land),

(ii) constructing a levee,

(iii) draining the land,

(iv) environmental protection works.

The area of proposed works is not located within land mapped as Coastal Wetland and therefore State Environmental Planning Policy (Coastal Management) 2018 does not apply.

3.3 LOCAL CONTROLS

3.3.1 Local Environmental Plan

The *Bankstown Local Environmental Plan 2015* applies to the subject site.

The proposed development is considered to be generally consistent with the particular aims of the Plan under Part 1, Clause 1.2 (2), in particular (a) and (g)as follows:

(a) to manage growth in a way that contributes to the sustainability of Bankstown, and recognises the needs and aspirations of the community,

(b) to protect and enhance the landform and vegetation, especially foreshores and bushland, in a way that maintains the biodiversity values and landscape amenity of Bankstown,
(c) to protect the natural, cultural and built heritage of Bankstown,
(d) to provide development opportunities that are compatible with the prevailing suburban character and amenity of residential areas of Bankstown,
(e) to minimise risk to the community in areas subject to environmental hazards by restricting development in sensitive areas,
(f) to provide a range of housing opportunities to cater for changing demographics and population needs,
(g) to provide a range of business and industrial opportunities to encourage local employment and economic growth,
(h) to provide a range of recreational and community service opportunities to meet the needs of residents of and visitors to Bankstown,
(i) to achieve good urban design in terms of site layouts, building form, streetscape, architectural roof features and public and private safety,
(j) to concentrate intensive trip-generating activities in locations most accessible to rail transport to reduce car dependence and to limit the potential for additional traffic on the road network,
(k) to consider the cumulative impact of development on the natural environment and waterways and on the capacity of infrastructure and the road network,
(l) to enhance the quality of life and the social well-being and amenity of the community.

3.3.1.1 Permissibility

The land zoning for the subject land is described as IN1 – General Industrial under the provisions of the *Bankstown Local Environmental Plan 2015*, which applies to the subject site.

The proposed development is considered permitted with consent as it falls under the definition of "general industries". The following definitions are of relevance:

> ***resource recovery facility*** *means a building or place used for the recovery of resources from waste, including works or activities such as separating and sorting, processing or treating the waste, composting, temporary storage, transfer or sale of recovered resources, energy generation from gases and water treatment, but not including re-manufacture or disposal of the material by landfill or incineration.*
>
> ***Note.***
>
> *Resource recovery facilities are a type of* ***waste or resource management facility****—see the definition of that term in this Dictionary.*
>
> ***Industry*** *means any of the following-*
>
> *a)* **General industry**,
> *b)* Heavy industry,
> *c)* Light industry,
> But does not include
> *d)* Rural industry, or
> *e)* Extractive industry or
> *f)* Mining

> ***General Industry*** *means a building or place (other than a heavy industry or light industry) that is used to carry out an industrial activity. -*
>
> ***Industrial activity*** *means the manufacturing, production, assembling, altering, formulating, repairing, renovating, ornamenting, finishing, cleaning, washing, dismantling, transforming, processing, recycling, adapting or servicing of, or the research and development of, any goods, substances, food, products or articles for commercial purposes, and includes any storage or transportation associated with any such activity. -*

In addition waste management and resource recovery facilities are permitted with consent under Clause 121 of Division 23, Part 3, of the *State Environmental Planning Policy* (SEPP) *(Infrastructure) 2007*, as discussed in Section 3.2.5.4.

The following objectives apply.

> ***Zone IN1 General Industrial***
> ***1. Objectives of zone***
> - *To provide a wide range of industrial and warehouse land uses.*
> - *To encourage employment opportunities.*
> - *To minimise any adverse effect of industry on other land uses.*
> - *To support and protect industrial land for industrial uses.*
>
> ***2 Permitted without consent***
> *Nil*
>
> ***3 Permitted with consent***
> *Agricultural produce industries; Building identification signs; Business identification signs; Depots; Food and drink premises; Freight transport facilities; Garden centres;* ***General industries****; Hardware and building supplies; Hospitals; Industrial training facilities; Kiosks; Landscaping material supplies; Light industries; Markets; Medical centres; Neighbourhood shops; Oyster aquaculture; Places of public worship; Plant nurseries; Roads; Tank-based aquaculture; Timber yards; Vehicle sales or hire premises; Warehouse or distribution centres; Any other development not specified in item 2 or 4*
>
> ***4 Prohibited***
> *Agriculture; Air transport facilities; Airstrips; Amusement centres; Biosolids treatment facilities; Boat launching ramps; Boat sheds; Camping grounds; Caravan parks; Cemeteries; Centre-based child care facilities; Charter and tourism boating facilities; Commercial premises; Eco-tourist facilities; Entertainment facilities; Exhibition homes; Exhibition villages; Extractive industries; Farm buildings; Forestry; Function centres; Health services facilities; Heavy industrial storage establishments; Home occupations (sex services); Industries; Jetties; Marinas; Mooring pens; Moorings; Open cut mining; Pond-based aquaculture; Port facilities; Residential accommodation; Respite day care centres; Restricted premises; Rural industries; Schools; Sewage treatment plants; Signage; Tourist and visitor accommodation; Water recreation structures; Water recycling facilities; Wharf or boating facilities; Wholesale supplies*

Note: The proposal is not for a "water recycling facility" as this refers to a place used for the treatment of sewage effluent, stormwater or waste water for use as an alternative supply to mains water, groundwater or river water.

3.3.1.2 Zoning Requirements

The site is located in an area of Zone IN1 under the provisions of the Bankstown Local Environmental Plan 2015. The LEP states that the objectives of this zone are:

- To provide a wide range of industrial and warehouse land uses.
- To encourage employment opportunities.
- To minimise any adverse effect of industry on other land uses.
- To support and protect industrial land for industrial uses.

The proposal is for the establishment of a dewatering facility on an existing industrial site. Relevant definitions are listed below;

> ***general industry*** *means a building or place (other than a heavy industry or light industry) that is used to carry out an industrial activity.*
>
> ***heavy industry*** *means a building or place used to carry out an industrial activity that requires separation from other development because of the nature of the processes involved, or the materials used, stored or produced, and includes:*
> *(a) hazardous industry, or*
> *(b) offensive industry.*
> *It may also involve the use of a hazardous storage establishment or offensive storage establishment.*
>
> ***industry*** *means any of the following:*
> *(a) general industry,*
> *(b) heavy industry,*
> *(c) light industry,*
>
> *but does not include:*
>
> *(d) rural industry, or*
> *(e) extractive industry, or*
> *(f) mining.*
>
> ***light industry*** *means a building or place used to carry out an industrial activity that does not interfere with the amenity of the neighbourhood by reason of noise, vibration, smell, fumes, smoke, vapour, steam, soot, ash, dust, waste water, waste products, grit or oil, or otherwise, and includes any of the following:*
> *(a) high technology industry,*
> *(b) home industry.*

The proposed use is consistent with the definition of "general industry" and is permissible with consent in the zone. Furthermore, the proposed use is not covered by any of the categories in the prohibited development schedule for this Zone. It would readily meet the objectives of the plan as outlined above.

3.3.1.3 General LEP Provisions

3.3.1.3.1 Building Height

Clause 4.3 relates to Height of Buildings. The Height of Building Map sheet HOB_005 is displayed below in Figure 3-1. As shown, there are no restrictions on the height of buildings at the proposed development site.

Figure 3-1: Height of Building map



↑N

Source: NSW Government, 2020

Legend:

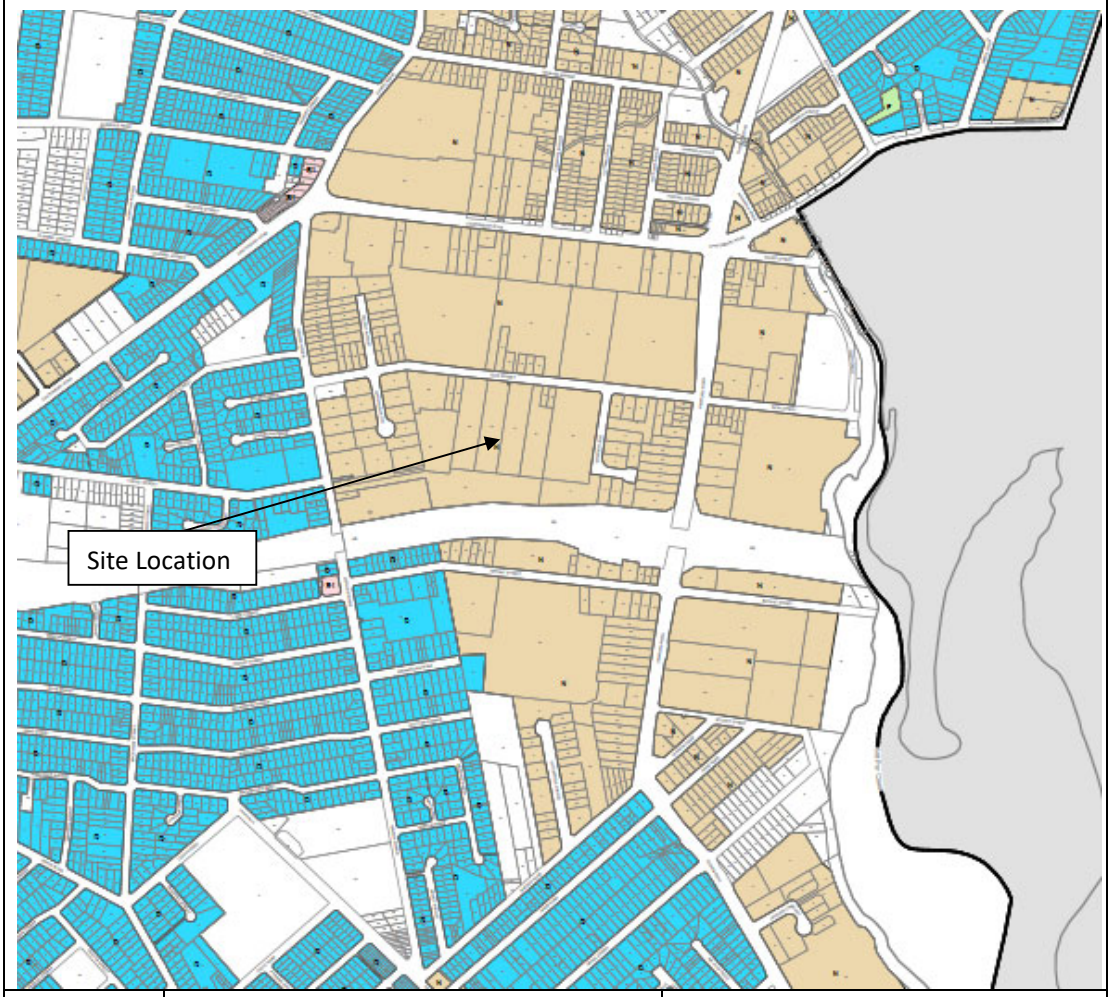
J	9.0	U1	30.0
K	10.0	U2	32.0
L	11.0	V1	35.0
N1	13.0	V2	38.0
N2	14.0	W	41.0
O	16.0	X	47.0
P	17.0	Y	53.0
Q1	19.0		Area 1
Q2	20.0		Area 2
S	23.0		
T1	25.0		
T2	26.0		
T3	29.0		

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3.3.1.3.2 Floor Space Ratio

Clause 4.4 relates to floor space ratio requirements. The Floor Space Ratio Map Sheet FSR_005 is shown below in Figure 3-2. The site has a maximum Floor Space Ratio of 1:1.

Figure 3-2: Floor Space Ratio Map



Source: NSW Government, 2020

Legend:

D	0.5	V	3
F	0.6	Y	4.5
H	0.7		Area 1
I	0.75		Area 2
N	1		Area 3
P	1.25		Area 4
S1	1.5		Area 5
S2	1.75		Area 6
T	2		
U	2.5		

↑N

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3.3.1.3.3 Flood Planning

Clause 6.3 relates to flood planning. The site is within a medium flood risk area as shown in Section 6.3.3. A flood assessment has been undertaken to ensure the design of the site will not impact on flood waters.

3.3.1.3.4 Terrestrial Biodiversity

Clause 6.4 relates to biodiversity. There is no vegetation on site. Biodiversity is discussed in Section 6.4. No trees will be removed as part of this development.

3.3.1.3.5 Heritage Conservation

Clause 5.10 of the Bankstown LEP Heritage conservation objectives are as follows:

(1) Objectives The objectives of this clause are as follows—
- *(a) to conserve the environmental heritage of Bankstown,*
- *(b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,*
- *(c) to conserve archaeological sites,*
- *(d) to conserve Aboriginal objects and Aboriginal places of heritage significance.*

There are no identified heritage items on or within the immediate vicinity of the site. Due to the need to undertake excavation for the development, an Aboriginal Heritage assessment report has been undertaken.

3.3.1.3.6 Earthworks

Under the Bankstown LEP, Clause 6.2 is relevant to earthworks;

(1) The objective of this clause is to ensure that earthworks for which development consent is required will not have a detrimental impact on environmental functions and processes, neighbouring uses, cultural or heritage items or features of the surrounding land.

(2) Development consent is required for earthworks unless—
- *(a) the earthworks are exempt development under this Plan or another applicable environmental planning instrument, or*
- *(b) the earthworks are ancillary to development that is permitted without consent under this Plan or to development for which development consent has been given.*

(3) In deciding whether to grant development consent for earthworks (or for development involving ancillary earthworks), the consent authority must consider the following matters—
- *(a) the likely disruption of, or any detrimental effect on, drainage patterns and soil stability in the locality of the development,*
- *(b) the effect of the development on the likely future use or redevelopment of the land,*
- *(c) the quality of the fill or the soil to be excavated, or both,*
- *(d) the effect of the development on the existing and likely amenity of adjoining properties,*
- *(e) the source of any fill material and the destination of any excavated material,*

(f) the likelihood of disturbing relics,

(g) the proximity to, and potential for adverse impacts on, any waterway, drinking water catchment or environmentally sensitive area,

(h) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

The proposed development requires some excavations. This includes the excavations required for the liquid waste dewatering plant's inground pits. These earthworks are ancillary to this development application. In addition, the earthworks are minor in nature and are therefore not expected to cause disruption to drainage patterns, soil stability, adjoining properties, waterways nor effect likely future use of the land. No fill material would be required. Destination of excavated material would be managed under the Acid Sulfate Soil Management Plan. Excavations are not expected to disturb relics as none were found during site surveys as stated in the Aboriginal Heritage Assessment Report.

The proposed development complies with this Clause.

3.3.1.3.7 Acid Sulfate Soils

Clause 6.1 relates to acid sulfate soils. The site is mapped on the Acid Sulfate Soils Map Sheet ASS_005 as containing Class 5 acid sulfate soils. The Phase II report identified the site contains acid sulfate soils. Therefore this clause applies and an Acid Sulfate Soil management plan has been prepared.

3.3.2 Development Control Plans

This section outlines the Bankstown DCP requirements that apply to the proposal. Additionally, for applicable controls the table outlines how the proposal will comply with the DCP.

Table 3-3: Bankstown DCP Requirements

Requirements	Compliance	Comments
Part A - Precinct Controls		
1 – Centres	N/A	The site is not located in a centre.
2 – Corridors	N/A	The site is not located along the Hume Highway corridor.
3 – Key Infill Development Sites	N/A	The site is not located in a key infill development site.
Part B – General Controls		
1 – Residential Development	N/A	Not relevant to the proposed development.
2 – Commercial Centres	N/A	Not relevant to the proposed development.
3 – Industrial Precincts		
3.2 – Building Envelopes	Complies	Site plans are located in Appendix 8.
3.3 – Building Design	Complies	Site plans are located in Appendix 8.
3.4 – Environmental Management	Complies	Air Quality Impact Assessment and Noise Impact Assessment are located in appendix 1 and 2 respectively.
3.5 – Ancillary Development	Complies	Fences and signs will not be altered. Chemicals will be stored in a bunded area. This is explained in further detail in Section 8.6.1.
3.6 – Chullora Technology Park	N/A	The site is not located at this location.
3.7 - Nos. 52 and 60 Roberts Road in Greenacre	N/A	The site is not located at these locations.
4 – Sustainable Development		
4-2 – Water Conservation Controls	N/A	Neither requirement W1 or W2 are relevant to the site.
4.3 – Energy Minimisation Controls	N/A	Criteria under this clause is not exceeded and as such, this is not relevant to the proposed development.
5 – Parking	Complies	Parking will meet requirements of this clause, and is outlined in Section 5.7.6.
6 – Child Care Centres	N/A	Not relevant to the proposed development.
7 – Educational Establishments	N/A	Not relevant to the proposed development.
8 – Places of Public Worship	N/A	Not relevant to the proposed development.
9 – Sex Services Premises	N/A	Not relevant to the proposed development.
10 – Telecommunications Facilities	N/A	Not relevant to the proposed development.
11 – Tree Preservation Order	Complies	No trees will be removed from the site. As such, the development complies with the DCP.
12 – Flood Risk Management	Complies	The site is not identified as low, medium or high flood risk on the DCP Flood risk management map.
13 – Waste Management and Minimisation	Complies	Discussed in Waste Management Report, located in Appendix 3.

The proposed development is consistent with the aims and objectives of the Bankstown DCP and complies with requirements.

3.3.3 Existing Development Consent Conditions

The table below demonstrates that the site would be able to comply with existing development consent conditions with the addition of the proposed dewatering plant.

Table 3-4: Compliance with existing consent conditions

No.	Condition	Comment	Complies?
DA-51/1997, 29 August 1997			
1	Development shall take place generally in accordance with plans and details submitted to Council on 30 January 1997 in respect of Development Application 51/97 except where varied by the conditions that follow.	Copies of approved plans have been received.	Yes.
2	This consent will lapse five years from the endorsed date of consent unless either the use together with the completion of necessary building works has physically commenced, or an extension of the consent has been granted by Council.	Building works were completed.	Yes
3	The submission of a Certificate under Section 73 of the Water Board (Corporatisation) Act, 1994, prior to the release of the Building Application. For further information contact the Urban Development Officer at the Parramatta Office of Sydney Water, Telephone 9843 6236 or 9843 6241.	Assumed compliance	Yes

Table 3-4: Compliance with existing consent conditions

No.	Condition	Comment	Complies?
Soil and Water Management			
4	All activity shall be conducted in a manner that has no impact upon the amenity and environment of the nearby area by reason of the emission or discharge of dirt, dust, silt, sand or otherwise from the site. In this regard a soil and water management plan prepared by a registered surveyor or engineer shall be submitted to Council with the Building Application for approval showing the existing sediment controls together with proposed control methods to ensure compliance with this condition. Soil and water management controls shall include the heavy duty concrete paving of all areas subject to vehicle movements and connection to the stormwater drainage system via a sediment trap, and the method of ensuring that all vehicles that access the site do not trail waste material onto the roadway. Soil and water management controls detailed in the approved plan shall be implemented and maintained to the satisfaction of Council at all times.	The site is covered in heavy duty concrete paving. Sediment traps are installed. A wheel wash is installed to prevent trailing of waste onto the roadway. The stormwater drainage system has been redesigned as part of this DA to capture the first 25mm and treat this in the dewatering plant whilst the clean overflow would be sent via a silt arrestor to the street stormwater system.	Yes
Stormwater Drainage			
5	All stormwater run-off shall be collected and conveyed to an inspection pit on the site and adjacent to the existing drainage easement in accordance with a drainage design approved by Council. The drainage design submitted for approval with the building plans shall comply with the requirements of Council's policy of Control of Stormwater Runoff from Development Sites.	Stormwater drainage design has been upgraded as part of the proposed development.	Yes
Carparking			
6	Carparking spaces for 30 vehicles shall be provided for the overall site in marked spaces in the manner generally shown on the approved site plan and such spaces are to be kept clear and available at all times.	This condition has been amended (see below).	N/A
Use Of Site			
7	All waste materials shall be stored in containers located either within the building or behind screen walls in accordance with the requirements of Council.	This condition is obsolete. Approved plans from 2014 show external storage bunkers.	N/A

Table 3-4: Compliance with existing consent conditions

No.	Condition	Comment	Complies?
8	All loading and unloading of vehicles, storage of goods or materials and all industrial activity shall take place wholly within the site, in a manner that does not interfere with parking areas, driveways or landscaping.	The site complies with this condition	Yes
9	The hours of operation shall be limited to between 6.00am - 6.00pm on weekdays and 7.00 am - 6.00 pm weekends.	The C&D facility will continue to operate during these hours.	Yes
Environmental Protection			
10	The use of the premises shall incorporate facilities that will prevent the discharge of any pollutant, including noise, which may degrade the environment or be prejudicial to its inhabitants.	Additional mitigation measures installed for the proposal will also provide safeguards for existing activities.	Yes
11	All pollution control devices (including drainage systems, sumps and traps) shall be regularly maintained.	Managed under an EMP	Yes
12	All liquid wastes shall be collected and disposed of in a manner which does not pollute the stormwater system.	Complies. The stormwater system will be upgraded as part of this proposal.	Yes
13	All paints, chemicals and other liquids shall be stored in approved receptacles which are to be located in a bunded area constructed in accordance with Council's guidelines.	The site will continue to comply with this requirement.	Yes
DA-51/1997/2, 24 September 2013			
1	Development shall take place generally in accordance with plans and details submitted to Council on 30 January 1997 in respect of Development Application 51/97, unless altered amended or superseded by the Section 96(1A) Amendment Application No. DA-51/1997/2, lodged with Council on 1 June 2012, and accompanied by Plans: REF: 1229-1 dated 3 June 2013, prepared by G.J. Atkins & Associates and CAD REF 116785 - 2A, dated 20 June 2013, prepared by RPS Australia East PIL (indicative layout only - no building works approved), all affixed with Council's approval stamp dated 24 SEP 2013, except where varied by the conditions that follow.	These plans have been superseded by a S96 application in 2014. New plans have been prepared as part of this proposed development for approval which will supersede the currently approved plans.	Yes

Table 3-4: Compliance with existing consent conditions

No.	Condition	Comment	Complies?
6	Carparking spaces for sixteen (16) vehicles shall be provided for the overall site in marked spaces in the manner generally shown on the approved site plan, as amended in red, and such spaces are to be kept clear and available at all times.	Based on the DCP, the site requires 8 car spaces. The new site plan shows 15 car spaces. This condition will need to be removed as part of a S4.55 modification.	S4.55 to be submitted
9	The hours of operation shall be limited to between 6.00am - 6.00pm on weekdays and 7.00am - 6.00pm on weekends. a) The hours of operation of the approved use shall be unlimited, 24 hours a day, 7 days per week, for a period of 12 months from the date of this determination notice. Once the 12-month trial period has lapsed, the hours of operation shall revert to the approved hours detailed in Condition 9 above, unless a further application has been submitted to and approved by Council for hours outside those specified in Condition 9. The 24 hour operation of the facility shall at all times comply with the relevant recommendations/conclusions. of the Noise Assessment Report No. 13151 Version A, prepared by Wilkinson Murray, dated 6 June 2013, noting that no approval has been granted for the installation and/or operation of a crushing machine under the subject determination notice.	The 12-month trial for 24/7 operations has lapsed. The C&D facility will operate within hours 6.00am - 6.00pm on weekdays and 7.00am - 6.00pm on weekends.	N/A

Table 3-4: Compliance with existing consent conditions

No.	Condition	Comment	Complies?
16	For the purposes of a transfer station operating on the site, the types of materials permitted to be brought to the site under the term "road waste material" and resulting purely from roadworks, are limited to the following: a) General solid waste (non-putrescible): i. Glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal; ii. Virgin excavated material; iii. Building and Demolition waste; iv. Asphalt waste; v. Cured concrete waste; vi. Any mixture of the wastes referred to above. b) Drilling mud, meaning a mixture of naturally occurring rock and soil, including but not limited to materials such as sandstone, shale and clay, and drilling fluid generated during drilling operations such as horizontal or directional drilling or potholing. This does not include drilling mud that has been generated by: i. Deep drilling for mineral, gas or coal exploration; or ii. Drilling through contaminated soils, acid sulphate soils (ASS) or potential acid sulphate soils (PASS).	These waste types are currently accepted at the existing C&D facility with the exception of drilling mud.	Yes
DA-51/1997/3. 17 February 2015			
1	Development shall take place generally in accordance with plans and details submitted to Council on 30 January 1997 in Respect of Development Application 51/97, unless altered, amended or superseded by the Section 96(1A) Amendment Application No. DA-51/1997/2, lodged with Council on 1 June 2012, and accompanied by Plans: REF: 1229-1 dated 3 June 2013, prepared by G.J. Atkins & Associates and CAD REF: 116785 - 2A, dated 20 June 2013, prepared by RPS Australia East P/L (indicative layout only - no building works approved), all affixed with Council's approval stamp dated 24 SEP 2013, or unless altered, amended or superseded by the Section 96(1A) Amendment Application No. DA-51/1997/3, lodged with Council on 24 September 2014, except where varied by the conditions that follow.	Approved plans are provided in Attachment 6. Revised plans will supersede these.	No[1]

Table 3-4: Compliance with existing consent conditions

No.	Condition	Comment	Complies?
9	The hours of operation shall be limited to between 6.00am - 6.00pm on weekdays and 7.00am - 6.00pm on weekends. a) The hours of operation of the approved use shall be unlimited, 24 hours a day, 7 days per week, for a further period of12 months from the date of this determination notice. Once the 12-month trial period has lapsed, the hours of operation shall revert to the approved hours detailed in Condition 9 above, unless a further application has been submitted to and approved by Council for hours outside those specified in Condition 9. The 24 hour operation of the facility shall at all times comply with the relevant recommendations/conclusions of the Noise Assessment Report No. 1315.1 Version A, prepared by Wilkinson Murray, dated 6 June 2013, noting that no approval has been granted for the installation and/or operation of a crushing machine under the subject determination notice.	The 12-month trial for 24/7 operations has lapsed. The C&D facility will operate within hours 6.00am - 6.00pm on weekdays and 7.00am - 6.00pm on weekends.	N/A

Note 1: A S4.55 modification application is required for the C&D facility which will operate under the current DA-51/1997 for updated site layout, waste storage bunkers and car parking spaces. The S4.55 modification will be submitted following approval of this development application.

4. CONSULTATION

Consultation with government departments and the local community plays an important role in ensuring that all potential environmental impacts are evaluated and the most important issues are prioritised. The following sections provide details on consultation and stakeholder engagement, such as that with regulators and government bodies. Key aspects and assessment requirements identified through the consultation process are also summarised in the following sections, together with the reference to where these aspects and requirements have been addressed in the report.

4.1 STAKEHOLDER ENGAGEMENT

Liaison with all relevant government authorities regarding the proposed development and requirements of the EIS has been ongoing since the inception of the project. Consultation has been undertaken on a formal basis. Summarised below are all the regulatory stakeholders that have been consulted as part of this development application, together with the details of such consultation.

4.1.1 Department of Planning, Industry and Environment (DPIE)

A request for the Secretary's Environmental Assessment Requirements (SEARs) and related Scoping Report was sent to the Planning Services Division and SEARs (document reference SSD-10450) with the requirements attached (Attachment 2). The DPIE included input from specific DPIE departments: Environment, Energy and Science Group (EES) and (DPIE) Water and the Natural Resources Access Regulator (NRAR); as well as separate agencies/regulators including: NSW Environment Protection Authority (EPA), Ausgrid, Transport for NSW (TfNSW), Sydney Water and Fire and Rescue NSW.

A draft EIS was submitted to the Department on 7 September 2020 based on available SEARs. Note that formal Council requirements had not been received at this stage. An adequacy review was received from the Department on 30 September 2020. Council requirements were received on 8 October 2020.

Following the adequacy review of the draft EIS, a letter response was provided detailing work being undertaken to address concerns raised and a meeting was held via Microsoft Teams at 10am on 18 November 2020. Items discussed at the meeting included:

<u>Current Council Approval</u>

- The Department are satisfied that the application relates to the dewatering plant only as essentially there is little cross over between this and the C&D operations. The current approval for the C&D facility can therefore stay with Council. The SSD approval will relate only to the dewatering plant.
- The Department also indicated that they would <u>not</u> require the C&D operations to be enclosed as these activities are already approved and not part of the SSD application.
- Therefore the shade sails proposed for air mitigation of the C&D operations are not part of the SSD application. A separate modification application to Council will be required for approval of the shade sails.

EIS content

- In regard to the above, a clear description of the components of the SSD application and any cross over with the C&D operations will be needed in the EIS.
- Included should be details regarding how concrete washout waste is received – eg: how/where concrete vehicles are washed out on site.
- Included should be a description of potential contamination issues and/or separation of waste streams and how this will be managed.

Consultation

- The Department would like water issues discussed further with EPA and Council.
- The Department indicated approved plans from Council should be able to be obtained with land owner's consent.

Draft EIS date

- A draft EIS addressing issues raised to be submitted early January.

Benbow Environmental contacted Council regarding the issue of approved plans with the consent of the owner, however Council did not agree and therefore BE requested the Department email Council directly.

4.1.2 DPIE's Environment Energy and Science Group (EES)

The EES comments are included in the SEARs.

4.1.3 (DPIE) Water and the Natural Resources Access Regulator (NRAR);

The (DPIE) Water and NRAR comments are included in the SEARs.

4.1.4 NSW Environment Protection Authority (EPA)

Key issues and assessment requirements from the EPA were included in the SEARs. Ongoing consultation with the EPA has been undertaken. This includes numerous letters and phone conversations from late 2019, particularly dealing with the installation of shade sails and their suitability for use to control dust emissions from C&D operations. In addition, a letter to provide an update on the project design was emailed on 16 November 2020 to request a meeting to discuss these changes and the additional assessments being undertaken. An email response was received from the EPA on 16 November requesting an indication of availability for meeting dates and details on specific issues to be discussed. A date for the meeting was arranged for 11am on 12 January 2020. The agenda issued included:

1. EPL Variation
   The facility has an existing consent for the processing of drilling mud. This is included in the current 80,000 tpa capacity of the site. An EPL variation application has been submitted to EPA.

2. Changes to proposed development
   Confirm that the proposed development is for a 250,000 tpa dewatering plant. The existing C&D facility that processes 80,000 tpa will not change.
   Based on feedback from agencies (adequacy review), changes to the proposal include modification to building – design work for changes to the building is currently being

prepared. Additional stormwater infrastructure, a new retaining wall, design of a leachate/first flush/stormwater management system and a flood assessment will be required. This work is being undertaken by Indesco.

3. Revised Site Plans
   A new architect has been engaged to prepare a full set of detailed plans including existing site plan, proposed site layout, floor plan showing equipment locations and details of storage tanks for the new dewatering plant.

4. SSD Application
   A meeting with the Department was undertaken on 18/11/2020. The Department has indicated that the SSD application relates only to the proposed dewatering facility. The existing C&D approval will stay with Council. In this regard, the proposed shade cloth will be part of a modification application and not be part of the SSD application. This will also impact on the Air Quality Impact Assessment which will assess air impacts from the dewatering plant as the C&D operation is not changing. An AQIA for the C&D operations will be undertaken as part of the modification application for the shade sails.

5. EPA concerns

A summary of items discussed is as follows:

- EPL variation – a Section 60 notice requesting further information was sent on 25 November 2020 regarding the EPL variation. This information is being prepared as part of the SSD application and will be provided at a later stage. EPL variation will be put on hold until requested information is received.
- EPA note that the period between 2018 to 2020, there were several non-compliances regarding water running off onto an adjoining property which were ignored. A penalty notice and an official caution were issued.
- As recently as last month, EPA received a dust complaint from a neighbouring property during windy weather. EPA conducted an inspection of the site did not observe dust emissions at the time, but did note dust accumulated on roads, kerbs and pathway around the premises indicating that the dust originated from the site. Complainant was concerned about dust entering the building and settling on cars.
- Based on these observations, EPA are reluctant to approve any changes if the proposal does not include enclosing the facility.
- EPA reviewing dust assessment and note that as well as dust being a concern during operation of the crusher, it is also a concern before and after operations in the open spaces as no watering down is being undertaken at these times. The tip and spread area was noted to be muddy with dust accumulated on roadways.
- Best practice controls should be implemented on site such as enclosing operations.
- Benbow note that the issue with enclosing the entire facility is that the structure would need to cover an enormous area that would be costly.
- Constructing shade sails as a dust measure for current C&D operations has been proposed. However, EPA note this approach may become less effective if capacity is increased.
- The AQIA will need to consider cumulative impacts (i.e: dust from current C&D operations) and dust emissions from stockpiles would be uncontrolled even with use of shade sails as EPA do not consider shade sails to be a control measure.
- Consider whether treated water from dewatering plant is appropriate to use for dust suppression.
- Consider potential odour of drilling mud.

- How will potential contamination of incoming waste be managed? This will be addressed within an Environmental Management Plan submitted with the application.
- Due to the non-compliance history of the site, additional and effective dust control are required. Demonstration that proposed dust controls will be effective is required.
- A stormwater drainage plan is needed.
- The noise assessment should consider Fact Sheet C of the noise policy for low frequency noise from existing equipment.
- Vibration may need to be considered in terms of potential to impact on the adjacent buildings at 79 Gow Street.
- Cumulative assessments for dust and noise are needed and how dust and noise will be managed on site.
- An Acid Sulfate Soil management plan is required.
- Options for enclosing the facility in stages and other methods will be considered. Consideration for an enclosure to be constructed in stages or for partial enclosure as part of a risk assessment which identifies high risk areas to be covered first. The option to use different materials such as waterproof/impervious material and design similar to an airplane hangar (dome-type structure) should be considered in place of shade sails. Tunnelling effects to be considered & one end fully enclosed.

4.1.5 City of Canterbury-Bankstown (Council)

Key issues and assessment requirements from Canterbury-Bankstown Council were **not** included in the SEARs as detailed in the DPIE SEARS cover letter. Council provided requirements in a separate letter dated 22 May 2020 which was received by email from the Department on 8 October 2020. Council's Stormwater System Report (SSR) was obtained which indicated a flood assessment for the site was not required.

A letter detailing proposed changes to the development was sent requesting a meeting via email on 12 November 2020. This was followed up on 18 November 2020. A meeting was undertaken via Microsoft Teams on 15 December 2020 and included representatives of Council, Benbow Environmental and Indesco. A summary of the items discussed is provided as follows:

<u>Changes to proposed development</u>

- The development no longer includes a concrete batching plant or increase in capacity of the existing C&D facility. The proposal involves establishment and operation of a dewatering facility with some minor cross -over with existing C&D operations.

<u>Approval pathway</u>

- Outcomes of a meeting with the Department indicated the dewatering facility would be approved under a separate SSD approval and the existing C&D facility would operate under the current Council consent.
- Council will follow up with the Department the rationale behind this decision and discuss how the two consents will be managed.

<u>Approved plans</u>

- It was noted that the Department requested a copy of the approved plans from Council directly and these have not yet been provided.

Environmental Issues

- Traffic
  - Require EIS to include breakdown on truck sizes and times including nomination of the largest vehicle that will access the site.
  - Provide swept path diagrams to show the largest truck manoeuvring at the site and demonstrating it can enter and leave in a forward direction.
  - Car parking on-site will need to cater for additional employees.
  - A clear delineation between pedestrians and vehicles will need to be shown on a traffic management plan with controls to be put in place.
  - The traffic assessment needs to consider existing traffic generation versus proposed.
- Waste
  - Ensure the site has a tradewaste agreement
  - Waste vehicles need to enter and leave in a forward directions
  - No other issues raised in regard to the draft waste management plan.
- Contamination
  - The contamination report provided was all good.
  - An acid sulphate soil management plan will need to be submitted with the application.
- Noise
  - Noise report will need to consider traffic.
  - A cumulative assessment will be provided with consideration given to the existing development
  - Plant and machinery on site to be included.
- Air quality
  - Council notes there have been complaints in regards to air.
  - These complaints relate to dust fallout on cars at the adjoining property.
  - This development will include provision for additional dust suppression by implementing water sprayers on stockpiles and use of treated water from the proposed dewatering plant for this purpose.
- Community Consultation
  - Benbow to provide Council with the extended area community consultation leaflet was distributed.
- Visual impacts
  - Views of the site will need to be demonstrated.
  - Identification of potential locations for landscaping is required.
  - Council to provide a list of suitable species and these when planted will need to be protected from impacts from trucks.
- Stormwater and Flooding
  - Site is flood protected and a drainage easement runs across the site.
  - Considerations as to whether the proposal affects Council easement in terms of traffic loading, structurally and ensure access to the easement is not impeded.
  - Council require the structural assessment and survey of pipe to determine exact location.
  - Show how new site footprint impacts on flood behaviour.
  - A 2-flow model is available from Council and is to be used with local aspects to consider residual impacts to properties upstream and downstream.
  - Indesco to request easement data and flood study from Council.
  - Stormwater to be contained on site with first flush ideally to be treated through dewatering plant.
  - Indesco to prepare concept design for review to determine whether a S68 is required.
  - Flood model will work to 100 year flood and consider PMF level and freeboard.
  - Council require a flood evacuation plan.

- Consider the existing storage bay locations in relation to the easement.
- Assess whether there would be any impact to Salt Pan Creek.

4.1.6 Transport for NSW (TfNSW)

The TfNSW comments are included in the SEARs. A letter detailing changes to the proposed development and the outcomes of the draft traffic assessment was emailed to TfNSW on 16 November 2020. A meeting to discuss these aspects was requested. The TfNSW responded via email on 18 November 2020 and indicated that as the changes did not relate to traffic, no meeting was needed.

4.1.7 Fire and Rescue NSW (FR NSW)

The FR NSW comments are included in the SEARs. A meeting was held with FR NSW on Thursday 8th of July, the outcomes of the meeting were as follows:

- The site contains fire extinguishers and hose reels but currently there is no hydrant system. The need for a hydrant system is dictated by the BCA and any site containing a building with a floor area larger than 500m2 requires a hydrant system.
- FR NSW recommended that provisions be put in place for future site changes.
- FR NSW questioned the site's ability to retain any contaminated fire fighting water. The proposed stormwater system upgrade would provide a 200 kL capacity to contain water runoff. A stormwater isolation valve is to be installed as part of this system to ensure water runoff can be contained on site.
- FR NSW advised an Emergency Plan with Information Package is needed after approval.

4.1.8 Sydney Water

A letter was sent to Sydney Water on 16 November 2020 requesting a meeting to discuss the project and requirements in more detail. No response from Sydney Water had been received at the writing of this report.

4.1.9 Ausgrid

Ausgrid requests "*in consultation with relevant agencies prepare a services and utilities impact assessment which: assesses the capacity of existing services and utilities and identify any upgrades and required to facilitate the development and assesses the impacts of the proposal on existing utility infrastructure and service provider assets and describe how any potential impacts would be managed".* Comments are included in the SEARS in Attachment 2. Services and Utilities Impact Assessment is provided in Appendix 10.

4.2 COMMUNITY CONSULTATION

A community consultation leaflet was prepared and sent to selected surrounding landowners and occupiers via post on 30th June, 2020. Upon feedback from the DPIE in the adequacy review of the draft EIS, this leaflet was revised (Attachment 1) and re-sent on 12 November 2020 to surrounding landowners and occupiers which included those receivers identified in the noise and air reports. These locations were based on the nearest affected industrial receivers and the nearest residential areas and are shown in Table 4-1.

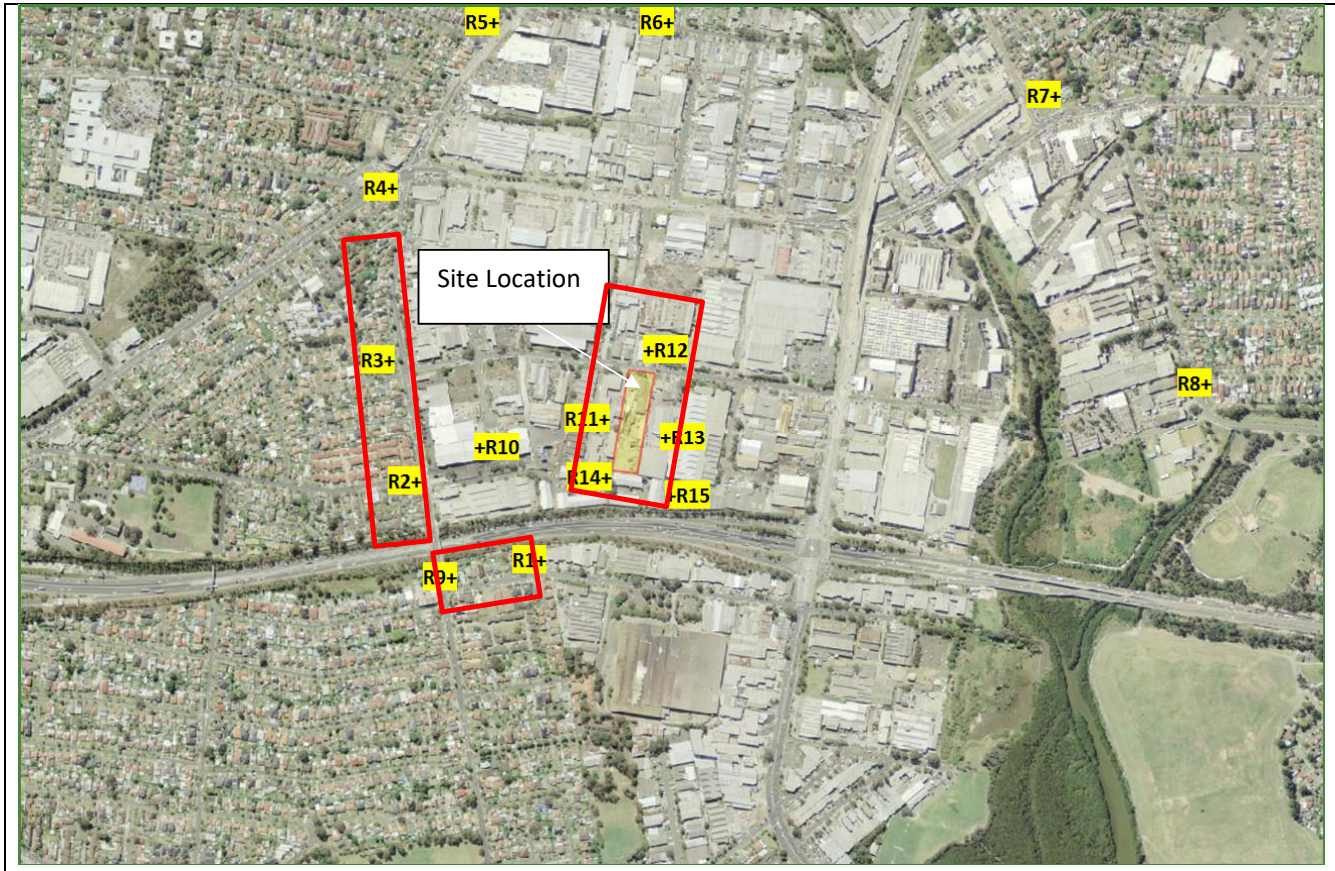
Table 4-1: Distribution of community leaflet

Address	Direction from Subject Site	Noise/Air Receptor ID
7 Gibson Avenue, PADSTOW NSW 2211	W	-
7A Gibson Avenue, PADSTOW NSW 2211	W	-
9 Gibson Avenue, PADSTOW NSW 2211	W	-
9A Gibson Avenue, PADSTOW NSW 2211	W	-
13 Gibson Avenue, PADSTOW NSW 2211	W	-
14 Gibson Avenue, PADSTOW NSW 2211	W	-
15 Gibson Avenue, PADSTOW NSW 2211	W	-
17 Gibson Avenue, PADSTOW NSW 2211	W	-
19 Gibson Avenue, PADSTOW NSW 2211	W	-
21 Gibson Avenue, PADSTOW NSW 2211	W	-
23 Gibson Avenue, PADSTOW NSW 2211	W	-
23A Gibson Avenue, PADSTOW NSW 2211	W	-
27 Gibson Avenue, PADSTOW NSW 2211	W	-
29 Gibson Avenue, PADSTOW NSW 2211	W	-
31 Gibson Avenue, PADSTOW NSW 2211	W	-
33 Gibson Avenue, PADSTOW NSW 2211	W	-
35 Gibson Avenue, PADSTOW NSW 2211	W	-
37 Gibson Avenue, PADSTOW NSW 2211	W	-
39 Gibson Avenue, PADSTOW NSW 2211	W	R3
41 Gibson Avenue, PADSTOW NSW 2211	W	-
43 Gibson Avenue, PADSTOW NSW 2211	W	-
45 Gibson Avenue, PADSTOW NSW 2211	W	-
45A Gibson Avenue, PADSTOW NSW 2211	W	-
47 Gibson Avenue, PADSTOW NSW 2211	W	-
49 Gibson Avenue, PADSTOW NSW 2211	W	-
51 Gibson Avenue, PADSTOW NSW 2211	W	-
53 Gibson Avenue, PADSTOW NSW 2211	W	-
55 Gibson Avenue, PADSTOW NSW 2211	W	-
57 Gibson Avenue, PADSTOW NSW 2211	W	-
59 Gibson Avenue, PADSTOW NSW 2211	W	R2
61 Gibson Avenue, PADSTOW NSW 2211	W	-
63 Gibson Avenue, PADSTOW NSW 2211	W	-
65A Gibson Avenue, PADSTOW NSW 2211	W	-
65 Gibson Avenue, PADSTOW NSW 2211	W	-
67 Gibson Avenue, PADSTOW NSW 2211	W	-
69 Gibson Avenue, PADSTOW NSW 2211	W	-
78 Gibson Avenue, PADSTOW NSW 2211	SW	R14
100 Gibson Avenue, PADSTOW NSW 2211	W	R9
1/69 Gow Street, PADSTOW NSW 2211	W	-
69-73 Gow Street, PADSTOW NSW 2211	W	-
77 Gow Street, PADSTOW NSW 2211	W	-
79 Gow Street, PADSTOW NSW 2211	W	R13
80 Gow Street, PADSTOW NSW 2211	N	-
82 Gow Street, PADSTOW NSW 2211	N	R12

Table 4-1: Distribution of community leaflet

Address	Direction from Subject Site	Noise/Air Receptor ID
84 Gow Street, PADSTOW NSW 2211	N	-
5/86 Gow Street, PADSTOW NSW 2211	N	-
86 Gow Street, PADSTOW NSW 2211	N	-
88 Gow Street, PADSTOW NSW 2211	N	-
3/89 Gow Street, PADSTOW NSW 2211	W	-
89 Gow Street, PADSTOW NSW 2211	W	R11
12/89 Gow Street, PADSTOW NSW 2211	W	-
90B Gow Street, PADSTOW NSW 2211	N	-
24 Bryant Street, PADSTOW NSW 2211	S	R1
22 Bryant Street, PADSTOW NSW 2211	S	-
20 Bryant Street, PADSTOW NSW 2211	S	-
18 Bryant Street, PADSTOW NSW 2211	S	-
16 Bryant Street, PADSTOW NSW 2211	S	-
14 Bryant Street, PADSTOW NSW 2211	S	-
12 Bryant Street, PADSTOW NSW 2211	S	-
10A Bryant Street, PADSTOW NSW 2211	S	-
10 Bryant Street, PADSTOW NSW 2211	S	-
8A Bryant Street, PADSTOW NSW 2211	S	-
6 Bryant Street, PADSTOW NSW 2211	S	-
4 Bryant Street, PADSTOW NSW 2211	S	-
2 Bryant Street, PADSTOW NSW 2211	S	-
168 Canterbury Road, BANKSTOWN NSW 2200	NW	R4
76 Chapel Road, BANKSTOWN NSW 2200	NW	R5
61 Marshall Street, BANKSTOWN NSW 2200	NW	R6
26 John Street, PUNCHBOWL NSW 2196	NE	R7
62 Moxon Road, PUNCHBOWL NSW 2196	E	R8
9 Gatwood Close, PADSTOW NSW 2211	W	R10
9 Wordie Place, PADSTOW NSW 2211	SW	R15

Figure 4-1: Map showing distribution of community leaflet



↑N
Not to scale

Legend:
Leaflets distributed to residences within the red boundary
Leaflets distributed to receivers identified in the noise & air reports **+R**

Benbow Environmental
25-27 Sherwood Street,
Northmead NSW 2152

No face to face community consultation was undertaken due to COVID-19. No phone calls or emails were received from residents as a result of both mail outs.

4.3 ASSESSMENT REQUIREMENTS

The Secretary's Environmental Assessment Requirements (SEARs) SSD-10450 obtained for the proposed development include key issues and requirements identified by DPIE, EES, (DPIE) Water /NRAR, NSW EPA, TfNSW, Sydney Water, Fire and Rescue NSW, Canterbury-Bankstown Council and Ausgrid which have been provided in the following tables. A copy of the SEARs is also provided in Attachment 2.

Table 4-2: DPI&E Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
General Requirements		
The environmental impact statement (EIS) for the development must meet the form and content requirements in clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (the Regulation). In addition, the EIS must include:		
• a detailed description of the development, including:	1.2.3	1-4
- the need for the proposed development	15.1	15-1
- justification for the proposed development	1.2.2	1-4
- likely staging of the development	5.1.5	5-5
- likely interactions between the development and existing, approved and	5	5-1
- proposed operations on-site and within the vicinity of the site	5.3	5-8
- plans of any proposed building works.		
• consideration of all relevant environmental planning instruments, including identification and justification of any inconsistencies with these instruments	3	4-38
• a risk assessment of the potential environmental impacts of the development identifying the key issues for further assessment	8.5.3	8-24
• a detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment, which includes:		
- a description of the existing environment, using sufficient baseline data	6	6-14
- an assessment of the potential impacts of all stages of the development, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes	10	10-1
- a description of the measures that would be implemented to avoid, minimise mitigate and if necessary, offset the potential impacts of the development, including proposals for adaptive management and/ or contingency plans to manage significant risks to the environment.	12	12-1
• a consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments included in the EIS.	12.2	12-3
The EIS must also be accompanied by a report from a qualified quantity surveyor providing:		
• a detailed calculation of the capital investment value (CIV) of the development as defined in clause 3 of the Environmental Planning and Assessment Regulation 2000, including details of all components of the CIV	5.7.4 14	5-10 14-1
• an estimate of the jobs that will be created by the development during the construction and operational phases of the development		
• certification the information provided is accurate at the date of preparation		

Table 4-2: DPI&E Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Key Issues		
Community and Stakeholder Engagement – including:		
• a community and stakeholder participation strategy which identifies who in the community has been consulted and a justification for their selection, other stakeholders consulted and the form(s) of consultation, including justification for the approach • a report on the results of the implementation of the strategy including issues raised by the community and surrounding landowners and occupiers • details of how issues raised during consultation have been addressed and whether they have resulted in changes to the development • details of the proposed approach to future community and stakeholder engagement based on the results of consultation.	4.2	4-6
Suitability of the Site – including:		
• details of the development consents and approved plans for the existing development, including for all structures, plant and equipment • a detailed justification that the site can accommodate the development • a detailed justification that the site can accommodate the proposed processing capacity and storage of liquid waste combined with the existing storage of general solid waste (construction and demolition waste).	1.3 15.1	1-5 15-1
Waste Management – including:		
• a description of all waste streams that would be accepted at the site including the maximum weekly, monthly and annual throughputs • details of the source of the waste streams to justify the need for the proposed processing capacity • a description of waste processing operations, including a description of the technology to be installed, resource outputs, and the quality control measures that would be implemented • details of the existing operations including the storage and processing of construction and demolition waste • details of the interaction between the existing operations and the proposed operations • details of how waste would be stored and handled on site, and transported to and from the site including details of how the receipt of non-conforming waste would be dealt with • details of the development's waste tracking system for incoming and outgoing waste • details of the waste management strategy for construction and ongoing operational waste generated • the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2014-2021.	Appendix 3	
Air Quality and Odour – including:		
• a quantitative assessment of the potential air quality and odour impacts of the development in accordance with relevant NSW Environment Protection Authority (EPA) guidelines • the details of buildings and air handling systems and strong justification for any material handling, processing or stockpiling external to a building • a greenhouse gas emission assessment • details of proposed mitigation, management and monitoring measures.	Appendix 1	

Table 4-2: DPI&E Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Traffic and Access – including:		
• details of all traffic types and volumes likely to be generated during construction and operation, including a description of haul routes. Traffic flows are to be shown diagrammatically to a level of detail sufficient for easy interpretation • an assessment of the predicted impacts of traffic on road safety and the capacity of the road network, including consideration of cumulative traffic • impacts at key intersections, using SIDRA or similar traffic modelling • plans demonstrating how all construction and operation vehicles, including those awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network • detailed plans of the proposed site access and parking provision on site in accordance with the relevant Australian Standards • swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site • plans of any proposed road upgrades, infrastructure works, or new roads required for the development.	Appendix 9	
Soil and Water – including:		
• an assessment of potential impacts to soil and water resources, topography, hydrology, groundwater, drainage lines, watercourses on or nearby the site, including mapping and description of existing background conditions and cumulative impacts • a detailed site water balance including identification of water requirements for the life of the development, measures that would be implemented to ensure an adequate and secure water supply is available for the development and a detailed description of the measures to minimise the water use at the site • characterisation of water quality at the point of discharge to surface and/or groundwater against the relevant water quality criteria (including details of the contaminants of concern that may leach from the waste into the wastewater and proposed mitigation measures to manage any impacts to receiving water) • details of stormwater/wastewater management system including the capacity of onsite detention system(s), onsite sewage management and measures to treat, reuse or dispose of water • detailed flooding assessment • a description of erosion and sediment controls.	Appendix 6	
Noise and Vibration – including:		
• a quantitative assessment of potential construction, operational and traffic noise and vibration impacts, including cumulative impacts, in accordance with relevant NSW Environment Protection Authority guidelines • details and justification of the proposed noise mitigation, management and monitoring measures.	Appendix 2	

Table 4-2: DPI&E Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Fire and Incident Management – including:		
• detailed information regarding the proposed structures addressing relevant levels of compliance with Volume One of the National Construction Code (NCC) • details of how stockpile storage will be limited in size and volume and arranged to minimise the likelihood of the fire spreading • technical information on the environmental protection equipment to be installed on the premises such as air, water and noise controls, spill clean-up equipment and fire (including location of fire hydrants and water flow rates at the hydrant) management and containment measures 5 • consideration of consistency with NSW Fire & Rescue Fire Safety Guideline Fire Safety in Waste Facilities (February 2020) • details regarding the site's ability to contain appropriate volume of contaminated fire water run-off.	8.6.3	8-30
Biodiversity – including:		
an assessment of the biodiversity impacts in accordance with the Biodiversity Assessment Method and documented in a Biodiversity Development Assessment Report (BDAR) or a waiver for the preparation of a BDAR under the Biodiversity Conservation Act 2016.	8.4	8-19
Heritage and Aboriginal Cultural Heritage – including:		
An assessment of Aboriginal cultural heritage values that exist across the development documented in an Aboriginal Cultural Heritage Assessment Report (ACHAR) or an assessment of Aboriginal cultural heritage issues which satisfies the requirements of the National Parks and Wildlife Act 1974 (NSW).	9.3	9-3
Hazard and Risk – including:		
Preliminary hazard analysis (PHA) adopting a Level 1 qualitative risk analysis as per the Department's Multi-level Risk Assessment and prepared in accordance with the Department's Hazardous Industry Planning 4 Advisory Paper No. 6, 'Hazard Analysis'. The PHA must verify potential dust explosion hazards within the building, identify any additional hazards arising from the SSD, verify the existing safeguards and identify any additional safeguards to control the risks from the facility as a whole.	8.5.3	8-24
Contamination – including:		
An assessment of site suitability under the provisions of State Environmental Planning Policy No. 55 – Remediation of Land.	3.2.5.2	3-8
Cumulative Impacts including:		
particularly in relation to air, noise, and traffic associated with other nearby industrial and commercial operations.	10	10-1

Table 4-3: EES Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Biodiversity and BDAR Waiver Request		
EES is currently reviewing the BDAR Waiver request for this SSD. Until EES has undertaken this review it is recommended the SEARs include the attach biodiversity requirements.	8.4	8-19
Flooding		
EES recommends the SEARs include the attached EES standard flooding requirements.	8.3 Appendix 6	8-15
Aboriginal Cultural Heritage		
The Scoping Report notes a search of the NSW State Heritage Inventory found no Aboriginal places or items of heritage on, or within the vicinity of the site and that the site is fully concreted with no vegetation and therefore a full Aboriginal and Cultural Heritage Assessment is not considered required (Section 6.6, page 23). EES notes however that the proposed development may require excavation work (section 5.3.1.2, page 17). If the excavation is likely to disturb the ground surface it is recommended an Aboriginal cultural heritage assessment report is prepared. EES recommends the SEARs include the attached Aboriginal cultural heritage requirements.	9.3	9-3
Urban Tree Canopy and Landscaping		
The Scoping report states the proposed development will not result in the removal of existing vegetation or a change to landscaping of the site (section 6.7, pages 24-25). If a landscape plan is required for this SSD, EES recommends the SEARs require that the plan: • includes details on the native vegetation community (or communities) and native plant species that once occurred in this locality • specifies that any landscaping will use a diversity of local provenance species (trees, shrubs and groundcovers) from the native vegetation community (or communities) that once occurred on the site to improve biodiversity • includes a list of local provenance species (trees, shrubs and groundcovers) to be used in the site landscaping • uses advanced sized trees, providing sufficient area/space to allow any planted trees to grow to maturity on the site.	8.4	8-19

Table 4-4: (DPIE) Water/NRAR Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
General		
• The identification of an adequate and secure water supply for the life of the project. This includes confirmation that water can be sourced from an appropriately authorised and reliable supply. This is also to include an assessment of the current market depth where water entitlement is required to be purchased. • A detailed and consolidated site water balance. • Assessment of impacts on surface and ground water sources (both quality and quantity), related infrastructure, adjacent licensed water users, basic landholder rights, watercourses, riparian land, and groundwater dependent ecosystems, and measures proposed to reduce and mitigate these impacts. • Proposed surface and groundwater monitoring activities and methodologies. • Consideration of relevant legislation, policies and guidelines, including the NSW Aquifer Interference Policy (2012), the Guidelines for Controlled Activities on Waterfront Land (2018) and the relevant Water Sharing Plans (available at https://www.industry.nsw.gov.au/water).	Appendix 6 8.3	8-15

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
A. Executive Summary - EPA		
The executive summary should include a brief discussion of the extent to which the proposal achieves identified environmental outcomes.	0	
B. The Proposal		
1. Objectives of the Proposal		
• The objectives of the proposal should be clearly stated and refer to: a) the size and type of the operation, the nature of the processes and the products, by-products and wastes produced; b) a life cycle approach to the production, use or disposal of products; c) the anticipated level of performance in meeting required environmental standards and cleaner production principles; d) the staging and timing of the proposal and any plans for future expansion; e) the proposal's relationship to any other industry or facility.	1.2.1	1-4
2. Description of the Proposal – General		
• Outline the production process including: a) the environmental "mass balance" for the process – quantify in-flow and out-flow of materials, any points of discharge to the environment and their respective destinations (sewer, stormwater, atmosphere, recycling, landfill etc); b) any life-cycle strategies for the products.	5	5-1
• Outline cleaner production actions, including: a) measures to minimise waste (typically through addressing source reduction); b) proposals for use or recycling of by-products; c) proposed disposal methods for solid and liquid waste; d) air management systems including all potential sources of air emissions, proposals to re-use or treat emissions, emission levels relative to relevant standards in regulations, discharge points; e) water management system including all potential sources of water pollution, proposals for re-use, treatment etc, emission levels of any wastewater discharged, discharge points, summary of options explored to avoid a discharge, reduce its frequency or reduce its impacts, and rationale for selection of option to discharge; f) soil contamination treatment and prevention systems.	5.9	5-13
• Outline construction works including: a) actions to address any existing soil contamination; b) any earthworks or site clearing; re-use and disposal of cleared material (including use of spoil on-site); c) construction timetable and staging; hours of construction; proposed construction methods; d) environment protection measures, including noise mitigation measures, dust control measures and erosion and sediment control measures.	5.3	5-8
• Include a site diagram showing the site layout and location of environmental controls.	See site plans	

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Air		
• Identify all sources or potential sources of air emissions from the development. Note: emissions can be classed as either: ► point (e.g. emissions from stack or vent); or ► fugitive (from wind erosion, leakages or spillages, associated with loading or unloading, conveyors, storage facilities, plant and yard operation, vehicle movements (dust from road, ► exhausts, loss from load), land clearing and construction works). • Provide details of the project that are essential for predicting and assessing air impacts including: a) the quantities and physio-chemical parameters (e.g. concentration, moisture content, bulk density, particle sizes etc) of materials to be used, transported, produced or stored; b) an outline of procedures for handling, transport, production and storage; c) the management of solid, liquid and gaseous waste streams with potential to generate emissions to air.	Appendix 1	
Noise and Vibration		
• Identify all noise sources or potential sources from the development (including both construction and operation phases). Detail all potentially noisy activities including ancillary activities such as transport of goods and raw materials. • Specify the times of operation for all phases of the development and for all noise producing activities. • For projects with a significant potential traffic noise impact provide details of road alignment (include gradients, road surface, topography, bridges, culverts etc), and land use along the proposed road and measurement locations – diagrams should be to a scale sufficient to delineate individual residential blocks.	Appendix 2	

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Water		
• Provide details of the project that are essential for predicting and assessing impacts to waters including: a) the quantity and physio-chemical properties of all potential water pollutants and the risks they pose to the environment and human health, including the risks they pose to Water Quality Objectives in the ambient waters (as defined on http://www.environment.nsw.gov.au/ieo/index.htm, using technical criteria derived from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC 2000); b) the management of discharges with potential for water impacts; c) drainage works and associated infrastructure; land-forming and excavations; working capacity of structures; and water resource requirements of the proposal. • Outline site layout, demonstrating efforts to avoid proximity to water resources (especially for activities with significant potential impacts e.g. effluent ponds) and showing potential areas of modification of contours, drainage etc. • Outline how total water cycle considerations are to be addressed showing total water balances for the development (with the objective of minimising demands and impacts on water resources). Include water requirements (quantity, quality and source(s)) and proposed storm and wastewater disposal, including type, volumes, proposed treatment and management methods and re-use options.	Appendix 6	

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Waste and Chemicals		
Provide details of the quantity and type of both liquid waste and non-liquid waste generated, handled, processed or disposed of at the premises. Waste must be classified according to the EPA's Waste Classification Guidelines 2014 (as amended from time to time) • Provide details of liquid waste and non-liquid waste management at the facility, including: a) the transportation, assessment and handling of waste arriving at or generated at the site; b) any stockpiling of wastes or recovered materials at the site; c) any waste processing related to the facility, including reuse, recycling, reprocessing (including composting) or treatment both on- and off-site; d) d) the method for disposing of all wastes or recovered materials at the facility; e) e) the emissions arising from the handling, storage, processing and reprocessing of waste at the facility; f) f) the proposed controls for managing the environmental impacts of these activities. • Provide details of spoil disposal with particular attention to: a) the quantity of spoil material likely to be generated; b) proposed strategies for the handling, stockpiling, reuse/recycling and disposal of spoil; c) the need to maximise reuse of spoil material in the construction industry; d) identification of the history of spoil material and whether there is any likelihood of contaminated e) material, and if so, measures for the management of any contaminated material; f) designation of transportation routes for transport of spoil. • Provide details of procedures for the assessment, handling, storage, transport and disposal of all hazardous and dangerous materials used, stored, processed or disposed of at the site, in addition to the requirements for liquid and non-liquid wastes. • Provide details of the type and quantity of any chemical substances to be used or stored and describe arrangements for their safe use and storage. • Reference should be made to the guidelines: EPA's Waste Classification Guidelines 2014 (as amended from time to time).	8.6.1	8-26
ESD		
• Demonstrate that the planning process and any subsequent development incorporates objectives and mechanisms for achieving ESD, including: a) an assessment of a range of options available for use of the resource, including the benefits of each option to future generations; b) proper valuation and pricing of environmental resources; c) identification of who will bear the environmental costs of the proposal.	11	11-1
3. Rehabilitation		
• Outline considerations of site maintenance, and proposed plans for the final condition of the site (ensuring its suitability for future uses).	5.10	5-13

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
4. Consideration of Alternatives and Justification for the Proposal		
• Consider the environmental consequences of adopting alternatives, including alternative: a) sites and site layouts; b) access modes and routes; c) materials handling and production processes; d) waste and water management; e) impact mitigation measures; f) energy sources. • Selection of the preferred option should be justified in terms of: a) ability to satisfy the objectives of the proposal; b) relative environmental and other costs of each alternative; c) acceptability of environmental impacts and contribution to identified environmental objectives; d) acceptability of any environmental risks or uncertainties; e) reliability of proposed environmental impact mitigation measures; f) efficient use (including maximising re-use) of land, raw materials, energy and other resources.	1.3	1-5
C. The Location		
1. General		
• Provide an overview of the affected environment to place the proposal in its local and regional environmental context including: a) meteorological data (e.g. rainfall, temperature and evaporation, wind speed and direction); b) topography (landform element, slope type, gradient and length); c) surrounding land uses (potential synergies and conflicts); d) geomorphology (rates of landform change and current erosion and deposition processes); e) soil types and properties (including erodibility, engineering and structural properties, dispersibility, permeability, presence of acid sulfate soils and potential acid sulfate soils); f) Ecological information (water system habitat, vegetation, fauna); g) availability of services and the accessibility of the site for passenger and freight transport.	2.1	2-1
2. Air		
• Describe the topography and surrounding land uses. Provide details of the exact locations of dwellings, schools and hospitals. Where appropriate provide a perspective view of the study area such as the terrain file used in dispersion models. • Describe surrounding buildings that may affect plume dispersion. • Provide and analyse site representative data on following meteorological parameters: a) temperature and humidity; b) rainfall, evaporation and cloud cover; c) wind speed and direction; d) atmospheric stability class; e) mixing height (the height that emissions will be ultimately mixed in the atmosphere); f) katabatic air drainage; g) air re-circulation.	6	6-14

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
3. Consideration of Alternatives and Justification for the Proposal		
• Identify any noise sensitive locations likely to be affected by activities at the site, such as residential properties, schools, churches, and hospitals. Typically the location of any noise sensitive locations in relation to the site should be included on a map of the locality. • Identify the land use zoning of the site and the immediate vicinity and the potentially affected areas.	1.3	1-5
4. Water		
• Describe the catchment including proximity of the development to any waterways and provide an assessment of their sensitivity/significance from a public health, ecological and/or economic perspective. The Water Quality and River Flow Objectives on the website: http://www.environment.nsw.gov.au/ieo/index.htm should be used to identify the agreed environmental values and human uses for any affected waterways. This will help with the description of the local and regional area.	6.3	6-16
4. Soil Contamination Issues		
• Provide details of site history – if earthworks are proposed, this needs to be considered with regard to possible soil contamination, for example if the site was previously a landfill site or if irrigation of effluent has occurred.	3.2.5.2	3-8
D. Identification and Prioritisation of Issues/Scoping of Impact Assessment		
• Provide an overview of the methodology used to identify and prioritise issues. The methodology should take into account: a) relevant NSW government guidelines; b) industry guidelines; c) EISs for similar projects; d) relevant research and reference material; e) relevant preliminary studies or reports for the proposal; f) consultation with stakeholders. • Provide a summary of the outcomes of the process including: a) all issues identified including local, regional and global impacts (e.g. increased/ decreased greenhouse emissions); b) key issues which will require a full analysis (including comprehensive baseline assessment); c) issues not needing full analysis though they may be addressed in the mitigation strategy; d) justification for the level of analysis proposed (the capacity of the proposal to give rise to high concentrations of pollution compared with the ambient environment or environmental outcomes is an important factor in setting the level of assessment).	7	7-1
E. The Environmental Issues		
1. General		
• The potential impacts identified in the scoping study need to be assessed to determine their significance, particularly in terms of achieving environmental outcomes, and minimising environmental pollution. • Identify gaps in information and data relevant to significant impacts of the proposal and any actions proposed to fill those information gaps so as to enable development of appropriate management and mitigation measures. This is in accordance with ESD requirements. *Note: The level of detail should match the level of importance of the issue in decision making which is dependent on the environmental risk.*	8	8-1

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Describe Baseline Conditions		
• Provide a description of existing environmental conditions for any potential impacts.	6	6-14
Assess Impacts		
• For any potential impacts relevant for the assessment of the proposal provide a detailed analysis of the impacts of the proposal on the environment including the cumulative impact of the proposal on the receiving environment especially where there are sensitive receivers. • Describe the methodology used and assumptions made in undertaking this analysis (including any modelling or monitoring undertaken) and indicate the level of confidence in the predicted outcomes and the resilience of the environment to cope with the predicted impacts. • The analysis should also make linkages between different areas of assessment where necessary to enable a full assessment of environmental impacts e.g. assessment of impacts on air quality will often need to draw on the analysis of traffic, health, social, soil and/or ecological systems impacts; etc. • The assessment needs to consider impacts at all phases of the project cycle including: exploration (if relevant or significant), construction, routine operation, start-up operations, upset operations and decommissioning if relevant. • The level of assessment should be commensurate with the risk to the environment.	8.1 Appendix 1	8-1

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Describe Management and Mitigation Measures		
• Describe any mitigation measures and management options proposed to prevent, control, abate or mitigate identified environmental impacts associated with the proposal and to reduce risks to human health and prevent the degradation of the environment. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented. • Proponents are expected to implement a 'reasonable level of performance' to minimise environmental impacts. The proponent must indicate how the proposal meets reasonable levels of performance. For example, reference technology based criteria if available, or identify good practice for this type of activity or development. A 'reasonable level of performance' involves adopting and implementing technology and management practices to achieve certain pollutant emissions levels in economically viable operations. • Technology-based criteria evolve gradually over time as technologies and practices change. • Use environmental impacts as key criteria in selecting between alternative sites, designs and technologies, and to avoid options having the highest environmental impacts. • Outline any proposed approach (such as an Environmental Management Plan) that will demonstrate how commitments made in the EIS will be implemented. Areas that should be described include: a) operational procedures to manage environmental impacts; b) monitoring procedures; c) training programs; d) community consultation; e) complaint mechanisms including site contacts; f) strategies to use monitoring information to improve performance; g) strategies to achieve acceptable environmental impacts and to respond in event of exceedances.	8.1 Appendix 1	8-1
2. Air		
Describe Baseline Conditions		
• Provide a description of existing air quality and meteorology, using existing information and site representative ambient monitoring data.		

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Assess Impacts		
• Identify all pollutants of concern and estimate emissions by quantity (and size for particles), source and discharge point. • Estimate the resulting ground level concentrations of all pollutants. Where necessary (e.g. potentially significant impacts and complex terrain effects), use an appropriate dispersion model to estimate ambient pollutant concentrations. Discuss choice of model and parameters with the EPA. • Describe the effects and significance of pollutant concentration on the environment, human health, amenity and regional ambient air quality standards or goals. • Describe the contribution that the development will make to regional and global pollution, particularly in sensitive locations. • For potentially odorous emissions provide the emission rates in terms of odour units (determined by techniques compatible with EPA procedures). Use sampling and analysis techniques for individual or complex odours and for point or diffuse sources, as appropriate. *Note: With dust and odour, it may be possible to use data from existing similar activities to generate emission rates.* • Reference should be made to relevant guidelines, including but not limited to Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (DEC, 2016); Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (DEC, 2007); Assessment and Management of Odour from Stationary Sources in NSW (DEC, 2006); Technical Notes: Assessment and Management of Odour from Stationary Sources in NSW (DEC, 2006); Load Calculation Protocol for use by holders of NSW Environment Protection Licences when calculating Assessable Pollutant Loads (DECC, 2009).	8.1 Appendix 1	9-1
Describe Management and Mitigation Measures		
• Outline specifications of pollution control equipment (including manufacturer's performance guarantees where available) and management protocols for both point and fugitive emissions. Where possible, this should include cleaner production processes.	8.1 Appendix 1	8-1

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
3. Noise and Vibration		
Describe Baseline Conditions		
• Determine the existing background (LA90) and ambient (LAeq) noise levels, as relevant, in accordance with the NSW Noise Policy for Industry. • Determine the existing road traffic noise levels in accordance with the NSW Road Noise Policy, where road traffic noise impacts may occur. • The noise impact assessment report should provide details of all monitoring of existing ambient noise levels including: a) details of equipment used for the measurements; b) a brief description of where the equipment was positioned; c) a statement justifying the choice of monitoring site(s), including the procedure used to choose the site(s), having regards to Fact Sheets A and B of the NSW Noise Policy for Industry; d) details of the exact location of the monitoring site and a description of land uses in surrounding areas; e) a description of the dominant and background noise sources at the site; f) day, evening and night assessment background levels for each day of the monitoring period; g) the final Rating Background Level (RBL) value; h) graphs of the measured noise levels for each day should be provided; i) a record of periods of affected data (due to adverse weather and extraneous noise), methods used to exclude invalid data and a statement indicating the need for any re-monitoring.	8.2 Appendix 2	8-5

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Assess Impacts		
• Determine the project noise trigger levels for the site. For each identified potentially affected receiver, this should include: a) determination of the project intrusive noise level for each identified potentially affected receiver; b) selection and justification of the appropriate amenity category for each identified potentially affected receiver; c) determination of the project amenity noise level for each receiver; d) determination of the appropriate maximum noise level event assessment (sleep disturbance) trigger level. • Maximum noise levels during night-time period (10pm-7am) should be assessed to analyse possible effects on sleep. Determine expected noise level and noise character likely to be generated from noise sources during: a) site establishment; b) construction; c) operational phases d) transport including traffic noise generated by the proposal; e) other services. *Note: The noise impact assessment report should include noise source data for each source in 1/1 or 1/3 octave band frequencies including methods for references used to determine noise source levels. Noise source levels and characteristics can be sourced from direct measurement of similar activities or from literature (if full references are provided).* • Determine the noise levels likely to be received at the reasonably most affected location(s) (these may vary for different activities at each phase of the development). • The noise impact assessment report should include: a) a plan showing the assumed location of each noise source for each prediction scenario; b) a list of the number and type of noise sources used in each prediction scenario to simulate all potential significant operating conditions on the site; c) any assumptions made in the predictions in terms of source heights, directivity effects, shielding from topography, buildings or barriers, etc; d) methods used to predict noise impacts including identification of any noise models used; e) the weather conditions considered for the noise predictions; f) the predicted noise impacts from each noise source as well as the combined noise level for each prediction scenario; g) for developments where a significant level of noise impact is likely to occur, noise contours for the key prediction scenarios should be derived; h) an assessment of the need to include modification factors as detailed in Fact Sheet C of the NSW Noise Policy for Industry.	8.2 Appendix 2	8-5

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
• Discuss the findings from the predictive modelling and, where relevant noise criteria have not been met, recommend additional feasible and reasonable mitigation measures. • The noise impact assessment report should include details of any mitigation proposed including the attenuation that will be achieved and the revised noise impact predictions following mitigation: a) Where relevant noise/vibration levels cannot be met after application of all feasible and reasonable mitigation measures the residual level of noise impact needs to be quantified; • For the assessment of existing and future traffic noise, details of data for the road should be 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. • Where blasting is intended an assessment in accordance with the Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration (ANZECC, 1990) should be undertaken. The following details of the blast design should be included in the noise assessment: a) bench height, burden spacing, spacing burden ratio; b) blast hole diameter, inclination and spacing; c) type of explosive, maximum instantaneous charge, initiation, blast block size, blast frequency.	8.2 Appendix 2	8-5

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Describe Management and Mitigation Measures		
• Determine the most appropriate noise mitigation measures and expected noise reduction including both noise controls and management of impacts for both construction and operational noise. This will include selecting quiet equipment and construction methods, noise barriers or acoustic screens, location of stockpiles, temporary offices, compounds and vehicle routes, scheduling of activities, etc. • 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: a) use of alternative transportation modes, alternative routes, or other methods of avoiding the new road usage; b) control of traffic (eg: limiting times of access or speed limitations); c) resurfacing of the road using a quiet surface; d) use of (additional) noise barriers or bunds; e) treatment of the façade to reduce internal noise levels buildings where the night-time criteria is a major concern; f) more stringent limits for noise emission from vehicles (i.e. using specially designed 'quite' trucks and/or trucks to use air bag suspension; g) driver education; h) appropriate truck routes; i) limit usage of exhaust brakes; j) use of premium muffles on trucks; k) reducing speed limits for trucks; l) ongoing community liaison and monitoring of complaints; m) phasing in the increased road use.	8.2 Appendix 2	8-5

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
4. Water		
Describe Baseline Conditions		
• Describe existing surface and groundwater quality – an assessment needs to be undertaken for any water resource likely to be affected by the proposal and for all conditions (e.g. a wet weather sampling program is needed if runoff events may cause impacts). • Note: Methods of sampling and analysis need to conform with an accepted standard (e.g. Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DEC 2004) or be approved and analyses undertaken by accredited laboratories). • Provide site drainage details and surface runoff yield. • State the ambient Water Quality and River Flow Objectives for the receiving waters. These refer to the community's agreed environmental values and human uses endorsed by the Government as goals for the ambient waters. These environmental values are published on the website: • http://www.environment.nsw.gov.au/ieo/index.htm. The EIS should state the environmental values listed for the catchment and waterway type relevant to your proposal. NB: A consolidated and approved list of environmental values are not available for groundwater resources. Where groundwater may be affected the EIS should identify appropriate groundwater environmental values and justify the choice. • State the indicators and associated trigger values or criteria for the identified environmental values. This information should be sourced from the ANZECC 2000 Guidelines for Fresh and Marine Water Quality (http://www.environment.gov.au/water/publications/quality/nwqms-guidelines-4-vol1.html) (Note that, as at 2004, the NSW Water Quality Objectives booklets and website contain technical criteria derived from the 1992 version of the ANZECC Guidelines. The Water Quality Objectives remain as Government Policy, reflecting the community's environmental values and long-term goals, but the technical criteria are replaced by the more recent ANZECC 2000 Guidelines). NB: While specific guidelines for groundwater are not available, the ANCECC 2000 Guidelines endorse the application of the trigger values and decision trees as a tool to assess risk to environmental values in groundwater. • State any locally specific objectives, criteria or targets, which have been endorsed by the government e.g. the Healthy Rivers Commission Inquiries or the NSW Salinity Strategy (DLWC, 2000) (http://www.environment.nsw.gov.au/salinity/government/nswstrategy.htm). • Where site specific studies are proposed to revise the trigger values supporting the ambient Water Quality and River Flow Objectives, and the results are to be used for regulatory purposes (e.g. to assess whether a licensed discharge impacts on water quality objectives), then prior agreement from the EPA on the approach and study design must be obtained.	8.3 Appendix 6	8-15

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
• Describe the state of the receiving waters and relate this to the relevant Water Quality and River Flow Objectives (i.e. are Water Quality and River Flow Objectives being achieved?). Proponents are generally only expected to source available data and information. However, proponents of large or high risk developments may be required to collect some ambient water quality / river flow / groundwater data to enable a suitable level of impact assessment. Issues to include in the description of the receiving waters could include: a) lake or estuary flushing characteristics; b) specific human uses (e.g. exact location of drinking water offtake); c) sensitive ecosystems or species conservation values; d) d) a description of the condition of the local catchment e.g. erosion levels, soils, vegetation cover, etc; e) an outline of baseline groundwater information, including, but not restricted to, depth to watertable, flow direction and gradient, groundwater quality, reliance on groundwater by surrounding users and by the environment; f) historic river flow data where available for the catchment.		
Assess Impacts		
• No proposal should breach clause 120 of the *Protection of the Environment Operations Act* 1997 (i.e. pollution of waters is prohibited unless undertaken in accordance with relevant regulations). • Identify and estimate the quantity of all pollutants that may be introduced into the water cycle by source • and discharge point including residual discharges after mitigation measures are implemented. • Include a rationale, along with relevant calculations, supporting the prediction of the discharges. • Describe the effects and significance of any pollutant loads on the receiving environment. This should include impacts of residual discharges through modelling, monitoring or both, depending on the scale of the proposal. Determine changes to hydrology (including drainage patterns, surface runoff yield, flow regimes, wetland hydrologic regimes and groundwater). • Describe water quality impacts resulting from changes to hydrologic flow regimes (such as nutrient enrichment or turbidity resulting from changes in frequency and magnitude of stream flow). • Identify any potential impacts on quality or quantity of groundwater describing their source. • Identify potential impacts associated with geomorphological activities with potential to increase surface water and sediment runoff or to reduce surface runoff and sediment transport. Also consider possible impacts such as bed lowering, bank lowering, instream siltation, floodplain erosion and floodplain siltation. • Identify impacts associated with the disturbance of acid sulfate soils and potential acid sulfate soils. • Containment of spills and leaks shall be in accordance with EPA's guidelines section 'Bunding and Spill Management' at http://www.epa.nsw.gov.au/mao/bundingspill.htm and the most recent versions of the Australian Standards referred to in the Guidelines. Containment should be designed for no-discharge.	8.3 Appendix 6	8-15

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
• The significance of the impacts listed above should be predicted. When doing this it is important to predict the ambient water quality and river flow outcomes associated with the proposal and to demonstrate whether these are acceptable in terms of achieving protection of the Water Quality and River Flow Objectives. In particular the following questions should be answered: a) will the proposal protect Water Quality and River Flow Objectives where they are currently achieved in the ambient waters; and b) will the proposal contribute towards the achievement of Water Quality and River Flow Objectives. The mixing zone could result in dilution, assimilation and decay of the effluent to allow water quality objectives to be met further downstream, at the edge of the mixing zone). The EPA will advise the proponent under what conditions a mixing zone will and will not be acceptable, as well as the information and modelling requirements for assessment. *Note: The assessment of water quality impacts needs to be undertaken in a total catchment management context to provide a wide perspective on development impacts, in particular cumulative impacts.*	8.3 Appendix 6	8-15
Describe Management and Mitigation Measures		
• Outline stormwater management to control pollutants at the source and contain them within the site. Also describe measures for maintaining and monitoring any stormwater controls. • Outline erosion and sediment control measures directed at minimising disturbance of land, minimising water flow through the site and filtering, trapping or detaining sediment. Also include measures to maintain and monitor controls as well as rehabilitation strategies. • Describe waste water treatment measures that are appropriate to the type and volume of waste water and are based on a hierarchy of avoiding generation of waste water; capturing all contaminated water (including stormwater) on the site; reusing/recycling waste water; and treating any unavoidable discharge from the site to meet specified water quality requirements. • Outline pollution control measures relating to storage of materials, possibility of accidental spills (e.g. preparation of contingency plans), appropriate disposal methods, and generation of leachate. • Describe hydrological impact mitigation measures including: a) site selection (avoiding sites prone to flooding and waterlogging, actively eroding or affected by deposition); b) minimising runoff; c) minimising reductions or modifications to flow regimes; d) avoiding modifications to groundwater. • Describe groundwater impact mitigation measures including: a) site selection; b) retention of native vegetation and revegetation; c) artificial recharge; d) providing surface storages with impervious linings; e) monitoring program.	8.3 Appendix 6	8-15

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
• Describe geomorphological impact mitigation measures including: a) site selection; b) erosion and sediment controls; c) minimising instream works; d) treating existing accelerated erosion and deposition; e) monitoring program.	8.3 Appendix 6	8-15
• Any proposed monitoring should be undertaken in accordance with the Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DEC 2004).	8.3 Appendix 6	8-15
5. Soils and Contamination		
Describe Baseline Conditions		
• Provide any details (in addition to those provided in the location description - Section C) that are needed to describe the existing situation in terms of soil types and properties and soil contamination.	Appendix 5	
Assess Impacts		
• Identify any likely impacts resulting from the construction or operation of the proposal, including the likelihood of: a) disturbing any existing contaminated soil; b) contamination of soil by operation of the activity; c) subsidence or instability; d) soil erosion; e) disturbing acid sulfate or potential acid sulfate soils. • Reference should be made to relevant guidelines including but not limited to Contaminated Sites – Guidelines for Consultants Reporting on Contaminated Sites (OEH, 2011); Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997 (EPA, 2015)>.	Appendix 5	
Describe Management and Mitigation Measures		
• Describe and assess the effectiveness or adequacy of any soil management and mitigation measures during construction and operation of the proposal including: a) erosion and sediment control measures; b) proposals for site remediation – see Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land (Department of Urban Affairs and Planning and Environment Protection Authority, 1998); c) proposals for the management of these soils – see Acid Sulfate Soil Manual (Acid Sulfate Soil Advisory Committee 1998) and Acid Sulfate Soils Assessment Guidelines (Acid Sulfate Soil Advisory Committee 1998).	Appendix 5	
6. Waste and Chemicals		
Describe Baseline Conditions		
• Describe any existing waste or chemicals operations related to the proposal.	8.5 8.6.1 Appendix 3	8-19 8-26
Assess Impacts		
• Assess the adequacy of proposed measures to minimise natural resource consumption and minimise impacts from the handling, transporting, storage, processing and reprocessing of waste and/or chemicals. • Reference should be made to the EPA's Waste Classification Guidelines 2014 (as in force from time to time).	8.6.1 Appendix 3	8-26

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
• If the proposal is an energy from waste facility it must: ► demonstrate that the proposed operation will comply with the NSW EPA's Energy from Waste Policy Statement; ► describe of the classes and quantities of waste that would be thermally treated at the facility; ► demonstrate that waste used as a feedstock in the waste to energy plant would be the residual from a resource recovery process that maximises the recovery of material; ► detail procedures that would be implemented to control the inputs to the waste to energy plant, including contingency measures that would be implemented if inappropriate materials are identified; ► detail the location and size of stockpiles of unprocessed and processed recycled waste at the site; ► demonstrate any waste material (e.g. biochar, ash) produced from the waste to energy facility for land application is fit-for-purpose and poses minimal risk of harm to the environment in order to meet the requirements for consideration of a resource recovery order and /or exemption by the EPA; ► detail procedures for the management of other solid, liquid and gaseous waste streams; ► describe how waste would be treated, stored, used, disposed and handled on site, and transported to and from the site, and the potential impacts associated with these issues, including current and future offsite waste disposal methods; and ► identify the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2014-21.	8.5 Appendix 3	8-19
Describe Management and Mitigation Measures		
• Outline measures to minimise the consumption of natural resources. • Outline measures to avoid the generation of waste and promote the re-use and recycling and reprocessing of any waste. • Outline measures to support any approved regional or industry waste plans.	8.5 Appendix 3	8-19
7. Cumulative Impacts		
• 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 (e.g. water and sewerage services, transport infrastructure upgrades). • Assess likely impacts from such additional infrastructure and measures reasonably available to the proponent to contain such requirements or mitigate their impacts (e.g. travel demand management strategies).	10	11-1
F. List of Approvals and Licences		
• Identify all approvals an licences required under environment protection legislation including details of all schedule activities, types of ancillary activities and types of discharges (to air, land, water).	13	13-1

Table 4-5: NSW EPA Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
G. List of Approvals and Licences		
• Outline how the proposal and its environmental protection measures would be implemented and managed in an integrated manner so as to demonstrate that the proposal is capable of complying with statutory obligations under EPA licences or approvals (e.g. outline of an environmental management plan). • The mitigation strategy should include the environmental management and cleaner production principles which would be followed when planning, designing, establishing and operating the proposal. It should include two sections, one setting out the program for managing the proposal and the other outlining the monitoring program with a feedback loop to the management program.	12	12-1
H. Justification for the Proposal		
• Reasons should be included which justify undertaking the proposal in the manner proposed, having regard to the potential environmental impacts.	15	15-1

Table 4-6: TfNSW Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Transport for NSW - General		
A detailed traffic impact assessment should be prepared and include, but not be limited to, the following: 1. Daily and peak traffic movements likely to be generated by the proposed redevelopment (including vehicle type and the likely arrival and departure times) and volumes likely to be generated during construction and operation, including a description of haul route origins and destinations, including; a) An inbound and outbound vehicle profile by time of day and day of week (if travel patterns differ across the week); b) Site plan and operating plan to demonstrate that the site will be managed such that queues do not develop on Gow Street; c) Site plan showing the proposed layout of the processing plant, storage and handling facilities and truck circulation layout that demonstrates the site will accommodate the most productive vehicle types (noting that the surrounding road network accommodates 25/26 metre B-doubles); d) Site layout that illustrates how loading and unloading (including waiting areas) will occur in relation to covered and uncovered areas for the different material types; e) Map the catchment for this processing centre to demonstrate that it is located in a suitable location to serve the construction industry from the perspective of not generating additional trips over long distances between construction sites, batching plants, this facility and land fill locations; f) The rationale for the expansion in fuel storage and clarification of how the storage expansion will be staged between the existing operations; Stage 1 (this proposal) and stage 2; g) Details of the driver facilities provided on site; h) Details of the origin/destination of dangerous goods movements to/from the site; and i) Swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site for both light and heavy vehicles. 2. All affected intersections should be examined/ modelled and the need/associated funding for upgrading or road improvement works (if required), including consideration of cumulative traffic impacts at key intersections using SIDRA or similar traffic model as prescribed by TfNSW (former Roads and Maritime). These should include, but not be limited to: a) Gow Street at Fairfield Road; and b) Gow Street at Gibson Avenue. The traffic modelling should consider the scenarios of year 2026, 2031, 2036 and the year until the facility cease operation. 3. Details of the proposed accesses and the parking provisions associated with the proposed redevelopment including compliance with the requirements of the relevant Australian Standards (ie: turn paths, sight distance requirements, aisle widths, etc). 4. Proposed number of car parking spaces and compliance with the appropriate parking codes.	Appendix 9	

Table 4-6: TfNSW Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
5. To ensure that the above requirements are fully addressed, the traffic impact assessment must properly ascertain the cumulative study area traffic impacts associated with the redevelopment (and any other known proposed developments in the area). This process provides an opportunity to identify a package of traffic and transport infrastructure measures required to support future development. Regional and local intersection and road improvements, vehicular access options for adjoining sites, public transport needs, the timing and cost of infrastructure works and the identification of funding responsibilities associated with the development should be identified. 6. TfNSW requires the Environmental Assessment report to address the implications of the proposed development for non-car travel modes (including public transport use, walking and cycling); the potential for implementing a location-specific sustainable travel plan (eg 'Travelsmart' or other travel behaviour change initiative); and the provision of facilities to support non-car mode share for travel to and from the site. This will entail an assessment of the accessibility of the development site by public transport. The detailed traffic impact assessment should address the relevant planning provisions, goals and strategic planning objectives in the following: ► Future Transport 2056 and supporting documents; ► Draft NSW Freight and Ports Plans; ► Guide to Traffic Generating Developments 2002(RTA); – TDT 2013/04a Guide to Traffic Generating Developments, and; ► Austroads Guide to Traffic Management Part 12: Traffic Impacts of Development.	Appendix 9	

Table 4-7: Sydney Water Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
• Sydney Water has a 400 mm VC branch carrier wastewater main located within the subject site • Sydney Water requests that detailed domestic and industrial water and wastewater demands be specified within the Environmental Impact Statement • Indicative stormwater, trade wastewater and water re-use quantities should also be included within the EIS report • It is recommended that the proponent engages a Water Servicing Coordinator and meetings are held between the proponent and Sydney Water to ensure that Sydney Water's requirements inform the design process. Sydney Water also requests that the Department of Planning, Industry and Environment include the following Secretary's Environmental Assessment Requirements relating to the provision of water-related services for the subject site:	8.3 Appendix 6	8-15
Water-Related Infrastructure Requirements		
1. The proponent of the development should determine service demands following servicing investigations and demonstrate that satisfactory arrangements for drinking water, wastewater, and if required, recycled water services have been made. 2. The proponent must obtain endorsement and/or approval from Sydney Water to ensure that the proposed development does not adversely impact on any existing water, wastewater or stormwater main, or any other Sydney Water asset, including any easement or property. When determining landscaping options, the proponent should take into account that certain tree species can cause cracking or blockage of Sydney Water pipes and therefore should be avoided. 3. Strict requirements for Sydney Water's stormwater assets (for certain types of development) may apply to this site. The proponent should ensure that satisfactory steps/measures been taken to protect existing stormwater assets, such as avoiding building over and/or adjacent to stormwater assets and building bridges over stormwater assets. The proponent should consider taking measures to minimise or eliminate potential flooding, degradation of water quality, and avoid adverse impacts on any heritage items, and create pipeline easements where required. 4. As this development creates trade wastewater, Sydney Water has trade wastewater requirements which need to be met. By law, the property owner must submit an application requesting permission to discharge trade wastewater to Sydney Water's sewerage system. The proponent must obtain Sydney Water approval for this permit before any business activities can commence. Given this development comprises industrial operations, wastewater may discharge into a sewerage area that is subject to wastewater reuse. Please contact Sydney Water's Business Customer Services to send your permit application or to find out more information. They can be contacted at the following email address: businesscustomers@sydneywater.com.au.	8.3 Appendix 6	8-15

Table 4-7: Sydney Water Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Integrated Water Cycle Management		
5. The proponent should outline any sustainability initiatives that will minimise/reduce the demand for drinking water, including any alternative water supply and end uses of drinking and non-drinking water that may be proposed, and demonstrate water sensitive urban design (principles are used), and any water conservation measures that are likely to be proposed. This will allow Sydney Water to determine the impact of the proposed development on our existing services and required system capacity to service the development.	8.3 Appendix 6	8-15

Table 4-8: Fire and Rescue NSW Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Fire Rescue NSW – General Comments		
• It is understood that a SEPP 33 assessment will be undertaken as part of the development of the Environmental Impact Statement (EIS). • It is recommended that advice and considerations contained within FRNSW's Fire Safety Guideline – Fire safety in waste facilities be addressed. Advice and recommendations contained within the guideline have been developed to enable FRNSW to adequately manage an incident at such facilities. • It is recommended that advice and considerations contained within FRNSW's Fire Safety Guideline – Emergency Vehicle Access be addressed. This is required such that FRNSW are able to safely access all parts of the site where an incident may occur. • It is recommended that provisions be made for the containment of contaminated fire water run-off based on the worst credible fire scenario for the site. Any system(s) provided is to be automatic in nature and should not rely upon on-site staff or emergency services personnel to access or activate provided systems or valves in the event of fire. • It is recommended that if the development proposes to incorporate a fire engineered solution (FES), whether a building design having a performance solution in accordance with the National Construction Code (NCC) or other infrastructure where building codes are not applicable, FRNSW should be engaged in the fire engineering brief (FEB) consultation process at the preliminary design phase, post approval of the development application. FRNSW also recommend that clauses E1.10 and E2.3 be addressed where a FES is required. • It is recommended that a Condition of Consent be included that would require the fire and life safety measures for the development to be reassessed for adequacy in the event that either; significant changes are made to the site configuration, processing capacity is increased or there are changes to either the accepted waste streams or a significant increase in streams that are combustible in nature. • It is recommended that the emergency plan for the waste facility in accordance with AS 3745–2010 Planning for emergencies in facilities be prepared for the development. An external consultant should be engaged to provide specialist advice and services in relation fire safety planning and developing an emergency plan.	8.5.3	8-24

Table 4-9: Ausgrid (Utilities) Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Ausgrid – General Comments		
• Assesses the capacity of existing services and utilities and identify any upgrades required to facilitate the development • Assesses the impacts of the proposal on existing utility infrastructure and service provider assets and describe how any potential impacts would be managed."	Appendix 10	

Table 4-10: Canterbury Bankstown Council Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Canterbury Bankstown Council – General Comments		
Statutory and Strategic Context		
Include consideration of the Bankstown Local Environmental Plan 2015, including the zone objectives of the IN1 General Industrial Zone. Address the relevant provisions, goals and strategic planning objectives of the Local Strategic Planning Statement (LSPS), *Connective City 2036*.	3.3.1	3-12
Flood, Drainage and Stormwater		
Clearly demonstrate that Council's existing drainage easement and drainage pipe is not impacted as a result of the development through supporting structural certification and hydraulic assessments, where necessary. Easement considerations include the following: a. Retention of access from the roadway (i.e. Gow Street) for maintenance vehicles (such as excavators). b. Provision of working space (e.g. for excavator booms) around the drainage infrastructure c. Not constructing any permanent structures within the width of the easement d. Installation of structural footings below the zone of influence of the pipe trench Any proposed modifications or connections to Council's drainage easement infrastructure requires Council approval via Section 68 of the Local Government Act.	8.3.1.1	8-16
The stormwater pipeline and associated easement is to be clearly shown on all relevant civil, architectural and landscaping plans. Council notes that the pipelines may not be centrally located within the easements.	Appendix 4	
Address the relevant provisions of the Bankstown DCP Part B12 – Flood Risk Management (especially all applicable facets of Schedule 5) and NSW Floodplain Development Manual (2005).	Appendix 12	
Prepare a Flood Impact Assessment through consultation with Council engineers to demonstrate no adverse flooding impacts and ensure flood hazards are mitigated to reduce flood liability and risk to life. This is to include: a. Council's available flood information (SSR – Stormwater System Report) is to be obtained for the development site. b. The flood impact assessment is to be calibrated against Council's catchment-wide flood study unless demonstrated otherwise through rigorous justification. c. Consideration of potential reductions in flood storage for the area and appropriate mitigation to minimise impacts. d. Assessment of the flood hazard based on the ARR2019 flood hazard curves (H1 to H6). e. Evacuation/egress for events up to the PMF is to be considered f. Council has no objection to the continued use of ARR1987 for the hydrological and hydraulic modelling, as per Council's catchment flood study.	Appendix 12	
Consider a dedicated overland flow path as a means of safety conveying flows of flood risks and impacts. Particularly in the event that the on-site stormwater systems (including any tanks and conduits) are exceeded or blocked in extreme events up to the 1% AEP (100- year ARI).		

Table 4-10: Canterbury Bankstown Council Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
Demonstrate the appropriateness of an inground pit for the dewatering plant with consideration to the flood and stormwater site affectations. If a pit is to proceed, provide a Leachate Management Plan to minimise the risk of site contamination.	Appendix 12	
Acid Sulphate Soils		
Consider undertaking an Acid Sulphate Soils Management Plan as the site is in Class 5 Acid Sulphate Soils (ASS) and is within 500m of Class 2 ASS (as per Sheet 5 of Bankstown LEP 2015).	Appendix 16	
Operation		
Provide an Operational Management Plan through consultation with relevant Council officers that outlines how the following impacts will be managed: • Increased heavy vehicle movements on nearby residential streets at all hours of the day and night. Including additional weights on lower order roads than currently anticipated. • Increased impacts on noise, air quality and vibration to surrounding uses • Potentially pollution generating activity on a site flood affected site contaminating nearby waterbodies. • It is recommended that truck movements associated with the site avoid Gibson Avenue during sensitive hours of operation.	Appendix 17	
Transport and Accessibility		
Provide a Traffic Impact Assessment (TIA) for the operation of traffic (all modes) which is to the satisfaction of Council's Traffic Engineer. The TIA should: • Demonstrate internal truck circulation and onsite queuing for both the proposed and existing developments. • Provide further details on the potential secondary access point and integration with existing and/or proposed uses. Council notes that works have recently occurred on the eastern boundary of the site, potentially a secondary access point that has not been included on the scoping report. • Elaborate on the expected number of heavy vehicle movements including the type of vehicles being utilising, with the tare and gross vehicle masses to understand the actual traffic implications. • Demonstrate the primary and secondary routes anticipated for heavy vehicles movements to and from. Council notes that there is no left turn out of Gow Street onto Fairford Road requiring an alternative route when exiting the facility, likely past residential properties. Increased truck noise past residential properties during sensitive hours is not supported. • Clarify and identify existing weight restrictions of roads in the heavy vehicle routes. • Identify proposed car parking arrangements. Noting that the site plan appears (12 shown) to be inconsistent with the scoping report (16 noted) and the existing layout (7 approx.).	Appendix 9	
The Construction Management Plan should also consider: • Management of pedestrian movements during construction • The impact of on-site parking and access arrangements of construction vehicles, construction workers to and from the site and service vehicles, and their impact to existing parking in and around the site and surrounding area.	Appendix 15	

Table 4-10: Canterbury Bankstown Council Assessment Requirements and EIS Reference

Environmental Assessment Requirements – Key Issues	EIS Reference	
	Section	Page No
The draft Traffic Management Plan (TMP) for the operation of traffic (all modes) should be prepared to the satisfaction of Council's Traffic Engineer.	Appendix 9	
Noise, Air Quality and Vibration		
Produce and provide a Noise Impact Assessment (NIA) and Full Quantitative Air Quality and Odour Impact Assessment (AQOIA) through consultation with the EPA and Council.	Appendix 1 and 2	
Consider a sound wall to the rear of the property to minimise noise impacts on surrounding residential populations.	Appendix 2	
Waste Management		
Considering the scale and intensity of the proposed development, a trade waste agreement should be included as part of the development.	Appendix 3	
Urban Design		
The design of the development is to consider the following matters: • Entries & frontage: Design to clearly articulate pedestrian and vehicle entries & frontages. Vehicular entries should be seen from at least 100m away. • Use of landscaping. • Interface Impact to surrounding land uses. • Accessible paths of travel to enter and move through the site.	Appendix 8	
Ecologically Sustainable Development		
Demonstrate good water sensitive urban design and landscaping, inclusive stormwater drainage solutions. Council notes that the site currently has little to no landscaping. Additional landscaping would be favourable to the area and assist in minimising stormwater runoff and heat island effects.	11	11-1
Plans and Documentation		
• Provide an elevation of the proposed development from Gow Street • Highlight primary and secondary accessible routes to and from the facility for heavy vehicles • Section of proposed pit including and proposed containment measures.	Appendix 8	
Consultation		
Council recommends that the extent of community consultation be extended to reflect the area affected by noise, air quality, odour and transport issues as a minimum.	4.2	4-6

5. DESCRIPTION OF PROPOSED DEVELOPMENT

The proposed development involves the construction and operation of a liquid waste dewatering facility to be established at the existing Gow Street Recycling Centre.

The proposed dewatering facility would have a processing capacity of 250,000 tonnes per annum and would accept drilling mud and concrete washout waste. The new facility would store a maximum of 1,460 tonnes of waste at any one time which includes approximately 365 tonnes of liquid waste and 1,095 tonnes of solid waste.

The dewatering plant operations are proposed to take place on site 24 hours a day, 7 days a week. The existing C&D facility would continue to operate within the approved hours of operation: 06:00 and 18:00 Monday to Friday, and 07:00 and 18:00 on weekends. The existing facility is not and will not be part of the development and will continue to operate under the existing consent.

The dewatering plant would operate on a site that contains an existing resource recovery facility but would essentially be a separate operation. There would be some cross-over between the two operations and this section provides a description of the existing facilities and processes, those proposed and explains how these two independent processes will operate and be managed at the site.

5.1 PROPOSED LIQUID WASTE DEWATERING FACILITY

Establishment and operation of a liquid waste dewatering plant is proposed. This plant would essentially operate separately from the existing approved resource recovery facility, however, there would be some minor interactions between processes. The proposal consists of the following elements:

- Construction of purpose-built building to enclose the dewatering facility. This would replace the existing warehouse building that would be demolished.
- A new office building would be constructed. This would replace the existing demountable office and amenities building as well as the demountable lunchroom that would be removed from site. The new office building would be used by staff of both the existing and proposed developments.
- Installation of dewatering equipment including a flocculant station/pit, screw separator and screen, slurry homogeniser, 2 x 60 kL silos, and filter press.
- A truck unloading area inside the building.
- Seven (7) inground pits and sumps inside the building. Pits and sump details are as follows:
  - Pit 7 - Inground Pit Receivals (1), 8.0 x 4.5 x 3.0 m deep (Volume: 108,000 L)
  - Pit 6 - Inground Pit Receivals (2), 2.4 x 4.5 x 3.0 m deep (Volume: 32,400 L)
  - Pit 5 - Inground Pit Receivals (3), 2.4 x 4.5 x 3.0 m deep (Volume: 32,400 L)
  - Pit 4 - Floc Plant: Dirty water pit (2), 3.33 x 2.835 x 2.5 m deep (Volume: 23,601 L)
  - Pit 3 - Floc Plant: Dirty water pit (1), 2 x 2.835 x 2.5 m deep (Volume: 14,175 L)
  - Pit 2 - Floc Plant: Clean water pit, 3.0 x 2.835 x 2.5 m deep (Volume: 21,263 L)
  - Pit 1 - Floc Plant: Sump Pit, 1.6 x 2.835 x 2.5 m deep (Volume: 11,340 L)
- Six (6) bunkers. Four (4) bunkers would be located inside the building and two (2) would be located external to the building under an awning. Bunker contents and dimensions are:
  - Bunker 1: Aggregate, 6.2 x 4.0 m
  - Bunker 2: Aggregate, 6.2 x 4.0 m

  - Bunker 3: Sand 5.07 x 5.805 m
  - Bunker 4: Sand 5.295 x 5.805 m
  - Bunker 5: Sand 5.295 x 5.805 m
  - Bunker 6: Filter cake 6.7 x 8.9 m
- Extension of the boundary wall up to new building behind the new aggregate bunkers.
- Connection to Sydney Water tradewaste under an agreement.
- Stormwater upgrades including a first flush system that directs the first 25 mm of on-site stormwater to a silt arrester and detention tank which will be used in the dewatering plant while the clean overflow is discharged to the stormwater easement using the existing stormwater connection during a heavy rain event.

A proposed site plan and equipment layout are provided in Appendix 8. A description of the dewatering process is provided in the following sub-section.

5.1.1 Proposed Process Description

The dewatering facility would operate as a recycling facility for the drilling mud and concrete washout water and stormwater captured onsite. The facility would involve the following activities:

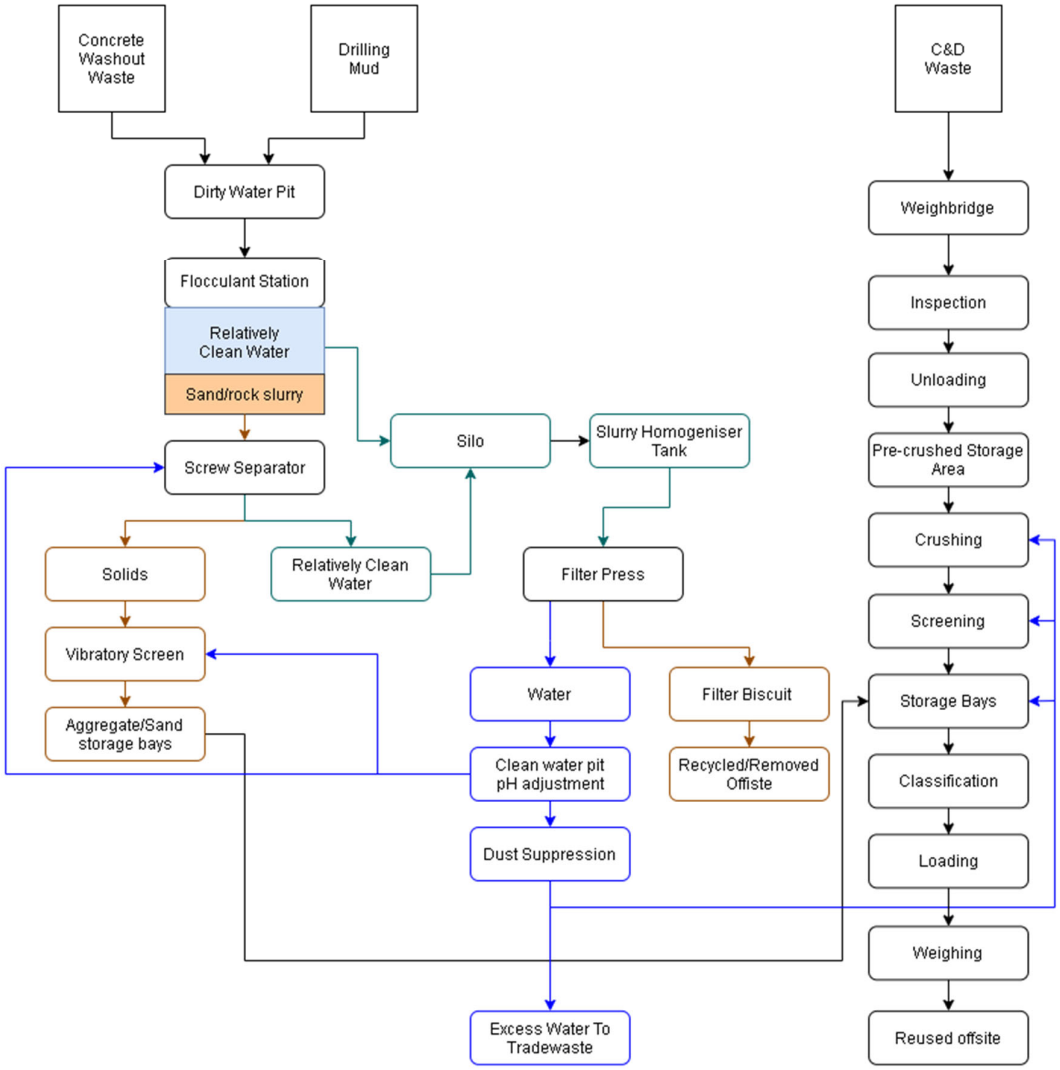
- Recording of all waste loads at the weighbridge.
- Unloading of drilling mud/concrete washout water into dirty water containment pits.
- This liquid is transferred into the dirty water pit and then into the flocculent station.
- The flocculants assist in settling sediments at the bottom of the tank.
- The sand/rock/sediment slurry is pumped from the bottom of the tank and into a screw separator.
- The screw separator removes the solids from the water.
- The solids are then transferred to a vibrating screen where the aggregates and sands are conveyed to internal and external storage bays.
- The water from the flocculent station and the screw separator is pumped to the two 60 kL silos, the slurry homogeniser tank and then into the filter press.
- The filter press removes the remaining silts and the cleaned water is pumped to the clean water pit.
- The sediments/silt from the filter press becomes a fine biscuit which is removed offsite as for application to land under the Treated Drilling Mud Exemption 2014 or to landfill.
- The filter press requires intermittent backwashing where backwash water is pumped to the dirty water pit to be reprocessed through the system.
- The clean water pit would be pH adjusted and then used for cleaning aggregates and sand during the screening process, dust suppression and washdown onsite. Prior to use on site, water quality would be tested to ensure the water is suitable for reuse on site. Excess water would be sent to tradewaste under a Trade Waste Agreement.

Site washdown water and stormwater will be collected in a 200 kL underground tank and through the above dewatering system.

The maximum quantity of liquid waste that can be processed through the dewatering plant in a 24-hour period is approximately 1,500 tonnes. Approximately 450 tonnes of clean water is generated each day. This can easily accommodate stormwater runoff and the proposed 250,000 tonnes per annum.

A process flow diagram is presented in Figure 5-1. This shows the existing processes, new processes and interactions between the two operations.

Figure 5-1: Process Flow Diagram



5.1.2 Raw Materials

Two waste types will be received as “raw materials” to the process.

- Drilling mud; and
- Concrete washout waste.

The above waste streams would be sourced from construction and infrastructure projects within the local and regional area.

The first 25 mm of on-site stormwater captured within a pit would also be treated through the dewatering plant.

5.1.2.1 Drilling mud

The drilling mud to be received is to be non-destructive digging waste which is a water-based drilling mud containing clay (usually bentonite) and various non-odorous chemicals. The odorous drilling mud types include oil-based muds and synthetic based muds which are generally used on offshore rigs. The site would not receive oil-based or synthetic-based muds.

Under the Treated Drilling Mud Order 2014, the following definitions are provided:

> ***Drilling fluid*** *means a mixture of water and chemical additives including but not limited to bentonite, soda ash (sodium carbonate), sodium hydroxide, lime and polymers.*
>
> ***Drilling mud*** *means a mixture of naturally occurring rock and soil, including but not limited to materials such as sandstone, shale and clay, and drilling fluid generated during drilling operations such as horizontal directional drilling or potholing. This does not include drilling mud that has been generated by:*
>
> *(a) Deep drilling for mineral, gas or coal exploration; or*
> *(b) Drilling through contaminated soils, acid sulphate soils (ASS) or potential acid sulphate soils (PASS)*

The drilling mud would meet the above definitions to enable the treated drilling mud to be applied to land under the resource recovery exemption. The chemical additives listed above are all known to be odorless as stated in relevant safety data sheets. One chemical of concern is barium sulphate which has the potential to be odorous due to the presence of sulphate which could potentially be reduced to hydrogen sulphide under anaerobic conditions. Drilling mud containing barium sulphate will NOT be accepted.

5.1.2.2 Concrete washout waste

Concrete washout waste is the resulting slurry generated after concrete is poured at a construction site. The concrete washout waste is produced when the chutes and drums of ready mixed concrete trucks, the hoppers of concrete pump trucks, wheelbarrows and hand tools are washed out with water to remove the residual concrete and prevent this from hardening on the equipment.

Concrete is a mixture of cement, water and aggregate material, usually a mixture of sand and gravel or crushed stone. The cement is generally made from a mixture of limestone and other clay containing oxides of calcium, aluminium, silicon and other metals. These materials are heated in a kiln, then pulverised to produce cement powder.

Concrete washout waste may therefore contain traces of toxic metals such as Chromium VI and is caustic and corrosive, with a pH of around 12. pH adjustment through addition of an acid or carbon dioxide would reduce the pH to acceptable levels.

Concrete wash out water would be sourced from concrete trucks returning from construction jobs that need to be washed out before returning to their existing concrete batching plants. Many concrete batching plants do not contain the facilities on site to manage concrete wash out water and therefore the new dewatering plant would provide a facility to treat this waste.

Concrete trucks would enter the loading area of the dewatering plant and wash out directly into the dirty water containment pit. This process would be enclosed within the facility.

5.1.2.3 On-site stormwater

On-site stormwater would be captured from the hardstand area into a first flush system where the first 25mm of rainwater would be treated through the dewatering plant. Any additional rainfall during heavy rain events would be discharged to the street stormwater system.

A stormwater isolation valve will be installed after the 200kL underground containment system, to contain contaminated stormwater if required.

5.1.3 Finished Product

Essentially the finished products include – aggregates, sand, filter cake (biscuit) and treated water. The dry component of the drilling mud would result in recovered aggregates, sand or become a "biscuit". Recovered aggregates, soils, sands and treated drilling mud would need to comply with the conditions of the recovered aggregate order 2014, the "batch process" recovered fines order 2014 or the treated drilling mud order 2014 to be re-used off site for application to land for road making activities, building, landscaping and construction works. The wet component is treated water that would be reused on site for dust suppression for the existing external storage bunkers or sent to tradewaste under an agreement with Sydney Water.

5.1.4 Discharge Points

There are no discharge points to air, water or land.

5.1.5 Interactions Between the Processes

The dewatering facility will receive a maximum of 250,000 tpa of liquid waste.

- Approximately 60% is water: 150,000 tpa
- Approximately 2% is fine filter cake (general solid waste): 5,000 tpa
- Approximately 38% is recycled aggregates and fines: 95,000 tpa

The majority (>90%) of the waste aggregates and fines (between 1 - 50 mm) do not require crushing but only screening. This will occur within the dewatering plant with the sorted material transferred directly into each appropriate storage bay.

Less than 10% of the recycled aggregates and fines (9,500 tpa) would require crushing. This material would be processed through the site's currently operating C&D plant which is licenced to process 80,000 tpa. As the plant currently processes <70,000 tpa, this additional volume can be absorbed without exceeding the existing licence limit.

The dewatering plant would operate separately from the existing C&D facility. There would be some cross-over between operations as follows:

- Less than 10% of the recycled aggregates and fines produced from the dewatering plant (9,500 tpa) would require crushing. This material would be processed through the site's existing C&D plant which is licenced to process 80,000 tpa.
- Treated water from the dewatering process would be reused on site for dust suppression purposes on the existing external storage bunkers.
- The weighbridges and the existing wheel wash would be utilised by trucks associated with the C&D facility and proposed dewatering plant.
- Site offices and car parking would be used for site employees for both the existing C&D activities and the proposed dewatering activities.

5.1.6 Potential cross contamination

There is not considered to be any cross-contamination issues with concrete washout waste and drilling mud as the properties of these wastes' streams are very similar. It is common practice for facilities to receiver both drilling mud and concrete washout at dewatering facilities in NSW.

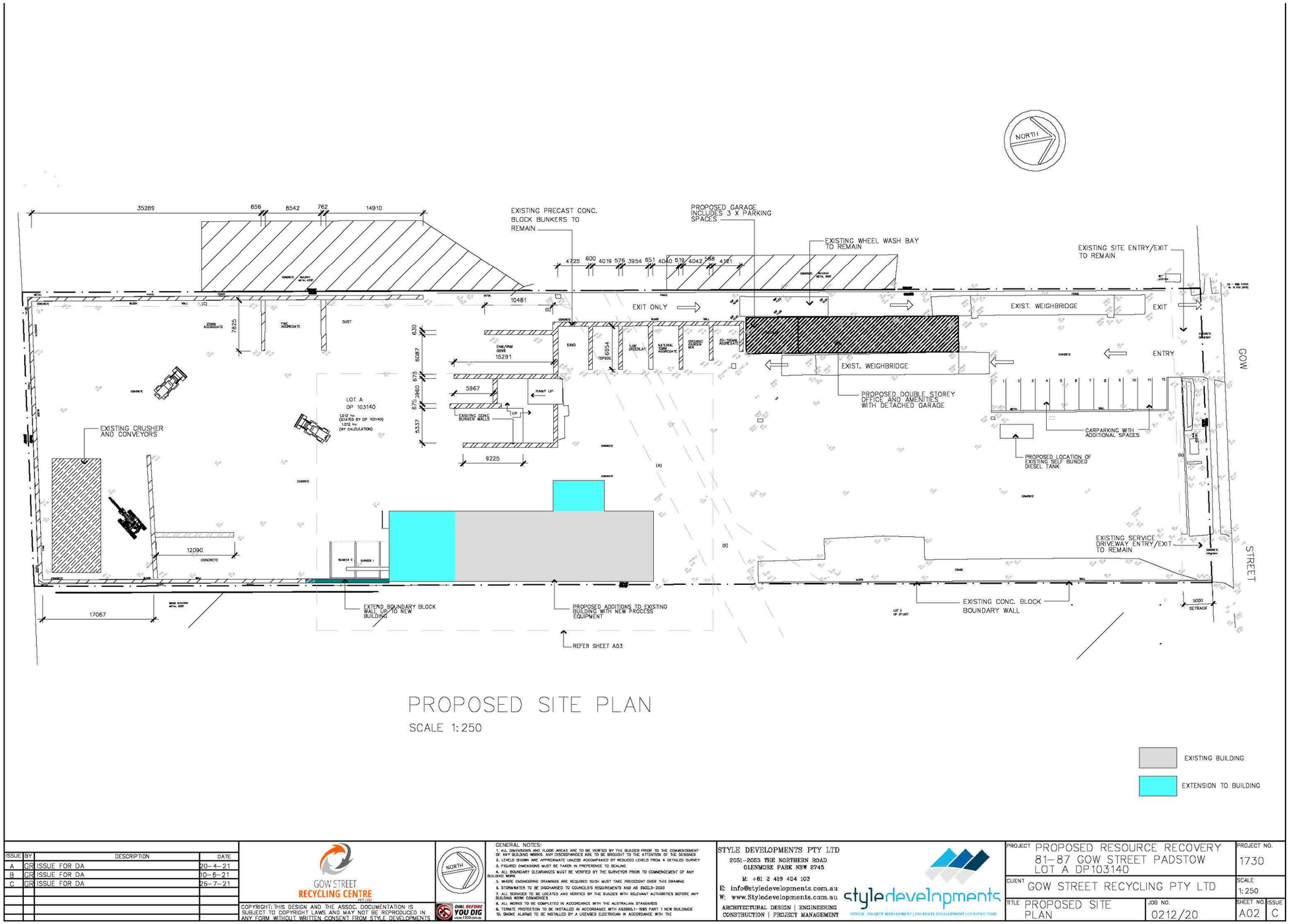
If contaminated liquid wastes are received either in the form of drilling mud or concrete washout waste in the dewatering plant they have the potential to contaminate solid and liquid storage. If the liquid is used as a dust suppression, it will have the potential to contaminate the construction and demolition waste stockpiles. Therefore, it is essential that no contaminated wastes are processed on site.

5.2 SITE PLANS

The proposed site plan for the liquid waste dewatering facility is shown in Figure 5-2 below. A full set of plans is provided in Appendix 8 and include:

- A00 - Cover Sheet
- A01 - Existing Site Plan
- A02-B - Proposed Site Plan Rev B
- A03 - Propose Floor Plan
- A04 – Elevations
- A05 – Elevations
- A06 - Building Sections
- A07 - Equipment Elevations
- A08 - Rigid truck queuing plan
- A09 - B-Double Queuing plan
- A10 - Truck load and unloading plan

Figure 5-2: Proposed Site Plan



PROPOSED SITE PLAN
SCALE 1:250

ISSUE	BY	DESCRIPTION	DATE
A	GR	ISSUE FOR DA	20-4-21
B	GR	ISSUE FOR DA	10-6-21
C	GR	ISSUE FOR DA	26-7-21

GOW STREET RECYCLING CENTRE

COPYRIGHT: THIS DESIGN AND THE ASSOC. DOCUMENTATION IS SUBJECT TO COPYRIGHT LAWS AND MAY NOT BE REPRODUCED IN ANY FORM WITHOUT WRITTEN CONSENT FROM STYLE DEVELOPMENTS

GENERAL NOTES:
1. ALL DIMENSIONS AND FLOOR AREAS ARE TO BE VERIFIED BY THE BUILDER PRIOR TO THE COMMENCEMENT OF ANY BUILDING WORKS. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE DESIGNER.
2. LEVELS SHOWN ARE APPROXIMATE UNLESS ACCOMPANIED BY REDUCED LEVELS FROM A DETAILED SURVEY.
3. FIGURED DIMENSIONS MUST BE TAKEN IN PREFERENCE TO SCALING.
4. ALL BOUNDARY CLEARANCES MUST BE VERIFIED BY THE SURVEYOR PRIOR TO COMMENCEMENT OF ANY BUILDING WORK.
5. WHERE ENGINEERING DRAWINGS ARE REQUIRED SUCH MUST TAKE PRECEDENT OVER THIS DRAWING.
6. STORMWATER TO BE DISCHARGED TO COUNCIL'S REQUIREMENTS AND AS 3500.3-2003.
7. ALL SERVICES TO BE LOCATED AND VERIFIED BY THE BUILDER WITH RELEVANT AUTHORITIES BEFORE ANY BUILDING WORK COMMENCES.
8. ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH THE AUSTRALIAN STANDARDS
9. TERMITE PROTECTION TO BE INSTALLED IN ACCORDANCE WITH AS3660.1-1995 PART 1 NEW BUILDINGS
10. SMOKE ALARMS TO BE INSTALLED BY A LICENSED ELECTRICIAN IN ACCORDANCE WITH THE

STYLE DEVELOPMENTS PTY LTD
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ARCHITECTURAL DESIGN | ENGINEERING CONSTRUCTION | PROJECT MANAGEMENT

PROJECT	PROPOSED RESOURCE RECOVERY 81-87 GOW STREET PADSTOW LOT A DP103140	PROJECT NO.	1730
CLIENT	GOW STREET RECYCLING PTY LTD	SCALE	1:250
TITLE	PROPOSED SITE PLAN	JOB NO. 0212/20	SHEET NO. A02 / ISSUE C

5.3 VALUE

Donald Cant Watts Corke prepared a Quantity Surveyors Report for the proposed development. This report confirmed the capital investment value of the development is $3,691,075. The QS report is provided as Appendix 14.

5.4 CONSTRUCTION WORKS

The liquid waste processing plant and new office will be constructed onsite and is expected to be completed within four-months.

The construction works involve:

- Removal of demountable office and lunchroom.
- Upgrade of the stormwater infrastructure and containment system.
- Modifications to the existing industrial building including excavations for inground pits;
- Installation of dewatering plant equipment, footings, water containment pits.
- Installation of additional dust controls for the existing construction and demolition waste recycling facility including upgraded sprinkler system and flexible hood and vacuum ducting over the crushing and screening equipment.
- Construction of the proposed office building.

The construction works involve excavations for the water containment pits, stormwater system upgrade and footings for the equipment installation. The Phase II soil contamination report (see appendix 5) found no evidence of existing on site contamination. However the presence of Acid Sulfate Soils were detected, therefore an Acid Sulfate Soil Management Plan is required prior to the commencement of excavations works.

All excavated soils will be managed in accordance with the Acid Sulfate Soil Management Plan and classified in accordance with the Waste Classification Guidelines.

Erosion and sediment controls will be implemented during construction works and are presented in Appendix 4.

Construction works would be undertaken in accordance with a construction environmental management plan.

5.5 EQUIPMENT

Existing equipment that is currently approved for use at the facility includes;

- Crusher;
- Screen;
- Front End Loader x 2;
- Excavator x 2; and
- Trucks x 3.

The proposed dewatering plant will include the following equipment:

- Screen spray bar pump;
- Vibrating screen;
- conveyors
- Screw separator;
- Submersible pump;
- Flocculant station and dosing system;
- Stainless steet tank/silos;
- Slurry homogeniser tanks;
- Filter feeding centrifugal pump;
- Filter press;
- Internal pump (noise control – this pump replaces the vacuum truck pump); and
- Pipework valves etc.

Details of the proposed equipment are provided on the proposed floor plan and equipment layout, and elevation and section drawings in Appendix 8.

5.6 CHEMICALS

Diesel will be stored within a self bunded tank externally. All other chemicals will be stored internally on bunded pallets or within dangerous goods storage cabinets. The chemicals will include:

Existing:
- 33,000 L of diesel (in a self bunded tank);
- 200 L of degreaser;
- 200 L of truck wash;
- 1,000 L of engine oil;
- 200 L of transmission oil;
- 200 L of differential oil; and
- 200 kg of grease and lubricants

Proposed:
- 250 kg of flocculant; and
- 440 L of corrosive substances (acid/base used for pH adjustment).

5.7 OPERATIONAL DETAILS

5.7.1 Utility Connections

5.7.1.1 Water

The site is connected to mains water.

5.7.1.2 Sewage and Wastewater

The site is connected to the main sewage system. The site will require connection to tradewaste.

5.7.1.3 Electricity

The site is connected to the electricity network.

5.7.1.4 Telecommunications

Services are to be provided by a local network.

5.7.2 Gas, Petrol and Diesel

A 33,000 litre, self bunded tank provides diesel fuel for trucks and mobile equipment is used onsite.

5.7.3 Hours of Operation

The dewatering facility proposes to operate for 24 hours / seven days a week. Shifts would include day and night time as follows:

Day Shift: 6:00am to 6:00pm (6 Staff)
Night Shift: 6:00pm to 6:00am (4 staff)

The approved operational hours for the C&D facility are: 06:00 and 18:00 Monday to Friday, and 07:00 and 18:00 on weekends. The existing facility will continue to operate within these hours.

5.7.4 Employment

The site currently employs nine (9) full-time staff, with most to be retrained in order to operate the new equipment. Approximately ten (10) additional full-time jobs will be created.

Sub-contractors will be hired for the construction phase. Approximately 5 construction jobs will be generated.

5.7.5 Traffic

The operation of the dewatering plant would generate additional traffic. Traffic associated with the proposed dewatering plant include liquid tankers and concrete trucks unloading liquid waste, medium ridged and B-doubles for picking up aggregates and sands and additional car movements due to increased staff. There would also be some medium rigid trucks removing filter cake. The remainder of the separated components of the liquid waste resulting from its treatment through the plant would be further processed in the existing C&D as part of the approved capacity. The wastewater would be sent to tradewaste, requiring no trucks to remove this waste type.

The main vehicles accessing the site include:

- Cars of site staff and visitors which would be restricted to the allocated parking areas only;
- Medium rigid trucks;
- B–Doubles; and
- Liquid tanker trucks; and
- Concrete trucks.

At maximum proposed capacity, heavy vehicle trips per day are expected to include 44 on average for the C&D facility and 128 for the dewatering plant. These trips would be distributed over the hours of operation.

There are two access driveways to the site from Gow Street. The main western entrance would be used to access the site, the other eastern driveway would only be used for service vehicles. There is ample room on site during peak times for queuing of trucks to prevent queuing on the street.

Vehicles unloading at the dewatering plant typically take 10-25 minutes to unload. Trucks picking up solid materials via FEL typically take around 15 minutes to load and vehicles dropping off solid materials typically take 1-2 minutes to unload.

Further details on traffic associated with the operation of the site is provided in Section 9.4.

A full traffic and parking assessment is provided in Appendix 9. A Traffic Management Plan is also provided with the development application in Appendix 9.

5.7.6 Parking

Condition 6 of DA-51/1997/2 requires that Carparking spaces for sixteen (16) vehicles shall be provided for the overall site in marked spaces. Changes to the site layout and requirements of Bankstown Development Control Plan 2015 have also been considered in the following table.

Table 5-1: Car Parking Rates

Land use	Parking Requirement	Gross Floor Area	No. Spaces Required
Industries and light industries including vehicle body repair workshops and vehicle repair stations	1 space per 100 m^2 of gross floor area	Dewatering Building: 587 m^2	5.87
	Note 2: Where an office component does not exceed 20% of the total gross floor area, 1 car space per 100 m^2 of gross floor area	New office building: 182 m^2 Total gross floor area: 769 m^2	
		First 20% of factory floor	1.53
	Any additional office space will be assessed at a rate of 1 car space per 40 m^2 of gross floor area	Remaining office space.	0.73
		Total car spaces required:	8

Under the Bankstown DCP, 8 car spaces are required. 15 car spaces have been provided including 12 spaces adjacent to the entrance driveway and 3 spaces in the garage adjacent to the office building. The proposed development complies with the DCP.

5.7.7 Site Security

Staff will be on site 24/7 which provides security. The industrial building has existing security provisions.

5.7.8 Landscaping

No landscaping is proposed. The application for the dewatering facility does not require any changes to the street frontage of the site. The site is fully developed as an industrial site and all surfaces are sealed. No grassed areas are present. There is very little space at the street frontage for opportunities for landscaping to significantly improve the tree canopy or impacts of stormwater runoff and potential heat island effects. Additional landscaping within the site is not feasible as it is likely to impact vehicle movements and the benefit does not outweigh the costs.

5.8 EMISSIONS AND WASTE

An outline of the potential emissions and wastes resulting from the proposed development is provided in the following sub-sections. Detailed assessments are provided in Appendix 3 of the EIS.

5.8.1 Air and Odour

There may be dust generated from the two new aggregate bunkers associated with the dewatering plant. Odorous material would not be accepted on site. An Air Quality Impact Assessment has been undertaken that considers the site's current and proposed activities and is provided in Appendix 1.

With the proposed site activities and additional dust controls in place, it is considered that emissions to air from the site's operation are unlikely to cause harm to resident's health or the environment.

5.8.2 Noise and Vibration

On a typical operational day, noise sources associated with the dewatering plant will come from the following sources:

- 1 x Vacuum truck pump;
- 2 x Conveyors
- 3 x Indoor pumps;
- 1 x Screw Separator (indoors); and
- 1 x Vibrating Screen (indoors).

Existing noise sources would be from the crusher, screen and on-site vehicles. A noise assessment in provided in appendix 2.

5.8.3 Water and Wastewater

Water is used for:

- Washing the aggregates and sands within the dewatering plant;

- Dust suppression; and
- Office and amenities.

As per this proposal, Waste water will be received at the site as drilling mud and concrete truck washout. The waste water will be held in storage tanks until it is processed and reused for onsite purposes such as cleaning the concrete surface, dust suppression and washing of aggregate. If an excess of treated water is generated and cannot be reused onsite, it will be sent to trade waste in accordance with a trade waste agreement.

Groundwater is not proposed to be extracted nor used for the proposed development. Mains water would continue to be used for the office and amenities.

5.8.4 Waste

Essentially the dewatering facility would accept drilling mud and concrete washout waste and treat these to generate three finished products – recovered aggregates that can be sold, filter cake "biscuit" that may be applied to land under the Treated drilling mud exemption 2014 (if applicable) or sent to landfill and treated water which can be reused on site.

Recovered aggregate from the dewatering facility will be crushed and screened at the existing C&D recycling facility on site, and if required rewashed at the dewatering facility.

The resulting treated drilling mud (fine biscuit) which represents less than 10% of the materials from the dewatering process can be applied to land as engineering fill or for use in earthworks under the Treated Drilling Mud Exemption 2014. If requirements of the Treated Drilling Mud Order 2014 cannot be met, this biscuit would be sent to landfill as general solid waste.

The treated water would be used on-site for dust suppression and washing purposes in the existing construction and demolition (C&D) recycling facility. The site may generate excess treated water from time to time, that is unable to be used onsite, any such water will be sent to trade waste in accordance with a trade waste agreement.

5.9 Cleaner Production Actions

Cleaner production involves improving the environmental and economic efficiency of production processes, products and services. The proposed dewatering facility involves the following cleaner production actions:

- Additional wastes would be recovered improving environmental processes;
- Aggregates and sands are produced synergising with the existing C&D facility providing increased production/efficiency of this supply;
- Services are improved as the site will provide a location for an increased variety of construction wastes (adding concrete washout and drilling mud); and
- Clean water is generated which will be used for dust suppression reducing the requirement for drinking water consumption and increasing efficacy of dust mitigation.

5.10 Site Rehabilitation

The proposed development is unlikely to require any rehabilitation.

6. EXISTING ENVIRONMENT

6.1 GEOLOGY AND SOILS

6.1.1 Geological and Soil Landscapes

The 'Sydney 1:100 000 Geological Map Sheet 9130' describes the geological composition of the area as Ashfield Shale (Rwa) which is part of the Wianamatta Group and comprises of dark-grey to black claystone-siltstone and fine sandstone-siltstone laminate.

The soil map 'Soil Landscape of Sydney 1:100,000 Sheet 9130' shows that the subject site is located in a 'Blacktown' (bt) area and is described as follows:

> *Blacktown (bt)*
>
> *Landscape – gently undulating rises on Wianamatta Group shales and Hawkesbury shale. Local relief to 30 m, slopes are usually <5%. Broad rounded crests and ridges with gently inclined slopes. Cleared Eucalypt woodland and tall open-forest (wet sclerophyll forests).*
>
> *Soils – shallow to moderately deep (<100 cm) Red and Brown Podzolic Soils (Dr3.21, Dr3.11, Db2.11) on crests, upper slopes and well-drained areas, deep (150-300 cm) Yellow Podzolic Soils and Soloths (Dy2.11, Dy3.11) on lower slopes and in areas of poor drainage.*

6.1.2 Acid Sulfate Soils (ASS)

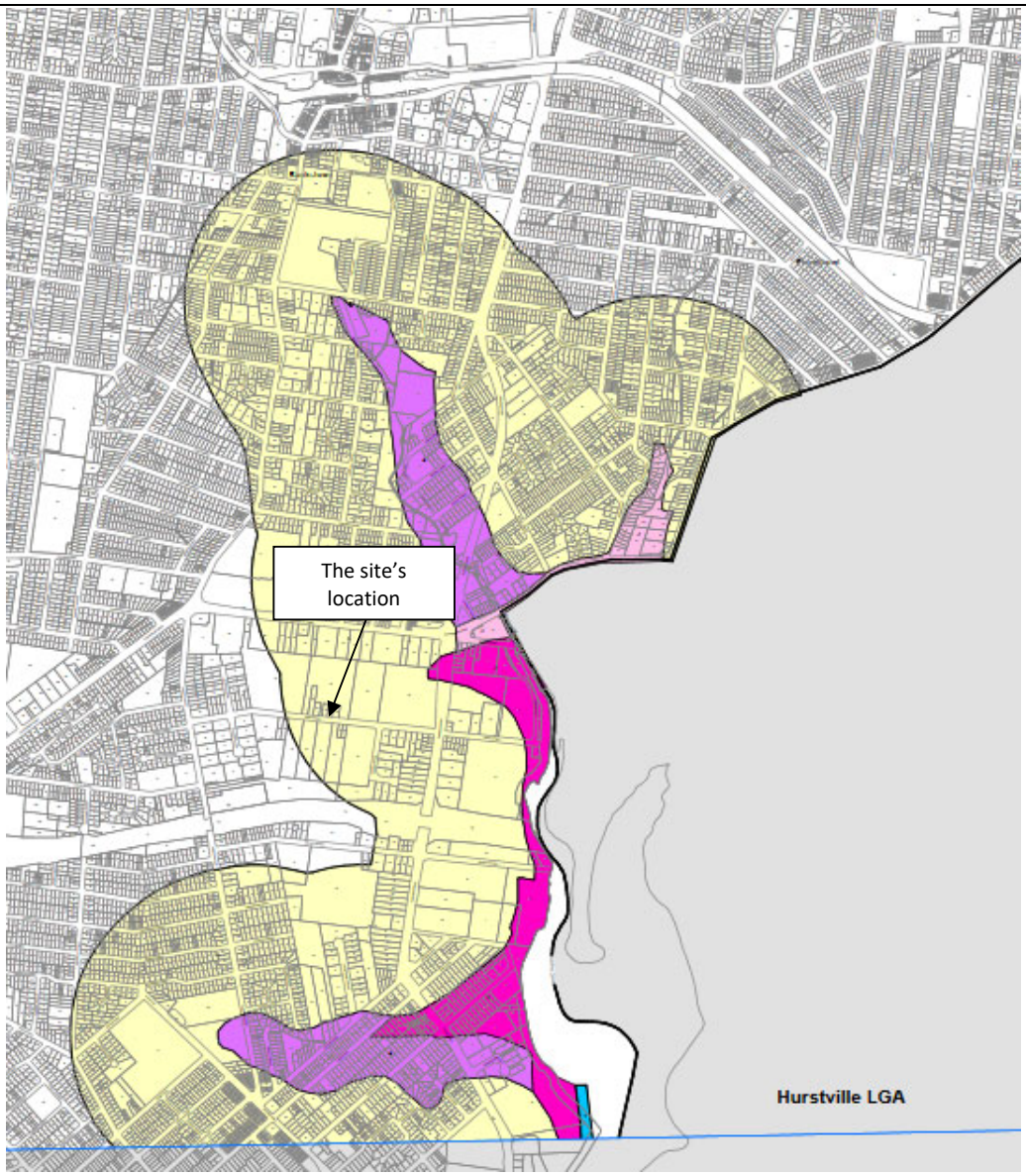
Acid Sulfate Soils (ASS) are naturally occurring soils and sediments that form under waterlogged conditions. They contain iron sulfide (predominantly pyrite) and when water logged, or in an anoxic environment, ASS remain benign. However, if drained, excavated or exposed to air by a lowering of the water table, the sulfides react with oxygen to form sulfuric acid, sometimes in large quantities (for every tonne of sulfidic material that completely oxidises, 1.6 tonnes of pure sulfuric acid is produced). ASS contains traces of metals such as iron, aluminium and arsenic. Once acid forms, it mobilises any metals held within the soil. Rainfall washes this mixture into the surrounding environment polluting land and nearby waterways. Accumulation of acid and metals becomes toxic to plants and animals, especially aquatic organisms. Built structures are highly susceptible to ASS, as acid will slowly corrode concrete, steel, roads and building foundations.

The Bankstown LEP 2015 ASS map (see Figure 6-1), shows the subject site is located within an area of Class 5 soils. Class 5 is categorised as;

"Acid sulfate soils are not typically found in Class 5 areas. Areas classified as Class 5 are located within 500 metres on adjacent class 1,2,3 or 4 land."

Due to the proposed construction and excavation works, an ASS assessment was undertaken. The results are detailed within the soil and water assessment (see Appendix 6).

Figure 6-1: Acid Sulfate Soil Map



Source: Bankstown LEP 2015

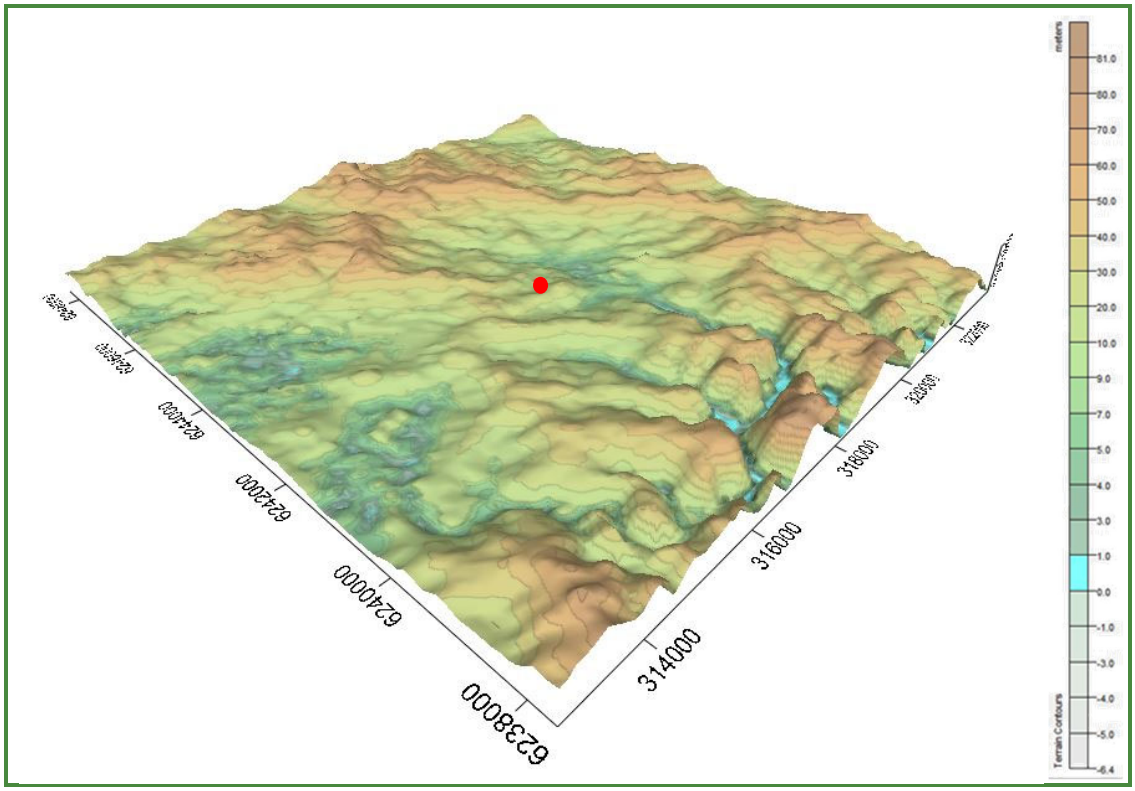
↑N Not to scale	**Legend**: **Acid Sulfate Soils** 1 Class 1 2 Class 2 3 Class 3 4 Class 4 5 Class 5	Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

6.2 TOPOGRAPHY

The site is located within an industrial area. Its surface is covered in concrete hardstand and is generally flat, with a slight rise towards the southern end of the property.

A three-dimensional view of the local topography surrounding the site has been provided in Figure 6-2, with the terrain/vertical axis exaggerated by a factor of 10. It should be noted that this figure approximates the actual terrain, based on information that has been digitised from local contour maps.

Figure 6-2: Local Topography with Vertical Exaggeration of 10



Note: ● = Approximate location of site

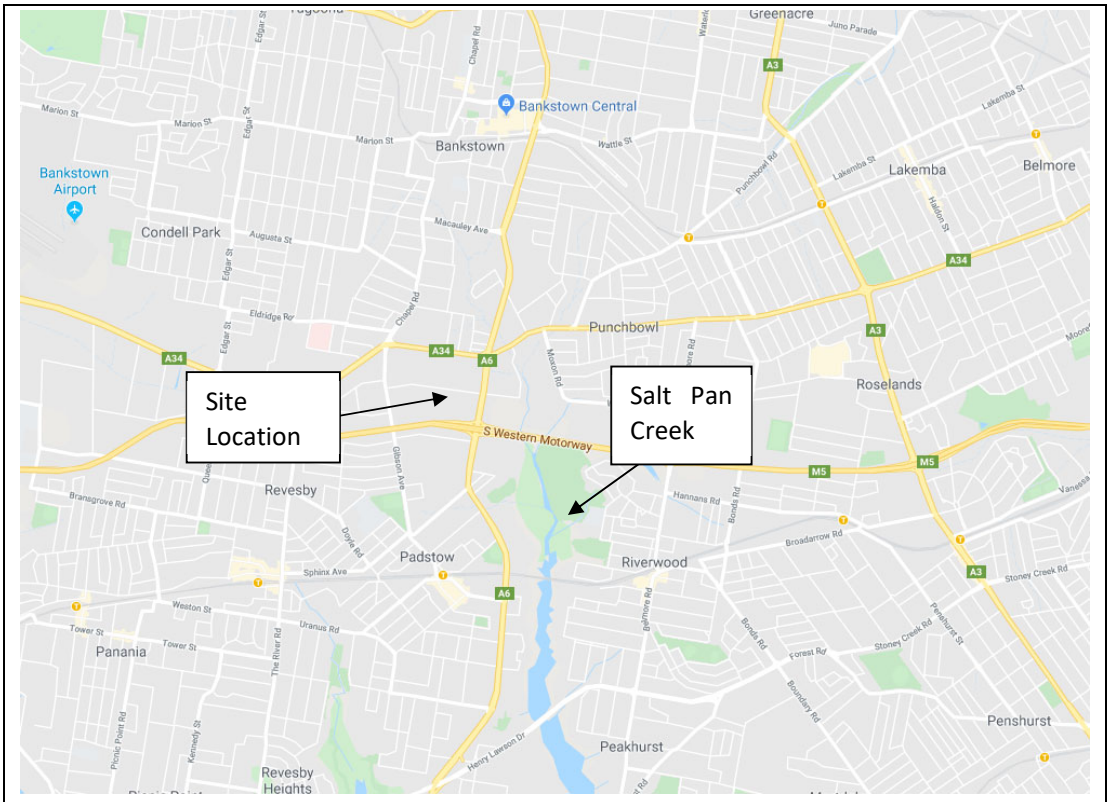
6.3 HYDROLOGY

The following section details the hydrological aspect of the site and surrounding region. Specifics on surface water, waterways and groundwater have been described, together with overall catchment issues such as salinity and flooding.

6.3.1 Waterways and Catchment

The site contains no waterbodies, with the nearest water source being Salt Pan Creek, located approximately 760 m SE from the site (Figure 6-3). The creek's headwaters are located at Mt Lewis, approximately four km NE from the site. The creek flows south-easterly before reaching its confluence with the Georges River, at Riverwood. Salt Pan Creek's catchment is approximately 26 km^2 and is prone to flooding due to urban development and the removal of vegetation.

Figure 6-3: Nearest Waterways



Source: Google Maps 2020

↑N Not to scale		Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

6.3.1.1 Water Quality and River Flow Objectives

This section provides the Water Quality Objectives (WQOs) and the River Flow Objectives (RFOs) for the Georges River catchment. WQOs and RFOs are used to develop plans and actions affecting water quality and river health. There would be no discharge into any waterways from the proposed development as stormwater will be captured and reused onsite. Excess water captured at the site would be disposed as trade waste water Nevertheless, WQOs and RFOs are provided for here for completeness of information for the potentially receiving waters.

The subject site is located in 'Waterways affected by Urban Development'. The relevant WQOs and RFOs are summarised below in Table 6-1 and Table 6-2 respectively. If needed, key water quality indicators and related numerical criteria (default trigger values) relevant to assessing and monitoring the health of aquatic ecosystems can be found at: http://www.environment.nsw.gov.au/ieo/GeorgesRiver/report-02.htm

Table 6-1: Relevant Water Quality Objectives (WQOs)

WQO	Objective
Aquatic Ecosystems	*Maintaining or improving the ecological condition of waterbodies and their riparian zones over the long term*
Visual Amenity	*Aesthetic qualities of waters*
Secondary Contact Recreation	*Maintaining or improving water quality for activities such as boating and wading, where there is a low probability of water being swallowed*
Primary Contact Recreation	*Maintaining or improving water quality for activities such as swimming in which there is a high probability of water being swallowed*

Table 6-2: Relevant River Flow Objectives (RFOs)

RFO	Objective
Maintain wetland and floodplain inundation	*Maintain or restore the natural inundation patterns and distribution of floodwaters supporting natural wetland and floodplain ecosystems*
Maintain Natural Flow Variability	*Maintain or mimic natural flow variability in all streams*
Maintain Natural Rates of Change in Water Levels	*Maintain rates of rise and fall of river heights within natural bounds*
Minimise Effects of Weirs and Other Structures	*Minimise the impact of instream structures*

6.3.1.2 Catchment Management Plan

Georges Riverkeeper Strategic Plan 2018-2022 is a four year plan produced by Georges Riverkeeper, a catchment management group. Georges Riverkeeper facilitates proactive waterway management that is adaptive and integrated across other areas of member councils, rather than being reactive and piecemeal. There are five focus areas in the Strategic Plan, these are:

- Catchment Actions Program, (previously the Riverkeeper Program)
- River Health Monitoring Program
- Storm water Program
- Research Program
- Education and Capacity Building Program

6.3.2 Groundwater

According to the Australian Groundwater Explorer, there are four groundwater bores within 500 m of the subject site. Available data for these bores is presented in Table 6-3.

Table 6-3: Available Data for Groundwater Bores within 500 m of the Subject Site.

Bore	Depth (m)	Standing Water Level (m)	Salinity
GW111382.1.1	7.0	-	True
GW109275.1.1	7.0	-	False
GW111383.1.1	6.1	-	True
GW111381.1.1	4.5	-	True

The Phase I ESA, conducted by Benbow Environmental (BE), suggested a potential existed for groundwater to have been contaminated due to past practises. These include;

- Sediment from onsite roadways;
- Heavy metal particulates;
- Oil leaching from stained concrete surfaces;
- Lead based paints used prior to 1970; and
- Hydrocarbons leaking from an historical underground storage tank.

The limited Phase II ESA conducted by BE in early 2020 found no evidence for gross soil or groundwater contamination as having occurred.

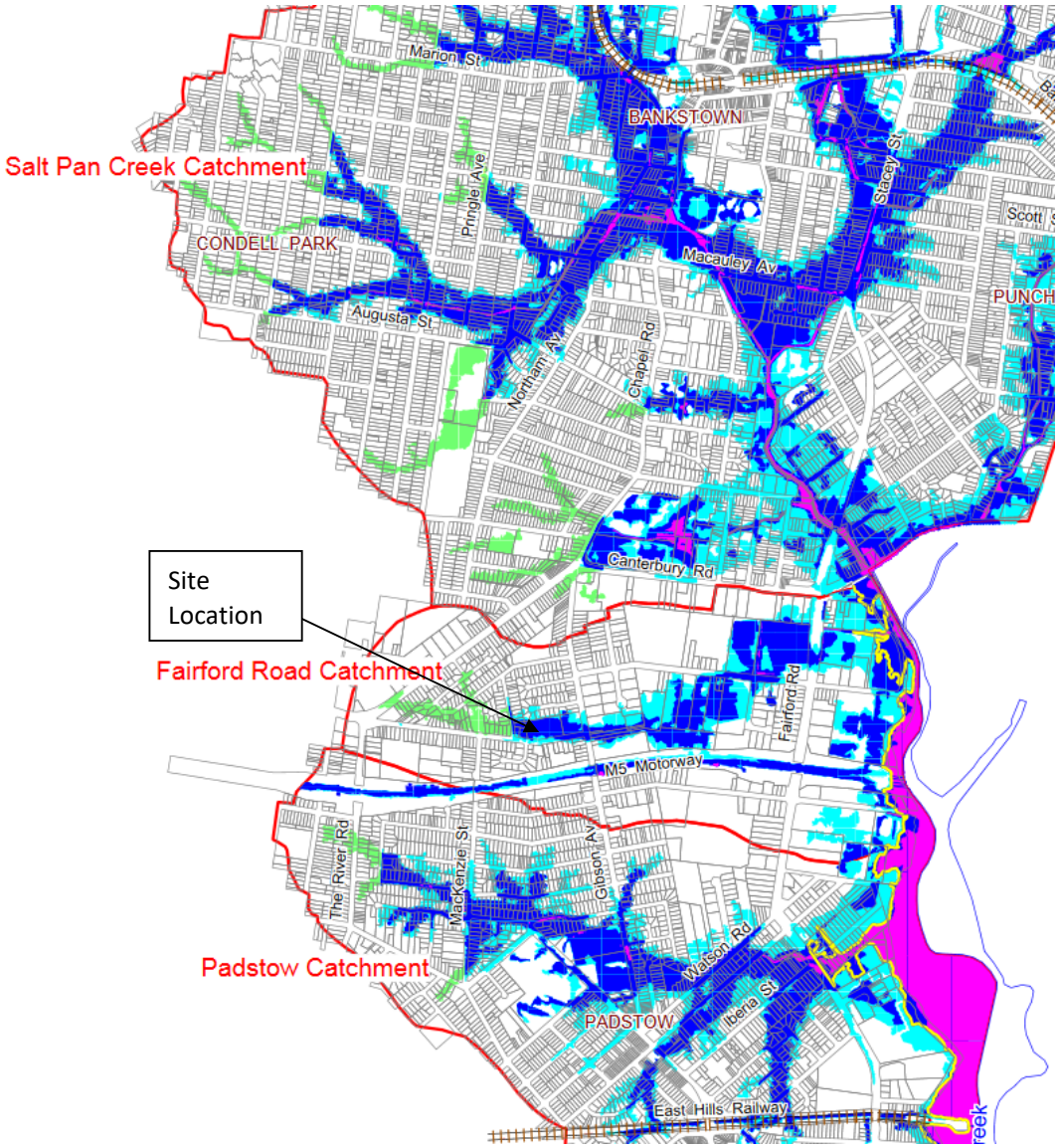
6.3.3 Flooding

Flood maps created by the Canterbury Bankstown Council indicate that the site is located in medium risk flood hazard area (Figure 6-4).

The waste storage areas and buildings within the proposal area are within the 1:100 AEP (Annual Exceedance Probability) flood zone. The 1% AEP flood is approximately equal to the 1 in 100 year Average Recurrent Interval (ARI) flood event (or simply 100 year flood). This means there is a 1% chance that a flood will occur over this section of the site in any given year.

A flood impact assessment report is provided in Appendix 12.

Figure 6-4: Provisional Flood Risk Categories Map



Source: Canterbury Bankstown Council 2019

↑N Not to scale	LEGEND High Flood Risk Precinct Medium Flood Risk Precinct Low Flood Risk Precinct Overland Flow Risk Precinct Georges River Influence Line		Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

6.4 FLORA AND FAUNA

A targeted search was undertaken using data from the BioNet Atlas of NSW Wildlife website to identify any threatened species in the area surrounding the proposed development. The search criteria included all valid records from the past five years of entities threatened in NSW (listed under the *Threatened Species Conservation Act 1995*) and entities threatened nationally (listed under the *Environment Protection and Biodiversity Conservation Act 1999*) within a selected area.

The selected area incorporated the entirety of the Canterbury-Bankstown LGA, including the proposed development. The results from the search are listed in Table 6-4, and presented in their geographical context in Figure 6-5.

The targeted search shows that there are two endangered population species that have been sighted within close proximity to the subject site.

The first of these is the Gosford Wattle, *Acacia prominens*. An isolated population of the species exists in the Hurstville and Kogarah LGAs nearby to the site, with records of the wattle dating back to the 19th Century. Due to the small volume of remaining vegetation within these LGAs, the Gosford Wattle is considered endangered in these areas.

The second listed species is the Tadgell's Bluebell, *Wahlenbergia multicaulis*. This perennial, tufted herb has blue flowers, with petals 2 – 10 mm in length. There are 13 known locations of the species in NSW, with the majority in Sydney's western suburbs. Major threats to the species, includes weed invasion, habitat loss and genetic swapping.

The Bankstown LEP 2015 Map does not identify the subject site as containing either critical habitat or biodiversity. The nearest area of biodiversity is situated around Salt Pan Creek, approximately 760 m east of the site. A vast array of flora species and populations exist throughout the catchment area, including one endangered species (coastal saltmarsh) and two endangered Forest populations; Cooks River Castlereagh Ironbark Forest and Sandstone Transition Forest.

Table 6-4: List of threatened species in the selected area within the last 5 years

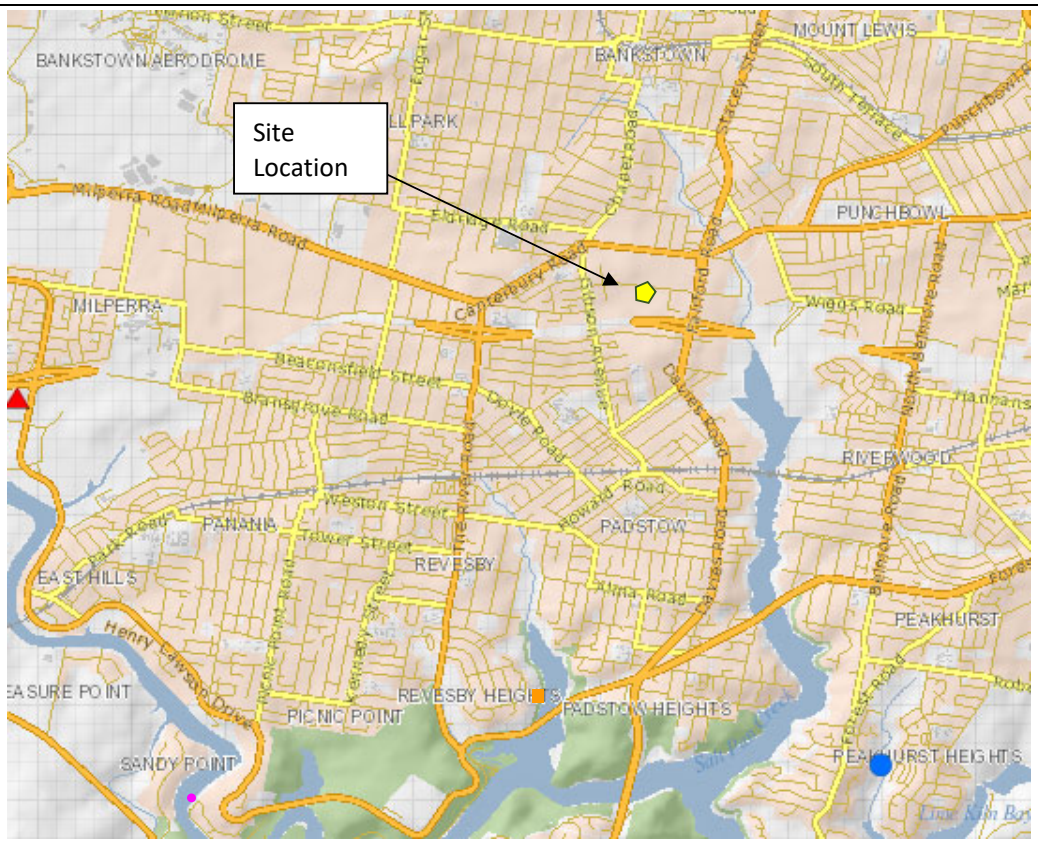
Kingdom	Clade	Scientific Name	Common Name	NSW Status	Sightings
Animalia	Accipitridae	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	Vulnerable Protected	1
Animalia	Accipitridae	*Hieraaetus morphnoides*	Little Eagle	Vulnerable Protected	2
Animalia	Burhinidae	*Burhinus grallarius*	Bush Stone-Curlew	Endagered Protected	1
Animalia	Rostratulidae	*Rostratula australis*	Australian Painted Snipe	Endangered Protected	1
Animalia	Psittacidae	*Glossopsitta pusilla*	Little Lorikeet	Vulnerable Protected	1
Animalia	Strigidae	*Ninox Strenua*	Powerful Owl	Vulnerable Protected Specialty Class 3	11
Animalia	Phascolarctidae	*Phascolarctos cinereus*	Koala	Vulnerable Protected	9

Table 6-4: List of threatened species in the selected area within the last 5 years

Kingdom	Clade	Scientific Name	Common Name	NSW Status	Sightings
Animalia	Pteropodidae	*Pteropus poliocephalus*	Grey Headed Flying Fox	Vulnerable Protected	282
Animalia	Emballonuridae	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	Vulnerable Protected	1
Animalia	Molossidae	*Micronomus norfolkensis*	Eastern Coastal Free-tailed Bat	Vulnerable Protected	2
Animalia	Vespertilionidae	*Chalinolobus dwyeri*	Large-eared Pied Bat	Vulnerable Protected	1
Animalia	Vespertilionidae	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle	Vulnerable Protected	1
Animalia	Vespertilionidae	*Myotis macropus*	Southern Myotis	Vulnerable Protected	2
Plantae	Dilleniaceae	*Hibbertia puberula*	Wedge Guinea Flower	Endangered	1
Plantae	Fabaceae	*Acacia prominens*	Gosford Wattle	Endangered Population	1
Plantae	Asterids	*Wahlenbergia multicaulis*	Tadgell's Bluebell	Endangered Population	1
Plantae	Fabaceae	*Acacia pubescens*	Downy Wattle	Vulnerable	69

Note: Data taken from between December 2014 and December 2019.

Figure 6-5: Nearby Endangered Population Flora Sightings



Source: BioNet Atlas of NSW Wildlife (2019)

↑N Not to scale	LEGEND: ▲ - Tadgell's Bluebell ● - Gosford Wattle ⬡ - Site Location	Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

6.5 NOISE AMENITY

The existing acoustic environment of the site and surrounding area is typical of an urban environment with background noise levels dominated by traffic noise. Details of the existing acoustic environment including background noise monitoring are provided in Section 8.2.2.

6.6 BACKGROUND AIR QUALITY

Background air quality parameters were obtained from the closest NSW EPA Chullora air quality monitoring station located approximately 5 km north of the subject site. Typical of the majority of air quality monitoring stations throughout the Sydney basin, elevated background dust (PM_{10} and $PM_{2.5}$) levels are present. Details of the monitored dust levels are provided in section 8.1.2.

6.7 CLIMATE

This section provides background information on the meteorological conditions of the existing area surrounding the proposed development. The referenced meteorological information for rainfall and temperature has been sourced from the Bureau of Meteorology (BoM) monitoring station at Bankstown Airport AWS, Station No. 066137. This station is located approximately 6.3 km south east of the subject site and is considered suitable for reference to general climate conditions in the local area.

6.7.1 Temperature

The mean annual minimum and maximum temperatures at Bankstown Airport AWS are 12.0°C and 23.3°C respectively. The lowest temperatures occur in July, with a mean maximum of 17.4°C and a mean minimum of 5.1°C. The hottest temperatures are recorded during January, with the highest maximum average of 28.5°C. This data is shown in Table 6-5.

Table 6-5: Temperature Statistics at Bankstown Airport AWS

Months / Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean Maximum Temperature (ºC)	28.5	27.9	26.4	23.8	20.6	17.8	17.4	19.0	21.7	23.9	25.4	27.5	23.3
Mean Minimum Temperature (ºC)	18.3	18.2	16.3	12.8	9.4	6.8	5.1	6.0	8.7	11.9	14.4	16.7	12.0

Source: Bureau of Meteorology, 2019
Note: Statistics are based on data collected from the Year 1968 to 2019

6.7.2 Rainfall

Rainfall data from Bankstown Airport AWS shows the mean annual rainfall of 868 mm, with a monthly mean of 72.3 mm. February is the wettest month, having a mean rainfall of 101 mm, while the driest month July, has a mean of 42.7 mm. The mean annual number of rainy days (i.e. days with rain above 1.0 mm) is calculated as 81.3 days. This data is shown in Table 6-6 below.

Table 6-6: Rainfall Statistics – Bankstown Airport AWS

Months / Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean Rainfall (mm)	91.9	101.0	100.5	83.0	63.5	80.3	42.7	49.2	44.6	60.1	75.4	68.5	868.0
Decile 5 (Median) Rainfall (mm)	74.6	75.0	78.6	57.5	51.4	57.2	29.6	24.6	37.0	39.2	67.8	56.6	885.8
Mean No. of Days of Rain ≥ 1 mm	8.0	7.9	8.5	6.6	6.5	6.8	5.2	4.5	5.3	6.7	7.9	7.2	81.1

Source: Bureau of Meteorology, 2019
Note: Statistics are based on data collected from the Year 1968 to 2019
Note: Red indicates maximum values, whereas blue indicates minimum values

6.7.3 Wind

Seasonal wind rose plots for this site utilising Bankstown Airport AWS 2018 data have been included as Figure 6-6.

Based on the information presented from the 2018 data for Bankstown Airport, annual average wind speeds of 3.22 m/s and a calms frequency of 16.35% were estimated. Annual winds from the south-east were found to be dominant and were present for approximately 13% of the time.

The average summer wind speed was estimated to be 3.68 m/s, with a calms frequency of 11.21%. North-easterly and south-easterly winds were found to be dominant both at a frequency of around 18%. Winds from the east were found to be present for approximately 16% of the time while the remainder of the wind directions have contributions of less than 13%.

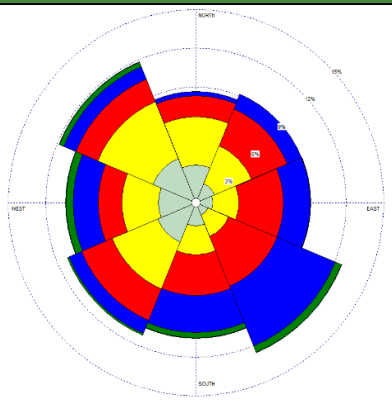
In autumn, dominant winds were blowing from the south-east (14%) and north-west (13%). All other wind directions occurred at frequencies less than 11%. The average autumn wind speed was 3.00 m/s with a calms frequency of 18.88%.

The winter season data showed the prevalence of winds from the south-west, west and north-west at frequencies of 16%, 18% and 21% respectively. All other wind directions occurred at frequencies less than 12%. The average winter wind speed was determined to be 2.82 m/s with a calms frequency of 17.53%.

In the spring time, average wind speeds of 3.39 m/s with a frequency of calms of 17.68% were recorded. Dominant strong winds were found to be present from the south east (14%) and south (13%). The rest of the wind directions were found to be present at frequencies less than 11%.

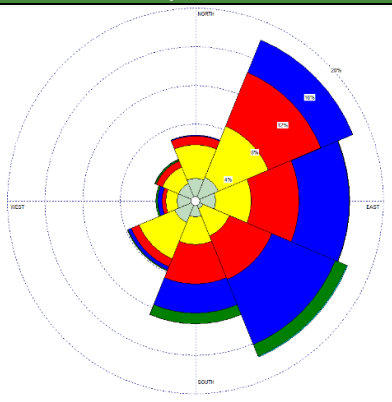
Figure 6-6: Wind Rose Plots for the Referenced Meteorological Station – Bureau of Meteorology Bankstown Airport AWS (2018)

All Seasons



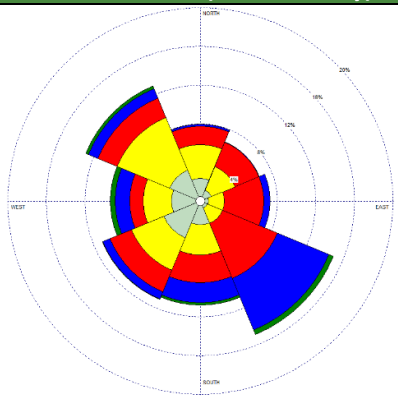
Average Wind Speed: 3.22 m/s
Calms Frequency: 16.35%
Axis Frequencies: 3%, 6%, 9%, 12%, 15%

Summer Season (December – February)



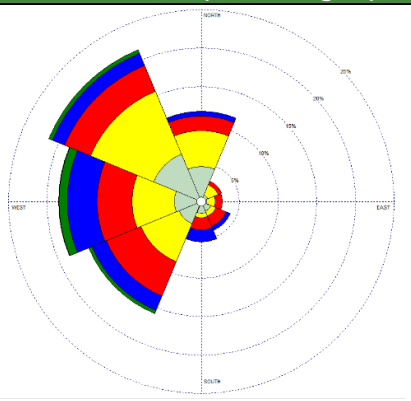
Average Wind Speed: 3.68 m/s
Calms Frequency: 11.21%
Axis Frequencies: 4%, 8%, 12%, 16%, 20%

Autumn Season (March – May)



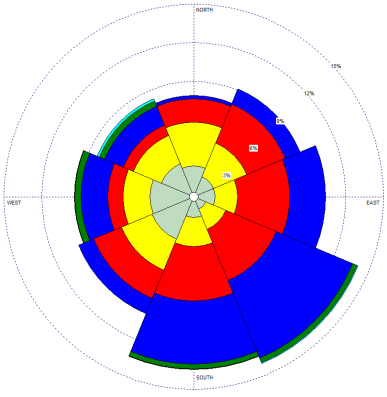
Average Wind Speed: 3.00 m/s
Calms Frequency: 18.88%
Axis Frequencies: 4%, 8%, 12%, 16%, 20%

Winter Season (June – August)



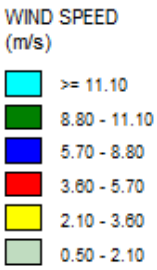
Average Wind Speed: 2.82 m/s
Calms Frequency: 17.53%
Axis Frequencies: 5%, 10%, 15%, 20%, 25%

Spring Season (September – November)



Average Wind Speed: 3.39 m/s
Calms Frequency: 17.68 %
Axis Frequencies: 3%, 6%, 9%, 12%, 15%

Legend



7. IDENTIFICATION AND PRIORITISATION OF ISSUES

The identification and prioritisation of the potential environmental impacts of the proposed development were fundamental steps in preparing the EIS.

This process involved the following stages:

1. Review of the proposal and existing site operations

Initial meetings with the proponent were undertaken to discuss the details of the proposal. This established the nature of the proposal. An inspection of the site and surrounding areas was undertaken which lead to identification of potential sensitive receptors.

2. Identification of planning requirements

Review of planning instruments that apply to the land was undertaken to determine any planning constraints and zoning rules affecting the property.

3. Guidelines and reference material

Past reports for the existing site and relevant NSW government/industry guidelines were reviewed.

4. Preparation of Scoping Report

Experience with similar projects and a previous Scoping Report assisted in development of a Scoping Report that outlined the proposal and potential environmental impacts.

5. Consultation with regulatory authorities & stakeholders

Secretary's Environmental Assessment Requirements for the EIS from the DPIE were obtained. This included feedback from Ausgrid, NSW EPA, DPIE (EES and Water), NSW Fire and Rescue, Sydney Water and TfNSW.

These steps led to the design and objectives of the Proposal.

7.1 KEY ISSUE RISK ASSESSMENT

The SEARs required a risk assessment identifying key issues. This has been undertaken following the risk assessment methodology outlined in the following sections.

7.1.1 Risk Criteria

The following sub-section defines the risk criteria used in this assessment.

7.1.1.1 Consequence Estimation

Consequence descriptor is used to quantify the potential on-site and off-site impacts in terms of environmental, health and financial impacts. Consequence is described in the following table.

Table 7-1: Consequence Table

Level	Descriptor	Consequences Or Impact Description
1	Insignificant	Confined on-site environmental impacts able to be promptly rectified. No injuries. Financial loss less than $2,000.
2	Minor	Confined environmental impacts requiring short term recovery with potentially little or no off-site impacts. First Aid treatment. Financial loss $2,000 to $20,000.
3	Moderate	Confined environmental impacts requiring medium term recovery both on-site and off-site. Medical treatment required. Financial loss $20,000 to $200,000,
4	Severe	Unconfined environmental impacts requiring long term recovery and leaving residual damage both on-site and off-site. Extensive injuries, loss of product capability. Financial loss $200,000 to $1M.
5	Catastrophic	Widespread environmental impact requiring long term recovery and leaving major damage both on-site and off-site. Death. Financial loss more than $1M.

7.1.2 Likelihood Estimation

This aspect involves determining how likely an event is to occur. Likelihood is the chance that something might happen and is defined for the purposes of this assessment in the following table.

Table 7-2: Likelihood Table

Level	Descriptor	Likelihood Description
A	Almost Certain	Very likely. The event is expected to occur in most circumstances.
B	Likely	Strong possibility. The event will probably occur in most circumstances.
C	Possible	The event might occur at some time.
D	Unlikely	Not expected. There is a slight possibility the event could occur at some time.
E	Rare	Highly unlikely. The event may occur only in exceptional circumstances.

7.1.3 Level of Risk

The level of risk is defined by the following table.

Table 7-3: Level of Risk Table

		Consequence				
		Insignificant 1	Minor 2	Moderate 3	Severe 4	Catastrophic 5
Likelihood	A (almost certain)	MEDIUM	HIGH	HIGH	VERY HIGH	VERY HIGH
	B (likely)	LOW	MEDIUM	HIGH	HIGH	VERY HIGH
	C (possible)	LOW	MEDIUM	MEDIUM	HIGH	HIGH
	D (unlikely)	LOW	LOW	MEDIUM	MEDIUM	H (10)
	E (rare)	LOW	LOW	LOW	LOW	LOW

Key issues are identified by any level of risk medium and above. The level of assessment can be based on the risk level and is discussed in the risk table. Key issues identified with a high or very high level of risk would need to be quantitatively assessed.

Issues with a low risk level are not considered key issues. A brief discussion is considered adequate for these issues.

7.1.4 Key Issue Risk Table

Table 7-4 presents the risk assessment that identifies the key issues of the project.

Table 7-4: Key Issues Risk Assessment

Environmental Aspect	Discussion of Development Features & Potential Impacts	Raw Risk			Assessment Requirements	Key Issue
		Consequence	Likelihood	Raw Risk Level		
STATUTORY AND STRATEGIC CONTEXT	The proposal constitutes state significant development based on the proposed capacity of the dewatering plant under Clause 23 of the State and Regional Development SEPP. The proposal is required to comply with state, regional and local planning instruments. The risk associated with not complying with planning instruments is assessed.	Severe	Possible	H	A planning assessment is required to assess the proposal against all relevant planning strategies, environmental planning instruments and development control plans.	Yes
SUITABILITY OF THE SITE	The materials and processes associated with the proposal present a risk of causing pollution if the site is not suitable for the proposed use.	Severe	Possible	H	A detailed justification for the proposal and suitability of the site is provided.	Yes
COMMUNITY & STAKEHOLDER ENGAGEMENT	The risk of members of the community being impacted by the development could result if aspects are not managed appropriately. Stakeholder engagement is required as the project is state significant.	Severe	Possible	H	Community consultation and stakeholder engagement is an essential part of the EIS process. Opportunity for stakeholders & the community to provide input into requirements for the EIS and to express concerns was required.	Yes
WASTE MANAGEMENT	Waste forms the basis of the development in that the facility would undertake resource recovery and waste processing. Waste classifications for both inputs and outputs include general solid waste (non-putrescible) and liquid waste. No hazardous or toxic waste is included. Resource recovery orders and exemptions are applicable. Potential for waste to contaminate the environment is a risk.	Severe	Possible	H	A detailed waste management assessment is required.	Yes

Table 7-4: Key Issues Risk Assessment

Environmental Aspect	Discussion of Development Features & Potential Impacts	Raw Risk			Assessment Requirements	Key Issue
		Consequence	Likelihood	Raw Risk Level		
AIR QUALITY & ODOUR	Dust Cumulative dust issues are associated with the existing C&D activities. Dust would also be generated when aggregates are removed from the drilling mud waste stream. Dust needs to be assessed for the combined existing and proposed development.	Severe	Likely	H	A quantitative air quality impact assessment is required due to the dust generated from the existing process and potential for additional dust impacts.	Yes
	Odour No odorous materials would be accepted on site. Restrictions of the type of drilling mud allowed at the site are posed by the existing consent. No changes to this are proposed.	Insignificant	Unlikely	L	An odour assessment is not warranted.	
	Greenhouse Gas Emissions The project is unlikely to meet thresholds under the NGER Act. Additional energy use would result in GHG emissions.	Minor	Likely	M	GHG emission assessment is provided.	
SOILS & WATER	Flooding The property is subject to flood related development controls. Changes to the site may result in changes to flood impacts off-site.	Moderate	Possible	M	A flood assessment is required.	Yes
	Water The development requires changes to roofed areas and will require excavations and retaining walls. Changes to stormwater infrastructure will be required. The process will treat liquid waste. Treated water would be reused on site. Changes to water interactions will result.	Severe	Likely	H	Stormwater design and music modelling (quantitative assessment) is required. A water qualitative assessment would address the potential impacts to surface and groundwater.	

Table 7-4: Key Issues Risk Assessment

Environmental Aspect	Discussion of Development Features & Potential Impacts	Raw Risk			Assessment Requirements	Key Issue
		Consequence	Likelihood	Raw Risk Level		
	<u>Soil</u> Past site uses warrant a preliminary site investigation to determine the contamination status of the site. Outcomes of this would inform whether sampling and analysis is required. Disturbance to soil is required for underground tanks (OSD) and excavations for stormwater infrastructure and dewatering tanks.	Moderate	Possible	M	Contamination is assessed in accordance with SEPP 55. A soil assessment would address the potential impacts to land.	Yes
NOISE & VIBRATION	Additional noise generating equipment is required for the operation of the dewatering plant. 24/7 operations are proposed. Sensitive receptors are located in close proximity to the site.	Severe	Possible	H	A quantitative noise impact assessment is required.	Yes
TRAFFIC & TRANSPORT	Additional truck movements would be associated with the 250,000 tonnes of drilling mud to be processed potentially resulting in impacts to the existing road network and intersections.	Severe	Likely	H	A full traffic assessment is required.	Yes
FIRE & INCIDENT MANAGEMENT	There is limited combustible waste to be stored at the site. The majority of waste is non-combustible. As this development is a waste facility, the FRNSW guidelines for waste facilities needs to be addressed.	Moderate	Possible	M	Fire risk needs to be assessed.	Yes
HAZARD & RISK	<u>Chemicals</u> No significant quantities of hazardous chemicals are to be used in the process. Quantities of chemicals are relatively minor and do not trigger SEPP 33, therefore a preliminary hazard analysis is not required.	Minor	Possible	M	SEPP 33 risk screening required. Chemical management issues addressed.	Yes

Table 7-4: Key Issues Risk Assessment

Environmental Aspect	Discussion of Development Features & Potential Impacts	Raw Risk			Assessment Requirements	Key Issue
		Consequence	Likelihood	Raw Risk Level		
	<u>Biosecurity</u> Biosecurity is not considered an issue as there are no putrescible or odorous waste to be accepted.	Insignificant	Unlikely	L	Brief discussion included.	No
	<u>Bushfire</u> The land is not bushfire prone.	Minor	Unlikely	L	Brief discussion included.	No
BIODIVERSITY	Preliminary findings determined that land does not include or comprise critical habitat, nor is it in the immediate vicinity of any threatened species. The land has been previously cleared of all vegetation. A BDAR waiver application has been submitted.	Insignificant	Rare	L	Brief discussion included.	No
HERITAGE	A search of the NSW State Heritage Inventory found no Aboriginal places or items of heritage on, or within the vicinity of the site and that the site is fully concreted with no vegetation and therefore a full Aboriginal and Cultural Heritage Assessment is not considered required. EES notes however that the proposed development may require excavation work. If the excavation is likely to disturb the ground surface it is recommended an Aboriginal cultural heritage assessment report is prepared. The development requires excavation work that will disturb the ground surface.	Moderate	Possible	M	An aboriginal heritage assessment is required.	Yes
VISUAL	The site is a fully developed industrial site. Based on preliminary plans, changes on site would not significantly impact on the visual appearance of the site.	Minor	Unlikely	L	A discussion of visual amenity has been provided.	No

Table 7-4: Key Issues Risk Assessment

Environmental Aspect	Discussion of Development Features & Potential Impacts	Raw Risk			Assessment Requirements	Key Issue
		Consequence	Likelihood	Raw Risk Level		
ECOLOGICAL SUSTAINABLE DEVELOPMENT	Additional processes are likely to impact on environmental aspects. The proposal is state significant. Therefore, ecological sustainable development needs to be discussed in detail.	Moderate	Possible	M	ESD discussed in detail	Yes
CUMULATIVE IMPACTS	Due to the size and nature of the proposed development, controlling for direct environmental impacts would minimise any cumulative impacts from the proposed development. Some aspects such as noise, dust impacts, traffic and stormwater have been assessed cumulatively in their assessments.	Moderate	Possible	M	Cumulative impacts are briefly discussed. Results of any cumulative assessments are provided.	Yes
HUMAN HEALTH AND SAFETY	Preliminary investigations into the potential impacts to human health resulting from liquid waste recycling facilities are either negligible or appropriately mitigated. Furthermore, the nature of the drilling mud is inert or chemically inactive. No hazardous materials are associated with the processing operations.	Minor	Unlikely	L	A detailed assessment is not warranted. A brief discussion on human health is provided.	No
SOCIO-ECONOMIC	Employment is expected to be for 10 positions. The development is expected to have small positive contributions to the community in terms of socio-economic impacts.	Minor	Unlikely	L	Socio-economic aspects are briefly discussed.	No

7.2 SUMMARY OF KEY ISSUES

Issues identified with a risk level of medium, high and very high are considered to be key issues that require detailed assessment. Assessment requirements for each key issue are identified in Table 7-4. No very high risk level issues were identified. The following are the key issues:

Key issues with high risk level, requiring detailed assessment:

- Statutory and strategic context – A detailed planning assessment is required.
- Suitability of the site – A detailed justification for the proposal and suitability of the site is required.
- Community and stakeholder engagement – meaningful consultation of potential affected community, adjoining properties and regulatory authorities is needed.
- Waste management – A detailed waste management assessment and plan is required.
- Air Quality and odour – A detailed dust impact assessment is needed. An odour assessment is not warranted.
- Water – Stormwater design and music modelling is also required along with a qualitative assessment of surface and groundwater impacts.
- Noise and Vibration – A full noise impact assessment is needed.
- Traffic and Transport – A detailed traffic impact assessment is required.

Medium risk key issues include:

- Flooding - A flood assessment has been identified as being required.
- Soil – Contamination requires assessment in accordance with SEPP55. A soil assessment needs to address potential impacts to land.
- Fire and Incident Management – Fire risk requires assessment.
- Hazard and Risk – A SEPP33 preliminary risk screening is needed.
- Heritage – An aboriginal heritage assessment is required.
- Ecological sustainable development will be discussed in detail.
- Cumulative impacts would be addressed for high risk issues and a summary provided.

Low risk issues need to be briefly addressed and include:

- Odour – An odour assessment is not warranted and justification is provided.
- Biosecurity.
- Bushfire.
- Biodiversity – A BDAR waiver was issued.
- Visual amenity.

8. ENVIRONMENTAL IMPACTS AND SAFEGUARDS

8.1 AIR QUALITY

An Air Quality Impact Assessment (AQIA) has been undertaken for the proposed development. A full copy of the AQIA is provided as Appendix 1. A summary of the AQIA is provided in this section.

The assessment determines the predicted dust and particulate matter contribution from the existing and proposed site operations. It also determines the impacts associated with greenhouse gas (GHG) emissions from the site.

The assessment does not include an assessment of odour impacts, as no odour is expected to be generated from the proposed development. A brief discussion is provided below.

This AQIA has been prepared in accordance with the NSW EPA guidelines *"Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales"* (2016) (AMMAAP), which shall henceforth be referred to as the *Approved Methods*. Additionally, the GHG assessment has been prepared in accordance with the Australian Government *Department of the Environment and Energy, August 2019 Australian National Greenhouse Accounts – National Greenhouse Accounts Factors*.

8.1.1 Odour Impacts

Odour is not expected to be emitted from the site as there are no odour producing materials processed at the site. However, drilling mud has the potential to be odorous depending on its source or chemical presence/reactions.

The drilling mud received by the facility is non-destructive digging waste, which is a water-based drilling mud containing clay (usually bentonite) and various non-odorous chemicals. Odorous drilling mud types (including oil-based muds and synthetic based muds) which are generally used on offshore rigs, would not be received by the facility.

Under *The Treated Drilling Mud Order 2014*, the following definitions are provided:

> ***Drilling fluid*** *means a mixture of water and chemical additives including but not limited to bentonite, soda ash (sodium carbonate), sodium hydroxide, lime and polymers.*
>
> ***Drilling mud*** *means a mixture of naturally occurring rock and soil, including but not limited to materials such as sandstone, shale and clay, and drilling fluid generated during drilling operations such as horizontal directional drilling or potholing. This does not include drilling mud that has been generated by:*
>
> *(c) Deep drilling for mineral, gas or coal exploration; or*
> *(d) Drilling through contaminated soils, acid sulphate soils (ASS) or potential acid sulphate soils (PASS)*

The drilling mud would meet the above definitions to enable the treated drilling mud to be applied to land under the resource recovery exemption. The chemical additives listed above are

all known to be odourless, as stated in relevant safety data sheets. One chemical of concern is barium sulphate, which has the potential to be odorous due to the presence of sulphate which could potentially be reduced to hydrogen sulphide under anaerobic conditions. Drilling mud containing barium sulphate would not be accepted at the facility.

Additionally, drilling mud received at the site would require customers agreeing to and complying with the following criteria, prior to the site accepting the drilling mud delivery:

1. A mixture of naturally occurring rock and soil, including but not limited to materials such as sandstone, shale and clay, and drilling fluid generated during drilling operations such as horizontal directional drilling or potholing.
2. Does not include drilling mud generated by:
    a. deep drilling for mineral gas or coal exploration; or
    b. drilling through contaminated soils, acid sulphate soils (ASS) or potential acid sulphate soils (PASS); or
    c. drilling through soil contaminated by a hazardous contaminant
3. Does not contain any of the following:
    a. Restricted simulation fluids
    b. Any characteristics under the Australian dangerous goods code (e.g: explosives, flammable or emitting flammable gases, oxidising, containing organic peroxides, poisonous, infectious, corrosive, toxic)
    c. Oil-based or synthetic-based mud
    d. barium sulphate
    e. additives where the SDS, which must be provided, show that the chemical may cause adverse ecological effects.
4. Free from:
    a. Detectable offensive odours;
    b. Glass, metal, plastics, rubber and coatings; and
    c. Pests or vermin infestations

As the drilling mud to be accepted would be free from detectable offensive odour (odourless), a detailed odour assessment is not considered warranted.

8.1.2 Local Air Quality

Background air quality parameters were obtained from the closest NSW EPA Chullora air quality monitoring station located approximately 5 km north of the subject site. As such, this station is considered to be site-representative. The relevant assessable pollutant parameters available from the monitoring station are PM_{10} and $PM_{2.5}$. Data was obtained for 2015 as it was considered the most representative year.

A summary of this data is provided in Table 8-1.

Table 8-1: Summary of 2015 Data for $PM_{2.5}$ and PM_{10} from Chullora Air Quality Monitoring Station.

Pollutant	Averaging period	Concentration (µg/m^3)
$PM_{2.5}$	Maximum 24 hr average for 2015	**37.21**
	2nd highest 24 hr average for 2015	19.25
	3rd highest 24 hr average for 2015	18.37
	Annual average for 2015	**8.62**
PM_{10}	Maximum 24 hr average for 2015	**64.56**
	2nd highest 24 hr average for 2015	48.23
	3rd highest 24 hr average for 2015	46.21
	Annual average for 2015	17.59

Note: Bold values exceed the *Approved Methods* criteria.

8.1.3 Dust Impact Assessment

8.1.3.1 Dust Impact Assessment – Proposed Development

Dewatering processes were not included in dispersion modelling as they are completely enclosed in a wet environment and do not generate dust. However, stockpiled recovered aggregates from processed water has been included as this has the potential to generate airborne dust (via wind erosion) where not managed correctly. It is noted that the dust from these stockpiles represent negligible emissions as the total dust emissions are several orders of magnitude less that more significant sources assessed in the cumulative dust impact assessment.

8.1.3.2 Cumulative Dust Impact Assessment

The air dispersion model AERMOD was used for the prediction of off-site dust impacts associated with the air emissions from the proposed operations. Two scenarios were included in the air dispersion modelling:

> Scenario 1 – modelled emission sources with general mitigation measures recommended and
> Scenario 2 – modelled emission sources with an additional custom flexible hood and vacuum ducting applied to the crusher/screen.

The assessment aimed to demonstrate the predicted dust impacts from site activities on neighbouring receptors with and without the use of the flexible hood and vacuum ducting

applied to the crusher/screener. Preliminary dust monitoring undertaken on- and off-site demonstrate that current dust emissions from site activities exceed NSW EPA criteria.

Results of air impact modelling for both scenario 1 and scenario 2 demonstrate that incremental dust levels were reduced with the inclusion of a custom hood covering applied to the crusher/screener by ~12-46% at the most heavily impacted receptor (R11; 89 Gow Street, Padstow). It is recommended that all controls listed for Scenario 2 be applied onsite on site to ensure continued compliance and further reduce dust impacts from the proposed development on all nearest receptors, both industrial and sensitive.

In cases of elevated background concentrations, the NSW EPA requires a demonstration that no additional exceedances of the impact assessment criteria will occur as a result of the proposed site activities. Contemporaneous additions assessment was conducted for the most impacted receptor (R11; 89 Gow Street, Padstow). The 24 hour averaging period for PM_{10} showed 2 additional days of exceedance, however this is attributed to the elevated background concentration levels of 48.23 µg/$m^3$and 46.21 µg/m^3. The 24 hour averaging period for $PM_{2.5}$ demonstrated no additional days of exceedance.

With the proposed site activities and additional dust controls in place, it is considered that emissions to air from the site's operation are unlikely to cause harm to resident's health or the environment.

8.1.4 Cumulative Dust Control Measures

To mitigate potential current and future dust emissions off-site, GSRC propose to construct a flexible hood and vacuum ducting around the crusher and screen to control dust emissions, ensuring continued compliance with NSW EPA criteria and further reducing dust impacts from the proposed development on all nearest receptors, industrial and sensitive.

The air quality mitigation measures (for dust control) that are included in the air dispersion model and proposed development are as follows:

- All dust generating activities will have direct dust suppression sprays;
- All dust generating activities areas will have perimeter dust suppression sprays;
- Truck loading and unloading, front end loader shovelling will occur in bays with 2-3 m high walls/windbreaks;
- Stockpiled materials are stored within storage bays are enclosed bays with 2-3 m high walls and have directs dust suppression sprays applied; and
- Activities in the southern end of the site will have additional wind breaks due to the 8.5 m walls surrounding these activities front end loaders, and stockpiles excluded).
- Crusher and screen are covered by a flexible hood and vacuum ducting.

8.1.5 Greenhouse Gas (GHG) Assessment

Scope 1 GHG emissions from the proposed development are limited to diesel fuel consumption from on site vehicles. Scope 2 GHG emissions are limited to electricity consumption during site operations. Scope 3 emissions encompass a wide range of potential sources which are expected to be negligible for the proposed development. Therefore, Scope 3 GHG emissions were not assessed any further.

Annual GHG emissions for Scope 1 and Scope 2 GHG emissions for the operation of the C&D and drilling mud dewatering facilities are estimated to be 710 t CO_2-e.

Australia's total GHG emissions as at December 2019 (the most recent inventory update) was estimated to be 532.5 Mt CO_2-e (Australian Government, Quarterly Update of Australia's National Greenhouse Gas Inventory: December 2019). In comparison, the estimated annual GHG emission for proposed development is 0.00071 Mt CO_2-e. Therefore, the annual contribution of GHG emissions from the proposed development in comparison to the Australian greenhouse emissions in 2019 is approximately 0.00013%.

GHG contributions from the proposed development are considered negligible.

8.2 NOISE

A Noise Impact Assessment has been undertaken for the proposed development. A full copy of is provided as Appendix 2.

8.2.1 Nearest Receptors

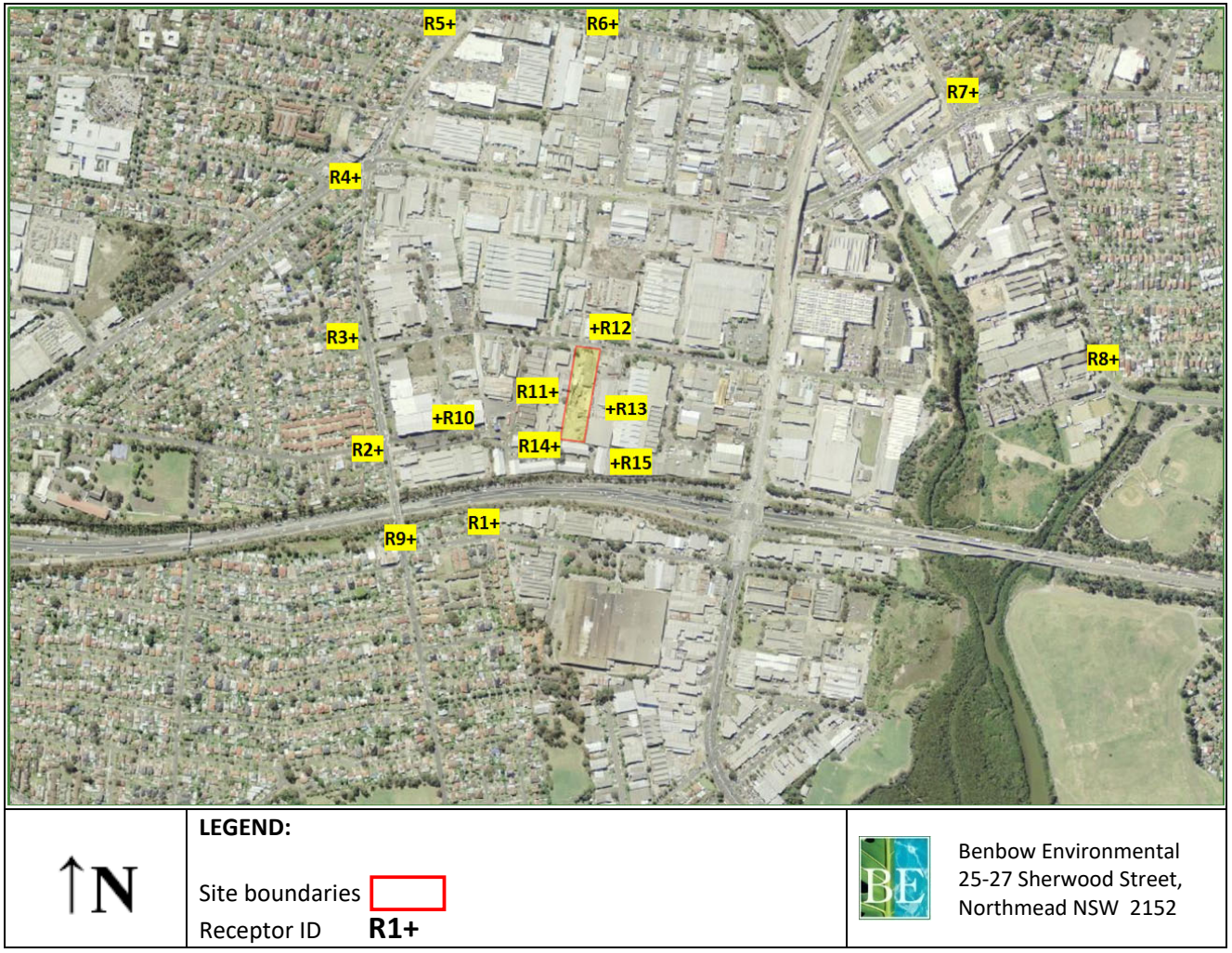
Table 8-2 below identifies the nearest sensitive receptors that have the potential to be affected by the proposed development. An aerial photograph showing the location of the sensitive receptors in relation to the site are shown in Figure 8-1. These receptors were selected based on their proximity and directional bearing from the subject site.

Table 8-2: Nearest Sensitive Receptors to the Subject Site

Receptor ID	Address	Lot & DP	Approx. Distance from Proposed Development	Type of Receptor
R1	24 Bryant Street, Padstow	Lot 16 DP 18539	240 m SW	Residential
R2	59 Gibson Avenue, Padstow	Lot 1 DP 18270	380 m W	Residential
R3	166 Canterbury Road, Bankstown	Lot 1 DP 10428	585 m NW	Residential
R4	40A Hoskins Avenue, Bankstown	Lot 3 DP 511905	700 m N	Residential
R5	1A Stacey Street, Bankstown	Lot 1 DP 103437	925 m NE	Residential
R6	60 Moxon Road, Punchbowl	Lot 92 DP 13801	1055 m E	Residential
R7	40 Kentucky Road, Riverwood	Lot 340 DP 225388	1355 m SE	Residential
R8	17 Watson Road, Padstow	Lot 11 DP 658501	755 m SSE	Residential
R9	Padstow North Primary School, Halcyon Avenue, Padstow	Lot 32 DP 10031	485 m S	School/ Childcare Centre
R10	Salt Pan Creek Reserve, 66C Fairford Road, Padstow	Lot 7005 DP 93365	685 m E	Recreational Reserve

Receptor ID	Address	Lot & DP	Approx. Distance from Proposed Development	Type of Receptor
R11	89 Gow Street, Padstow	Lot A SP 103140	Adjacent W	Industrial
R12	82 Gow Street, Padstow	Lot 2 DP 392634	Opposite N	Industrial
R13	79 Gow Street, Padstow	Lot 3 DP 371357	Adjacent E	Industrial
R14	78 Gibson Avenue, Padstow	SP 22907	Adjacent S	Industrial
R15	9 Wordie Place, Padstow	12 DP 242730	Adjacent SW	Industrial

Figure 8-1: Nearest Sensitive Receptors to the Subject Site



8.2.2 Existing Acoustic Environment

The level of background and ambient noise is assessed separately for the daytime, evening and night time assessment periods. The NSW EPA Noise Policy for Industry defines these periods as follows:

- **Day** is defined as 7.00am to 6.00pm, Monday to Saturday and 8.00am to 6.00pm Sundays and Public Holidays;
- **Evening** is defined as 6.00pm to 10.00pm, Monday to Sunday and Public Holidays; and
- **Night** is defined as 10.00pm to 7.00am, Monday to Saturday and 10.00pm to 8.00am Sundays and Public Holidays.

An attended noise measurement was conducted on the 24th of September at one (1) residential location.

8.2.2.1 Measured Noise Levels

8.2.2.1.1 Short Term Operator Attended Noise Monitoring Results

Attended noise monitoring was conducted on Tuesday the 11th of March 2019 in order to gain an understanding of the background noise sources of the area. Noise contributions were obtained from ambient noise sources such as local fauna, road traffic and industrial sources. The results of the short-term attended noise monitoring are displayed in Table 8-3 below.

The attended measurements showed that the background noise levels were dominated by road traffic and noise from trucks passing by.

Table 8-3: Short Term Attended Noise Monitoring

Location / Time	Noise Descriptor				Comments
	L_{Aeq}	L_{A90}	L_{A10}	L_{A1}	
24 Bryant Street, Padstow	60	57	63	67	*Cars, M5 < 63 dB(A)* *Truck, M5 < 72 dB(A)* *Motorbike, M5 < 68 dB(A)* *Wind through trees, < 50 dB(A)* *Bird chirp close < 62 dB(A)*

8.2.2.1.2 Long-Term Unattended Noise Monitoring Results

The data was analysed to determine a single assessment background level (ABL) for each day, evening and night time period, in accordance with the NSW EPA Noise Policy for Industry. That is, the ABL is established by determining the lowest tenth-percentile level of the L_{A90} noise data over each period of interest. The background noise level or rating background level (RBL) representing the day, evening and night assessment periods is based on the median of individual ABL's determined over the entire monitoring period. The results of the long-term unattended noise monitoring are displayed inTable 8-4.

Table 8-4: Unattended Noise Monitoring Results, dB(A)

Monitoring Location and associated receptors	Assessment Background Level ABL (L_{90})		
	Day	Evening	Night
Logger A	53	50	42

8.2.3 Meteorological Conditions

The full Noise Impact Assessment (Appendix 2) assessed whether wind and temperature inversions are considered to be a feature of the area with the following conclusions:

- There is one instance where during a period/ season more than 30% of wind speeds are less than 3 m/s in the plus and minus 45 degree arc from source to receiver. therefore wind effects have been included in the assessment.
- The analysis conducted on the 2019 weather data highlighted that during winter 38.29% of the nights presented temperature inversion conditions, therefore these effects have been included in the noise impact assessment.

The following conditions will be considered in this noise impact assessment considered:

- Neutral Weather Conditions
- Temperature Inversion

Details of the considered meteorological conditions have been displayed in Table 8-5.

Table 8-5: Meteorological Conditions Assessed in Noise Propagation Modelling

Classification	Ambient Temp.	Ambient Humidity	Wind Speed	Wind Direction (blowing from)	Temperature Inversion	Affected Receiver	Applicability
A	Neutral	10°C	70%	–	–	No	All
B	Inversion	10°C	70%	2 m/s	3°C/100 m	Yes	All
C	Gradient Flow	10 °C	70%	3 m/s	From SW	No	R8

8.2.4 Operational Noise Impact Assessment

8.2.4.1 Project Noise Trigger Levels

The project noise trigger levels for the site have been established in accordance with the principles and methodologies of the NSW Noise Policy for Industry (EPA, 2017).

The table below presents the rating background level, project intrusive noise level, recommended amenity noise level, and project amenity noise level. The project noise trigger level is the lowest value of intrusiveness or project amenity noise level after conversion to $L_{Aeq\ 15\ minute}$, dB(A)

equivalent level. Sleep disturbance trigger levels associated with operational activities are presented in Table 8-6 below.

Table 8-6: Project Noise Trigger Levels (PNTL) for Operational Activities, dB(A)

Receiver	Type of Receptor	Time of day	Rating background noise level	Project intrusiveness noise level $L_{eq\ 15\ minute}$	Recommended amenity noise level $L_{Aeq\ period}$	Project amenity noise level $L_{Aeq\ 15\ minute}$ [1]	PNTL $L_{Aeq\ 15\ minute}$	Sleep Disturbance L_{Amax}
R1-R8	Residential – Urban	Day	53	58	60	**58**	**58**	-
		Evening	50	55	50	**48**	**48**	-
		Night	42	47	45	**43**	**43**	**57**
R9	School Classroom - Internal	Noisiest 1-hour when in use	-	-	50[2]	50[2]	**50**	
R10	Place of worship	When in use	-	-	50[3]	48	**48**	-
R11-R15	Industrial Premises	When in use	-	-	70	68	**68**	-

Notes:
1) These levels have been converted to $L_{Aeq\ 15\ minute}$ using the following: $L_{Aeq\ 15\ minute} = L_{Aeq\ period} + 3$ dB (NSW Noise Policy for Industry Section 2.2).
2) In the case where existing schools are affected by noise from existing industrial noise sources,the acceptable LAeqnoise level may be increased to 40 dB LAeq(1hr).
3) 10 dB has been added to the internal criteria to give the outdoor noise limit

8.2.4.2 Predicted Cumulative Impacts

Noise propagation modelling was carried out using Sound PLAN v7.3. Two cumulative operational scenarios were considered in the noise model in accordance with the Noise Policy for Industry. The first scenario considered a day and evening situation in which all existing and proposed equipment were running for 100% of the time over the 15 minute assessment period, with two vehicle movements being considered within a 15 minute period. The second scenario occurs during the night and considers a full operational scenario but without the existing crusher, excavator and proposed external vacuum pump operating. Scenario 2 also considers temperature inversion weather conditions and wind conditions for R8. Results of the predictive noise modelling of the operational scenarios are shown in Table 8-7.

The modelled scenarios are predicted to comply with the $L_{eq(15\ minute)}$ project specific criteria at all sensitive receptors. Exceedance of the L_{AMax} sleep disturbance is not predicted at any residential receptors.

During the night from 10pm – 6am the crusher, vacuum pump and excavator should not be used.

It is therefore concluded that the proposed site activities will not have a detrimental impact on surrounding receivers. Proactive noise control measures are recommended in Section 6.3 of the Noise Impact Assessment (Appendix 2).

Table 8-7: Predicted Noise Levels – Operational Activities dB(A)

Receptor	Project Criteria $L_{eq(15\ minute)}$			Project Criteria L_{Amax}	Scenario 1 – Day and Evening	Scenario 2 – Night (temperature inversion/R8 wind conditions)	
	Day	Evening	Night		Predicted $L_{eq(15\ minute)}$	Predicted $L_{eq(15\ minute)}$	Predicted L_{Amax}
R1	58	48	43	57	43 ✓	42 ✓	48 ✓
R2	58	48	43	57	37 ✓	38 ✓	46 ✓
R3	58	48	43	57	32 ✓	32 ✓	48 ✓
R4	58	48	43	57	28 ✓	27 ✓	37 ✓
R5	58	48	43	57	34 ✓	35 ✓	42 ✓
R6	58	48	43	57	43 ✓	42 ✓	49 ✓
R7	58	48	43	57	28 ✓	33 ✓	47 ✓
R8	58	48	43	57	20 ✓	23 ✓	37 ✓
R9	50			N/A	37 ✓	38 ✓	N/A
R10	48			N/A	41 ✓	42 ✓	N/A
R11	68			N/A	58 ✓	57 ✓	N/A
R12	68			N/A	64 ✓	64 ✓	N/A
R13	68			N/A	62 ✓	61 ✓	N/A
R14	68			N/A	56 ✓	51 ✓	N/A
R15	68			N/A	56 ✓	52 ✓	N/A

✓Complies × Non-compliance

8.2.4.3 Noise Control Measures

During the night from 10pm – 6am the existing crusher, excavator and proposed vacuum truck should pump not be used. An internal pump can be used at night such that the tanker truck vacuum pump is not needed.

Whilst further noise controls are not predicted to be required to meet the operational noise criteria, the following management practices are recommended as good practice:

- Prohibition of extended periods of on-site revving/idling;
- Keeping the roller shutter door closed where possible;
- Minimisation of the use of truck exhaust brakes on site;
- Enforcement of low on-site speed limits; and
- On-site vehicles and machinery to be maintained in accordance with a preventative maintenance program to ensure optimum performance and early detection of wearing or noisy components.

8.2.5 Road Traffic Noise Impact Assessment

The maximum number of truck movements along Gibson Ave during the daytime is assumed to be 15 per hour. The maximum number of truck movements along Gibson Ave during the night time is assumed to be 4 per hour. The worst case residential receiver utilised in the assessment is 59 Gibson Ave. Trucks have been modelled passing this house as moving point sources travelling at the posted speed of 60km/hr. The predicted results are shown in the following table.

Table 8-8: Predicted Levels for Road Traffic Noise

Receptor	Noise Criteria		Site Contribution	
	Day $L_{Aeq, 1\ hour}$	Night $L_{Aeq, 1\ hour}$	Day $L_{Aeq, 1\ hour}$	Night $L_{Aeq, 1\ hour}$
59 Gibson Ave (R2)	55	50	54 ✓	48 ✓

For the residential dwellings that front onto Gibson Ave, the predicted noise levels associated with the vehicle movements from the site would be below the criteria for local roads.

Step 3 of Section 3.4.1 of the RNP identifies possible reasonable and feasible control measures when exceedances of either the outlined criteria. As no exceedances are predicted, the proposed vehicle movements comply with the RNP, and no additional mitigation strategies are recommended.

8.2.6 Statement of Potential Noise Impacts

The noise impact assessment was undertaken in accordance with the following guidelines:

- NSW Noise Policy for Industry (EPA, 2017);
- NSW Road Noise Policy (RNP) (DECCW, 2011); and
- Canterbury Bankstown Development Control Plan (DCP) 2015.

Assessment criteria for noise emissions from the subject site were used to determine whether the potential noise impacts from the site were within the derived limits or in exceedance of the guidelines.

The nearest receivers and noise criteria were identified. The site operations were modelled using the predictive noise software, Sound Plan V7.3.

The activities proposed by the proponent were found to be within the framework of the NSW EPA Noise Policy for Industry.

The modelled scenarios are predicted to comply with the $L_{eq(15\ minute)}$ project specific criteria at all sensitive receptors. Exceedance of the L_{AMax} sleep disturbance is not predicted at any residential receptors.

The noise assessment predicted that if the assumptions presented are carried out, noise levels would be met at all surrounding residential receivers during all time periods.

During the night from 10pm – 6am the existing crusher, excavator and proposed vacuum truck pump should not be used. An internal pump can be used at night such that the tanker truck vacuum pump is not needed.

Compliance with the guidelines set out in the NSW Road Noise Policy was predicted at all considered receptors.

No major construction will take place therefore construction noise and vibration impacts are considered minimal.

8.3 SOIL AND WATER

Stormwater concept designs and a Flood Impact Assessment Report are presented in Appendix 4 and 12 respectively. A qualitative soil and water assessment report has been undertaken and is provided in Appendix 6.

8.3.1 Existing Site Conditions

The site is located within an industrial area. Its surface is covered in concrete hardstand and is generally flat, rising slightly at the southern end of the property.

The site contains no waterbodies with the nearest water source being Salt Pan Creek, located approximately 760 m SE from the site. A drainage easement consisting of two large stormwater drainage pipelines (diameter 1,500 mm), traverse underground in the centre of the site. Eight existing onsite stormwater pits connect to these two main lines via 1,050 mm, 450 mm, 300 mm and 250 mm diameter underground pipelines.

Overland flooding is an issue with this existing arrangement and has resulted in sediment laden runoff from the site on occasions.

The existing water quality at the point of discharge was sampled and analysed. The default guideline values (DVG) adopted for the site is the 95% level of species protection recommended for application for slightly to moderately disturbed ecosystems under the Australian and New

Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018). The results complied with the guideline values for "Slightly-moderately disturbed ecosystems" with the exception of pH which was slightly higher than the criteria. Therefore based on this data, the stormwater runoff can be described as "slightly-moderately disturbed".

The 'Sydney 1:100 000 Geological Map Sheet 9130' describes the geological composition of the area as *Ashfield Shale (Rwa)* which is part of the Wianamatta Group and comprises of dark-grey to black claystone-siltstone and fine sandstone-siltstone laminate.

Soil logs from the limited Phase II Environmental Site Assessment (ESA) confirm the site as having red and brown Podzolic soils with highly plastic (high clay content) subsoils. The conclusions of the ESA found no evidence of soil contamination within the proposed areas marked for excavation. However, the ESA confirmed the presence of acid sulfate soils (ASS).

8.3.1.1 Existing Drainage Easement and Drainage Pipe

A condition report and survey of Council's existing drainage easement and drainage pipe is provided in Appendix 11. This drainage pipe is not impacted as a result of the proposed development. The development will utilise the existing connection to connect to the site's proposed upgraded stormwater system.

8.3.2 Proposed Stormwater System Upgrade

The proposal involves construction and operation of a liquid waste dewatering facility on the site where an existing C&D recycling plant operates. Upgrade of the stormwater system to enable adequate management of leachate and on-site stormwater has been designed to Council requirements. The proposed stormwater system will provide onsite detention and water quality treatment and include two underground storage tanks with a capacity to hold a total of 200kL, with silt arrestor pit.

The system would capture first flush site stormwater (leachate) which would initially be treated through an arrestor and detained within the two underground storage tanks before being treated through the dewatering plant.

A stormwater isolation valve will be installed after the 200 kL underground containment system. This can be used to prevent the discharge of potentially contaminated stormwater/firefighting water if required.

Stormwater system upgrades require excavations to be undertaken. An acid sulfate soil management plan has been prepared and will be implemented during excavations.

8.3.3 Proposed Water Requirements

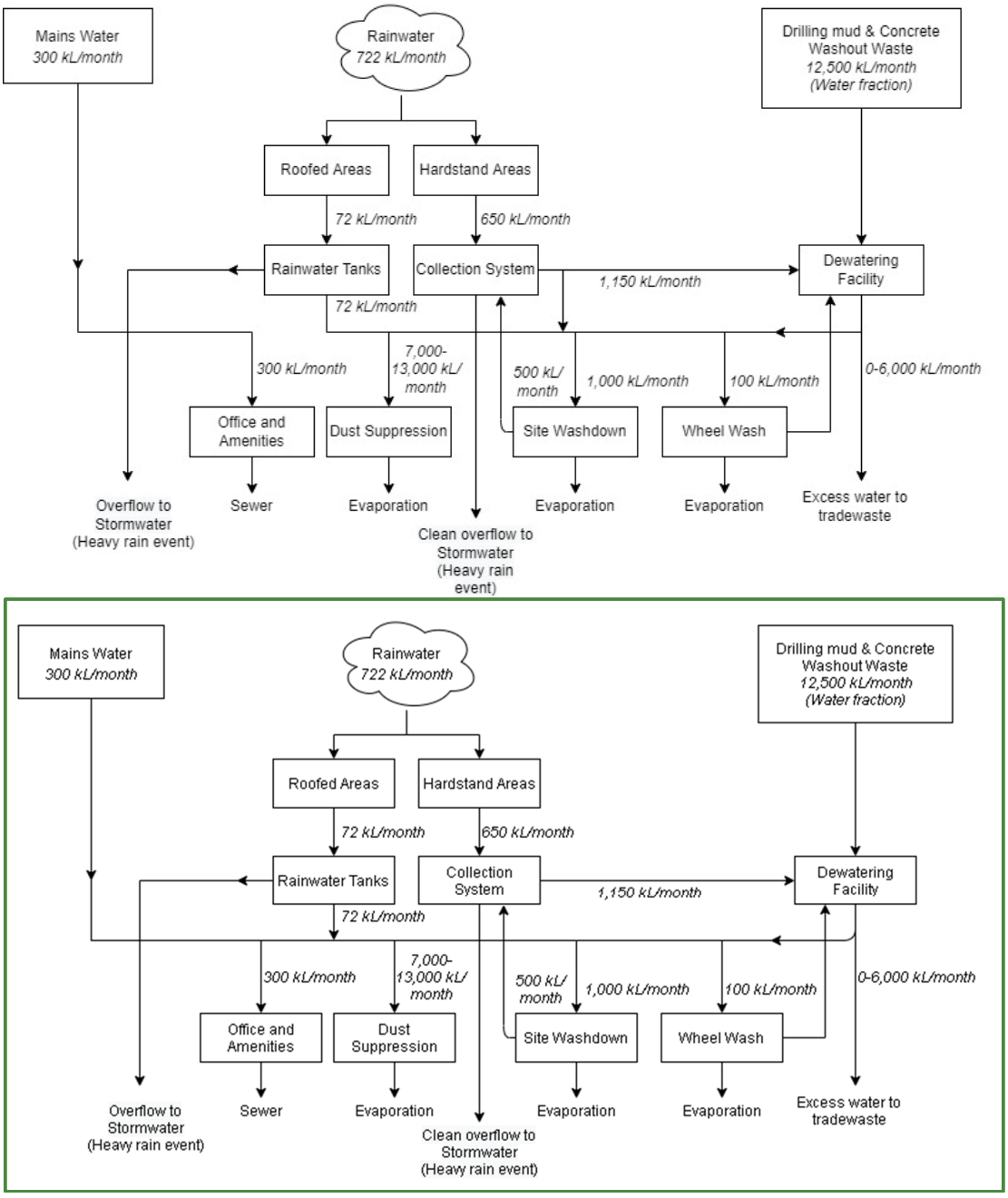
The proposed development would require mains water for use in the office and amenities. All other water usage would be recycled water sourced from the dewatering facility and rainwater tanks on site.

The dewatering facility would accept liquid waste including drilling mud and concrete washout water from external sites and process this to produce solid and liquid components. The solid

components being filter cake and aggregate would be stored within storage bays on before being sent to landfill or processed through the existing on-site C&D recycling facility. Resulting treated water from the dewatering plant would be used on site for dust suppression purposes through water sprayers to suppress dust on the existing external C&D storage bays, in the existing wheel wash and for washing down purposes. Excess treated water would be discharged to sewer under a Tradewaste Agreement with Sydney Water.

A site water balance is provided below (Figure 8-2).

Figure 8-2: Site Water Balance



8.3.4 Flooding

A Flood Impact Assessment Report is provided in Appendix 12. *The results of the flood assessment generally indicate that the proposed development:*

1. Do not generate flooding issues at the subject site due to local overland flow;
2. Do not lead to adverse flooding impacts on the surrounding areas; and
3. Does not create safety issues at the subject site and the surrounding areas.

8.3.5 Potential Impacts to Water

Potential impacts to water are from pollutants entering the stormwater system and being discharged from the site. These pollutants are primarily total suspended solids, which may alter the pH and also include Hydrocarbons, PAH, Nitrogen, Phosphorus, Ammonia, BTEX. A conceptual model of potential contaminants and their source is provided in detail in the soil and water report provided in appendix 6. With the controls in place the risk potential for impacts to water are low.

8.3.6 Potential Impacts to Soil

The most likely contamination sources are from the onsite use of fuel and oils, either through spillage during refuelling and/or maintenance activities or from waste materials stored onsite. Any contaminants left on the hardstand surface would likely be collected by stormwater runoff. However, as stormwater is intended to be collected and reused onsite, any contaminates in surface waters will also be captured and removed.

- Potential spillages of diesel and lubricating oil could occur during refuelling and equipment maintenance; the risk would be minimised through procedures and training in appropriate methods and signage showing how to avoid spills and the use of appropriately trained contractors.

- Good housekeeping practices are important to prevent contamination. These include regular cleaning of all hardstand areas, inspection of the integrity of equipment and inspection, cleaning and maintenance of stormwater/surface water system.

8.3.7 Mitigation Measures

During Construction

- An Erosion and Sediment Control Plan which include Erosion and sediment controls such as geotextile inlet filters for existing stormwater pits, sediment fence for the perimeter of the construction zone and a shaker pad for stabilised site access.

During Operation

- BCP Stream Guard Pollution Control Pit or equivalent at stormwater pits;
- Silt arrestor;
- 200kL underground containment;
- Reuse of stormwater within the dewatering plant;

- Spill kits;
- Environmental Management Plan;
- Water monitoring program;
- Self-bunded diesel tank with concrete barriers;
- Housekeeping.

8.4 FLORA AND FAUNA

8.4.1 Biodiversity Assessment

A biodiversity assessment waiver was completed alongside this EIS, and is located in Appendix 7. There is no vegetation present on site as the site is fully developed and is covered in a concrete hardstand. Current structures on site are not used as a habitat by any endangered species. The site does not impact habitat connectivity or flight path integrity. The waiver emphasises that the site will cause negligible disruption to the surrounding environment.

8.4.2 Species

Section 6.4 lists the endangered and vulnerable species within a 10 km radius of the site. No endangered or threatened species are situated within the industrial zoned area that the proposed development is located. Nor are they situated near the proposed development itself. Therefore, flora and fauna impacts are considered negligible.

8.4.3 Statement of Effects on Surrounding Environment

The surrounding environment will not be impacted by the development. This EIS and the BDAR waiver, in Appendix 7, emphasise the lack of biodiversity that exists on the subject site. Additionally, all endangered species are located outside the industrial area that the proposed development is located and as such are not threatened by it.

8.5 WASTE GENERATION AND MANAGEMENT

A Waste Management Report is provided in Appendix 3 which addresses the SEARS (10450) requirements. As the facility is an existing C&D recycling plant and proposes to add a dewatering plant to treat liquid waste, the waste management report provides details of wastes to be received, processed and stored, and describes the on-site management of waste. All processing and storage of waste associated with the dewatering plant would be within an enclosed building. Two storage bunkers would be roofed and walled. A summary is provided in the following sub-sections.

8.5.1 Incoming Waste

Two waste streams would be accepted at the facility including Commercial and Industrial (C&I) waste and Construction and Demolition (C&D) waste. C&D waste is associated with the existing C&D facility.

The existing C&D recycling plant is licensed to accept the following materials:

- Building and demolition waste; and

- Asphalt waste (including asphalt resulting from road construction and waterproofing works).

The incoming waste associated with the proposed dewatering plant will be Commercial and Industrial (C&I) waste and Construction and Demolition (C&D) waste and includes the following:

- Drilling mud (non-destructive digging waste); and
- Concrete washout waste.

This waste would be sourced from construction sites and commercial/industrial facilities such as concrete batching plants. Both of these wastes are classified as “liquid waste”.

Table 8-9 provides details of incoming waste as part of the existing C&D facility (shaded cells) and the proposed dewatering facility.

8.5.2 Recovered Materials and Outgoing Waste

Aggregates, treated water and filter cake (biscuit) would be generated from the processing of the liquid waste in the dewatering facility.

Recovered aggregate from the dewatering facility will be recycled under relevant resource recovery exemptions or occasionally, crushed and screened at the existing C&D recycling facility on site.

The resulting treated drilling mud (fine biscuit) which represents less than 10% of the materials from the dewatering process can potentially be applied to land as engineering fill or for use in earthworks under the Treated Drilling Mud Exemption 2014. If requirements of the Treated Drilling Mud Order 2014 cannot be met, this biscuit would be sent to landfill as general solid waste.

The treated water would be used on-site for dust suppression and washing purposes in the existing construction and demolition (C&D) recycling facility. The site may generate excess treated water from time to time, that is unable to be used onsite, any such water will be sent to trade waste in accordance with a trade waste agreement.

Recovered materials and wastes generated and their management at the site from both the existing C&D facility (shaded cells) and proposed dewatering facility are detailed in Table 8-10.

Table 8-9: Incoming Waste Types, Quantities and Management

Waste Stream	Estimated Total Incoming Quantity	Waste Classification	Waste Description	Weekly Quantity (tonnes)	Monthly Quantity (tonnes)	Yearly Quantity (tonnes)	Management
C&D Waste	80,000 tpa	General Waste (Non-putrescible)	Bricks	308	1333	16,000	Incoming pre-sorted waste loads undergo initial inspection via the weighbridge then is placed in designated storage bays (Areas 1, 2 and 3 – processing area, waste receivals and uncrushed concrete bays) to be crushed and screened through existing infrastructure. Recovered products are stored on site within existing designated bays.
			Tiles	154	667	8,000	
			Concrete	492	2133	25,600	
			Asphalt	154	667	8,000	
			Sandstone	123	533	6,400	
			VENM/ENM	308	1333	16,000	
C&I Waste	250,000 tpa	Liquid waste	Drilling mud	3846	16667	200,000	Drilling mud and concrete washout waste would be brought onto site in tankers/concrete trucks and unloaded into the dirty water pit inside the building. The liquid is treated within the enclosed facility.
			Concrete washout water	962	4167	50,000	

Table 8-10: Recovered and Generated Waste Types, Quantities and Management

Waste Type	Estimated Maximum Quantity	EPA Waste Classification[1]	Relevant Resource Recovery Order	Management
Aggregates – 20 mm or 10 mm	60,000 tpa	General soil waste (non-putrescible)	The recovered aggregate order 2014	This crushed then screened into varying standard sizes and directed to the designated external storage bays in Area 4. Sold for reuse in construction projects under the recovered aggregates order 2014.
Fines (-60 aggregate)	4,000 tpa	General soil waste (non-putrescible)	The recovered aggregate order 2014 The "batch process" recovered fines order 2014	The smallest aggregate size that is screened through the process. This is stored in external storage bay in Area 4. Sold for reuse in landscape supplies.
Soil	16,000 tpa	General soil waste (non-putrescible)	The "batch process" recovered fines order 2014	Excavated material that is brought on site is processed into soils that are reused for the purposes of construction or landscaping off-site under the "batch process" recovered fines order 2014. This material is stored in designated bays in Areas 5 and 6.
Treated water	150,000 tpa	Liquid waste	N/A	This is the treated water from the dewatering plant that is stored in the clean water pit. This water would be of a suitable quality to reuse on site for various dust suppression and cleaning purposes. Excess water would be sent to tradewaste.
Aggregates & Sand	95,000 tpa	General soil waste (non-putrescible)	The recovered aggregates order 2014 The "batch process" recovered fines order 2014	Aggregates including sand generated from the dewatering process are transferred via conveyor to be stored in five designated storage bays within the enclosed dewatering facility. These aggregates are sold for reuse off site under the recovered aggregates order 2014 or the "batch process" recovered fines order 2014 if applicable may be further processed through the C&D plant.

Table 8-10: Recovered and Generated Waste Types, Quantities and Management

Waste Type	Estimated Maximum Quantity	EPA Waste Classification[1]	Relevant Resource Recovery Order	Management
Filter cake (biscuit)	5,000 tpa	General soil waste (non-putrescible)	The treated drilling mud order 2014 The recovered aggregates order 2014	Filter cake (biscuit) is generated from the filter press and stored in a bunker inside the building. Where possible, the filter cake would be applied to land off site under the treated drilling mud order 2014 or the recovered aggregates order if applicable. Where the RRO does not apply, filter cake is to be sent to landfill.
Non-recyclable waste	150 tpa	General solid waste (non-putrescible)	N/A	General waste that cannot be recycled may be generated from time to time. This is stored within a designated bin on site and sent to a licensed landfill.
Office & Amenities Waste	10 tpa	General solid waste (Putrescible)	N/A	This waste is ancillary to the process and is serviced by a licensed waste contractor.
Office Recyclables	24 tpa	General solid waste (non-putrescible)	N/A	This waste is ancillary to the process. It is transferred offsite to a licensed recycling facility for further processing. E.g. Visy Recycling

Notes:

1. Waste classification according to *Waste Classification Guidelines* provided.

8.5.3 Maximum Processing Quantities

The site has an approved processing capacity of 80,000 tonnes per year of C&D waste. The proposed dewatering facility requires approval to process 250,000 tonnes of liquid waste per year. This would result in a total maximum processing quantity of 330,000 tonnes per annum of waste at the facility.

8.5.4 Waste Storage

8.5.4.1 Maximum Storage Capacity

The site currently has approval to store 7,300 tonnes of waste at any one time. Waste storage quantities associated with the new dewatering facility will require storage of 1,460 tonnes of waste.

The site requires approval to store a maximum of 8,760 tonnes of waste at any one time.

8.5.4.2 Existing Waste Storage

On-site storage of incoming waste and recovered materials associated with the existing C&D facility will not change. External bunkers in Areas 1, 2 and 3 are used to stored incoming waste. External bunkers in Areas 4, 5 and 6 are used to store recovered materials. Dust suppression is currently applied via water sprayers. The treated water from the proposed dewatering plant would be used for this purpose. Storage bunker details are provided in the following table:

Table 8-11: C&D Facility Existing Waste Storage Bunker Details

Area	Bunker	Material Description	Width (m)	Length (m)	Volume (m^3)
1	1	Incoming C&D waste (Processing area	12	18	864
2	1	Waste receivals – uncrushed material – Bick/tile/concrete	14	12.09	677
3	1	Uncrushed concrete	6	12.09	290
4	1	10 mm Aggregate	4.04	6.654	108
	2	20 mm Aggregate	35.289	7.825	1105
	3	30-100 mm Aggregate	4.121	4	66
	4	Fine aggregates	8.542	7.825	267
5	1	ENM/VENM/GSW – Screened	5.337	9.225	197
	2	ENM/VENM/GSW – Screened	3.96	5.967	95
	3	ENM/VENM/GSW – Screened	6.087	12.886	314
6	1	Sand	4.725	6.654	126
	2	Topsoil	4.019	6.654	107
	3	Turf Underlay	3.954	6.654	105
	4	Organic garden mix (soil)	4.042	6	97
	5	Dust (triangle bay)	7.455	7.825	116
				Total Maximum Capacity	4593 m^3 7300 tonnes

8.5.4.3 Proposed Waste Storage

New waste storage areas associated with the dewatering plant would consist of inground pits and silos for liquid waste and storage bunkers for aggregate and filter cake. These storage areas are within the building or within covered walled bunkers. A summary is provided below:

Table 8-12: Dewatering Facility Storage Area Details

Area	Storage Type	Material Description	Volume (m^3)	Estimated Tonnes
7	Inground Pit 7	Dirty water pit accepting drilling mud and concrete washout waste	108	108
	Inground Pit 6		32.4	32.4
	Inground Pit 5		32.4	32.4
8	Inground Pit 4	Flocc plant dirty water	23.6	23.6
	Inground Pit 3		14.2	14.2
	Inground Pit 2	Clean/treated water	21.3	21.3
	Inground Pit 1	Sump Pit	11.3	11.3
9	Stainless steel silos	Two cylindrical tanks each with a capacity of 60,000 L for processing of liquid waste	120	120
10	Bunker (1)	Aggregate – external bunker	99.2	148.8
	Bunker (2)	Aggregate – external bunker	99.2	148.8
	Bunker (3)	Fine aggregate/sand – internal bunker	117.7	176.6
	Bunker (4)	Fine aggregate/sand – internal bunker	122.9	184.4
	Bunker (5)	Fine aggregate/sand – internal bunker	144.5	216.8
	Bunker (6)	Filter press waste – internal bunker	146.5	219.8
		Total Maximum Storage Capacity		**1458.4**

Accounting for a factor of safety, additional waste storage required on site is 1,460 tonnes at any one time.

8.5.5 Legal Requirements

The management and storage of waste on site would comply with relevant legislation and guidelines as detailed in the Waste Management Report.

8.5.5.1 EPL Variation

The facility will require a variation to the existing environment protection licence for the increase in waste storage quantities and for the processing of liquid waste. Scheduled activities under the POEO Act associated with the dewatering plant include:

- Clause 41 – Non-thermal treatment of liquid waste; and
- Clause 42 – Waste storage

8.5.5.2 Waste Tracking Requirements

The existing and proposed facility does not accept waste that needs to be tracked under the waste tracking system, Schedule 1 of the Waste Regulation. The facility would record all waste loads using the existing weighbridge and docket system.

8.5.5.3 Resource Recovery Orders and Exemptions

Relevant resource recovery exemption orders including: the recovered aggregate order 2014 and the treated drilling mud order 2014. Quality control measures would be put in place in order to comply with these orders. In the event the material does not comply with the order, alternative uses for the material such as use in concrete or other products would be investigated.

8.5.6 Waste Management

A waste management plan detailing the waste associated with the proposed development in line with Council requirements for demolition, construction and ongoing waste is provided with the development application.

Waste would be managed on site as described in the tables detailed earlier and in the Waste Management Report.

8.5.6.1 Incoming Waste Procedure

An incoming waste procedure detailed in the Waste management report would be implemented which details the procedure for inspection of C&D loads and management of any non-conforming waste. This includes a procedure for incoming liquid waste loads. A waste specification for drilling mud is provided which sets requirements for incoming loads that need to be complied with.

8.6 HAZARDS AND RISKS

This section presents the hazards and risks associated with the proposed modifications.

8.6.1 Chemicals and Dangerous Goods Storage

The site will store 33,000 L of diesel in a self bunded diesel tank. This tank will be protected from vehicle collision using concrete barriers. Additionally, the site will also hold other various chemicals that are used for trucks and machinery, including degreaser, oils and lubricants. Small quantities of a flocculant (a non-dangerous good) will be stored on site to aid in recovery of mineral ores and remove suspended material from wastewater. All of these chemicals will be stored inside on bunded pallets.

Table 8-13: Chemical Storage

Product Name	UN No.	ADG/GHS	GHS Signal Word	Quantity Storage Capacity	Storage Type	Storage Location
Diesel	3082	ADG: non-dangerous good (Combustible Liquid C1) GHS: Aspiration Hazard: Category 1; Carcinogenicity: Category 2; Flammable Liquids: Category 4; Hazardous to the Aquatic Environment – Long-term hazard: Category 2	DANGER	33,000 L	Self-bunded storage tank	Outside
Polyelectrolyte flocculant	N/A	Eye Damage/ Irritation: Category 1	N/A	250 kg	Bunded pallets	Inside
Degreaser	Not regulated	Eye Damage/ Irritation: Category 2A Skin Corrosion/Irritation: Category 2	WARNING	200 L	Bunded pallets	Inside
Truck Wash	Not regulated	Eye Damage/ Irritation: Category 2A Skin Corrosion/Irritation: Category 2	WARNING	200 L	Bunded pallets	Inside
Engine Oil	Not regulated	N/A	N/A	1000 L	Bunded pallets	Inside
Transmission Oil	Not regulated	N/A	N/A	200 L	Bunded pallets	Inside
Diff Oil	Not regulated	N/A	N/A	200 L	Bunded pallets	Inside
Grease and Lubricants	Not regulated	Grease: N/A Lubricant: Flammable Aerosol Category 1 Gas Under Pressure: Compressed gas Aspiration Toxicity Category 1 Specific Target Organ Toxicity Single Exposure Category 3 (Nervous System effects)	Grease: N/A Lubricant: Danger	200 kg	Bunded pallets	Inside

Table 8-13: Chemical Storage

Product Name	UN No.	ADG/GHS	GHS Signal Word	Quantity Storage Capacity	Storage Type	Storage Location
pH Adjustment Chemicals	1830 1824	Corrosive to Metals - Category 1 Skin Corrosion - Sub-category 1B Eye Damage - Category 1 ADG: Class 8	Danger	400L	Chemical storage cabinet (Acids stored separate to bases)	Inside

8.6.2 Preliminary Risk Screening

Details of Dangerous Goods (DG Code) and/or Hazardous Chemicals (GHS Classification) typically used and stored onsite, with current and proposed storage quantities provided in Table 8-14. Safety Data Sheets (SDS) of all the listed chemicals are available on request.

Chemical management requires a facility to comply with the requirements of the *Work, Health and Safety Regulation 2017*. Notification to SafeWork Australia is not required as chemical quantities do not exceed the manifest quantities.

Requirements in Australian Standards also need to be applied when a facility stores more than minor quantities of a hazardous substance/chemical belonging to one of the nine Classes of Dangerous Goods. The basis of management for chemical safeguards for these classes is described in the following Australian Standards:

- AS 1940–2017 *The storage and handling of flammable and combustible liquids;*
- AS 3780-2008 *The storage and handling of corrosive substances*;
- AS/NZS 1596:2014 *The storage and handling of LP Gas;* and
- AS 4332–2004 *The storage and handling of gases in cylinders.*

Storage of all hazardous chemicals would comply with the above standards. General controls that need to be met for adequate chemical management at the site are as follows:

- Provision of adequate fire protection services;
- Provision of spill kits near chemical storage area;
- Site securely locked when not in operation;
- Up to date environmental and safety management procedures and systems; and
- Personnel regularly trained and competency tested in matters regarding the use of firefighting equipment.

A preliminary risk screening of the proposed development in accordance *with State Environment Planning Policy No. 33 – Hazardous and Offensive Development* (SEPP 33) has been undertaken, with results provided below. The quantities of dangerous goods do not exceed the threshold quantities for applying SEPP 33. Therefore, a Preliminary Hazard Analysis (PHA) is not required.

Table 8-14: SEPP 33 Preliminary Risk Screening

Class	Screening Threshold	Description	Site Specific Description	Quantity to be stored	Triggers SEPP 33
Class 1.2	5 tonne	Explosives	None	None	No
Class 1.3	10 tonne	Explosives	None	None	No
Class 2.1	10 tonne or 16 m^3 if stored above ground 40 tonnes or 64 m^3 if stored underground or mounded	Flammable Gases	None	None	No
Class 2.2	Not Relevant	Non-flammable, non-toxic gases	None	None	Not relevant
Combustible Liquid C1	**Not relevant**	**Combustible liquid with flashpoint of 150°C or less**	**Diesel stored in self-bunded tank**	**33,000 L**	**Not Applicable**
Combustible Liquid C2	Not relevant	Combustible liquid with flashpoint exceeding 150°C	None	None	Not Applicable
Class 2.3	5 tonne	Anhydrous ammonia	None	None	No
	1 tonne	Chlorine and sulphur dioxide stored as liquefied gas in contains <100 kg	None	None	No
	2.5 tonne	Chlorine and sulphur dioxide stored as liquefied gas in containers >100 kg	None	None	No
	100 kg	Liquefied gas kept in or on premises	None	None	No
	100 kg	Other toxic gases	None	None	No
Class 3	Assessed by reference to figures 8 & 9 of applying SEPP 33	Flammable liquids PG I, II and III	None	None	No
Class 4.1	5 tonne	Flammable Solids	None	None	No
Class 4.2	1 tonne	Substances liable to spontaneous combustion	None	None	No
Class 4.3	1 tonne	Substances which, in contact with water, emit flammable gases	None	None	No

Table 8-14: SEPP 33 Preliminary Risk Screening

Class	Screening Threshold	Description	Site Specific Description	Quantity to be stored	Triggers SEPP 33
Class 5.1	25 tonne	Ammonium nitrate – high density fertiliser grade	None	None	No
Class 5.1	5 tonne	Oxidising substances	None	None	No
Class 5.1	2.5 tonne	Dry pool chlorine – in containers <30 kg	None	None	No
Class 5.1	1 tonne	Dry pool chlorine – in containers >30 kg	None	None	No
Class 5.1	5 tonne	Any other Class 5.1	None	None	No
Class 5.2	10 tonne	Organic peroxides	None	None	No
Class 6.1 PGI	0.5 tonne	Toxic substances	None	None	No
Class 6.1 PGII & III	2.5 tonne	Toxic substances	None	None	No
Class 6.2	0.5 tonne	Infectious substances	None	None	No
Class 7	All	Radioactive Material	None	None	No
Class 8 PGI	5 tonne	Corrosive substance	None	None	No
Class 8 PGII	**25 tonne**	**Corrosive substance**	**Both degreaser and truck wash to be stored in bunded area. pH adjustment chemical**	**800L**	**No**
Class 8 PGIII	50 tonne	Corrosive substance	None	None	No

8.6.3 Fire

8.6.3.1 Fire Risk Assessment

8.6.3.1.1 Hazard Identification Charts

In order to identify and characterise the nature of potential fire events, a series of Hazard Identification Charts have been compiled. The compiled charts are provided overleaf. The charts, for the purpose of this study, only assess the potential fire events of the proposed development. Each chart consists of four columns:

Column 1: *Functional/Operational Area*
The process area of the Site involved with the potential event is listed e.g. Flammable Liquid Store.

Column 2: *Possible Initiating Event*
The events that are considered to be likely or realistic are listed. Where the possible consequences are similar, the events are listed together and individually numbered.

Column 3: *Possible Consequences*
The outcomes from an event occurring are listed e.g. Fire, Explosion.

Column 4: *Prevention/Protection Measures*
The measures designed into the function/operation of the particular area of the site are listed. The measures include for example safeguards, design features, management methods and operator training.

Table 8-15: Event/Consequence Analysis Table

Functional/Operational Area	Possible Initiating Event	Possible Consequences	Prevention/Protection Measures
Diesel • Diesel tanker refuelling fire • Mobile equipment/trucks refuelling using diesel storage tank • Diesel tank pool fire	1. Vehicle collision: dispenser is hit, parked tanker is hit, tanker hose is hit 2. Fuel leak: tanker drives off with hose still connected, tank is overfilled, tank vent is blocked, equipment failure, filling non-compliant container, person leaving nozzle unattended 3. Equipment leak: Equipment that operates on diesel is not properly sealed after refuelling. 4. Smoking and other personal ignition sources 5. Lightning strike 6. Adjacent property fire 7. Arson	1. Vapour is ignited causing fire or spill, damage to property, injury or death. 2. Fuel is ignited in equipment causing equipment damage or destruction, or the loss of life. 3. Spilt fuel enters the environment, soil, stormwater, ground water	1. Diesel tank designed to comply with AS1940, AS1692 and AS1657. 2. Diesel tank protected by concrete barriers. 3. Tanker driver training – handling of flammable liquids, spill kit training, check volumes, monitor filling, emergency stop. 4. Overfill protection, 5. Fill Gauges; 6. Fill point signage; 7. Containment system (self-bunded tank); 8. Safe location of fill point; 9. No smoking on site; 10. Signage prohibiting use of ignition sources; 11. Staff dangerous goods training; 12. Nozzles with safety cut out valve; 13. Low speed limit; 14. Fire extinguishers 15. Fire service equipment available; 16. Emergency response plan includes actions to take if a fire occurs; 17. Fully fenced site and locked gates during after-hours; 18. Smoke detectors within building 19. Stormwater isolation valve.
Chemical Storage Area • Refilling of lubricant • Flocculant • Various chemicals	1. Smoking 2. Broken fluorescent light 3. Arson 4. Adjacent property fire 5. Lightning Strike 6. Lubricant leaking/spillage 7. Damaged by moving car or truck	1. Lubricant is ignited, causing fire which can lead to damage to property, injury or death. 2. Chemicals enter the groundwater, environment, soil or stormwater. 3. Nearby trucks or cars are damaged or set alight.	1. Storage of chemicals to comply with AS1940; 2. Low Speed Limit; 3. Smoke detectors in building; 4. No smoking policy in and near the building; 5. Signage prohibiting the use of ignition sources; 6. Staff training to prevent spillages and leakages; 7. Containment system (Chemicals are stored in a self-bunded area) 8. Fire extinguishers;

Table 8-15: Event/Consequence Analysis Table

Functional/Operational Area	Possible Initiating Event	Possible Consequences	Prevention/Protection Measures
Fire in office building	1. Smoking 2. Appliance fire 3. Broken fluorescent light 4. Faulty electrics 5. Arson 6. Adjacent property fire 7. Heaters near flammable objects	1. Full scale building fire; 2. Possible spread of fire to other areas.	1. No smoking on site; 2. Fire extinguishers; 3. Fire service equipment available; 4. Emergency response plan includes actions to take if a fire occurs; 5. Fully fenced site and locked gates during after-hours; 6. Smoke detectors within building.
Screening Equipment	1. Smoking 2. Broken fluorescent light 3. Arson 4. Adjacent property fire 5. Equipment Malfunction	1. Full scale equipment fire; 2. Damage to equipment and personnel; 3. Possible spread of fire to other areas.	1. Regular servicing of equipment; 2. Staff training on equipment; 3. No smoking on site; 4. Fire extinguishers; 5. Fire service equipment available; 6. Emergency response plan includes actions to take if a fire occurs; 7. Fully fenced site and locked gates during after-hours;
Crusher	1. Smoking 2. Broken fluorescent light 3. Arson 4. Adjacent property fire 5. Equipment Malfunction	1. Full scale equipment fire; 2. Possible spread of fire to other areas.	1. Regular servicing of equipment 2. Staff training on equipment; 3. No smoking on site; 4. Fire extinguishers; 5. Fire service equipment available; 6. Emergency response plan includes actions to take if a fire occurs; 7. Fully fenced site and locked gates during after-hours;

Table 8-15: Event/Consequence Analysis Table

Functional/Operational Area	Possible Initiating Event	Possible Consequences	Prevention/Protection Measures
Mud Dewatering Plant	1. Smoking 2. Broken fluorescent light 3. Arson 4. Adjacent property fire 5. Equipment Malfunction	1. Full scale equipment fire; 2. Possible spread of fire to other areas.	1. Regular servicing of equipment 2. Staff training on equipment 3. No smoking on site 4. Fire extinguishers 5. Fire service equipment available 6. Emergency response plan includes actions to take if a fire occurs 7. Fully fenced site and locked gates during after hours 8. Smoke detectors within building

8.6.3.2 Fire Safety in Waste Facilities

Fire and Rescue NSW developed guidelines regarding fire safety within waste facilities titled, 'Fire safety guideline – Fire safety in waste facilities', and dated February 2020. The proposed development does not apply, as per section 3 of the Fire Safety Guidelines (February 2020):

> *This guideline does not apply to any waste facility, or areas of, that are being used for:*
>
> *a) Landfill (but, may apply to a waste facility on the landfill site)*
> *b) composting, including in-vessel, green waste and anaerobic digestion*
> *c) Liquid waste treatment*
> *d) Hazardous chemicals or special waste treatment (e.g. waste tyres), or*
> *e) Less than 50 m^3 of combustible waste material.*
>
> ***Note:** Fire safety requirements still apply to waste facilities not covered by this guideline.*

Definitions:

> *Combustible waste material – means any solid waste material that can readily ignite and burn under normal conditions, which includes:*
> - *Paper and cardboard*
> - *Wood and wood based products*
> - *Plastic*
> - *Rubber*
> - *Textiles*
> - *Waste derived fuels such as refuse derived fuels (RDF), solid recovered fuels (SRF) and processed engineered fuels (PEF)*
> - *Metal with combustible contaminants; and*
> - *Any other waste material which may pose a notable fire risk like above.*

The proposal is for liquid waste treatment, therefore the guideline does not apply to this area of the facility. Furthermore, the site will store less than 50 m^3 of combustible waste material therefore this guideline does not apply.

8.6.3.3 Stockpile Sizes

As discussed above minimal combustible wastes will be stored on site, therefore the size of stockpiles do not present a risk of fire spreading on the site.

8.6.3.4 National Construction Code (NCC)

The dewatering plant will occupy an existing building that would be extended. With the equipment installed it is required to comply with Volume One of the National Construction Code (NCC).

The building housing the dewatering plant is already built requiring only minor extensions and is expected to be in compliance with the code. A BCA compliance report can be undertaken if required. The main requirement due to the use of the building as a dewatering plant is assessing whether the site meets the fire exit distance given the locations of the equipment.

Provision D1.4ci of the NCC BCA Volume 1 is of most relevance:
no point on a floor must be more than 20 m from an exit, or a point from which travel in different directions to 2 exits is available, in which case the maximum distance to one of those exits must not exceed 40 m;

The floor plan has been reviewed and as the building has a small footprint; all accessible locations including pathways around equipment easily comply with this provision.

Provision E1.3ai of the NCC BCA Volume 1 is also of relevance:
A fire hydrant system must be provided to serve a building having a total floor area greater than 500m^2.

The floor plan shows the building with the extensions would have a floor area of 587 m^2. Therefore, a hydrant system that meets the requirements of AS 2419.1 must be provided.

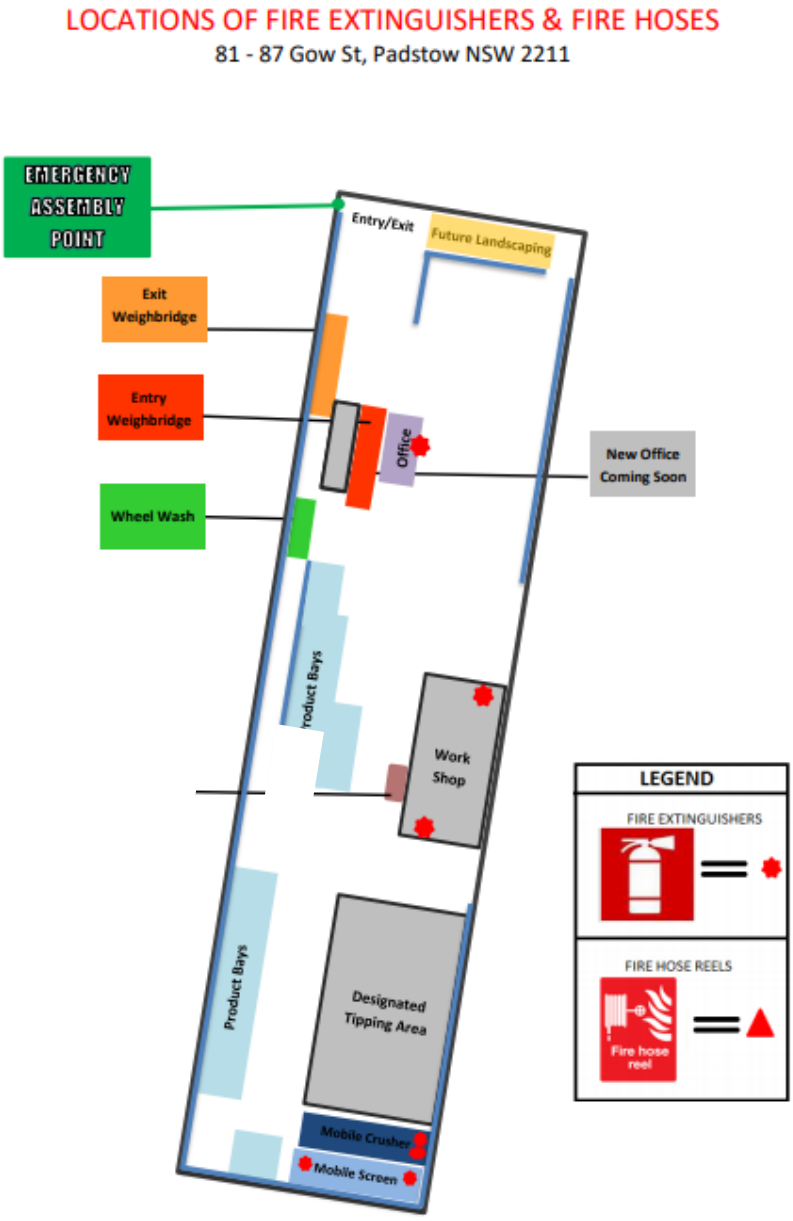
8.6.3.5 Contaminated Fire Fighting Water

The site has limited capacity to contain contaminated fire-fighting water. Based on the proposed stormwater concept design, the site could contain up to 200kL of contaminated fire-fighting water in the stormwater containment system. An isolation valve would be installed to ensure any contaminated fire fighting water runoff can be contained on site. As the fire risk from the facility is low, no additional containment is considered warranted.

8.6.3.6 Firefighting Equipment

The following figure presents the existing firefighting equipment present at site.

Figure 8-3: Fire Extinguishers & Hose Reels



8.6.3.7 Assessment of Fire Threat

There is a potential fire risk from diesel use on the site. However, the tank is fully compliant with AS1940 and as such, the risk of a fire starting is low. The handling and management of the diesel, if undertaken with care, is also extremely unlikely to start a fire. The malfunctioning of equipment also presents another possible fire risk. However, proper maintenance of the equipment should eliminate any serious risk of fire. Due to the nature of the operation, there is a risk of fire occurring from arson or an off-site fire, although these are also unlikely.

The Emergency Plan, which will be completed in accordance with AS3745–2010, will need to provide work practice procedures to reduce this risk to a low level. This is provided in Section appendix 18. No further assessment is considered warranted.

The following safeguards and recommendations would be adhered to at the site to control potential fire risks:

- Fire detection systems are installed and operated in accordance with AS 1670.1:2004.
- Diesel is to be stored and transferred in accordance with AS1940.
- Fire services at the site are to be maintained in accordance with AS 1851–2012.
- Emergency lighting and exit signage are to be provided in accordance with the BCA and AS 2293–2005.
- Specific on site personnel are to be trained in specific site procedures, emergency procedures and the use of hose reels. Hose reels near to the tank farm would have foam available.
- Strict control of ignition sources to be enforced on site.
- Maintenance and housekeeping practices provided in accordance with AS/NZS 4745:2012.
- A hydrant system would be provided for the dewatering building in accordance with AS 2419.1.

8.6.3.8 Bushfire Hazard

The subject site is not located on bushfire prone land. Fire safety equipment adequate for the proposed modifications would be provided on site as discussed in the previous section. No further assessment is warranted.

8.6.4 Flooding

Initial consultation with Canterbury-Bankstown Council in relation to flooding issues was undertaken and Council advised that NO flood / overland flood study is necessary providing requirements were to be complied with.

However, due to changes in the development as part of the retaining wall design, a flood assessment is to be provided. Indesco have prepared a flooding assessment in line with addressing other issues in relation to stormwater. Council have been consulted during this assessment.

The full assessment is provided in Appendix 12.

8.6.5 Incident Management

The site's Emergency Plan and Pollution Incident Response Management Plan (PIRMP) address incident management. Incident management specifically relating to pollution incidents is also included in Section 4.4 of the Site's Environmental Management Plan.

The Emergency Plan is provided as Appendix 18 and the Environmental Management Plan as Appendix 17. The PIRMP is available on the website: www.gsrc.com.au. This would be updated for dewatering activities upon approval of the dewatering plant.

8.6.5.1 Emergency Shutdown Contingency Plans

Emergency plant shutdowns are very rare. Shutdowns due to emergency incidences such as fire or flooding are addressed in the site emergency plan.

If machinery breakdown occurs, then the incoming material storage areas would accumulate waste. There are three full time fitters onsite which can resolve most mechanical issues with equipment onsite. In the unlikely event they cannot resolve a breakdown issue a technician would be called out repair the breakdown. If the breakdown cannot be fixed in time to ensure the site does not accumulate more waste than the Environment Protection Licence allows, the following contingency measures are available:

- Hire replacement equipment such as mobile crusher and screen;
- Call off scheduled deliveries of waste; and/or
- Transporting unprocessed waste offsite to another resource recovery facility licenced to receive that waste.

Staff are available at all times to manage onsite traffic, with the exception of evacuation scenarios where the safety of personnel take priority over traffic management.

9. SOCIAL IMPACTS AND SAFEGUARDS

This section addresses the most significant social impacts that could result from the proposed development, which are human health and traffic issues. Visual impacts and heritage are also discussed briefly.

9.1 HUMAN HEALTH

Potential health impacts from the proposed development have been assessed with reference to the *Health Impact Assessment Guidelines* (enHealth, 2001). Identified issues concerning human health are detailed below.

9.1.1 Air Quality

Impacts to air from the proposed development are primarily related to dust emissions, as discussed in Section 8.1. Chemical compound and odour emission levels were considered negligible or deemed absent from the proposed development.

Dust from the proposed development will be appropriately managed and controlled with proposed and existing mitigation measures on site. Predicted dust emission levels from the proposed development are below the *Approved Methods* criteria and will result in very minor ground level concentrations. Therefore, air quality impacts with regards to human health are considered negligible.

9.1.2 Noise

High noise levels can potentially cause health impacts (e.g. hearing loss) to workers who are exposed to it on a daily basis. Control practices that will be in place to minimise the risk of exposure to employees include the use of appropriate PPE and undertaking systematic equipment maintenance. Additionally, occupational noise assessments can be carried out initially to monitor noise levels associated with the proposed development.

Potential health impacts associated with external environmental noise are considered unlikely based on the results from the Noise Impact Assessment (Appendix 2), which show that noise impacts at nearest sensitive receptors are expected to be negligible.

9.1.3 Fire Risk

Smoke released from a fire would cause a potential risk to human health through inhalation, as well as burns from a fire. Potential fire risks may be associated with flammable chemicals, faulty machinery/plant or combustible materials on site.

With correct maintenance of equipment, and adequate fire services and equipment in place, the risk of a fire occurring on site is considered to be low.

Additionally, the nature of the materials to be accepted on site (drilling mud and concrete washout liquid wastes) are non-combustible and therefore unlikely to pose a fire risk.

9.1.4 Chemical Spill

Potential adverse impacts to health could result from unintended human contact with hazardous chemicals, upon their accidental release within the building and/or externally to the site, through the stormwater system. The possibility of such an event occurring is considered to be low and a number of safeguards are in place to reduce the risk of chemical spills at the proposed development.

Potential hazards associated with chemicals on site will be reduced and mitigated due to the following:

- Storage and handling of chemicals will be undertaken within the enclosed building area, reducing the risk of contaminants making contact with the environment and the surrounding community;
- All chemicals are to be safely stored according to the relevant Australian Standard, including bunding for storage of dangerous goods and spill clean-up equipment is available on site to clean up potential chemical spills should these occur;
- In addition to chemicals being stored within bunded areas, chemicals will be stored upon sealed hardstand, further limiting potential health impacts from the accidental release of hazardous chemicals to on-site workers or the local community; and
- A Safety Data Sheet register would be maintained and the identification of chemicals stored on site and their potential hazards would be included in training as part of the site's EMP.

9.1.5 Employee Health and Safety

All employees would undergo appropriate training as part of site induction and be provided with appropriate Personal Protective Equipment (PPE) for their role, such as ear plugs (if required), high visibility clothing and safety boots. The employer would ensure the operation is conducted as approved and appropriate resources are available for work safety. The proposed development would be required to comply with the following Acts and Regulations relating to health and safety:

- Work Health & Safety Act 2011; and
- Work Health & Safety Regulations 2017.

Employees would be trained in the appropriate safety procedures applicable to their role including use of firefighting equipment.

9.2 VISUAL IMPACTS

Figure 9-1 below shows the existing view of the site from Gow Street. Site changes will be confined to the rear of the site and within an existing building. This will not result in significant changes to the site appearance from Gow Street and therefore visual impacts will be negligible.

Figure 9-1: Existing view of site from Gow Street



9.3 HERITAGE

As per correspondence with the Department of Planning, Industry & Environment (Ref: SSD-10450) in response to the supporting scoping report for the proposed development, "a search of the NSW State Heritage Inventory found no Aboriginal places or items of heritage on, or within the vicinity of the site and that the site is fully concreted with no vegetation and therefore a full Aboriginal and Cultural Heritage Assessment is not considered required. EES notes however that the proposed development may require excavation work. If the excavation is likely to disturb the ground surface it is recommended an Aboriginal cultural heritage assessment report is prepared".

Planned excavations may result in ground disturbance and therefore a full Aboriginal cultural heritage assessment report has been prepared by McCardle Cultural Heritage. A summary of the process and outcomes of the assessment is presented below:

> *The project area lies within the Cumberland Plain, which is a broad and shallow basin that stretches westwards from Parramatta to the Hawkesbury-Nepean River and southwards from Windsor to Thirlmere. The project area has undergone excavation and fill works for the existing recycling facility resulting in a disturbed landscape with none of the original landforms remaining.*
>
> *The underlying geology of the project area is the Wianamatta Group geological formation, specifically the Bringelly Shale geological unit. The Bringelly Shale formation is primarily composed of shale, with occasional calcareous claystone, laminate, and coal (Bannerman*

and Hazelton 1990, p. 28). The absence of suitable raw materials types in the project area, such as mudstone and silcrete, indicates that stone materials suitable for manufacturing stone artefacts would have been transported into the project area.

Situated on the Blacktown residual soil landscape, the geomorphology of the local area includes texture contrast soils that consist of an upper soil Horizon A and underlying B (referred to as duplex soils). Unit A and Unit B are interpreted as being Holocene and Pleistocene in age respectively and within the region, sites tend to occur on or within soil Horizon A or are often present at the interface of the A and B horizons.

In terms of fresh water availability, the project area is located over 770 metres west of a 3rd order creek (Salt Pan Creek) and the closest reliable fresh water is the Georges River located 5 kilometres west of the project area. Thus, the project area was not well resourced in terms of fresh water availability, and as water is essential for survival, the project area would not have been suitable for camping.

In relation to land uses and associated impacts to the landscape and associated cultural materials, European settlers extensively cleared the original native vegetation in the 1800's and since then the investigation area has been subject to additional clearing, excavation and fill works associated with the existing recycling facility and associated infrastructure. These direct impacts to the land and associated cultural materials that may be present are easy to see and understand.

A search of the AHIMS register indicate there are no known Aboriginal sites recorded within two kilometres of the project area Based on the AHIMS results and regional assessments, patterns of past Aboriginal land use have been identified. Previous assessments have identified that artefact scatters and isolated finds are the most prominent site type. These assessments have also identified that both landform and distance to water were important factors in past Aboriginal land use. Elevated landforms within 50 metres of reliable water appear to have been the most favoured. In relation to fresh water sources, the higher the stream order (and more reliable water source) the higher the numbers of sites and site densities and both decrease with distance from the resource. Raw materials are predominantly silcrete and mudstone followed by chert and quartz and artefact types are mainly flakes, broken flakes and flaked pieces. All sites were noted to have been disturbed through past landuses including but not limited to clearing, agricultural and pastoral activities, residential developments, utilities, infrastructure and erosion.

The presence of past Aboriginal people and their use of the landscape are undeniable and evidence is seen in the cultural materials that have survived both natural and human landuses since colonisation of the area in the 1800's. Whilst the regional environment provided resources, including raw materials for tool manufacture, fauna and flora for subsistence, medicinal resources, ceremonial places, and water which is a survival necessity that would have allowed for sustainable occupation of the area, the project area itself comprises a landscape in which water courses are absent which is likely to have been a significant factor in relation to past Aboriginal occupation of the locality.

The absence of resources in the project area may have supported transitory movement such as hunting and gathering, travel and possibly camping by small numbers of people over short periods of time. Non-indigenous settlement and land uses have impacted the investigation area, most noticeably from vegetation removal and excavation works

associated with the current facility. Whilst it is clear Aboriginal people lived across the landscape, the evidence will have been impacted through such land uses. Based on the environmental, cultural and archaeological contexts, it was predicted that very low-density artefacts scatters and isolated finds representative of transitory movement (hunting and gathering, travel) may have been present within the project area, and that such evidence was likely to have been disturbed through past land uses.

The project area was surveyed as one unit based on the disturbed landform. Consisting of a highly disturbed landscape with none of the original landform present, the project area contains an existing recycling facility that has been previously completely excavated and concreted. The project area, being covered in concrete, a typical effective coverage estimation is not possible. No archaeological sites or Potential Archaeological Deposits (PADs) were identified during the survey and this is likely due to a number of factors including:

- *Distance from reliable water and subsistence resources indicates the project area was unlikely to have been utilised for camping;*
- *The project area may have been used for travel and/or hunting and gathering which manifest in the archaeological record as very low-density artefact scatters and/or isolated finds; and*
- *Past and present land uses would have displaced and/or destroyed any evidence of past Aboriginal land use.*

Considering general models of occupation for the locality, the results of this and local investigations, the locality may have been utilised by Aboriginal people. As the project area itself is located over 770 metres from the closest water SOURCE and associated resources, the project area is unlikely to have been utilised more than a low intensity usage such as transitory movement or hunting/gathering activities.

As no sites or PADs were identified, there are no impacts on the archaeological record and the following recommendations are made:

3) The persons responsible for the management of onsite works will ensure that all staff, contractors and others involved in construction and maintenance related activities are made aware of the statutory legislation protecting sites and places of significance. Of particular importance is the National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010, under the National Parks and Wildlife Act 1974; and

4) Should any Aboriginal objects be uncovered during works, all work will cease in that location immediately and the Environmental Line contacted.

Should any unexpected materials (including heritage items, Aboriginal artefacts or remains) be uncovered during excavation, earthworks or construction, then the following steps would be taken:

1. Cease work immediately. Do not touch the suspect material or object.

2. Contact the Principal Contractor and inform of findings.

3. Set up temporary barricades (tape, bunting, or temporary fencing) to segregate the material and prevent access to the area.

4. Install erosion and sediment controls if necessary. Such controls include hay bales, geotextile fences and sediment barriers to prevent rainwater from transferring the suspect material off site.

5. Cover any stockpiled material containing the suspect material with tarps or plastic sheeting.

6. Arrange inspection by a suitably qualified person to confirm identification of the suspect material. Sampling and testing (if required) will be undertaken as recommended by this consultant. In the event that the object is suspected to be an Aboriginal object a qualified archaeologist will need to confirm this and make further recommendations.

7. If any suspected human remains are discovered during any activity, you must notify the NSW Police and the OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location. Do not recommence work at that location unless authorised in writing by the OEH.

8. If material is confirmed to be contaminated, a remedial action plan (RAP) may need to be prepared to deal with the material. Undertake recommendations in the RAP.

9. If the material is not contaminated and poses no threat to the human health or the environment, the barricades can be removed and work can continue as normal.

10. Record details of any unexpected find in the incident register.

The above actions are deemed sufficient for the minor excavations required on site. These actions would be included in an Unexpected Finds Protocol and implemented as part of the Construction Environmental Management Plan.

In addition, the following is noted:

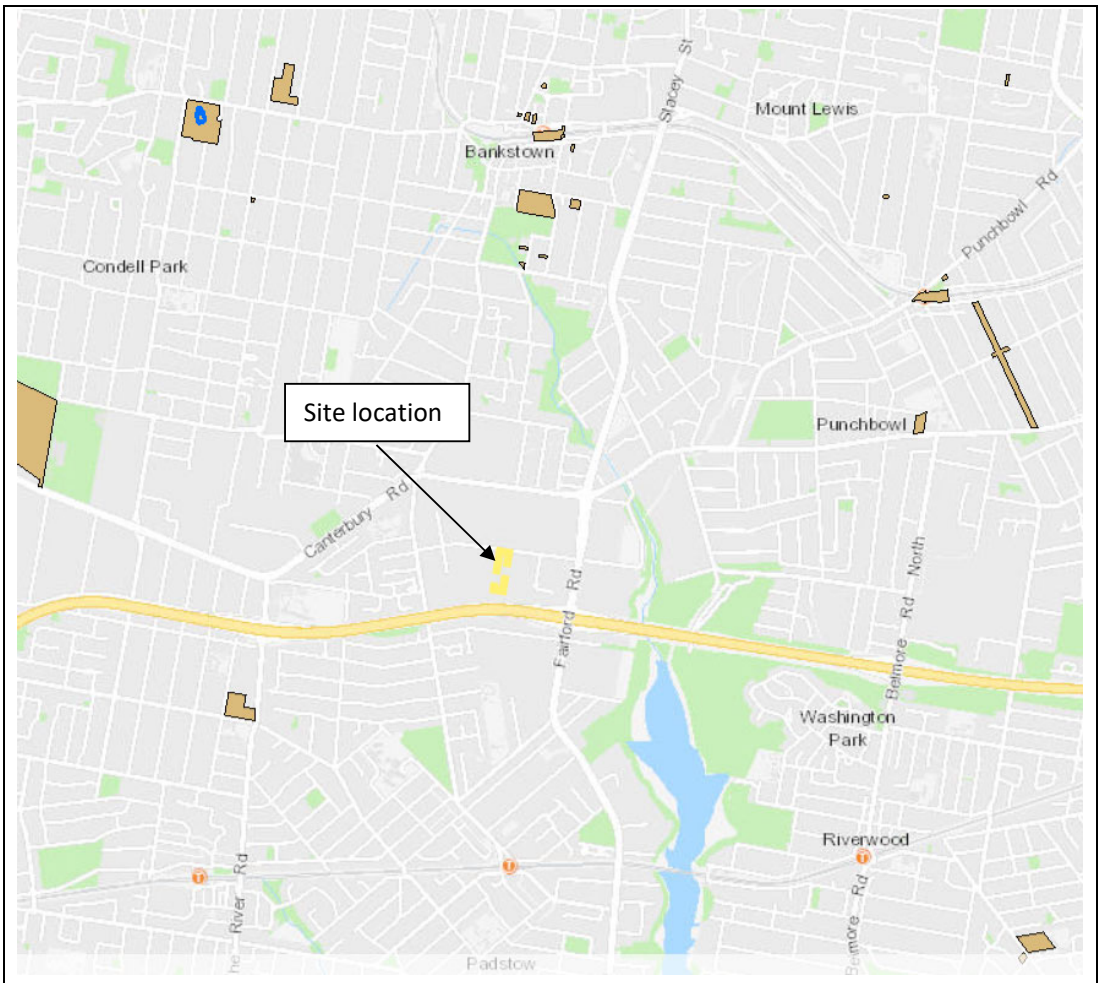
- A search for heritage places and items was conducted via the OE&H State Heritage Inventory, an online heritage database which includes listings from Aboriginal Places, State Heritage Register, Interim Heritage Orders, State Agency Heritage Registers and Local Environmental Plans.

- The subject land was found not to be affected by an Interim Heritage Order under the provisions of the NSW *Heritage Act 1977*. No Aboriginal Places or European heritage locations have been identified or uncovered on the subject site or in its vicinity.

- The site is also not listed as being a heritage item or containing items under the Bankstown LEP 2015.

The nearest general heritage item to the site is "Revesby Public School", 1.4 km to the south-west of the site (Figure 9-2). This site will not be impacted by the proposed development.

Figure 9-2: Heritage map



Source: NSW Planning Portal 2020

The full Aboriginal Cultural Heritage Assessment report is presented in Appendix 13.

9.4 ROAD, TRAFFIC AND TRANSPORT

9.4.1 Existing Road Network

The proposed site is located to the North of the Western Motorway within an area which is generally industrial. The site is accessed via Gow Street which is a local road with one lane each way and a sign posted speed limit of 50 km/hr.

Fairford Road is an arterial road with two lanes with intersection to Gow Street to the east of the site. Fairford Road provides access to the M5 Western Motorway and Canterbury Road.

Gibsons Avenue is a collector road with intersection with Gow Street and provides access to Canterbury Road.

9.4.2 Site Access

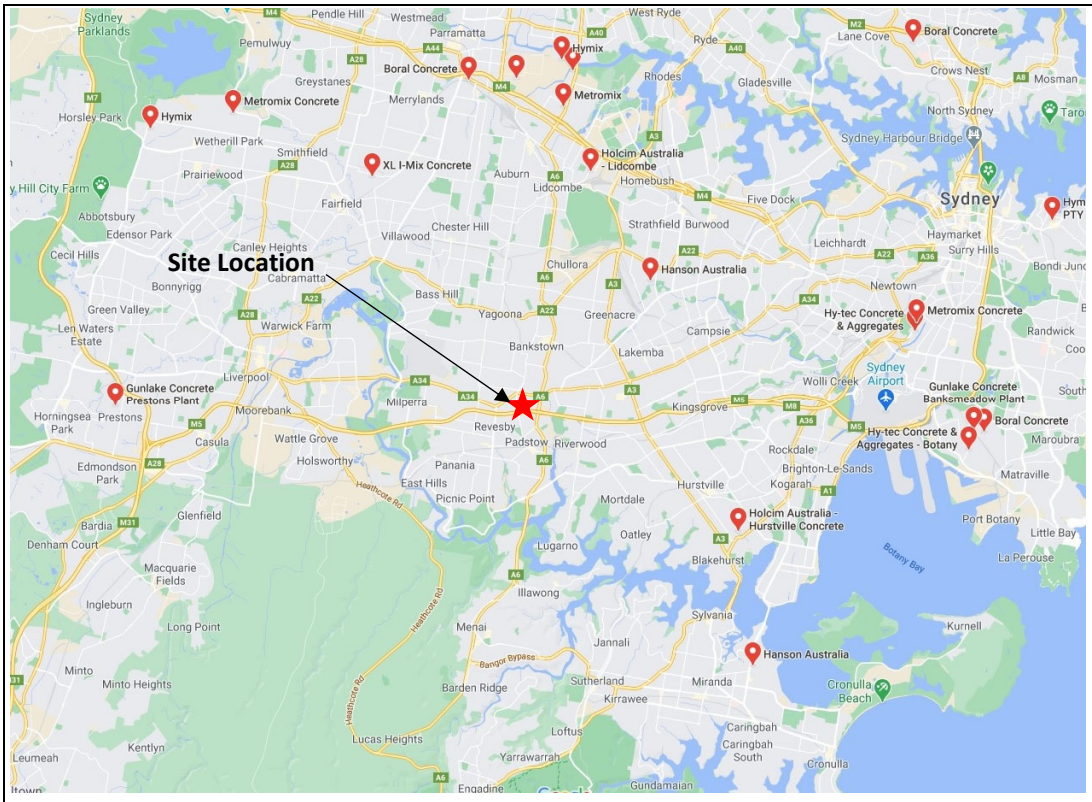
There are two entrance driveways to the development site from Gow Street. The driveway on the north west is the main entrance and exit to the facility. The driveway on the north east is an existing service entry and exit.

9.4.3 Truck Routes

The site is located centrally to enable trucks to access the M5 Western Motorway via Fairford Road, Canterbury Road and The River Road.

A map of the catchment in the following figures demonstrates the site is located in a suitable location to serve the construction industry and would not generate additional trips over long distances between construction sites batching plants and landfill locations. This is because the site would endeavour to serve local construction projects within government areas that are within close proximity of the site. The map shows existing concrete batching plants within the local area that could potentially be customers to the dewatering plant. Likewise, skip bin hire locations are also shown on a catchment where waste is pre-sorted prior to being brought to the site.

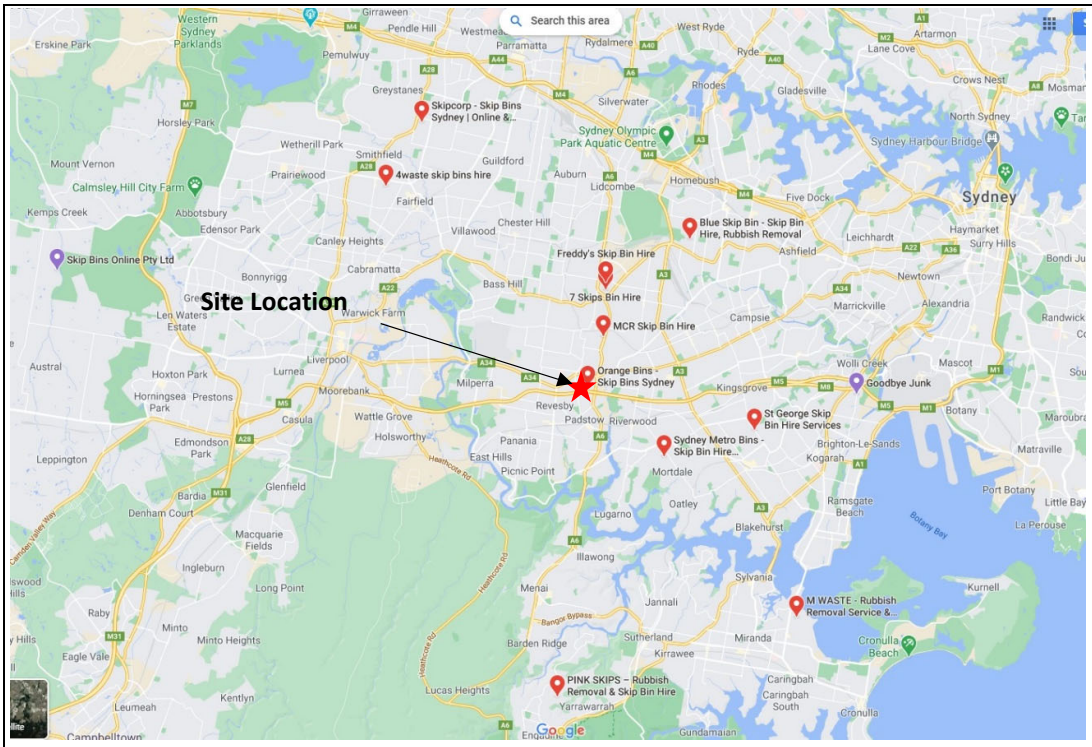
Figure 9-3: Map of Catchment – Concrete Batching Plants



Source: Google Maps 2020

N Not to scale	**LEGEND:** Concrete Batching Plant Location Site Location	Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

Figure 9-4: Map of Catchment – Skip Bin Hire Locations



Source: Google Maps 2020

↑N Not to scale	**LEGEND:** Skip Bin Hire Location Site Location	Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

9.4.4 Traffic Generation

The operation of the dewatering plant would generate additional traffic. The main vehicles accessing the site will include:

- Cars of site staff and visitors which would be restricted to the allocated parking areas only;
- Medium rigid trucks;
- B–Doubles;
- Liquid tanker trucks; and
- Concrete trucks.

At maximum proposed capacity, heavy vehicle trips per day are expected to include 44 on average for the C&D facility and 128 for the dewatering plant. The average daily trip generation of the liquid waste facility are estimated as follows:

- Liquid Waste Trucks (tanker trucks and concrete trucks) – 92
- Solid material Trucks – 36
- Cars/ light vehicles - 8

This accounts for trucks both coming in and going out and assumes 46 liquid tankers in each directed to transport 685 tonnes each day with 15 tonne average capacity. It also includes 18

trucks in each direction with a 10 tonne average capacity transporting 274 tonnes of solid material per day. It also includes 4 cars (staff or other vehicles).

In addition to that there is existing vehicle movements of the C & D facility:

- C&D trucks - 44
- Solid material Trucks – 36
- Cars/light vehicles - 6

This accounts for trucks both coming in and going out and assumes 22 trucks in each directed to transport 438 tonnes each day with 10 tonne average capacity trucks. It also includes 4 cars (staff or other vehicles).

It should also be said that the liquid waste truck peak hour in the day does not coincide with the commuter peak hour. In this case, the majority of liquid waste pickups would occur at the site from 7am onwards.

A liquid waste truck leaving the plant is required to take into account where the plant is located and the travel time from the facility to the construction site. Travelling in peak hour is inefficient since sitting in peak hour queue is unproductive time and is generally avoided.

9.4.5 Expected Truck & Car Distribution

The dewatering facility proposes to operate for 24 hours/seven days a week. However, the majority of liquid waste pickups would occur at the site from 7am onwards. Travelling in peak hour is inefficient since sitting in peak hour queue is unproductive time and is generally avoided. Peak vehicle movements are ten (10) trucks per hour. Table 9-1 displays an example of the truck distribution over a standard 24-hour period.

The peak hours are 8:00am to 9:00am and 5:00pm to 6:00pm for the weekday AM and PM peak hours respectively.

The approved operational hours for the C&D facility are: 06:00 and 18:00 Monday to Friday, and 07:00 and 18:00 on weekends. The existing facility will continue to operate within these hours.

Table 9-1: Expected Truck and Car Distribution

Time	C & D facility				Dewatering Facility			
	Incoming trucks per hour		Outgoing trucks per hour		Incoming trucks per hour		Outgoing trucks per hour	
	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy
1:00	NA	NA	NA	NA	0	1	0	1
2:00	NA	NA	NA	NA	0	1	0	1
3:00	NA	NA	NA	NA	0	1	0	1
4:00	NA	NA	NA	NA	0	2	0	2
5:00	NA	NA	NA	NA	0	2	0	2
6:00	0	1	0	1	0	2	0	2
7:00	0	1	0	1	0	2	0	1
8:00	***3***	***2***	***0***	***3***	***4***	***2***	***0***	***3***

Table 9-1: Expected Truck and Car Distribution

Time	C & D facility				Dewatering Facility			
	Incoming trucks per hour		Outgoing trucks per hour		Incoming trucks per hour		Outgoing trucks per hour	
	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy
9:00	0	2	0	1	0	3	0	4
10:00	0	3	0	2	0	4	0	5
11:00	0	3	0	3	0	5	0	5
12:00	0	3	0	3	0	5	0	5
13:00	0	2	0	2	0	5	0	5
14:00	0	2	0	2	0	5	0	5
15:00	0	1	0	1	0	4	0	4
16:00	0	1	0	1	0	3	0	4
17:00	***0***	***1***	***3***	***2***	***0***	***3***	***4***	***0***
18:00	NA	NA	NA	NA	0	3	0	3
19:00	NA	NA	NA	NA	0	3	0	3
20:00	NA	NA	NA	NA	0	3	0	3
21:00	NA	NA	NA	NA	0	2	0	2
22:00	NA	NA	NA	NA	0	1	0	1
23:00	NA	NA	NA	NA	0	1	0	1
0:00	NA	NA	NA	NA	0	1	0	1
Total	3	22	3	22	4	64	4	64
	6 light/day and 44 heavy/per day				8 light/day and 128 heavy/day			

Note: “Light” vehicles meaning cars, “Heavy” vehicles meaning trucks and liquid tankers

9.4.6 Vehicle Unloading and Loading times

Vehicle loading and unloading times are presented in the following table.

Table 9-2: Vehicle Unloading and Loading Times

	Proposed			Existing	
	Tanker trucks	Concrete trucks	Solid material trucks pickup	C&D drop off trucks	C&D material trucks pickup
Maneuvering around site (minutes)	2	2	2	2	2
Weighbridge time (minutes)	5	5	5	5	5
Average capacity (tonnes)	15	15	10	10	10
Description of unloading/ loading activity	Liquids are pumped out; pumps operate at 10 L/s	Liquids are washed and tipped out	Materials are loaded onto truck via FEL	Materials are tipped out	Materials are loaded onto truck via FEL
Unloading time (minutes)	25	10	N/A	2	N/A
Loading time (minutes)	N/A	N/A	15	N/A	15
Total time on site (minutes)	32	22	22	9	22

9.4.7 Traffic Impact Assessment

A traffic impact assessment was undertaken by ML Traffic Engineers. The report focuses on the proposed liquid waste facility and how the additional trips will impact on the operating performance of priority intersections as a result of operation of the facility. A summary of the outcomes of this assessment are provided below:

- SIDRA analysis was provided for existing and future traffic volumes the intersections of:
  - Stop intersection of Fairford Road with Gow Street; and
  - Priority intersection of Gibson Avenue with Gow Street and Stiles Avenue.

- The intersection analysis was assessed to determine the Degree of Saturation (DS), Average Delay (AVD in seconds) and Level of Service (LoS) at each intersection for the existing traffic volumes, traffic volumes as a result of the proposed development and traffic volumes forecast for future years 2021, 2026, 2031 and 2036.

- SIDRA analysis shows turn movements have a Level of Service (LoS) A (good operation) for the stop intersection of Fairford Road with Gow Street and a LoS A or B (good with acceptable delays and spare capacity) for the priority intersection of Gibson Avenue with Gow Street and Stiles Avenue. Both intersections will have spare capacity.

In summary, the proposed development will be a moderate trip generator for the weekday AM and PM peak hours. The additional trips from the proposed expansion of a liquid waste facility can be accommodated at the nearby intersections without significantly affecting intersection performance, delays or queues. Forecasted traffic volumes (for future years) at both surveyed intersections will run with a good level of service with minor change to queuing distances and degree of saturation.

The full traffic impact assessment is provided as Appendix 9.

9.4.8 Accessibility by Public Transport

There are several bus routes and train services that can be accessed from the closest bus stop to the site which is located 200 metres to the east of the site at the corner of Fairford Road and Gow Street. Bus M91 – Parramatta to Hurstville stops at the Fairford Road/Gow Street stop and later stops at Padstow train station in a southerly direction and Bankstown Station when travelling in a northerly direction. These train stations provide access to the city and the north west (Liverpool or Lidcombe to City via Bankstown) and south west (Macarthur to City via Airport or Sydenham) suburbs of Sydney. Bus S5 – Padstow to Milperra, bus M92 Sutherland to Parramatta and bus 927 to Padstow Heights are also accessible from Bus M91 at Padstow Station.

This network of public transport provides access to and from the site to many suburbs of Sydney.

9.4.9 On-site Traffic

There is ample room on site for trucks to manoeuvre, weigh their loads upon entry and exit, unload and/or load, wait, and enter and exit the site in a forward direction. Internal truck circulation is shown on the truck queuing plan, load and unload plan, and the swept path diagrams. A traffic management plan also provides operation measures to manage on-site traffic on a daily basis.

9.4.9.1 Transport, Queuing and Access

The following table provides a breakdown of vehicle waiting and activity during peak operations.

Table 9-3: Vehicle Waiting and Activity - Peak Operations

Activity	Details
Vehicles waiting to access the site	Up to 2 vehicles can wait in-front of the weighbridge prior to entering the site;
Vehicles at weighbridge	Up to 2 vehicles can weigh on the weighbridge at any one time;
Vehicle load inspections	Up to 3 vehicles either on the weighbridge or in front of the weighbridge can be untarped for load inspection prior to entering the site.
Vehicles within the site, waiting to access unloading areas	Up to 2 vehicles can wait behind the weighbridge at any one time waiting to access the unloading/loading areas
Vehicles unloading/loading times	Up to 3 vehicles can unload at any one time. 1 vehicle can load at any one time. Typically unloading and locating takes approximately 5 minutes.

Table 9-3: Vehicle Waiting and Activity - Peak Operations

Activity	Details
Vehicles exiting the site	Up to 2 vehicles can wait behind the weighbridge at any one time waiting to leave the site
Difference between weekdays and weekends	Weekdays are busier than weekends. Total number of vehicles on weekends is approximately 30% of the total number of vehicles on a weekday. The weekends often have more box trailers, as smaller jobs (households) arrive on site on the weekends.

A worst case scenario analysis showing vehicle stacking/queuing/waiting on site based on the proposed processing capacity, peak delivery times and the duration of time a vehicle is on site is provided in the form of a scaled plans that accompany the site plans in Appendix 8.

- A08 – Rigid truck queuing plan
- A09 – B-Double queuing plan
- A10 – Truck load and unload

9.4.10 Off Street Parking

Fifteen car spaces are provided at the site which as demonstrated in Section 5.7.6 complies with Bankstown DCP. This number of spaces also caters for the expected number of employees being nine (9) current full-time staff, and an additional ten (10) additional full-time staff who would be distributed over 2 shifts. Therefore a maximum of fourteen (14) staff would be required on site at any one time.

10. CUMULATIVE IMPACTS AND SAFEGUARDS

This section provides an assessment of the potential cumulative impacts that may arise as a result of the operations from the proposed development, concurrently or sequentially with other projects in the region.

Cumulative impacts are incremental environmental impacts that are caused by past, present or future activities that, when combined, may have further cumulative effect. In fact, the environmental impacts of any single project upon a receiver or resource may not be significant when considered in isolation; however, the potential impacts may increase when individual effects are considered in combination, either with the same project or together with other projects.

The potential cumulative impacts that could arise from the operations of the proposed development are assessed in the following subsections.

10.1 EXISTING C&D FACILITY

The cumulative environmental impacts from the existing C&D facility have been assessed. This includes cumulative air, noise and stormwater impacts. The following section provides justification in response to NSW EPA request to consider enclosing the existing C&D operations as part of the proposed development.

10.1.1 Enclosed Facility

The existing development which includes the C&D processing operations is approved (DA-51/1997) and is licenced under the *Protection of the Environment Operations Act, 1997*: EPL No. 10943 for the processing of 80,000 tonnes per year of building and demolition waste and asphalt waste, and the storage of up to 7,300 tonnes of waste at any one time. The EPA correspondence dated 20 February 2020 refers to C&D processing activities related to the proposed expansion of the C&D facility. This aspect of the proposed development is no longer part of the application.

The EPA correspondence dated 20 April 2020 refers to the new development which includes the addition of the dewatering facility. It should be noted that the proposed dewatering plant will be enclosed and aggregate bays covered and walled. This is shown on the site plans. The existing and approved C&D operations will continue to operate under the current consent and licence. It is considered unreasonable to request significant changes of this nature to site operations that are already approved. To enclose the entire site is economically infeasible and would result in the business closure. Cost analysis indicates significant upfront expenses are required to provide a large enough building to enclose all (existing and proposed) operations. Numerous options were considered in the planning process with regard to enclosing the facility including:

- Constructing the building in stages;
- Changes to the layout of the facility such as locating the C&D plant and constructing a building at the front (northern end) of the site;
- Enclosing the C&D operations using an awning;
- Providing shade sails over the C&D activities;
- Providing a rigid impermeable material over the C&D activities.

In all cases, the options were found to be either economically infeasible, insufficient room was available or infeasible due to disruption to work activities resulting in loss of income.

The requirement to construct an enclosed building would be considered warranted should expansion of the existing C&D facility be proposed. Should a future application be made with a larger throughput and potentially a concrete batching plant operation on site, returns on this investment would be expected to validate enclosing the facility.

As the existing operations are currently approved, the requirement to enclose these existing activities should not apply as the modification of the facility relates to establishment of a dewatering facility, with the C&D aspect remaining unchanged. The proponent has implemented dust control measures to minimise dust from the existing facility and continues to be pro-active in attempting to manage dust emissions. These measures include:

- Limiting stockpile height to 4 m;
- Constructing three walls around all storage bays;
- Construction of an 8.5 m high boundary wall which serves as a wind break;
- Improved upgraded water misting sprays;
- Addition of a flexible hood and vacuum ducting to capture dust emissions from crushing and screening operations.

It is acknowledged that enclosed recycling facilities are considered best environmental practice in Europe. Such initiatives are financially supported by the government. This is not the case in Australia. Standards for waste facilities are becoming more and more stringent without the financial support of the Australian Government. This needs to change particularly considering that the waste industry is not a very profitable industry.

For the above reasons, the existing C&D facility should not be required to be enclosed.

10.2 AIR QUALITY

This AQIA has been prepared in accordance with the NSW EPA guidelines *"Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales"* (2016) (AMMAAP), which shall henceforth be referred to as the *Approved Methods*. This document specifies particular pollutants which are assessed as a cumulative impact (incremental impact from site + background). The pollutants assessed cumulatively relevant to the subject site are PM_{10}, $PM_{2.5}$ and TSP.

Additionally, the GHG assessment has been prepared in accordance with the Australian Government *Department of the Environment and Energy, August 2019 Australian National Greenhouse Accounts – National Greenhouse Accounts Factors*.

Odour is not considered as a potential emission that would be generated from the proposed development and therefore was not assessed.

The air dispersion model AERMOD was used for the prediction of off-site dust impacts associated with the air emissions from the proposed operations. Two scenarios were included in the air dispersion modelling:

Scenario 1 – modelled emission sources with general mitigation measures recommended and
Scenario 2 – modelled emission sources with an additional custom flexible hood and vacuum ducting applied to the crusher/screen.

The assessment aimed to demonstrate the predicted dust impacts from site activities on neighbouring receptors with and without the use of the flexible hood and vacuum ducting applied to the crusher/screener. Preliminary dust monitoring undertaken on- and off-site demonstrate that current dust emissions from site activities exceed NSW EPA criteria.

Results of air impact modelling for both scenario 1 and scenario 2 demonstrate that incremental dust levels were reduced with the inclusion of a custom hood covering applied to the crusher/screener by ~12-46% at the most heavily impacted receptor (R11; 89 Gow Street, Padstow). It is recommended that all controls listed for Scenario 2 be applied onsite on site to ensure continued compliance and further reduce dust impacts from the proposed development on all nearest receptors, both industrial and sensitive.

In cases of elevated background concentrations, the NSW EPA requires a demonstration that no additional exceedances of the impact assessment criteria will occur as a result of the proposed site activities. Contemporaneous additions assessment was conducted for the most impacted receptor (R11; 89 Gow Street, Padstow). The 24 hour averaging period for PM_{10} showed 2 additional days of exceedance, however this is attributed to the elevated background concentration levels of 48.23 µg/$m^3$and 46.21 µg/m^3. The 24 hour averaging period for $PM_{2.5}$ demonstrated no additional days of exceedance.

With the proposed site activities and additional dust controls in place, it is considered that emissions to air from the site's operation are unlikely to cause harm to resident's health or the environment.

10.3 Noise and Vibration

Operational noise is a critical environmental issue in any area with surrounding residential receivers. The existing background noise levels were used in determining the project criteria for the noise impact assessment (Appendix 2). All relevant noise criteria were satisfied at nearest residential receivers in all time periods.

10.4 Surface Waters

The development proposes a stormwater concept design that utilises the proposed dewatering facility to minimise potential stormwater impacts. This will improve the current stormwater system. Therefore, contribution of the individual site has been appropriately mitigated and cumulative long term impacts are considered to be insignificant.

10.5 Waste Management

A major incident or recurring incidents involving the storage and management of waste products could have potential cumulative impacts if considered in the context of the surrounding area, which has the potential to deal with large volumes of waste generation. Incidents include

accidental spillages that have the potential to enter the surrounding environment causing land and water pollution.

A number of safeguards and management measures would be implemented at the site in order to prevent accidental release of any waste. These safeguards primarily include the existing stormwater controls and the proposed upgraded stormwater. The management measures include the environmental procedures presented in the site's EMP. With these procedures and safeguards in place, the contribution of the site to cumulative impacts from the incorrect handling and management of waste would be insignificant.

10.6 HAZARDS AND RISK

Hazards and risk associated with the proposed development are related to the potential for fires, spillage of chemicals and release of particulates into the surrounding environment.

There are safeguards established at the site to reduce the risk of fires as well as the risk of release of chemicals and particulates, such as the storage of chemicals according to relevant standards including bunding, provision of spill kits and appropriate staff training in emergency response.

Cumulative impacts are not expected due to the current safeguards and procedures in place. These would be maintained.

10.7 TRAFFIC AND TRANSPORT

The traffic impact assessment for the proposed development, undertaken by ML Traffic Engineers, considered cumulative impacts on the existing road network by using existing traffic count data of the surrounding road networks. Key intersections were assessed for the additional traffic generated by the proposal during AM and PM peak hour traffic.

Results of this assessment are presented in Appendix 9. The report concludes that the proposed development is a moderate trip generator for the weekday AM and PM peak hours. The additional trips from the proposed development can be accommodated at the nearby intersection without significantly affecting intersection performance delays or queues.

The proposal would have an acceptable traffic impact and there is no requirement for provision of any new traffic capacity roadworks.

11. ECOLOGICALLY SUSTAINABLE DEVELOPMENT

Ecologically sustainable development is defined as "development that meets the need of the present generation without compromising the ability of future generations to meet their own needs". Ecological sustainability requires a combination of good planning, and effective and environmentally sound approach to design, operations and management. The principles of ESD throughout the project's life cycle are outlined in the following paragraphs.

Decision making should be based on sound environmental management principles which consider not only the present, but also the future, particularly in relation to:

- Precautionary principle – if threats of serious or irreversible environmental damage exist, lack of full scientific evidence should not be used as a reason for postponing measures to prevent environmental degradation;
- Inter-generational equity – the present generation should ensure that health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
- The conservation of biodiversity and ecological integrity – the conservation of biological diversity and ecological integrity should be a fundamental consideration; and
- The valuation of the environment and resources and the establishment for the efficient use of resources.

The above principles have been incorporated into the overall design of the project and into the management of operations on site. The EIS outlines safeguards that would be implemented on site so that the proposed operations would cause minimal harm to the environment and that resources would be sustained to ensure availability to future generations, through reducing the environmental impacts on the surrounding community.

The main environmental safeguards to be implemented in order to minimise environmental harm, in line with ESD principles, are as follows:

- Implementation of air quality controls;
- Stormwater pollution controls, including fully contained process and storage areas.
- Fire protection services;
- Storage and handling of hazardous chemicals including hardstand area integrity management and maintenance of hazardous chemicals and liquid waste storage area;
- Waste management and stringent procedures to manage the incoming and outgoing waste; and
- Environmental Management Plan (EMP).

The proposed development would not have any foreseeable negative impacts on socio-economic aspects. Instead, a positive contribution from the increased operations on site would be the creation of jobs, with additional employment opportunities being provided. Increased operations are also to focus heavily on servicing the local markets. In addition the proposed development would recover essential resources including water. As a result, the proposal could have positive economic "spin-off" effects in the local region, by enhancing social productivity while not undermining ecological systems. This aspect would be in accordance with the inter-generational equity principle of ESD.

In order to monitor the sustainable performance of a development, various sustainability indicators can be used.

Examples of these indicators are outlined in Table 11-1 and have been addressed in relation to the subject site and its considerations for ESD and sustainable practices. The site's EMP will be is to be continually updated in order to maintain the principles of ESD and monitor the sustainability indicators mentioned in the table.

Table 11-1: Sustainability Indicators

Indicator category	Comments and Description
Community	• Increase in employment opportunities; • Strengthening of local economy; • Level of knowledge based investment increased; • No net loss of heritage or other features, buildings, places of high community importance; and • No loss of community integrity.
Ecosystems	• No net reduction in richness or abundance of flora and fauna species in aquatic or terrestrial environments; • No net reduction in the existing landscaping of the site; • No net increase of pests or disease threats to the health of the ecosystem; and • Reduction of hazards which are threats to the health of the ecosystem (fire, pollution, etc.).
Soils	• No net topsoil erosion; • No increase in area of land affected by salinisation; and • No reduction in soil pH below certain levels.
Water	• No net increase in levels of acidification or toxic substances, heavy metals, nutrient and sediment levels; and • No net reduction in quality of water bodies as aquatic habitats. • Recovery of valuable water resources.
Air	• No net reduction in air quality.
Energy	• Programs to reduce the use of fossil fuels for transportation and energy consumption.

12. MITIGATION MEASURES AND MANAGEMENT

This section provides a summary of the mitigation measures required to ensure that the surrounding natural and built environment is safeguarded from potential impacts of the proposed development. An overview of the site management plans to be used on site is also provided, together with a description of incident management procedures.

12.1 SUMMARY OF CONTROLS AND MITIGATION MEASURES

Table 12-1 presents a summary of the potential impacts of the proposed dewatering plant discussed throughout Section 8, and identifies the environmental safeguards and control measures for the dewatering plant specifically that are recommended throughout the EIS to provide a sufficient level of protection, to both the built and natural environment surrounding the development.

Table 12-1: Summary of Potential Impacts, Environmental Safeguards and Control Measures

Potential Impacts	Safeguards and Control Measures
Air	
Generation of particulate emissions (dust)	• Dewatering plant storage bays to be enclosed/have wind breaks and water sprays. • Dewatering plant clean water to be used for dust suppression.
GHG emissions from site activities.	Opportunities to reduce and manage GHG emissions from site • Source liquid waste from within the vicinity of the project area; • Maintain equipment and on-site plant/vehicles in good working order to maximise fuel efficiency; and • Use high efficiency pumps and associated equipment in the drilling mud dewatering facility.

Table 12-1: Summary of Potential Impacts, Environmental Safeguards and Control Measures

Potential Impacts	Safeguards and Control Measures
Noise	
Generation of noise by use of dewatering plant equipment on site and vehicle movements exceeding compliance levels and resulting in impacts to acoustic amenity and complaints from the community.	During the night from 10pm – 6am the vacuum truck pump should not be used. An internal pump can be used at night such that the tanker truck vacuum pump is not needed. Whilst further noise controls recommended as good practice: • Prohibition of extended periods of on-site revving/idling; • Keeping the roller shutter door closed where possible; • Minimisation of the use of truck exhaust brakes on site; • Enforcement of low on-site speed limits; and • On-site vehicles and machinery to be maintained in accordance with a preventative maintenance program to ensure optimum performance and early detection of wearing or noisy components.
Water	
Contamination of stormwater run-off and consequent impacts on nearby surface waters. Residual impacts after management and mitigation measures: insignificant impacts from potential discharges to water.	• Stormwater concept/containment design including: ▸ BCP Stream Guard Pollution Control Pit or equivalent at stormwater pits; ▸ Silt arrestor; ▸ 200kL underground containment; ▸ Stormwater isolation valve; and ▸ Reuse of stormwater within dewatering plant. • Stormwater monitoring program; • Construction erosion and sediment controls; • The site is fully sealed; • Bunded minor chemical storage; • Daily site cleaning; • Regular workplace inspection and high standard of housekeeping; and • Segregated and designated waste bays and bins.
Waste Management	
Potential environmental and off-site impacts associated with excessive generation of waste and potential release of waste to surrounding environment. Residual impacts after management and mitigation measures:	• Dedicated waste storage tanks and storage areas; • Waste minimisation and resource recovery practices implemented; • Treated water quality sampling and testing program to ensure quality is suitable for reuse; • Record keeping of all incoming and outgoing waste loads; • Additional measures recommended include: ▸ Waste audits; ▸ Continual improvement of waste minimisation and resource recovery practices.

Table 12-1: Summary of Potential Impacts, Environmental Safeguards and Control Measures

Potential Impacts	Safeguards and Control Measures
Hazards and Risk	
Incident involving the potential for a spill or fire. Residual impacts after management and mitigation measures: potential for fire to cause serious material damage and impact on human life is low.	• Self bunded diesel tank with concrete barriers. • Chemical storage in accordance with relevant standard; • Control of ignition sources, including "no smoking" policy; • Adequate provision for escape; • Adequate fire services; • Spill controls including, DG storage bunding, spill kits and spill kit training; • Building security; • Hydrant system installed for dewatering building; and • Emergency plan and emergency response training.
Human Health	
Impacts stemming from other aspects including air quality, noise and hazards and risk: airborne tissue fibres, high internal noise levels and harmful consequences of a potential fire or chemical spill incident. Residual impacts after management and mitigation measures: minor to insignificant impacts to human health of workers and local community.	• Implementation of EMP; • Use of Personal Protective Equipment; • Undertake occupational health assessments if required; • Regular workplace inspection and high standard of housekeeping; • Regular equipment maintenance; • Safeguards and control measures implemented for Air Quality; • Safeguards and control measures implemented for Hazards and Risks; and • Safeguards and control measures recommended for Noise.
Traffic and transport	
Low to moderate traffic impact	No requirement for road upgrades

12.2 Site Management Plans

Various site management plans would need to be prepared or updated by Gow Street Recycling Centre prior to the operation commencing, to ensure that proposed operations will be undertaken in an environmentally safe manner and with consideration to work health and safety. The most important site management plans include the following:

- Emergency Plan (EP) – Appendix 18;
- Environmental Management Plan (EMP) – Appendix 17;
- Construction Environmental Management Plan (CEMP) – Appendix 15;
- Pollution Incident Response Management Plan;
- Traffic Management Plan– Appendix 9; and
- Acid Sulfate Soil Management Plan – Appendix 16.

13. LIST OF APPROVALS AND LICENCES

A list of licences, approvals and permits required for the proposed development are shown in the following table in **bold**.

Table 13-1: Required licences, approvals and permits

Type	Relevant Legislation	Required?	Agency
LICENCES			
Environment Protection Licence	**Clause 34 & 42 of Schedule 1 of the Protection of the Environment Operations Act 1997**	**Yes**	**NSW EPA**
Surface Water Licence	Water Act 1912	No	Office of Water
Groundwater Licence	Water Act 1912	No	Office of Water
Controlled Activity Approval	Water Management Act 2000	No	Office of Water
PERMITS			
Permits under the Fisheries Management Act	Fisheries Management Act 1994	No	DPI Fishing and Aquaculture
Aboriginal Heritage Impact Permit	National Parks & Wildlife Act 1974	No	OEH
Permits under the Heritage Act 1977	Heritage Act 1977	No	OEH
APPROVALS			
Development Consent*	**Environmental Planning and Assessment Act 1979**	**Yes**	**Department of Planning, Industry and Environment**
Alter or erect improvements within a mine subsidence district	Mine Subsidence Compensation Act 1961	No	Mine Subsidence Board
Consent for works and structures in a public road	Roads Act 1993	No	RMS
Sub-division or development of bush fire prone land	Rural Fires Act 1997	No	Commissioner of the NSW Rural Fire Service

*Existing consent is held with Canterbury-Bankstown Council

14. STATEMENT OF COMMITMENTS

Gow Street Recycling Centre commits to the following course of action during the site modifications and operations of the proposed dewatering facility at 81 Gow Street, Padstow:

- Gow Street Recycling Centre will abide by all legal requirements, licence conditions and approvals pertaining to the site.
- Gow Street Recycling Centre will ensure the external areas are kept tidy and free of items and debris to facilitate movement of vehicles on site and minimise potential pollution.
- Gow Street Recycling Centre will implement and maintain the following safeguards and mitigation measures at the site, as detailed in this EIS.
  - Gow Street Recycling Centre should ensure during the night from 10pm – 6am the vacuum truck pump will not be used as well as ongoing maintenance of noisy machinery so criteria are not exceeded and the nearest sensitive receivers.
  - Bunding must be implemented and maintained for the storage of liquid waste and dangerous Goods/hazardous chemicals and combustible liquids in accordance with the relevant Australian Standards.
  - Hardstand processing areas, tanks, blind sump pits and pollution control devices are to be regularly inspected and/or cleaned and maintained in good working condition.
  - Staff must be trained in spill response and emergency procedures, including firefighting techniques.
  - Undertake the upgrade of the stormwater system including BCP Stream Guard Pollution Control Pit or equivalent at stormwater pits, silt arrestor, 200kL underground containment, isolation valve and ensure all aspects are properly maintained.
  - Implement stormwater monitoring program;
  - Implement treated water sampling and testing regime to ensure water quality is suitable for reuse;
  - Recording of all incoming and outgoing waste loads;
  - Good housekeeping must be undertaken for all operational and storage areas at the site;
  - Fire hydrant system, services and equipment must be provided, and the existing ones should be maintained, in accordance with BCA and relevant Australian Standards.
  - Vehicles, especially trucks, must be properly maintained in order to reduce noise.
  - All equipment should be regularly inspected and maintained.
  - All staff must wear PPE relevant to their role.
  - Gow Street Recycling Centre will ensure NSW EPA waste record keeping and reporting requirements are adhered to.
- Gow Street Recycling Centre will implement an Environmental Management Plan and ensure it incorporates the commitments, safeguards, mitigation measures and recommendations documented in this EIS.
- Gow Street Recycling Centre will implement an Emergency Plan.
- Gow Street Recycling Centre will update their Pollution Incident Response Management Plan.

15. JUSTIFICATION AND CONCLUDING REMARKS

15.1 PROJECT JUSTIFICATION

With the growing number of NSW Government Infrastructure projects, those with a minimum capital value of $50 million listed on the NSW Infrastructure Pipeline Portal, the demand for treatment facilities to deal with dewatering drilling mud and concrete washout waste generated by the construction industry is continuing to increase around NSW, particularly in Western Sydney.

The proposed development would establish a dewatering plant to process drilling mud and concrete washout waste into reusable products. In this way, the proposal supports and is consistent with a number of statutory policies including the "Waste Avoidance and Resource Recovery Act, 2001" (WARR Act), the "NSW Waste Avoidance and Resource Recovery Strategy 2014-21" and the "National Waste Policy 2018".

The NSW Waste Avoidance and Resource Recovery Strategy 2014-21 is a key policy tool under the WARR Act. The proposed development supports the goals of the strategy:

- Increase recycling – by 2021-22 increase recycling rates for construction and demolition waste from 75% to 80%, and for commercial and industrial waste from 57% to 70%.

  Comment: The proposal would establish a facility to enable recycling wastes from construction projects including drilling mud and concrete washout waste whilst maintaining the C&D recycling facility which also serves this purpose, thereby supporting an increase in the recycling rates for these wastes.

- Divert more waste from landfill – by 2021-22 increase the waste diverted from landfill from 63% to 75%.

  Comment: Establishing the dewatering facility would enable more wastes to be diverted from landfill. Of the 250,000 tonnes per year of liquid waste, it is estimated that the project would result in up to 85% recovery rate.

- Reduce illegal dumping.

  Comment: The proposal supports the reduction in illegal dumping by providing a facility that accepts unwanted wastes.

The National Waste Policy 2018 is an Australian Government initiative that aims to "better support our economy, protect the health of our communities and reduce environmental impacts if we harness the value of materials we dispose of and return them to productive use". The policy provides a framework for collective action for businesses, governments, communities and individuals until 2030. The proposal is consistent with the policy as it would be active in applying the principles of the circular economy, in particular:

- Improve resource recovery – including materials collection systems and processes for recycling and the quality of recycled material we produce;

- Increase use of recycled material and build demand and markets for recycled products.

- Better manage material flows to benefit human health, the environment and the economy.

  Comment: The proposal aims to establish an improved material collection system which has a high rate of recovery for the dewatering process and enabling three reusable products to be generated – filter cake which can be reused under a resource recovery exemption, aggregate which would be processed through the C&D facility and sold as product and treated water, the majority of which would be reused on site for dust suppression purposes and is expected to be of a quality capable of being reused in other potential future processes such as concrete batching.

15.1.1 Market Demand

Waste generated from construction and demolition (C&D) activities historically ends up in landfill. Increasingly, businesses are seeing waste as a potential resource which has resulted in a growth of recycling facilities to repurpose waste C&D in NSW. A similar demand exists for facilities to treat liquid waste, as disposal is costly to industry and water is increasingly becoming a more precious resource, yet few facilities are presently available to recycle such waste. Gow Street Recycling Centre wishes to capitalise on this need by expanding their recycling centre to include a liquid waste dewatering plant that treats drilling mud and concrete washout water.

Padstow is a suburb located in south-western Sydney. This location and the surrounding suburbs is a rapidly growing area of NSW. Current infrastructure projects within close proximity to the site include:

- Bankstown Station Precinct, including the Sydenham to Bankstown Urban Renewal Corridor; and
- The new Bankstown-Lidcombe Hospital

In addition, the construction of Badgerys Creek airport, employment and growth centres and the associated infrastructure projects as well as the increasing demand for residential developments means this region is generating significant quantities of liquid waste associated with this construction activity. This proposed development is needed to provide an additional process specifically to treat liquid waste from such projects and convert them into usable products.

15.1.2 Site Suitability

The justifications for selecting the subject site and for establishing the dewatering plant are listed as follows:

- The site is already developed and has consent to accept drilling mud;
- The site previously operated a dewatering/washing plant that processed drilling mud and the new dewatering plant would be an improved upgrade to what previously existed;
- The proposal is considered to be the most cost-effective process with minimal environmental impact;
- The site is not in a sensitive land use area;
- The development is a permitted use with consent;
- The development generates local employment;

- Transport routes are readily available and the local road network is capable of handling the additional truck movements;
- The site has sufficient room for on-site parking and truck manoeuvring;
- Local markets for construction materials will become more competitive, leading to fiscal returns for consumers and developers;
- The site's ability to recycle C&D waste will reduce the amount of raw materials extracted for new developments, consequently reducing environmental impacts of new local developments;
- The site's ability to recycle multiple types of waste will reduce the quantity of waste that is deposited to landfill, which will increase the sustainability of future construction projects;
- The site is located in a suitable location to serve current and future infrastructure and construction projects; and
- The proposed development will have extensive environmental safeguards to provide assurance in regards to the expected degree of environmental impacts.

15.1.3 Processing Capacity Justification

The site can accommodate the proposed processing capacity and storage of liquid waste combined with the existing storage of general solid waste (construction and demolition waste).

The maximum quantity of liquid waste that can be processed through the dewatering plant in a 24-hour period is approximately 1,500 tonnes. This can easily accommodate stormwater runoff (~650 kL/month) and the proposed 250,000 tonnes per annum.

The source of the waste streams for the dewatering plant would be from construction projects in the local and regional area. There are a list of major infrastructure projects on the pipeline website. Drilling mud and concrete washout waste would be generated in the majority of these projects.

15.1.4 Environmental Improvements

The proposed development is expected to have negligible additional environmental impacts as the dewatering operations are located indoors. The proposed dewatering plant is expected to significantly reduce environmental impacts for the following reasons:

- Treated water will be used as dust suppression, increasing available water supply for dust suppression, reducing dust impacts;
- Additional dust controls will be installed on the existing crusher and screen, reducing dust impacts.
- Upgraded stormwater system will collect first flush and process through the dewatering plant preventing the majority of stormwater from leaving the site and removing the sediment.

15.2 CONCLUDING REMARKS

The environmental assessment process has enabled the potential impacts of the proposed development to be evaluated, and control strategies to be devised in order to ensure compliance with regulatory standards. The development involves:

- Construction of a liquid waste (drilling mud) dewatering facility;
- Processing 250,000 tonnes of liquid waste per year; and
- 24/7 site operations.

The use of a site that is already developed with buildings and infrastructure in place is a major advantage. As a result, the new infrastructure required for the new processes will not have an impact on any on or off-site ecosystems.

The site is well suited for the new and existing processes that have been proposed, and will not negatively impact any existing nearby receptors. It is requested that the proposal be approved.

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16. REFERENCES

NSW Government. (2000). *Environmental Planning and Assessment Regulation*. Retrieved from http://www.legislation.nsw.gov.au/#/view/regulation/2000/557

Australian Federal Governmet. (2011). *Work Health and Safety Act 2011*. Retrieved from https://www.legislation.gov.au/Details/C2016C00887

Australian Government. (1999). *Environment Protection and Biodiversity Conservation Act*. Retrieved from https://www.comlaw.gov.au/Details/C2015C00422

Bankstown Local Environmental Plan 2015. (2015). Retrieved from https://www.legislation.nsw.gov.au/#/view/EPI/2015/140

New South Wales Consolidated Acts. (1979). *ENVIRONMENTAL PLANNING AND ASSESSMENT ACT*. Retrieved from http://www.austlii.edu.au/au/legis/nsw/consol_act/epaaa1979389/

New South Wales Environmental Protection Authority. (2011). *Road Noise Policy*. Retrieved from http://www.epa.nsw.gov.au/resources/noise/2011236nswroadnoisepolicy.pdf

New South Wales Government. (2007). *State Environmental Planning Policy (Infrastructure)*. Retrieved from http://www.legislation.nsw.gov.au/sessionalview/sessional/epi/2007-641.pdf

New South Wales Government. (2011). *State Environmental Planning Policy (State and Regional Development)*. Retrieved from http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+511+2011+cd+0+N

New South Wales Government. (2014). *State Environmental Planning Policy No 55 – Remediation of Land*. Retrieved from http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+520+1998+cd+0+N

New South Wales Government. (n.d.). *State Environmental Planning Policy No 64 – Advertising and Signage.* Retrieved from http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+199+2001+cd+0+N

NSW EPA. (2014). *NSW Waste Avoidance and Resource Recovery Strategy 2014–21*. Retrieved from http://www.epa.nsw.gov.au/resources/wastestrategy/140876-WARR-strategy-14-21.pdf

NSW EPA. (2016). *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*. Retrieved from http://www.epa.nsw.gov.au/resources/epa/approved-methods-for-modelling-and-assessment-of-air-pollutants-in-NSW-160666.pdf

NSW EPA. (2017). *Noise Policy for Industry*. Retrieved from https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/noise/17p0524-noise-policy-for-industry.pdf

NSW Government. (1992). *State Environmental Planning Policy No 33—Hazardous and Offensive Development*. Retrieved from http://www.legislation.nsw.gov.au/#/view/EPI/1992/129

NSW Government. (2011). *Hazardous Industry Planning Advisory Paper No 2 Fire Safety Study Guidelines* . Retrieved from http://www.planning.nsw.gov.au/Policy-and-Legislation/~/media/CCC734E980C4427DB95D319DF073C41A.ashx

NSW Government. (2016). *Protection of the Environment Operations (Waste) Regulation 2014*. Retrieved from http://www.legislation.nsw.gov.au/#/view/regulation/2014/666

NSW Government. (2016). *State Environmental Planning Policy (State Significant Precincts) 2005*. Retrieved from http://www.legislation.nsw.gov.au/#/view/EPI/2005/194

NSW Government. (2017). *Work Health and Safety Regulation 2017*. Retrieved from https://www.legislation.nsw.gov.au/#/view/regulation/2017/404/full

Standards Australia. (2004). *AS 1940-2017 The storage and handling of flammable and combustible liquids*.

Standards Australia. (2004). *AS 4332-2004 (R2016) The storage and handling of gases in cylinders*. Retrieved from https://infostore.saiglobal.com/store/details.aspx?ProductID=313443

Standards Australia. (2008). *AS 3780-2008 The storage and handling of corrosive substances*. Retrieved from http://infostore.saiglobal.com/store/details.aspx?ProductID=1017574

Standards Australia. (2014). *AS/NZS 1596:2014 The storage and handling of LP Gas*. Retrieved from https://infostore.saiglobal.com/store/details.aspx?ProductID=1728387

DEWATERING PLANT AIR QUALITY IMPACT ASSESSMENT
PREPARED FOR
GOW STREET RECYCLING CENTRE
81 GOW STREET, PADSTOW NSW 2211

Prepared for: Gow Street Recycling Centre

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EXECUTIVE SUMMARY

Benbow Environmental has been engaged by Gow Street Recycling Centre (GSRC) to undertake a Dewatering Plant Air Quality Impact Assessment (DPAQIA) from the proposed dewatering plant to be located at 81 Gow Street, Padstow NSW 2211.

The assessment determines the predicted dust and particulate matter contribution from the proposed site operations. It also determines the impacts associated with greenhouse gas (GHG) emissions from the proposed development.

The assessment does not include an assessment of odour impacts, as no odour is expected to be generated from the proposed development. The drilling mud received by the facility is non-destructive digging waste, which is a water-based drilling mud containing clay (usually bentonite) and various non-odorous chemicals. Odorous drilling mud types (including oil-based muds and synthetic based muds) would not be received by the facility.

This DPAQIA has been prepared in accordance with the NSW EPA guidelines *"Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales"* (2016) (AMMAAP), which shall henceforth be referred to as the *Approved Methods*. Additionally, the GHG assessment has been prepared in accordance with the Australian Government *Department of the Environment and Energy, August 2019 Australian National Greenhouse Accounts – National Greenhouse Accounts Factors*.

DEWATERING PLANT DUST IMPACT ASSESSMENT

Dewatering processes were not included in dispersion modelling as they are completely enclosed in a wet environment and do not generate dust. However, stockpiled recovered aggregates from processed water has been included as this has the potential to generate airborne dust (via wind erosion) where not managed correctly

The air dispersion model AERMOD was used for the prediction of off-site dust impacts associated with the air emissions from the dewatering plant stockpiles.

In cases of elevated background concentrations, the NSW EPA requires a demonstration that no additional exceedances of the impact assessment criteria will occur as a result of the proposed site activities. Contemporaneous additions assessment was conducted for the most impacted receptor (R11; 89 Gow Street, Padstow). The 24 hour averaging period for $PM_{2.5}$ and PM_{10} demonstrated no additional days of exceedance from the proposed dewatering plant.

Therefore, the dust impacts from the proposed dewatering plant will not cause harm to human health or the environment. No additional controls are considered warranted.

GREENHOUSE GAS (GHG) ASSESSMENT

Scope 1 GHG emissions from the proposed development are limited to diesel fuel consumption from plant and equipment operation on site. Scope 2 GHG emissions are limited to electricity consumption during site operations. Scope 3 emissions encompass a wide range of potential sources which are expected to be negligible for the developments. Therefore, Scope 3 GHG emissions were not assessed any further.

Annual GHG emissions for Scope 1 and Scope 2 GHG emissions for the operation of the C&D and drilling mud dewatering facilities are estimated to be 710 t CO_2-e.

Australia's total GHG emissions as at December 2019 (the most recent inventory update) was estimated to be 532.5 Mt CO_2-e (Australian Government, Quarterly Update of Australia's National Greenhouse Gas Inventory: December 2019). In comparison, the estimated annual GHG emission for proposed development is 0.00071 Mt CO_2-e. Therefore, the annual contribution of GHG emissions from the proposed development in comparison to the Australian greenhouse emissions in 2019 is approximately 0.0000013%.

CONCLUSION

Assessment of the proposed dewatering site activities finds that the dust and GHG emissions to air from proposed site operations are unlikely to cause harm to health or the environment.

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Attachments

Attachment 1: Long-term Climate Statistics for the Referenced Meteorological Station – Canterbury Racecourse AWS, Bureau of Meteorology

1. INTRODUCTION

Benbow Environmental has been engaged by Gow Street Recycling Centre (GSRC) to undertake a Dewatering Plant Air Quality Impact Assessment (DPAQIA) of the proposed dewatering plant located at 81 Gow Street, Padstow NSW 2211.

The assessment determines the predicted dust and particulate matter contribution from the proposed dewatering plant. It also determines the impacts associated with greenhouse gas (GHG) emissions from the dewatering plant. The assessment does not include an assessment of odour impacts, as no odour is expected to be generated from the proposed development.

This DPAQIA has been prepared in accordance with the NSW EPA guidelines *"Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales"* (2016) (AMMAAP), which shall henceforth be referred to as the *Approved Methods*. Additionally, the GHG assessment has been prepared in accordance with the Australian Government *Department of the Environment and Energy, August 2019 Australian National Greenhouse Accounts – National Greenhouse Accounts Factors*.

This DPAQIA uses existing air quality data to establish the background levels of dust and particulates. This background data is then combined with the predicted levels from the proposed dewatering plant to assess the air quality impacts.

2. LOCATION AND SETTING

2.1 SITE LOCATION

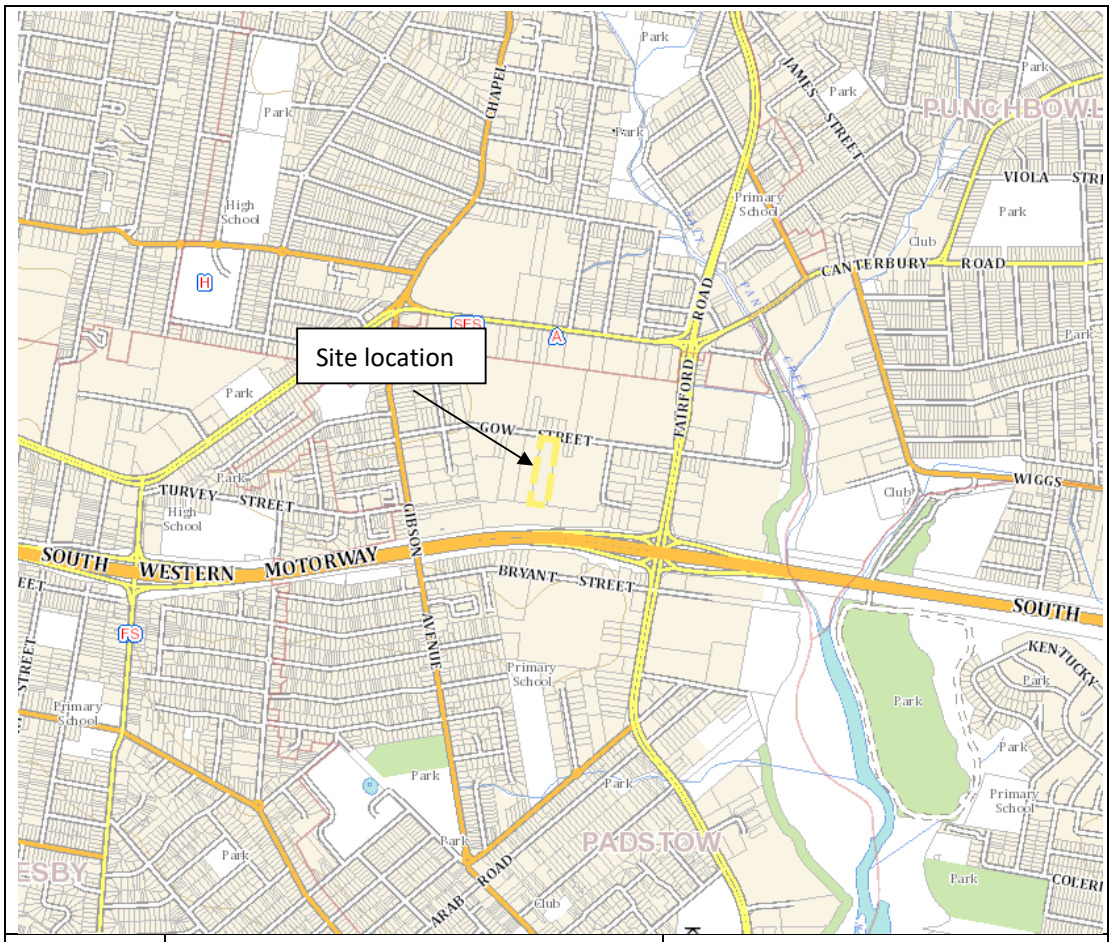
The proposed development is to be located at 81 Gow Street, Padstow NSW 2211 ("the subject site"), legally described as Lot A DP 103140. The location of the subject site as an aerial view is shown in Figure 2-1 and its location in a local context is shown in Figure 2-2.

Figure 2-1: Location of subject sites



↑N	**Source:** SIX Maps 2020 **Legend:** Site boundary	Benbow Environmental 25-27 Sherwood Road Northmead NSW 2152

Figure 2-2: The Site Location in a Local Context

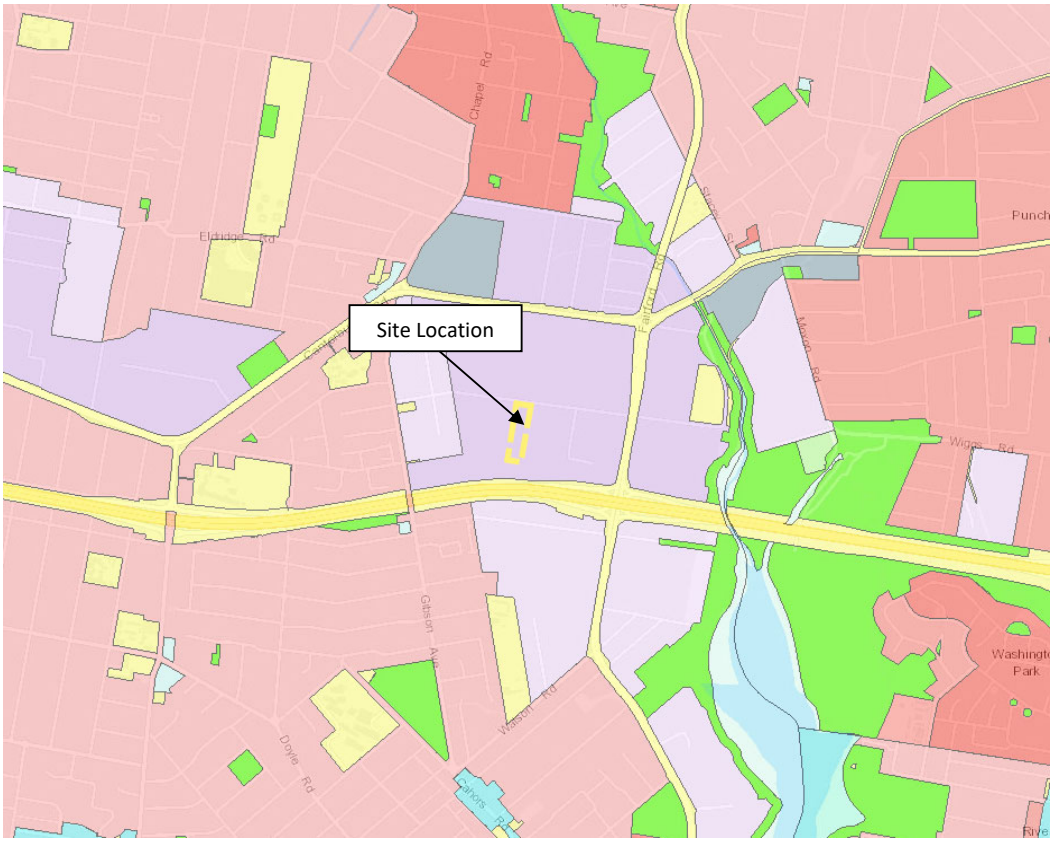


2.2 LAND USE

The site is situated in IN1 – General Industrial land use zoning under the Bankstown Local Environmental Plan (LEP) 2015 as shown in Figure 2-3. The site is surrounded on all sides by IN1 – General Industrial zoned land, with SP2 – Special Infrastructure zoned land (South Western Motorway) further south and IN2 – Light Industrial zoned land to the far west.

Beyond the immediate surrounds are also areas of R2 – Low Density Residential and RE1 — Public Recreation zoning to the south-west, west, north and east. Approximately 765 m east is Salt Pan Creek, W1 - Natural Waterways zoning. The T8 – Airport & South Line is located 1.6 km to the south. The closest residential areas are to the south (200 m) and west (375 m) of the site.

Figure 2-3: Surrounding land use zoning



Source: https://www.planningportal.nsw.gov.au

Legend: Site boundary

- B1 - Neighbourhood Centre
- B2 - Local Centre
- B3 - Commercial Core
- B4 - Mixed Use
- B5 - Business Development
- B6 - Enterprise Corridor
- B7 - Business Park
- B8 - Metropolitan Centre
- E1 - National Parks and Nature Reserves
- E2 - Environmental Conservation
- E3 - Environmental Management
- E4 - Environmental Living
- IN1 - General Industrial
- IN2 - Light Industrial
- IN3 - Heavy Industrial
- IN4 - Working Waterfront
- R1 - General Residential
- R2 - Low Density Residential
- R3 - Medium Density Residential
- R4 - High Density Residential
- R5 - Large Lot Residential
- RE1 - Public Recreation
- RE2 - Private Recreation
- RU1 - Primary Production
- RU2 - Rural Landscape
- RU3 - Forestry
- RU4 - Primary Production Small Lots
- RU5 - Village
- RU6 - Transition
- SP1 - Special Activities
- SP2 - Infrastructure
- SP3 - Tourist
- W1 - Natural Waterways
- W2 - Recreational Waterways
- W3 - Working Waterways

2.3 HOURS OF OPERATIONS

The proposed dewatering plant is requesting approval to operate 24 hours per day, 7 day per week.

2.4 NEAREST SENSITIVE RECEPTORS

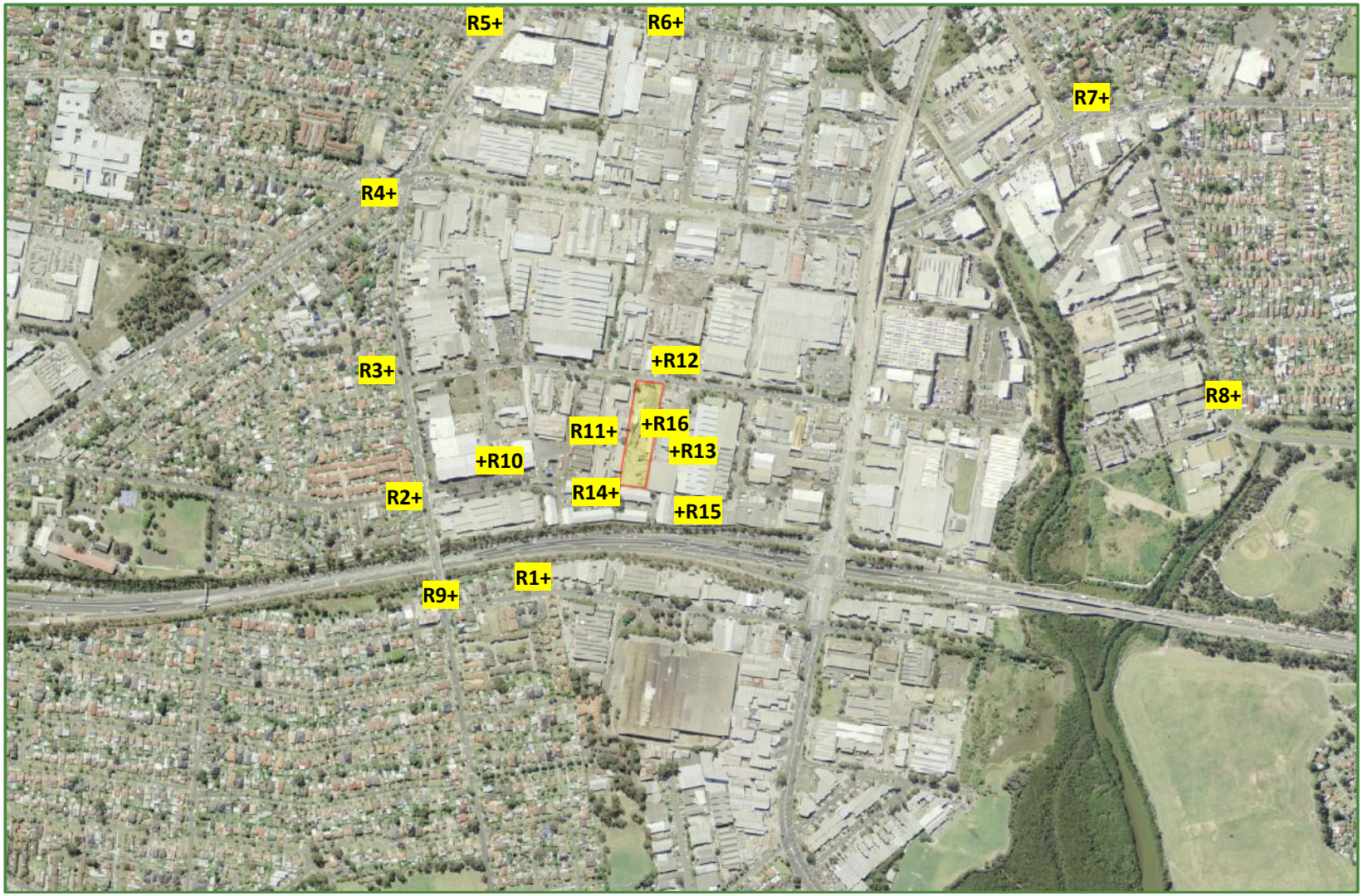
Table 2-1 lists the location of representative potentially affected receptors that are considered in this assessment. The locations are shown in Table 2-1 and Figure 2-4.

Table 2-1: Table of Nearest Receptors

Receptor ID	Address	Direction from Site	Lot & DP	Approx. Distance from Proposed Development	Type of Receptor
R1	24 Bryant Street, Padstow	SW	17 DP 18539	240 m	Residential
R2	59 Gibson Avenue, Padstow	W	1 DP 18270	430 m	Residential
R3	39 Gibson Avenue, Padstow	W	2 DP 26399	500 m	Residential
R4	168 Canterbury Road, Bankstown	NW	3 DP 10428	610 m	Residential
R5	76 Chapel Road, Bankstown	NW	6 DP 132453	780 m	Residential
R6	61 Marshall Street, Bankstown	N	4 DP 13275	700 m	Residential
R7	26 John Street, Punchbowl	NE	1 DP 36047	900 m	Residential
R8	62 Moxon Road, Punchbowl	E	1 DP 1129073	1030 m	Residential
R9	98-100 Gibson Avenue, Padstow	SW	11 DP 1208760	390 m	School Classroom
R10	9 Gatwood Close, Padstow	W	71 DP 1163243	290 m	Place of Worship
R11	89 Gow Street, Padstow	W	A SP 103140	Adjacent	Industrial
R12	82 Gow Street, Padstow	N	2 DP 392634	Adjacent	Industrial
R13	79 Gow Street, Padstow	E	3 DP 371357	Adjacent	Industrial
R14	78 Gibson Avenue, Padstow	S	SP 22907	Adjacent	Industrial
R15	9 Wordie Place, Padstow	SW	12 DP 242730	Adjacent	Industrial
R16	81 Gow Street, Padstow (on-site)	-	-	On-site	Dust monitor location

Note: distances measured from the boundaries of the site

Figure 2-4: Receptor Map



3. PROPOSED LIQUID WASTE DEWATERING FACILITY

Establishment and operation of a liquid waste dewatering plant is proposed. This plant would essentially operate separately from the existing approved resource recovery facility, however, there would be some minor interactions between processes. The proposal consists of the following elements:

- Construction of purpose-built building to enclose the dewatering facility. This would replace the existing warehouse building that would be demolished.
- A new office building would be constructed. This would replace the existing demountable office and amenities building as well as the demountable lunchroom that would be removed from site. The new office building would be used by staff of both the existing and proposed developments.
- Installation of dewatering equipment including a flocculant station/pit, screw separator and screen, slurry homogeniser, 2 x 60 kL silos, and filter press.
- A truck unloading area inside the building.
- Seven (7) inground pits and sumps inside the building. Pits and sump details are as follows:

  - Pit 7 - Inground Pit Receivals (1), 8.0 x 4.5 x 3.0 m deep (Volume: 108,000 L)
  - Pit 6 - Inground Pit Receivals (2), 2.4 x 4.5 x 3.0 m deep (Volume: 32,400 L)
  - Pit 5 - Inground Pit Receivals (3), 2.4 x 4.5 x 3.0 m deep (Volume: 32,400 L)
  - Pit 4 - Floc Plant: Dirty water pit (2), 3.33 x 2.835 x 2.5 m deep (Volume: 23,601 L)
  - Pit 3 - Floc Plant: Dirty water pit (1), 2 x 2.835 x 2.5 m deep (Volume: 14,175 L)
  - Pit 2 - Floc Plant: Clean water pit, 3.0 x 2.835 x 2.5 m deep (Volume: 21,263 L)
  - Pit 1 - Floc Plant: Sump Pit, 1.6 x 2.835 x 2.5 m deep (Volume: 11,340 L)

- Six (6) bunkers. Four (4) bunkers would be located inside the building and two (2) would be located external to the building under an awning. Bunker contents and dimensions are:

  - Bunker 1: Aggregate, 6.2 x 4.0 m
  - Bunker 2: Aggregate, 6.2 x 4.0 m
  - Bunker 3: Sand 5.07 x 5.805 m
  - Bunker 4: Sand 5.295 x 5.805 m
  - Bunker 5: Sand 5.295 x 5.805 m
  - Bunker 6: Filter cake 6.7 x 8.9 m

- Extension of the boundary wall up to new building behind the new aggregate bunkers.
- Connection to Sydney Water tradewaste under an agreement.
- Stormwater upgrades including a first flush system that directs the first 20 mm of on-site stormwater to a silt arrester and detention tank which will be used in the dewatering plant while the clean overflow is discharged to the stormwater easement using the existing stormwater connection during a heavy rain event.

A proposed site plan and equipment layout are provided in Appendix 8 of the EIS. A description of the dewatering process is provided in the following sub-section.

3.1 PROPOSED PROCESS DESCRIPTION

The dewatering facility would operate as a recycling facility for the drilling mud and concrete washout water and stormwater captured onsite. The facility would involve the following activities:

- Unloading of drilling mud/concrete washout water into dirty water containment pits.
- This liquid is transferred into the dirty water pit and then into the flocculent station.
- The flocculants assist in settling sediments at the bottom of the tank.
- The sand/rock/sediment slurry is pumped from the bottom of the tank and into a screw separator.
- The screw separator removes the solids from the water.
- The solids are then transferred to a vibrating screen where the aggregates and sands are conveyed to internal and external storage bays.
- The water from the flocculent station and the screw separator is pumped to the two 60 kL silos, the slurry homogeniser tank and then into the filter press.
- The filter press removes the remaining silts and the cleaned water is pumped to the clean water pit.
- The sediments/silt from the filter press becomes a fine biscuit which is removed offsite as for application to land under the Treated Drilling Mud Exemption 2014 or to landfill.
- The filter press requires intermittent backwashing where backwash water is pumped to the dirty water pit to be reprocessed through the system.
- The clean water pit would be pH adjusted and then used for cleaning aggregates and sand during the screening process, dust suppression and washdown onsite. Excess water would be sent to tradewaste under a Trade Waste Agreement.

Site washdown water and stormwater will be collected in a 200 kL underground tank and through the above dewatering system.

The maximum quantity of liquid waste that can be processed through the dewatering plant in a 24-hour period is approximately 1,500 tonnes. This can easily accommodate stormwater runoff and the proposed 250,000 tonnes per annum.

The proposed development will operate on an existing site. The existing site operate an approved construction and demolition facility. The technical assessment has been revised to include the proposed development only. Modelling does not include any assessment of the existing sources on site. Cumulative assessment refers only to background levels of dust from NSW EPA monitoring stations as per the requirements of the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW (NSW EPA 2016).* This is in accordance with requests by DPIE communicated on 7th April 2022.

4. AIR QUALITY CRITERIA AND GUIDELINES

4.1 PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) applies the following definitions relating to air pollution:

> ***"Air pollution"*** *means the emission into the air of any air impurity.*
>
> *While "air impurity" includes smoke, dust (including fly ash), cinders, solid particles of any kind, gases, fumes, mists odours, and radioactive substances'*

The following sections of this Act have most relevance to the site:

- Section 124 Operation of Plant - other than domestic plant

  The occupier of any premises who operates any plant in or on those premises in such a manner as to cause air pollution from those premises is guilty of an offence if the air pollution so caused, or any part of the air pollution so caused, is caused by the occupier's failure:

  (a) to maintain the plant in an efficient condition, or

  (b) to operate the plant in a proper and efficient manner.

- Section 126 Dealing with Materials

  (1) The occupier of any premises who deals with materials in or on those premises in such a manner as to cause air pollution from those premises is guilty of an offence if the air pollution so caused, or any part of the air pollution so caused, is caused by the occupiers failure to deal with those materials in a proper and efficient manner.

  (2) In this section:

  deal *with materials means process, handle, move, store or dispose of the materials.*

  Materials *includes raw materials, materials in the process of manufacture, manufactured materials, by-products or waste materials.*

- Section 128 Standards of air impurities not to be exceeded

  (1) The occupier of any premises must not carry on any activity, or operate any plant, in or on the premises in such a manner as to cause or permit the emission at any point specified in or determined in accordance with the regulations of air impurities in excess of:

  (a) The standard of concentration and the rate, or

  (b) The standard of concentration or the rate.

Prescribed by the regulations in respect of any such activity or any such plant.

(2) Where neither such a standard nor rate has been so prescribed, the occupier of any premises must carry on any activity, or operate any plant, in or on the premises by such practicable means as may be necessary to prevent or minimise air pollution.

- Section 129 Standards of air impurities not to be exceeded

(1) The occupier of any premises at which scheduled activities are carried on under the authority conferred by a licence must not cause or permit the emission of any offensive odour form the premises to which the licence applies.

(2) It is a defence in proceedings against a person for an offence against this section if the person establishes that:

(a) The emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of the licence directed at minimising the odour, or

(b) The only persons affected by the odour were persons engaged in the management or operation of the premises.

(3) A person who contravenes this section is guilty of an offence.

The proposed development is required to comply with this Act.

4.2 PROTECTION OF ENVIRONMENT OPERATIONS (CLEAN AIR) REGULATION 2021

In accordance with Part 5 of the *Protection of the Environment Operations (Clean Air) Regulation 2021* (herein referred to as the Clean Air Regulation), the proposed waste recycling facility would belong to Group 6 (Standards for scheduled premises) as the activity is to be "*commenced to be carried on, or to operate, on or after 1 September 2005 as a result of an environment protection licence granted under the* Protection of the Environment Operations Act 1997 *pursuant to an application made on or after 1 September 2005".*

Schedule 4 of the Clean Air Regulation provides standards of concentration for scheduled premises general activities and plant, any crushing, grinding, separating or materials handling activity:

Solid Particles (total) = 20 mg/m^3

The facility would be required to meet the above standard of concentration.

4.3 ADOPTED CRITERIA & NSW ENVIRONMENT PROTECTION AUTHORITY GUIDELINES

The *Approved Methods* (EPA 2016) provides guidance on methodology and thresholds that are to be used for the air impact assessment of a proposed development. This air impact assessment has been conducted in accordance with this guideline. Assessable pollutants (along with their corresponding limits) are summarised in Table 4-1. These criteria are applied at the nearest existing or likely future off-site sensitive receptor.

Table 4-1: Applicable Particulate Criteria at Sensitive Receptors from the NSW EPA Modelling Guidelines (*Approved Methods* 2016)

Pollutant	Averaging Period	Percentile	Concentration µg/m^3
Total Suspended Particulates (TSP)	Annual	100th	90
PM_{10}	24 Hours	100th	50
	Annual	100th	25
$PM_{2.5}$	24 Hours	100th	25
	Annual	100th	8

5. METEOROLOGY AND LOCAL AIR QUALITY

The meteorological data used in the modelling of this assessment was no-observation prognostic meteorological data. A prognostic meteorological data file was created by Lakes Environmental with WRF and AERMET using a representative year. The representative year is selected based on the evaluation of weather monitoring stations for their proximity to the site, completeness of data, and similarity of topography to the subject site.

5.1.1 Representative Meteorological Year

The nearest weather monitoring station to the subject site with a full data set for both temperature and daily wind run is the Canterbury Racecourse AWS operated by the Bureau of Meteorology. This monitoring station is located approximately 8.55 km north-east of the subject site and was considered to be the most appropriate source of data for determining the representative year due to its proximity to the site, completeness of data, and similar topography to the subject site.

The representative meteorological year of 2015 was selected based on long term averages from Canterbury Racecourse AWS. Meteorological data for 2015 was compared with long term averages for minimum temperature, maximum temperature, and wind run and found to be consistent. (Attachment 1).

A 2015 prognostic meteorological data file was created by Lakes Environmental using the WRF model. This data file was used as input into AERMET pre-processor to create onsite Surface and profile met data.

5.1.2 WRF and AERMET

The Weather Research and Forecasting (WRF) Model is a next-generation mesoscale numerical weather prediction system designed as a collaborative effort between the American National Center for Atmospheric Research and other meteorological specialist organisations. It was created for both atmospheric research and operational forecasting applications and serves a wide range of meteorological applications across scales from tens of meters to thousands of kilometres.

AERMET is a meteorological pre-processor that organises data and estimates the necessary boundary layer parameters for dispersion calculations in AERMOD.

A meteorological data file was produced for inclusion in the air dispersion model using AERMET ver. 16216. The WRF prognostic data was entered into AERMET as onsite and upper air data. The surrounding land use was set to urban.

5.2 WIND ROSE PLOTS

Wind rose plots show the direction from which the wind is coming with triangles known as “petals”. The petals of the plots in summarise wind direction data into 8 compass directions ie. north, north-east, east, south-east, etc.

The length of the triangles, or "petals", indicates the frequency that the wind blows from the direction presented. Longer petals for a given direction indicate a higher frequency of wind from that direction. Each petal is divided into segments, with each segment representing one of the six wind speed classes. Thus, the segments of a petal show what proportion of wind for a given direction falls into each class.

The proportion of time for which wind speed is equal to or less than 0.5 m/s, when speed is negligible, is referred to as calm hours or "calms". Calms are not shown on a wind rose as they have no direction, but they are noted under each wind rose as a temporal percentage.

The concentric circles in each wind rose are the axes that denote wind frequencies. In comparing the plots it should be noted that the axis varies between wind roses, although all wind roses are the same size. The frequencies shown in the first quadrant (top-left quarter) of each wind rose are stated beneath the wind rose.

5.2.1 Local Wind Trends

Seasonal wind rose plots for this site using Canterbury Racecourse AWS data from 2015 have been included in Figure 5-1. Annual average wind speeds of 2.84 m/s and a calms frequency of 17.58% were estimated. Annual winds from the north-west were found to be dominant and were present at a frequency of approximately 15%.

The average summer wind speed was estimated to be the highest of the seasons at 3.31 m/s, with the lowest calms frequency of 14.10%. North-easterly winds were found to be strongly dominant followed by those from the south-east at a frequency of 21% and 18% respectively.

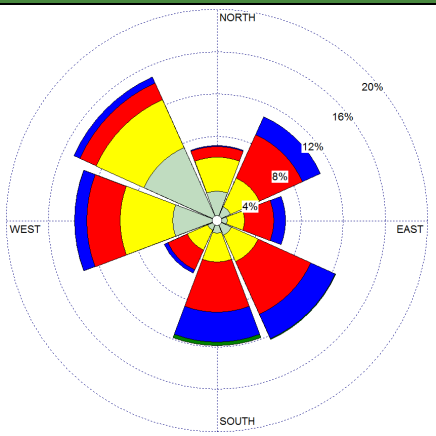
In autumn, dominant winds blew from the west (~18%). The average autumn wind speed was 2.76 m/s with a calms frequency of 18.26%.

The winter season data showed the prevalence of winds from the north-western and western directions. The dominant winds blew from the north-west at a frequency of ~26% and 22% from the west. The average winter wind speed was the lowest of all the seasons at 2.15 m/s with the highest calms frequency of 22.49%.

In the spring time, average wind speeds of 3.17 m/s were recorded. Dominant winds were from the north-east (15%), south-east (14%) and south (14%). The spring calms frequency was 14.89%.

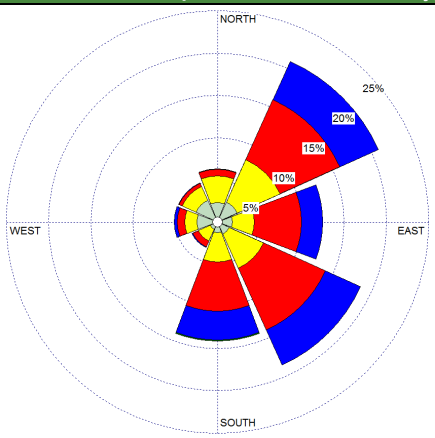
Figure 5-1: Wind Rose Plots for the Referenced Meteorological Station – Canterbury Racecourse, Bureau of Meteorology (2015)

All Seasons



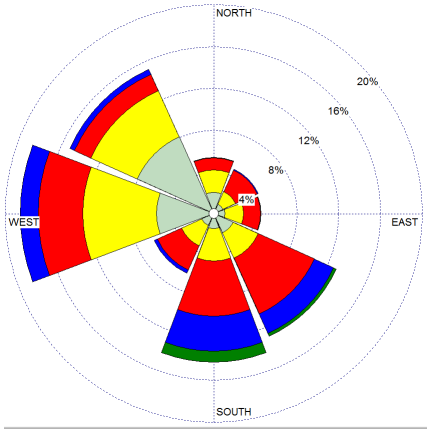
Average Wind Speed: 2.84 m/s
Calms Frequency: 17.58%
Axis Frequencies: 4%, 8%, 12%, 16%, 20%

Summer Season (December – February)



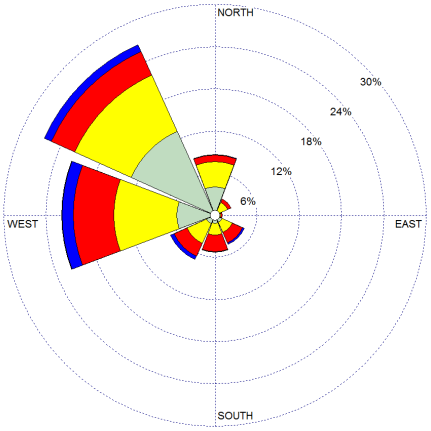
Average Wind Speed: 3.31 m/s
Calms Frequency: 14.10%
Axis Frequencies: 5%, 10%, 15%, 20%, 25%

Autumn Season (March – May)



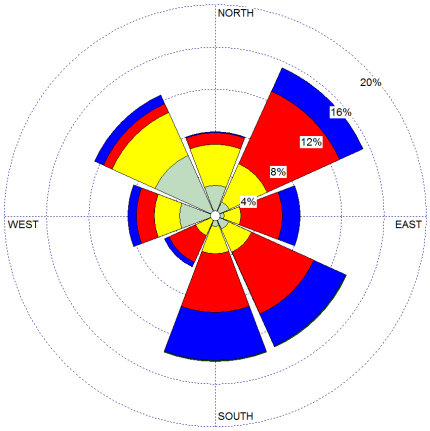
Average Wind Speed: 2.76 m/s
Calms Frequency: 18.26%
Axis Frequencies: 4%, 8%, 12%, 16%, 20%

Winter Season (June – August)



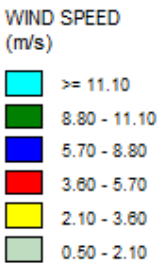
Average Wind Speed: 2.15 m/s
Calms Frequency: 22.49%
Axis Frequencies: 6%, 12%, 18%, 24%, 30%

Spring Season (September – November)



Average Wind Speed: 3.17m/s
Calms Frequency: 14.89%
Axis Frequencies: 4%, 8%, 12%, 16%, 20%

Legend



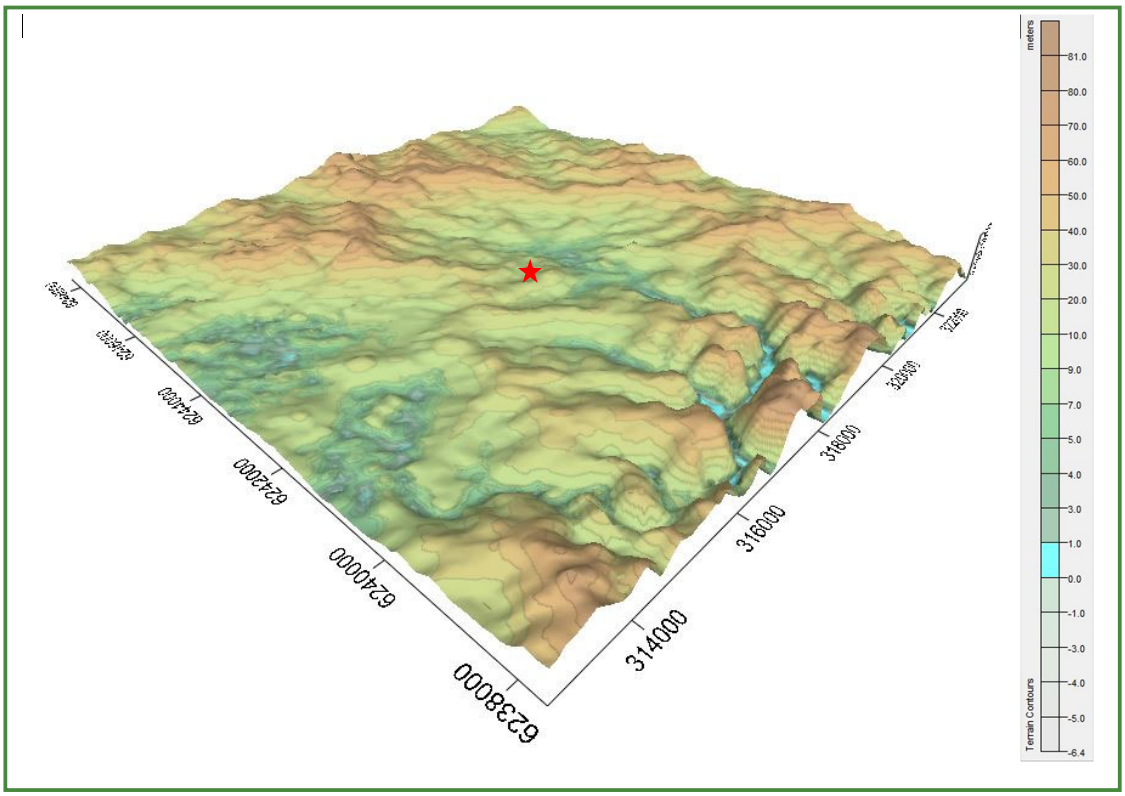
5.3 TERRAIN AND STRUCTURAL EFFECTS ON DISPERSION

The meteorological condition known as katabatic flow (or katabatic drift) is often identified as the condition under which maximum environmental impacts from primarily ground-based sources are likely to occur. Katabatic flow is simply the movement of cold air down a slope, generally under stable atmospheric conditions. Under such circumstances, dispersion of airborne pollutants is generally slow and the associated impacts can reach their peak.

Katabatic flow is unlikely to affect emissions from the site's activities as the site is at a low elevation and is relatively flat in an industrial area. The closest residential areas to the west and south-west are at higher elevations.

Figure 5-2 shows the terrain with the z-axis (i.e. vertical axis) exaggerated by a factor of 10 (i.e. a given distance on the x-axis or y-axis appears three times as great on the z-axis) in order to provide a clearer description of the topography. A coloured scale bar shows elevations corresponding to the colours used in the figures. It should be noted that these figures are an approximation of the actual terrain, based on terrain information from NASA SRTM 1-arc second digital elevation models.

Figure 5-2: Local topography of site with factor of 10 vertical exaggeration



★ = site location

5.4 LOCAL AIR QUALITY

No air quality measurements have been undertaken specifically for this project. Instead, the nearest available air quality monitoring data was used to gain an understanding of what current pollutant levels may be around the site and to provide background air quality parameters for the assessment.

Ambient air quality data for $PM_{2.5}$ and PM_{10} was obtained from the NSW EPA Chullora air quality monitoring station located approximately 5.35 km north-north-east of the subject site, adjacent to the Cooks River, Chullora. This station is considered to be site-representative. The relevant data is summarised in Table 5-1.

Table 5-1: Summary of 2015 Data for $PM_{2.5}$ and PM_{10} from Chullora Air Quality Monitoring Station.

Pollutant	Averaging period	Concentration (µg/m^3)
$PM_{2.5}$	Maximum 24 hr average for 2015	**37.21**
	2nd highest 24 hr average for 2015	19.25
	3rd highest 24 hr average for 2015	18.37
	Annual average for 2015	**8.62**
PM_{10}	Maximum 24 hr average for 2015	**64.56**
	2nd highest 24 hr average for 2015	48.23
	3rd highest 24 hr average for 2015	46.21
	Annual average for 2015	17.59

Note: Bold values exceed the *Approved Methods* criteria.

No ambient air quality data for Total Suspended Particulates (TSP) is available from the referenced monitoring station. Therefore, the worst-case particle size distribution data from the AP-42 Emissions Database provided by the U.S. Environmental Protection Agency (US EPA, 1995), a PM_{10}-to-TSP ratio of 0.51 was used to estimate the TSP background concentration level of 34.31 µg/m^3 for an annual averaging period.

The data collected from Chullora air quality monitoring station shows elevated background levels of both $PM_{2.5}$ and PM_{10} that are above the *Approved Methods* 24 hour average criterion of 25 µg/m^3 for $PM_{2.5}$ and 50 µg/m^3 for PM_{10}. Although, the annual average of PM_{10} was within the criteria of 25 µg/m^3, the annual average of $PM_{2.5}$ exceeded the criteria of 8 µg/m^3.

In cases of elevated background concentrations, the *Approved Methods* states:

> *In some locations, existing ambient air pollutant concentrations may exceed the impact assessment criteria from time to time. In such circumstances, a licensee must demonstrate that no additional exceedances of the impact assessment criteria will occur as a result of the proposed activity and that best management practices will be implemented to minimise emissions of air pollutants as far as is practical.*

This has been addressed in the modelling results and discussion in Section 7.5.

6. AIR QUALITY IMPACTS

6.1 CONSTRUCTION

Construction of the drilling mud dewatering facility and infrastructure will be undertaken on site within an existing building and expected to be completed within 4 months. These construction activities, while minor, have the potential to generate dust where not managed appropriately.

A Construction Environmental Management Plan (CEMP) is recommended to be prepared that documents the environmental aspects of the construction phase and establishes procedures to manage any potential impacts. It is recommended an Air Quality Control Procedure be presented in the CEMP which sets out the procedure for managing and monitoring air emissions during construction. The following is a summary of the control measures provided in the procedure. Local weather conditions should be taken into account in determining the level and suitability of controls required.

Control Measures

- Monitor local weather conditions and cease dust generating operations when conditions result in visible dust emissions, and implement mitigation measures or until weather conditions improve;
- Erection of wind breaks such as fences or vegetative buffers at the site boundary;
- Locate stockpiles away from drainage paths, easement, kerb, or road surface, and near existing wind breaks such as trees and fences;
- Dust suppression/wind breaks on stockpiles;
- Limit stockpile height to 5 m (maximum) and size;
- Vehicles leaving the site to be cleaned of dirt and other materials to avoid tracking onto public roads;
- Enforce appropriate speed limits for vehicles on site. Recommended speed limit is <15 km/hr;
- Cover all loads entering and leaving the site; and
- Inspect the site daily using a Site Dust Control Checklist to aid with the implementation of air quality control measures.

Dust impacts are assessed further in Section 7.

GHG emissions are assessed further in Section 8.

6.2 OPERATIONS

Potential emissions from the proposed dewatering plant include dust and greenhouse gases (GHG). The majority of the dewatering processes does not produce dust as it is completely enclosed in a wet environment. However, stockpiled recovered aggregates from processed water has been included as this has the potential to generate airborne dust (via wind erosion) where not managed correctly. Odour is not expected from the proposed development as it does not accept odorous waste.

Dust impacts are assessed further in Section 7.

GHG emissions are assessed further in Section 8.

6.3 ODOUR IMPACTS

Odour is not expected to be emitted from the site as there are no odour producing materials processed at the site. However, drilling mud has the potential to be odorous depending on its source or chemical presence/reactions.

The drilling mud received by the facility is non-destructive digging waste, which is a water-based drilling mud containing clay (usually bentonite) and various non-odorous chemicals. Odorous drilling mud types (including oil-based muds and synthetic based muds) which are generally used on offshore rigs, would not be received by the facility.

Under *The Treated Drilling Mud Order 2014*, the following definitions are provided:

> ***Drilling fluid*** *means a mixture of water and chemical additives including but not limited to bentonite, soda ash (sodium carbonate), sodium hydroxide, lime and polymers.*
>
> ***Drilling mud*** *means a mixture of naturally occurring rock and soil, including but not limited to materials such as sandstone, shale and clay, and drilling fluid generated during drilling operations such as horizontal directional drilling or potholing. This does not include drilling mud that has been generated by:*
>
> *(a) Deep drilling for mineral, gas or coal exploration; or*
> *(b) Drilling through contaminated soils, acid sulphate soils (ASS) or potential acid sulphate soils (PASS)*

The drilling mud would meet the above definitions to enable the treated drilling mud to be applied to land under the resource recovery exemption. The chemical additives listed above are all known to be odourless, as stated in relevant safety data sheets. One chemical of concern is barium sulphate, which has the potential to be odorous due to the presence of sulphate which could potentially be reduced to hydrogen sulphide under anaerobic conditions. Drilling mud containing barium sulphate would not be accepted at the facility.

Additionally, drilling mud received at the site would require customers agreeing to and complying with the following criteria, prior to the site accepting the drilling mud delivery:

1. A mixture of naturally occurring rock and soil, including but not limited to materials such as sandstone, shale and clay, and drilling fluid generated during drilling operations such as horizontal directional drilling or potholing.
2. Does not include drilling mud generated by:
    a. deep drilling for mineral gas or coal exploration; or
    b. drilling through contaminated soils, acid sulphate soils (ASS) or potential acid sulphate soils (PASS); or
    c. drilling through soil contaminated by a hazardous contaminant
3. Does not contain any of the following:
    a. Restricted simulation fluids
    b. Any characteristics under the Australian dangerous goods code (e.g: explosives, flammable or emitting flammable gases, oxidising, containing organic peroxides, poisonous, infectious, corrosive, toxic)
4. Free from:
    a. Detectable offensive odours;

b. Glass, metal, plastics, rubber and coatings; and
c. Pests or vermin infestations

As the drilling mud to be accepted would be free from detectable offensive odour (odourless), a detailed odour assessment is not considered warranted.

7. DEWATERING PLANT DUST IMPACT ASSESSMENT

This section assesses the effects of potential emissions on the existing ambient air quality as a direct result of the dewatering plant operations. The assessment methodology, modelling configurations, results and discussion of the potential impacts as well as any recommendations on mitigation measures are described in detail.

Dewatering processes were not included in dispersion modelling as they are completely enclosed in a wet environment and do not generate dust. However, stockpiled recovered aggregates from processed water has been included as this has the potential to generate airborne dust (via wind erosion) where not managed correctly. It is these sources that have been modelled for this assessment.

7.1 EMISSION SOURCES

Activities associated with the drilling mud dewatering facility are performed in a closed environment and do not generate dust. The drilling mud dewatering facility and its processes have not been considered a contributing factor to dust emissions on site. However, aggregate storage bays for recovered materials from drilling mud/concrete washout water has the potential to generate dust during windblown erosion and are therefore considered in the assessment.

Wheel generated dust has not been considered as a significant source of emissions. The entire site is sealed hardstand of compacted road base which releases minimal dust. Trucks wheels will also be promptly cleaned in a wheel wash as they leave the site to remove any dust or sediments, and will only achieve minimal speeds on the site. Hence, wheel generated dust emissions are adequately controlled.

7.2 MITIGATION MEASURES

The air quality mitigation measures (for dust control) that are included in the air dispersion model and proposed development are stockpiled materials from the dewatering facility are stored within storage bays are enclosed bays with 2-3 walls and have directs dust suppression sprays applied.

7.3 EMISSION RATE DERIVATION

The emission rates for each source were estimated using the following equation by multiplying the appropriate emission factors by the quantity of materials processed at the relevant activities for the corresponding activity period of time. Appropriate reduction factors are then applied.

$$ER = \frac{1000 \times EF \times Q \times RF}{OpHrs}$$

Where:

ER = Emission Rate (g/s)
EF = Emission Factor (kg/tonne)
OpHrs = Annual operational time (s/year) or (s/day)
Q = Materials processed (tonnes/year) or (tonnes/day)
RF = Reduction Factor (if applicable)

7.3.1 Adopted Emission Factors

The below emission factors from the NPI EETM for Mining (2012), Mining and Processing of Non-Metallic Minerals (2014) (crushed stone processing data) were utilised in this assessment to represent dewatering plant stockpiles storage activities on site.

As the emission factor acquired from the NPI EETM only provides the emission factor for PM_{10}, further calculations were required to estimate the emission factors for Total Suspended Particulates (TSP) and $PM_{2.5}$. For this purpose, the generalised particle size distribution for mechanically generated aggregate and unprocessed ores from US EPA's AP-42 database was used to estimate the proportion of PM_{10} to TSP and also for PM_{10} to $PM_{2.5}$. These ratios were then used to derive the emission factors for TSP and $PM_{2.5}$ (Aggregates). Table 7-2 demonstrates the adopted emission factors per activity on site. The excerpt for the generalised particle size distribution has been provided as Table 7-1.

Table 7-1: US EPA AP-42 Generalised Particle Size Distribution for Mechanically Generated Aggregate, Unprocessed Ores

Particle Size (µm)	Cumulative % ≤ Stated Size (Uncontrolled)	Minimum Value	Maximum Value	Standard Deviation
2.5	15	3	35	7
10.0	51	23	81	14

Table 7-2 shows the emission factors adopted for C&D activities on site.

Table 7-2: Emission Factors for PM_{10} from NPI EETM for Mining and Processing of Non-Metallic Minerals (2014) and Mining (2012)

Reference (NPI EETM)	Source	$PM_{2.5}$ Emission Factor (kg/tonne)	PM_{10} Emission Factor (kg/tonne)	TSP Emission Factor (kg/tonne)
Mining	Wind Erosion from Stockpiles	0.03 kg/ha/hr	0.2 kg/ha/hr	0.4 kg/ha/hr

Note: [1]NPI EETM not available, estimated using US EPA's AP-42 database.

7.3.2 Reduction Factors

Reduction factors for the facility have been based on the *Emission Estimation Technique Manual for Concrete Batching and Concrete Product Manufacturing* (NPI DEH, 1999) which are shown in Table 7-3.

The use of the materials handling and materials storage reduction factors within this NPI EETM is considered applicable to this assessment as the materials are similar in nature to those handled and stored at concrete batching plants (aggregates and sands).

Table 7-3: Reduction Factors for PM_{10} for Concrete Batching Activities from NPI EETM for Concrete Batching and Concrete Products

Control	Reduction Factor (Materials Handling)	Reduction Factor (Materials Storage)
Default	-	0.3
Wind Breaks	0.7	0.7
Water Sprays	0.5	0.5
Chemical Suppression	0.2	0.2
Enclosure (2-3 walls)	0.1	0.1
Covered Stockpiles	0.0	0.0
Enclosed	0.0	-

Reduction factors shown in Table 7-3 were applied to the NPI EETM emission factors for Scenarios 1 and 2, shown below in Table 7-4. These tables show the emission reduction controls in place for each dust generating process. Where reduction factors have been multiplied for handling and storage, the factor is shown in brackets with the relevant applied factor and an explanation is provided justifying the use of multiplied reduction.

Table 7-4: Emission Reduction Factors Applied to NPI EETM Emission Factors

Processes at Proposed Site	Control in Place	Reduction Factor(s) Applied	Comments
Wind erosion from Stockpiles	Enclosure (2-3 walls), water sprays	0.1, 0.5 (x2)	Enclosure control applied as 8.5 m perimeter fencing encloses activity. Water sprays applied directly at the source **and** perimeter of activity area.

7.3.3 Assumptions and Emission Sources Modelled

Liquid waste processing activities were not included in the model as the processes are completely enclosed, in a wet environment and do not generate dust. However, stockpiled materials (recovered aggregates) from drilling mud water has been included in the model, associated assumptions are:

- Dewatering plant aggregate and stockpiles were assumed to occupy 70 m^2 for 24 hours per day and 365 days per year. The same emission rate and area size were used to estimate both annual and 24 hours emissions; and
- Release height for stockpiles was 0 m.

Table 7-5: Summary of Emission Source

Source Name	Source ID (model)	Source Type	Source Area (m^2)	Release Height (m)	Daily Emission Rate (g/s)		Annual Emission Rate (g/s)		
					$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	TSP
Dewatering Aggregate and Sand Stockpile	DMAG	Area	70	0	6.56E-07	4.38E-06	6.56E-07	4.38E-06	8.75E-06

Figure 7-1: Arrangement of Modelled Sources



7.4 AIR IMPACT MODELLING

7.4.1 Dispersion Model

The new generation air dispersion model, AERMOD ver. 9.8.0, was used for the prediction of off-site impacts associated with the air emissions from the proposed operations. AERMOD uses air dispersion based on planetary boundary layer turbulence structure and scaling concepts. The AERMOD model replaced AUSPLUME as the air dispersion model accepted by the Victorian EPA in January 2014 and is a suitable model to use for this air assessment.

The model was used to estimate the concentration impacts on receptors for each hour of input meteorology. Terrain was assumed to be elevated.

7.4.1.1 Meteorological Data

Prognostic meteorological data for the year 2015 was obtained from Lakes Environmental Services and pre-processed using AERMET, as described in Sections 5.1.1 and 5.1.2. The resultant upper air and surface data files were input to AERMOD.

7.4.2 Air Impact Modelling Results

Table 7-6 to Table 7-10 provide the results of the maximum modelled impacts for each identified receptor. Isopleths for each averaging period are provided in Figure 7-2 to Figure 7-6. Background concentrations that exceed the relevant *Approved Methods* criterion are marked with red text.

Table 7-6: TSP Annual Averaging Period Modelling Results

Receptor ID	Incremental Impact (µg/m³)	Background (µg/m³)	Total Cumulative Impact (µg/m³)	Criteria (µg/m³)
R1	0.00005	34.31	34.31005	90
R2	0.00003		34.31003	
R3	0.00001		34.31001	
R4	0.00001		34.31001	
R5	0.00001		34.31001	
R6	0.00001		34.31001	
R7	0.00001		34.31001	
R8	0.00001		34.31001	
R9	0.00003		34.31003	
R10	0.00004		34.31004	
R11	0.00062		34.31062	
R12	0.00015		34.31015	
R13	0.00163		34.31163	
R14	0.00051		34.31051	
R15	0.00016		34.31016	
R16	0.00234		34.31234	

Note: Complies / Non-compliance

Figure 7-2: TSP Annual Averaging Period Modelling Results

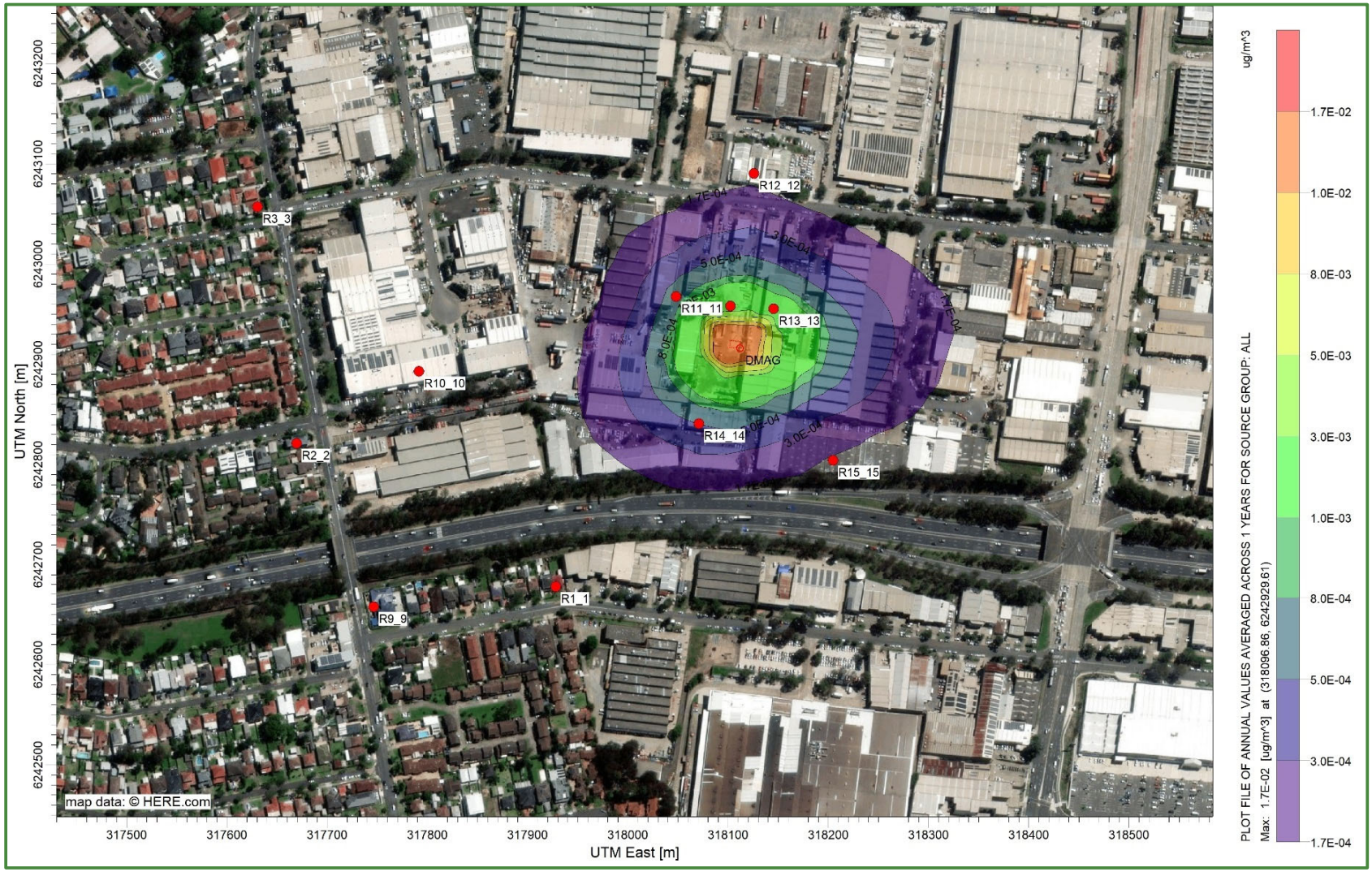


Table 7-7: PM_{10} Annual Averaging Period Modelling Results

Receptor ID	Incremental Impact (µg/m³)	Background (µg/m³)	Total Cumulative Impact (µg/m³)	Criteria (µg/m³)
R1	0.00003	17.59	17.59003	25
R2	0.00001		17.59001	
R3	0.00001		17.59001	
R4	0		17.59	
R5	0		17.59	
R6	0		17.59	
R7	0		17.59	
R8	0		17.59	
R9	0.00001		17.59001	
R10	0.00002		17.59002	
R11	0.00031		17.59031	
R12	0.00007		17.59007	
R13	0.00081		17.59081	
R14	0.00026		17.59026	
R15	0.00008		17.59008	
R16	0.00117		17.59117	

Note: Complies / Non-compliance

Figure 7-3: PM_{10} Annual Averaging Period Modelling Results

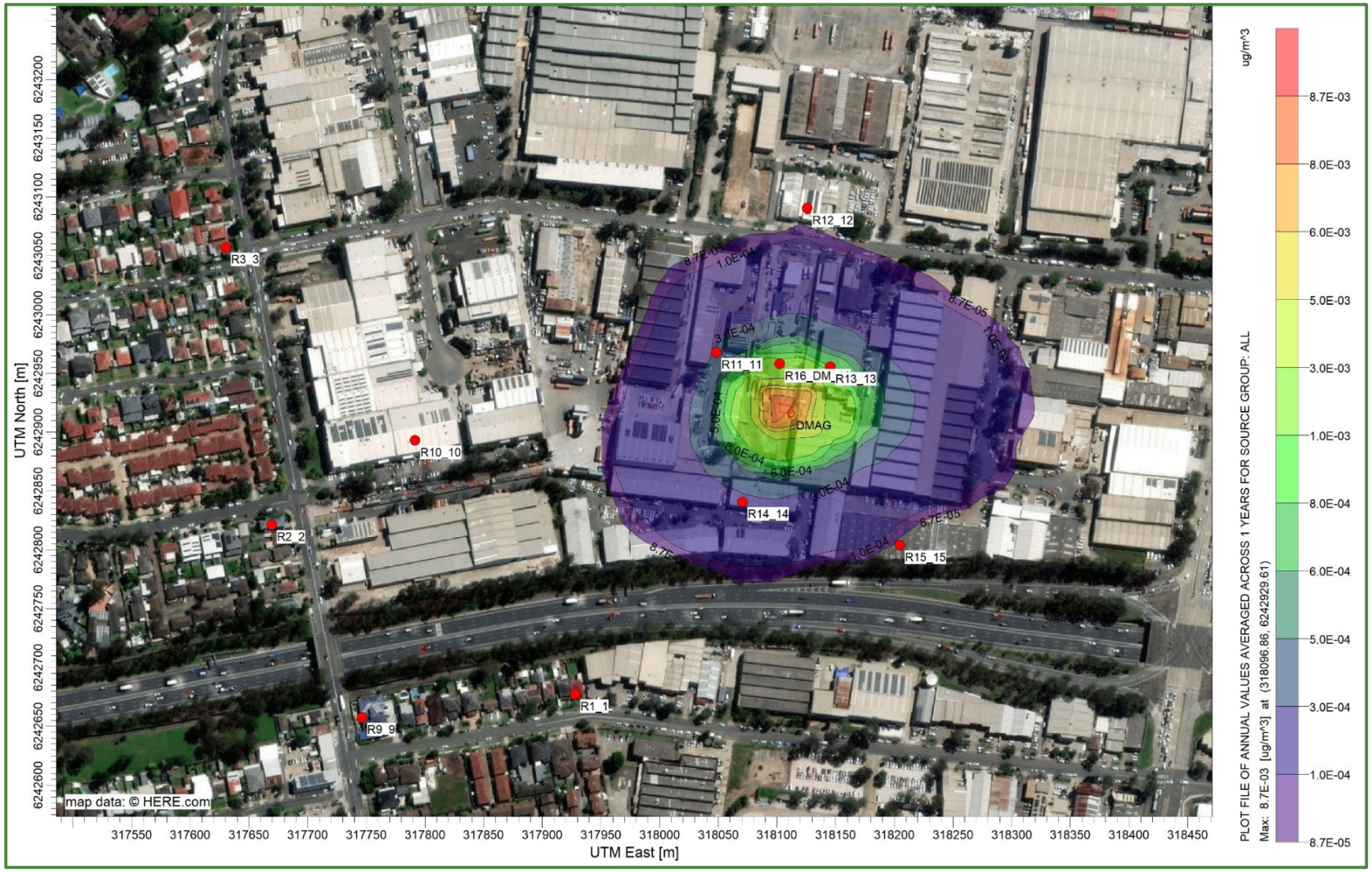


Table 7-8: $PM_{2.5}$ Annual Averaging Period Modelling Results

Receptor ID	Incremental Impact (µg/m³)	Background (µg/m³)	Total Cumulative Impact (µg/m³)	Criteria (µg/m³)
R1	0	8.62	8.62	8
R2	0		8.62	
R3	0		8.62	
R4	0		8.62	
R5	0		8.62	
R6	0		8.62	
R7	0		8.62	
R8	0		8.62	
R9	0		8.62	
R10	0		8.62	
R11	0.00005		8.62005	
R12	0.00001		8.62001	
R13	0.00012		8.62012	
R14	0.00004		8.62004	
R15	0.00001		8.62001	
R16	0.00018		8.62018	

Note: Complies / Non-compliance

Figure 7-4: $PM_{2.5}$ Annual Averaging Period Modelling Results

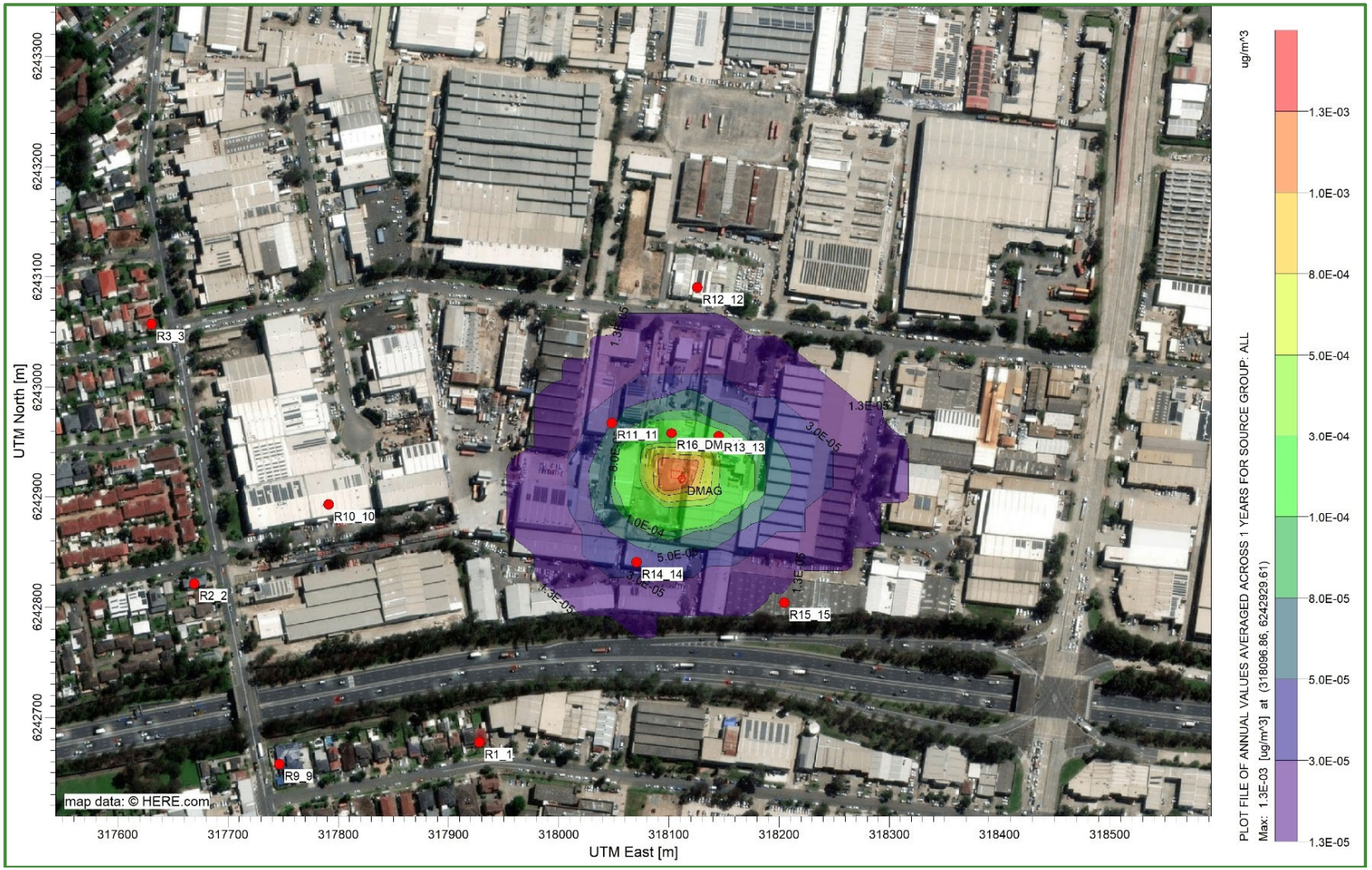


Table 7-9: PM_{10} 24 Hour Averaging Period Modelling Results

Receptor ID	Incremental Impact (µg/m³)	Background (µg/m³)	Total Cumulative Impact (µg/m³)	Criteria (µg/m³)
R1	0.00034	64.56	64.56034	50
R2	0.00055		64.56055	
R3	0.00023		64.56023	
R4	0.00011		64.56011	
R5	0.00008		64.56008	
R6	0.0001		64.5601	
R7	0.00009		64.56009	
R8	0.00009		64.56009	
R9	0.00024		64.56024	
R10	0.00056		64.56056	
R11	0.00462		64.56462	
R12	0.00142		64.56142	
R13	0.0073		64.5673	
R14	0.00258		64.56258	
R15	0.00113		64.56113	
R16	0.00832		64.56832	

Note: Complies / Non-compliance

Figure 7-5: PM_{10} 24 Hour Averaging Period Modelling Results

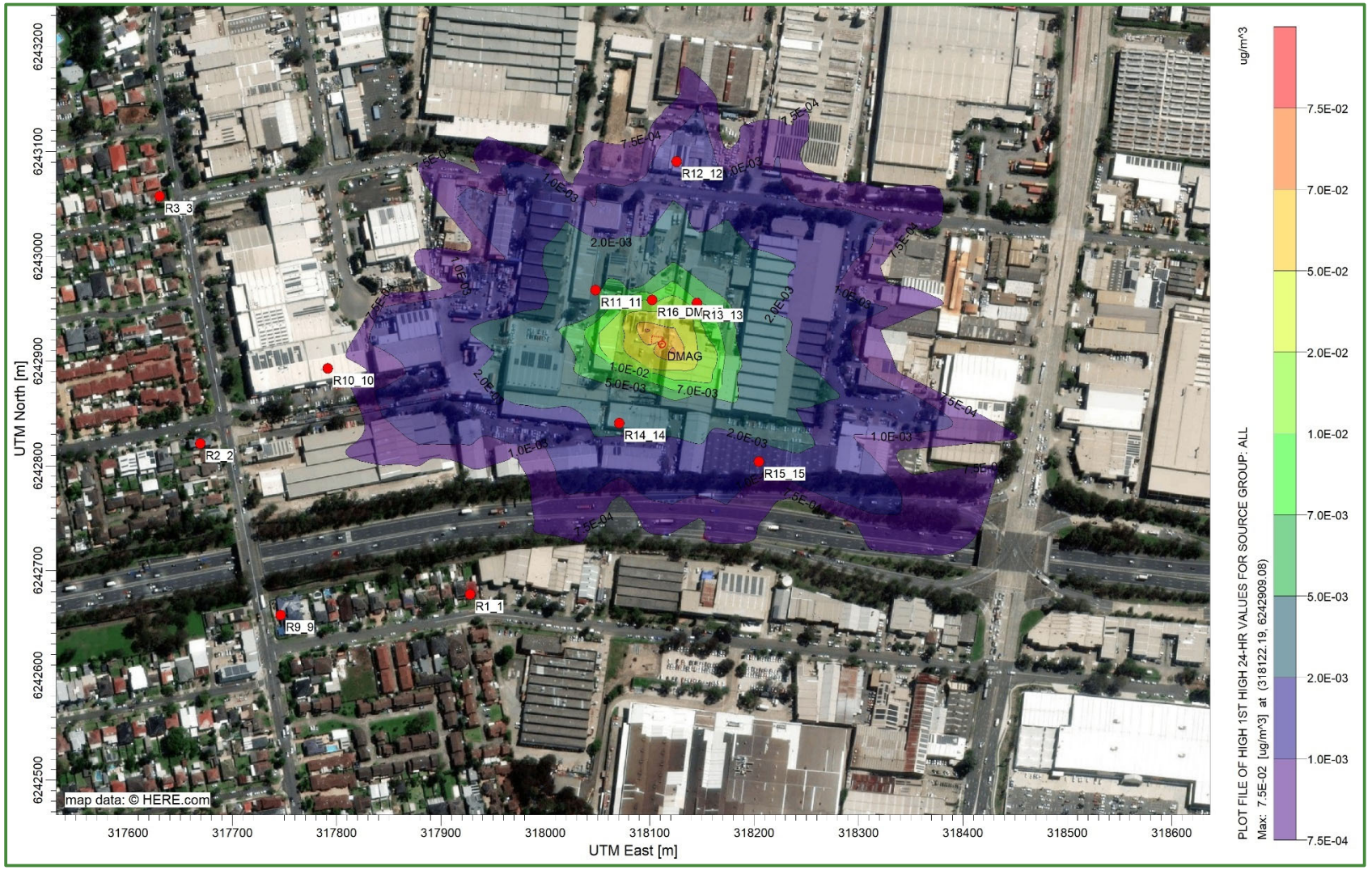
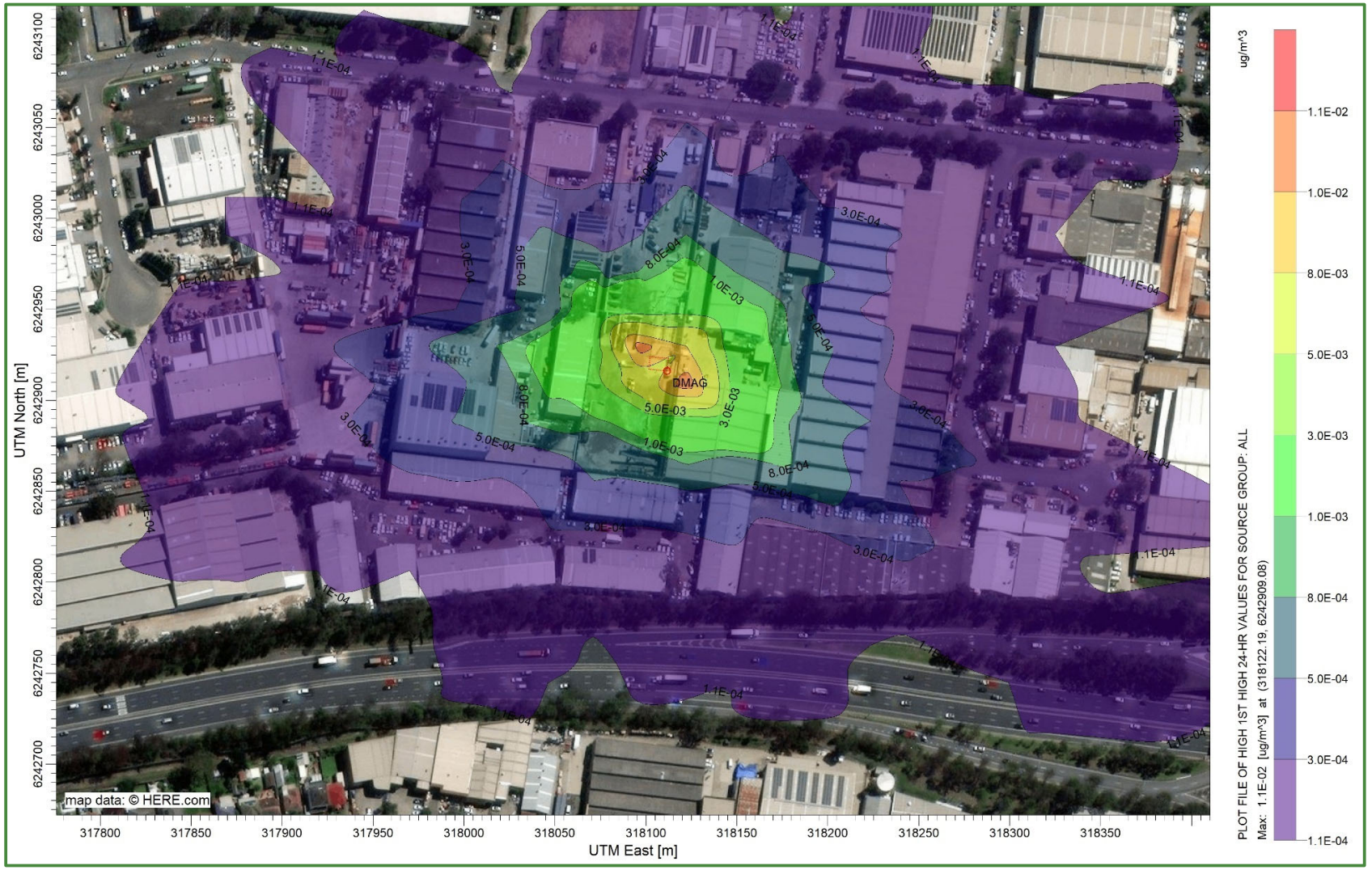


Table 7-10: $PM_{2.5}$ 24 Hour Averaging Period Modelling Results

Receptor ID	Incremental Impact (µg/m³)	Background (µg/m³)	Total Cumulative Impact (µg/m³)	Criteria (µg/m³)
R1	0.00005	37.21	37.21005	25
R2	0.00008		37.21008	
R3	0.00003		37.21003	
R4	0.00002		37.21002	
R5	0.00001		37.21001	
R6	0.00001		37.21001	
R7	0.00001		37.21001	
R8	0.00001		37.21001	
R9	0.00004		37.21004	
R10	0.00008		37.21008	
R11	0.00069		37.21069	
R12	0.00021		37.21021	
R13	0.00109		37.21109	
R14	0.00039		37.21039	
R15	0.00017		37.21017	
R16	0.00125		37.21125	

Note: Complies / Non-compliance

Figure 7-6: $PM_{2.5}$ 24 Hour Averaging Period Modelling Results



7.4.3 Cumulative Assessment

Due to the high background levels of PM_{10} and $PM_{2.5}$ at the site, the *Approved Methods* require a demonstration that no additional exceedances of the impact assessment criteria will occur as a result of the proposed site activities. Industrial receptor R11 (89 Gow Street, Padstow) was selected for contemporaneous addition of background impacts as it demonstrates impacts on the highest impacted receptor.

Cumulative assessment data of background levels of dust is sourced from NSW EPA monitoring stations as per the requirements of the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW (NSW EPA 2016).* This is in accordance with requests by DPIE communicated on 7th April 2022.

Table 7-11 summarise the contemporaneous impact and background of the top eight days of highest background concentrations and the top eight days of highest predicted increment for PM_{10} and $PM_{2.5}$ for the highest impacted receptor.

Table 7-11: Summary of Top Eight Days of Contemporaneous PM_{10} Impact and Background at Industrial Receptor R11 (*Approved Methods* Criterion = 50 µg/m³)

Date	PM_{10} 24 Hour Average (µg/m³)			Date	PM_{10} 24 Hour Average (µg/m³)		
	Highest Background	Predicted Increment	Total		Background	Highest Predicted Increment	Total
6/05/2015	64.56×	0.00069	64.56×	10/10/2015	26.99	0.0046	27.00✓
21/08/2015	48.23	0.00053	48.23✓	29/12/2015	11.47	0.0036	11.47✓
1/07/2015	46.21	0.00046	46.21✓	13/02/2015	15.00	0.0031	15.00✓
26/11/2015	45.95	0.00041	45.95✓	20/03/2015	31.21	0.0028	31.22✓
7/10/2015	36.23	0.00037	36.23✓	28/03/2015	14.73	0.0025	14.74✓
14/12/2015	33.92	0.00034	33.92✓	18/10/2015	24.31	0.0022	24.31✓
1/10/2015	32.60	0.00031	32.60✓	19/10/2015	20.02	0.0021	20.02✓
20/11/2015	32.31	0.00031	32.31✓	23/07/2015	13.00	0.0020	13.00✓

✓Complies × Non-compliance

Table 7-12: Summary of Top Eight Days of Contemporaneous $PM_{2.5}$ Impact and Background at Industrial Receptor R11 (*Approved Methods* Criterion = 25 µg/m³)

Date	$PM_{2.5}$ 24 Hour Average (µg/m³)			Date	$PM_{2.5}$ 24 Hour Average (µg/m³)		
	Highest Background	Predicted Increment	Total		Background	Highest Predicted Increment	Total
21/08/2015	37.21×	0.0007	37.21×	10/10/2015	12.55	0.00069	12.55✓
6/05/2015	19.25	0.0005	19.25✓	29/12/2015	3.88	0.00053	3.88✓
5/07/2015	18.37	0.0005	18.37✓	13/02/2015	10.22	0.00046	10.22✓
30/06/2015	17.53	0.0004	17.53✓	20/03/2015	15.10	0.00041	15.10✓
5/03/2015	17.52	0.0004	17.52✓	28/03/2015	4.95	0.00037	4.95✓
29/04/2015	16.15	0.0003	16.15✓	18/10/2015	9.39	0.00034	9.39✓
25/05/2015	15.84	0.0003	15.84✓	23/07/2015	9.13	0.00031	9.13✓
14/06/2015	15.81	0.0003	15.81✓	19/10/2015	7.56	0.00031	7.56✓

✓Complies × Non-compliance

7.5 DISCUSSION OF MODELLING RESULTS

In cases of elevated background concentrations, the NSW EPA requires a demonstration that no additional exceedances of the impact assessment criteria will occur as a result of the proposed site activities. Contemporaneous additions assessment was conducted for the most impacted receptor (R11; 89 Gow Street, Padstow). The 24 hour averaging period for $PM_{2.5}$ and PM_{10} demonstrated no additional days of exceedance from the proposed dewatering plant.

Therefore, the dust impacts from the proposed dewatering plant will not cause harm to human health or the environment. No additional controls are considered warranted.

8. GREENHOUSE GAS (GHG) ASSESSMENT

The following standards, sources and guidelines have been used as part of this greenhouse gas (GHG) assessment:

- Australian Standard AS ISO 14064.1: 2018– "Greenhouse gases" – "Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals";
- Department of the Environment and Energy, August 2019. Australian National Greenhouse Accounts – National Greenhouse Accounts Factors;
- Department of the Environment and Energy, October 2017. National Greenhouse and Energy Reporting System Measurement – Technical Guidelines;
- Department of Industry, Science, Energy and Resources, 2019. Australia'sNational Greenhouse Accounts, Quarterly Update of Australia's National Greenhouse Gas Inventory: December 2019; and2019; and
- Greenhouse Gas Protocol, revised edition 2015. *Corporate Accounting and Reporting Standard*.

This GHG assessment considers the existing proposed development and are based on the expected fuel and electricity use required for the dewatering plant to operate.

8.1 DIRECT AND INDIRECT EMISSIONS

Emissions are commonly classified as direct or indirect emissions, which are defined by the GHG Protocol as:

- Direct GHG emissions are emissions from sources within the boundary of an organisation and as a result of that organisations activities; and
- Indirect GHG emissions are emissions generated in the wider economy that are a consequence of the activities of the organisation, but occur at sources owned or controlled by another entity.

Direct and indirect emissions are further categorised into three broad scopes:

- Scope 1: All direct GHG emissions;
- Scope 2: Indirect emissions from consumption of purchased electricity, heat or steam; and
- Scope 3: Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities not covered in Scope 2, outsourced activities, waste disposal, etc.

Scope 1 GHG emissions from the proposed development are limited to diesel fuel consumption from plant and equipment operation on site. Scope 2 GHG emissions are limited to electricity consumption during site operations. Scope 3 emissions encompass a wide range of potential sources which are expected to be negligible for the proposed development. Therefore, Scope 3 GHG emissions are not assessed any further.

Scope 1 and Scope 2 GHG emissions are detailed in the following sections.

8.1.1 Direct Emissions

Direct GHG emissions from the proposed development would be generated from the consumption of diesel from the use of company owned plant, equipment and trucks. This would contribute to Scope 1 emissions.

8.1.2 Indirect Emissions

Indirect emissions from the proposed development would be generated from the consumption of purchased electricity.

8.2 Emission Factors

The National Greenhouse Accounts (NGA) Factors (August 2019) were used to determine relevant GHG emission factors for the operation of the proposed development. These are presented in Table 8-1.

Table 8-1: Greenhouse Gas Emission Factors

Source	Energy Content Factor (GJ/kL)	Emission Factor	Units	Reference
Diesel – for stationary purposes (site plant/equipment)	38.6	CO_2 = 69.9 CH_4 = 0.1 N_2O = 0.2	t CO2-e/kL	DEE (2019)
Electricity (NSW)	-	0.81	kg CO2/kWh	DEE (2019)

8.3 Estimation of GHG Emissions

8.3.1 Scope 1 GHG Emissions – Consumption of Diesel

Diesel consumption during operation would be associated with on site vehicles including delivery trucks.

Diesel fuel consumption has a number of GHG emission sources including carbon dioxide (CO_2) and products of incomplete combustion (methane, CH_4 and nitrous oxide, N_2O). The following formula was adopted for diesel consumption:

$$E = \frac{Q \; x \; EC \; x \; EF}{1{,}000}$$

where:

E is the amount of estimated greenhouse gas emissions in tonnes $CO_{2\text{-}e}$ (carbon dioxide equivalent)
Q is the volume of fuel combusted in kL

EC is the heat content of specific fuel type in GJ/kL
EF is the greenhouse gas emission factor specific to fuel type in kg CO_{2-e}/GJ

Calculation of Scope 1 emissions presented in Table 8-2 is estimated based on the assumptions that up to 90,000 L (90 kL) of diesel will be consumed per year associated with the proposed development.

Table 8-2: Estimated Scope 1 (Direct) Greenhouse Gas Emissions

Activity	Annual Consumption (GJ/year)	Emission Factor (kg CO_{2-e}/GJ)			Annual GHG Emissions (tonnes CO_{2-e})
		CO_2	CH_4	N_2O	
Consumption of Diesel	3474	69.9	0.1	0.2	244*
Total Annual Scope 1 GHG Emissions					244*

Note: * Results for GHG emissions are in 2 significant figures

8.3.2 Scope 2 GHG Emissions – Purchased Electricity

Scope 2 GHG emissions are associated with the consumption of purchased electricity. During operation, the drilling mud facility and office building would be connected to electricity. A review of the current electricity consumption at GSRC and an estimation of consumption with the inclusion of the new drilling mud facility has been undertaken.

The following formula was adopted for electricity consumption at the proposed development:

$$E = \frac{Q \times EF}{1{,}000}$$

Where:

E is the amount of estimated greenhouse gas in tonnes CO_2-e
Q is the quantity of purchased electricity in kWh
EF is the greenhouse gas emission factor specific to fuel type in kg CO_2-e/kWh for the state of New South Wales (0.81).

Calculation of Scope 2 emissions presented in Table 8-3 is estimated based on the assumptions that up to 576,000 kWh of electricity will be consumed per year for the proposed development.

Table 8-3: Estimated Scope 2 (Indirect) Greenhouse Gas Emissions

Activity	Annual Consumption (kWh)	Emission Factor ? (kg CO2/kWh)	Annual GHG Emissions (tonnes CO_{2-e})
Consumption of Electricity	576,000	0.81	467*
Total Annual Scope 2 GHG Emissions			467*

Note: * Results for GHG emissions are in 2 significant figures

8.3.3 Summary of GHG Emissions

A summary of the above-calculated GHG emissions is shown in Table 8-4.

Table 8-4: GHG Emission Summary

Annual GHG Emissions (tonnes CO_{2-e})	
Scope 1 – Diesel Consumption	244*
Scope 2 – Electricity Consumption	467*
Scope 3	Not Included
Total (Scope 1 + 2 + 3)	**710***

Note: *Results are in 2 significant figures

Annual GHG emissions for operation of the liquid waste processing facilities are estimated to be 710 t CO_2-e.

Australia's total GHG emissions as at December 2019 (the most recent inventory update) was estimated to be 532.5 Mt CO_2-e (Australian Government, Quarterly Update of Australia's National Greenhouse Gas Inventory: December 2019). In comparison, the estimated annual GHG emission for proposed development is 0.00071 Mt CO_2-e. Therefore, the annual contribution of GHG emissions from the proposed development in comparison to the Australian GHG emissions in 2019 is approximately 0.00013%.

8.4 Measures to Reduce GHG Emissions

Opportunities to reduce GHG emissions need to be considered as an ongoing objective within the site's Environmental Management Plan. However, the following mitigation measures are recommended:

- Source construction materials from within the vicinity of the project area;
- Maintain equipment and on-site plant/vehicles in good working order to maximise fuel efficiency; and
- Use high efficiency pumps and associated equipment in the drilling mud dewatering facility.

9. STATEMENT OF POTENTIAL AIR QUALITY IMPACTS

9.1 DUST IMPACT ASSESSMENT

The main dewatering processes were not included in dispersion modelling as they are completely enclosed in a wet environment and do not generate dust. However, stockpiled recovered aggregates from processed water has been included as this has the potential to generate airborne dust (via wind erosion) where not managed correctly. It is noted that the dust from these stockpiles represent negligible emissions (DMAG source in emission inventory Table 7-5) as the total dust emissions are several orders of magnitude less that more significant sources assessed in the cumulative dust impact assessment.

9.2 GREENHOUSE GAS (GHG) ASSESSMENT

Scope 1 GHG emissions from the proposed development are limited to diesel fuel consumption from plant and equipment operation on site. Scope 2 GHG emissions are limited to electricity consumption during site operations. Scope 3 emissions encompass a wide range of potential sources which are expected to be negligible for the proposed development. Therefore, Scope 3 GHG emissions were not assessed any further.

Annual GHG emissions for Scope 1 and Scope 2 GHG emissions for the operation of the drilling mud dewatering facilities are estimated to be 710 t CO_2-e.

Australia's total GHG emissions as at December 2019 (the most recent inventory update) was estimated to be 532.5 Mt CO_2-e (Australian Government, Quarterly Update of Australia's National Greenhouse Gas Inventory: December 2019). In comparison, the estimated annual GHG emission for proposed development is 0.00071 Mt CO_2-e. Therefore, the annual contribution of GHG emissions from the proposed development in comparison to the Australian greenhouse emissions in 2019 is approximately 0.0000013%.

9.3 CONCLUSION

Assessment of the proposed dewatering site activities finds that the dust and GHG emissions to air from proposed site operations are unlikely to cause harm to health or the environment.





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Senior Environmental Scientist

R T Benbow
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10. REFERENCES

- Australian Standard AS ISO 14064.1: 2018– "Greenhouse gases" – "Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals"

- Department of Industry, Science, Energy and Resources, 2019. *Australia's National Greenhouse Accounts, Quarterly Update of Australia's National Greenhouse Gas Inventory: December 2019*

- Department of the Environment and Energy, August 2019. *Australian National Greenhouse Accounts – National Greenhouse Accounts Factors*

- Department of the Environment and Energy, October 2017. *National Greenhouse and Energy Reporting System Measurement – Technical Guidelines*

- Environment Protection Authority (2016) *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*. Sydney.

- Greenhouse Gas Protocol, revised edition 2015. *Corporate Accounting and Reporting Standard*.

- National Pollutant Inventory (1999) *Emission Estimation Technique Manual for Concrete Batching and Concrete Product Manufacturing.* Available at: http://www.npi.gov.au/resource/emission-estimation-technique-manual-concrete-batching-and-concrete-product-manufacturing (Accessed:17 July 2020).

- National Pollutant Inventory (2012) *Emission Estimation Technique Manual for Mining*

- National Pollutant Inventory (2014) *Emission Estimation Technique Manual for Mining and Processing of Non-Metallic Minerals*

- NSW legislation (1997) *Protection of the Environment Operations Act*. *No 156.* Available at: https://www.legislation.nsw.gov.au/#/view/act/1997/156/wholehttps://www.legislation.nsw.gov.au/#/view/act/1997/156/whole (Accessed: 17 July 2020).

- United States Environmental Protection Agency (1995) *AP 42, Fifth Edition Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*. Available at: https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air emissionfactors(https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air emission-factors-Accessed: 17 July 2020).

11. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of Gow Street Recycling Centre, as per our agreement for providing environmental services. Only Gow Street Recycling Centre is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that otherwise required by law) in relation to any of the information contained within this document. We accept no responsibility for the accuracy of any data or information provided to us by Gow Street Recycling Centre for the purposes of preparing this report.

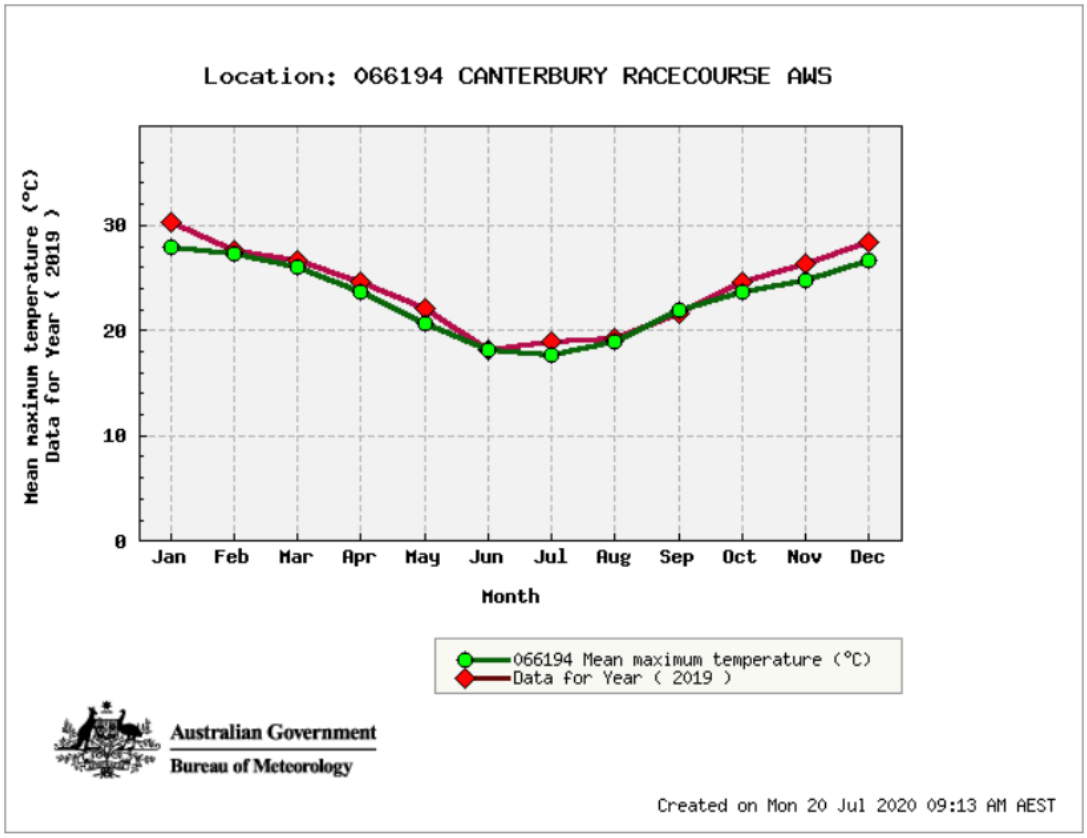
Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.

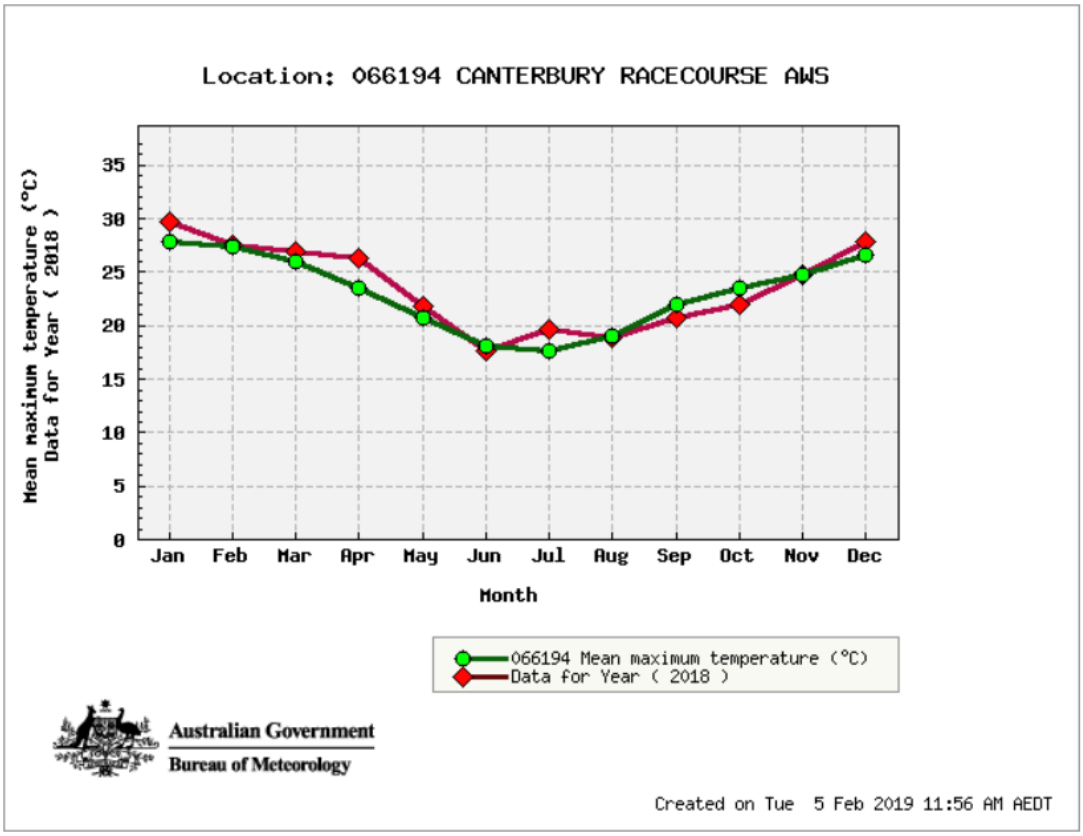
ATTACHMENTS

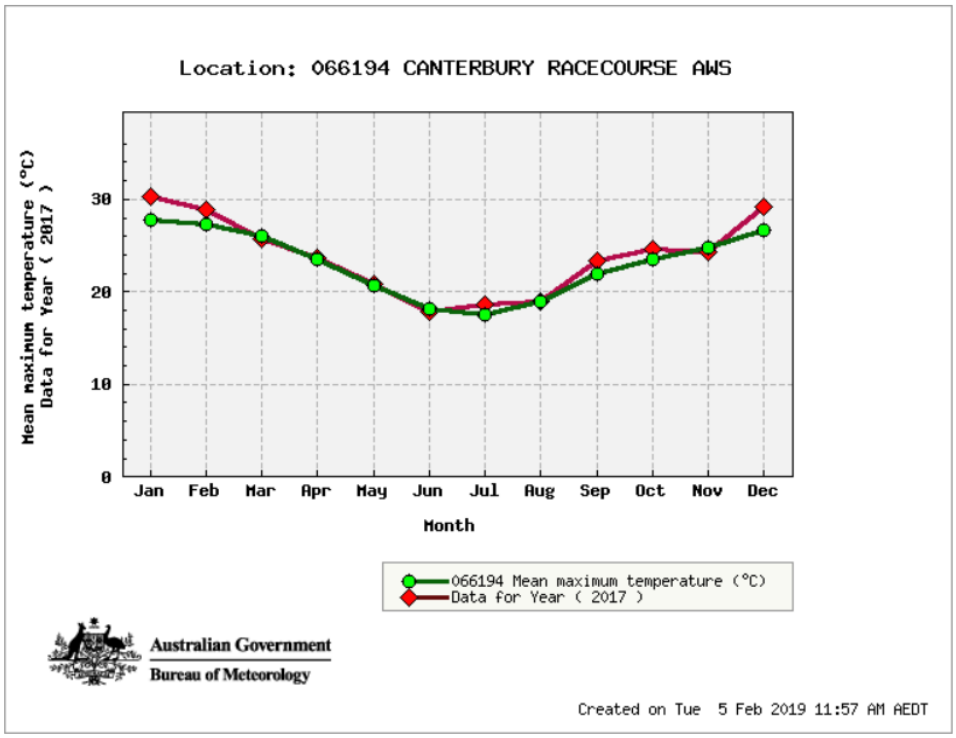
Attachment 1: Long-term Climate Statistics for the Referenced Meteorological Station – Canterbury Racecourse AWS, Bureau of Meteorology

Representative Year

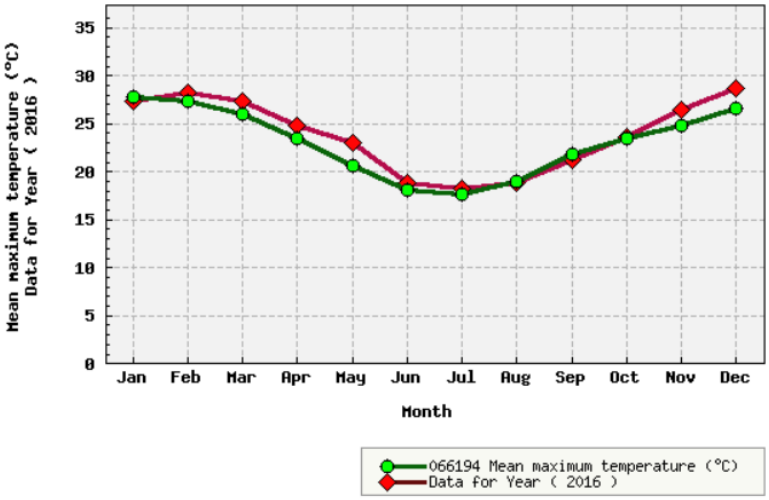
We have selected 2015 as the most representative year for weather. The minimum mean temperature follows the overall trend relatively closely in comparison to the years preceding 2018. The maximum mean temperature is not as close to the trend as 2017, however it is still quite close and is on par with 2016 and 2018. For mean daily wind run in 2015, it is the first year preceding 2018 with a full year of data and the trend is followed more so than other years.




Location: 066194 CANTERBURY RACECOURSE AWS
Mean maximum temperature (°C)
Data for Year (2018)
0
5
10
15
20
25
30
35
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
066194 Mean maximum temperature (°C)
Data for Year (2018)
Australian Government
Bureau of Meteorology
Created on Tue 5 Feb 2019 11:56 AM AEDT


Location: 066194 CANTERBURY RACECOURSE AWS
Mean maximum temperature (°C)
Data for Year (2017)
0
10
20
30
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
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Data for Year (2017)
Australian Government
Bureau of Meteorology
Created on Tue 5 Feb 2019 11:57 AM AEDT

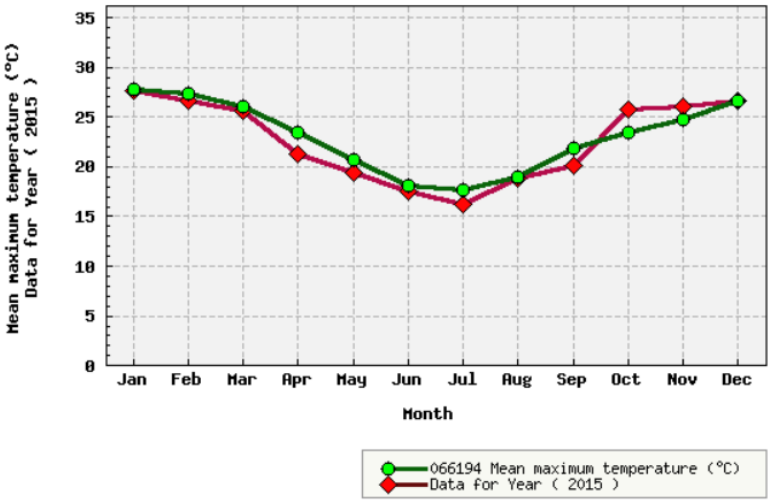
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Bureau of Meteorology

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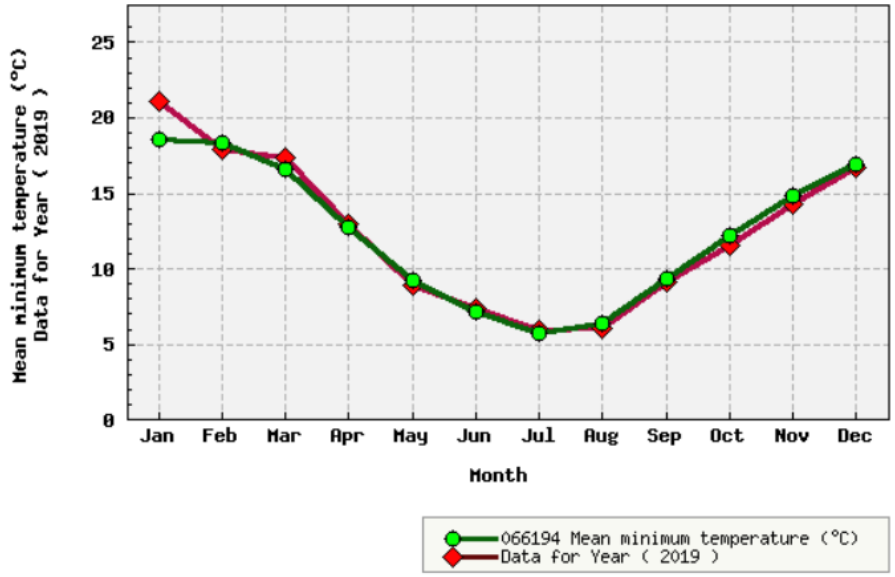
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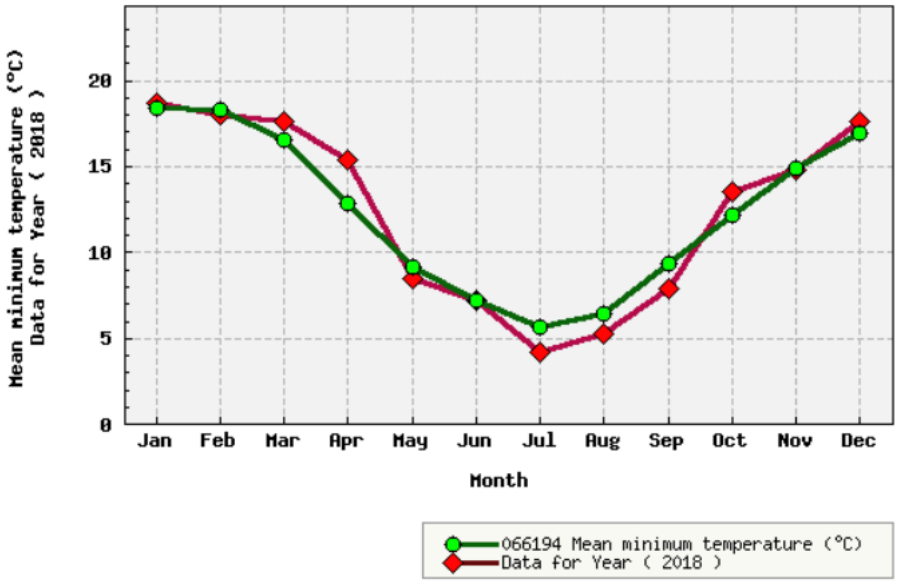
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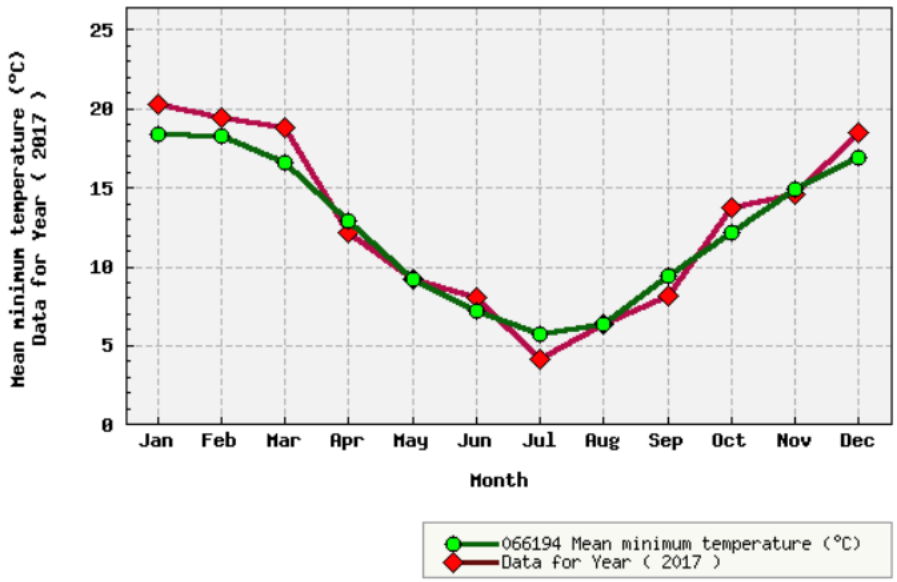
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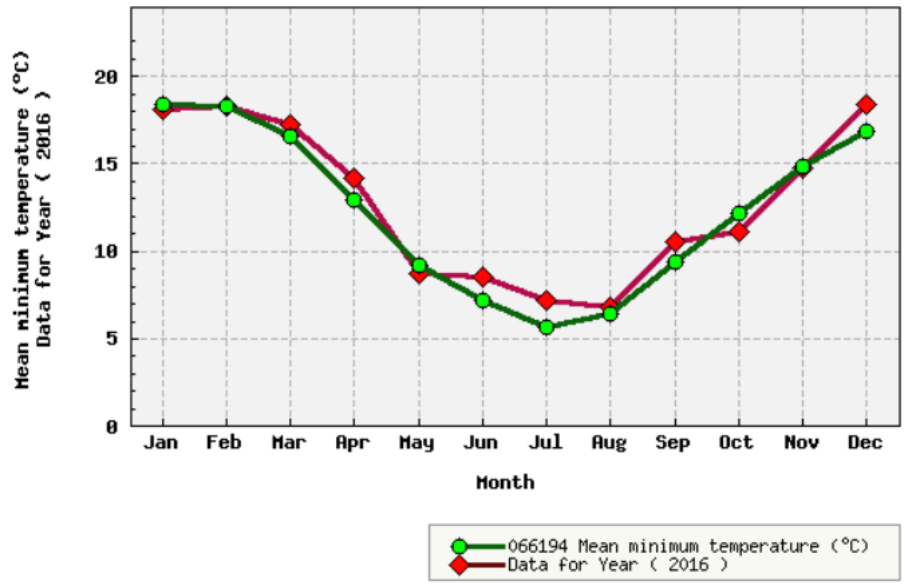
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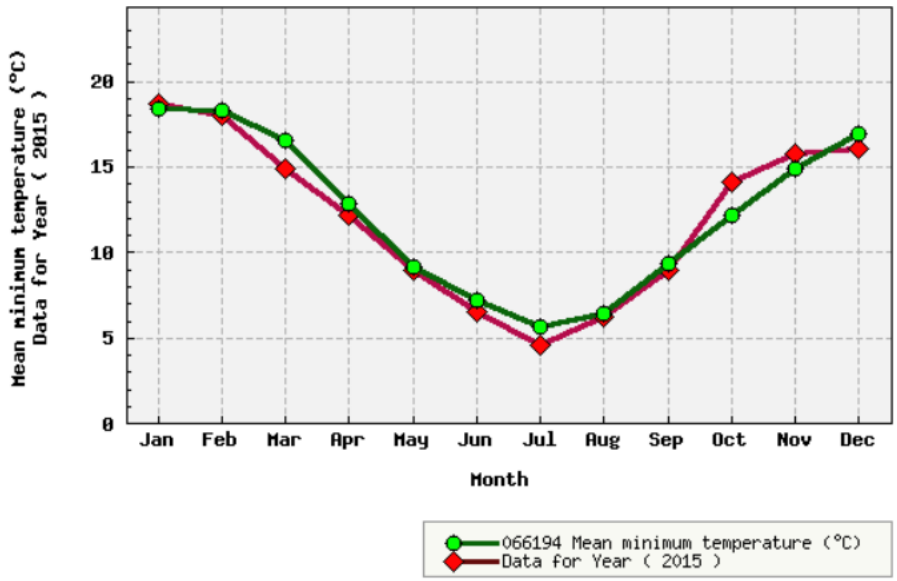
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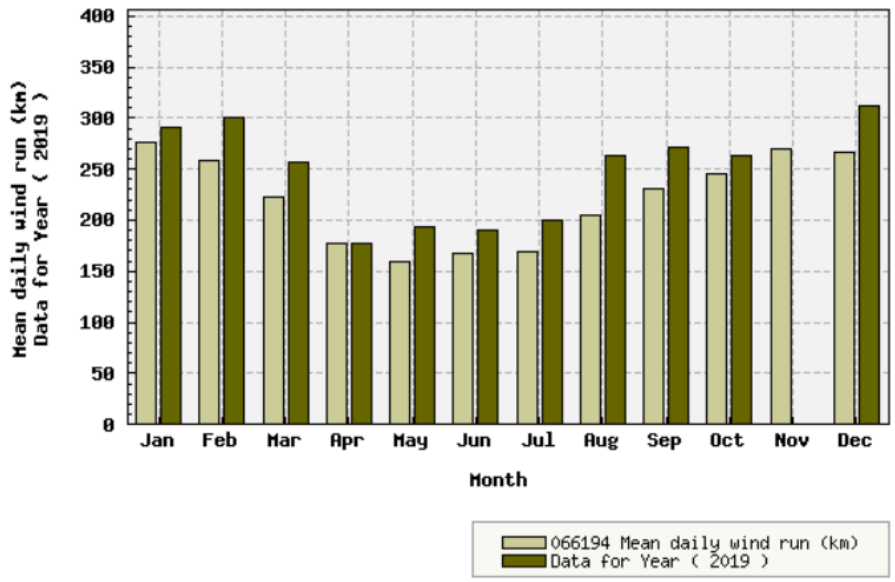
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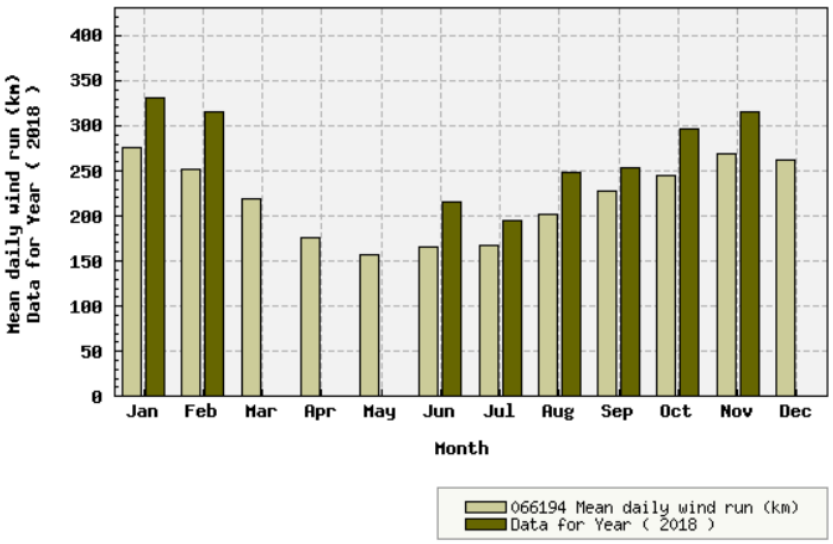
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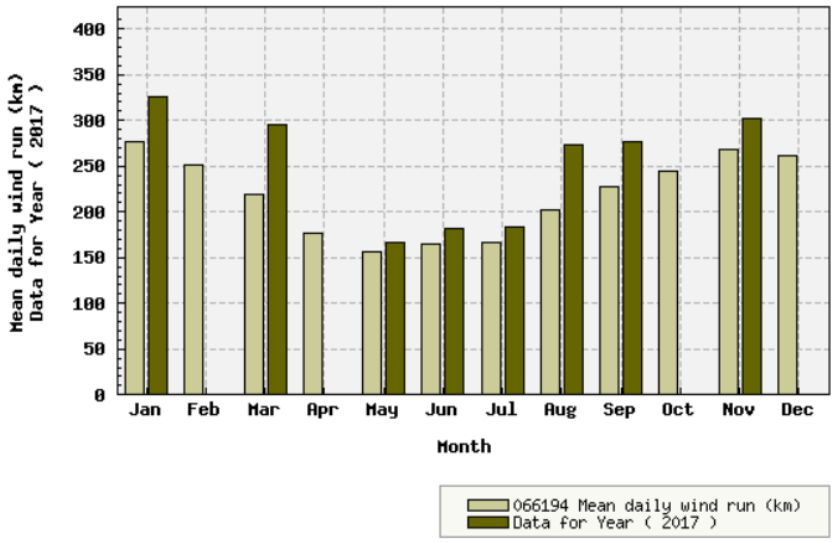
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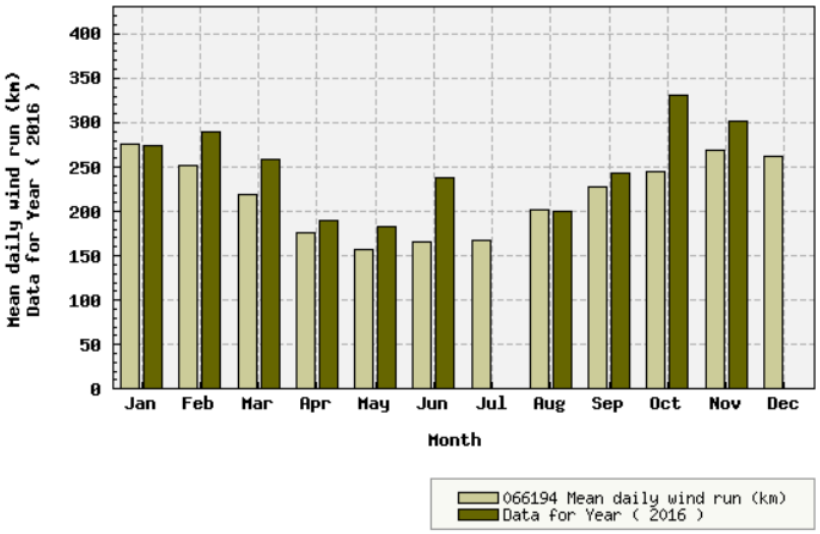
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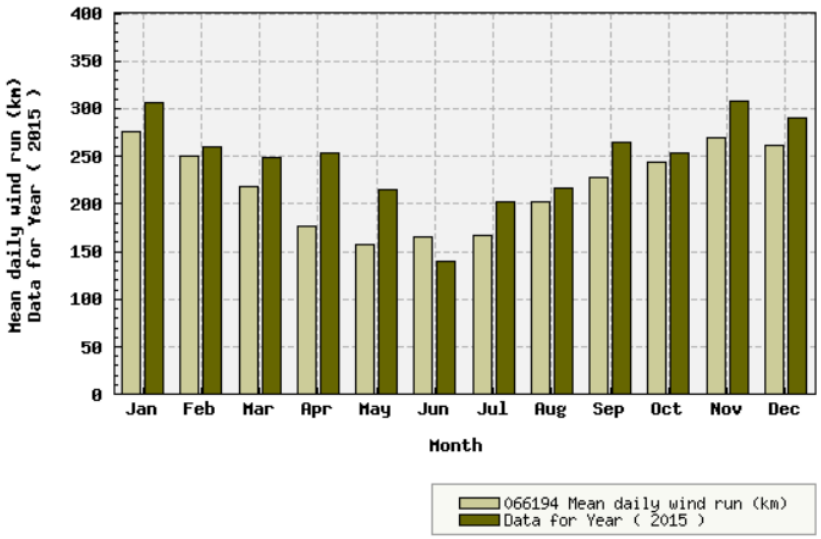
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Location: 066194 CANTERBURY RACECOURSE AWS



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DEWATERING PLANT NOISE AND VIBRATION IMPACT ASSESSMENT
FOR GOW STREET RECYCLING CENTRE PTY LTD
81 GOW STREET, PADSTOW

Prepared for: Gow Street Recycling Centre Pty Ltd
NSW EPA

Prepared by: Victoria Hale, Senior Environmental Scientist
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Report No: 191290_NIA-02_Rev1
April 2022
(Released: 8 April 2022)

Benbow
ENVIRONMENTAL

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EXECUTIVE SUMMARY

Benbow Environmental has been engaged by Gow Street Recycling Centre (GSRC) to prepare a Dewatering Plant Noise and Vibration Impact Assessment (DPN&VIA) for a resource recovery facility at 81 Gow Street, Padstow (Lot A DP 103140). This report has been completed as part of an Environmental Impact Statement (EIS) for the proponent, which aim to update their existing Environmental Protection License (10943) which currently allows them to have a processing capacity of 80,000 tpa, and a maximum storage quantity of 7,300 at any one time.

The proposed development includes establishment of a dewatering plant, with a capacity of 250,000 tonnes per year. These operations will take place on site 24/7. This noise report assesses contributions from the dewatering plant operations only and the cumulative impacts of both the proposed dewatering plant and the existing C&D recycling facility operating simultaneously.

The nearest receivers and the noise generating activities have been identified. Noise criteria for the project have been formed, with assessment of the proposed site activities conducted against the NSW Noise Policy for Industry (EPA, 2017), NSW Interim Construction Guidelines (DECCW, 2009) and the NSW Road Noise Policy (DECCW, 2011). Modelling of the activities was conducted using the noise modelling software SoundPlan.

This noise impact assessment finds that predicted noise levels from all scenarios will be below the criteria set out in accordance with the NSW Noise Policy for Industry, at all receivers and time periods.

During the night from 10pm – 6am the proposed vacuum truck pump should not be used. An internal pump can be used at night such that the tanker truck vacuum pump is not needed.

Compliance with the guidelines set out in the NSW Road Noise Policy and Interim Construction Noise Guidelines was predicted at all considered receptors.

Vibration impacts from the proposed dewatering plant are considered negligible. Vibration impacts from the existing C&D facility have been found to comply with the relevant criteria (see Attachment 5).

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1. INTRODUCTION

Benbow Environmental has been engaged by Gow Street Recycling Centre (GSRC) to prepare a Dewatering Plant Noise and Vibration Impact Assessment (DPN&VIA) for a resource recovery facility at 81 Gow Street, Padstow (Lot A DP 103140). This report has been completed as part of an Environmental Impact Statement (EIS) for the proponent, which aim to update their existing Environmental Protection License (10943) which currently allows them to have a processing capacity of 80,000 tpa, and a maximum storage quantity of 7,300 at any one time.

The proposed development includes establishment of a dewatering plant, with a capacity of 250,000 tonnes per year. These operations will take place on site 24/7. This noise report assesses contributions from the dewatering plant operations only and the cumulative impacts of both the proposed dewatering plant and the existing C&D recycling facility operating simultaneously.

Principal noise sources resulting from the proposed dewatering plant include mobile equipment, trucks and vacuum truck pumps, internal pumps and equipment. Noise sources resulting from the existing C&D facility include screening equipment, crushing equipment, excavators, front end loaders and truck movements.

The potential noise impacts of operational and road traffic activities on the nearby receivers have been predicted utilising noise modelling software, SoundPlan. This noise impact assessment has been prepared in accordance with the following guidelines and documents:

- NSW Noise Policy for Industry (EPA, 2017);
- NSW Interim Construction Guideline (DECCW, 2009);
- NSW Road Noise Policy (RNP) (DECCW, 2011); and
- Bankstown Development Control Plan (DCP) 2015.

1.1 SCOPE OF WORKS

This noise impact assessment has been limited to the following scope of works:

a) Review of proposed plans and operations;
b) Long term and short term ambient and background noise monitoring in accordance with relevant guidelines;
c) Identify project specific noise levels;
d) Determine all potential noise sources associated with the proposed development;
e) Collect required noise source data;
f) Predict potential noise impacts at the nearest potentially affected receptors to the site;
g) Assess potential noise impacts against relevant legislation and guidelines;
h) Recommend control measures where required; and
i) Compile this report with concise statements of potential noise impact.

To aid in the review of this report, supporting documentation has been included within the Attachments. A glossary of terminology is included in Attachment 1.

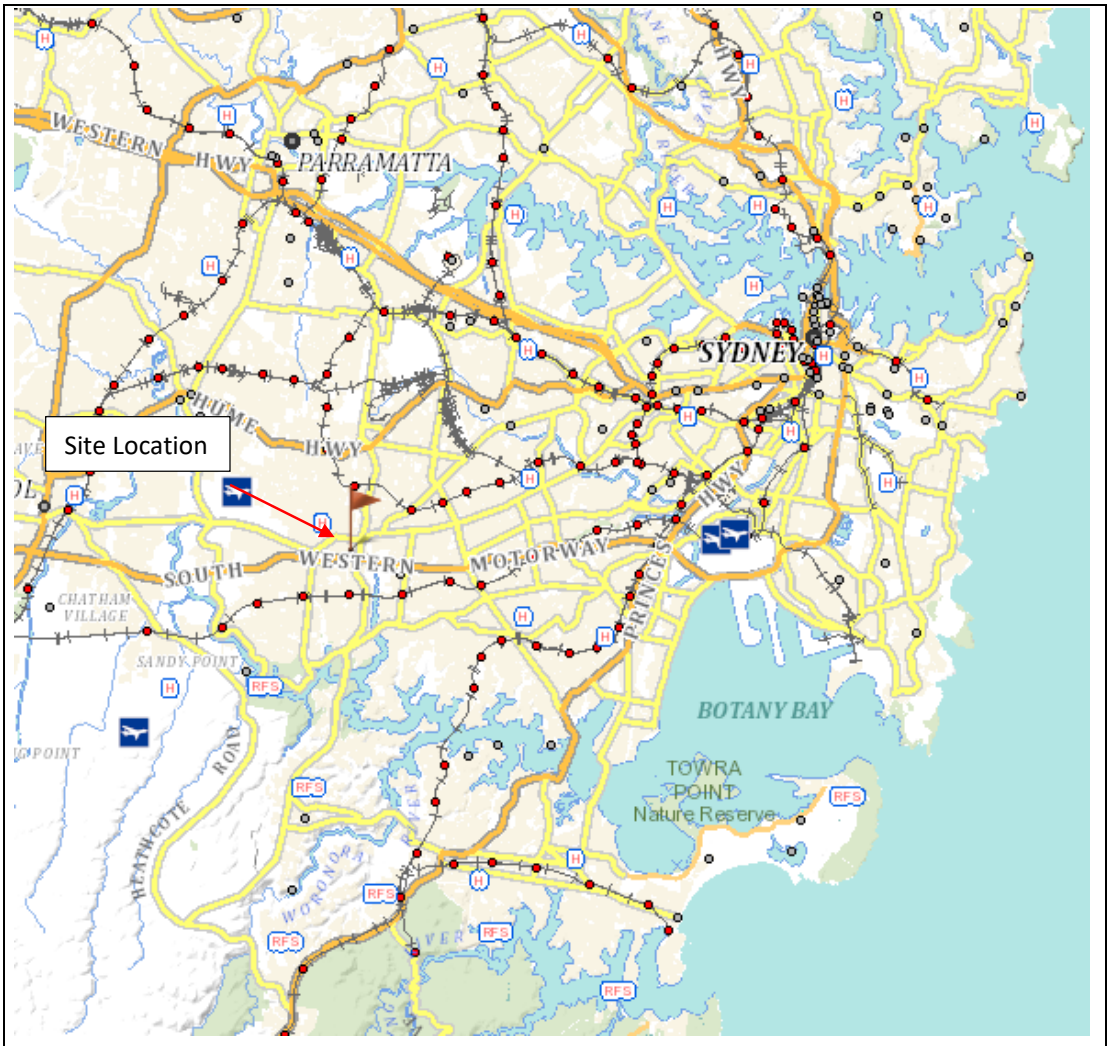
2. LOCATION AND SETTING

2.1 SITE LOCATION

The site is located at 81-87 Gow Street, Padstow, 2211, in Sydney's south-west, within the boundaries of the Canterbury-Bankstown Council. The property is also known as Lot A DP 103140.

The site has an area of approximately 1 ha and can be accessed from Gow Street. The site is situated in IN1 – General Industrial land use zoning under the Bankstown Local Environmental Plan (LEP) 2015. It is located in an industrial precinct, then all adjacent receptors are industrial Figure 2-1 shows the site in a regional context.

Figure 2-1: Site Location in a regional context



Source: Six Maps 2019

↑N Not to scale		Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

2.2 HOURS OF OPERATIONS

The dewatering facility proposes to operate for 24 hours / seven days a week.

The approved operational hours for the C&D facility are: 06:00 and 18:00 Monday to Friday, and 07:00 and 18:00 on weekends. The existing facility will continue to operate within these hours.

2.3 EXISTING RESOURCE RECOVERY FACILITY

The site contains an existing resource recovery facility with approval under DA-51/1997 to process up to 80,000 tonnes per year and store tpa of construction and demolition (C&D) waste and has a storage capacity of 7,300 tonnes at any one time. The facility is authorised to accept the following wastes:

- General solid waste (non-putrescible) including:
  - Glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal;
  - Virgin excavated material;
  - Building and Demolition waste;
  - Asphalt waste;
  - Cured concrete waste;
  - Any mixture of the wastes referred to above.
- Drilling mud, meaning a mixture of naturally occurring rock and soil, including but not limited to materials such as sandstone, shale and clay, and drilling fluid generated during drilling operations such as horizontal or directional drilling or potholing. This does not included drilling mud that has been generated by:
  - Deep drilling for mineral, gas or coal exploration; or
  - Drilling through contaminated soils, acid sulphate soils (ASS) or potential acid sulphate soils (PASS).

It should be noted that the facility currently does not accept drilling mud and this waste type is currently not included on the Site's EPL.

The site is fully developed and consists of two weighbridges, a wheel wash, a warehouse building, demountable office and a demountable lunchroom. Crushing and screening equipment are located in the south-east corner and there are 12 pre-cast concrete external storage bunkers for the storage of incoming wastes and recovered materials.

The existing development site is a fully developed industrial premises with a total area of approximately 10,115 m^2. The entire site consists of sealed concrete hardstand.

Approved hours of operation of the existing resource recovery facility are between 6.00am - 6.00pm on weekdays and 7.00am - 6.00pm weekends.

A description of the existing processes is provided in the following section.

2.3.1 Existing Process Description

The following steps are undertaken at the existing approved resource recovery facility:

- Incoming waste is received pre-sorted from skip bin facilities and is inspected at the weighbridge upon arrival at the site.
- Acceptable waste is weighed and recorded.
- Trucks unload the waste at the pre-crushed storage area.
- Material is crushed and screened to suitable sizes.
- Recovered material is stored in designated external storage bunkers.
- Materials are loaded onto trucks and weighed before leaving the site via the wheel wash for off-site reuse as road-base material.

Waste dockets are maintained for record keeping purposes.

2.4 DESCRIPTION OF THE SURROUNDING AREA

The site and immediate surrounding receivers are located within land zoned IN1 – General Industrial under Bankstown Local Environmental Plan, 2015, shown below in Figure 2-3. The nearest residential area is located to the south-east of the site, which is also located in Padstow. There are some IN2 – Light Industrial land zoning areas to the south and south-east of the site. There are RE1 – Public Recreation land zoning areas that run alongside Salt Pan Creek. The South Western Motorway, or the M5, is located in SP2 – Infrastructure land zoning directly south of the site.

Figure 2-2: Land Zoning Map



Source: NSW Planning Portal 2019

N

Not to scale

Legend:

Zone

B1	Neighbourhood Centre	R2	Low Density Residential
B2	Local Centre	R3	Medium Density Residential
B4	Mixed Use	R4	High Density Residential
B5	Business Development	RE1	Public Recreation
B6	Enterprise Corridor	RE2	Private Recreation
B7	Business Park	RU4	Primary Production Small Lots
E1	National Park and Nature Reserves	SP1	Special Activities
IN1	General Industrial	SP2	Infrastructure
IN2	Light Industrial	W1	Natural Waterways

2.5 NEAREST SENSITIVE RECEPTORS

Table 2-1 lists the location of representative potentially affected receivers that are considered in this assessment. The locations are shown in Figure 2-3.

Table 2-1: Table of Nearest Receptors

Receptor ID	Address	Direction from Site	Lot & DP	Approx. Distance from Proposed Development	Type of Receptor
R1	24 Bryant Street, Padstow	SW	17 DP 18539	240 m	Residential
R2	59 Gibson Avenue, Padstow	W	1 DP 18270	430 m	Residential
R3	39 Gibson Avenue, Padstow	W	2 DP 26399	500 m	Residential
R4	168 Canterbury Road, Bankstown	NW	3 DP 10428	610 m	Residential
R5	76 Chapel Road, Bankstown	NW	6 DP 132453	780 m	Residential
R6	61 Marshall Street, Bankstown	N	4 DP 13275	700 m	Residential
R7	26 John Street, Punchbowl	NE	1 DP 36047	900 m	Residential
R8	62 Moxon Road, Punchbowl	E	1 DP 1129073	1030 m	Residential
R9	98-100 Gibson Avenue, Padstow	SW	11 DP 1208760	390 m	School Classroom
R10	9 Gatwood Close, Padstow	W	71 DP 1163243	290 m	Place of Worship
R11	89 Gow Street, Padstow	W	A SP 103140	Adjacent	Industrial
R12	82 Gow Street, Padstow	N	2 DP 392634	Adjacent	Industrial
R13	79 Gow Street, Padstow	E	3 DP 371357	Adjacent	Industrial
R14	78 Gibson Avenue, Padstow	S	SP 22907	Adjacent	Industrial
R15	9 Wordie Place, Padstow	SW	12 DP 242730	Adjacent	Industrial

Note: distances measured from the boundaries of the site

Figure 2-3: Map of Nearest Receptors



Source: Google Earth 2018

↑N Not to scale	**Legend:** **+** Receiver location	Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

3. PROPOSED LIQUID WASTE DEWATERING FACILITY

Establishment and operation of a liquid waste dewatering plant is proposed. This plant would essentially operate separately from the existing approved resource recovery facility, however, there would be some minor interactions between processes. The proposal consists of the following elements:

- Construction of purpose-built building to enclose the dewatering facility. This would replace the existing warehouse building that would be demolished.
- A new office building would be constructed. This would replace the existing demountable office and amenities building as well as the demountable lunchroom that would be removed from site. The new office building would be used by staff of both the existing and proposed developments.
- Installation of dewatering equipment including a flocculant station/pit, screw separator and screen, slurry homogeniser, 2 x 60 kL silos, and filter press.
- A truck unloading area inside the building.
- Six (6) inground pits and sumps inside the building. Pits and sump details are as follows:
    - Inground Pit (receivals), 8.0 x 4.5 x 3.0 m deep (Volume: 108,000 L)
    - Floc Plant: Clean water pit, 3.0 x 2.835 x 2.5 m deep (Volume: 21,263 L)
    - Floc Plant: Dirty water pit (1), 2 x 2.835 x 2.5 m deep (Volume: 14,175 L)
    - Floc Plant: Dirty water pit (2), 3.33 x 2.835 x 2.5 m deep (Volume: 23,601 L)
    - Floc Plant: Sump Pit, 1.6 x 2.835 x 2.5 m deep (Volume: 11,340 L)
- Six (6) bunkers. Four (4) bunkers would be located inside the building and two (2) would be located external to the building under an awning. Bunker contents and dimensions are:
    - Bunker 1: Aggregate, 6.2 x 4.0 m
    - Bunker 2: Aggregate, 6.2 x 4.0 m
    - Bunker 3: Sand 5.07 x 5.805 m
    - Bunker 4: Sand 5.295 x 5.805 m
    - Bunker 5: Sand 5.295 x 5.805 m
    - Bunker 6: Filter cake 6.7 x 8.9 m
- Extension of the boundary wall up to new building behind the new aggregate bunkers.
- Connection to Sydney Water tradewaste under an agreement.
- Stormwater upgrades including a first flush system that directs the first 20 mm of on-site stormwater to a silt arrester and detention tank which will be used in the dewatering plant while the clean overflow is discharged to the stormwater easement using the existing stormwater connection during a heavy rain event.

A proposed site plan and equipment layout are provided in Appendix 8. A description of the dewatering process is provided in the following sub-section.

3.1 PROPOSED PROCESS DESCRIPTION

The dewatering facility would operate as a recycling facility for the drilling mud and concrete washout water and stormwater captured onsite. The facility would involve the following activities:

- Unloading of drilling mud/concrete washout water into dirty water containment pits.
- This liquid is transferred into the dirty water pit and then into the flocculent station.
- The flocculants assist in settling sediments at the bottom of the tank.
- The sand/rock/sediment slurry is pumped from the bottom of the tank and into a screw separator.
- The screw separator removes the solids from the water.
- The solids are then transferred to a vibrating screen where the aggregates and sands are conveyed to internal and external storage bays.
- The water from the flocculent station and the screw separator is pumped to the two 60 kL silos, the slurry homogeniser tank and then into the filter press.
- The filter press removes the remaining silts and the cleaned water is pumped to the clean water pit.
- The sediments/silt from the filter press becomes a fine biscuit which is removed offsite as for application to land under the Treated Drilling Mud Exemption 2014 or to landfill.
- The filter press requires intermittent backwashing where backwash water is pumped to the dirty water pit to be reprocessed through the system.
- The clean water pit would be pH adjusted and then used for cleaning aggregates and sand during the screening process, dust suppression and washdown onsite. Excess water would be sent to tradewaste under a Trade Waste Agreement.

Site washdown water and stormwater will be collected in a 200 kL underground tank and through the above dewatering system.

The maximum quantity of liquid waste that can be processed through the dewatering plant in a 24-hour period is approximately 1,500 tonnes. This can easily accommodate stormwater runoff and the proposed 250,000 tonnes per annum.

4. EXISTING ACOUSTIC ENVIRONMENT

The level of background noise varies over the course of any 24 hour period, typically from a minimum at 3.00am to a maximum during morning and afternoon traffic peak hours. Therefore the NSW EPA Noise Policy for Industry (2017) requires that the level of background and ambient noise be assessed separately for the daytime, evening and night time periods. The Noise Policy for Industry defines these periods as follows:

- **Day** – the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays;
- **Evening** – the period from 6pm to 10pm; and
- **Night** – the remaining periods.

4.1 NOISE MONITORING EQUIPMENT AND METHODOLOGY

Background noise level measurements were carried out using a Svantek SVAN 957 Precision Sound Level Meter (attended noise monitoring) and one (1) Acoustic Research Laboratories statistical Environmental Noise Logger, type EL-215 (unattended noise monitoring). The instrument sets were calibrated by a NATA accredited laboratory within two years of the measurement period. Calibration certificates have been included in Attachment 2.

To ensure accuracy and reliability in the results, field reference checks were applied both before and after the measurement period with an acoustic calibrator. There were no excessive variances observed in the reference signal between the pre-measurement and post-measurement calibration. The instruments were set on A-weighted Fast response and noise levels were measured over 15-minute statistical intervals. QA/QC procedures applied for the measurement and analysis of noise levels have been presented in Attachment 3. The microphones were fitted with windsocks and were positioned between 1.2 metres and 1.5 metres above ground level. Details of the instrumentation and setting utilised are provided in Table 4-1.

Table 4-1: Instrumentation and Setup Details

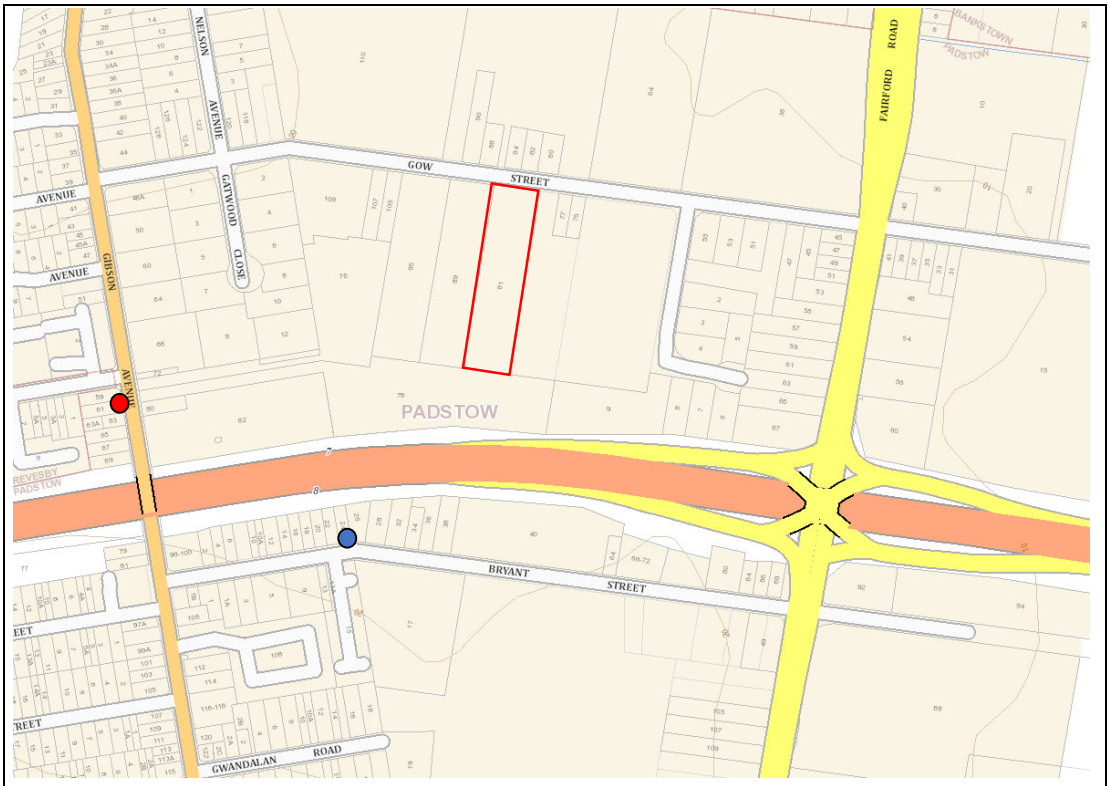
Type of Monitoring	Equipment	Serial Number	Setup Details
Long-term Unattended	ARL-215	194552	A-weighted Fast Response 15 minute integration period
Short-term Attended	Svantek SVAN957 Type 1 Integrating Sound and Vibration analyser	15335	Three channels: A-weighted Fast Response C-weighted Fast Response A-weighted Impulse Response 15 minute integration period 1/3 octave band recorded every 100 ms Logger file Recorded at steps of 100 ms

4.2 MEASUREMENT LOCATION

Unattended long-term noise monitoring was undertaken from 11th March 2019 to 26th March 2019 at one representative location, 24 Bryant Street, Padstow, as shown in Figure 4-1. Road traffic noise monitoring was undertaken from 7th February 2022 to 10th February 2022 at 61 Gibson Ave.

Attended noise monitoring was undertaken at the same location on 11th March 2019. The attended and noise logging locations are shown in Figure 4-1. Noise Logger Charts are presented in Attachment 3.

Figure 4-1: Noise Logging Location



Source: Six Maps 2019

↑N Not to scale	**Legend**: Noise logging and attended location Existing Road Traffic logging location Site Boundaries	Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

4.3 MEASURED NOISE LEVELS

4.3.1 Long-Term Unattended Noise Monitoring Results

The data was analysed to determine a single assessment background level (ABL) for each day, evening and night time period, in accordance with the NSW EPA Noise Policy for Industry. That is, the ABL is established by determining the lowest tenth-percentile level of the L_{A90} noise data over each period of interest. The background noise level or rating background level (RBL) representing the day, evening and night assessment periods is based on the median of individual ABL's determined over the entire monitoring period.

The results of the long-term unattended noise monitoring are displayed inTable 4-2. Daily noise logger graphs have been included in Attachment 3.

Table 4-2: Unattended Noise Monitoring Results, dB(A)

Date	Average L_1			Average L_{10}			ABL (L_{90})			L_{eq}		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
11/3/2019	-	59	59	-	56	54	-	48	42	-	53	51
12/3/2019	64	-	-	60	-	-	53	-	-	58	-	-
13/3/2019	65	61	60	61	57	55	53	48	38	59	55	53
14/3/2019	-	-	-	-	-	-	-	-	-	-	-	-
15/3/2019	-	-	-	-	-	-	-	-	-	-	-	-
16/3/2019	-	-	-	-	-	-	-	-	-	-	-	-
17/3/2019	-	62	-	-	58	-	-	51	-	-	57	-
18/3/2019	65	62	-	62	59	-	55	49	-	60	59	-
19/3/2019	-	63	-	-	60	-	-	50	-	-	60	-
20/3/2019	-	63	60	-	59	56	-	50	42	-	58	54
21/3/2019	-	62	61	-	59	56	-	51	43	-	58	55
22/3/2019	66	62	60	61	59	56	53	50	44	59	58	54
23/3/2019	65	63	59	60	58	54	52	50	40	62	59	52
24/3/2019	63	-	58	58	-	53	51	-	42	57	-	51
25/3/2019	-	61	-	-	57	-	-	51	-	-	55	-
26/3/2019	64	-	60	61	-	56	53	-	42	59	-	54
Average	**65**	**62**	**60**	**60**	**58**	**55**	*	*	*	*	*	*
Median (RBL)	*	*	*	*	*	*	**53**	**50**	**42**	*	*	*
Logarithmic Average	*	*	*	*	*	*	*	*	*	**60**	**58**	**53**

Note: - indicates values that has not been considered due to adverse weather conditions.
* Indicates values that are not relevant to that noise descriptor.
Value in bold indicates relevant noise descriptor.

4.3.2 Short-Term Attended Noise Monitoring Results

Given that the results of the unattended noise monitoring are affected by all ambient noise sources such as local fauna, road traffic and industrial sources, it is not possible to determine with precision the exact existing industrial noise contribution based on unattended monitoring alone. Therefore, the attended noise monitoring allows for a more detailed understanding of the existing ambient noise characteristics and a more meaningful final analysis to be undertaken. The results of the short-term attended noise monitoring are displayed in Table 4-3.

Table 4-3: Attended Noise Monitoring Results, dB(A)

Location / Time	Noise Descriptor				Comments
	L_{Aeq}	L_{A90}	L_{A10}	L_{A1}	
24 Bryant Street, Padstow	60	57	63	67	*Cars, M5 < 63 dB(A)* *Truck, M5 < 72 dB(A)* *Motorbike, M5 < 68 dB(A)* *Wind through trees, < 50 dB(A)* *Bird chirp close < 62 dB(A)* *Existing Orange Bins site inaudible*

4.3.3 Existing Road Traffic Noise

Existing road traffic noise levels have been obtained from the unattended environmental noise logger located at 61 Gibson Ave.

Table 4-4 shows the results of the long term unattended road traffic noise monitoring. Daily noise logger graphs have been included in Attachment 3.

Table 4-4: Existing Road Traffic Noise Data

Date	Existing Road Traffic Noise – dB(A)			
	Daytime (7am to 10pm)		Nightime (10pm to 7am)	
	$L_{eq\ (15\ hour)}$	$L_{eq\ (1\ hour)}$	$L_{eq\ (9\ hour)}$	$L_{eq\ (1\ hour)}$
7/02/2021	-	-	61	61
8/02/2021	66	66	58	61
9/02/2021	66	66	58	61
10/02/2021	66	67	-	-

Based on the results of the noise logging undertaken, the road traffic noise levels measured on Gibson Ave for day time $L_{eq\ (1\ hour)}$ of 66 dB(A) and night time $L_{eq\ (1\ hour)}$ of 61 dB(A).

5. METEOROLOGICAL CONDITIONS

Wind and temperature inversions may affect the noise emissions from the site and are to be incorporated in the assessment when considered to be a feature of the area.

In this section, an analysis of the 2019 weather data has been conducted to establish whether significant winds are characteristic of the area.

5.1 WIND EFFECTS

Wind is considered to be a feature where source-to-receiver wind speeds (at 10 m height) of 3 m/s or below occur for 30% or more of the time in any assessment period in any season.

5.1.1 Wind Rose Plots

Wind rose plots show the direction that the wind is coming from, with triangles known as "petals". The petals of the plots in the figures summarise wind direction data into 8 compass directions i.e. north, north-east, east, south-east, etc. The length of the triangles, or "petals", indicates the frequency that the wind blows from that direction. Longer petals for a given direction indicate a higher frequency of wind from that direction. Each petal is divided into segments, with each segment representing one of the six wind speed classes.

Thus, the segments of a petal show what proportion of wind for a given direction falls into each class. The proportion of time for which wind speed is less than 0.5 m/s, when speed is negligible, is referred to as calm hours or "calms". Calms are not shown on a wind rose as they have no direction, but the proportion of time consisting of the period under consideration is noted under each wind rose.

The concentric circles in each wind rose are the axis, which denote frequencies. In comparing the plots it should be noted that the axis varies between wind roses, although all wind roses are similar in size. The frequencies denoted on the axes are indicated beneath each wind rose.

5.1.2 Local Wind Trends

Seasonal wind rose plots for this site utilising Bankstown Airport AWS 2019 data have been included in Figure 5-1, Figure 5-2 and Figure 5-3 for day, evening and night periods respectively.

Figure 5-1: Wind Rose Plots – BOM Bankstown Airport AWS ID 066137 – 2019 – Day time

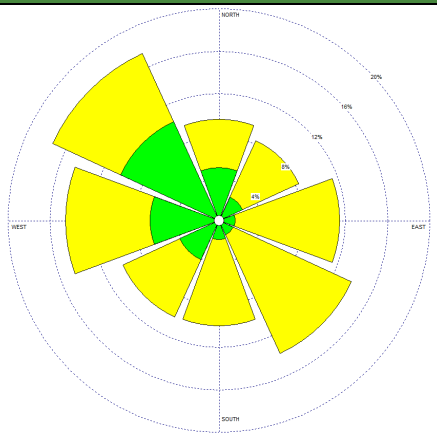
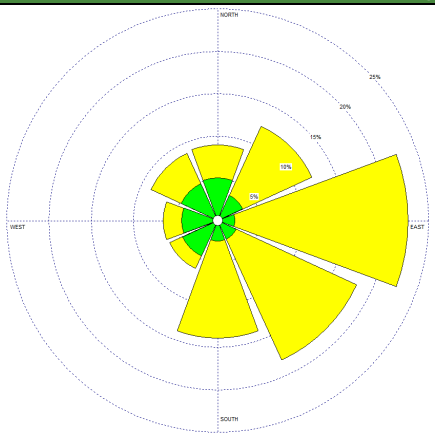
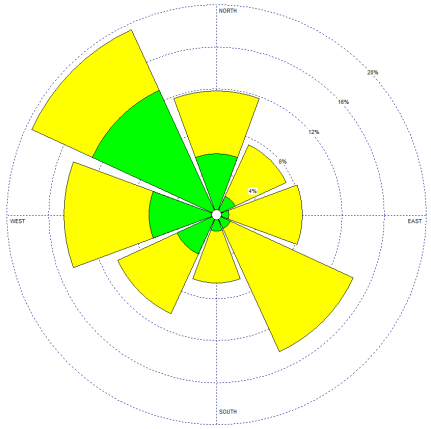
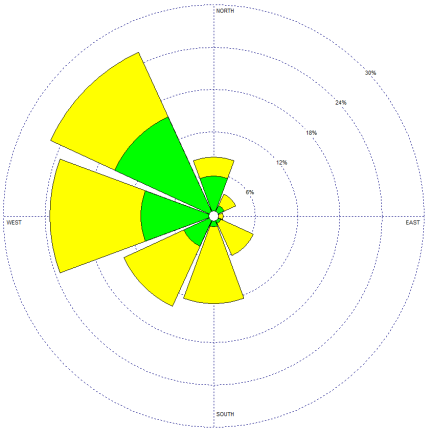
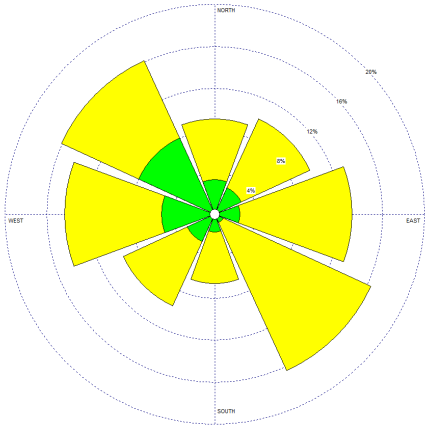
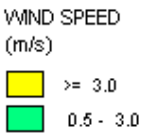
All Seasons	Summer Season (December – February)
	
Average Wind Speed: 4.00 m/s Calms Frequencies: 4.47% Axis Frequencies: 4%, 8%, 12%, 16%, 20%	Average Wind Speed: 4.37 m/s Calms Frequencies: 2.81% Axis Frequencies: 5%, 10%, 15%, 20%, 25%
Autumn Season (March – May)	**Winter Season (June – August)**
	
Average Wind Speed: 3.51 m/s Calms Frequencies: 7.61% Axis Frequencies: 4%, 8%, 12%, 16%, 20%	Average Wind Speed: 3.70 m/s Calms Frequencies: 5.04% Axis Frequencies: 6%, 12%, 18%, 24%, 30%
Spring Season (September – November)	**Legend**
	
Average Wind Speed: 4.43 m/s Calms Frequencies: 2.50% Axis Frequencies: 4%, 8%, 12%, 16%, 20%	

Figure 5-2: Wind Rose Plots – BOM Bankstown Airport AWS ID 066137 – 2019 – Evening time

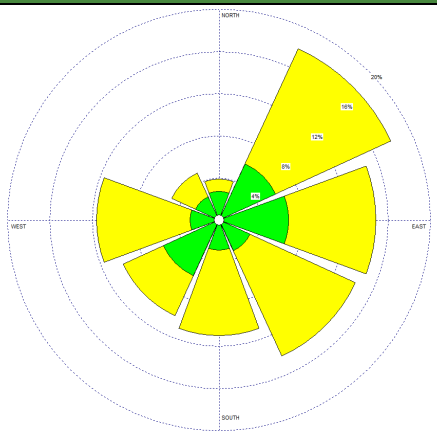
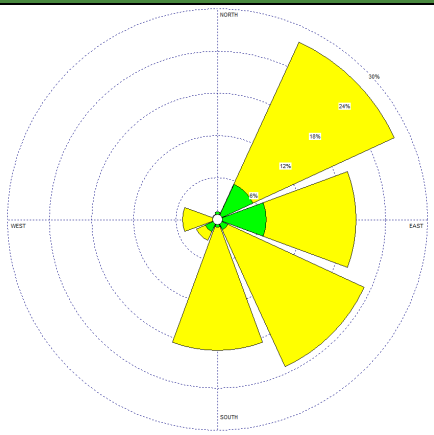
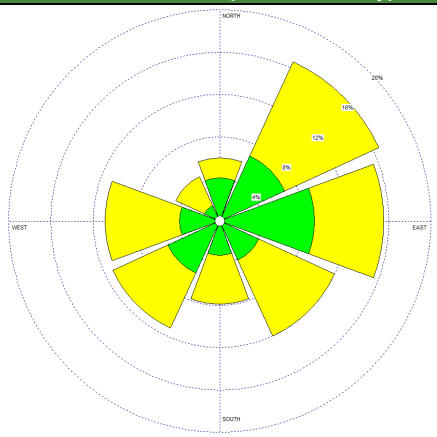
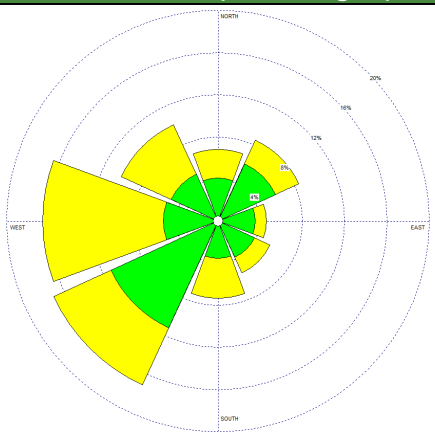
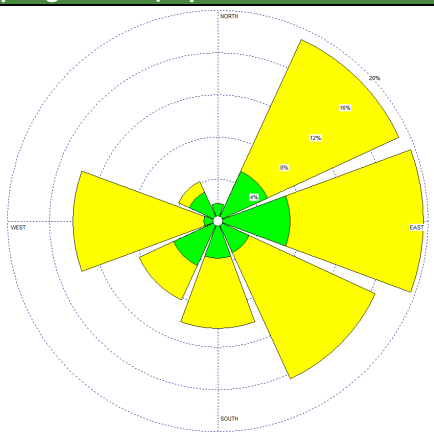
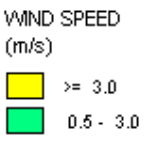
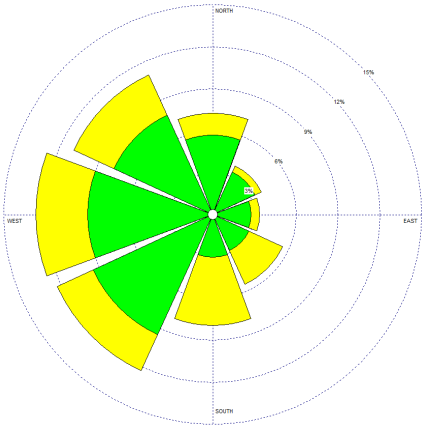
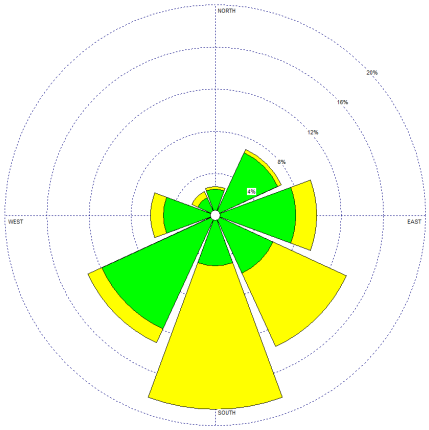
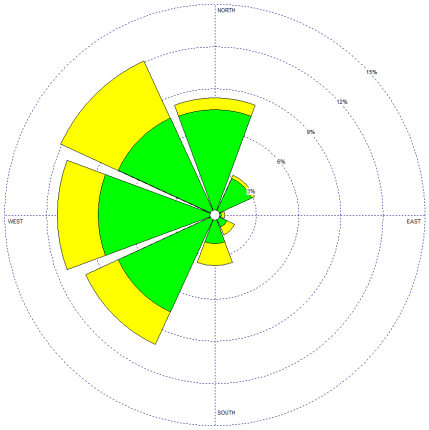
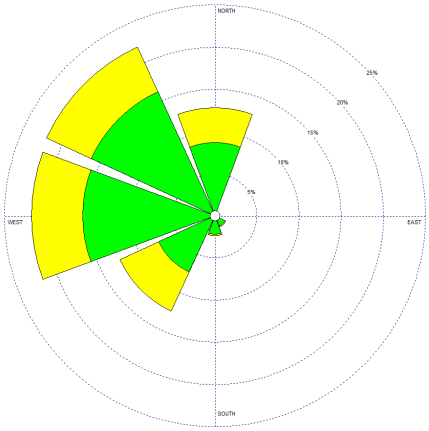
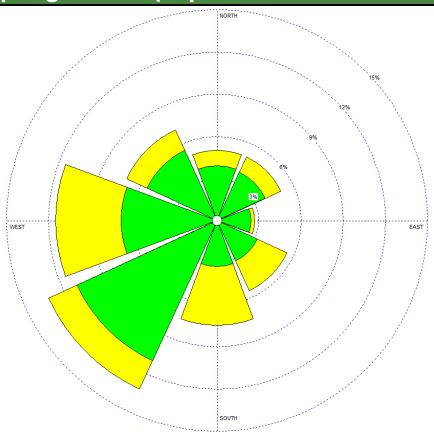
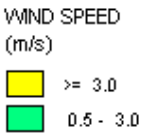
All Seasons	Summer Season (December – February)
	
Average Wind Speed: 3.39 m/s Calms Frequencies: 11.51% Axis Frequencies: 4%, 8%, 12%, 16%, 20%	Average Wind Speed: 4.47 m/s Calms Frequencies: 0.56% Axis Frequencies: 7%, 14%, 21%, 28%, 35%
Autumn Season (March – May)	**Winter Season (June – August)**
	
Average Wind Speed: 2.84 m/s Calms Frequencies: 15.49% Axis Frequencies: 4%, 8%, 12%, 16%, 20%	Average Wind Speed: 2.43 m/s Calms Frequencies: 23.64% Axis Frequencies: 4%, 8%, 12%, 16%, 20%
Spring Season (September – November)	**Legend**
	
Average Wind Speed: 3.86 m/s Calms Frequencies: 6.04% Axis Frequencies: 5%, 10%, 15%, 20%, 25%	

Figure 5-3: Wind Rose Plots – BOM Bankstown Airport AWS ID 066137 – 2019 – Night time

All Seasons	Summer Season (December – February)
	
Average Wind Speed: 1.60 m/s Calms Frequencies: 35.86% Axis Frequencies: 3%, 6%, 9%, 12%, 15%	Average Wind Speed: 2.00 m/s Calms Frequencies: 26.67% Axis Frequencies: 4%, 8%, 12%, 16%, 20%
Autumn Season (March – May)	**Winter Season (June – August)**
	
Average Wind Speed: 1.12 m/s Calms Frequencies: 49.15% Axis Frequencies: 3%, 6%, 9%, 12%, 15%	Average Wind Speed: 1.81 m/s Calms Frequencies: 26.21% Axis Frequencies: 5%, 10%, 15%, 20%, 25%
Spring Season (September – November)	**Legend**
	
Average Wind Speed: 1.48 m/s Calms Frequencies: 41.27% Axis Frequencies: 3%, 6%, 9%, 12%, 15%	

Appendix D2 of the Noise Policy for Industry (EPA, 2017), refers to utilising the Noise Enhancing Wind Analysis (NEWA) program on the NSW EPA website to determine the significance of source-to-receiver winds.

Table 5-1 below contains the noise wind component analysis from the NEWA software. Wind speeds are taken up to 3 m/s and wind direction is taken from source-to-receiver, plus and minus 45 degrees, as per appendix D2 of the Noise Policy for Industry.

It can be seen from Table 5-1 that there is one instance where during a period/season, more than 30% of wind speeds are less than 3 m/s in the plus and minus 45 degree arc from source to receiver.

Therefore, wind effects have been included in the assessment.

Table 5-1: Noise Wind Component Analysis 2019 Bankstown Airport AWS

Receiver	Day				Evening				Night			
	Summer	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring
R1	9.8	10.9	7.4	6.8	10.7	12	9	11.5	9.9	9.8	8.5	8.2
R2	9.1	6.9	4.2	6.7	13.8	15.8	5.7	14	12.6	3.6	1.1	6.4
R3	7.5	5.7	4.5	4.8	18.2	16.8	4.6	16.8	15.6	2.1	1.6	7
R4	6.8	4.4	4.2	3.7	8.1	11.7	3.5	11.3	13.2	2.1	1.6	5.1
R5	5.2	2.9	2.7	2.7	3.9	6.3	3.5	5.8	9.3	1.7	1.9	3.8
R6	5.7	5.2	6.2	4.3	3.4	9.8	12.8	9.1	15.3	5.5	5.2	9.9
R7	7.6	10.1	15	6.9	3.9	12.2	19	8.5	19.8	15.8	20.7	18.6
R8	11	16.5	23.6	13.3	1.8	9.5	16.6	7.7	13.2	18.8	30.8	18.3
R9	9.6	8.7	5	6.2	13.5	13.3	6.8	13.7	10.1	5.5	3	6.5
R10	9.1	6.9	4.1	6.5	13.8	15.5	5.7	13.5	12.4	3.6	1.2	6.4
R11	9.8	11.2	7.4	7.2	11.2	12.2	9.5	11.5	9.6	9.7	9.1	8.2
R12	7.7	7.2	8.6	5.6	3.9	11.1	15.5	11	19.6	9.2	10.5	13.6
R13	11.4	20.3	21.1	13.7	1.3	7.1	12	6.9	4.6	16.4	27.7	9.9
R14	11.6	15.7	11.8	10.2	6	10.6	13	7.1	5.6	13.6	18.2	7.9

Noise enhancing meteorological conditions occur for 30% or more of the period and season

5.2 TEMPERATURE INVERSIONS

Temperature inversions are considered a feature where they occur more than 30% of the total night time during winter (June, July and August) between 6:00pm and 7:00am. This is different from the night noise assessment period over which inversions are to be assessed, which is from 10:00pm to 7:00am.

This involves determining the percentage occurrence of moderate (Class F) and strong (Class G) inversions. Weak inversions (Class E) should not be included in the analysis.

The analysis conducted on the 2019 weather data highlighted that during winter 38.29% of the nights presented temperature inversion conditions, therefore these effects have been included in the noise impact assessment.

5.2.1 Weather Conditions Considered in the Assessment

The following conditions were considered:

- Condition A: Neutral Weather Conditions
- Condition B: Temperature Inversion
- Condition C: 3 m/s Wind from SW (at R8)

The meteorological condition considered in the noise model has been displayed in detail in Table 5-2.

Table 5-2: Meteorological Conditions Assessed in Noise Propagation Modelling

Condition	Classification	Ambient Temp.	Ambient Humidity	Wind Speed	Wind Direction (blowing from)	Temperature Inversion	Affected Receptors	Applicability
A	Neutral	10°C	70%	–	–	No	All	All periods
B	Inversion	10°C	70%	2 m/s	3°C/100 m	Yes	All	Night time
C	Gradient Flow	10 °C	70%	3 m/s	From SW	No	R8	Night time

6. CURRENT LEGISLATION AND GUIDELINES

6.1 NSW EPA NOISE POLICY FOR INDUSTRY

6.1.1 Introduction

The NSW Noise Policy for Industry was developed by the NSW EPA primarily for the assessment of noise emissions from industrial sites regulated by the NSW EPA.

The policy sets out two components that are used to assess potential site-related noise impacts. The intrusiveness noise level aims at controlling intrusive noise impacts in the short-term for residences. The amenity noise level aims at maintaining a suitable amenity for particular land uses including residences in the long-term. The more stringent of the intrusiveness or amenity level becomes the project noise trigger levels for the project.

6.1.2 Project Intrusiveness Noise Level

The project intrusiveness noise level is determined as follows:

$L_{Aeq,\ 15\ minute}$ = rating background noise level + 5 dB

Where the $L_{Aeq,(15minute)}$ is the predicted or measured L_{Aeq} from noise generated within the project site over a fifteen minute interval at the receptor.

This is to be assessed at the most affected point on or within the residential property boundary or if that is more than 30 m from the residence, at the most affected point within 30 m of the residential dwelling.

6.1.3 Amenity Noise Level

To limit continuing increases in noise levels, the maximum ambient noise level within an area from industrial noise sources should not normally exceed the acceptable noise levels specified in Table 2.2 of the NSW Noise Policy for Industry 2017. The relevant recommended noise levels applicable from the Noise Policy for Industry are reproduced in Table 6-1. The urban category has been selected for the residential noise amenity criteria to match the characteristics of the area.

Table 6-1: Relevant amenity noise levels.

Receiver	Noise Amenity Area	Time of Day	L_{Aeq} dB(A) Recommended amenity noise level
Residential	Urban	Day	60
		Evening	50
		Night	45
Industrial premises	All	When in use	70
School Classroom - Internal	All	When in use	40[1]
School Classroom - External	All	When in use	External: 50[2]

Note: 1) In the case where existing schools are affected by noise from existing sources, the acceptable L_{Aeq} noise level may be increased to L_{Aeq} 1 hour.
2) Where internal amenity noise levels are specified, they refer to the noise level at the centre of the habitable room that is most exposed to the noise and apply with windows opened sufficiently to provide adequate ventilation, except where alternative means of ventilation complying with the Building Code of Australia are provided. In cases where gaining internal access for monitoring is difficult, then external noise levels 10 dB(A) above the internal levels apply.

Source: Table 2.2 and Section 2.6, NSW Noise Policy for Industry

The project amenity noise level for industrial developments = recommended amenity noise level minus 5 dB(A)

The following exceptions to the above method to derive the project amenity noise levels apply:

1. *In areas with high traffic noise levels*
2. *In proposed developments in major industrial clusters*
3. *Where the resultant project amenity noise level is 10 dB or more lower than the existing industrial noise level. In this case the project amenity noise levels can be set at 10 dB below existing industrial noise levels if it can be demonstrated that existing industrial noise levels are unlikely to reduce over time.*
4. *Where cumulative industrial noise is not a necessary consideration because no other industries are present in the area, or likely to be introduced into the area in the future. In such cases the relevant amenity noise level is assigned as the project amenity noise level for development.*

This development is not considered to be captured by the above exceptions.

6.1.4 Sleep Disturbance Criteria

In accordance with the NSW EPA Noise Policy for Industry, the potential for sleep disturbance from maximum noise level events from premises during the night-time period needs to be considered. Sleep disturbance is considered to be both awakenings and disturbance to sleep stages.

Where the subject development/premises night-time noise levels at a residential location exceed:

- **$L_{Aeq,\ 15\ minute}$ 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or**
- **L_{AFmax} 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater,**

a detailed maximum noise level assessment should be undertaken.

6.1.5 Assessment Periods and Shoulder Periods

The proposed facility would operate the crusher from 6:00 am.

As stated in the NSW EPA Noise Policy for Industry the daytime period is defined as 7.00am to 6.00pm, Monday to Saturday and 8.00am to 6.00pm Sundays and Public Holidays.

Also the aforementioned guideline includes the follows:

> Fact Sheet A: A3 - *"There will be situations that call for different assessment periods. For example, where early morning (5 am to 7 am) operations are proposed, it may be unreasonable to expect such operations to be assessed against the night-time project noise trigger levels—especially if existing background noise levels are steadily rising in these early morning hours. In these situations, and where operations outside of daytime hours can be justified, appropriate noise level targets may be negotiated with the regulatory/consent authority on a case-by-case basis. As a rule of thumb and for the purposes of deriving the intrusiveness noise level only, it may be appropriate to assign a shoulder period rating background noise level."*

Considering the above, the subject site would operate within the morning shoulder period, between 6:00am and 7:00am.

The results of the long-term unattended noise monitoring undertaken by Benbow Environmental highlights that during the shoulder periods the background noise level is consistent with the day-time background noise level. This can be seen from the noise logger charts presented in Attachment 4.

Benbow Environmental believes that the day-time background noise level is representative of the shoulder periods as well; therefore, this has been considered in this noise impact assessment.

6.1.6 Project Noise Trigger Levels

The project noise trigger levels for the site have been established in accordance with the principles and methodologies of the NSW Noise Policy for Industry (EPA, 2017).

The table below presents the rating background level, project intrusive noise level, recommended amenity noise level, and project amenity noise level. The project noise trigger level is the lowest value of intrusiveness or project amenity noise level after conversion to $L_{Aeq\ 15\ minute}$, dB(A) equivalent level. Sleep disturbance trigger levels associated with operational activities are presented in Table 6-2.

Different time periods apply for the noise criteria as the intrusive criterion considers a 15 minute assessment period while the amenity criterion requires assessment over the total length of time that a site is operational within each day, evening or night period. In order to ensure compliance under all circumstances, a 15 minute period assessment has been considered for all receptors.

Table 6-2: Project Noise Trigger Levels (PNTL) for Operational Activities, dB(A)

Receiver	Type of Receptor	Time of day	Rating background noise level	Project intrusiveness noise level $L_{eq\ 15\ minute}$	Recommended amenity noise level $L_{Aeq\ period}$	Project amenity noise level $L_{Aeq\ 15\ minute}$[1]	PNTL $L_{Aeq\ 15\ minute}$	Sleep Disturbance L_{Amax}
R1-R8	Residential – Urban	Day	53	58	60	**58**	**58**	-
		Evening	50	55	50	**48**	**48**	-
		Night	42	47	45	**43**	**43**	**57**
R9	School Classroom - Internal	Noisiest 1-hour when in use	-	-	50[2]	50[2]	**50**	
R10	Place of worship	When in use	-	-	50[3]	48	**48**	-
R11-R15	Industrial Premises	When in use	-	-	70	68	**68**	-

Notes:
1) These levels have been converted to $L_{Aeq\ 15\ minute}$ using the following: $L_{Aeq\ 15\ minute} = L_{Aeq\ period} + 3$ dB (NSW Noise Policy for Industry Section 2.2).
2) In the case where existing schools are affected by noise from existing industrial noise sources,the acceptable LAeqnoise level may be increased to 40 dB LAeq(1hr).
3) 10 dB has been added to the internal criteria to give the outdoor noise limit

6.2 BANKSTOWN DEVELOPMENT CONTROL PLAN

The proposed site sits within the applicable land for the Bankstown Development Control Plan (DCP). Part B3 – Industrial Precincts of the DCP is aimed towards IN1 and IN2 zoned areas under the LEP, and as such, is relevant to the site.

Section 4 – Environmental Management of the DCP provides required controls for Industrial Developments, and as such, is relevant of the site.

> ***Acoustic Privacy***
>
> *4.1 Development must:*
>
> *(a) consider the Industrial Noise Policy and the acoustic amenity of adjoining residential zoned land; and*
>
> *(b) may require adequate soundproofing to any machinery or activity that is considered to create a noise nuisance.*

This Noise Impact Assessment is designed to meet all requirements in the NSW EPA Noise Policy for Industry, and there is no adjoining residential properties. Mitigation strategies to avoid excessive noise are discussed in Section 6.3 of this report. As such, the requirements of the Bankstown DCP will be met.

6.3 NSW ROAD NOISE POLICY

The NSW Road Noise Policy (RNP) has been adopted to establish the noise criteria for the potential noise impact associated with additional traffic generated by the proposed development. The RNP was developed by the NSW EPA primarily to identify the strategies that address the issue of road traffic noise from:

- Existing roads;
- New road projects;
- Road redevelopment projects; and
- New traffic-generating developments.

6.3.1 Road Category

The subject site is accessed via Gow Street. There are no nearby residential receivers on this street. The nearest street that would be used for the proposed development that has residential receivers is Gibson Ave. This is classified as a local road in accordance with the RNP descriptions.

6.3.2 Noise Assessment Criteria

Section 2.3 of the RNP outlines the criteria for assessing road traffic noise. The relevant sections of Table 3 of the RNP are shown in Table 6-3.

Table 6-3: Road Traffic Noise Assessment Criteria For Residential Land Uses, dB(A)

Road Category	Type of Project/Land Use	Assessment Criteria, dB(A)*	
		Day (7am-10pm)	Night (10pm-7am)
Sub-arterial Roads	3. Existing residences affected by additional traffic on existing sub-arterial roads generated by land use developments	$L_{Aeq\ (15\ hour)}$ 60 dB	$L_{Aeq\ (9\ hour)}$ 55 dB
Local Roads	6. Existing residences affected by additional traffic on existing local roads generated by land use developments	$L_{Aeq\ (1\ hour)}$ 55 dB	$L_{Aeq\ (1\ hour)}$ 50 dB

* Measured at 1 m from a building façade.

6.3.3 Relative Increase Criteria

In addition to the assessment criteria outlined above, any increase in the total traffic noise level at a location due to a proposed project or traffic-generating development, must be considered. Residences experiencing increases in total traffic noise levels above the relative criteria should also be considered for mitigation as described in Section 3.4 of the RNP. For road projects where the main subject road is a local road, the relative increase criterion does not apply.

Table 6 of the RNP outlines the relative increase criteria for residential land uses, with the details applicable to this project shown in Table 6-4.

Table 6-4: Relative Increase Criteria For Residential Land Uses, dB(A)

Road Category	Type of Project/Land Use	Total Traffic Noise Level Increase, dB(A)	
		Day (7 am-10 pm)	Night (10 pm-7 am)
Arterial roads	Land use development with potential to generate additional traffic on existing road	Existing traffic $L_{Aeq\ (15\ hour)}$ + 12 dB (external)	Existing traffic $L_{Aeq\ (9\ hour)}$ + 12 dB (external)

The assessment criteria provided in Table 6-3 and the relative increase criteria provided in Table 6-4 should both be considered when designing project specific noise levels. When existing traffic levels are below the criteria in Table 6-3, the lower of the relative increase criteria and the assessment criteria in Table 6-3 should be adopted. For example, if the assessment criteria is 60 dB(A) and the relative increase criteria is 42 dB(A), then a project specific noise level of 42 dB(A) should be adopted. Similarly, if the assessment criteria is 60 dB(A) and the relative increase criteria is 65 dB(A), a project specific noise level of 60 dB(A) should be adopted.

6.3.4 Exceedance of Criteria

If the criteria shown in Table 6-3 cannot be achieved, justification should be provided that all feasible and reasonable mitigation measures have been applied.

For existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding 'no build option'.

6.3.5 Assessment Locations for Existing Land Uses

Table 6-5: Assessment Locations for Existing Land Uses

Assessment Type	Assessment Location
External noise levels at residences	The noise level should be assessed at 1 metre from the façade and at a height of 1.5 metres from the floor. Separate noise criteria should be set and assessment carried out for each façade of a residence, except in straightforward situations where the residential façade most affected by road traffic noise can be readily identified. The residential noise level criterion includes an allowance for noise reflected from the façade ('façade correction'). Therefore, when taking a measurement in the free field where reflection during measurement is unlikely (as, for instance, when measuring open land before a residence is built), an appropriate correction – generally 2.5 dB – should be added to the measured value. The 'façade correction' should not be added to measurements taken 1 metre from the façade of an existing building. Free measurements should be taken at least 15 metres from any wall, building or other reflecting pavement surface on the opposite side of the roadway, and at least 3.5 metres from any wall, building or other pavement surface, behind or at the sides of the measurement point which would reflect the sound.
Noise levels at multi-level residential buildings	The external points of reference for measurement are the two floors of the building that are most exposed to traffic noise. On other floors, the internal noise level should be at least 10 dB less than the relevant external noise level on the basis of openable windows being opened sufficiently to provide adequate ventilation. (Refer to the Building Code of Australia (Australian Building Codes Board 2010) for additional information.)
Internal noise levels	Internal noise levels refer to the noise level at the centre of the habitable room that is most exposed to the traffic noise with openable windows being opened sufficiently to provide adequate ventilation. (Refer to the Building Code of Australia (Australian Building Codes Board 2010) for additional information.)
Open space – passive or active use	The noise level is to be assessed at the time(s) and location(s) regularly attended by people using the space. In this regard, 'regular' attendance at a location means at least once a week.

Table 6-5: Assessment Locations for Existing Land Uses

Assessment Type	Assessment Location
Commercial or industrial premises	The noise level is to be assessed at the reasonably most affected point or within the property boundary. This requirement should not be read to infer that the noise level only applies at the 'reasonably worst-affected location'.

6.4 CONSTRUCTION NOISE CRITERIA

Criteria for construction and demolition noise has been obtained from the NSW Interim Construction Noise Guideline (DECC, 2009). Guidance for construction vibration has been taken from British Standard BS7385-Part 2: 1993 '*Evaluation and measurement for vibration in buildings*' and other standards.

6.4.1 NSW Interim Construction Noise Guideline

Residential Criteria

Table 2 of the Interim Construction Noise Guideline (DECC, 2009), sets out construction noise management levels for noise at residences and how they are to be applied. The management noise levels are reproduced in Table 6-6 below. Restrictions to the hours of construction may apply to activities that generate noise at residences above the 'highly noise affected' noise management level.

Table 6-6: Management Levels at Residences Using Quantitative Assessment

Time of Day	Management Level $L_{Aeq(15\ minute)}$	How to Apply
Recommended standard hours: Monday to Friday 7am – 6pm Saturday 8am – 1pm No work on Sundays or Public Holidays	Noise Affected RBL + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. • Where the predicted or measured $L_{Aeq(15\ minute)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practises to meet the noise affected level. • The proponent should also inform all potentially affected residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly Noise Affected 75 dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. • Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: 1. times identified by the community when they are less sensitive to noise (such as before and after school, or mid-morning or mid-afternoon for works near residents. 2. if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise Affected RBL + 5 dB	• A strong justification would typically be required for works outside the recommended standard hours. • The proponent should apply all feasible and reasonable work practices to meet the noise affected level. • Where all feasible and reasonable practices have been applied and noise is more than 5 dB(A) above the noise affected level, the proponent should negotiate with the community. • For guidance on negotiating agreements see Section 7.2.2 (RNP)

Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 m from the residence.

Other Land Uses

Table 6-7 sets out management levels for construction noise at other land uses applicable to the surrounding area.

Table 6-7: Management Levels at Other Land Uses

Land use	Management Level $L_{Aeq(15\ minute)}$ (applies when properties are being used)
Industrial Premises	External Noise Level 75 dB(A)
School Classrooms[1]	External Noise Level 55 dB(A)
Place of Worship	External Noise Level 55 dB(A)

Note: [1] As per Section 4.1.2 of the Interim Construction Noise Guideline, a conservative estimate of 10 dB difference between internal and external levels is applied.

There are no other sensitive land uses in the area surrounding the site.

Noise Criterion

The noise criterion for construction noise is presented in Table 6-8.

Table 6-8: Construction Noise Criterion dB(A)

Receiver	Land Use	Period	RBL L_{A90}	Management Level $L_{Aeq(15\ minute)}$
R1-R8	Residential	Standard Hours	53	63
R9	School/Childcare Centre	During Use	-	55
R10	Place of Worship	During Use	-	55
R11-R15	Industrial	During Use	-	75

6.4.2 Vibration Criteria

Vibration criteria from construction works are outlined in this section, including guidelines to avoid cosmetic damage, structural damage or human discomfort. There is no specific vibration standard in NSW to assess cosmetic or structural damage to buildings. Usually the British Standard BS 7385–Part 2: 1993 '*Evaluation and measurement for vibration in buildings*' or the German standard DIN4150–Part 3: 1999 '*Structural Vibration Part 3 – effects of vibration on structures*' is referenced. The *Assessing Vibration – A Technical Guideline* (DEC, 2006) provides guidance on preferred levels for human exposure.

6.4.3 BS 7385-2:1993

The British Standard BS 7385–Part 2:1993 '*Evaluation and measurement for vibration in buildings*' provides vibration limits to avoid cosmetic damage on surrounding structures. Limits are set at the lowest limits where cosmetic damage has previously been shown.

Table 6-9: Vibration criteria for cosmetic damage (BS 7385:2 1993)

Type of building	Peak component particle velocity in frequency range of predominant pulse		
	4 Hz to 15 Hz	15 Hz to 40 Hz	40 Hz and above
Reinforced or framed structures. Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above		
Unreinforced or light framed structures. Residential or light commercial type buildings	15 to 20 mm/s	20 to 50 mm/s	50 mm/s

6.4.4 DIN4150-3:1999

The German standard DIN4150-Part 3:1999 'Structural Vibration Part 3 – effects of vibration on structures' has also been considered. The German standard is considered more onerous than the British standard, and specifically includes more stringent limits to avoid structural damage to surrounding heritage buildings.

Table 6-10: Structural damage criteria heritage structures (DIN4150-3 1999)

Type of building	Peak component particle velocity (PPV) mm/s			
	Vibration at the foundation at a frequency of:			Vibration of horizontal plane of highest floor at all frequencies
	1 to 10 Hz	10 to 50 Hz	50 to 100 Hz	
Buildings used for commercial purposes, industrial buildings or buildings of similar design	20	20 to 40	40 to 50	40
Residential dwellings and similar	5	5 to 15	15 to 20	15
Structures that, because of their particular sensitivity to vibration, cannot be classified as the two categories above, and are of intrinsic value (for example heritage listed buildings).	3	3 to 8	8 to 10	8

6.4.5 Human Exposure

The guideline *Assessing Vibration – A Technical Guideline* (DEC, 2006) describes preferred criteria for human exposure. The limits describe values where occupants of buildings would be impacted by construction work.

Table 6-11: Preferred and maximum weighted rms z-axis values, 1-80 Hz

Location	Daytime		Night time	
	Preferred	Maximum	Preferred	Maximum
Continuous Vibration (weighted root mean square (rms) vibration levels for continuous acceleration (m/s^2) in the vertical direction)				
Residences	0.01	0.02	0.007	0.014
Offices, schools, educational institutions and places of worship	0.02	0.04	0.02	0.04
Workshops	0.04	0.08	0.04	0.08
Impulsive Vibration (weighted root mean square (rms) vibration levels for impulsive acceleration (m/s^2) in the vertical direction)				
Residences	0.3	0.6	0.1	0.2
Offices, schools, educational institutions and places of worship	0.64	1.28	0.64	1.28
Workshops	0.64	1.28	0.64	1.28
Intermittent Vibration (m/s)				
Residences	0.2	0.4	0.13	0.26
Offices, schools, educational institutions and places of worship	0.4	0.8	0.4	0.8
Workshops	0.8	1.6	0.8	1.6

7. OPERATIONAL NOISE IMPACT ASSESSMENT

An outline of the predictive noise modelling methodology and operational noise modelling scenarios has been provided in this section of the report. This assessment considers existing and proposed noise sources operating simultaneously in accordance with the Noise Policy for Industry requirements.

7.1 MODELLING METHODOLOGY

Noise propagation modelling was carried out using the Concawe algorithm within SoundPLAN. This model has been extensively utilised by Benbow Environmental for assessing noise emissions for existing and proposed developments, and is recognised by regulatory authorities throughout Australia. The model allows for the prediction of noise from a site at the specified receptor, by calculating the contribution of each noise source. Other model inputs included the noise sources, topographical features of the subject area, surrounding buildings, noise walls and receiver locations. Modelling for the temperature inversion has been considered within the ISO9613 algorithm, as per previous direction from the NSW EPA.

The modelling scenario has been carried out using the L_{Aeq} and L_{Amax} descriptors. Using the model, noise levels were predicted at the potentially most affected receivers to determine the noise impact against the project specific noise levels and other relevant noise criteria in accordance with the NSW Noise Policy for Industry (EPA, 2017).

7.1.1 Noise Sources

The sound power levels for the identified noise sources associated with the operational activities have been taken from Benbow Environmental's database.

A-weighted third octave band centre frequency sound power levels have been used and are presented in Table 7-1 below. The noise sources utilised as part of this assessment comprise of the primary noise generating activities associated with the effective operation of the proposed development.

Table 7-1: A-weighted Sound Power Levels Associated with Operational Activities, dB(A)

Noise Source	Height	Max	Overall	Third Octave Band Centre Frequency (Hz)									
				25	31	40	50	63	80	100	125	160	200
				250	315	400	500	630	800	1000	1250	1600	2000
				2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
Trommel screen	1 m	110	104	46	45	64	66	68	69	73	73	77	80
				82	86	87	88	91	91	93	94	95	95
				95	95	97	89	87	84	78	74	68	61
Excavator	1 m	109	106	43	52	57	65	80	74	76	82	81	85
				86	86	91	93	93	94	96	97	97	97
				97	96	94	92	90	86	81	76	70	62
Front End Loader (<111 kW at 2000 rpm)	1 m	105	102	44	51	59	65	64	77	77	78	80	85
				89	85	85	88	88	90	93	94	93	92
				91	90	88	87	84	81	77	73	66	60
Crusher	1 m	112	108	50	63	68	75	82	86	91	94	97	97
				91	90	94	99	101	98	96	97	96	94
				92	89	86	84	81	78	75	71	67	62
Pump	1 m	-	98	36	40	41	72	69	59	65	64	71	71
				74	74	77	81	80	83	89	87	91	89
				89	88	86	85	83	76	68	64	53	36
Vacuum Pump	1 m	109	106	33	56	56	60	70	66	68	79	74	74
				74	78	84	86	98	104	90	94	93	95
				93	90	88	87	83	84	77	-	-	-
Truck Engine	1.5 m	106	103	44	48	57	65	70	73	78	78	80	82
				83	85	94	98	94	96	89	88	82	87
				85	84	82	83	83	82	78	-	-	-
Truck Exhaust	3 m	104	101	42	46	55	63	68	71	76	76	78	80
				81	83	92	96	92	94	87	86	80	85
				83	82	80	81	81	80	76	-	-	-
Screw Separator	1 m	-	97	35	39	40	71	68	58	64	63	70	73
				73	73	76	80	79	82	88	86	90	88
				88	87	85	84	82	75	67	63	52	35
Vibrating Screen (indoors)	1 m	-	105	43	45	60	65	76	77	76	82	83	84
				84	85	91	94	91	93	95	96	96	96
				95	94	92	90	87	83	78	74	68	60
Conveyor	1-4 m	81	78	27	30	28	34	37	47	44	47	52	56
				56	63	66	69	67	70	69	71	70	69
				62	61	57	55	51	47	43	41	34	27

7.1.2 Modelling Scenario

Scenarios with varying weather conditions were modelled from the dewatering plant operations only and the cumulative impacts of both the proposed dewatering plant and the existing C&D recycling facility operating simultaneously. The scenario covers proposed day, evening and night operations, including proposed heavy vehicle movements, and indoor and outdoor sources. Figure 7-1 to Figure 7-3 shows the locations of the noise sources for the operational scenarios.

Table 7-2: Modelled Noise Sources

Scenario	Description
Scenario 1: **Dewatering plant only** Operations Day and Evening	This scenario includes the following: Outdoor noise sources • Truck Manoeuvring (2 entering and 2 trucks leaving per 15 minute period); • Front End Loader x 1; • Vacuum Pump x 1; and • Conveyor x2. Indoor noise sources • Pump x 3; • Vibrating screen; • Screw Separator; and • Conveyor x 2.
Scenario 2: **Dewatering plant only** Operations Night Temperature Inversion and Wind Conditions at R8	This scenario includes the following: Outdoor noise sources • Truck Manoeuvring (2 entering and 2 trucks leaving per 15 minute period); • Front End Loader x 1; and • Conveyor x 2. Indoor noise sources • Pump x 3; • Vibrating screen; • Screw Separator; and • Conveyor x 2.

Table 7-2: Modelled Noise Sources

Scenario	Description
Scenario 3: **Cumulative impacts of dewatering plant and the existing C&D** Operations Day and Evening	This scenario includes the following: Outdoor noise sources • Truck Manoeuvring (2 entering and 2 trucks leaving per 15 minute period); • Front End Loader x 2; • 8T Excavator x 1; • Crusher x 1; • Screen x 1; • Vacuum Pump x 1; and • Conveyor x2. Indoor noise sources • Pump x 3; • Vibrating screen; • Screw Separator; and • Conveyor x 2.

Figure 7-1: Scenario 1 Day and Evening Operations – Proposed Dewatering Plant Only

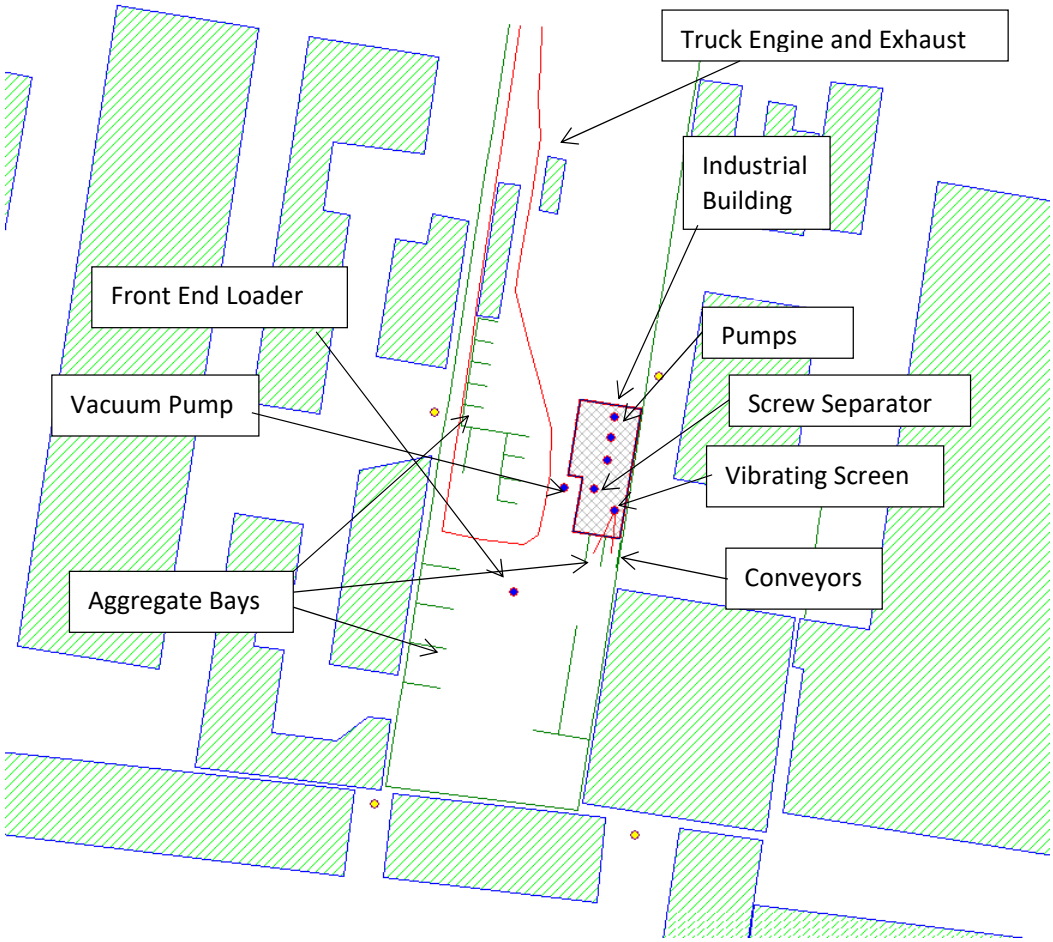


Figure 7-2: Scenario 2 – Night Operations – Proposed Dewatering Plant Only

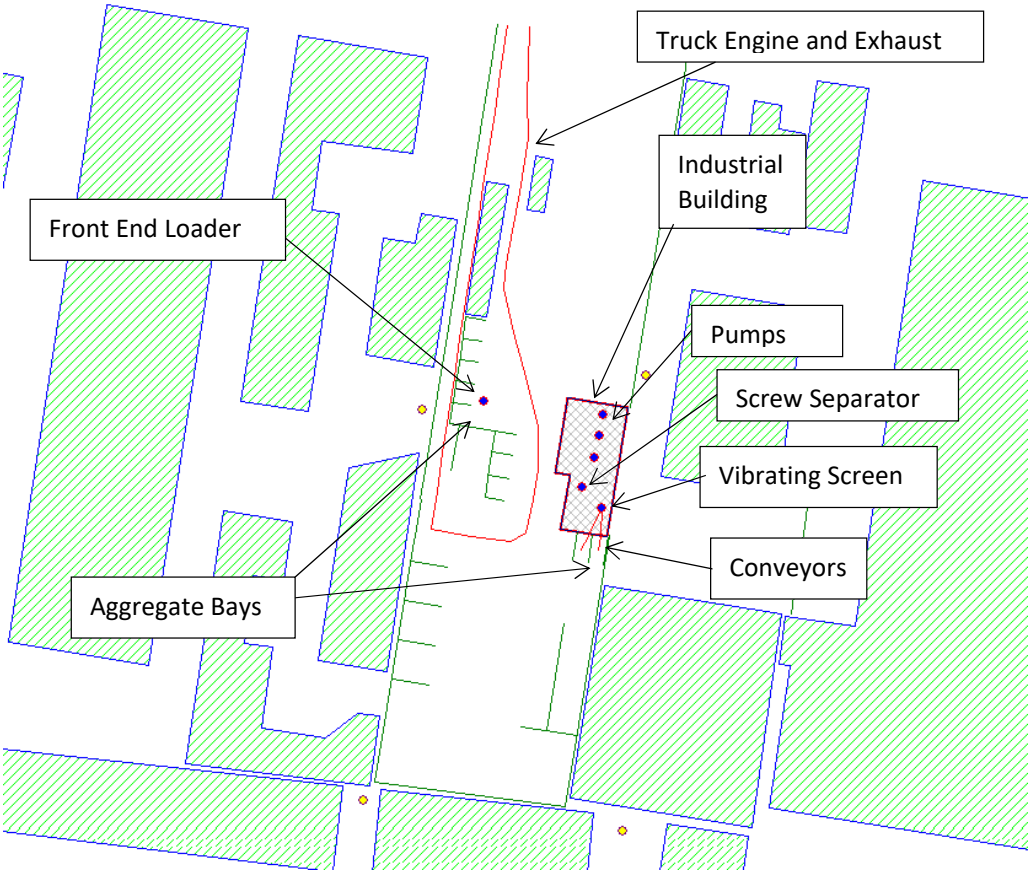
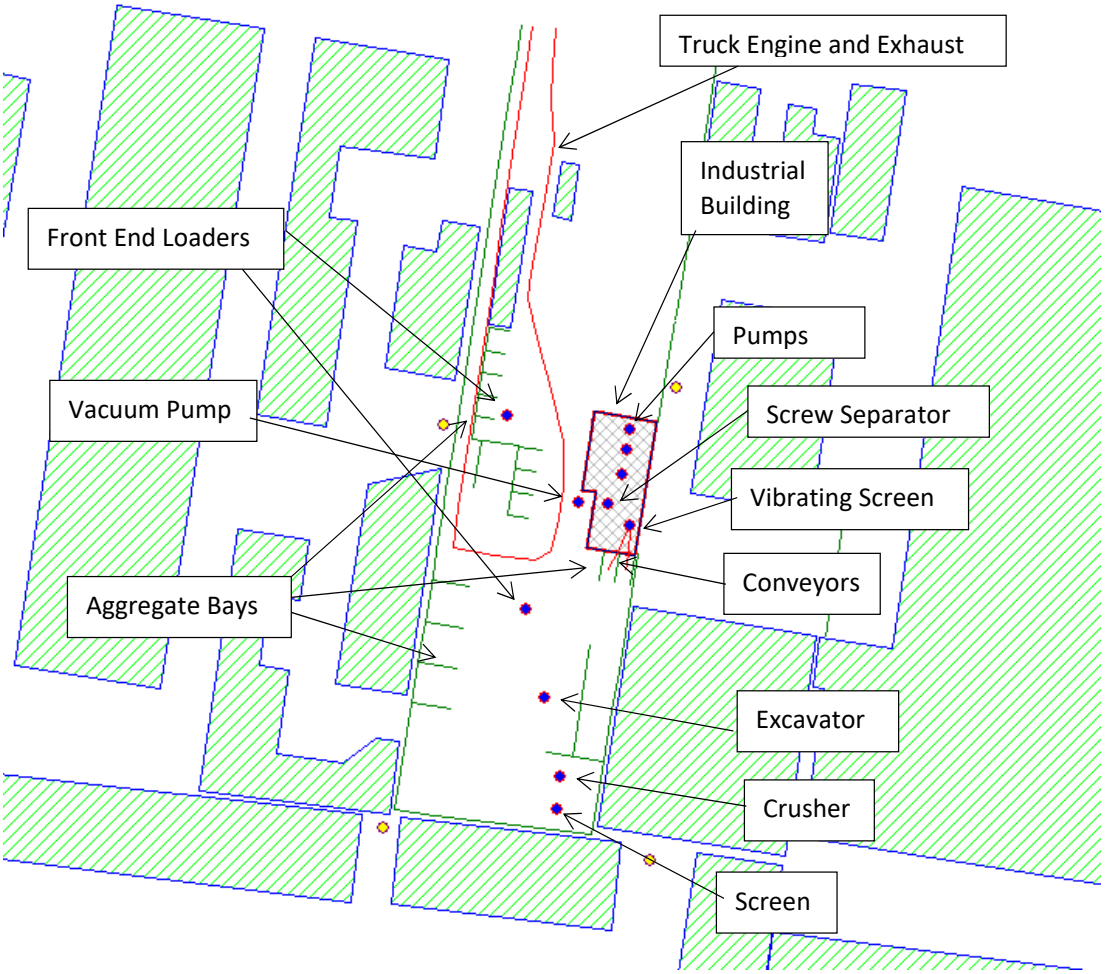


Figure 7-3: Scenario 3 Day and Evening Operations – Cumulative dewatering plant and the existing C&D



7.1.3 Modelling Assumptions

The relevant assessment period for operational noise emissions is 15 minutes when assessing noise levels against the Intrusive Criterion; therefore noise source durations detailed throughout the following assumptions section should be considered per 15 minute period in view of potential noise impacts under worst-case scenarios. Each assessment-specific assumption has been detailed below:

- Topographical information has been obtained from Google Earth and implemented in SoundPLAN.

- All ground areas surrounding the subject site and the nearest nominated occupancies have been modelled considering different ground factors ranging from 0 to 1. The site and surrounding industrial areas have been modelled with a ground absorption factor of 0 (hard).

- Surrounding buildings have been included in the noise model.

- 2 trucks are assumed to enter and leave the site every 15 minutes in a worst case scenario. Trucks have been assumed to travel on the site at 20 km/h. Trucks are modelled in sound plan as line sources, utilising moving point source definition. They occur during all time periods.

- The screen, pumps, and FELs are all assumed to be point sources, and are assumed to operate 100% of the time as a worst case scenario during all time periods. The crusher, vacuum pump and excavator will operate 100% of the time only during the day (including morning shoulder period) and evening periods (6am – 10pm).

- The dewatering facility building has been modelled with the walls and roof as 0.48 mm Trimdek (R_w 22 dB). There are two roller shutter doors on the western side of the building which have been modelled in the open position (R_w 0db).

- All residential receivers were modelled at 1.5 m above ground level at the most noise-affected point within the property boundary.

7.2 PREDICTED NOISE LEVELS – OPERATIONAL

Noise levels at the nearest receptors have been calculated and results of the predictive noise modelling considering operational activities are shown in Table 7-3. The modelled scenarios are predicted to comply with the $L_{eq(15\ minute)}$ project specific criteria at all sensitive receptors. Exceedance of the L_{AMax} sleep disturbance is not predicted at any residential receptors.

Proactive noise management practices are outlined in Section 1.1.

Table 7-3: Predicted Noise Levels – Operational Activities dB(A)

Receptor	Project Criteria $L_{eq(15\ minute)}$			Project Criteria L_{Amax}	Scenario 1 – Day and Evening – Dewatering Plant Only	Scenario 2 – Night (temperature inversion/R8 wind conditions) – Dewatering Plant Only		Scenario 3 – Day and Evening – Cumulative dewatering plant and the existing C&D
	Day	Evening	Night		Predicted $L_{eq(15\ minute)}$	Predicted $L_{eq(15\ minute)}$	Predicted L_{Amax}	Predicted $L_{eq(15\ minute)}$
R1	58	48	43	57	41✓	41 ✓	43 ✓	43 ✓
R2	58	48	43	57	33✓	36 ✓	43 ✓	37 ✓
R3	58	48	43	57	28✓	31 ✓	45 ✓	32 ✓
R4	58	48	43	57	22✓	25 ✓	32 ✓	28 ✓
R5	58	48	43	57	27✓	31 ✓	47 ✓	34 ✓
R6	58	48	43	57	38✓	40 ✓	44 ✓	43 ✓
R7	58	48	43	57	26✓	31 ✓	45 ✓	28 ✓
R8	58	48	43	57	17✓	21 ✓	35 ✓	20 ✓
R9	50			N/A	34✓	36 ✓	N/A	37 ✓
R10	48			N/A	34✓	41 ✓	N/A	41 ✓
R11	68			N/A	54✓	56 ✓	N/A	58 ✓
R12	68			N/A	62✓	64 ✓	N/A	64 ✓
R13	68			N/A	56✓	61 ✓	N/A	62 ✓
R14	68			N/A	47✓	46 ✓	N/A	56 ✓
R15	68			N/A	43✓	42 ✓	N/A	56 ✓

✓Complies × Non-compliance

7.3 Assessment of Annoying Characteristics

The following table addresses annoying noise as per fact sheet C of the noise policy for industry.

Table 7-4: Annoying Noise Characteristics

Factor	Comment	Applies
Tonal Noise	Z – Weighted 1/3 octave were assessed for tonal impacts. No tonal noise associated with the site was found.	No
Low-Frequency Noise	The difference between predicted C-weighted levels and predicted A-weighted levels are less than 15 dB for all scenarios, therefore low frequency impacts do not apply.	No
Intermittent noise	There are no intermittent noise sources associated with the operation of the dewatering plant. No other noise sources operate at night.	No

7.4 Recommended Mitigation Measures

The noise assessment in Section 7 predicted that if the assumptions listed in 7.1.3 are carried out, noise levels would be met at all surrounding residential receivers during all time periods.

During the night from 10pm – 6am the vacuum truck pump should not be used. An internal pump can be used at night such that the tanker truck vacuum pump is not needed.

While further noise mitigation measures are not required to meet the project criteria at the residential receivers, the following noise control measures are recommended in order to proactively further reduce noise levels at surrounding receivers:

- Prohibition of extended periods of on-site revving/idling;
- Minimisation of the use of truck exhaust brakes on site;
- Enforcement of low on-site speed limits; and
- Signs to encourage quiet operations during the night period.

8. ROAD TRAFFIC NOISE IMPACT ASSESSMENT

The maximum cumulative number of truck movements along Gibson Ave during the daytime is assumed to be 20 per hour (Approximately 10 from the existing C&D and 10 from the proposed dewatering plant). The maximum number of truck movements along Gibson Ave during the night time is assumed to be 6 per hour associated with the proposed dewatering plant. The worst case residential receiver utilised in this assessment is 59 Gibson Ave, the receiver has been placed 1.5 m above the ground and 1 m from the façade of the residence. Trucks have been modelled passing this house as moving point sources (sound power levels are shown in Table 7-1) travelling at the posted speed of 60km/hr. The predicted results are shown in the following table.

Table 8-1: Predicted Levels for Road Traffic Noise

Receptor	Noise Criteria		Site Contribution			Existing Road Traffic Noise		Total Road Traffic Noise	
	Day $L_{Aeq,\ 1\ hour}$	Night $L_{Aeq,\ 1\ hour}$	Day (proposed dewatering plant only) $L_{Aeq,\ 1\ hour}$	Day (total existing C&D and proposed dewatering plant) $L_{Aeq,\ 1\ hour}$	Night (proposed dewatering plant) $L_{Aeq,\ 1\ hour}$	Day $L_{Aeq,\ 1\ hour}$	Night $L_{Aeq,\ 1\ hour}$	Day $L_{Aeq,\ 1\ hour}$	Night $L_{Aeq,\ 1\ hour}$
59 Gibson Ave (R2)	55	50	53	55	50	66	61	66 ✓	61 ✓

For the residential dwellings that front onto Gibson Ave, the predicted noise levels associated with the vehicle movements from the site would meet the criteria for local roads. However, the existing road traffic noise is well above these limits. The proposed development results in an increase noise level of 0 dB(A) and therefore is well below the 2 dB(A) increase criteria.

Step 3 of Section 3.4.1 of the RNP identifies possible reasonable and feasible control measures when exceedances of either the outlined criteria. As no exceedances are predicted, the proposed vehicle movements comply with the RNP, and no additional mitigation strategies are recommended.

9. CONSTRUCTION NOISE IMPACT ASSESSMENT

9.1 MODELLED NOISE GENERATING SCENARIOS

Two construction scenarios that have the potential to generate noise at surrounding receivers are modelled. The scenarios are listed in Table 9-1, and are modelled for:

- Excavation and earthworks (scenario 1); and
- Concreting works (scenario 2);

The noise generating scenarios consider a situation in which all equipment was running for 100% of the time over the 15 minute assessment period. The equipment list for the scenario is detailed in Table 9-1, with an equipment location diagrams in Figure 9-1 and Figure 9-2.

All works are proposed to be undertaken during standard construction hours, that is:

- Monday to Friday, 7am to 6pm;
- Saturday 8am to 1pm ; and
- No work on Sundays or public holidays.

Table 9-1: Modelled Noise Scenarios for Proposed Construction Works

Scenario	Time of the day	Noise Sources for Worst 15-minute Period
1. Excavation and Regrading works	Standard hours	• 20T Excavator • Backhoe • Truck • Hand Tools
2. Concreting construction works	Standard hours	• Concrete mixer truck • Concrete pump • Hand tools

Note 1: As per section 4.5 of the Interim Construction Noise Guideline (DECC, 2009), a number of activities have proven to be particularly annoying to residents and have therefore had 5 dB added to their predicted levels.

Figure 9-1: Construction Scenario 1 – Excavation and Regrading Works

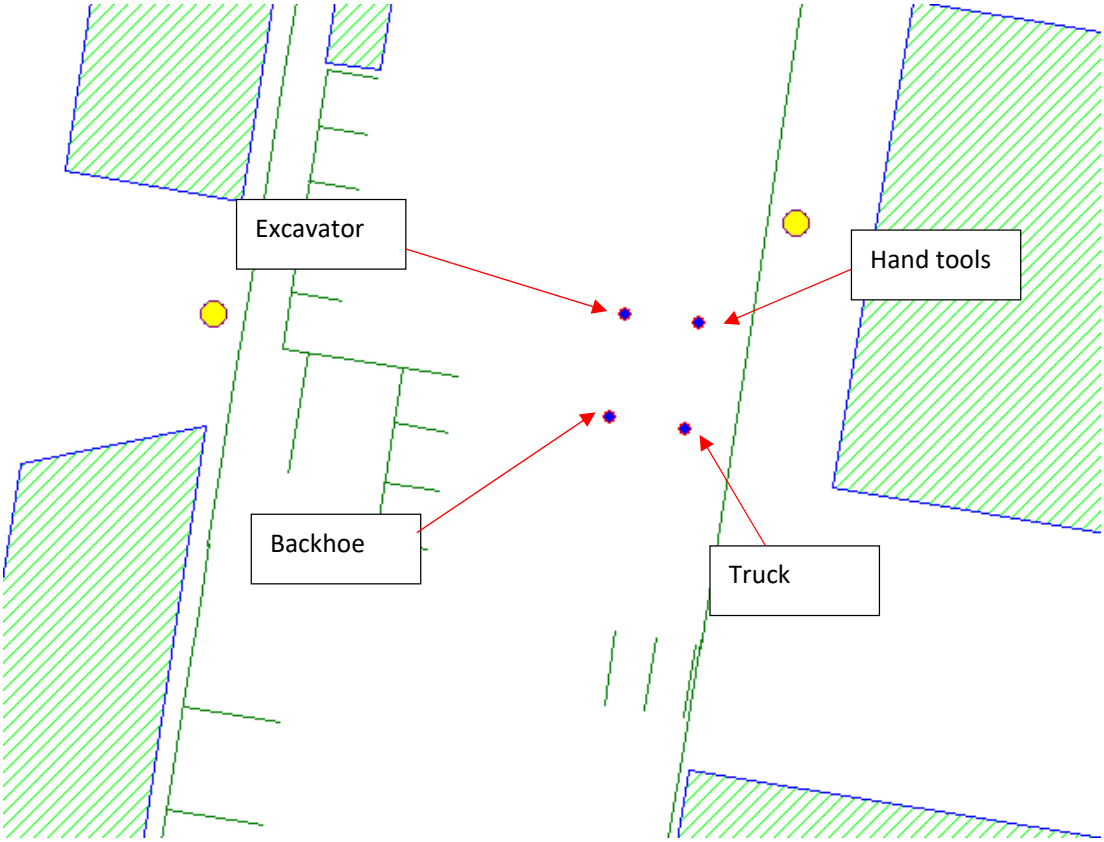
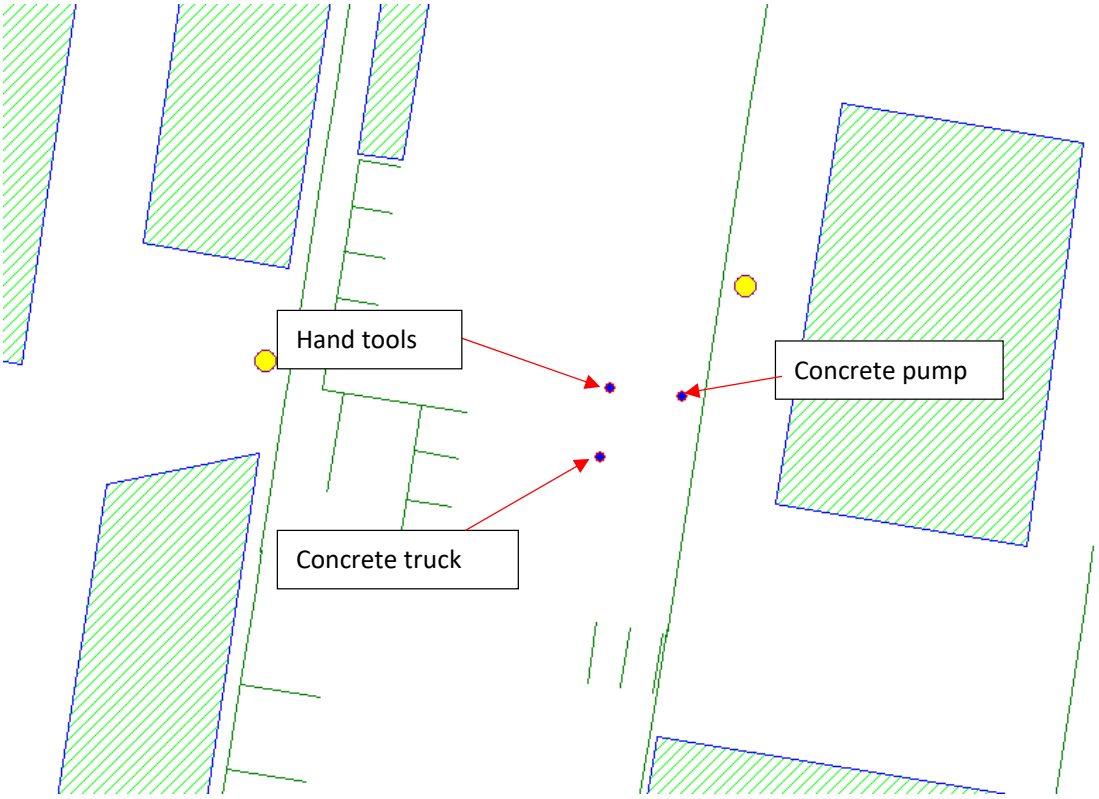


Figure 9-2: Construction Scenario 2 – Concreting Construction Works



9.2 MODELLING METHODOLOGY

9.2.1 Noise Model

Noise propagation modelling for the construction activities was carried out using the ISO 9613 algorithm within SoundPLAN v7.3. The construction scenarios were modelled using the $L_{Aeq,\ 15\ minutes}$ descriptor.

Assumptions made in the noise modelling of the construction noise scenarios are as follows:

- The relevant assessment period for operational noise emissions has been considered to be 15 minutes. Construction scenarios assume all equipment is running 100% of the time during the 15 minute assessment period, to provide a worst case scenario;

- All noise sources associated with the construction works have been modelled as point sources.

9.2.2 Noise Sources

A-weighted octave band centre frequency sound power levels are presented shown in Table 9-2 below. The sound power levels for the relevant noise sources have been calculated from measurements of sound pressure levels undertaken by an acoustic engineer from Benbow Environmental at similar sites and sourced from Benbow Environmental's noise source database, as well as taken from AS 2436: 2010 and the UK Department for Environmental Food and Rural Affairs (DEFRA) database, *Update of noise database for prediction of noise on construction and open sites*.

Table 9-2: A-weighted Sound Power Levels Associated with Construction Activities, dB(A)

Noise Source	Overall	Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
Excavator 20T	**110**	103	101	100	101	102	102	97	90
Truck	**106**	76	84	89	104	95	93	88	88
Hand tools	**100**	71	81	91	96	94	90	87	81
Backhoe	**104**	102	94	92	92	91	88	87	78
Concrete truck	**108**	85	86	85	94	98	107	89	82
Concrete pump truck	**105**	77	92	97	99	100	95	95	89

9.3 CONSTRUCTION PREDICTED NOISE LEVELS

Results of the predictive noise modelling of the construction activities are shown in Table 9-3. It can be seen that the predicted noise levels comply with the construction noise criteria at all receivers during standard construction hours.

Construction activities are therefore proposed to take place during standard construction hours as follows:

Monday to Friday:	7am to 6pm
Saturday:	8am to 1pm
Sunday and Public Holidays:	No works permitted

Table 9-3: Noise Modelling Results Associated with Construction Activities for L_{eq}, dB(A)

Receiver	PSNL ($L_{eq,15\ minute}$ dB(A))	Scenario (Standard Hours) (L_{eq}, dB(A))	
	Standard Hours	1	2
R1	63	39 ✓	40 ✓
R2	63	38 ✓	39 ✓
R3	63	36 ✓	36 ✓
R4	63	31 ✓	31 ✓
R5	63	35 ✓	34 ✓
R6	63	36 ✓	36 ✓
R7	63	25 ✓	25 ✓
R8	63	20 ✓	19 ✓
R9	55	39 ✓	39 ✓
R10	55	41 ✓	42 ✓
R11	75	57 ✓	58 ✓
R12	75	63 ✓	65 ✓
R13	75	61 ✓	62 ✓
R14	75	45 ✓	47 ✓
R15	75	41 ✓	43 ✓

✓Complies × Non-compliance

10. VIBRATION IMPACT ASSESSMENT

In the NSW TfNSW Construction Noise Strategy document and Assessing Vibration – a Technical Guideline, construction equipment that may cause vibration impacts includes hydraulic hammers, vibratory pile drivers, pile boring, jackhammers, 'wacker packers', concrete vibrators, and pavement breakers, amongst other equipment. The construction work proposed would not use this type of equipment and is not expected to cause vibration impacts. The equipment utilised for the dewatering plant will not generate vibration impacts therefore a detailed Vibration Impact Assessment is therefore not considered warranted.

A vibration assessment (Pulse White Noise Acoustics – Ref: 210578 – 81 Gow Street, Padstow – Vibration Survey-Attachment 5) of the existing C&D recycling facility has been undertaken and shows the measured vibration levels from the existing C&D facility's equipment (including the crusher and screens) are within the accepted limits.

11. STATEMENT OF POTENTIAL NOISE IMPACT

Benbow Environmental has been engaged by Gow Street Recycling Centre (GSRC) to prepare a Dewatering Plant Noise and Vibration Impact Assessment (DPN&VIA) for a resource recovery facility at 81 Gow Street, Padstow (Lot A DP 103140). This report has been completed as part of an Environmental Impact Statement (EIS) for the proponent, which aim to update their existing Environmental Protection License (10943) which currently allows them to have a processing capacity of 80,000 tpa, and a maximum storage quantity of 7,300 at any one time.

The proposed development includes establishment of a dewatering plant, with a capacity of 250,000 tonnes per year. These operations will take place on site 24/7. This noise report assesses contributions from the dewatering plant operations only and the cumulative impacts of both the proposed dewatering plant and the existing C&D recycling facility operating simultaneously.

The noise impact assessment was undertaken in accordance with the following guidelines:

- NSW Noise Policy for Industry (EPA, 2017);
- NSW Road Noise Policy (RNP) (DECCW, 2011); and
- Blacktown Development Control Plan (DCP) 2015.

Assessment criteria for noise emissions from the subject site were used to determine whether the potential noise impacts from the site were within the derived limits or in exceedance of the guidelines.

The nearest receivers and noise criteria were identified. The site operations were modelled using the predictive noise software, Sound Plan V7.3.

The activities proposed by the proponent were found to be within the framework of the NSW EPA Noise Policy for Industry.

The modelled scenarios are predicted to comply with the $L_{eq(15\ minute)}$ project specific criteria at all sensitive receptors. Exceedance of the L_{AMax} sleep disturbance is not predicted at any residential receptors.

The noise assessment in Section 7 predicted that if the assumptions listed in 7.1.3 are carried out, noise levels would be met at all surrounding residential receivers during all time periods.

During the night from 10pm – 6am the vacuum truck pump should not be used. An internal pump can be used at night such that the tanker truck vacuum pump is not needed.

Compliance with the guidelines set out in the NSW Road Noise Policy and Interim Construction Noise Guideline was predicted at all considered receptors.

Vibration impacts from the proposed dewatering plant are considered negligible. Vibration impacts from the existing C&D facility have been found to comply with the relevant criteria (see Attachment 5).

This concludes the report.





Victoria Hale
Senior Environmental Scientist

R T Benbow
Principal Consultant

12. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of Gow Street Recycling Centre, as per our agreement for providing environmental services. Only Gow Street Recycling Centre is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that otherwise required by law) in relation to any of the information contained within this document. We accept no responsibility for the accuracy of any data or information provided to us by Gow Street Recycling Centre for the purposes of preparing this report.

Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.

ATTACHMENTS

'A' FREQUENCY WEIGHTING

The 'A' frequency weighting roughly approximates to the Fletcher-Munson 40 phon equal loudness contour. The human loudness perception at various frequencies and sound pressure levels is equated to the level of 40 dB at 1 kHz. The human ear is less sensitive to low frequency sound and very high frequency sound than midrange frequency sound (i.e. 500 Hz to 6 kHz). Humans are most sensitive to midrange frequency sounds, such as a child's scream. Sound level meters have inbuilt frequency weighting networks that very roughly approximates the human loudness response at low sound levels. It should be noted that the human loudness response is not the same as the human annoyance response to sound. Here low frequency sounds can be more annoying than midrange frequency sounds even at very low loudness levels. The 'A' weighting is the most commonly used frequency weighting for occupational and environmental noise assessments. However, for environmental noise assessments, adjustments for the character of the sound will often be required.

AMBIENT NOISE

The ambient noise level at a particular location is the overall environmental noise level caused by all noise sources in the area, both near and far, including all forms of traffic, industry, lawnmowers, wind in foliage, insects, animals, etc. Usually assessed as an energy average over a set time period 'T' (L_{Aeq},T).

AUDIBLE

Audible refers to a sound that can be heard. There are a range of audibility grades, varying from "barely audible", "just audible" to "clearly audible" and "prominent".

BACKGROUND NOISE LEVEL

Total silence does not exist in the natural or built-environments, only varying degrees of noise. The Background Noise Level is the minimum repeatable level of noise measured in the absence of the noise under investigation and any other short-term noises such as those caused by all forms of traffic, industry, lawnmowers, wind in foliage, insects, animals, etc.. It is quantified by the noise level that is exceeded for 90 % of the measurement period 'T' (L_{A90}, T). Background Noise Levels are often determined for the day, evening and night time periods where relevant. This is done by statistically analysing the range of time period (typically 15 minute) measurements over multiple days (often 7 days). For a 15 minute measurement period the Background Noise Level is set at the quietest level that occurs at 1.5 minutes.

'C' FREQUENCY WEIGHTING

The 'C' frequency weighting approximates the 100 phon equal loudness contour. The human ear frequency response is more linear at high sound levels and the 100 phon equal loudness contour attempts to represent this at various frequencies at sound levels of approximately 100 dB.

DECIBEL

The decibel (dB) is a logarithmic scale that allows a wide range of values to be compressed into a more comprehensible range, typically 0 dB to 120 dB. The decibel is ten times the logarithm of the ratio of any two quantities that relate to the flow of energy (i.e. power). When used in acoustics it is the ratio of square of the sound pressure level to a reference sound pressure level, the ratio of the sound power level to a reference sound power level, or the ratio of the sound intensity level to a reference sound intensity level. See also Sound Pressure Level and Sound Power Level. Noise levels in decibels cannot be added arithmetically since they are logarithmic numbers. If one machine is generating a noise level of 50 dB, and another similar machine is placed beside it, the level will increase to 53 dB (from $10 \log_{10} (10^{(50/10)} + 10^{(50/10)})$ and not 100 dB. In theory, ten similar machines placed side by side will increase the sound level by 10 dB, and one hundred machines increase the sound level by 20 dB. The human ear has a vast sound-sensitivity range of over a thousand billion to one so the logarithmic decibel scale is useful for acoustical assessments.

dBA – See 'A' frequency weighting

dBC – See 'C' frequency weighting

EQUIVALENT CONTINUOUS SOUND LEVEL, LAeq

Many sounds, such as road traffic noise or construction noise, vary repeatedly in level over a period of time. More sophisticated sound level meters have an integrating/averaging electronic device inbuilt, which will display the energy time-average (equivalent continuous sound level - L_{Aeq}) of the 'A' frequency weighted sound pressure level. Because the decibel scale is a logarithmic ratio, the higher noise levels have far more sound energy, and therefore the LAeq level tends to indicate an average which is strongly influenced by short term, high level noise events. Many studies show that human reaction to level-varying sounds tends to relate closer to the L_{Aeq} noise level than any other descriptor.

'F'(FAST) TIME WEIGHTING

Sound level meter design-goal time constant which is 0.125 seconds.

FLETCHER–MUNSON EQUAL LOUDNESS CONTOUR CURVES

The Fletcher–Munson curves are one of many sets of equal loudness contours for the human ear, determined experimentally by Harvey Fletcher and Wilden A. Munson, and reported in a 1933 paper entitled "Loudness, its definition, measurement and calculation" in the Journal of the Acoustic Society of America.

FREE FIELD

In acoustics a free field is a measurement area not subject to significant reflection of acoustical energy. A free field measurement is typically not closer than 3.5 metres to any large flat object (other than the ground) such as a fence or wall or inside an anechoic chamber.

FREQUENCY

The number of oscillations or cycles of a wave motion per unit time, the SI unit is the hertz (Hz). 1 Hz is equivalent to one cycle per second. 1000 Hz is 1 kHz.

IMPACT ISOLATION CLASS (IIC)

The American Society for Testing and Materials (ASTM) has specified that the IIC of a floor/ceiling system shall be determined by operating an ISO 140 Standard Tapping Machine on the floor and measuring the noise generated in the room below. The IIC is a number found by fitting a reference curve to the measured octave band levels and then deducting the sound pressure level at 500 Hz from 110 decibels. Thus the higher the IIC, the better the impact sound isolation. Not commonly used in Australia.

'I' (IMPULSE) TIME WEIGHTING

Sound level meter time constant now not in general use. The 'I' (impulse) time weighting is not suitable for rating impulsive sounds with respect to their loudness. It is also not suitable for assessing the risk of hearing impairment or for determining the 'impulsiveness' of a sound.

IMPACT SOUND INSULATION ($L_{nT,w}$)

Australian Standard AS ISO 717.2 – 2004 has specified that the Impact Sound Insulation of a floor/ceiling system be quantified by operating an ISO 140 Standard Tapping Machine on the floor and measuring the noise generated in the room below. The Weighted Standardised Impact Sound Pressure Level ($L_{nT,w}$) is the sound pressure level at 500 Hz for a reference curve fitted to the measured 1/3 octave band levels. Thus the lower $L_{nT,w}$ the better the impact sound insulation.

IMPULSE NOISE

An impulse noise is typified by a sudden rise time and a rapid sound decay, such as a hammer blow, rifle shot or balloon burst.

LOUDNESS

The volume to which a sound is audible to a listener is a subjective term referred to as loudness. Humans generally perceive an approximate doubling of loudness when the sound level increases by about 10 dB and an approximate halving of loudness when the sound level decreases by about 10 dB.

MAXIMUM NOISE LEVEL, LAFmax

The root-mean-square (rms) maximum sound pressure level measured with sound level meter using the 'A' frequency weighting and the 'F' (Fast) time weighting. Often used for noise assessments other than aircraft.

MAXIMUM NOISE LEVEL, LASmax

The root-mean-square (rms) maximum sound pressure level measured with sound level meter using the 'A' frequency weighting and the 'S' (Slow) time weighting. Often used for aircraft noise assessments.

NOISE RATING NUMBERS

A set of empirically developed equal loudness curves has been adopted as Australian Standard AS1469-1983. These curves allow the loudness of a noise to be described with a single NR number. The Noise Rating number is that curve which touches the highest level on the measured spectrum of the subject noise. For broadband noise such as fans and engines, the NR number often equals the 'A' frequency weighted dB level minus five.

NOISE

Noise is unwanted, harmful or inharmonious (discordant) sound. Sound is wave motion within matter, be it gaseous, liquid or solid. Noise usually includes vibration as well as sound.

NOISE REDUCTION COEFFICIENT – See: "Sound Absorption Coefficient"

OFFENSIVE NOISE

Reference: Dictionary of the NSW Protection of the Environment Operations Act (1997). "Offensive Noise means noise:
(a) that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:
(i) is harmful to (or likely to be harmful to) a person who is outside the premise from which it is emitted, or
(ii) interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or
(b) that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances prescribed by the regulations."

PINK NOISE

Pink noise is a broadband noise with an equal amount of energy in each octave or third octave band width. Because of this, Pink Noise has more energy at the lower frequencies than White Noise and is used widely for Sound Transmission Loss testing.

REVERBERATION TIME, T60

The time in seconds, after a sound signal has ceased, for the sound level inside a room to decay by 60 dB. The first 5 dB decay is often ignored, because of fluctuations that occur while reverberant sound conditions are being established in the room. The decay time for the next 30 dB is measured and the result doubled to determine the T_{60}. The Early Decay Time (EDT) is the slope of the decay curve in the first 10 dB normalised to 60 dB.

SOUND ABSORPTION COEFFICIENT, α

Sound is absorbed in porous materials by the viscous conversion of sound energy to a small amount of heat energy as the sound waves pass through it. Sound is similarly absorbed by the flexural bending of internally damped panels. The fraction of incident energy that is absorbed is termed the Sound Absorption Coefficient, α. An absorption coefficient of 0.9 indicates that 90 % of the incident sound energy is absorbed. The average α from 250 to 2 kHz is termed the Noise Reduction Coefficient (NRC).

'S' (SLOW) TIME WEIGHTING

Sound level meter design-goal time constant which is 1 second.

SOUND ATTENUATION

A reduction of sound due to distance, enclosure or some other devise. If an enclosure is placed around a machine, or an attenuator (muffler or silencer) is fitted to a duct, the noise emission is reduced or attenuated. An enclosure that attenuates the noise level by 20 dB reduces the sound energy by one hundred times.

SOUND EXPOSURE LEVEL (LAE)

Integration (summation) rather than an average of the sound energy over a set time period. Use to assess single noise events such as truck or train pass by or aircraft flyovers. The sound exposure level is related to the energy average (L_{Aeq}, T) by the formula L_{Aeq}, T = L_{AE} – 10 $\log_{10}$ T. The abbreviation (SEL) is sometimes inconsistently used in place of the symbol (L_{AE}).

SOUND PRESSURE

The rms sound pressure measured in pascals (Pa). A pascal is a unit equivalent to a newton per square metre (N/m^2).

SOUND PRESSURE LEVEL, Lp

The level of sound measured on a sound level meter and expressed in decibels (dB). Where L_P = 10 $\log_{10}$ $(Pa/Po)^2$ dB (or 20 log10 (Pa/ Po) dB) where Pa is the rms sound pressure in Pascal and Po is a reference sound pressure conventionally chosen is 20 µPa (20 x 10^{-6} Pa) for airborne sound. L_p varies with distance from a noise source.

SOUND POWER

The rms sound power measured in watts (W). The watt is a unit defined as one joule per second. A measures the rate of energy flow, conversion or transfer.

SOUND POWER LEVEL, Lw

The sound power level of a noise source is the inherent noise of the device. Therefore sound power level does not vary with distance from the noise source or with a different acoustic environment. Lw = Lp + 10 $\log_{10}$ 'a' dB, re: 1pW, (10^{-12} watts) where 'a' is the measurement noise-emission area (m^2) in a free field.

SOUND TRANSMISSION CLASS (STC)

An internationally standardised method of rating the sound transmission loss of partition walls to indicate the sound reduction from one side of a partition to the other in the frequency range of 125 Hz to 4000 kHz. (Refer: Australian Standard AS 1276 – 1979). Now not in general use in Australia see: weighted sound reduction index.

SOUND TRANSMISSION LOSS

The amount in decibels by which a random sound is reduced as it passes through a sound barrier. A method for the measurement of airborne Sound Transmission Loss of a building partition is given in Australian Standard AS 1191 - 2002.

STATISTICAL NOISE LEVELS, Ln.

Noise which varies in level over a specific period of time 'T' (standard measurement times are 15 minute periods) may be quantified in terms of various statistical descriptors for example:-

- The noise level, in decibels, exceeded for 1% of the measurement time period, when 'A' frequency weighted and 'F' time weighted is reference to as L_{AF1}, T. This may be used for describing short-term noise levels such as could cause sleep arousal during the night.
- The noise level, in decibels, exceeded for 10% of the measurement time period, when 'A' frequency weighted and 'F' time weighted is reference to as L_{AF10}, T. In most countries the LAF10, T is measured over periods of 15 minutes, and is used to describe the average maximum noise level.
- The noise level, in decibels, exceeded for 90% of the measurement time period, when 'A' frequency weighted and 'F' time weighted is reference to as L_{AF90}, T. In most countries the LAF90, T is measured over periods of 15 minutes, and is used to describe the average minimum or background noise level.

STEADY NOISE

Noise, which varies in level by 6 dB or less, over the period of interest with the time-weighting set to "Fast", is considered to be "steady". (Refer AS 1055.1 1997).

WEIGHTED SOUND REDUCTION INDEX, Rw

This is a single number rating of the airborne sound insulation of a wall, partition or ceiling. The sound reduction is normally measured over a frequency range of 100 Hz to 3.150 kHz and averaged in accordance with ISO standard weighting curves (Refer AS/NZS 1276.1:1999). Internal partition wall Rw + C ratings are frequency weighted to simulate insulation from human voice noise. The R_w + C is similar in value to the STC rating value. External walls, doors and windows may be R_w + C_{tr} rated to simulate insulation from road traffic noise. The spectrum adaptation term Ctr adjustment factor takes account of low frequency noise. The weighted sound reduction index is normally similar or slightly lower number than the STC rating value.

WHITE NOISE

White noise is broadband random noise whose spectral density is constant across its entire frequency range. The sound power is the same for equal bandwidths from low to high frequencies. Because the higher frequency octave bands cover a wider spectrum, white noise has more energy at the higher frequencies and sounds like a hiss.

'Z' FREQUENCY WEIGHTING

The 'Z' (Zero) frequency weighting is 0 dB within the nominal 1/3 octave band frequency range centred on 10 Hz to 20 kHz. This is within the tolerance limits given in AS IEC 61672.1–2004: 'Electroacoustics - Sound level meters – Specifications'.

Attachment 2: Calibration Certificates

CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: **SLM 21111 & FILT 4097**

Equipment Description:	Sound & Vibration Analyser		
Manufacturer:	Svantek		
Model No:	Svan-957	**Serial No:**	15336
Microphone Type:	7052E	**Serial No:**	47869
Filter Type:	1/3 Octave	**Serial No:**	15336
Comments:	All tests passed for class 1. (See over for details)		
Owner:	Benbow Environmental 13 Daking Street North Parramatta 2151		
Ambient Pressure:	1004 hPa ±1.5 hPa		
Temperature:	21 °C ±2° C	**Relative Humidity:**	36% ±5%
Date of Calibration:	25/07/2017	**Issue Date:**	26/07/2017
Acu-Vib Test Procedure:	AVP10 (SLM) & AVP06 (Filters)		

CHECKED BY: .... **AUTHORISED SIGNATURE:** .....

Jack Kiedt

Accredited for compliance with ISO/IEC 17025
The results of the tests, calibration and/or measurements included in this document are traceable to Australian/national standards.

NATA
WORLD RECOGNISED ACCREDITATION

Accredited Lab. No. 9262
Acoustic and Vibration Measurements

ACU-VIB
ELECTRONICS

HEAD OFFICE
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
Tel: (02) 96808133 Fax: (02)96808233
Mobile: 0413 809806
web site: www.acu-vib.com.au

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: 23100

EQUIPMENT TESTED: Sound Level Calibrator

Manufacturer: Rion
Type No: NC-73 **Serial No:** 10186522
Owner: Benbow Environmental
13 Daking Street
North Parramatta NSW 2151

Tests Performed: Measured output pressure level was found to be:

Parameter	Pre-Adj	Adj Y/N	Output: (db re 20 µPa)	Frequency: (Hz)	THD&N (%)
Level 1:	NA	N	94.16	990.12	3.98
Level 2:	NA	N	NA	NA	NA
Uncertainty:			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

CONDITION OF TEST:
Ambient Pressure: 1010 hPa ±1.5 hPa **Relative Humidity:** 31% ±5%
Temperature: 24 °C ±2° C
Date of Calibration: 11/07/2018 **Issue Date:** 11/07/2018
Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2004
CHECKED BY: ... **AUTHORISED SIGNATURE:** .....
Jack Kiett

.Accredited for compliance with ISO/IEC 17025 - Calibration
The results of the tests, calibration and/or measurements included in this document are traceable to Australian/national standards.
The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

NATA
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Level 7 Building 2 423 Pennant Hills Rd
Pennant Hills NSW AUSTRALIA 2120
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
AS 1259.1:1990 - AS 1259.2:1990
Calibration Certificate

Calibration Number C18128_Reissued

Client Details Benbow Environmental
13 Daking Street
North Paramatta NSW 2151

Equipment Tested/ Model Number : ARL EL-215
Instrument Serial Number : 194441
Microphone Serial Number : N/A
Pre-amplifier Serial Number : N/A

Atmospheric Conditions
Ambient Temperature : 23.4°C
Relative Humidity : 52.3%
Barometric Pressure : 100.4kPa

Calibration Technician : Lucky Jaiswal
Secondary Check: Sandra Minto
Calibration Date : 9 Mar 2018
Report Issue Date : 3 Oct 2018
Approved Signatory : Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
10.2.2: Absolute sensitivity	*Pass*	10.3.4: Inherent system noise level	*Pass*
10.2.3: Frequency weighting	*Pass*	10.4.2: Time weighting characteristic F and S	*Pass*
10.3.2: Overload indications	*Pass*	10.4.3: Time weighting characteristic I	*Pass*
10.3.3: Accuracy of level range control	*Pass*	10.4.5: R.M.S performance	*Pass*
8.9: Detector-indicator linearity	*Pass*	9.3.2: Time averaging	*Pass*
8.10: Differential level linearity	*Pass*	9.3.5: Overload indication	*Pass*

Least Uncertainties of Measurement -

Acoustic Tests
- *31.5 Hz to 8kHz* ±0.15dB
- *12.5kHz* ±0.21dB
- *16kHz* ±0.29dB

Electrical Tests
- *31.5 Hz to 20 kHz* ±0.12dB

Environmental Conditions
- *Temperature* ±0.2°C
- *Relative Humidity* ±2.4%
- *Barometric Pressure* ±0.015Pa

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

The sound level meter under test has been shown to conform to the type 2 requirements for periodic testing as described in AS 1259.1:1990 and AS 1259.2:1990 for the tests stated above.

NATA WORLD RECOGNISED ACCREDITATION

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/National standards.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

Calibration of Sound Level Meters

A sound level meter requires regular calibration to ensure its measurement performance remains within specification. Benbow Environmental sound level meters are calibrated by a National Association of Testing Authority (NATA) registered laboratory or a laboratory approved by the NSW Environment Protection Authority (EPA) every two years and after each major repair, in accordance with AS 1259–1990.

The calibration of the sound level meter was checked immediately before and after each series of measurements using an acoustic calibrator. The acoustic calibrator provides a known sound pressure level, which the meter indicates when the calibrator is activated while positioned on the meter microphone.

The sound level meters also incorporate an internal calibrator for use in setting up. This provides a check of the electrical calibration of the meter, but does not check the performance of the microphone. Acoustical calibration checks the entire instrument including the microphone. Calibration certificates for the instrument sets used have been included as Attachment 1.

Care and Maintenance of Sound Level Meters

Noise measuring equipment contains delicate components and therefore must be handled accordingly. The equipment is manufactured to comply with international and national standards and is checked periodically for compliance. The technical specifications for sound level meters used in Australia are defined in Australian Standard AS 1259–1990 "*Sound Level Meters"*.

The sound level meters and associated accessories are protected during storage, measurement and transportation against dirt, corrosion, rapid changes of temperature, humidity, rain, wind, vibration, electric and magnetic fields. Microphone cables and adaptors are always connected and disconnected with the power turned off. Batteries are removed (with the instrument turned off) if the instrument is not to be used for some time.

Investigation Procedures

All investigative procedures were conducted in accordance with AS 1055.1–1997 *Acoustics – Description and Measurement of Environmental Noise* Part 1: *General Procedures*.

The following information was recorded and kept for reference purposes:

- type of instrumentation used and measurement procedure conducted;
- description of the time aspect of the measurements, ie. measurement time intervals; and
- positions of measurements and the time and date were noted.

As per AS 1055.1–1997, all measurements were carried out at least 3.5 m from any reflecting structure other than the ground. The preferred measurement height of 1.2 m above the ground was utilised. A sketch of the area was made identifying positions of measurement and the approximate location of the noise source and distances in meters (approx.).

Unattended Noise Monitoring

NOISE MONITORING EQUIPMENT

ARL noise loggers type Ngara and EL-215 were used to conduct the long-term unattended noise monitoring. This equipment complies with Australian Standard 1259.2–1990 *Acoustics – Sound Level Meters* and is designated as a Type 1 and Type 2 instrument suitable for field use.

The measured data is processed statistically and stored in memory every 15 minutes. The equipment was calibrated prior and subsequent to the measurement period using a Rion NC-73 sound level calibrator. There were no significant variances observed in the reference signal between the pre-measurement and post-measurement calibrations. Instrument calibration certificates have also been included in Attachment 1.

METEOROLOGICAL CONSIDERATION DURING MONITORING

For the long-term attended monitoring, meteorological data for the relevant period were provided by the Bureau of Meteorology, which was considered representative of the site for throughout the monitoring period.

DESCRIPTORS & FILTERS USED FOR MONITORING

Noise levels are commonly measured using A-weighted filters and are usually described as dB(A). The "A-weighting" refers to standardised amplitude versus frequency curve used to "weight" sound measurements to represent the response of the human ear. The human ear is less sensitive to low frequency sound than it is to high frequency sound. Overall A-weighted measurements quantify sound with a single number to represent how people subjectively hear different frequencies at different levels.

Noise environments can be described using various descriptors depending on characteristics of noise or purpose of assessments. For this survey the L_{A90} was used to analyse the monitoring results. The statistical descriptors L_{A90} measures the noise level exceeded for 90% of the sample measurement time, and is used to describe the “Background noise”. Background noise is the underlying level of noise present in the ambient noise, excluding extraneous noise or the noise source under investigation.

Measurement sample periods were fifteen minutes. The Noise -vs- Time graphs representing measured noise levels at the noise monitoring location are presented in Attachment 3.

ATTENDED NOISE MONITORING

NOISE MONITORING EQUIPMENT

The attended short-term noise monitoring was carried out using a SVANTEK SVAN957 Class 1 Precision Sound Level Meter. The instrument was calibrated by a NATA accredited laboratory within two years of the measurement period. The instrument sets comply with AS 1259 and was set on A-weighted, fast response.

The microphone was positioned at 1.5 metres above ground level and was fitted with a windsock. The instrument was calibrated using a Rion NC-73 sound level calibrator prior and subsequent to the measurement period to ensure the reliability and accuracy of the instrument sets. There were no significant variances observed in the reference signal between the pre-measurement and post-measurement calibrations. Instrument calibration certificates have also been included in Attachment 1.

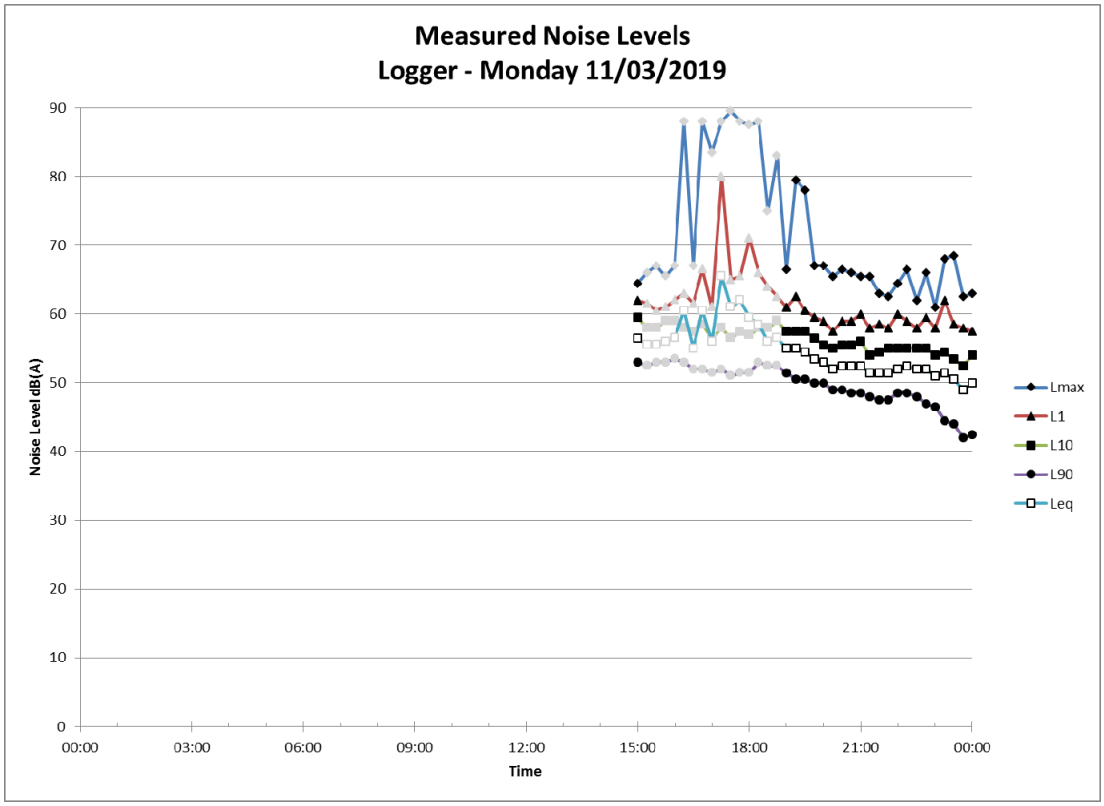
WEATHER CONDITIONS

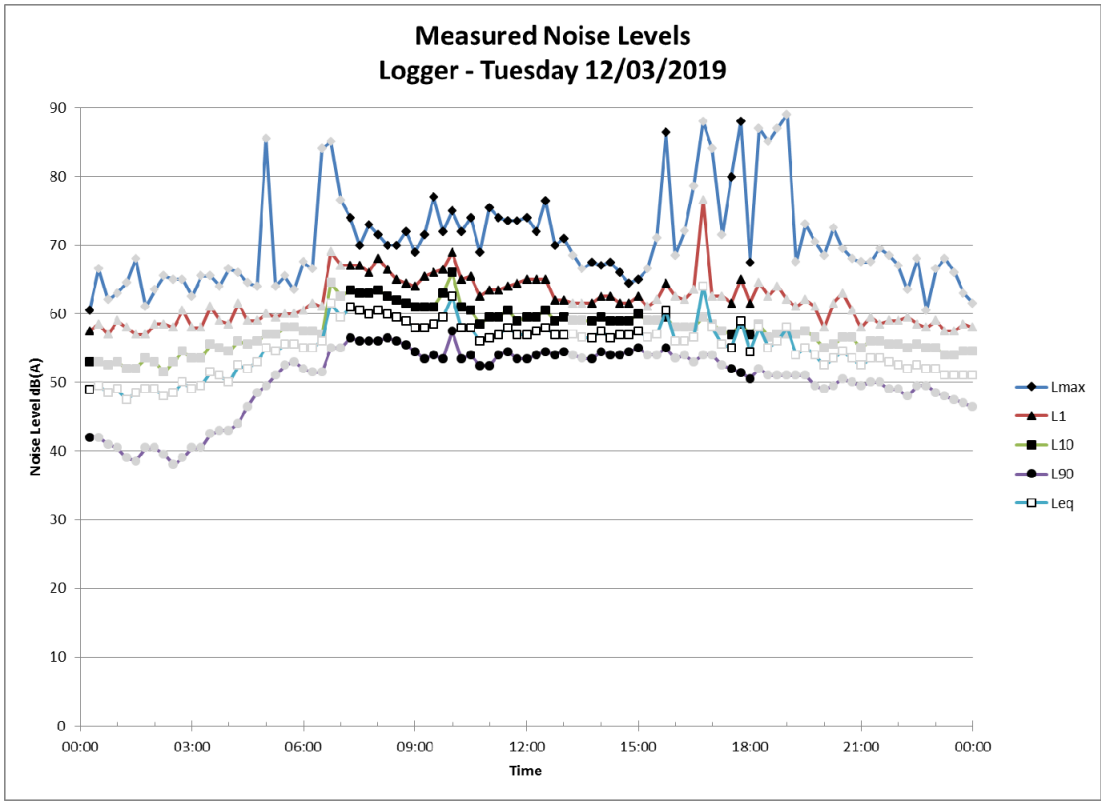
It was partially cloudy, fine without significant breeze.

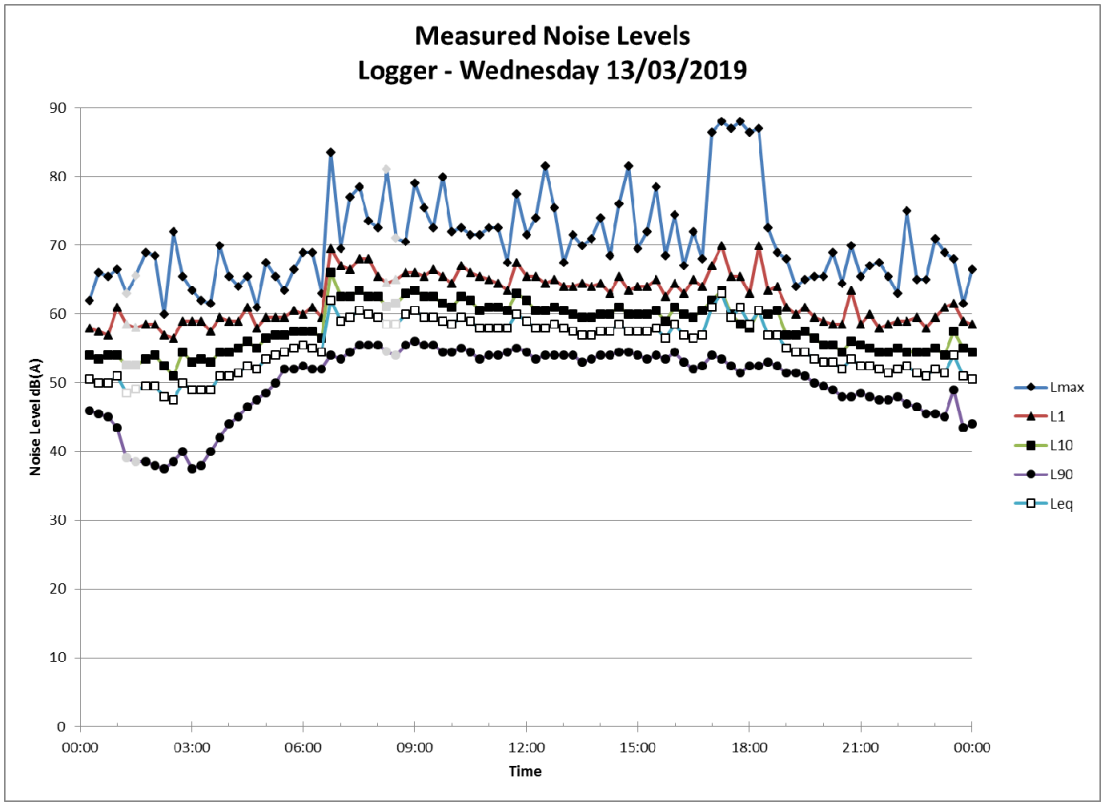
METHODOLOGY

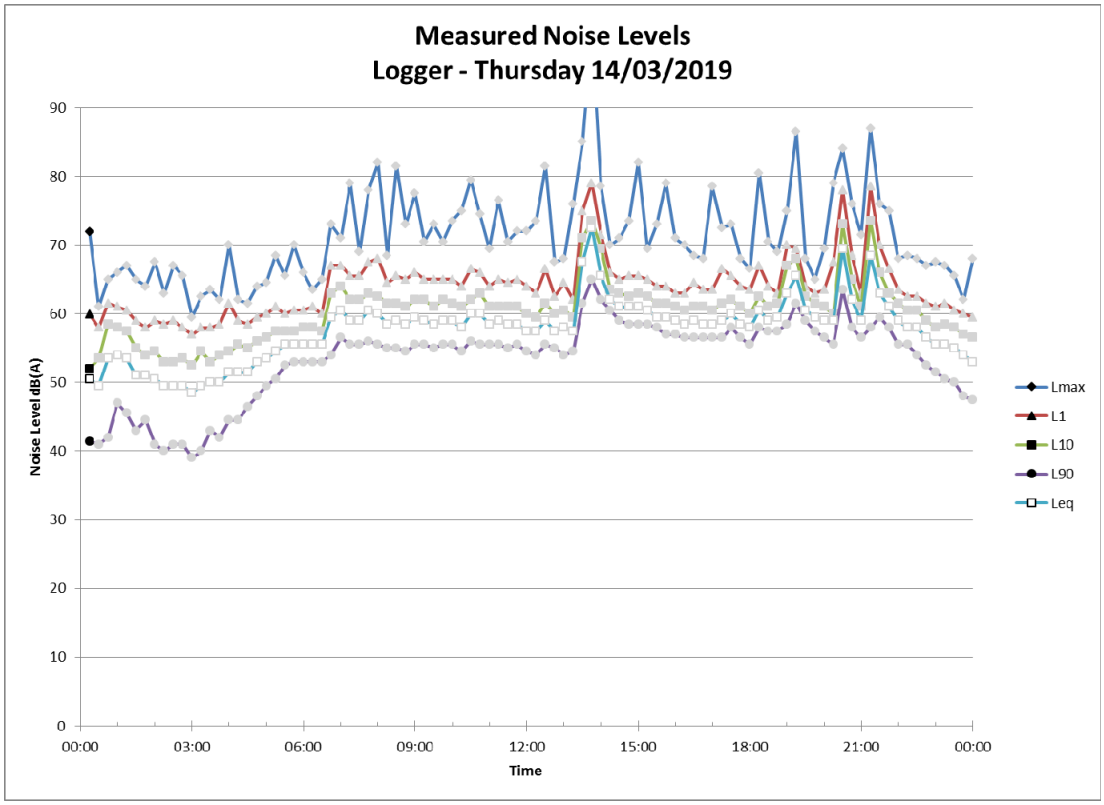
The attended noise measurements were carried out generally in accordance with Australian Standard AS 1055-1997 "Acoustics – Description and Measurement of Environmental Noise".

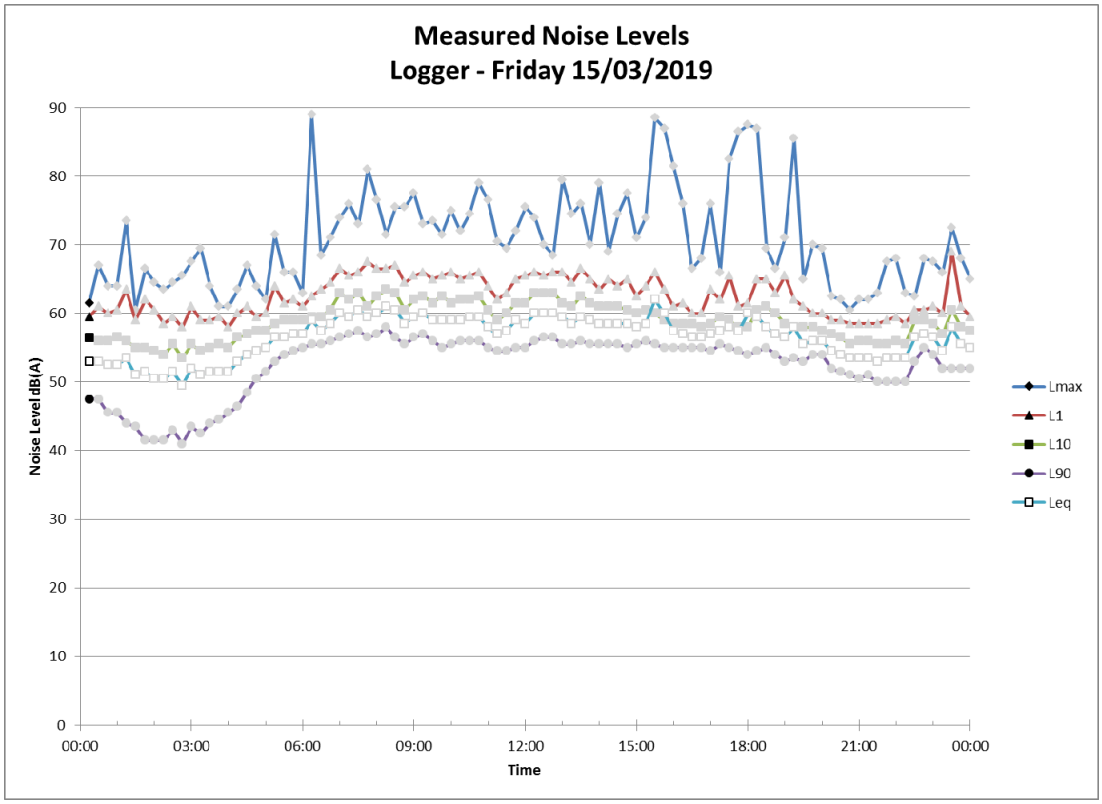
Attachment 4: Daily Noise Logger Charts

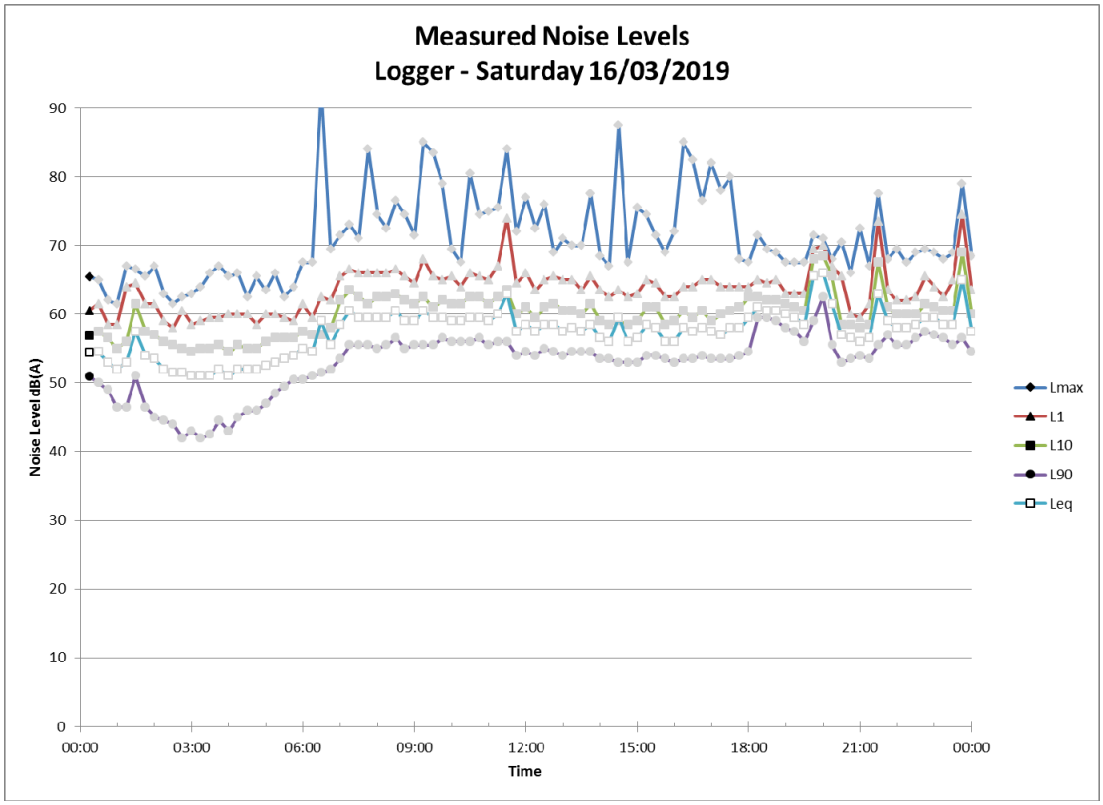

Measured Noise Levels
Logger - Monday 11/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq

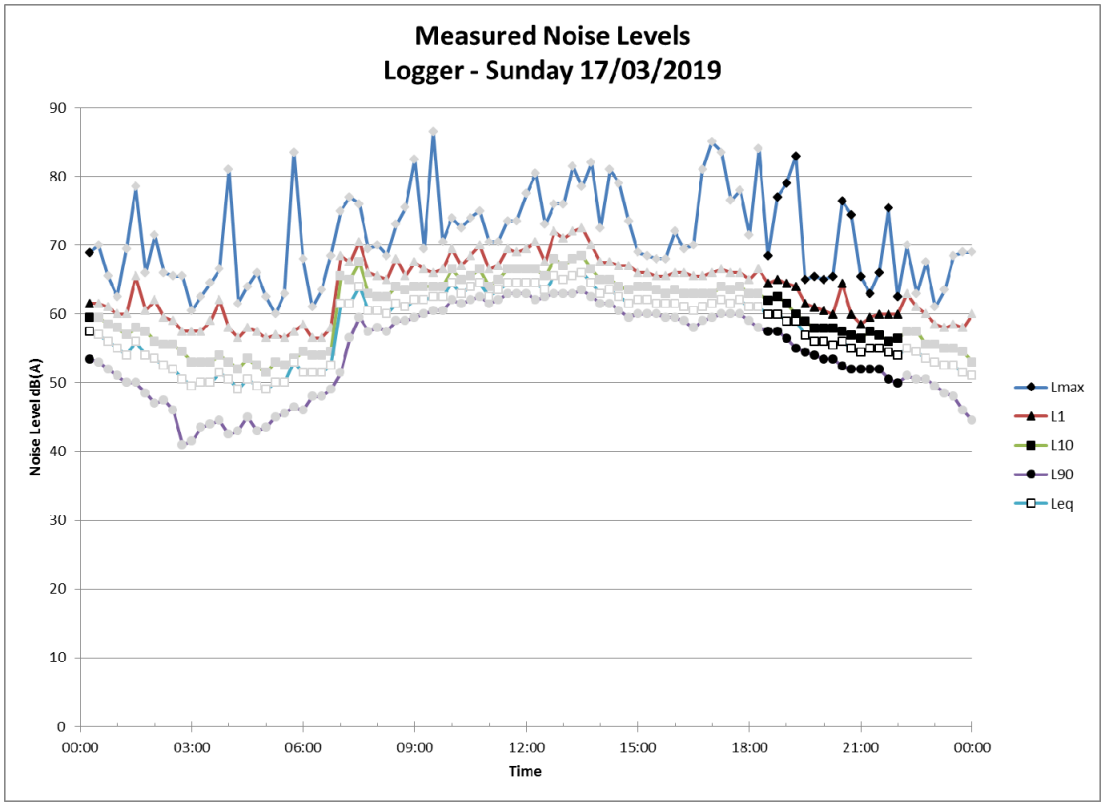

Measured Noise Levels
Logger - Tuesday 12/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq

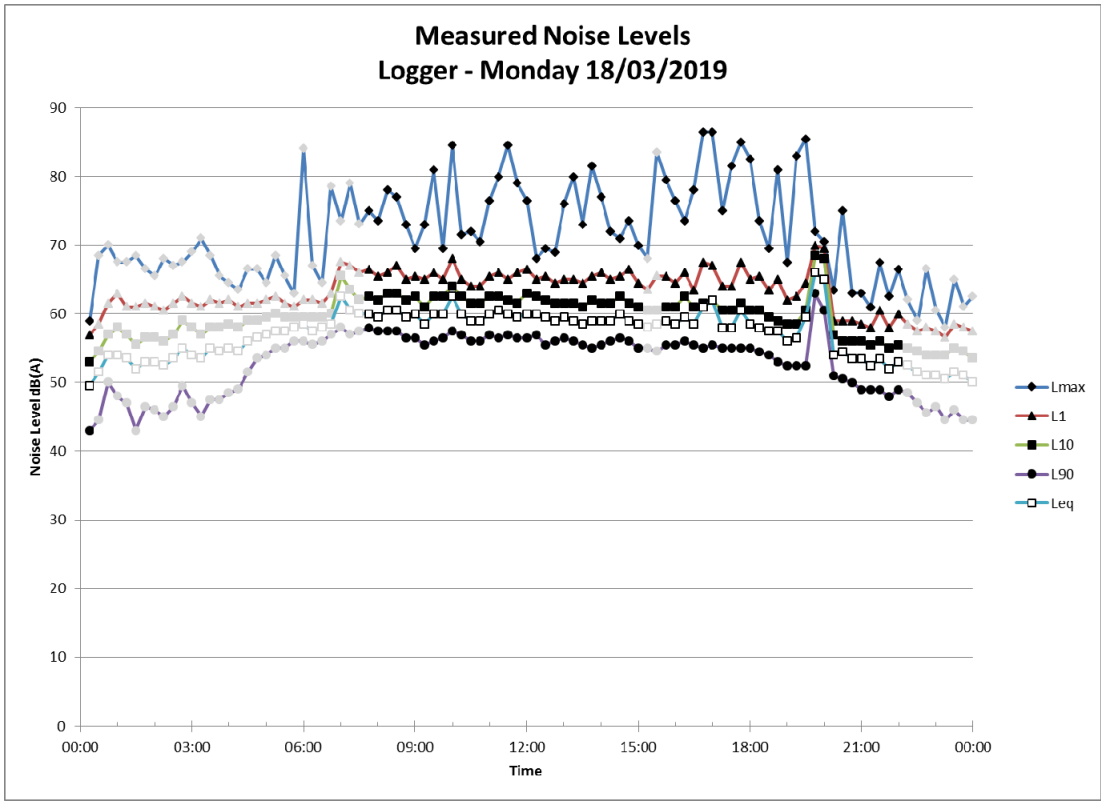

Measured Noise Levels
Logger - Wednesday 13/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq

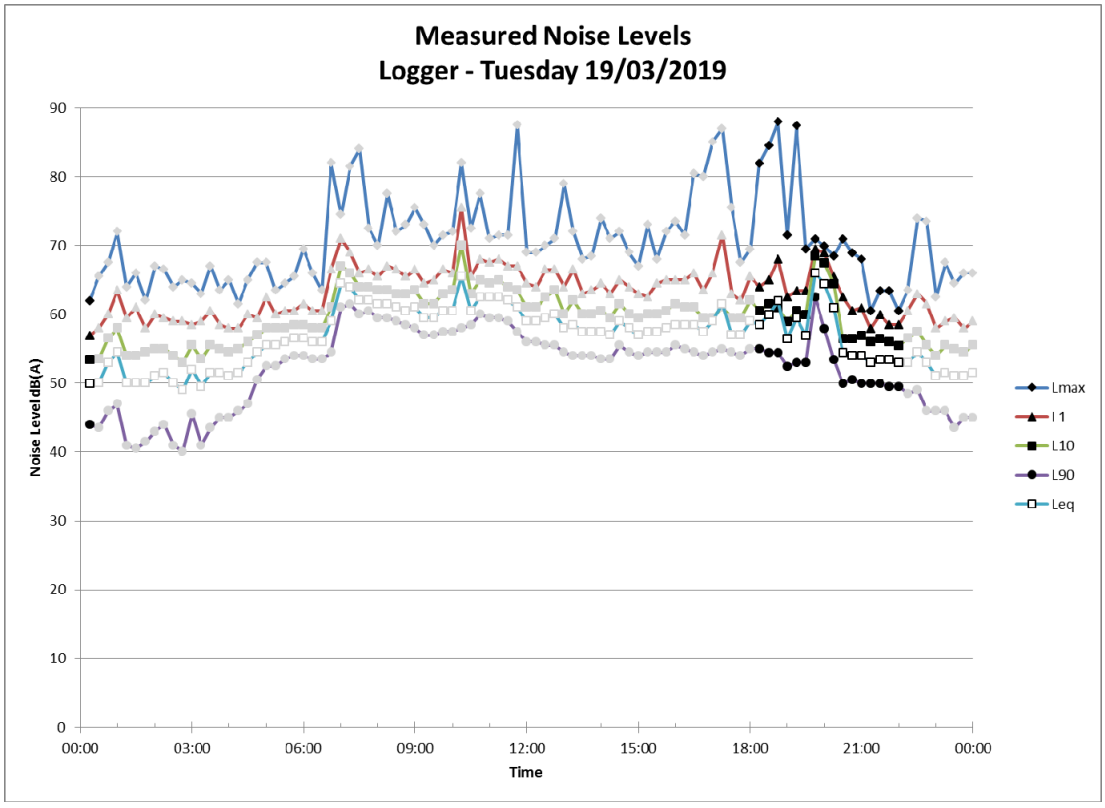

Measured Noise Levels
Logger - Thursday 14/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq

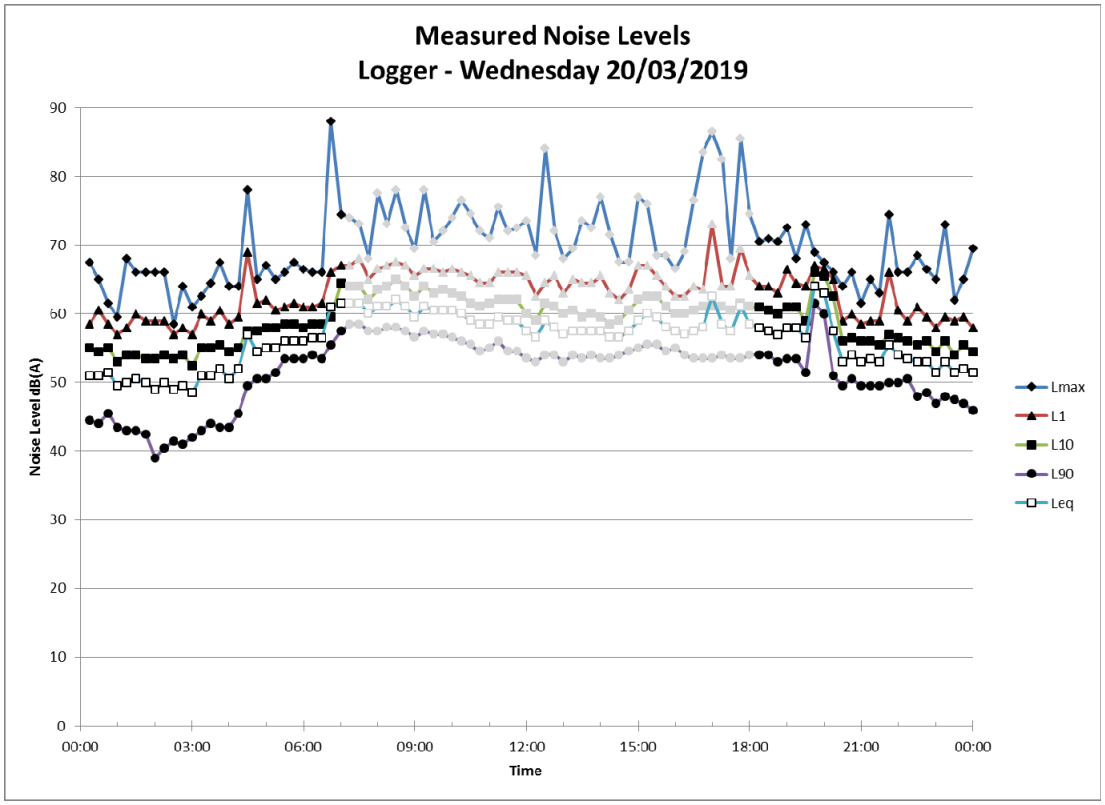

Measured Noise Levels
Logger - Friday 15/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq

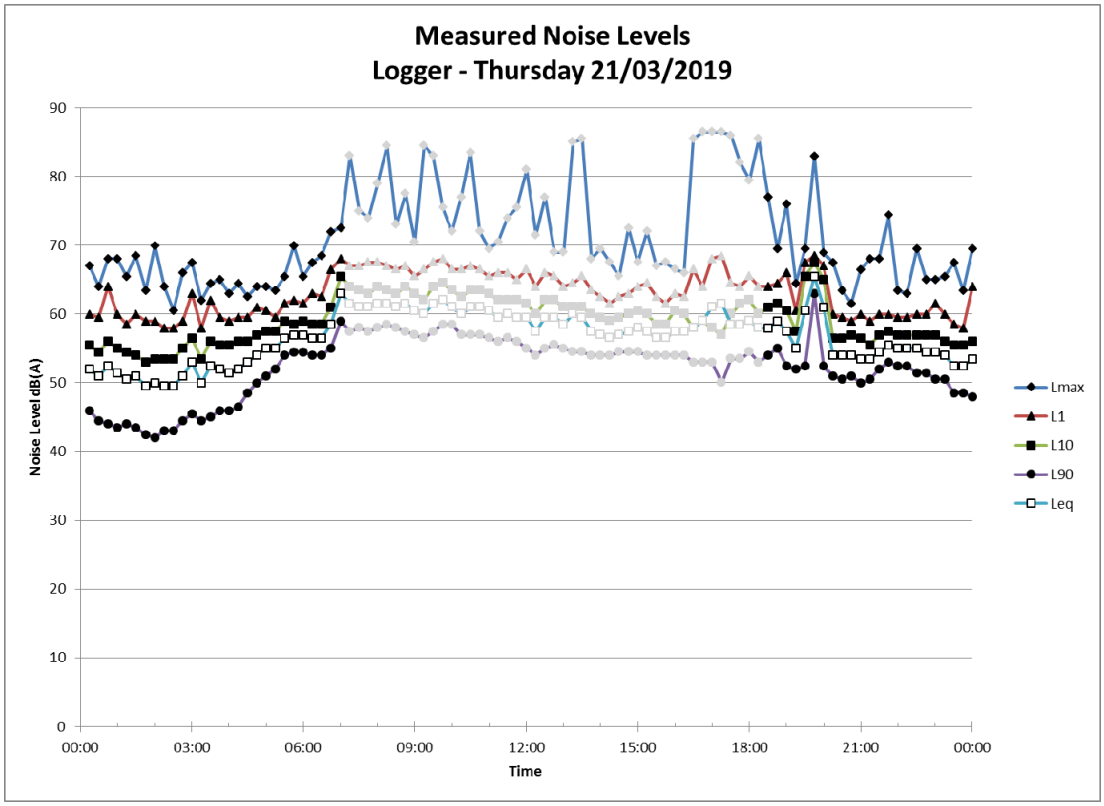

Measured Noise Levels
Logger - Saturday 16/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq

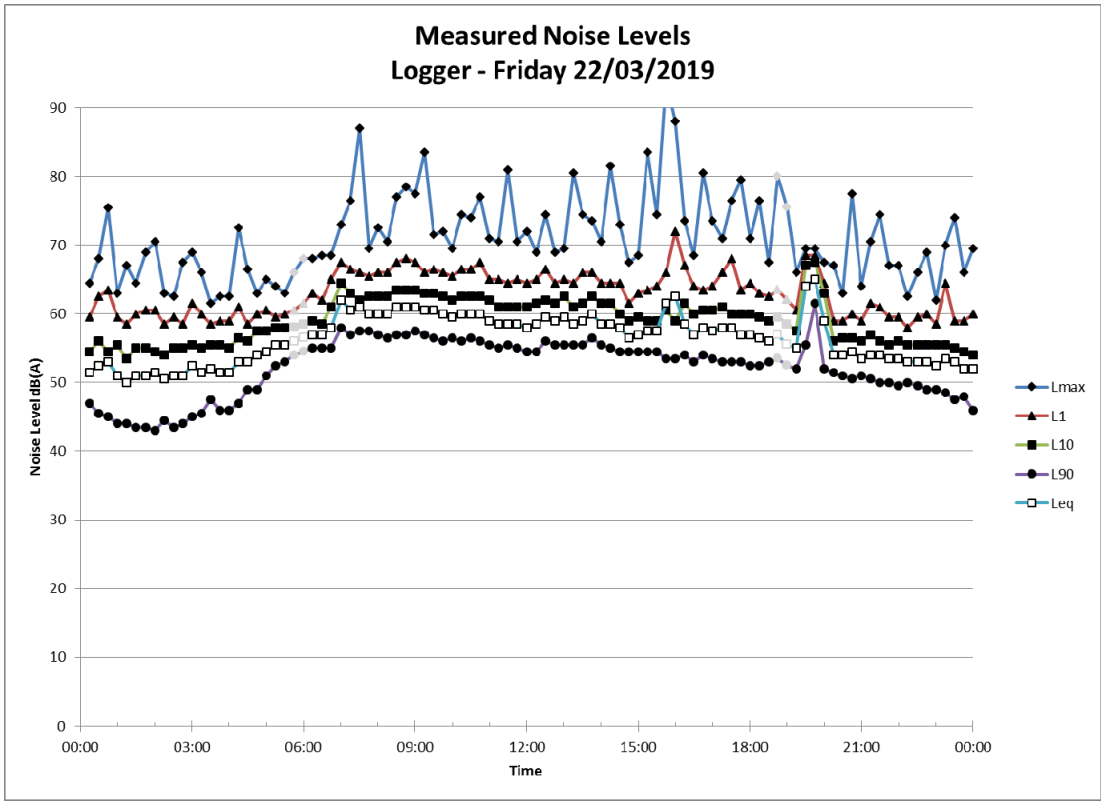

Measured Noise Levels
Logger - Sunday 17/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq

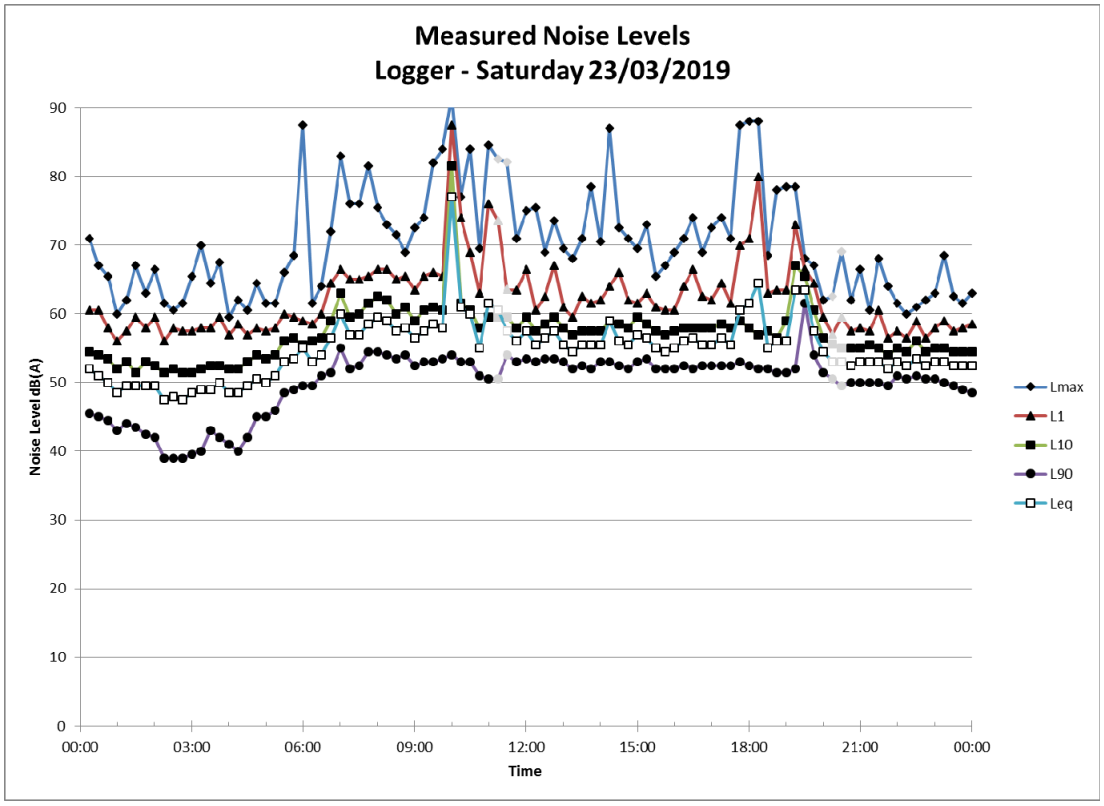

Measured Noise Levels
Logger - Monday 18/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
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Time
Lmax
L1
L10
L90
Leq

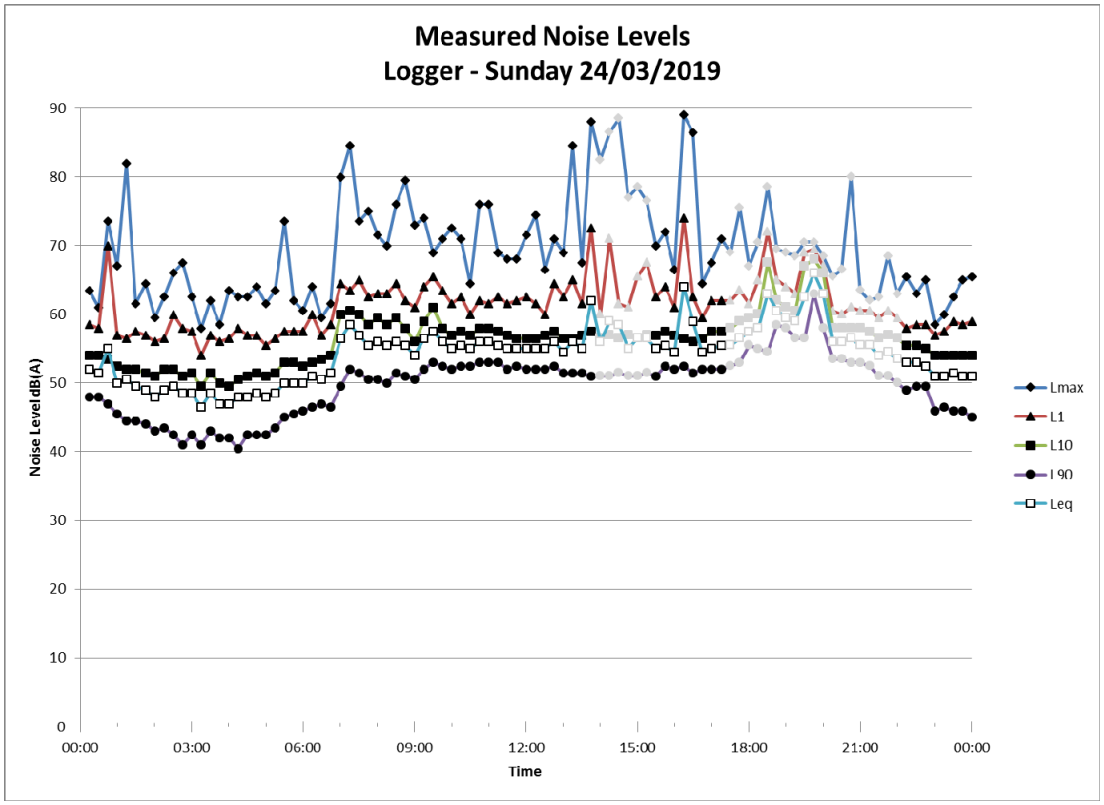

Measured Noise Levels
Logger - Tuesday 19/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq

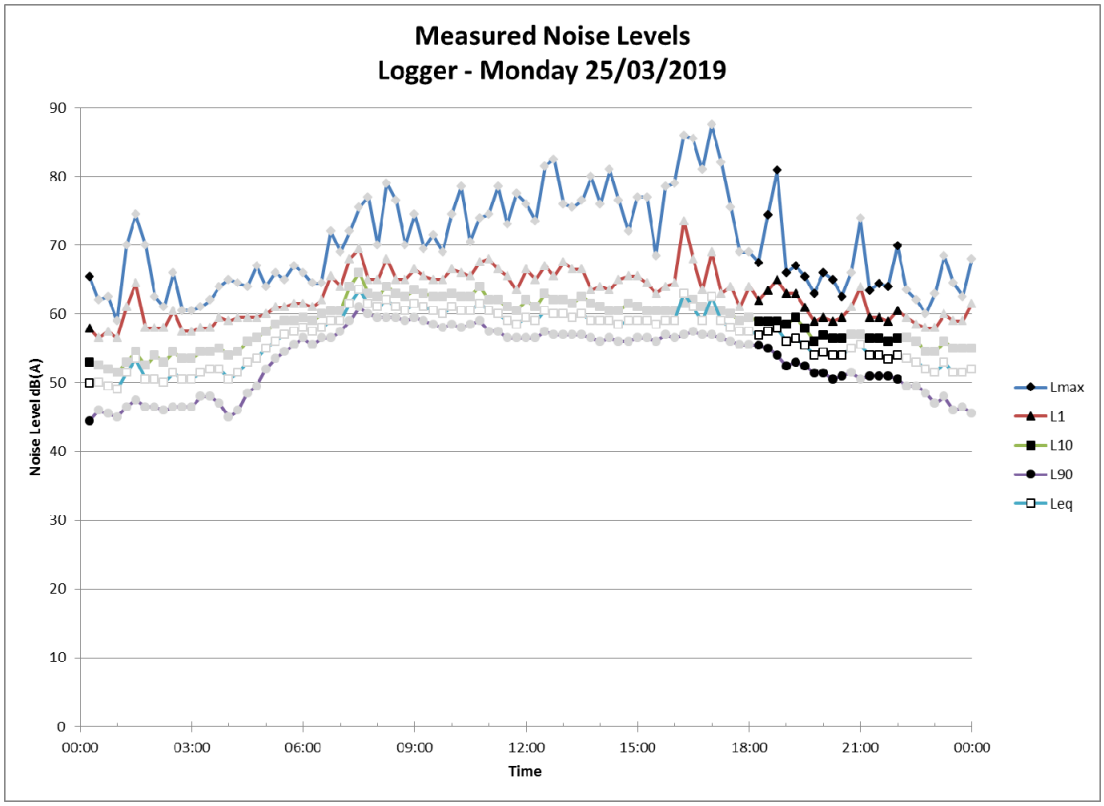

Measured Noise Levels
Logger - Wednesday 20/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq

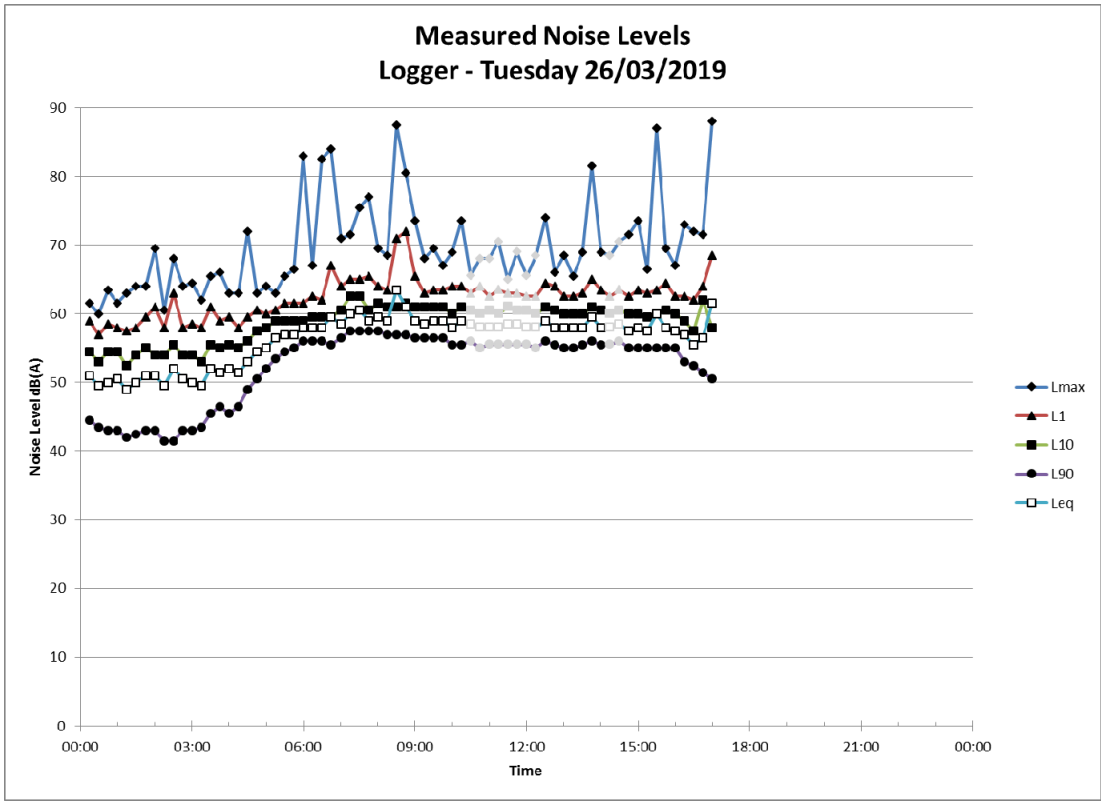

Measured Noise Levels
Logger - Thursday 21/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
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12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq

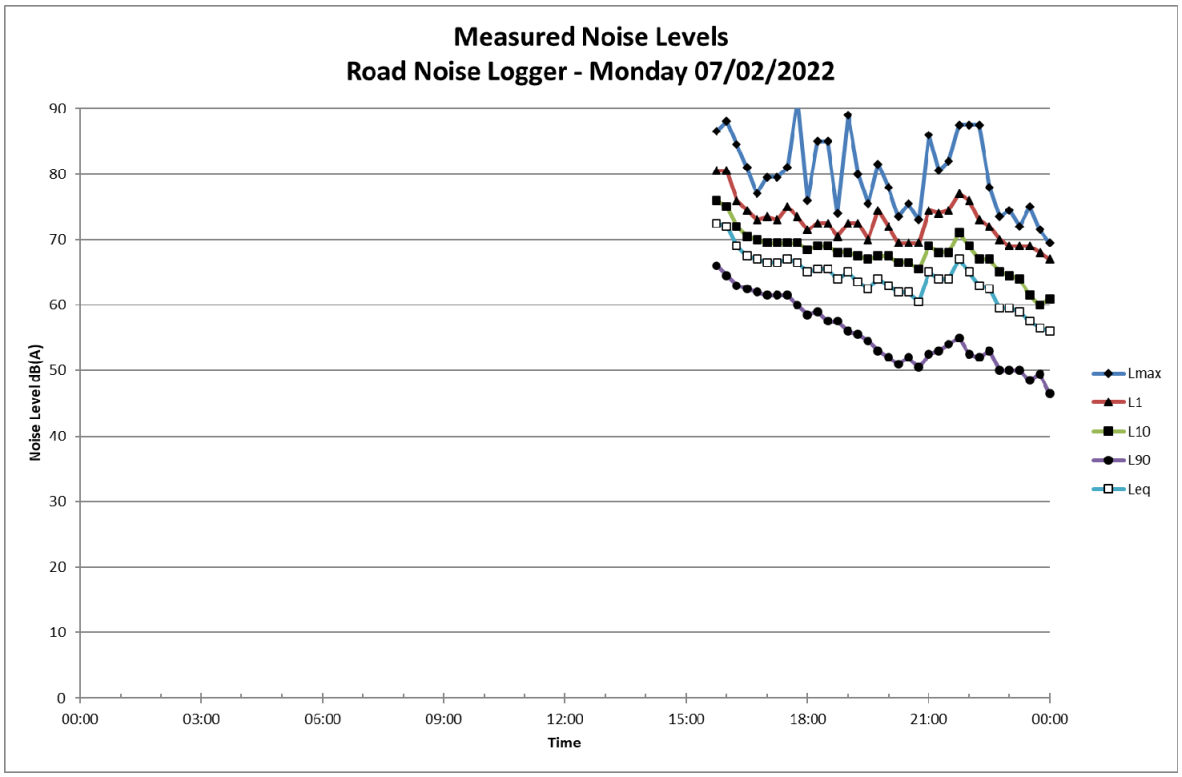

Measured Noise Levels
Logger - Friday 22/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq

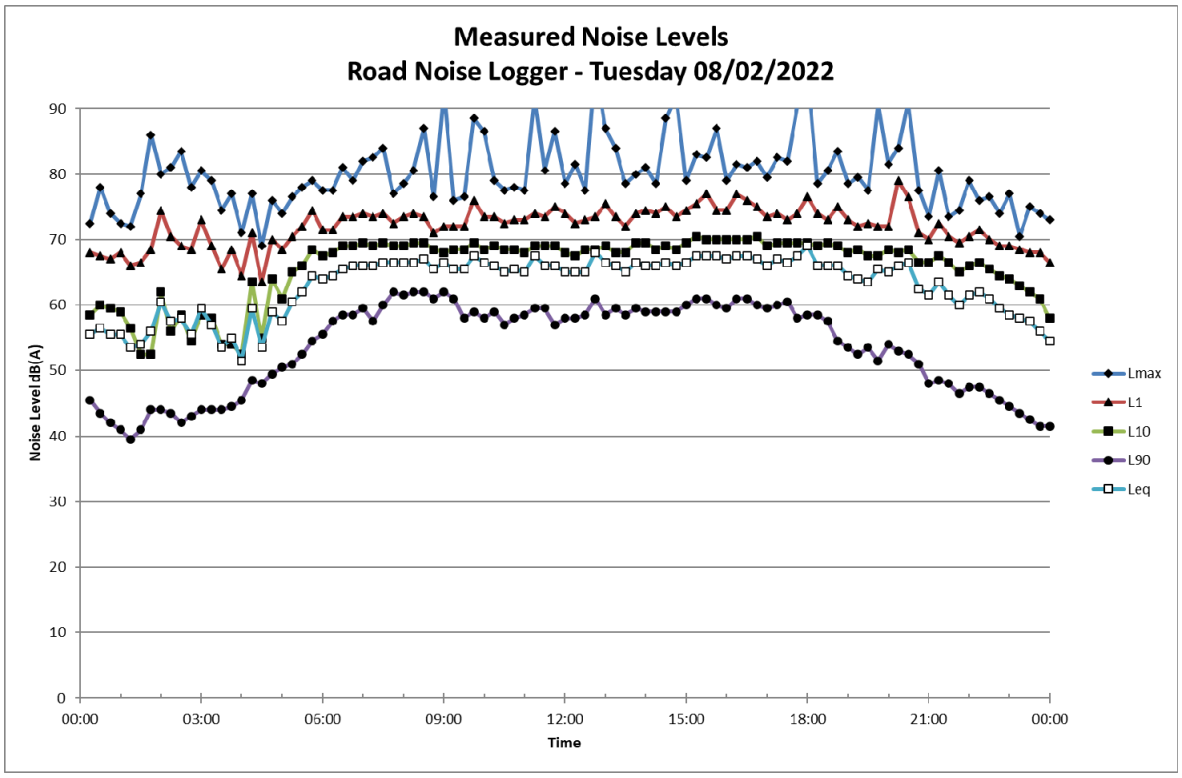

Measured Noise Levels
Logger - Saturday 23/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
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12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq

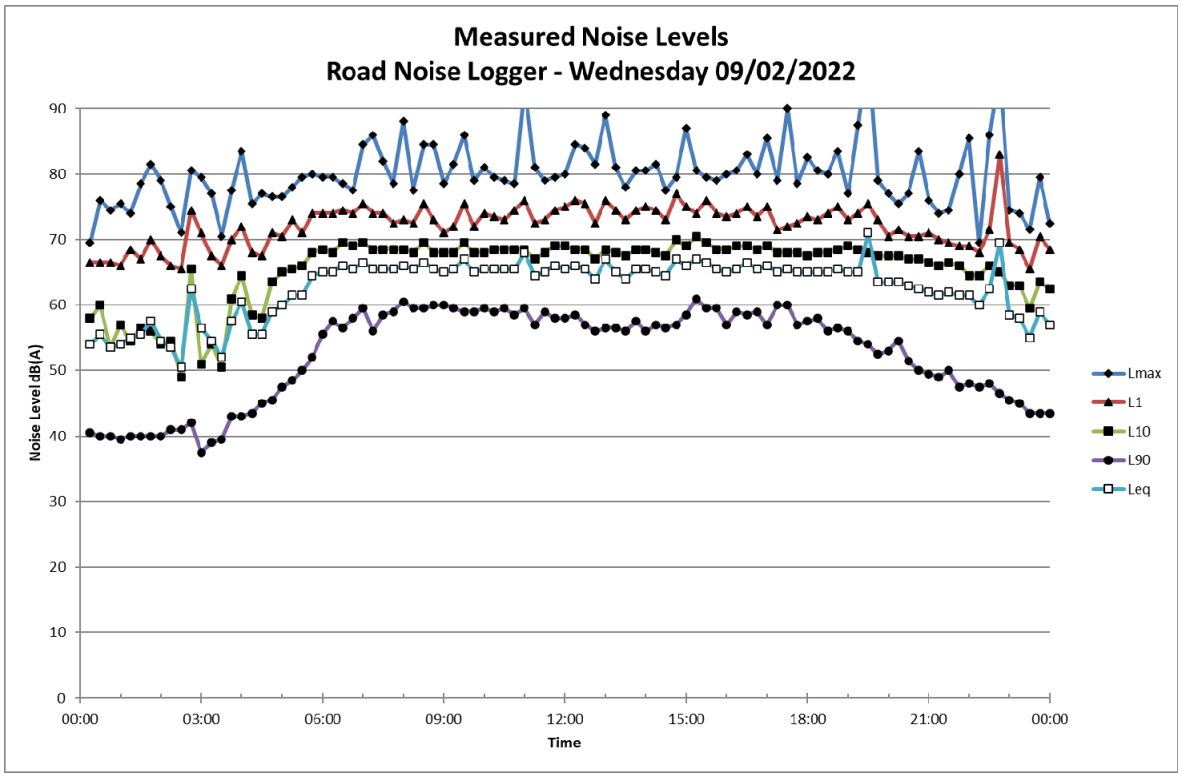

Measured Noise Levels
Logger - Sunday 24/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq

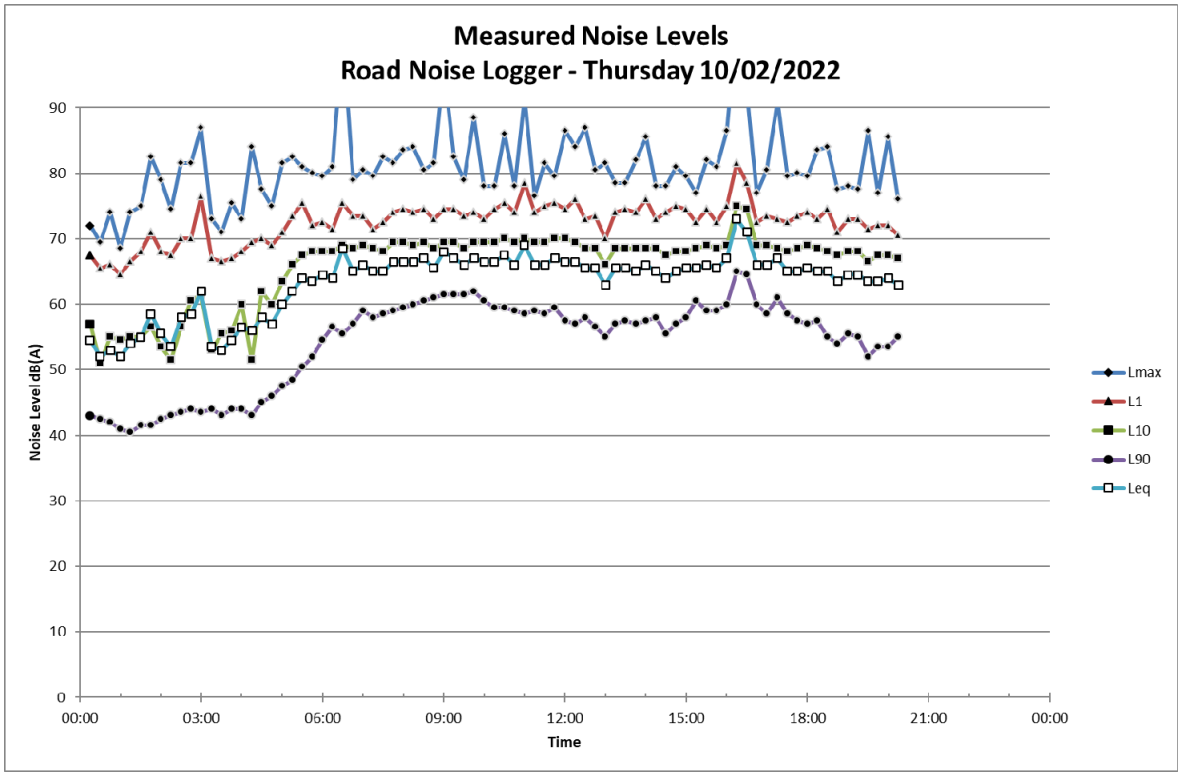

Measured Noise Levels
Logger - Monday 25/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq


Measured Noise Levels
Logger - Tuesday 26/03/2019
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq


Measured Noise Levels
Road Noise Logger - Monday 07/02/2022
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq


Measured Noise Levels
Road Noise Logger - Tuesday 08/02/2022
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq


Measured Noise Levels
Road Noise Logger - Wednesday 09/02/2022
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq


Measured Noise Levels
Road Noise Logger - Thursday 10/02/2022
Noise Level dB(A)
90
80
70
60
50
40
30
20
10
0
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Time
Lmax
L1
L10
L90
Leq

Attachment 5: Vibration Assessment

MEMORANDUM

210578 - 81 Gow Street, Padstow - Vibration Survey - R3.Docx

TO:	Nicolas Israel	**DATE:**	16 December 2021
EMAIL:	20nicolas15@gmail.com		
FROM:	Karel Ruber		
SUBJECT:	81 Gow Street Padstow Vibration Assessment		

CONFIDENTIALITY
This document is confidential and may contain legally privileged information. If you are not a named or authorised recipient you must not read, copy, distribute or act in reliance on it. If you have received this document in error, please telephone our operator immediately and return the document by mail

1. Introduction

The Gow Street Recycling Centre Pty Ltd (GSRC) at 81 Gow Street, Padstow is going through a major expansion of its facility through a State Significant Development (SSD No 10450). The GSRC site and its industrial neighbours are shown in Figure 1.

The GSRC's proposal has attracted a complaint from one of its neighbours who allege the existing impact crushing activities are causing structural damage to their warehouse structure. The complaint is shown in Appendix A: Anonymous Complaint by a Neighbouring Industrial Site".

The GSRC's website (https://gsrc.com.au/recycle.html) details a list of materials which are accepted for recycling. These include: Virgin Excavated Natural Material (Soil, Clay, Sand), Hard Mix/Mixed Excavation, Concrete, Brick, Asphalt/Bitumen, Sandstone, Terracotta Floor, Tiles/Terracotta Pipes, Marble, Granite, Travertine, Porcelain Tiles/Ceramic, Tiles and Roof Tiles.

The impact crusher is a Kleemann MR 110 Z EVO2 (see Figure 2). It only operates in the mornings, usually from about 6 AM to 9 AM.

As the complainant identity and location was not known, the two most likely affected neighbouring sites were identified and measurement were performed near the boundary walls and near the structural (warehouses) walls of those neighbours. The measurement locations are marked with stars in Figure 1, with more details of the measurements provided in Section 3.

Figure 1: Gow Street Recycling Centre, 81 Gow Street showing measurement locations near potentially affected neighbouring industrial sites (marked by Stars)

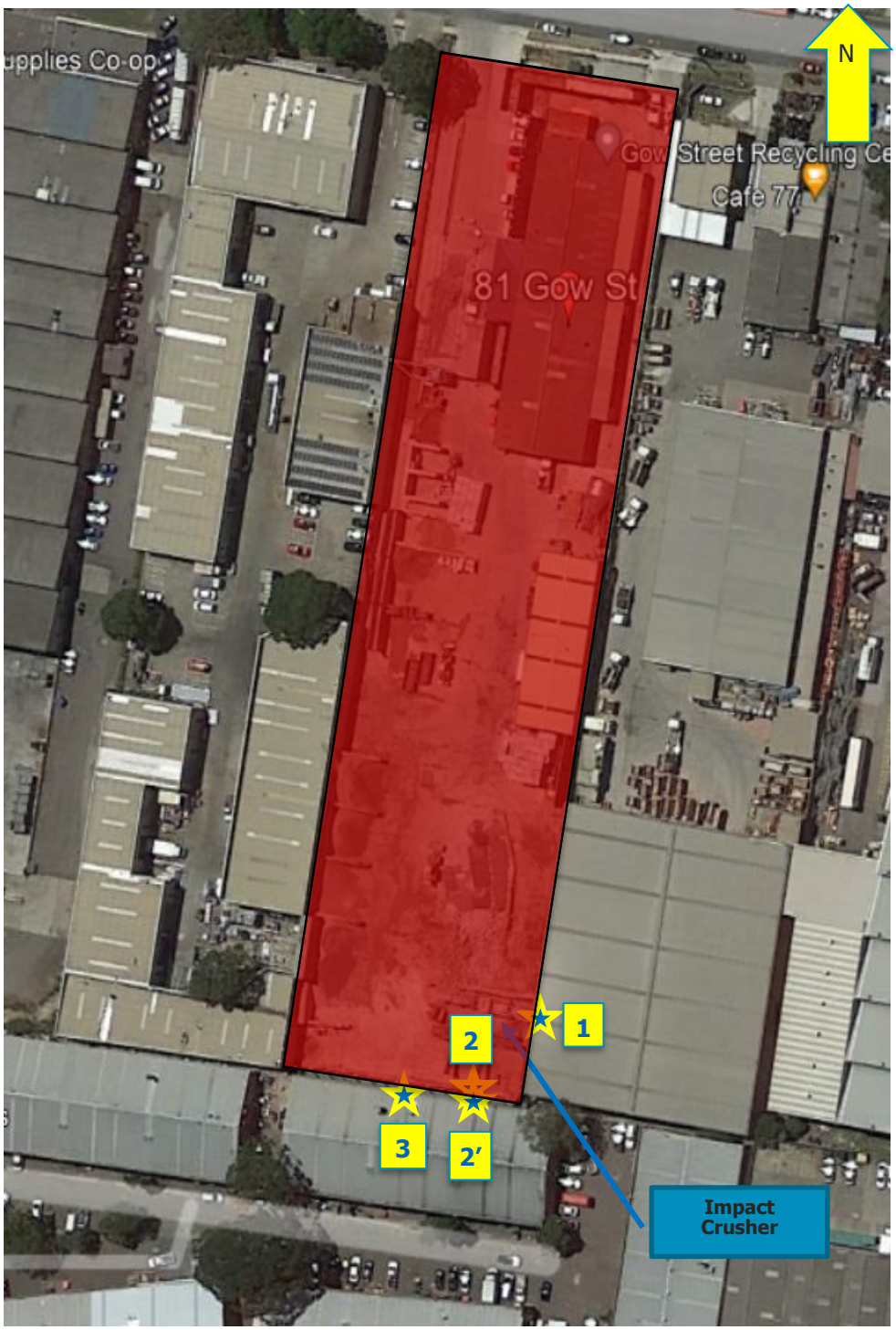


Figure 2: The Kleemann MR 130 Z EVO2 impact crusher



2. Vibration Criteria – Building Contents and Structure Damage

The vibration effects on the building itself are assessed against international standards as follows:

- For transient vibration: British Standard BS 7385: Part 2-1993 "Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration" (BSI 1993); and
- For continuous or repetitive vibration: German DIN 4150: Part 3 – 1999 "Effects of Vibration on Structure" (DIN 1999).

Peak particle velocity has been found to be the best single descriptor for correlating with case history data on the occurrence of vibration-induced damage. Peak particle velocity (p.p.v.) is the maximum instantaneous velocity of a particle at a point during a given time interval.

Both standards require that the peak component particle velocity, which is the maximum value of any one of three orthogonal component particle velocities measured during a given time, should be used for the assessment.

2.1 Standard BS 7385 Part 2 – 1993

For transient vibration, as discussed in standard BS 7385 Part 2-1993, the criteria are based on peak particle velocity (mm/s) which is to be measured at the base of the building. These are summarised in Table 1 and illustrated in the Figure 3 below.

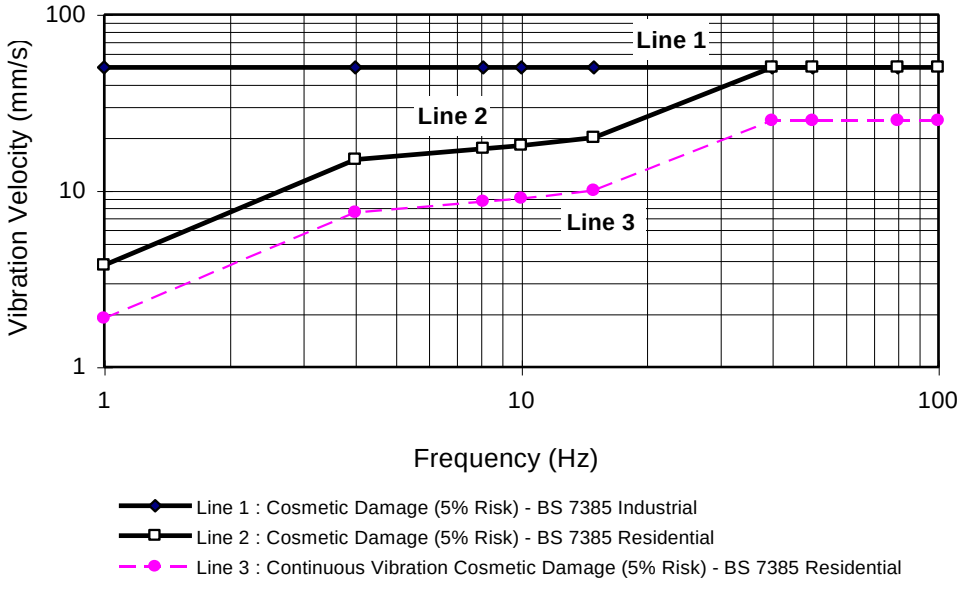
Table 1: Transient vibration criteria as per Standard BS 7385 Part 2 - 1993

Line in Figure 2	Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
		4 Hz to 15 Hz	15 Hz and Above
1	Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

Standard BS 7385 Part 2 – 1993 states that the values in Table 1 relate to transient vibration which does not cause resonant responses in buildings.

Where the dynamic loading caused by continuous vibration events results in dynamic magnification due to resonance (especially at the lower frequencies where lower guide values apply), then the values in Table 1 may need to be reduced by up to 50% (refer to Line 3 in the Figure below).

Figure 3: BS 7385 Part 2 – 1993, graph of transient vibration values for cosmetic damage



In the lower frequency region where strains associated with a given vibration velocity magnitude are higher, the recommended values corresponding to Line 2 are reduced. Below a frequency of 4 Hz where a high displacement is associated with the relatively low peak component particle velocity value, a maximum displacement of 0.6 mm (zero to peak) is recommended. This displacement is equivalent to a vibration velocity of 3.7 mm/s at 1 Hz.

The standard also states that minor damage is possible at vibration magnitudes which are greater than twice those given in Table 1, and major damage to a building structure may occur at values greater than four times the tabulated values.

Fatigue considerations are also addressed in the standard and it is concluded that unless calculation indicates that the magnitude and number of load reversals is significant (in respect of the fatigue life of building materials) then the values in Table 1 should not be reduced for fatigue considerations.

2.2 Standard DIN 4150 Part 3 – 1999

For continuous or repetitive vibration, standard DIN 4150 Part 3-1999 provides criteria based on values for peak particle velocity (mm/s) measured at the foundation of the building; these are summarised in the table below.

The criteria are frequency dependent and specific to particular categories of structures.

Table 2 Structural damage criteria as per standard DIN 4150 Part 3 - 1999

Type of Structure	Peak Component Particle Velocity, mm/s			
	Vibration at the foundation at a frequency of			Vibration of horizontal plane of highest floor at all frequencies
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz[1]	
Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
Structures that, because of their sensitivity to vibration, do not correspond to those listed in lines 1 and 2 and are of great intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8

Note 1: For frequencies above 100Hz, at least the values specified in this column shall be applied.

3. Vibration Criteria – Human Comfort

Vibration effects relating specifically to the human comfort aspects of the project are taken from the guideline titled *"Assessing Vibration – A Technical Guideline"*. (AVTG) This type of impact can be further categorised and assessed using the appropriate criterion as follows:

- Continuous vibration – from uninterrupted sources (refer to Table 3).
- Impulsive vibration – up to three instances of sudden impact e.g., dropping heavy items, per monitoring period (refer to Table 4).
- Intermittent vibration – such as from drilling, compacting or activities that would result in continuous vibration if operated continuously (refer to Table 5).

The applicable Location category for neighbouring industrial receivers is "Workshops". The most suitable criteria is the Continuous Vibration Criteria (refer to Table 3).

Table 3 Continuous vibration acceleration criteria (m/s^2) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010
Offices, schools, educational institutions and places of worship	Day or night-time	0.020	0.014	0.040	0.028
		0.04	0.029	0.080	0.058
Workshops	**Day or night-time**	**0.04**	**0.029**	**0.080**	**0.058**

Table 4 Impulsive vibration acceleration criteria (m/s^2) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day or night-time	0.64	0.46	1.28	0.92
Workshops	Day or night-time	0.64	0.46	1.28	0.92

Table 5 Intermittent vibration impacts criteria ($m/s^{1.75}$) 1 Hz-80 Hz

Location	Daytime		Night-time	
	Preferred Values	Maximum Values	Preferred Values	Maximum Values
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

4. Onsite Vibration Survey

Vibration Measurements were performed in the morning of the 3rd of December 2021 at the locations shown in Figure 1 above, which were near the boundary wall close to the impact crusher location.

The instrumentation for the unattended survey was comprised of a Svantek 958A Noise and Vibration Meter, s/n 69812. The triaxial accelerometer connected to the meter was a SV84 12467.

The measurements were performed close to the boundary and/or the receiver's building (see images below). During the measurement the crusher was processing 150mm to 200mm thick concrete and 2-3 bulldozers/excavators and a screener were operating.

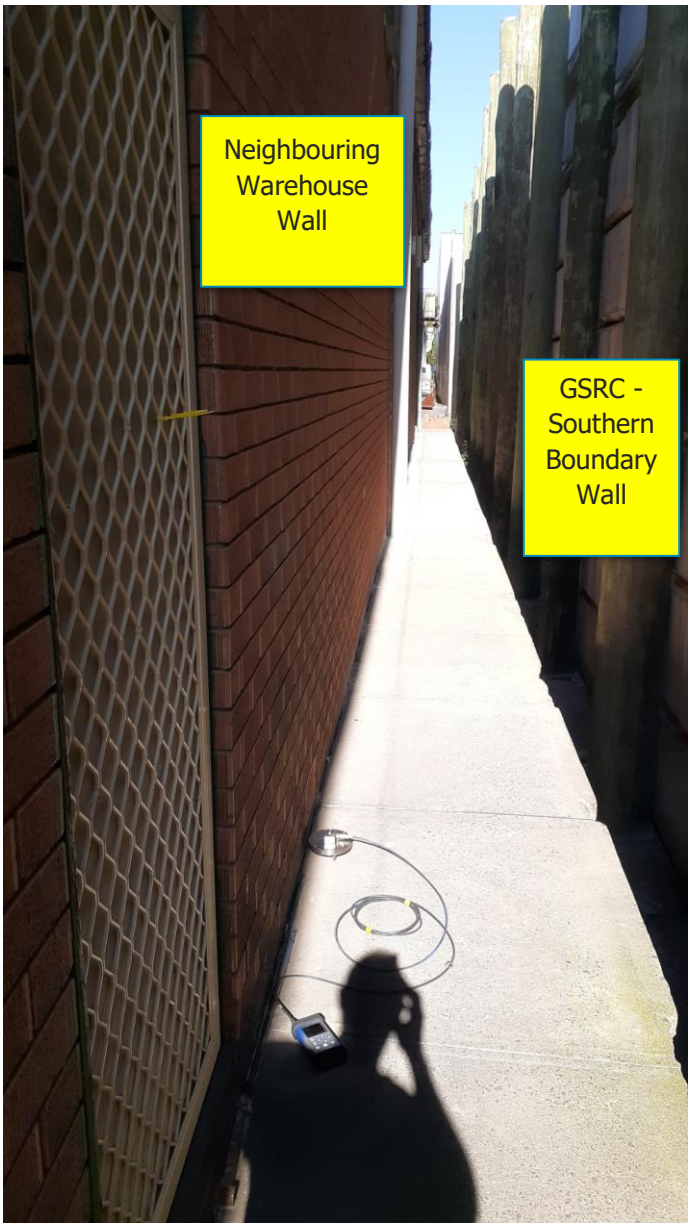
The measurement time lengths were based on the observed magnitude changes on the SVAN 958A meter, i.e. the measurements were stopped after it was noticed that increments in the maximum values were no longer observed. This resulted in a typical 2-3 min measurement time at each location. Sometimes measurements were repeated for increasing confidence in the results.

Measurement Location 1 was on the footpath between the Eastern Receiver and the site boundary wall (outside the GSRC compound). The triaxial accelerometer orientation was such as the X direction was parallel to the building wall, Y direction was perpendicular to the wall and Z direction was vertical. This orientation was also used in the other measurement locations

Measurements were performed on both sides of the Southern boundary wall assuming the most sensitive receiver and the complainant's warehouse is located there - see Figure 1 above and Figure 4 below.

Location 2 is inside the GSRC compound while Location 2' is roughly at the same position but outside the GSRC compound, on the concrete platform near the wall of the warehouse. Position 3 is also near the wall of the warehouse further down the platform, near a door.

Figure 4: Measurement Location 3 on the platform of the Southern neighbouring industrial property (warehouse)



Before starting the measurements on the concrete platform of the warehouse it was noticed that the platform was oscillating in response to walking on it. Therefore measurements were performed also while walking, for investigations.

5. Measurement Results and Assessment of Potential Structural Damage and Human Discomfort

5.1 Potential Structural Damage

The vibration measurement results are shown in the table below for comparison with the limits presented in Section 2.

Table 6 Summary Table of Vibration Measurement Results (velocity)

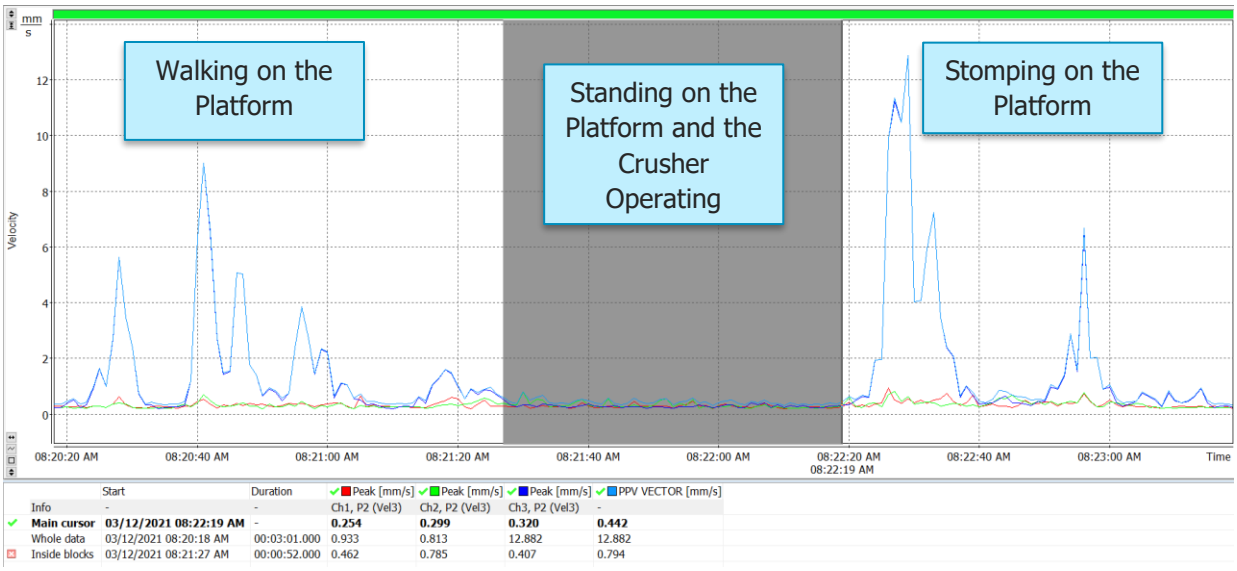
Location	X Dir. Peak Velocity [mm/s]	Y Dir. Peak Velocity [mm/s]	Z Dir. Peak Velocity [mm/s]	Maximum[1] [mm/s]	Comment
1	0.4	0.4	0.4	**0.4**	Eastern Boundary, outside near a warehouse wall. **Complies with limits.**
1	0.5	0.3	0.2	**0.5**	Eastern Boundary, repeat above. **Complies with limits.**
2	0.9	1.2	0.6	**1.2**	Southern Boundary, inside. **Complies with limits.**
2	0.8	0.5	0.4	**0.8**	Southern Boundary, inside. **Complies with limits.**
2'-1	0.7	9.0	9.0	**9.0**	Southern Boundary, outside: Walking (see Figure 5 below).
2'-2	0.5	0.8	0.4	**0.8**	As above Standing. **Complies with limits.**
2'-3	0.9	0.8	12.9	**12.9**	As above Stomping.
3	1.0	0.6	1.4	**1.4**	Southern Boundary, outside near a door. **Complies with limits.**
3	0.8	0.6	1.6	**1.6**	Southern Boundary, outside near a door. **Complies with limits.**

Note 1: The Maximum of Three Components Peak Velocity

Figure 5 below shows the time history of the measured vibrations in three perpendicular directions (Ch3 is in Z direction, i.e. vertical) at Location 2' on the platform.

The first time-section was measured while 1-2 persons were walking on the platform shown in Figure 4, the second time section shows the measured vibration on the platform while the crusher was operating (as well as possible other machinery inside the GSRC) and the last time section shows the vibration levels on the platform while 1 person was stomping.

Figure 5: Vibration velocity measurements while walking, standing still and stomping on the platform, measured in position 2'



	Start	Duration	Peak [mm/s]	Peak [mm/s]	Peak [mm/s]	PPV VECTOR [mm/s]
Info	-	-	Ch1, P2 (Vel3)	Ch2, P2 (Vel3)	Ch3, P2 (Vel3)	-
Main cursor	**03/12/2021 08:22:19 AM**	-	**0.254**	**0.299**	**0.320**	**0.442**
Whole data	03/12/2021 08:20:18 AM	00:03:01.000	0.933	0.813	12.882	12.882
Inside blocks	03/12/2021 08:21:27 AM	00:00:52.000	0.462	0.785	0.407	0.794

The vibration measurement results indicate that the vibration due to activities inside the GSRC at the time of measurements are well below the limits described in Section 2 and unlikely to cause any structural damage. The vibration levels were not large enough to be felt, however walking and stomping on the platform of the Southern neighbouring warehouse were much larger and clearly noticeable.

5.2 Potential Human Discomfort

The table below shows the vibration levels in rms acceleration for comparison with the limits presented in Section 3 for Human Comfort.

Table 7 Summary Table of Vibration Measurement Results (acceleration)

Location	X Dir. rms acceleration [m/s^2]	Y Dir. rms acceleration [m/s^2]	Z Dir. rms acceleration [m/s^2]	Comment
1	0.01	0.02	0.02	Eastern Boundary, outside near a warehouse wall. **Complies with limits.**
1	0.01	0.01	0.01	Eastern Boundary, repeat above. **Complies with limits.**
2	0.01	0.01	0.01	Southern Boundary, inside. **Complies with limits.**
2	0.01	0.01	0.01	Southern Boundary, inside. **Complies with limits.**
2'-1	0.02	0.02	0.05	Southern Boundary, outside: Walking
2'-2	0.01	0.02	0.02	As above Standing. **Complies with limits.**
2'-3	0.02	0.02	0.07	As above Stomping.
3	0.01	0.02	0.01	Southern Boundary, outside near a door. **Complies with limits.**
3	0.02	0.02	0.01	Southern Boundary, outside near a door. **Complies with limits.**

Note 1: The measured acceleration levels used were unweighted, while the criteria is given in weighted acceleration levels

6. Conclusions

PWNA has conducted a detailed assessment of the vibration levels from the operation of the impact crusher and other heavy machinery operating inside the Gow Street Recycling Centre (GSRC) compound at 81 Gow Street, Padstow.

The velocity vibration results are well below the limits for transient, continuous or repetitive vibration as described in German DIN 4150: Part 3 – 1999 and British Standard BS 7385: Part 2-1993, respectively and are very unlikely to cause any damage (including cosmetic damage) to nearby buildings.

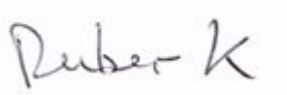
Individuals can detect building vibration values that are well below those that can cause any risk of damage to the building or its contents. The level of vibration that affects amenity is lower than that associated with building damage. During the measurements on the platform of the warehouse near the southern boundary wall of GSRC, vibration levels could be felt when walking on the platform of the neighbouring industrial site.

Vibration levels were below the threshold of perception while standing and the heavy machinery inside the GSRC were operating. The human comfort limits near the boundary were not exceeded by the operation of the heavy machinery, including the impact crusher, inside the GSRC.

We trust this information is of assistance. If you have any further questions, please do not hesitate to contact the undersigned.

Regards,

Karel Ruber



Pulse White Noise Acoustics Pty Ltd

Appendix A: Anonymous Complaint by a Neighbouring Industrial Site

The following is a copy of the complaint with the sections relevant to vibration highlighted in yellow:

I've been complaining for a few months about GSRC, to the EPA, over the last few months.

They have been running machinery including a machine called an 'impact crusher' that has caused physical damage to my warehouse and the internal an external walls of half a dozen warehouses inside the same property, all directly behind and sharing a property line with GSRC. every time there's a small gust of wind, Dust and concrete particles come over the fence and through the large cracks in the wall and cover everything.

If GSRC are allowed to house this water, my fear is that the dirty water will sit, become stagnant, and the smell will make working in my warehouse intolerable.

GSRC shows careless disregard to their neighbours every day. my warehouse has been vibrating like a small earthquake every time they switch on their 41ton impact crusher. (which crushes large slabs of concrete less than 20M from my office).

At the moment, alongside the vibration, frequent dust raining from the air from over the fence, we are also getting flies from their compost heap.

I'm certain that if GSRC is allowed to store dirty mud water, they won't care about the smell from the stagnant water, they are selfish, profit driven and psychopathic in their attitude towards the environment and the neighbouring offices and warehouses.

If there is water stored on their property, it will become stagnant and the air, just like the dust, will make it's way through to our side and force people to leave and restart their business from a different location.

There are many small offices where people work surrounding the GSRC property. I am currently making medical parts in my warehouse to fight coronavirus and after the lockdowns can't afford to move my equipment to another location. With my tall roof, I'm constantly collecting concrete dust/powder from their earthworks, the smell of stagnant water will come through.

After complaining to the EPA, I've noticed GSRC workers coming to our lot and spying on us. They are fully aware that they are causing issues to their surrounds, and have done nothing to date to rectify the issues.

The second risk is that of an accident. GSRC uses many large vehicles (driven carelessly at times) high speeds in a small area, and if one of these vehicles comes into contact with the water containment barrier, our warehouses will be flooded. No matter where the water is kept on their property, our warehouses will be down hill and under the flood line.

They are very careless with their machinery, and have already and continue to cause damage to our property. Allowing GSRC to keep large amounts of water is a disaster waiting to happen.

Attachment 4: Vibration Assessment

MEMORANDUM

210578 - 81 Gow Street, Padstow - Vibration Survey - R4.Docx

TO:	Nicolas Israel	**DATE:**	16 December 2021
EMAIL:	20nicolas15@gmail.com		
FROM:	Karel Ruber		
SUBJECT:	81 Gow Street Padstow Vibration Assessment		

1. Introduction

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The GSRC's proposal has attracted a complaint from one of its neighbours who allege the existing impact crushing activities are causing structural damage to their warehouse structure. The complaint is shown in Appendix A: Anonymous Complaint by a Neighbouring Industrial Site".

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The impact crusher is a Kleemann MR 110 Z EVO2 (see Figure 2). It only operates in the mornings, usually from about 6 AM to 9 AM.

As the complainant identity and location was not known, the two most likely affected neighbouring sites were identified and measurement were performed near the boundary walls and near the structural (warehouses) walls of those neighbours. The measurement locations are marked with stars in Figure 1, with more details of the measurements provided in Section 3.

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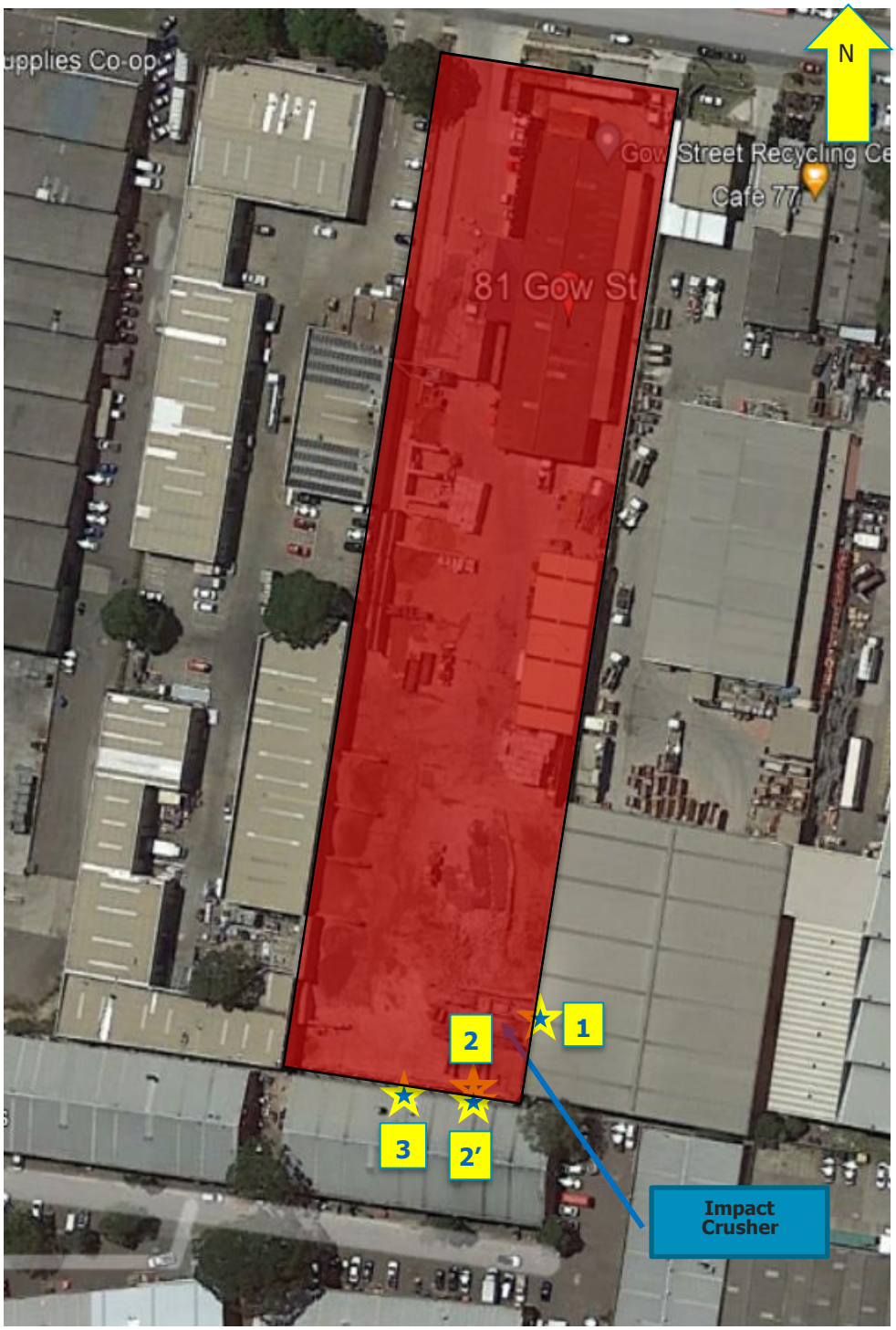


Figure 2: The Kleemann MR 130 Z EVO2 impact crusher



2. Vibration Criteria – Building Contents and Structure Damage

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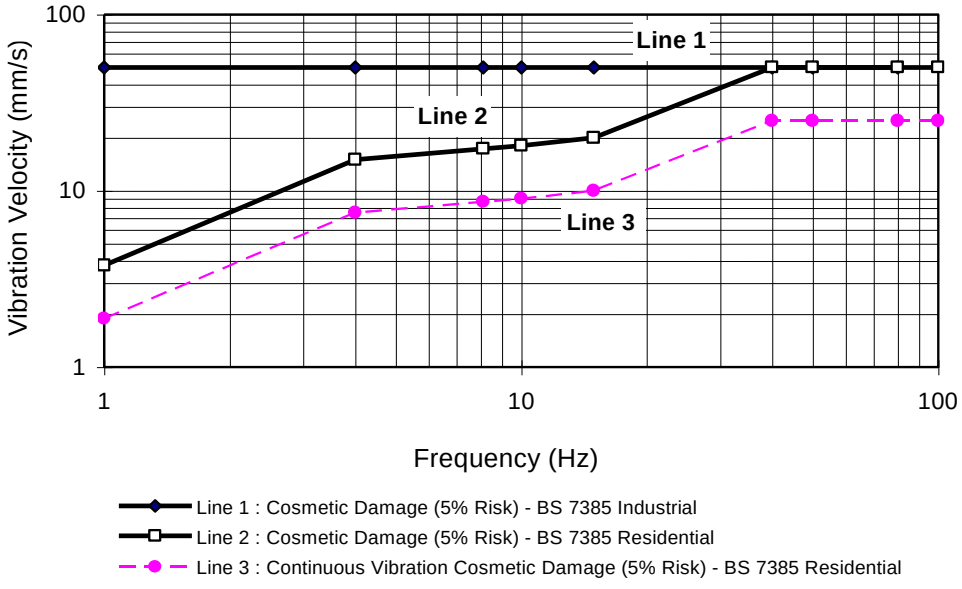
Table 1: Transient vibration criteria as per Standard BS 7385 Part 2 - 1993

Line in Figure 2	Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
		4 Hz to 15 Hz	15 Hz and Above
1	Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

Standard BS 7385 Part 2 – 1993 states that the values in Table 1 relate to transient vibration which does not cause resonant responses in buildings.

Where the dynamic loading caused by continuous vibration events results in dynamic magnification due to resonance (especially at the lower frequencies where lower guide values apply), then the values in Table 1 may need to be reduced by up to 50% (refer to Line 3 in the Figure below).

Figure 3: BS 7385 Part 2 – 1993, graph of transient vibration values for cosmetic damage



In the lower frequency region where strains associated with a given vibration velocity magnitude are higher, the recommended values corresponding to Line 2 are reduced. Below a frequency of 4 Hz where a high displacement is associated with the relatively low peak component particle velocity value, a maximum displacement of 0.6 mm (zero to peak) is recommended. This displacement is equivalent to a vibration velocity of 3.7 mm/s at 1 Hz.

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Fatigue considerations are also addressed in the standard and it is concluded that unless calculation indicates that the magnitude and number of load reversals is significant (in respect of the fatigue life of building materials) then the values in Table 1 should not be reduced for fatigue considerations.

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For continuous or repetitive vibration, standard DIN 4150 Part 3-1999 provides criteria based on values for peak particle velocity (mm/s) measured at the foundation of the building; these are summarised in the table below.

The criteria are frequency dependent and specific to particular categories of structures.

Table 2 Structural damage criteria as per standard DIN 4150 Part 3 - 1999

Type of Structure	Peak Component Particle Velocity, mm/s			
	Vibration at the foundation at a frequency of			Vibration of horizontal plane of highest floor at all frequencies
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz[1]	
Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
Structures that, because of their sensitivity to vibration, do not correspond to those listed in lines 1 and 2 and are of great intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8
Note 1: For frequencies above 100Hz, at least the values specified in this column shall be applied.				

3. Vibration Criteria – Human Comfort

Vibration effects relating specifically to the human comfort aspects of the project are taken from the guideline titled *"Assessing Vibration – A Technical Guideline"*. (AVTG) This type of impact can be further categorised and assessed using the appropriate criterion as follows:

- Continuous vibration – from uninterrupted sources (refer to Table 3).
- Impulsive vibration – up to three instances of sudden impact e.g., dropping heavy items, per monitoring period (refer to Table 4).
- Intermittent vibration – such as from drilling, compacting or activities that would result in continuous vibration if operated continuously (refer to Table 5).

The applicable Location category for neighbouring industrial receivers is "Workshops". The most suitable criteria is the Continuous Vibration Criteria (refer to Table 3).

Table 3 Continuous vibration acceleration criteria (m/s^2) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010
Offices, schools, educational institutions and places of worship	Day or night-time	0.020	0.014	0.040	0.028
		0.04	0.029	0.080	0.058
Workshops	**Day or night-time**	**0.04**	**0.029**	**0.080**	**0.058**

Table 4 Impulsive vibration acceleration criteria (m/s^2) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day or night-time	0.64	0.46	1.28	0.92
Workshops	Day or night-time	0.64	0.46	1.28	0.92

Table 5 Intermittent vibration impacts criteria ($m/s^{1.75}$) 1 Hz-80 Hz

Location	Daytime		Night-time	
	Preferred Values	Maximum Values	Preferred Values	Maximum Values
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

4. Onsite Vibration Survey

Vibration Measurements were performed in the morning of the 3rd of December 2021 at the locations shown in Figure 1 above, which were near the boundary wall close to the impact crusher location.

The instrumentation for the unattended survey was comprised of a Svantek 958A Noise and Vibration Meter, s/n 69812. The triaxial accelerometer connected to the meter was a SV84 12467.

The measurements were performed close to the boundary and/or the receiver's building (see images below). During the measurement the crusher was processing 150mm to 200mm thick concrete and 2-3 bulldozers/excavators and a screener were operating.

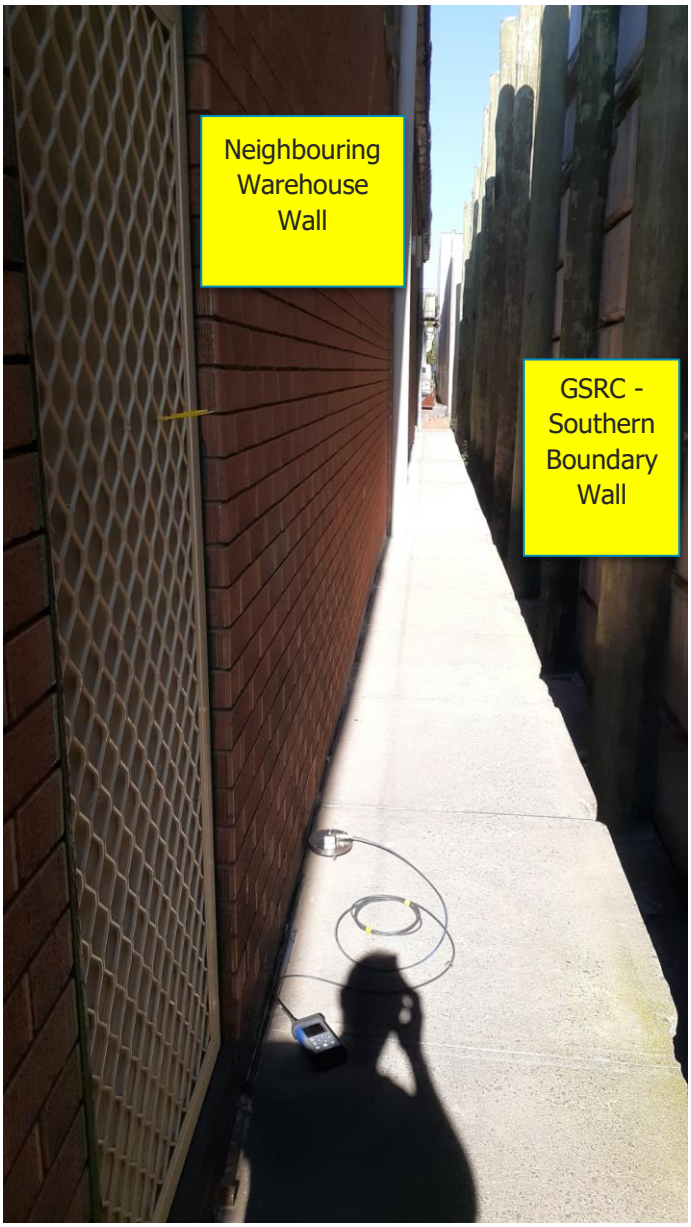
The measurement time lengths were based on the observed magnitude changes on the SVAN 958A meter, i.e. the measurements were stopped after it was noticed that increments in the maximum values were no longer observed. This resulted in a typical 2-3 min measurement time at each location. Sometimes measurements were repeated for increasing confidence in the results.

Measurement Location 1 was on the footpath between the Eastern Receiver and the site boundary wall (outside the GSRC compound). The triaxial accelerometer orientation was such as the X direction was parallel to the building wall, Y direction was perpendicular to the wall and Z direction was vertical. This orientation was also used in the other measurement locations

Measurements were performed on both sides of the Southern boundary wall assuming the most sensitive receiver and the complainant's warehouse is located there - see Figure 1 above and Figure 4 below.

Location 2 is inside the GSRC compound while Location 2' is roughly at the same position but outside the GSRC compound, on the concrete platform near the wall of the warehouse. Position 3 is also near the wall of the warehouse further down the platform, near a door.

Figure 4: Measurement Location 3 on the platform of the Southern neighbouring industrial property (warehouse)



Before starting the measurements on the concrete platform of the warehouse it was noticed that the platform was oscillating in response to walking on it. Therefore measurements were performed also while walking, for investigations.

5. Measurement Results and Assessment of Potential Structural Damage and Human Discomfort

5.1 **Potential Structural Damage**

The vibration measurement results are shown in the table below for comparison with the limits presented in Section 2.

Table 6 Summary Table of Vibration Measurement Results (velocity)

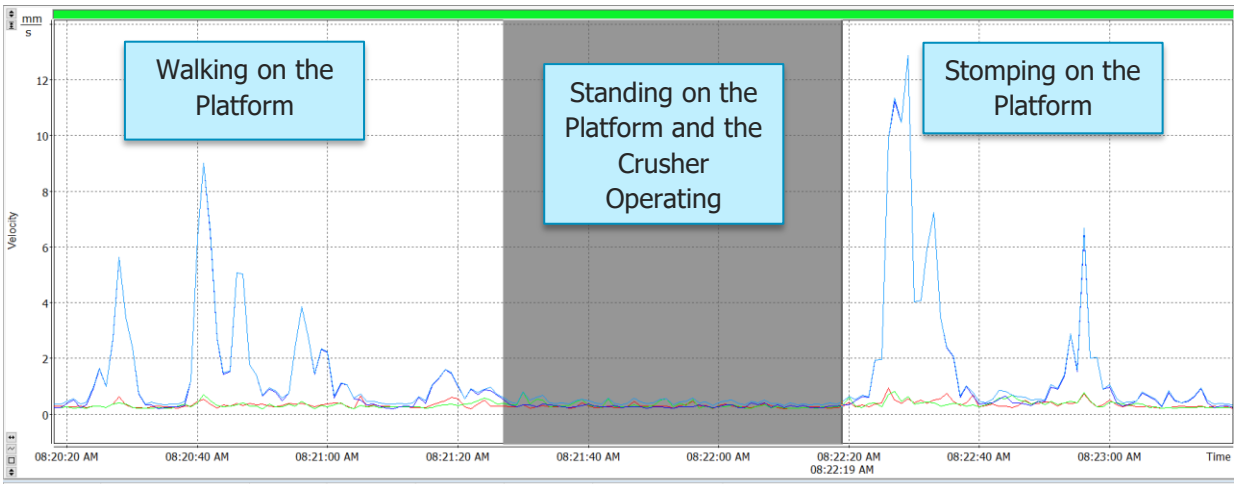
Location	X Dir. Peak Velocity [mm/s]	Y Dir. Peak Velocity [mm/s]	Z Dir. Peak Velocity [mm/s]	Maximum[1] [mm/s]	Comment
1	0.4	0.4	0.4	**0.4**	Eastern Boundary, outside near a warehouse wall. **Complies with limits.**
1	0.5	0.3	0.2	**0.5**	Eastern Boundary, repeat above. **Complies with limits.**
2	0.9	1.2	0.6	**1.2**	Southern Boundary, inside. **Complies with limits.**
2	0.8	0.5	0.4	**0.8**	Southern Boundary, inside. **Complies with limits.**
2'-1	0.7	9.0	9.0	**9.0**	Southern Boundary, outside: Walking (see Figure 5 below).
2'-2	0.5	0.8	0.4	**0.8**	As above Standing. **Complies with limits.**
2'-3	0.9	0.8	12.9	**12.9**	As above Stomping.
3	1.0	0.6	1.4	**1.4**	Southern Boundary, outside near a door. **Complies with limits.**
3	0.8	0.6	1.6	**1.6**	Southern Boundary, outside near a door. **Complies with limits.**

Note 1: The Maximum of Three Components Peak Velocity

Figure 5 below shows the time history of the measured vibrations in three perpendicular directions (Ch3 is in Z direction, i.e. vertical) at Location 2' on the platform.

The first time-section was measured while 1-2 persons were walking on the platform shown in Figure 4, the second time section shows the measured vibration on the platform while the crusher was operating (as well as possible other machinery inside the GSRC) and the last time section shows the vibration levels on the platform while 1 person was stomping.

Figure 5: Vibration velocity measurements while walking, standing still and stomping on the platform, measured in position 2'



	Start	Duration	Peak [mm/s]	Peak [mm/s]	Peak [mm/s]	PPV VECTOR [mm/s]
Info	-	-	Ch1, P2 (Vel3)	Ch2, P2 (Vel3)	Ch3, P2 (Vel3)	-
Main cursor	**03/12/2021 08:22:19 AM**	-	**0.254**	**0.299**	**0.320**	**0.442**
Whole data	03/12/2021 08:20:18 AM	00:03:01.000	0.933	0.813	12.882	12.882
Inside blocks	03/12/2021 08:21:27 AM	00:00:52.000	0.462	0.785	0.407	0.794

The vibration measurement results indicate that the vibration due to activities inside the GSRC at the time of measurements are well below the limits described in Section 2 and unlikely to cause any structural damage. The vibration levels were not large enough to be felt, however walking and stomping on the platform of the Southern neighbouring warehouse were much larger and clearly noticeable.

5.2 Potential Human Discomfort

The table below shows the vibration levels in rms acceleration for comparison with the limits presented in Section 3 for Human Comfort.

Table 7 Summary Table of Vibration Measurement Results (acceleration)

Location	X Dir. rms acceleration [m/s^2]	Y Dir. rms acceleration [m/s^2]	Z Dir. rms acceleration [m/s^2]	Comment
1	0.01	0.02	0.02	Eastern Boundary, outside near a warehouse wall. **Complies with limits.**
1	0.01	0.01	0.01	Eastern Boundary, repeat above. **Complies with limits.**
2	0.01	0.01	0.01	Southern Boundary, inside. **Complies with limits.**
2	0.01	0.01	0.01	Southern Boundary, inside. **Complies with limits.**
2'-1	0.02	0.02	0.05	Southern Boundary, outside: Walking
2'-2	0.01	0.02	0.02	As above Standing. **Complies with limits.**
2'-3	0.02	0.02	0.07	As above Stomping.
3	0.01	0.02	0.01	Southern Boundary, outside near a door. **Complies with limits.**
3	0.02	0.02	0.01	Southern Boundary, outside near a door. **Complies with limits.**

Note 1: The measured acceleration levels used were unweighted, while the criteria is given in weighted acceleration levels

6. Conclusions

PWNA has conducted a detailed assessment of the vibration levels from the operation of the impact crusher and other heavy machinery operating inside the Gow Street Recycling Centre (GSRC) compound at 81 Gow Street, Padstow.

The velocity vibration results are well below the limits for transient, continuous or repetitive vibration as described in German DIN 4150: Part 3 – 1999 and British Standard BS 7385: Part 2-1993, respectively and are very unlikely to cause any damage (including cosmetic damage) to nearby buildings.

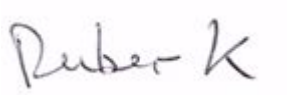
Individuals can detect building vibration values that are well below those that can cause any risk of damage to the building or its contents. The level of vibration that affects amenity is lower than that associated with building damage. During the measurements on the platform of the warehouse near the southern boundary wall of GSRC, vibration levels could be felt when walking on the platform of the neighbouring industrial site.

Vibration levels were below the threshold of perception while standing and the heavy machinery inside the GSRC were operating. The human comfort limits near the boundary were not exceeded by the operation of the heavy machinery, including the impact crusher, inside the GSRC.

We trust this information is of assistance. If you have any further questions, please do not hesitate to contact the undersigned.

Regards,

Karel Ruber



Pulse White Noise Acoustics Pty Ltd

Appendix A: Anonymous Complaint by a Neighbouring Industrial Site

The following is a copy of the complaint with the sections relevant to vibration highlighted in yellow:

I've been complaining for a few months about GSRC, to the EPA, over the last few months.

They have been running machinery including a machine called an 'impact crusher' that has caused physical damage to my warehouse and the internal an external walls of half a dozen warehouses inside the same property, all directly behind and sharing a property line with GSRC. every time there's a small gust of wind, Dust and concrete particles come over the fence and through the large cracks in the wall and cover everything.

If GSRC are allowed to house this water, my fear is that the dirty water will sit, become stagnant, and the smell will make working in my warehouse intolerable.

GSRC shows careless disregard to their neighbours every day. my warehouse has been vibrating like a small earthquake every time they switch on their 41ton impact crusher. (which crushes large slabs of concrete less than 20M from my office).

At the moment, alongside the vibration, frequent dust raining from the air from over the fence, we are also getting flies from their compost heap.

I'm certain that if GSRC is allowed to store dirty mud water, they won't care about the smell from the stagnant water, they are selfish, profit driven and psychopathic in their attitude towards the environment and the neighbouring offices and warehouses.

If there is water stored on their property, it will become stagnant and the air, just like the dust, will make it's way through to our side and force people to leave and restart their business from a different location.

There are many small offices where people work surrounding the GSRC property. I am currently making medical parts in my warehouse to fight coronavirus and after the lockdowns can't afford to move my equipment to another location. With my tall roof, I'm constantly collecting concrete dust/powder from their earthworks, the smell of stagnant water will come through.

After complaining to the EPA, I've noticed GSRC workers coming to our lot and spying on us. They are fully aware that they are causing issues to their surrounds, and have done nothing to date to rectify the issues.

The second risk is that of an accident. GSRC uses many large vehicles (driven carelessly at times) high speeds in a small area, and if one of these vehicles comes into contact with the water containment barrier, our warehouses will be flooded. No matter where the water is kept on their property, our warehouses will be down hill and under the flood line.

They are very careless with their machinery, and have already and continue to cause damage to our property. Allowing GSRC to keep large amounts of water is a disaster waiting to happen.

Attachment 5: Amended Traffic Impact Assessment & Traffic Management Plan

TRAFFIC AND PARKING IMPACT ASSESSMENT OF LIQUID WASTE FACILITY

81 Gow Street Padstow

Traffic and Parking Impact Report

Prepared for: Benbow Environmental

A206205N (Version 2c)

March 2022

Suite 195, 79-83 Longueville Road, Lane Cove North NSW 2066

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ABN 69 981 485 197

1. INTRODUCTION

ML Traffic Engineers was commissioned by Benbow Environmental to undertake a traffic and parking impact assessment of a proposed liquid waste facility at 81 Gow Street in Padstow.

The vehicle access and egress to the car park is via Gow Street. The site is currently a recycling centre.

This traffic report focuses on the proposed liquid waste facility and changes in car usage and car park utilisation and additional trips from the proposed liquid waste facility.

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

2. BACKGROUND AND EXISTING CONDITIONS OF THE PROPOSED LOCATION

2.1 Location and Land Use

The proposed liquid waste facility is located to the North of Western Motorway and is in an area which is a generally industrial.

Currently the site is a recycling centre.

Figures 1 and 2 shows the location of the development site from the aerial and street map perspective respectively.

Figure 3 shows the existing site.

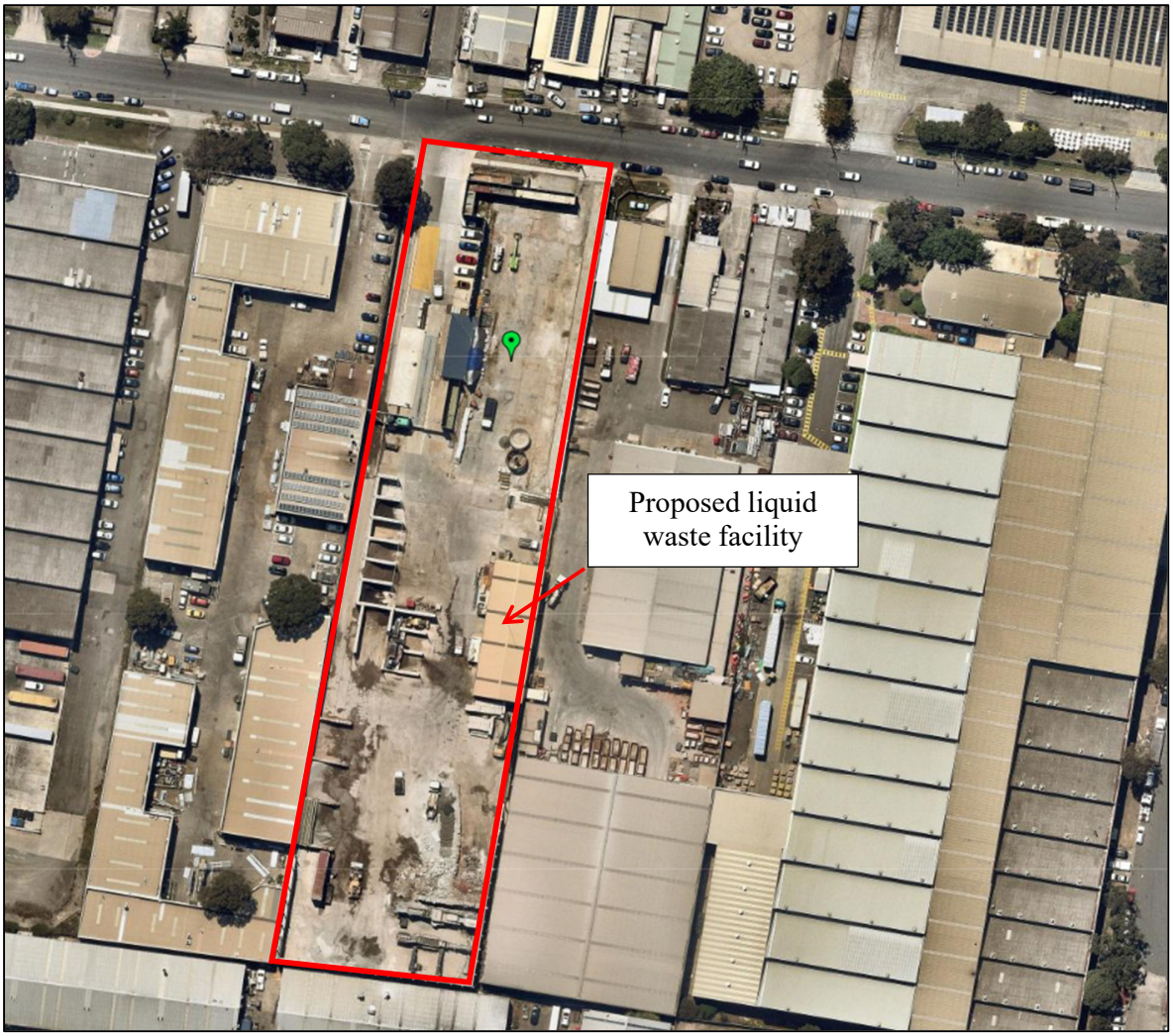


Figure 1: Location of the Subject Site on Aerial

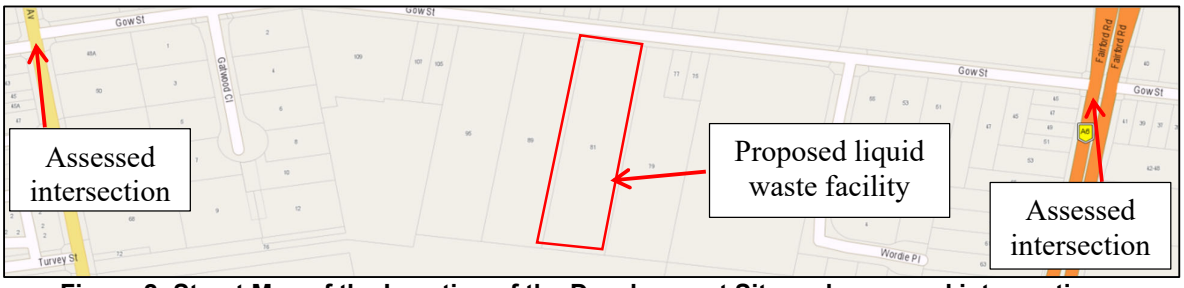


Figure 2: Street Map of the Location of the Development Site and assessed intersections



Figure 3: Development Site (81 Gow Street in Padstow)

2.2 Road Network

This section describes the roads near the proposed liquid waste facility. There are two entrance driveways to the development site from Gow Street. The driveway on the north west is the main entrance and exit to the facility. The driveway on the north east is an existing service entry and exit.

Gow Street is a local road with one lane each way with a sign posted speed limit of 50km/hr. Time un-restricted on-street parking is permitted on both sides of the road. Figure 4 shows the photograph of Gow Street.

Fairford Road is an arterial road with two lanes at the midblock on a divided carriageway. Parking is not permitted on either side of the road. The sign posted speed limit of 70km/hr near the intersection with Gow Street. Figure 5 shows the photograph of Fairford Road.

Gibson Avenue is a collector road with one lane each way and a sign posted speed limit of 60km/hr near the intersection with Gow Street. A short lane to turn right into Gow Street is available near the intersection with Gow Street. Time

unrestricted on-street parking is available on small section of the road. Figure 6 shows a photograph of Gibson Avenue.



Figure 4: Gow Street Facing West



Figure 5: Fairford Road facing North



Figure 6: Gibson Avenue facing South

2.3 Public Parking Opportunities

The development site is located in a general industrial zone. Time unrestricted on-street parking is available on both sides of Gow Street and short section of Gibson Avenue.

Site visits show that there are vacant car spaces on Gow Street with a driver needing to circulate to find a vacant car space.

2.4 Intersection Description

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

- Priority intersection of Fairford Road with Gow Street
- Stop intersection of Gibson Avenue with Gow Street and Stiles Avenue

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

The priority intersection of The Fairford Road with Gow Street is a three-leg intersection with only left turn movements permitted. Drivers on Gow Street need to give way to traffic on Fairford Road. Figure 7 shows a layout of the intersection using SIDRA – an industry standard intersection assessment software. The number on the lane represent the length of a short lanes in metres.

The stop intersection of Gibson Avenue with Gow Street and Stiles Avenue is a four-leg intersection. All turn movements are permitted. Drivers on Gow Street and Stiles Street must give way to vehicles on Gibson Avenue. Figure 8 shows a layout of the intersection using SIDRA.

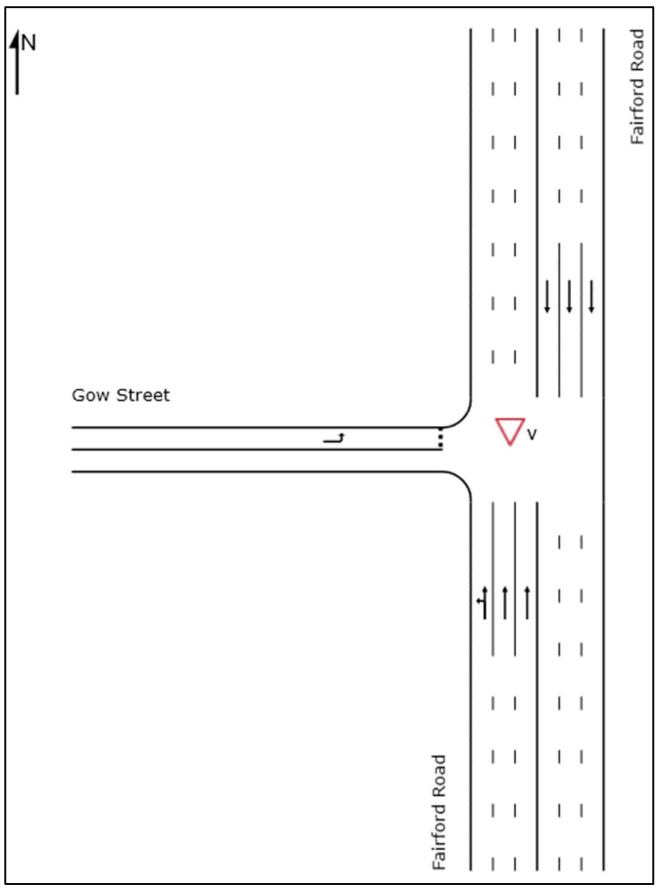


Figure 7: Priority Intersection of The Fairford Road with Gow Street (SIDRA)

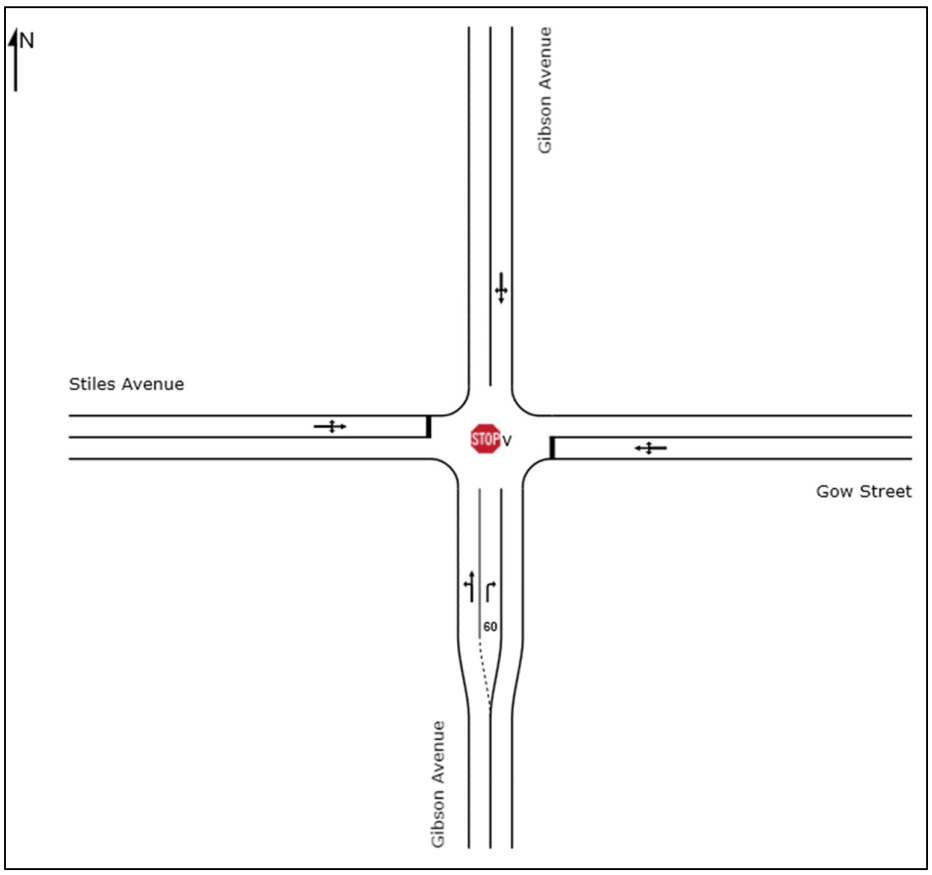


Figure 8: Stop Intersection of Gibson Avenue with Gow Street and Stiles Avenue (SIDRA)

2.5 Existing Traffic Volumes

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

Figures 9 and 10 presents in vehicle numbers the existing weekday AM and PM peak hour traffic volumes respectively. The bracketed numbers are trucks and un-bracketed are cars.

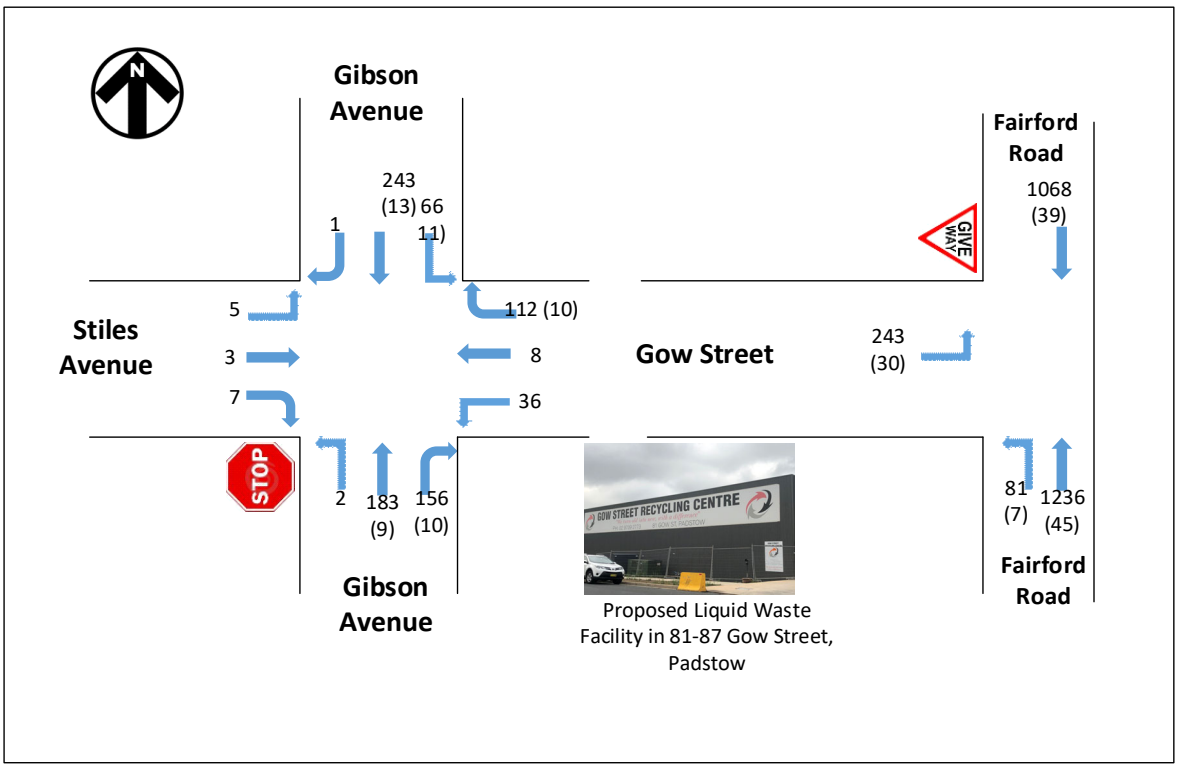


Figure 9: Existing Weekday Traffic Volumes AM Peak Hour

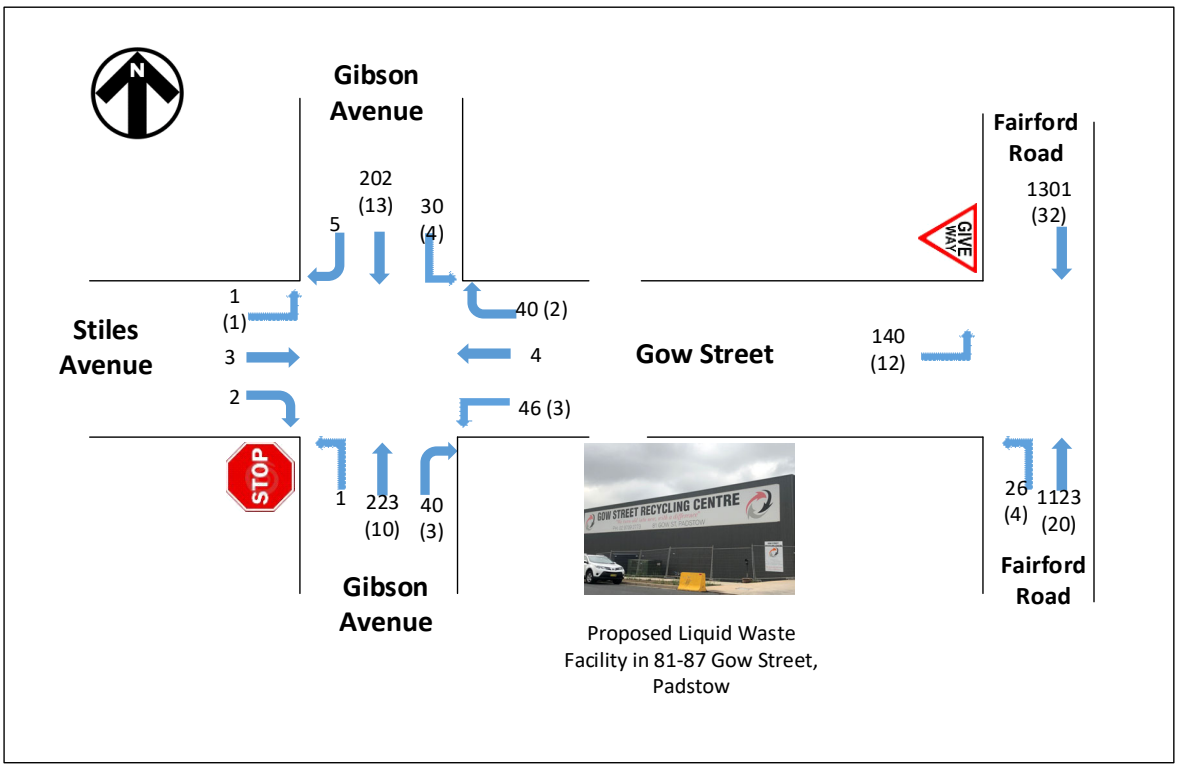


Figure 10: Existing Weekday Traffic Volumes PM Peak Hour

2.6 Intersection Assessment

An intersection assessment has been undertaken for the:

- Stop intersection of Fairford Road with Gow Street
- Priority intersection of Gibson Avenue with Gow Street and Stiles Avenue

The existing intersection operating performance was assessed using the SIDRA software package (version 8) to determine the Degree of Saturation (DS), Average Delay (AVD in seconds) and Level of Service (LoS) at each intersection. The SIDRA program provides Level of Service Criteria Tables for various intersection types. The key indicator of intersection performance is Level of Service, where results are placed on a continuum from 'A' to 'F', as shown in Table 1.

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

Table 1: Intersection Level of Service

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

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

Table 2: Intersection Average Delay (AVD)

The degree of saturation (DS) is another measure of the operational performance of individual intersections. For intersections controlled by traffic signals both queue

length and delay increase rapidly as DS approaches 1. It is usual to attempt to keep DS to less than 0.9. Degrees of Saturation in the order of 0.7 generally represent satisfactory intersection operation. When DS exceed 0.9 queues can be anticipated.

The result of the intersection analysis is as follows:

Priority intersection of Fairford Road with Gow Street

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

Stop intersection of Gibson Avenue with Gow Street and Stiles Avenue

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

The full Sidra results are presented in Appendix A.

2.7 Public Transport

The proposed liquid waste facility is located 400 metres from the nearest bus stop. M91 and M92 buses provides transport from Padstow to Paramatta and Sutherland. M91 stand is located at the corner of Fairford Road and Gow Street and M92 stand is located at the corner of Gibson Avenue and Gow Street

Figure 11 shows public transport network map. The site has access to public transport.

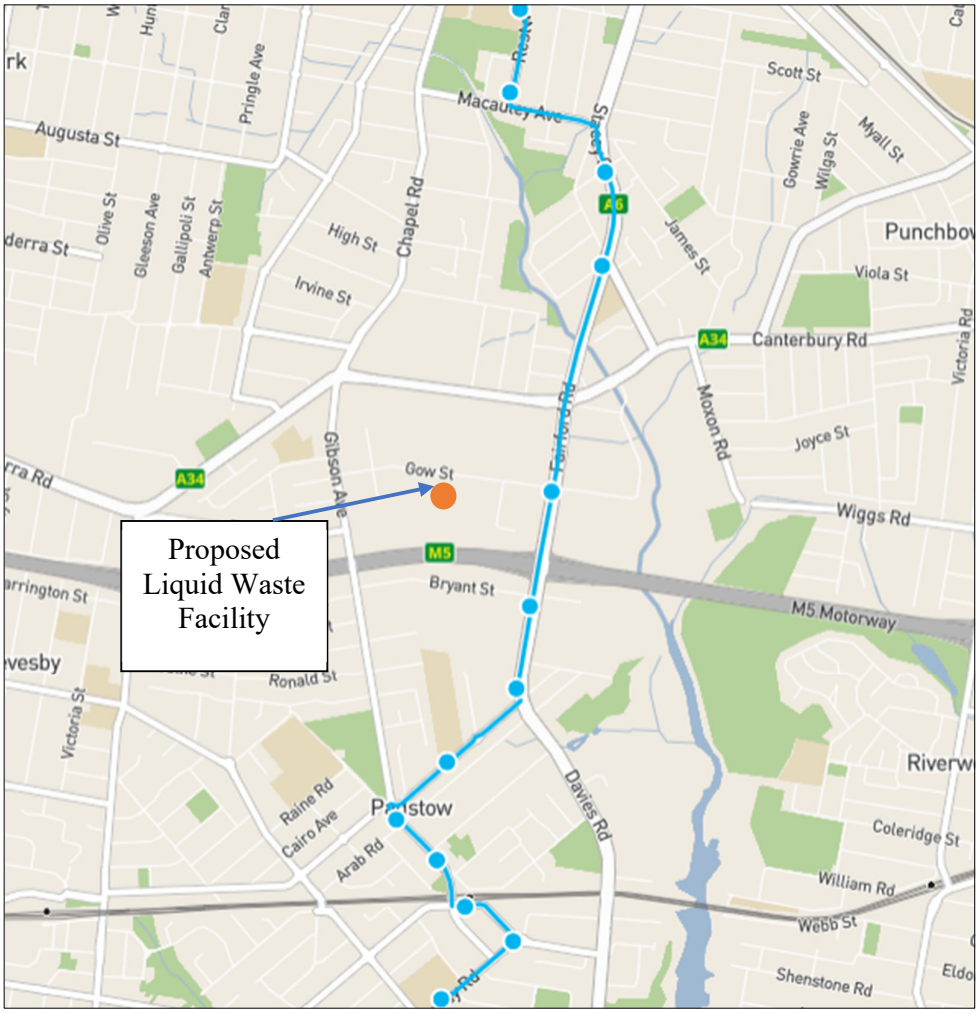


Figure 11: Public Transport Network Map

2.8 Conclusions on the Existing Conditions

The proposed liquid waste facility is in a general industrial area where there are limited vacant car spaces on Gow Street.

The nearby intersection performs well to accommodate additional traffic of the development site.

The local area is serviced by buses.

3. PROPOSED LIQUID WASTE FACILITY

The details of the proposed liquid waste facility are as follows:

Proposed Dewatering facility:

- 587m2

Proposed Office Buildings

- 182 m2

Total floor space of 769 m2.

Car Spaces:

- Total of nine car spaces are currently provided. Fifteen car spaces would be provided for the proposed development.

The parking is provided on the ground floor at the main entrance (12 spaces) and within a garage of the proposed office building (3 spaces).

The vehicle access and egress to the car park area is from the main driveway entrance on Gow Street.

The liquid waste facility would operate 24/7.

The facility currently employs 9 staff. An additional 10 staff will be employed for the dewatering plant. These additional employees will be distributed over 3 shifts.

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

4. CAR PARKING CONSIDERATIONS

4.1 Bankstown Council Development Control Plan 2011

The car parking requirements for the proposed liquid waste facility is presented in the Bankstown Council Development Control Plan 2015 with the parking rates as follows as it applies to this development:

Industrial

- 1 per 100m2 gross floor area

Office

- 1 per 100m2 where the office floor space is less than 20 percent of the gross floor area with additional office at a rate of one per 40m2

Table 3 summarises the car parking requirements of the proposed liquid waste facility .

Use	GFA (m^2)	Car Parking Rate	Car Parking requirements
Factory	587	1 per 100m^2	5.87
Office	182	1 per 100m^2 for first 20% of factory floor	1.53
		Remaining office space: 1 per 40m2	0.73
Total	769		8

Note: Office space is 20% of total GFA

Table 3: Summary of Car Parking Requirements

The proposed liquid waste facility requires eight car spaces. The existing facility has 9 spaces, and the proposed site changes allow for an additional 3 uncovered and 3 covered spaces. The provision of fifteen car spaces ensure the proposed liquid waste facility complies with Council's car parking requirements.

5. VEHICLE TRAFFIC IMPACT CONSIDERATIONS

5.1 Traffic Generation for the Proposed liquid waste facility

The NSW RTA Guide to Traffic Generating Development document does not publish trip generation rates for a liquid waste facility.

The operator of the liquid waste facility has provided information car and truck generation .

The average daily trip generation of the liquid waste facility are estimated as follows:

- Liquid Waste Trucks – 92
- Solid material Trucks – 36 Cars/ light vehicles - 8

This accounts for trucks both coming in and going out. Additional trips may occur due to truck size variation. This assumes 46 liquid tankers in each directed to transport 685 tonnes each day with 15 tonne capacity. It also includes 18 trucks in each direction with a 10 tonne capacity transporting 274 tonnes of solid material per day. It also includes 4 cars (staff or other vehicles).

In addition to that there is existing vehicle movements of the C & D facility:

- C&D trucks - 44
- Solid material Trucks – 36 Cars/ light vehicles - 6

This accounts for trucks both coming in and going out. Additional trips may occur due to truck size variation. This assumes 22 trucks in each directed to transport 438 tonnes each day with 10 tonne capacity trucks. It also includes 4 cars (staff or other vehicles).

It should also be said that the liquid waste truck peak hour in the day does not coincide with the commuter peak hour. In this case, the majority of liquid waste pickups would occur at the site from 7am onwards.

A liquid waste truck leaving the plant needs is required to take into account where the plant is located and the travel time from the facility to the construction site. Travelling in peak hour is inefficient since sitting in peak hour queue is unproductive time and is generally avoided. The estimated weekday peak hour trips are presented in Table 4.

Peak Hour	Origin	Destination	Total
AM	3	2	5
PM	0	3	3

Table 4: Trip generation for the Trucks of the liquid Waste Facility

The office component of the liquid waste facility will generate car trips at the rate of 2 per 100m2 (as set out in the "RTA Guide to Traffic Generating Developments"). Table 5 presents the trip distribution of the office area.

Peak Hour	Origin	Destination	Total
AM	0	4	4
PM	4	0	4

Table 5: Trip generation for the Cars (from the Office area) of the liquid Waste Facility

The site (waste recycling centre) is currently operating and hence generating trips in the AM and PM peak hour. The waste recycling trip distribution is presented in Table 6.

Weekday		Origin	Destination	Total
AM	Cars	0	3	3
	Trucks	3	2	5
	Total	3	5	8

Weekday		Origin	Destination	Total
PM	Cars	2	0	2
	Trucks	2	1	3
	Total	4	1	5

Table 6: Trip generation for the existing trips of the Waste Recycling Centre for trucks and cars for the Weekday Commuter Peak Hour

The net increase in car and truck trips are presented in Table 7. The proposed liquid waste facility is a low net generator.

Weekday		Origin	Destination	Total
AM	Cars	0	1	1
	Trucks	0	0	0
	Total	0	1	1

Weekday		Origin	Destination	Total
PM	Cars	2	0	2
	Trucks	0	2	2
	Total	2	2	4

Table 7: Net Trip generation for Proposed Liquid Waste Facility for trucks and cars for the Weekday Commuter Peak Hour

Table 8 displays an example of the truck distribution over a standard 24-hour period. This provides a profile of inbound and outbound by time of day, which is expected to be similar day to day.

The peak hours are 8:00am to 9:00am and 5:00pm to 6:00pm for the weekday AM and PM peak hours respectively.

The approved operational hours for the C&D facility are: 06:00 and 18:00 Monday to Friday, and 07:00 and 18:00 on weekends. The existing facility will continue to operate within these hours.

Time	C & D facility				Dewatering Facility			
	Incoming trucks per hour		Outgoing trucks per hour		Incoming trucks per hour		Outgoing trucks per hour	
	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy
1:00	NA	NA	NA	NA	0	1	0	1
2:00	NA	NA	NA	NA	0	1	0	1
3:00	NA	NA	NA	NA	0	1	0	1
4:00	NA	NA	NA	NA	0	2	0	2
5:00	NA	NA	NA	NA	0	2	0	2
6:00	0	1	0	1	0	2	0	2
7:00	0	1	0	1	0	2	0	1
8:00	***3***	***2***	***0***	***3***	***4***	***2***	***0***	***3***

Time	C & D facility				Dewatering Facility			
	Incoming trucks per hour		Outgoing trucks per hour		Incoming trucks per hour		Outgoing trucks per hour	
	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy
9:00	0	2	0	1	0	3	0	4
10:00	0	3	0	2	0	4	0	5
11:00	0	3	0	3	0	5	0	5
12:00	0	3	0	3	0	5	0	5
13:00	0	2	0	2	0	5	0	5
14:00	0	2	0	2	0	5	0	5
15:00	0	1	0	1	0	4	0	4
16:00	0	1	0	1	0	3	0	4
17:00	***0***	***1***	***3***	***2***	***0***	***3***	***4***	***0***
18:00	NA	NA	NA	NA	0	3	0	3
19:00	NA	NA	NA	NA	0	3	0	3
20:00	NA	NA	NA	NA	0	3	0	3
21:00	NA	NA	NA	NA	0	2	0	2
22:00	NA	NA	NA	NA	0	1	0	1
23:00	NA	NA	NA	NA	0	1	0	1
0:00	NA	NA	NA	NA	0	1	0	1
Total	3	22	3	22	4	64	4	64
	6 light/day and 44 heavy/per day				8 light/day and 128 heavy/day			

Note: "Light" vehicles meaning cars, "Heavy" vehicles meaning trucks and liquid tankers

Table 8: Expected Truck and Car Distribution

5.2 Traffic Volumes

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

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

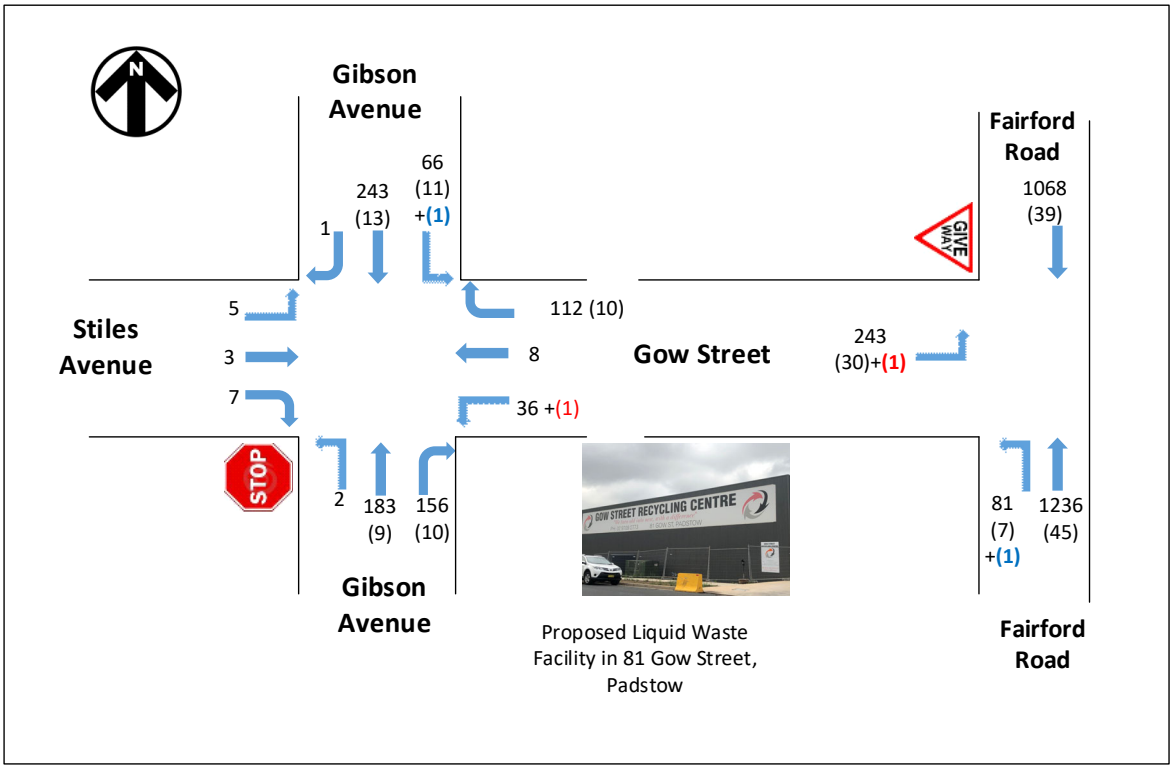


Figure 10: Weekday AM Peak Hour Traffic Volumes with proposed traffic

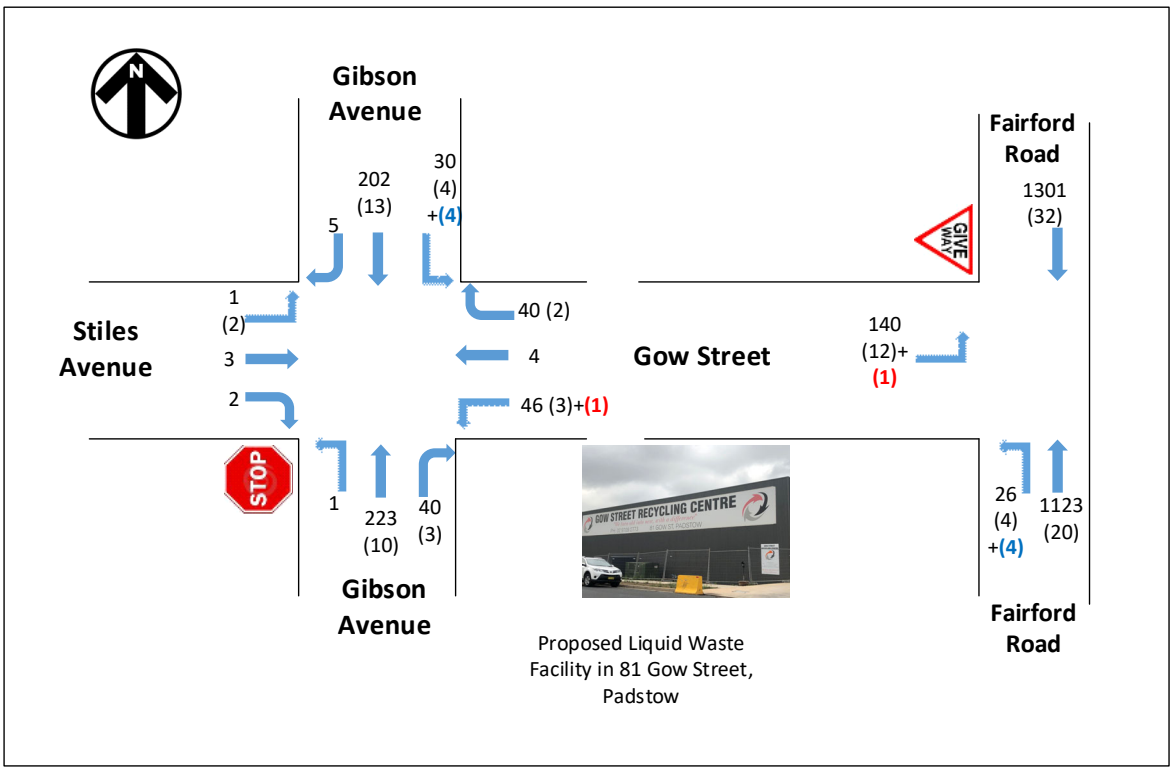


Figure 11: Weekday PM Peak Hour Traffic Volumes with proposed traffic

5.3 Intersection Assessment

An intersection assessment has been undertaken for the surveyed intersection.

The results of the intersection analysis are as follows:

Priority intersection of Fairford Road with Gow Street

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

Stop intersection of Gibson Avenue with Gow Street and Stiles Avenue

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

The full SIDRA results with liquid waste facility traffic are presented in Appendix B.

5.4 Future Intersection Assessment

The Transport for NSW has requested traffic forecast with 5 years interval from 2021 up to 2036. It is estimated that traffic growth occurs only on Fairford Road (A6) since the whole surrounding industrial area is already developed and they will not have major potential growth. It is forecasted that the growth rate on Fairford Road (A6) would be 1 percent per annum. Results of the forecasted traffic volume on adjacent road network are presented in the following figures.

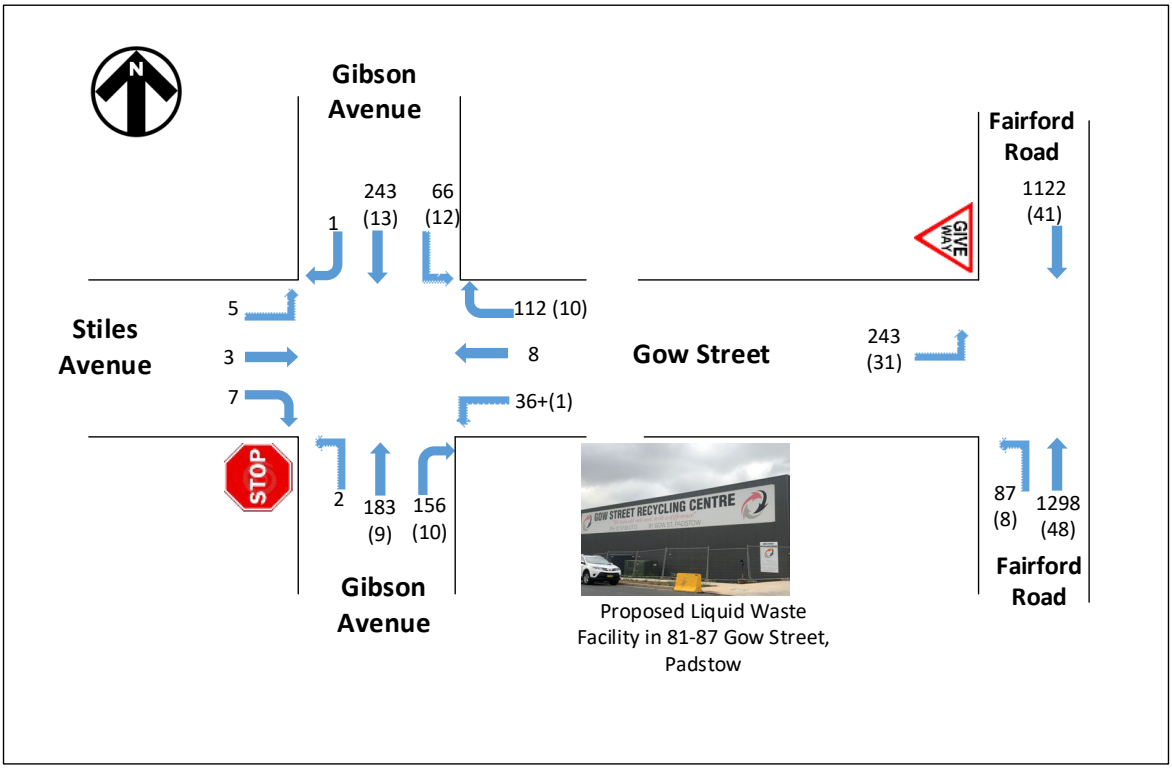


Figure 12: Weekday AM Peak Hour Traffic Volumes 2026

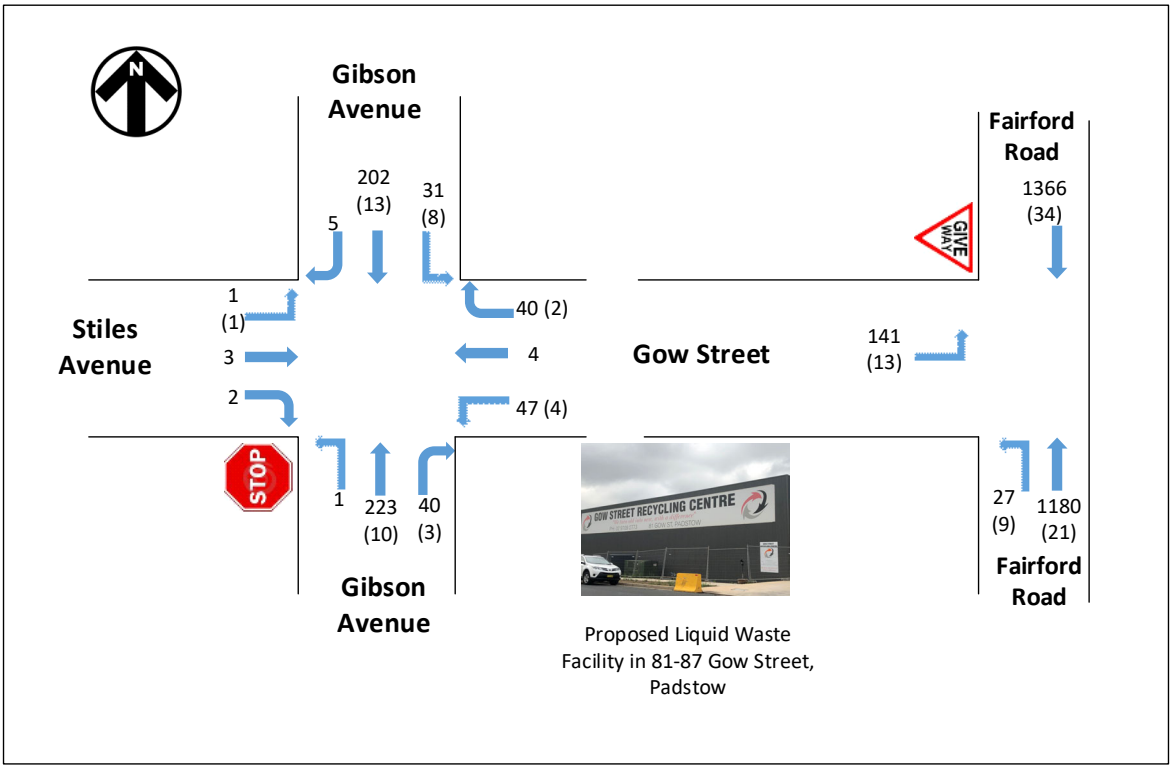


Figure 13: Weekday PM Peak Hour Traffic Volumes 2026

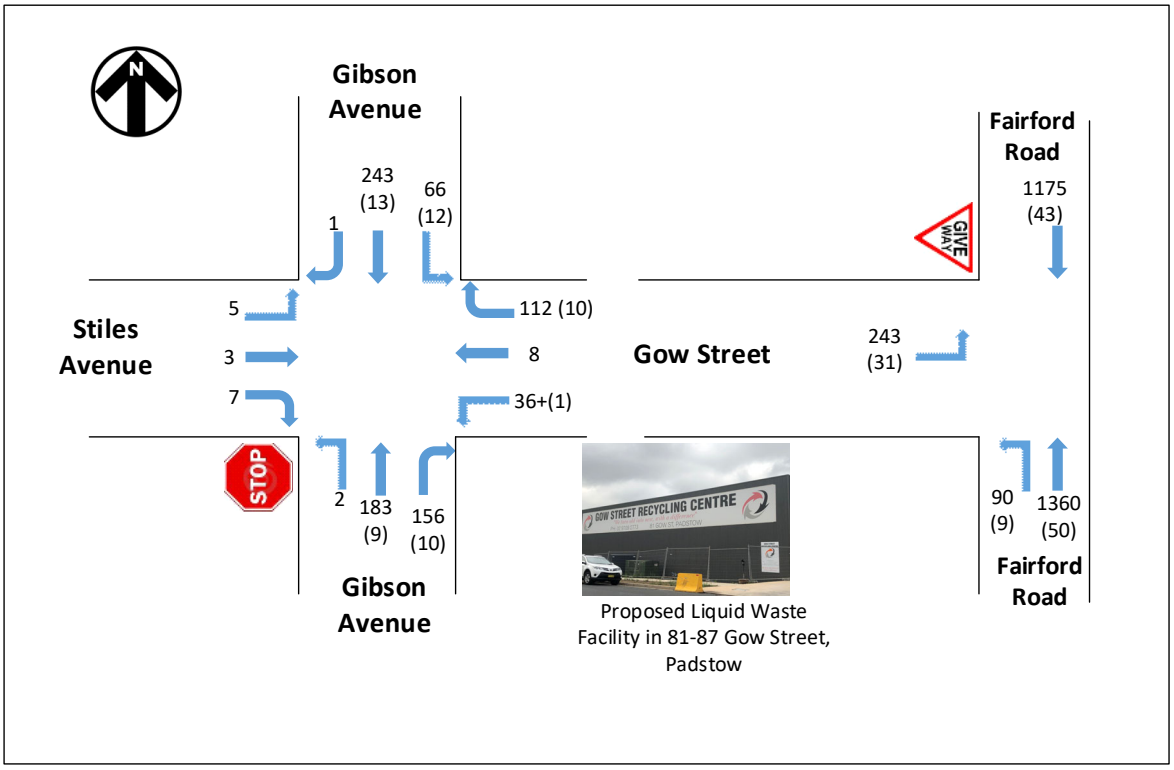


Figure 14: Weekday AM Peak Hour Traffic Volumes 2031

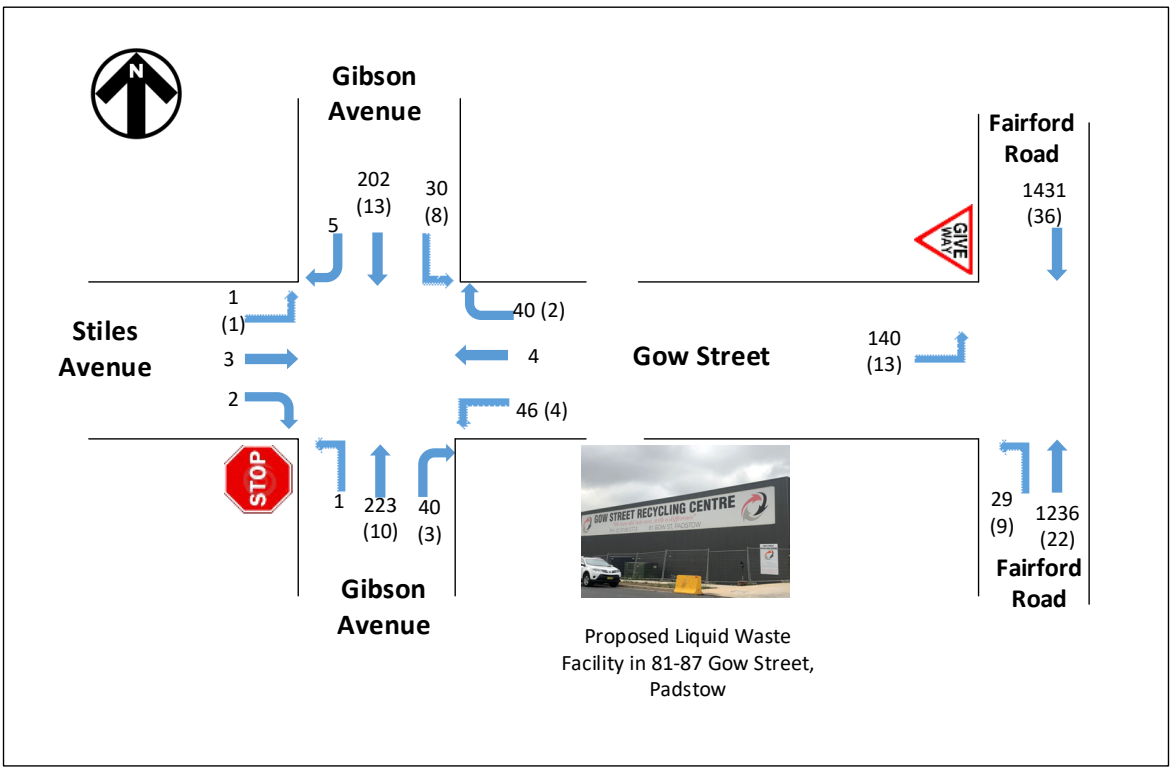


Figure 15: Weekday PM Peak Hour Traffic Volumes 2031

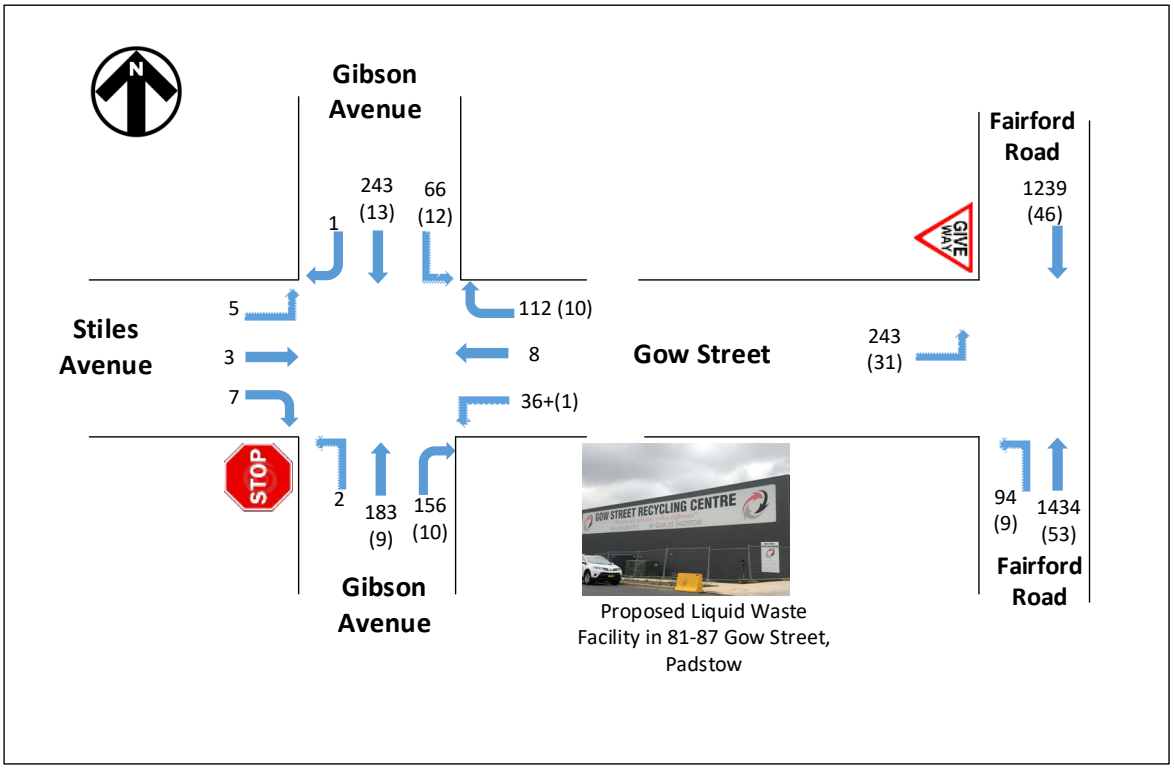


Figure 16: Weekday AM Peak Hour Traffic Volumes 2036

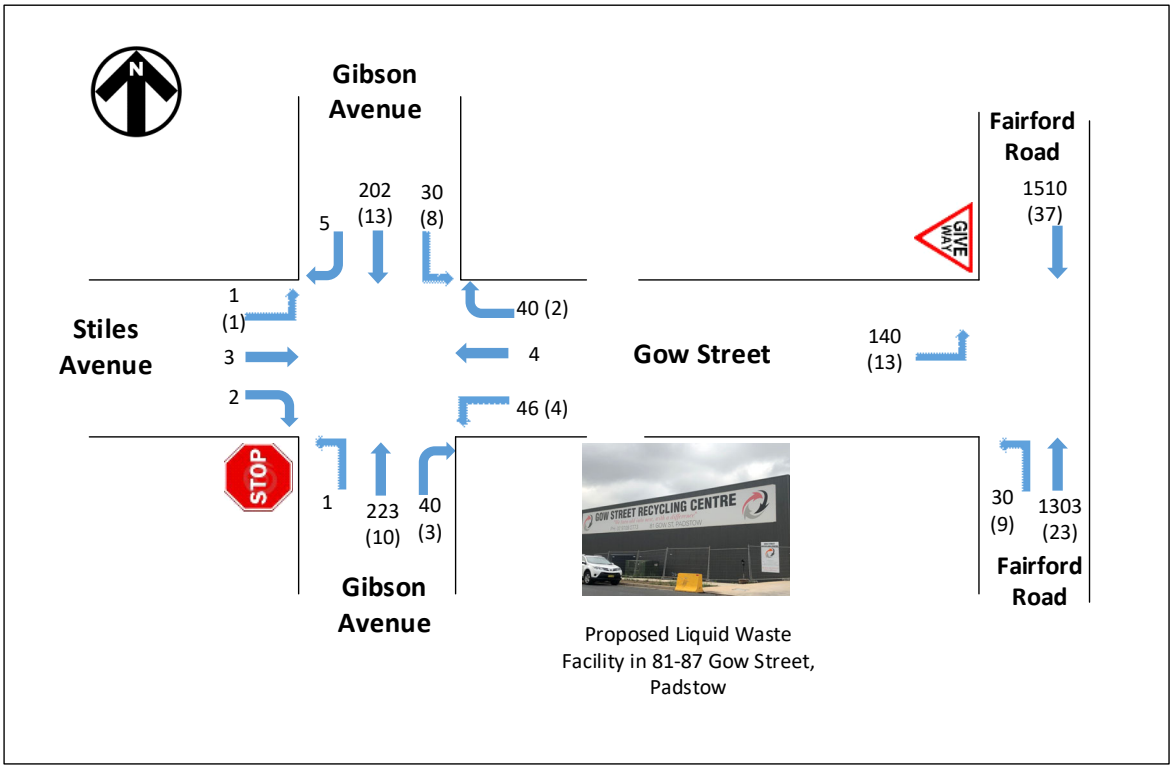


Figure 17: Weekday PM Peak Hour Traffic Volumes 2036

5.5 Comments on Forecasted Traffic Volume

The forecasted traffic volume demonstrates that both surveyed intersections will run with a good Level of Service with minor change in queueing distance and the Degree of saturation. It should be noted that the growth rate only applies on the through movements and turn movements of the Fairford Road(A6) and Gow Street intersection except the Gow Street turn movement. SIDRA intersection assessment has been carried out for all of the aforementioned scenarios.

The SIDRA modelling results are listed in the appendix C.

5.6 Heavy Vehicle Haul Routes

The map below shows possible heavy vehicles routes for 19 m B-doubles (over 50 tonnes), 23m B-double, and 25/26m B-double routes. Figure 19 shows the State and Regional roads, many of which overlap with heavy vehicle haul roads. All of the surrounding roads (the South Western Motorway, Fairford Rd, Canterbury Rd, Gibson Ave) connecting to and including Gow St are possible routes for heavy vehicles. Heavy vehicles inbound and outbound from the site are only to use these roads. There are sufficient routes for heavy vehicles to avoid residential areas and limit impacts.

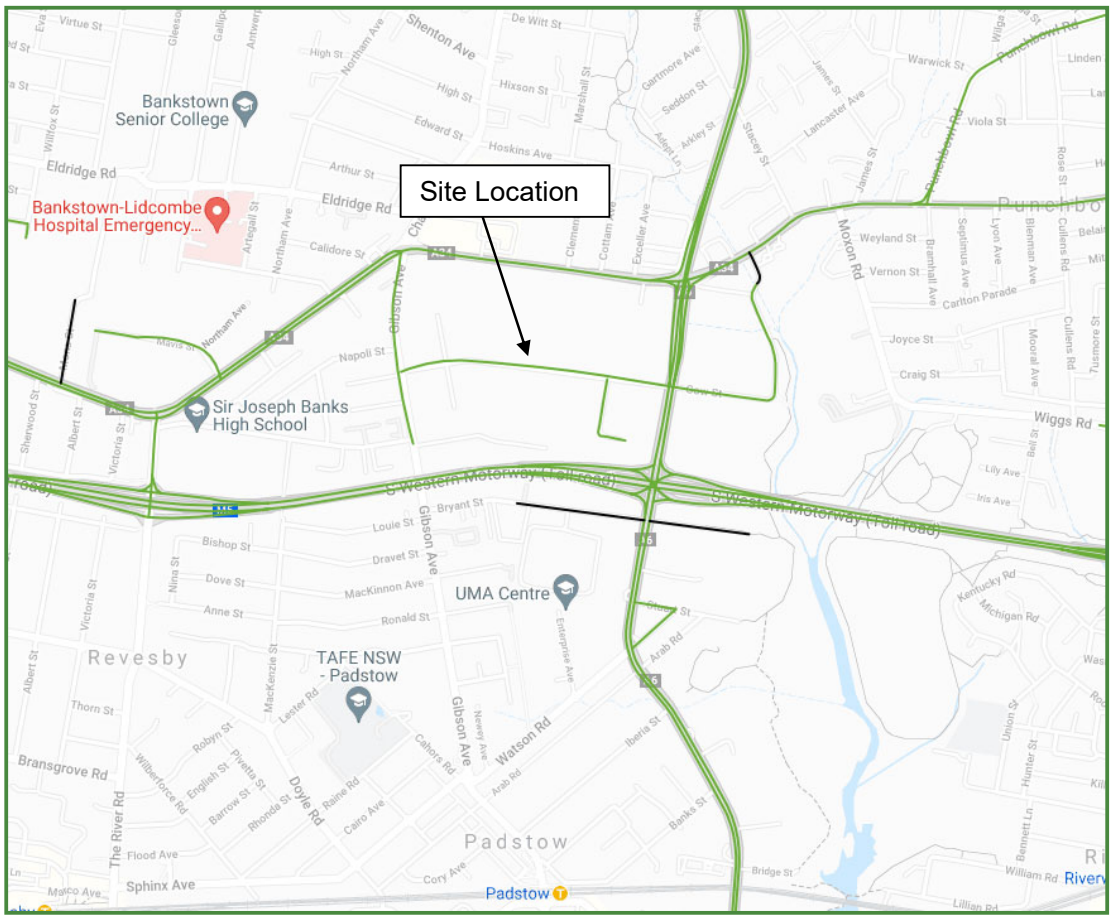


Figure 18: Heavy Vehicle Routes.
(© Transport for NSW 2021)



Figure 19: NSW Road Network Classifications
(© Mapbox © OpenStreetMap © Transport for NSW 2021)

6. CONCLUSIONS

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

Parking

- The proposed liquid waste facility provides sufficient on-site car spaces and complies with the council's parking requirements.

Traffic

- The proposed liquid waste facility is a moderate trip generator for the weekday AM and PM peak hours.
- The undertaken forecast modelling for surveyed intersection demonstrates that there will be no significant change in Level of Service, queueing distance nor the degree of saturation.
- The additional trips from the proposed liquid waste facility can be accommodated at the nearby intersection without significantly affecting intersection performance, delays or queues.
- There are no traffic engineering reasons why a planning permit for the proposed liquid waste facility at 81 Gow Street in Padstow should be refused.

APPENDIX A

SIDRA Intersection Results for Existing Traffic Conditions

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Fairford Road												
1	L2	93	8.0	0.253	6.2	LOS A	0.0	0.0	0.00	0.12	0.00	61.5
2	T1	1348	3.5	0.253	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	68.9
Approach		1441	3.8	0.253	0.4	NA	0.0	0.0	0.00	0.04	0.00	68.4
North: Fairford Road												
8	T1	1165	3.5	0.204	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		1165	3.5	0.204	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
West: Gow Street												
10	L2	287	11.0	0.346	7.6	LOS A	1.7	12.9	0.52	0.77	0.60	44.8
Approach		287	11.0	0.346	7.6	LOS A	1.7	12.9	0.52	0.77	0.60	44.8
All Vehicles		2894	4.4	0.346	1.0	NA	1.7	12.9	0.05	0.10	0.06	65.5

Table A1: Weekday Intersection Performance of Fairford Road with Gow Street AM Peak Hour

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Gibson Avenue												
1	L2	2	0.0	0.109	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.5
2	T1	202	4.7	0.109	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	50.0
3	R2	175	6.0	0.140	6.0	LOS A	0.6	4.7	0.44	0.63	0.44	45.2
Approach		379	5.3	0.140	2.8	NA	0.6	4.7	0.20	0.29	0.20	47.6
East: Gow Street												
4	L2	38	0.0	0.615	14.3	LOS A	4.1	28.9	0.77	1.21	1.42	38.5
5	T1	85	0.0	0.615	22.8	LOS B	4.1	28.9	0.77	1.21	1.42	38.4
6	R2	118	0.0	0.615	25.1	LOS B	4.1	28.9	0.77	1.21	1.42	38.2
Approach		241	0.0	0.615	22.6	LOS B	4.1	28.9	0.77	1.21	1.42	38.3
North: Gibson Avenue												
7	L2	69	0.0	0.198	5.0	LOS A	0.3	2.1	0.06	0.12	0.06	48.7
8	T1	269	5.1	0.198	0.1	LOS A	0.3	2.1	0.06	0.12	0.06	49.2
9	R2	13	91.7	0.198	7.2	LOS A	0.3	2.1	0.06	0.12	0.06	46.6
Approach		352	7.2	0.198	1.4	NA	0.3	2.1	0.06	0.12	0.06	49.0
West: Stiles Avenue												
10	L2	5	0.0	0.039	8.2	LOS A	0.1	1.0	0.54	0.91	0.54	41.9
11	T1	3	0.0	0.039	15.3	LOS B	0.1	1.0	0.54	0.91	0.54	41.8
12	R2	7	0.0	0.039	18.5	LOS B	0.1	1.0	0.54	0.91	0.54	41.8
Approach		16	0.0	0.039	14.4	LOS A	0.1	1.0	0.54	0.91	0.54	41.8
All Vehicles		987	4.6	0.615	7.3	NA	4.1	28.9	0.30	0.47	0.46	45.3

Table A2: Weekday Intersection Performance of Gibson Avenue with Gow Street and Stiles Avenue AM Peak Hour

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Fairford Road												
1	L2	32	13.3	0.214	6.5	LOS A	0.0	0.0	0.00	0.05	0.00	63.4
2	T1	1203	1.7	0.214	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	69.5
Approach		1235	2.0	0.214	0.2	NA	0.0	0.0	0.00	0.02	0.00	69.3
North: Fairford Road												
8	T1	1403	2.4	0.244	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		1403	2.4	0.244	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
West: Gow Street												
10	L2	160	7.9	0.187	6.8	LOS A	0.7	5.3	0.46	0.68	0.46	45.3
Approach		160	7.9	0.187	6.8	LOS A	0.7	5.3	0.46	0.68	0.46	45.3
All Vehicles		2798	2.6	0.244	0.5	NA	0.7	5.3	0.03	0.05	0.03	67.6

Table A3: Weekday Intersection Performance of Fairford Road with Gow Street PM Peak Hour

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Gibson Avenue												
1	L2	1	0.0	0.131	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
2	T1	245	4.3	0.131	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	45	7.0	0.034	5.5	LOS A	0.1	1.1	0.36	0.56	0.36	45.3
Approach		292	4.7	0.131	0.9	NA	0.1	1.1	0.06	0.09	0.06	49.2
East: Gow Street												
4	L2	48	0.0	0.160	8.4	LOS A	0.6	4.4	0.49	0.92	0.49	43.4
5	T1	4	0.0	0.160	12.8	LOS A	0.6	4.4	0.49	0.92	0.49	43.3
6	R2	44	4.8	0.160	14.5	LOS A	0.6	4.4	0.49	0.92	0.49	43.0
Approach		97	2.2	0.160	11.4	LOS A	0.6	4.4	0.49	0.92	0.49	43.2
North: Gibson Avenue												
7	L2	36	11.8	0.145	4.8	LOS A	0.1	0.4	0.02	0.08	0.02	48.8
8	T1	226	6.0	0.145	0.0	LOS A	0.1	0.4	0.02	0.08	0.02	49.5
9	R2	5	0.0	0.145	5.5	LOS A	0.1	0.4	0.02	0.08	0.02	48.5
Approach		267	6.7	0.145	0.8	NA	0.1	0.4	0.02	0.08	0.02	49.4
West: Stiles Avenue												
10	L2	2	50.0	0.014	10.9	LOS A	0.1	0.4	0.52	0.89	0.52	42.6
11	T1	3	0.0	0.014	12.3	LOS A	0.1	0.4	0.52	0.89	0.52	43.1
12	R2	2	0.0	0.014	13.7	LOS A	0.1	0.4	0.52	0.89	0.52	43.1
Approach		7	14.3	0.014	12.3	LOS A	0.1	0.4	0.52	0.89	0.52	43.0
All Vehicles		663	5.2	0.160	2.5	NA	0.6	4.4	0.11	0.22	0.11	48.2

Table A4: Weekday Intersection Performance of Gibson Avenue with Gow Street and Stiles Avenue PM Peak Hour

APPENDIX B

SIDRA Intersection Results for Existing Conditions with liquid waste facility traffic

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Fairford Road												
1	L2	94	9.0	0.254	6.2	LOS A	0.0	0.0	0.00	0.12	0.00	61.4
2	T1	1348	3.5	0.254	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	68.9
Approach		1442	3.9	0.254	0.4	NA	0.0	0.0	0.00	0.04	0.00	68.4
North: Fairford Road												
8	T1	1165	3.5	0.204	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		1165	3.5	0.204	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
West: Gow Street												
10	L2	288	11.3	0.348	7.6	LOS A	1.7	13.0	0.52	0.77	0.60	44.8
Approach		288	11.3	0.348	7.6	LOS A	1.7	13.0	0.52	0.77	0.60	44.8
All Vehicles		2896	4.5	0.348	1.0	NA	1.7	13.0	0.05	0.10	0.06	65.5

Table B1: Weekday Intersection Performance of Fairford Road with Gow Street AM Peak Hour with liquid waste facility traffic

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Gibson Avenue												
1	L2	2	0.0	0.109	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.5
2	T1	202	4.7	0.109	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	50.0
3	R2	175	6.0	0.144	6.1	LOS A	0.7	4.8	0.46	0.64	0.46	45.1
Approach		379	5.3	0.144	2.8	NA	0.7	4.8	0.21	0.30	0.21	47.6
East: Gow Street												
4	L2	39	2.7	0.608	14.2	LOS A	4.1	28.6	0.76	1.20	1.40	38.6
5	T1	85	0.0	0.608	22.4	LOS B	4.1	28.6	0.76	1.20	1.40	38.6
6	R2	118	0.0	0.608	24.6	LOS B	4.1	28.6	0.76	1.20	1.40	38.4
Approach		242	0.4	0.608	22.2	LOS B	4.1	28.6	0.76	1.20	1.40	38.5
North: Gibson Avenue												
7	L2	82	15.4	0.193	4.7	LOS A	0.0	0.1	0.00	0.13	0.00	48.6
8	T1	269	5.1	0.193	0.0	LOS A	0.0	0.1	0.00	0.13	0.00	49.3
9	R2	1	0.0	0.193	5.4	LOS A	0.0	0.1	0.00	0.13	0.00	48.4
Approach		353	7.5	0.193	1.1	NA	0.0	0.1	0.00	0.13	0.00	49.1
West: Stiles Avenue												
10	L2	5	0.0	0.038	8.2	LOS A	0.1	0.9	0.54	0.91	0.54	42.0
11	T1	3	0.0	0.038	15.4	LOS B	0.1	0.9	0.54	0.91	0.54	41.9
12	R2	7	0.0	0.038	18.0	LOS B	0.1	0.9	0.54	0.91	0.54	41.9
Approach		16	0.0	0.038	14.2	LOS A	0.1	0.9	0.54	0.91	0.54	41.9
All Vehicles		989	4.8	0.608	7.1	NA	4.1	28.6	0.28	0.47	0.43	45.4

Table B2: Weekday Intersection Performance of Gibson Avenue with Gow Street and Stiles Avenue AM Peak Hour with liquid waste facility traffic

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Fairford Road												
1	L2	36	23.5	0.216	6.6	LOS A	0.0	0.0	0.00	0.05	0.00	62.2
2	T1	1203	1.7	0.216	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	69.5
Approach		1239	2.4	0.216	0.2	NA	0.0	0.0	0.00	0.02	0.00	69.2
North: Fairford Road												
8	T1	1403	2.4	0.244	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		1403	2.4	0.244	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
West: Gow Street												
10	L2	161	8.5	0.188	6.8	LOS A	0.7	5.4	0.46	0.67	0.46	45.3
Approach		161	8.5	0.188	6.8	LOS A	0.7	5.4	0.46	0.67	0.46	45.3
All Vehicles		2803	2.7	0.244	0.5	NA	0.7	5.4	0.03	0.05	0.03	67.5

Table B3: Weekday Intersection Performance of Fairford Road with Gow Street PM Peak Hour with liquid waste facility traffic

Movement Performance - Vehicles													
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Gibson Avenue												
1	L2	1	0.0	0.131	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
2	T1	245	4.3	0.131	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
3	R2	45	7.0	0.034	5.5	LOS A	0.1	1.1	0.36	0.56	0.36	45.3
Approach		292	4.7	0.131	0.9	NA	0.1	1.1	0.06	0.09	0.06	49.2
East: Gow Street												
4	L2	53	8.0	0.166	8.8	LOS A	0.6	4.8	0.49	0.93	0.49	43.3
5	T1	4	0.0	0.166	12.9	LOS A	0.6	4.8	0.49	0.93	0.49	43.3
6	R2	44	4.8	0.166	14.5	LOS B	0.6	4.8	0.49	0.93	0.49	43.0
Approach		101	6.3	0.166	11.5	LOS A	0.6	4.8	0.49	0.93	0.49	43.2
North: Gibson Avenue												
7	L2	36	11.8	0.145	4.8	LOS A	0.1	0.4	0.02	0.08	0.02	48.8
8	T1	226	6.0	0.145	0.0	LOS A	0.1	0.4	0.02	0.08	0.02	49.5
9	R2	5	0.0	0.145	5.5	LOS A	0.1	0.4	0.02	0.08	0.02	48.5
Approach		267	6.7	0.145	0.8	NA	0.1	0.4	0.02	0.08	0.02	49.4
West: Stiles Avenue												
10	L2	2	50.0	0.014	10.9	LOS A	0.1	0.4	0.52	0.89	0.52	42.6
11	T1	3	0.0	0.014	12.3	LOS A	0.1	0.4	0.52	0.89	0.52	43.1
12	R2	2	0.0	0.014	13.8	LOS A	0.1	0.4	0.52	0.89	0.52	43.1
Approach		7	14.3	0.014	12.3	LOS A	0.1	0.4	0.52	0.89	0.52	43.0
All Vehicles		667	5.8	0.166	2.6	NA	0.6	4.8	0.11	0.22	0.11	48.2

Table B4: Weekday Intersection Performance of Gibson Avenue with Gow Street and Stiles Avenue Road PM Peak Hour with liquid waste facility traffic

APPENDIX C

SIDRA Intersection Results for Predicted Future Traffic Volume with Development Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Fairford Road														
1	L2	95	8	100	8.4	0.267	6.1	LOS A	0.0	0.0	0.00	0.12	0.00	60.4
2	T1	1346	48	1417	3.6	0.267	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	68.6
Approach		1441	56	1517	3.9	0.267	0.5	NA	0.0	0.0	0.00	0.04	0.00	68.0
North: Fairford Road														
8	T1	1163	41	1224	3.5	0.214	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		1163	41	1224	3.5	0.214	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
West: Gow Street														
10	L2	274	31	288	11.3	0.357	7.9	LOS A	1.8	13.6	0.53	0.79	0.63	44.6
Approach		274	31	288	11.3	0.357	7.9	LOS A	1.8	13.6	0.53	0.79	0.63	44.6
All Vehicles		2878	128	3029	4.4	0.357	1.0	NA	1.8	13.6	0.05	0.10	0.06	65.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Table C1: Weekday Intersection Performance of Fairford Road with Gow Street AM Peak Hour with liquid waste facility traffic for Future Scenario 2026

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Gibson Avenue														
1	L2	2	0	2	0.0	0.109	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
2	T1	192	9	202	4.7	0.109	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
3	R2	166	10	175	6.0	0.144	6.1	LOS A	0.7	4.8	0.46	0.64	0.46	45.1
Approach		360	19	379	5.3	0.144	2.9	NA	0.7	4.8	0.21	0.30	0.21	47.6
East: Gow Street														
4	L2	37	1	39	2.7	0.608	14.2	LOS A	4.1	28.6	0.76	1.20	1.40	38.6
5	T1	81	0	85	0.0	0.608	22.4	LOS B	4.1	28.6	0.76	1.20	1.40	38.6
6	R2	112	0	118	0.0	0.608	24.6	LOS B	4.1	28.6	0.76	1.20	1.40	38.4
Approach		230	1	242	0.4	0.608	22.2	LOS B	4.1	28.6	0.76	1.20	1.40	38.5
North: Gibson Avenue														
7	L2	78	12	82	15.4	0.193	4.7	LOS A	0.0	0.1	0.00	0.13	0.00	48.6
8	T1	256	13	269	5.1	0.193	0.0	LOS A	0.0	0.1	0.00	0.13	0.00	49.3
9	R2	1	0	1	0.0	0.193	5.4	LOS A	0.0	0.1	0.00	0.13	0.00	48.4
Approach		335	25	353	7.5	0.193	1.1	NA	0.0	0.1	0.00	0.13	0.00	49.1
West: Stiles Avenue														
10	L2	5	0	5	0.0	0.038	8.2	LOS A	0.1	0.9	0.54	0.91	0.54	42.0
11	T1	3	0	3	0.0	0.038	15.4	LOS B	0.1	0.9	0.54	0.91	0.54	41.9
12	R2	7	0	7	0.0	0.038	18.0	LOS B	0.1	0.9	0.54	0.91	0.54	41.9
Approach		15	0	16	0.0	0.038	14.2	LOS A	0.1	0.9	0.54	0.91	0.54	41.9
All Vehicles		940	45	989	4.8	0.608	7.1	NA	4.1	28.6	0.28	0.47	0.43	45.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Table C2: Weekday Intersection Performance of Gibson Avenue with Gow Street and Stiles Avenue AM Peak Hour with liquid waste facility traffic for Future Scenario 2026

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Fairford Road														
1	L2	36	9	38	25.0	0.227	6.6	LOS A	0.0	0.0	0.00	0.05	0.00	61.7
2	T1	1201	21	1264	1.7	0.227	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	69.3
Approach		1237	30	1302	2.4	0.227	0.2	NA	0.0	0.0	0.00	0.02	0.00	69.1
North: Fairford Road														
8	T1	1400	34	1474	2.4	0.256	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
Approach		1400	34	1474	2.4	0.256	0.1	NA	0.0	0.0	0.00	0.00	0.00	69.8
West: Gow Street														
10	L2	154	13	162	8.4	0.193	6.9	LOS A	0.7	5.5	0.47	0.69	0.47	45.2
Approach		154	13	162	8.4	0.193	6.9	LOS A	0.7	5.5	0.47	0.69	0.47	45.2
All Vehicles		2791	77	2938	2.8	0.256	0.5	NA	0.7	5.5	0.03	0.05	0.03	67.5

Table C3: Weekday Intersection Performance of Fairford Road with Gow Street PM Peak Hour for Future Scenario 2026

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Gibson Avenue														
1	L2	1	0	1	0.0	0.131	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
2	T1	233	10	245	4.3	0.131	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
3	R2	43	3	45	7.0	0.034	5.5	LOS A	0.1	1.1	0.36	0.56	0.36	45.3
Approach		277	13	292	4.7	0.131	0.9	NA	0.1	1.1	0.06	0.09	0.06	49.2
East: Gow Street														
4	L2	50	4	53	8.0	0.166	8.8	LOS A	0.6	4.8	0.49	0.93	0.49	43.3
5	T1	4	0	4	0.0	0.166	12.9	LOS A	0.6	4.8	0.49	0.93	0.49	43.3
6	R2	42	2	44	4.8	0.166	14.5	LOS B	0.6	4.8	0.49	0.93	0.49	43.0
Approach		96	6	101	6.3	0.166	11.5	LOS A	0.6	4.8	0.49	0.93	0.49	43.2
North: Gibson Avenue														
7	L2	34	4	36	11.8	0.145	4.8	LOS A	0.1	0.4	0.02	0.08	0.02	48.8
8	T1	215	13	226	6.0	0.145	0.0	LOS A	0.1	0.4	0.02	0.08	0.02	49.5
9	R2	5	0	5	0.0	0.145	5.5	LOS A	0.1	0.4	0.02	0.08	0.02	48.5
Approach		254	17	267	6.7	0.145	0.8	NA	0.1	0.4	0.02	0.08	0.02	49.4
West: Stiles Avenue														
10	L2	2	1	2	50.0	0.014	10.9	LOS A	0.1	0.4	0.52	0.89	0.52	42.6
11	T1	3	0	3	0.0	0.014	12.3	LOS A	0.1	0.4	0.52	0.89	0.52	43.1
12	R2	2	0	2	0.0	0.014	13.8	LOS A	0.1	0.4	0.52	0.89	0.52	43.1
Approach		7	1	7	14.3	0.014	12.3	LOS A	0.1	0.4	0.52	0.89	0.52	43.0
All Vehicles		634	37	667	5.8	0.166	2.6	NA	0.6	4.8	0.11	0.22	0.11	48.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Table C4: Weekday Intersection Performance of Gibson Avenue with Gow Street and Stiles Avenue AM Peak Hour with liquid waste facility traffic for Future Scenario 2031

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Fairford Road														
1	L2	99	9	104	9.1	0.279	6.1	LOS A	0.0	0.0	0.00	0.12	0.00	60.4
2	T1	1410	50	1484	3.5	0.279	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	68.6
Approach		1509	59	1588	3.9	0.279	0.5	NA	0.0	0.0	0.00	0.04	0.00	68.0
North: Fairford Road														
8	T1	1216	41	1280	3.4	0.224	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		1216	41	1280	3.4	0.224	0.1	NA	0.0	0.0	0.00	0.00	0.00	69.9
West: Gow Street														
10	L2	274	31	288	11.3	0.366	8.2	LOS A	1.8	14.1	0.55	0.81	0.66	44.5
Approach		274	31	288	11.3	0.366	8.2	LOS A	1.8	14.1	0.55	0.81	0.66	44.5
All Vehicles		2999	131	3157	4.4	0.366	1.0	NA	1.8	14.1	0.05	0.09	0.06	65.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Table C5: Weekday Intersection Performance of Fairford Road with Gow Street AM Peak Hour with liquid waste facility traffic for Future Scenario 2031

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Gibson Avenue														
1	L2	2	0	2	0.0	0.109	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
2	T1	192	9	202	4.7	0.109	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
3	R2	166	10	175	6.0	0.144	6.1	LOS A	0.7	4.8	0.46	0.64	0.46	45.1
Approach		360	19	379	5.3	0.144	2.9	NA	0.7	4.8	0.21	0.30	0.21	47.6
East: Gow Street														
4	L2	37	1	39	2.7	0.608	14.2	LOS A	4.1	28.6	0.76	1.20	1.40	38.6
5	T1	81	0	85	0.0	0.608	22.4	LOS B	4.1	28.6	0.76	1.20	1.40	38.6
6	R2	112	0	118	0.0	0.608	24.6	LOS B	4.1	28.6	0.76	1.20	1.40	38.4
Approach		230	1	242	0.4	0.608	22.2	LOS B	4.1	28.6	0.76	1.20	1.40	38.5
North: Gibson Avenue														
7	L2	78	12	82	15.4	0.193	4.7	LOS A	0.0	0.1	0.00	0.13	0.00	48.6
8	T1	256	13	269	5.1	0.193	0.0	LOS A	0.0	0.1	0.00	0.13	0.00	49.3
9	R2	1	0	1	0.0	0.193	5.4	LOS A	0.0	0.1	0.00	0.13	0.00	48.4
Approach		335	25	353	7.5	0.193	1.1	NA	0.0	0.1	0.00	0.13	0.00	49.1
West: Stiles Avenue														
10	L2	5	0	5	0.0	0.038	8.2	LOS A	0.1	0.9	0.54	0.91	0.54	42.0

11	T1	3	0	3	0.0	0.038	15.4	LOS B	0.1	0.9	0.54	0.91	0.54	41.9
12	R2	7	0	7	0.0	0.038	18.0	LOS B	0.1	0.9	0.54	0.91	0.54	41.9
Approach		15	0	16	0.0	0.038	14.2	LOS A	0.1	0.9	0.54	0.91	0.54	41.9
All Vehicles		940	45	989	4.8	0.608	7.1	NA	4.1	28.6	0.28	0.47	0.43	45.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Table C6: Weekday Intersection Performance of Gibson Avenue with Gow Street and Stiles Avenue AM Peak Hour with liquid waste facility traffic for Future Scenario 2031

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Fairford Road														
1	L2	36	9	38	25.0	0.237	6.6	LOS A	0.0	0.0	0.00	0.05	0.00	61.7
2	T1	1258	22	1324	1.7	0.237	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	69.3
Approach		1294	31	1362	2.4	0.237	0.2	NA	0.0	0.0	0.00	0.02	0.00	69.1
North: Fairford Road														
8	T1	1467	36	1544	2.5	0.268	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
Approach		1467	36	1544	2.5	0.268	0.1	NA	0.0	0.0	0.00	0.00	0.00	69.8
West: Gow Street														
10	L2	154	13	162	8.4	0.198	7.1	LOS A	0.8	5.7	0.48	0.70	0.48	45.1
Approach		154	13	162	8.4	0.198	7.1	LOS A	0.8	5.7	0.48	0.70	0.48	45.1
All Vehicles		2915	80	3068	2.7	0.268	0.5	NA	0.8	5.7	0.03	0.04	0.03	67.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Table C7: Weekday Intersection Performance of Fairford Road with Gow Street PM Peak Hour for Future Scenario 2036

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Gibson Avenue														
1	L2	1	0	1	0.0	0.131	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
2	T1	233	10	245	4.3	0.131	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
3	R2	43	3	45	7.0	0.034	5.5	LOS A	0.1	1.1	0.36	0.56	0.36	45.3
Approach		277	13	292	4.7	0.131	0.9	NA	0.1	1.1	0.06	0.09	0.06	49.2
East: Gow Street														
4	L2	50	4	53	8.0	0.166	8.8	LOS A	0.6	4.8	0.49	0.93	0.49	43.3
5	T1	4	0	4	0.0	0.166	12.9	LOS A	0.6	4.8	0.49	0.93	0.49	43.3
6	R2	42	2	44	4.8	0.166	14.5	LOS B	0.6	4.8	0.49	0.93	0.49	43.0
Approach		96	6	101	6.3	0.166	11.5	LOS A	0.6	4.8	0.49	0.93	0.49	43.2
North: Gibson Avenue														
7	L2	34	4	36	11.8	0.145	4.8	LOS A	0.1	0.4	0.02	0.08	0.02	48.8
8	T1	215	13	226	6.0	0.145	0.0	LOS A	0.1	0.4	0.02	0.08	0.02	49.5
9	R2	5	0	5	0.0	0.145	5.5	LOS A	0.1	0.4	0.02	0.08	0.02	48.5
Approach		254	17	267	6.7	0.145	0.8	NA	0.1	0.4	0.02	0.08	0.02	49.4
West: Stiles Avenue														
10	L2	2	1	2	50.0	0.014	10.9	LOS A	0.1	0.4	0.52	0.89	0.52	42.6
11	T1	3	0	3	0.0	0.014	12.3	LOS A	0.1	0.4	0.52	0.89	0.52	43.1
12	R2	2	0	2	0.0	0.014	13.8	LOS A	0.1	0.4	0.52	0.89	0.52	43.1
Approach		7	1	7	14.3	0.014	12.3	LOS A	0.1	0.4	0.52	0.89	0.52	43.0
All Vehicles		634	37	667	5.8	0.166	2.6	NA	0.6	4.8	0.11	0.22	0.11	48.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Table C8: Weekday Intersection Performance of Gibson Avenue with Gow Street and Stiles Avenue AM Peak Hour with liquid waste facility traffic for Future Scenario 2031

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Fairford Road														
1	L2	103	9	108	8.7	0.294	6.2	LOS A	0.0	0.0	0.00	0.12	0.00	60.5
2	T1	1487	53	1565	3.6	0.294	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	68.6
Approach		1590	62	1674	3.9	0.294	0.5	NA	0.0	0.0	0.00	0.04	0.00	68.0
North: Fairford Road														
8	T1	1285	46	1353	3.6	0.237	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		1285	46	1353	3.6	0.237	0.1	NA	0.0	0.0	0.00	0.00	0.00	69.9
West: Gow Street														
10	L2	274	31	288	11.3	0.378	8.5	LOS A	1.9	14.8	0.57	0.84	0.70	44.3
Approach		274	31	288	11.3	0.378	8.5	LOS A	1.9	14.8	0.57	0.84	0.70	44.3
All Vehicles		3149	139	3315	4.4	0.378	1.0	NA	1.9	14.8	0.05	0.09	0.06	65.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Table C9: Weekday Intersection Performance of Fairford Road with Gow Street AM Peak Hour with liquid waste facility traffic for Future Scenario 2036

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Gibson Avenue														
1	L2	2	0	2	0.0	0.109	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.4
2	T1	192	9	202	4.7	0.109	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
3	R2	166	10	175	6.0	0.144	6.1	LOS A	0.7	4.8	0.46	0.64	0.46	45.1
Approach		360	19	379	5.3	0.144	2.9	NA	0.7	4.8	0.21	0.30	0.21	47.6
East: Gow Street														
4	L2	37	1	39	2.7	0.608	14.2	LOS A	4.1	28.6	0.76	1.20	1.40	38.6
5	T1	81	0	85	0.0	0.608	22.4	LOS B	4.1	28.6	0.76	1.20	1.40	38.6
6	R2	112	0	118	0.0	0.608	24.6	LOS B	4.1	28.6	0.76	1.20	1.40	38.4
Approach		230	1	242	0.4	0.608	22.2	LOS B	4.1	28.6	0.76	1.20	1.40	38.5
North: Gibson Avenue														
7	L2	78	12	82	15.4	0.193	4.7	LOS A	0.0	0.1	0.00	0.13	0.00	48.6
8	T1	256	13	269	5.1	0.193	0.0	LOS A	0.0	0.1	0.00	0.13	0.00	49.3
9	R2	1	0	1	0.0	0.193	5.4	LOS A	0.0	0.1	0.00	0.13	0.00	48.4
Approach		335	25	353	7.5	0.193	1.1	NA	0.0	0.1	0.00	0.13	0.00	49.1
West: Stiles Avenue														

10	L2	5	0	5	0.0	0.038	8.2	LOS A	0.1	0.9	0.54	0.91	0.54	42.0
11	T1	3	0	3	0.0	0.038	15.4	LOS B	0.1	0.9	0.54	0.91	0.54	41.9
12	R2	7	0	7	0.0	0.038	18.0	LOS B	0.1	0.9	0.54	0.91	0.54	41.9
Approach		15	0	16	0.0	0.038	14.2	LOS A	0.1	0.9	0.54	0.91	0.54	41.9
All Vehicles		940	45	989	4.8	0.608	7.1	NA	4.1	28.6	0.28	0.47	0.43	45.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Table C10: Weekday Intersection Performance of Gibson Avenue with Gow Street and Stiles Avenue AM Peak Hour with liquid waste facility traffic for Future Scenario 2036

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Fairford Road														
1	L2	36	9	38	25.0	0.237	6.6	LOS A	0.0	0.0	0.00	0.05	0.00	61.7
2	T1	1258	22	1324	1.7	0.237	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	69.3
Approach		1294	31	1362	2.4	0.237	0.2	NA	0.0	0.0	0.00	0.02	0.00	69.1
North: Fairford Road														
8	T1	1467	36	1544	2.5	0.268	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
Approach		1467	36	1544	2.5	0.268	0.1	NA	0.0	0.0	0.00	0.00	0.00	69.8
West: Gow Street														
10	L2	154	13	162	8.4	0.198	7.1	LOS A	0.8	5.7	0.48	0.70	0.48	45.1
Approach		154	13	162	8.4	0.198	7.1	LOS A	0.8	5.7	0.48	0.70	0.48	45.1
All Vehicles		2915	80	3068	2.7	0.268	0.5	NA	0.8	5.7	0.03	0.04	0.03	67.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

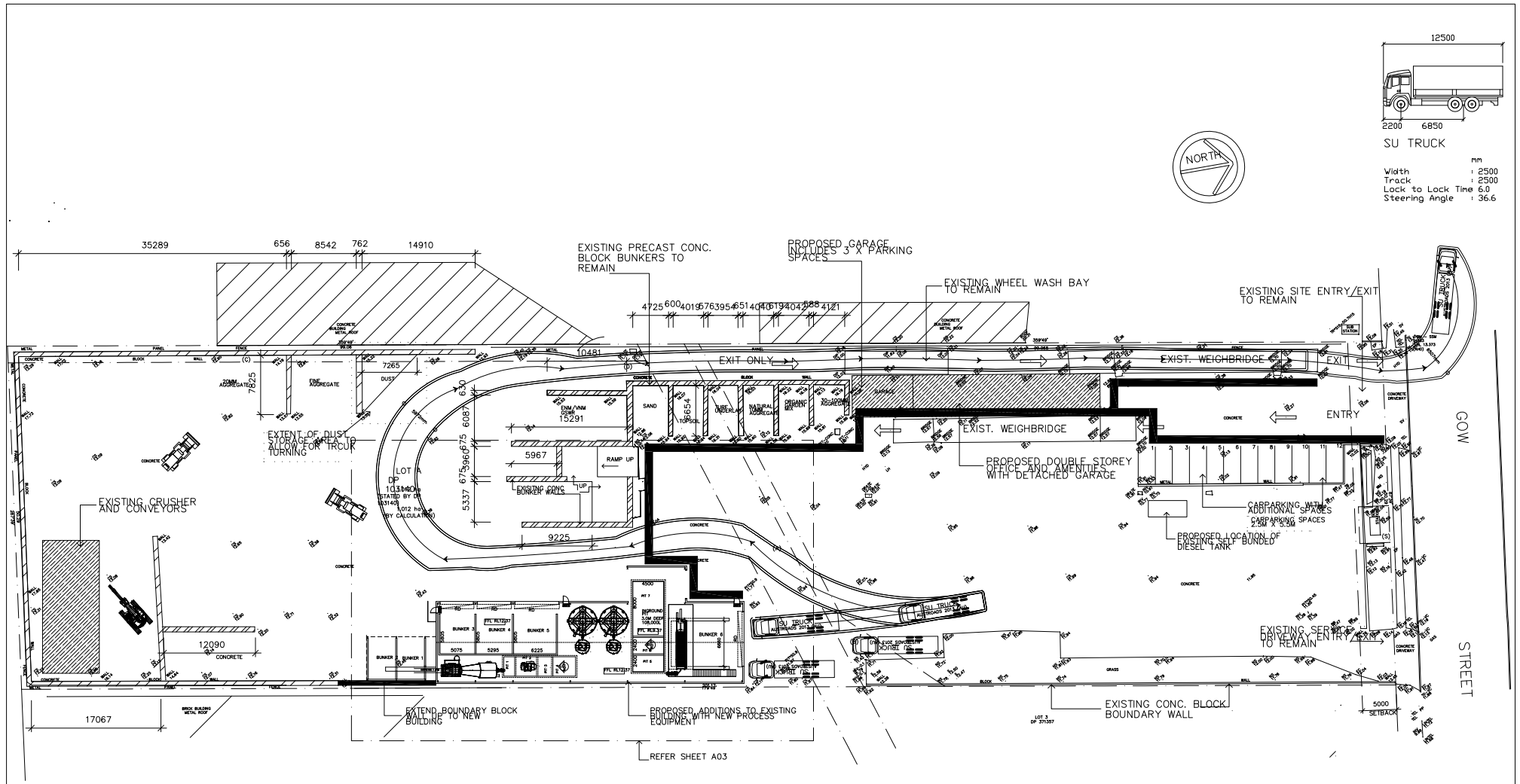
Table C11: Weekday Intersection Performance of Fairford Road with Gow Street PM Peak Hour for Future Scenario 2036

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Gibson Avenue														
1	L2	1	0	1	0.0	0.131	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.5
2	T1	233	10	245	4.3	0.131	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
3	R2	43	3	45	7.0	0.034	5.5	LOS A	0.1	1.1	0.36	0.56	0.36	45.3
Approach		277	13	292	4.7	0.131	0.9	NA	0.1	1.1	0.06	0.09	0.06	49.2
East: Gow Street														
4	L2	50	4	53	8.0	0.166	8.8	LOS A	0.6	4.8	0.49	0.93	0.49	43.3
5	T1	4	0	4	0.0	0.166	12.9	LOS A	0.6	4.8	0.49	0.93	0.49	43.3
6	R2	42	2	44	4.8	0.166	14.5	LOS B	0.6	4.8	0.49	0.93	0.49	43.0
Approach		96	6	101	6.3	0.166	11.5	LOS A	0.6	4.8	0.49	0.93	0.49	43.2
North: Gibson Avenue														
7	L2	34	4	36	11.8	0.145	4.8	LOS A	0.1	0.4	0.02	0.08	0.02	48.8
8	T1	215	13	226	6.0	0.145	0.0	LOS A	0.1	0.4	0.02	0.08	0.02	49.5
9	R2	5	0	5	0.0	0.145	5.5	LOS A	0.1	0.4	0.02	0.08	0.02	48.5
Approach		254	17	267	6.7	0.145	0.8	NA	0.1	0.4	0.02	0.08	0.02	49.4
West: Stiles Avenue														
10	L2	2	1	2	50.0	0.014	10.9	LOS A	0.1	0.4	0.52	0.89	0.52	42.6
11	T1	3	0	3	0.0	0.014	12.3	LOS A	0.1	0.4	0.52	0.89	0.52	43.1
12	R2	2	0	2	0.0	0.014	13.8	LOS A	0.1	0.4	0.52	0.89	0.52	43.1
Approach		7	1	7	14.3	0.014	12.3	LOS A	0.1	0.4	0.52	0.89	0.52	43.0
All Vehicles		634	37	667	5.8	0.166	2.6	NA	0.6	4.8	0.11	0.22	0.11	48.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Table C12: Weekday Intersection Performance of Gibson Avenue with Gow Street and Stiles Avenue AM Peak Hour with liquid waste facility traffic for Future Scenario 2036

A heavy vehicle from the filter cake bunker on the northern side of the development while other trucks are queueing



PROPOSED SITE PLAN

SCALE 1:250

DENOTES CHANGE

EXISTING BUILDING

EXTENSION TO BUILDING

PEDESTRIAN PATHWAY TO BE LINE MARKED ON PAVEMENT

ISSUE	BY	DESCRIPTION	DATE
A	GRISSUE	FOR DA	20-4-21
B	GRISSUE	FOR DA	10-6-21
C	GRISSUE	FOR DA	26-7-21
D	GRISSUE	FOR DA	29-1-22

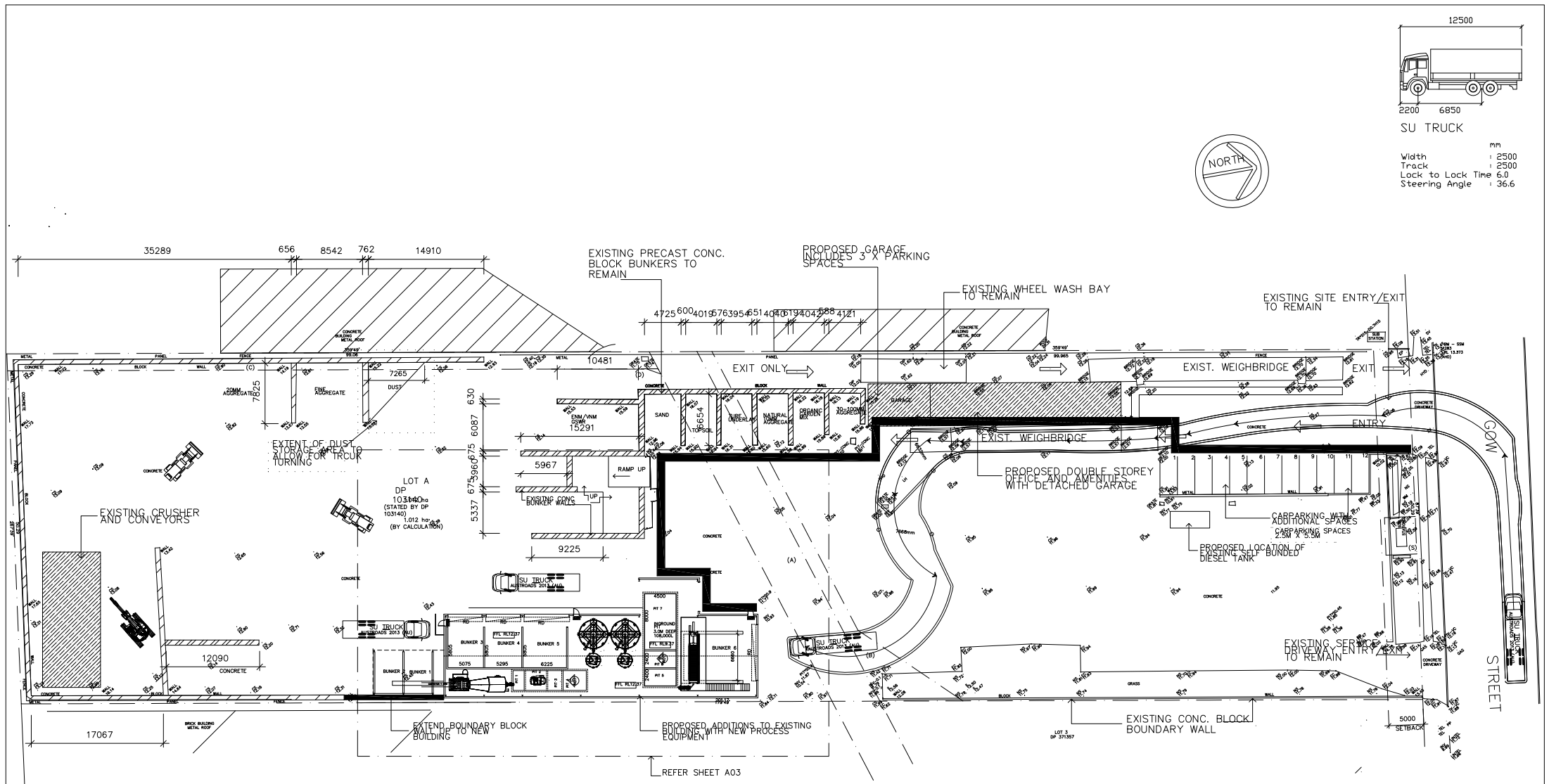
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6. STORMWATER TO BE DISCHARGED TO COUNCIL'S REQUIREMENTS AND AS 3500.3-2003.
7. ALL SERVICES TO BE LOCATED AND VERIFIED BY THE BUILDER WITH RELEVANT AUTHORITIES BEFORE ANY BUILDING WORK COMMENCES.
8. ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH THE AUSTRALIAN STANDARDS
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10. SMOKE ALARMS TO BE INSTALLED BY A LICENSED ELECTRICIAN IN ACCORDANCE WITH

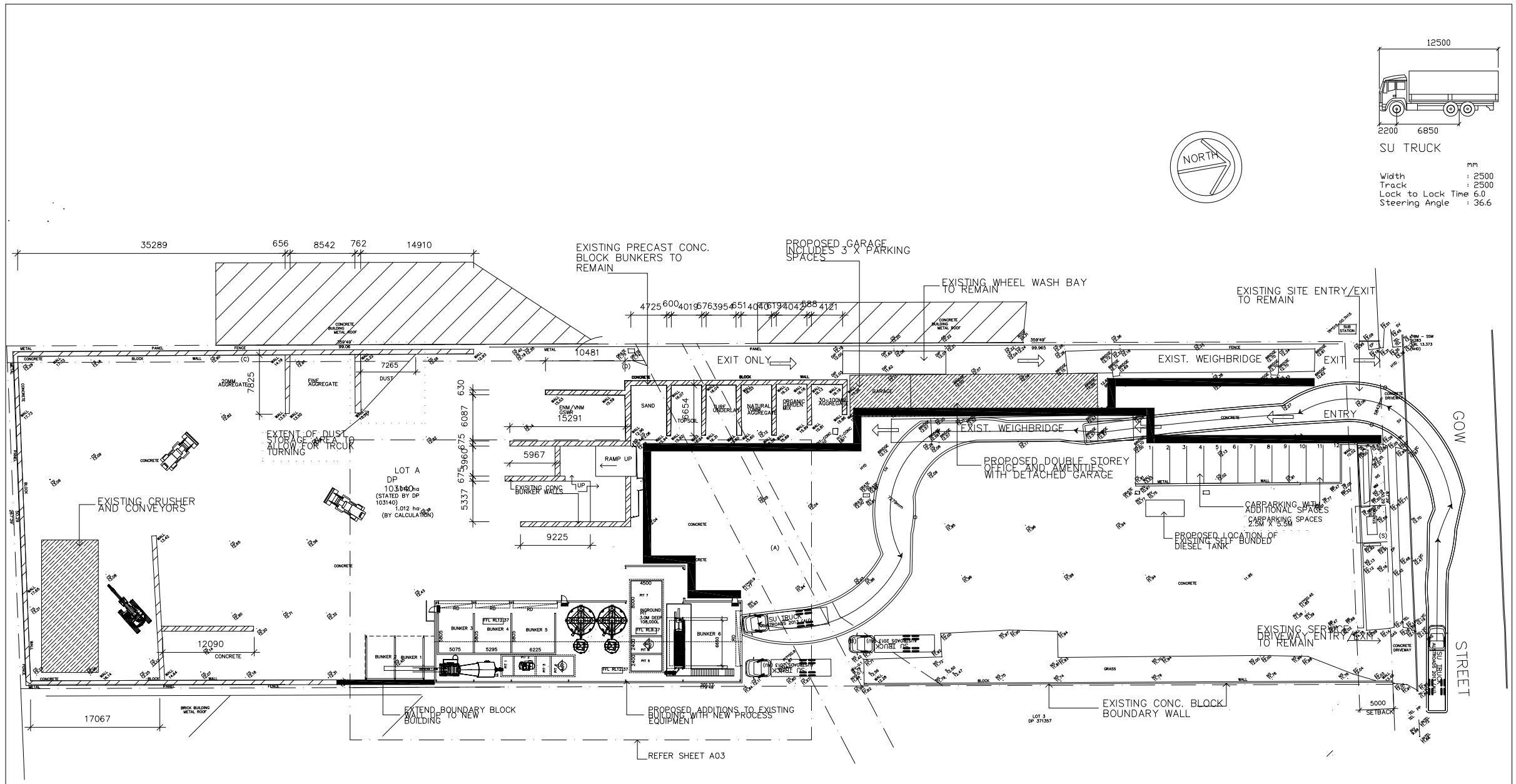
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PROJECT: PROPOSED RESOURCE RECOVERY
81-87 GOW STREET PADSTOW
LOT A DP103140
PROJECT NO: 730
CLIENT: GOW STREET RECYCLING PTY LTD
SCALE: 1:250 AT SHEET SIZE
TITLE: PROPOSED SITE PLAN
JOB NO. 0212/20
SHEET NO. A02 D

A heavy vehicle reversing into the queuing spots adjacent to the dewatering facility while another vehicle is queueing


12500
2200
6850
SU TRUCK
mm
Width : 2500
Track : 2500
Lock to Lock Time 6.0
Steering Angle : 36.6
NORTH
35289
656
8542
762
14910
EXISTING PRECAST CONC. BLOCK BUNKERS TO REMAIN
PROPOSED GARAGE INCLUDES 3 X PARKING SPACES
EXISTING WHEEL WASH BAY TO REMAIN
EXISTING SITE ENTRY/EXIT TO REMAIN
4725
600
4019
576
3954
651
4046
619
4045
588
4121
10481
EXIT ONLY
EXIST. WEIGHBRIDGE
EXIT
ENTRY
GOW STREET
7265
DUST
7825
COMM. AGGREGATE
FINE AGGREGATE
6308
6087
6754
6754
6754

A heavy vehicle loading from the filter cake bunker on the northern side of the development while other trucks are queueing



PROPOSED SITE PLAN

SCALE 1:250

DENOTES CHANGE

EXISTING BUILDING

EXTENSION TO BUILDING

PEDESTRIAN PATHWAY TO BE LINE MARKED ON PAVEMENT

ISSUE	BY	DESCRIPTION	DATE
A	GRISSUE	FOR DA	20-4-21
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81-87 GOW STREET PADSTOW
LOT A DP103140

CLIENT: GOW STREET RECYCLING PTY LTD

TITLE: PROPOSED SITE PLAN

JOB NO.: 0212/20

W/JOB NO.: W730

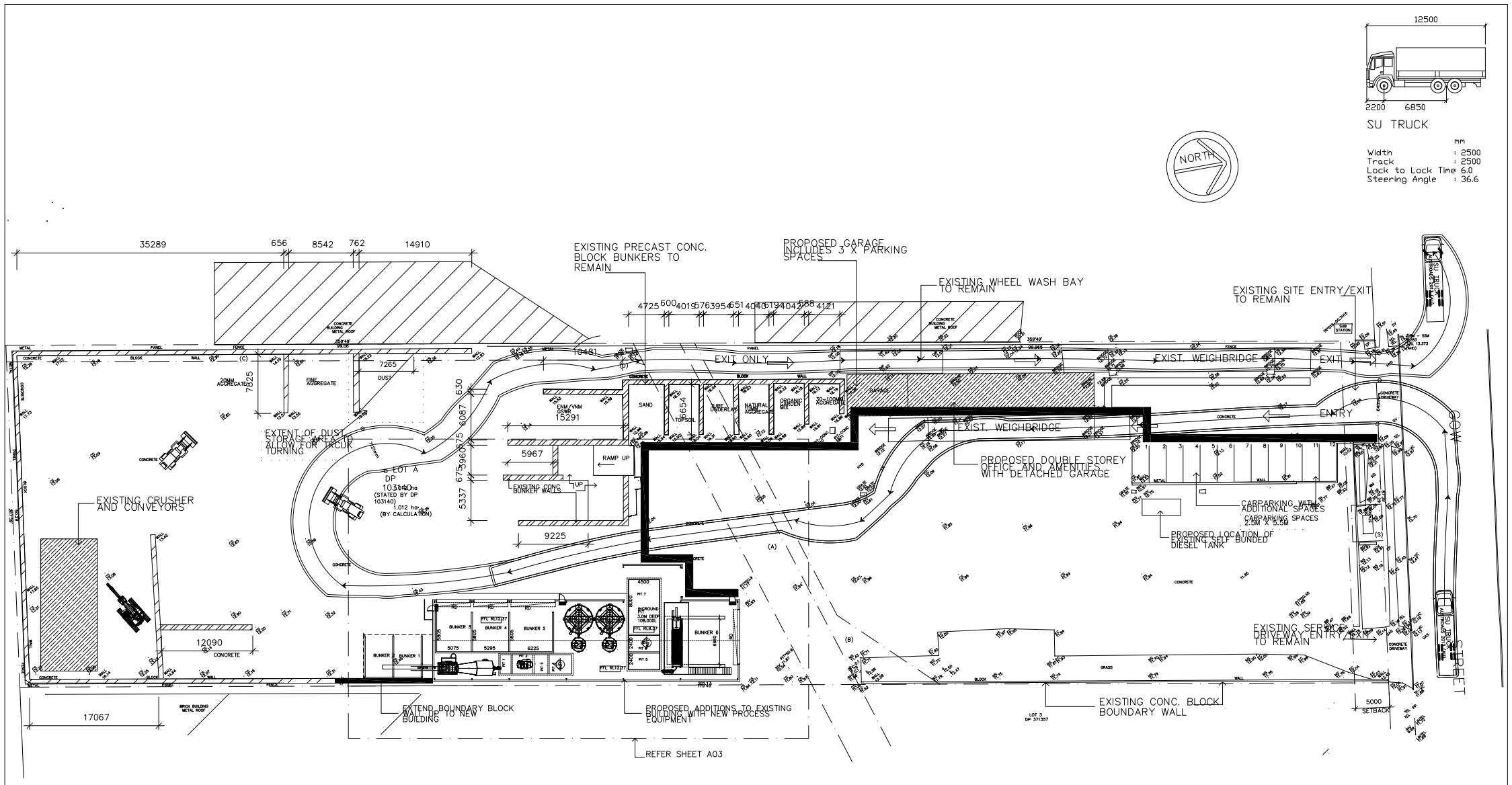
SCALE: 1:250

SHEET NO.: A02

ISSUE: D

AT SHEET

A heavy vehicle picking up aggregates from the dewatering facility.



PROPOSED SITE PLAN

SCALE 1:250

ISSUE	BY	DESCRIPTION	DATE
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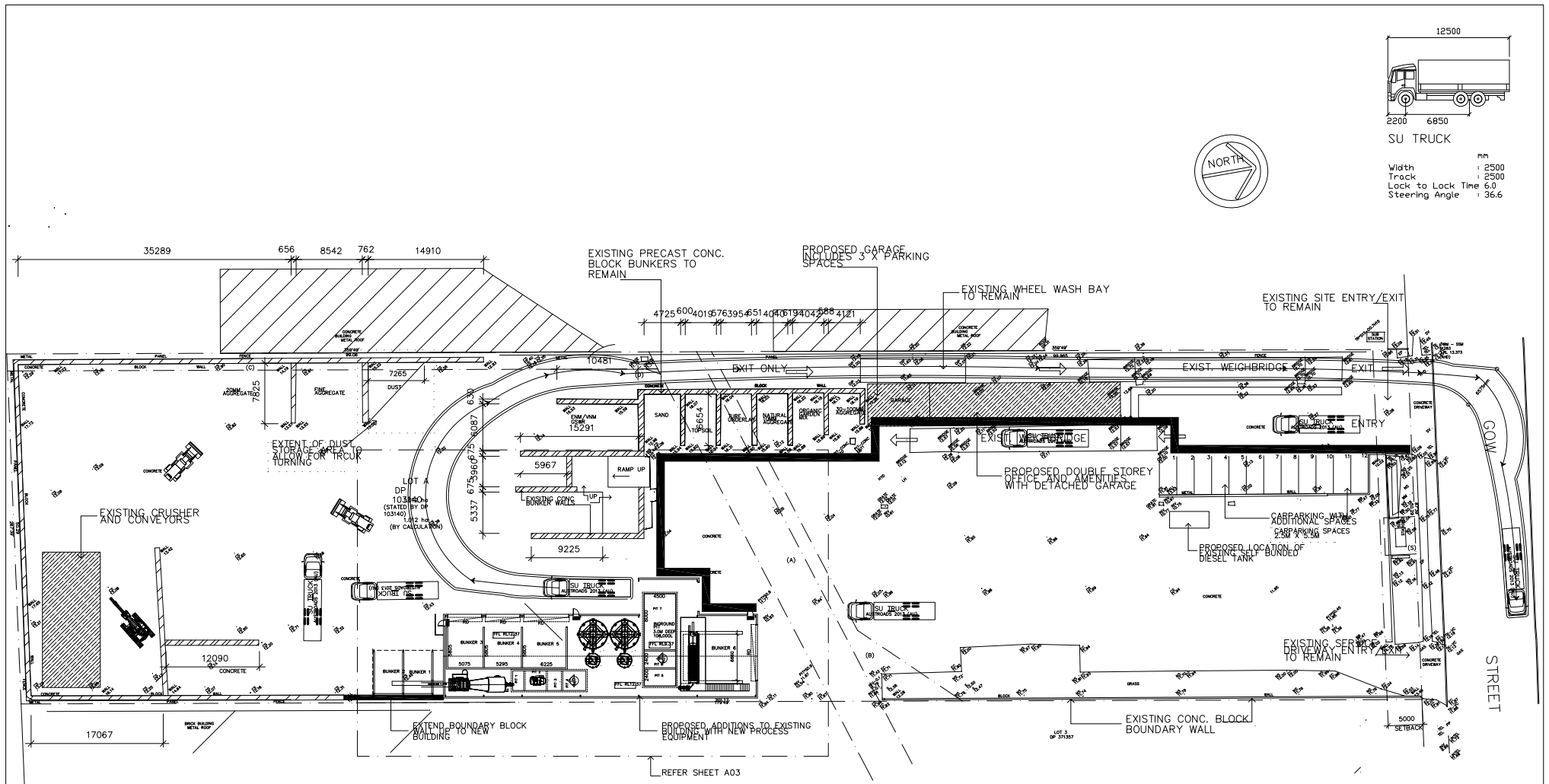
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CLIENT	GOW STREET RECYCLING PTY LTD
TITLE	PROPOSED SITE PLAN
JOB NO.	0212/20
PROJECT NO.	730
SCALE	1:250 AT SHEET
SHEET ISSUE	A02 D

A heavy vehicle egressing from the dirty water pit



PROPOSED SITE PLAN

SCALE 1:250

DENOTES CHANGE

EXISTING BUILDING

EXTENSION TO BUILDING

PEDESTRIAN PATHWAY TO BE LINE MARKED ON PAVEMENT

ISSUE	BY	DESCRIPTION	DATE
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LOT A DP103140

JOB NO. W730

CLIENT: GOW STREET RECYCLING PTY

SCALED: 1:250

TITLE: PROPOSED SITE PLAN

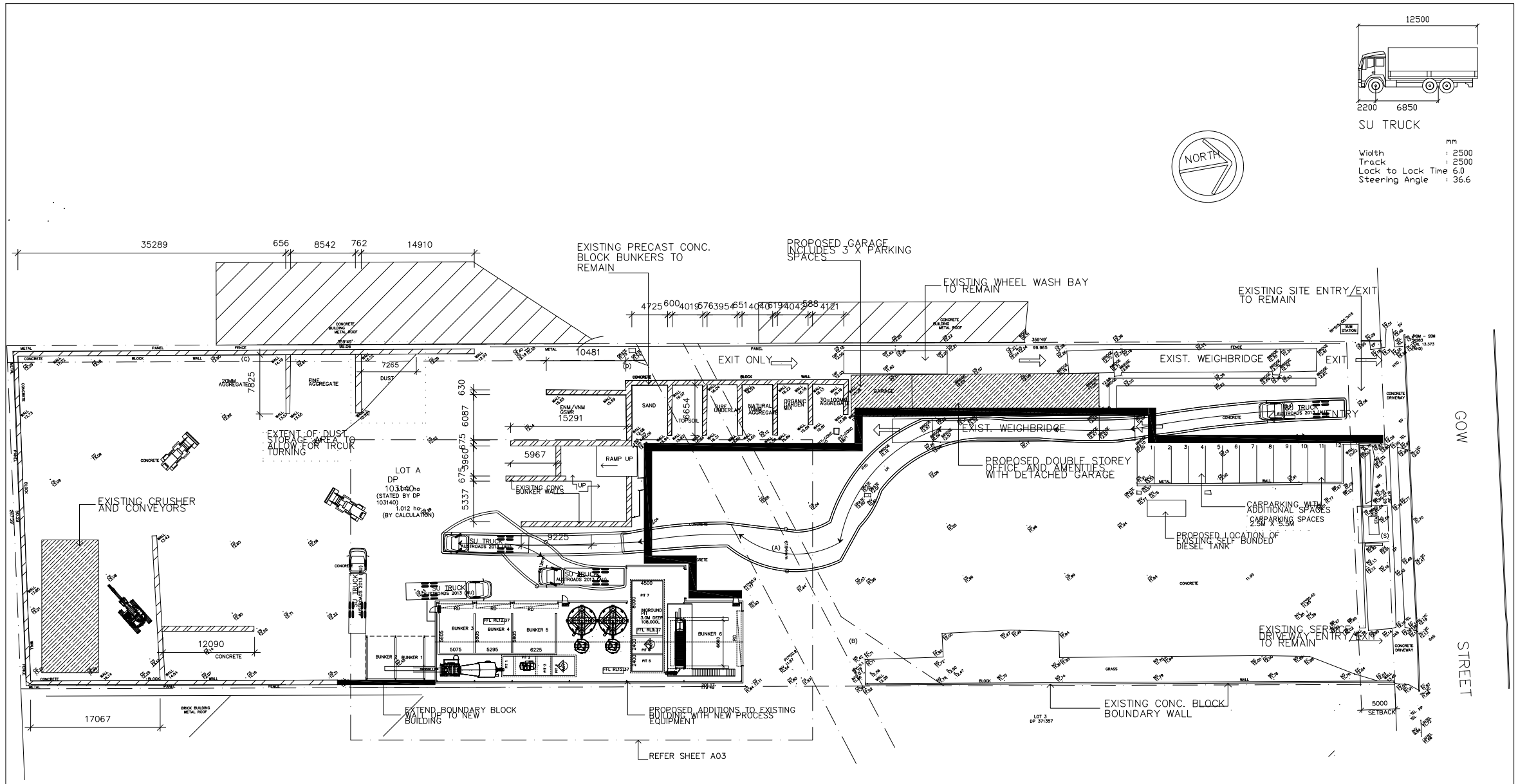
JOB NO. 0212/20

SHEET ISSUE: A02 D

A1 SHEET

A heavy vehicle backing into the dirty water pit

A heavy vehicle unloading into the dirty water pit while other trucks are queueing.



PROPOSED SITE PLAN

SCALE 1:250

DENOTES CHANGE

EXISTING BUILDING

EXTENSION TO BUILDING

PEDESTRIAN PATHWAY TO BE LINE MARKED ON PAVEMENT

ISSU	BY	DESCRIPTION	DATE
A		GRISSUE FOR DA	20-4-21
B		GRISSUE FOR DA	10-6-21
C		GRISSUE FOR DA	26-7-21
D		GRISSUE FOR DA	29-1-22

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LOT A DP103140

PROJECT NO.: 1730

CLIENT: GOW STREET RECYCLING PTY LTD

SCALE: 1:250

TITLE: PROPOSED SITE PLAN

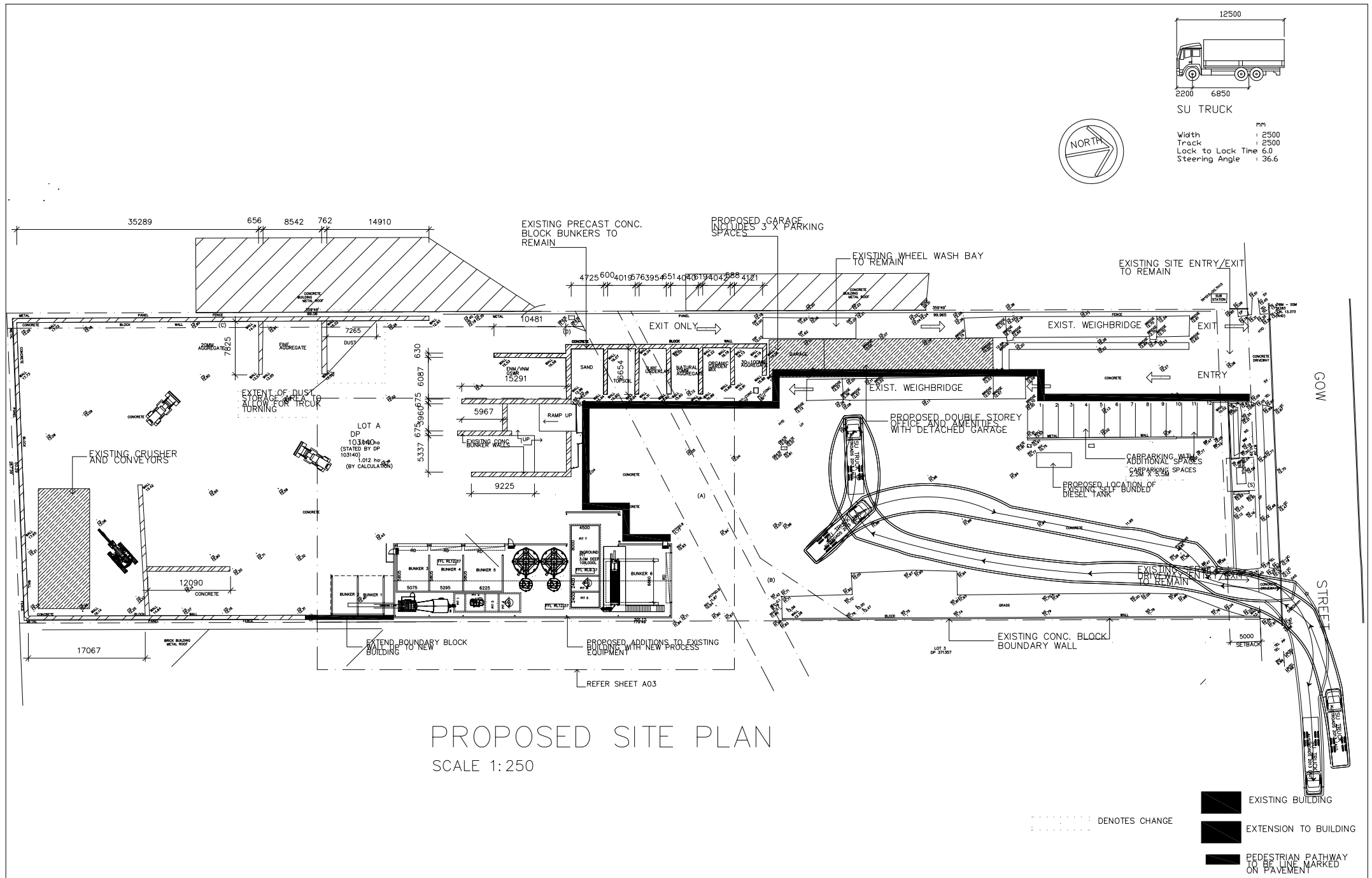
JOB NO.: 0212/20

SHEET NO: A02

ISSUE: D

AT SHEET

A swept path assessment showing a service vehicle entering and leaving the eastern driveway in a forward direction



PROPOSED SITE PLAN

SCALE 1:250

ISSUE	BY	DESCRIPTION	DATE
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CLIENT: GOW STREET RECYCLING PTY LTD
SCALE: 1:250
TITLE: PROPOSED SITE PLAN
JOB NO.: 0212/20
SHEET NO: A02
ISSUE: D
A1 SHEET

TRAFFIC MANAGEMENT PLAN
FOR GOW STREET RECYCLING CENTRE PTY LTD
81 GOW STREET, PADSTOW

Prepared for: Gow Street Recycling Centre
NSW EPA

Prepared by: Kate Barker, Environmental Scientist
R T Benbow, Principal Consultant

Report No: 191290_TMP_Rev3
March 2022
(Released: 11 March 2022)

Benbow
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Attachments

Attachment 1: Site Plans (Swept paths and queuing plans)

1. INTRODUCTION

Benbow Environmental have been engaged by Gow Street Recycling Centre (GSRC) to prepare a traffic management plan (TMP) for the proposed liquid waste processing facility located at 81 Gow Street, Padstow NSW 2211.

The site contains an existing construction and demolition (C&D) resource recovery facility and operates under an existing consent from Canterbury-Bankstown Council (DA-51/1997). The facility is approved to process up to 80,000 tonnes of waste per year and store 7,300 tonnes of waste at any one time. It undertakes scheduled activities on site (resource recovery and waste storage), and as such holds an Environment Protection Licence (EPL) (No. 10943).

GSRC seeks to modify consent to operate a liquid waste dewatering facility on site. The dewatering plant would process up to 250,000 tonnes of liquid waste per year and have a maximum processing capacity of 1,500 tonnes per day.

The purpose of the TMP is to detail how risks associated with plant and vehicle traffic are managed at the site on a daily basis.

A traffic and parking assessment has been undertaken and found that the proposed design of the development is acceptable. The nearby intersections perform well to accommodate additional traffic of the development site. The provision of fifteen (15) on site car parking spaces will accommodate the expected car requirements for staff.

Entrance and egress to the site is via Gow Street. The expected peak truck demand for the proposed dewatering facility development is four (4) per hour.

1.1 SCOPE OF WORKS

The scope of this TMP is limited to the following:

- Summary of traffic generation;
- Traffic entrance and egress;
- Procedure for traffic control officer receiving trucks on-site;
- Procedure for truck queuing;
- To ensure the safety of employees, contractors and traffic while on site;
- Encourage safe access and manoeuvrability of all traffic movements while on site;
- Establish dedicated loading/unloading areas, pedestrian walkways and site speed limits;
- Minimise conflict between on-site vehicles, cars and truck traffic;
- Minimise delays and disruptions to the business;
- Reduce the potential for tracking of sediment onto public roadways; and
- Identify and manage traffic hazards.

The TMP does not apply to traffic management related to construction work. Any proposed construction work on site will require a separate, specific construction traffic management plan.

1.2 TRAFFIC GENERATION

The approved operational hours for the C&D facility are: 06:00 and 18:00 Monday to Friday, and 07:00 and 18:00 on weekends. The existing facility will continue to operate within these hours.

The dewatering facility proposes to operate for 24 hours/seven days a week. However, the majority of liquid waste pickups would occur at the site from 7am onwards. Travelling in peak hour is inefficient since sitting in peak hour queue is unproductive time and is generally avoided. Peak vehicle movements are Ten (10) trucks per hour. Table 1-1 displays an example of the truck distribution over a standard 24-hour period.

The peak hours are 8:00am to 9:00am and 5:00pm to 6:00pm for the weekday AM and PM peak hours respectively.

Table 1-1: Truck and Car Distribution

Time	C & D facility				Dewatering Facility			
	Incoming trucks per hour		Outgoing trucks per hour		Incoming trucks per hour		Outgoing trucks per hour	
	Light	Heavy	Light	Heavy	Light	Heavy	Light	Heavy
1:00	NA	NA	NA	NA	0	1	0	1
2:00	NA	NA	NA	NA	0	1	0	1
3:00	NA	NA	NA	NA	0	1	0	1
4:00	NA	NA	NA	NA	0	2	0	2
5:00	NA	NA	NA	NA	0	2	0	2
6:00	0	1	0	1	0	2	0	2
7:00	0	1	0	1	0	2	0	1
8:00	***3***	***2***	0	***3***	***4***	***2***	***0***	***3***
9:00	0	2	0	1	0	3	0	4
10:00	0	3	0	2	0	4	0	5
11:00	0	3	0	3	0	5	0	5
12:00	0	3	0	3	0	5	0	5
13:00	0	2	0	2	0	5	0	5
14:00	0	2	0	2	0	5	0	5
15:00	0	1	0	1	0	4	0	4
16:00	0	1	0	1	0	3	0	4
17:00	***0***	***1***	***3***	***2***	***0***	***3***	***4***	***0***
18:00	NA	NA	NA	NA	0	3	0	3
19:00	NA	NA	NA	NA	0	3	0	3
20:00	NA	NA	NA	NA	0	3	0	3
21:00	NA	NA	NA	NA	0	2	0	2
22:00	NA	NA	NA	NA	0	1	0	1
23:00	NA	NA	NA	NA	0	1	0	1
0:00	NA	NA	NA	NA	0	1	0	1
Total	3	22	3	22	4	64	4	64
	6 light/day and 44 heavy/per day				8 light/day and 128 heavy/day			

Note: "Light" vehicles meaning cars, "Heavy" vehicles meaning trucks and liquid tankers

1.3 TRAFFIC IMPACT SIDRA SUMMARY

A traffic and parking assessment was undertaken by ML Traffic Engineers Pty Ltd.

The two nearby intersections were assessed using SIDRA software analysis for Level of Service (LoS):

- Priority intersection of Fairford Road with Gow Street
- Stop intersection of Gibson Avenue with Gow Street and Stiles Avenue

Table 1-2 displays the SIDRA criteria for intersection operating performance.

Table 1-2: Level of Service (LoS) for intersections

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

SIDRA analysis of the existing intersections show LoS A or B for the AM and PM peak hours for the priority intersection of Fairford Road with Gow Street, and a LoS A or B for the AM and PM peak hours for the stop intersection of Gibson Avenue with Gow Street and Stiles Avenue. Both intersections have spare capacity.

SIDRA analysis of the proposed trips on intersections show LoS A or B for the AM and PM peak hours for the priority intersection of Fairford Road with Gow Street, and a LoS A or B for the AM and PM peak hours for the stop intersection of Gibson Avenue with Gow Street and Stiles Avenue. The additional trips do not change the LoS for any turn movements or the overall intersections.

In summary, the proposed development will be a low trip generator for the weekday AM and PM peak hours. The additional trips from the proposed dewatering facility can be accommodated at the nearby intersections without significantly affecting intersection performance, delays or queues.

2. SITE LAYOUT

The existing development site is a fully developed industrial premises with a total area of approximately 10,115 m^2. The entire site consists of sealed concrete hardstand. An aerial view of the site is shown in Figure 2-1.

There is currently no existing vegetation or landscaping on the site. Existing vehicle access to the site is via two driveways from Gow Street. Vehicles currently enter and exit via the western driveway. The eastern driveway is a service driveway. There are nine (9) existing car spaces located adjacent to the western entry driveway that are used by staff.

There are currently two weighbridges at the site. Trucks are required to be weighed upon entry and exit to the site. A wheel wash is located along the western boundary prior to the weighbridge on the exit driveway. All trucks currently leave the site after passing through the wheel wash.

Figure 2-1: Aerial view of the site



2.1 ON-SITE TRAFFIC

Existing on-site vehicles include:

- Front End Loader x 2;
- Excavator x 2; and
- Trucks x 3.

Mobile plant and vehicles operating on site shall meet statutory requirements and have the required registration, licences or certification where required. All mobile plant and vehicles shall be fitted with suitable reversing alarms.

Other vehicles accessing the site include:

- Cars of site staff and visitors to the parking areas only;
- Medium rigid trucks;
- B–Doubles; and
- Liquid tanker trucks.

With the facility operating at maximum proposed capacity, heavy vehicle trips per day are expected to include 44 on average for the C&D facility, and 128 for the dewatering facility.

3. TRAFFIC MANAGEMENT

3.1 TRAFFIC ENTRANCE AND EGRESS PROCEDURE

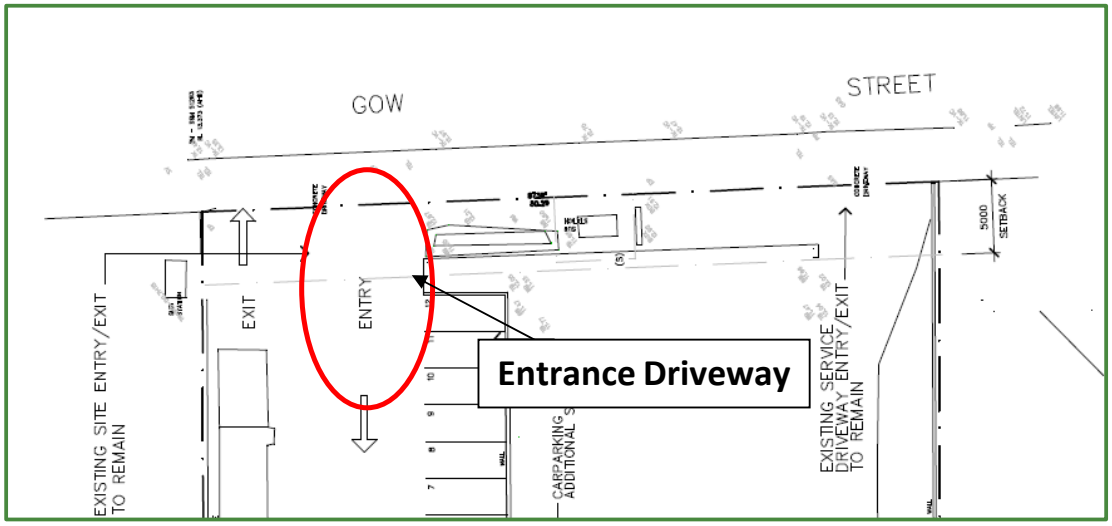
All plant traffic, staff and visitor vehicles are to enter and exit in a forward direction via the western driveway at 81 Gow Street. Access and egress to the carpark is via this driveway from Gow Street. The site entrance will be clearly sign-posted indicating that this is the only entrance & exit for all plant vehicles to the site.

A second eastern entrance is for service vehicles only.

3.1.1 Main Driveway Entrance

All plant traffic is to enter in a forward direction via the driveway at 81 Gow Street (Figure 3-1). The Traffic Control Officer will direct trucks to the first weighbridge and then to the correct area on site. Trucks are required to be weighed upon entry to the site.

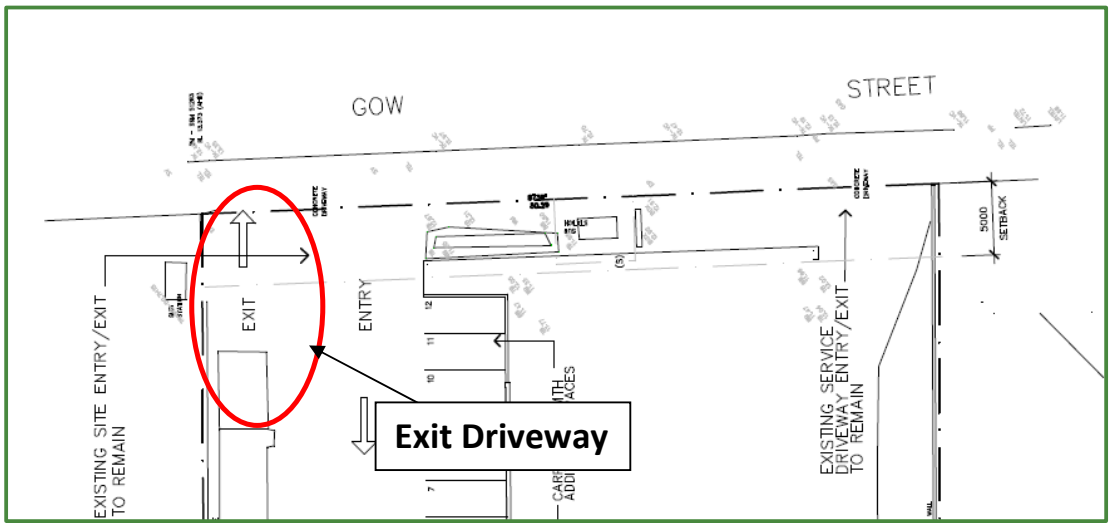
Figure 3-1: 81 Gow Street Entrance Driveway



3.1.2 Truck Egress

All plant traffic is to exit in a forward direction via the main (western) driveway at 81 Gow Street (Figure 3-2). All trucks would leave the site after passing through the wheel wash and then a weighbridge. Trucks are required to be weighed before exiting the site.

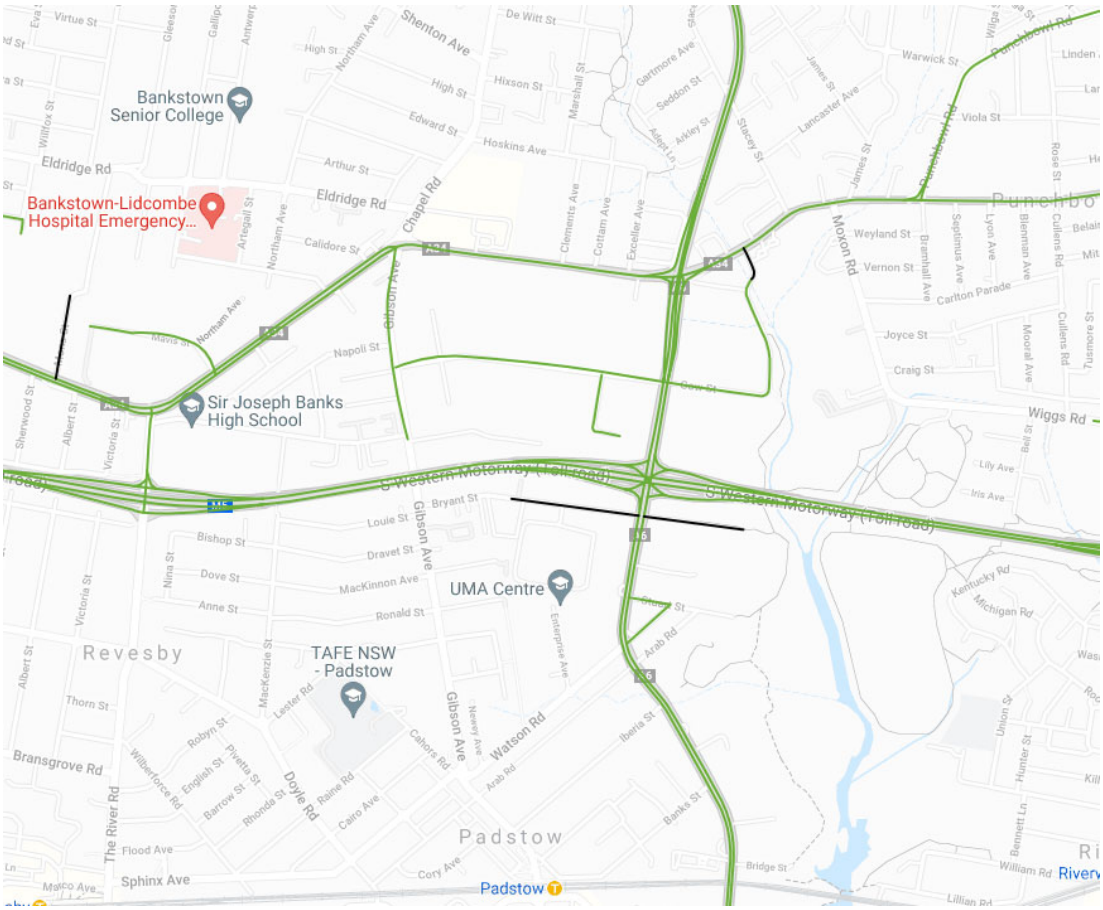
Figure 3-2: 81 Gow Street Exit Driveway



3.1.3 Heavy Vehicle routes

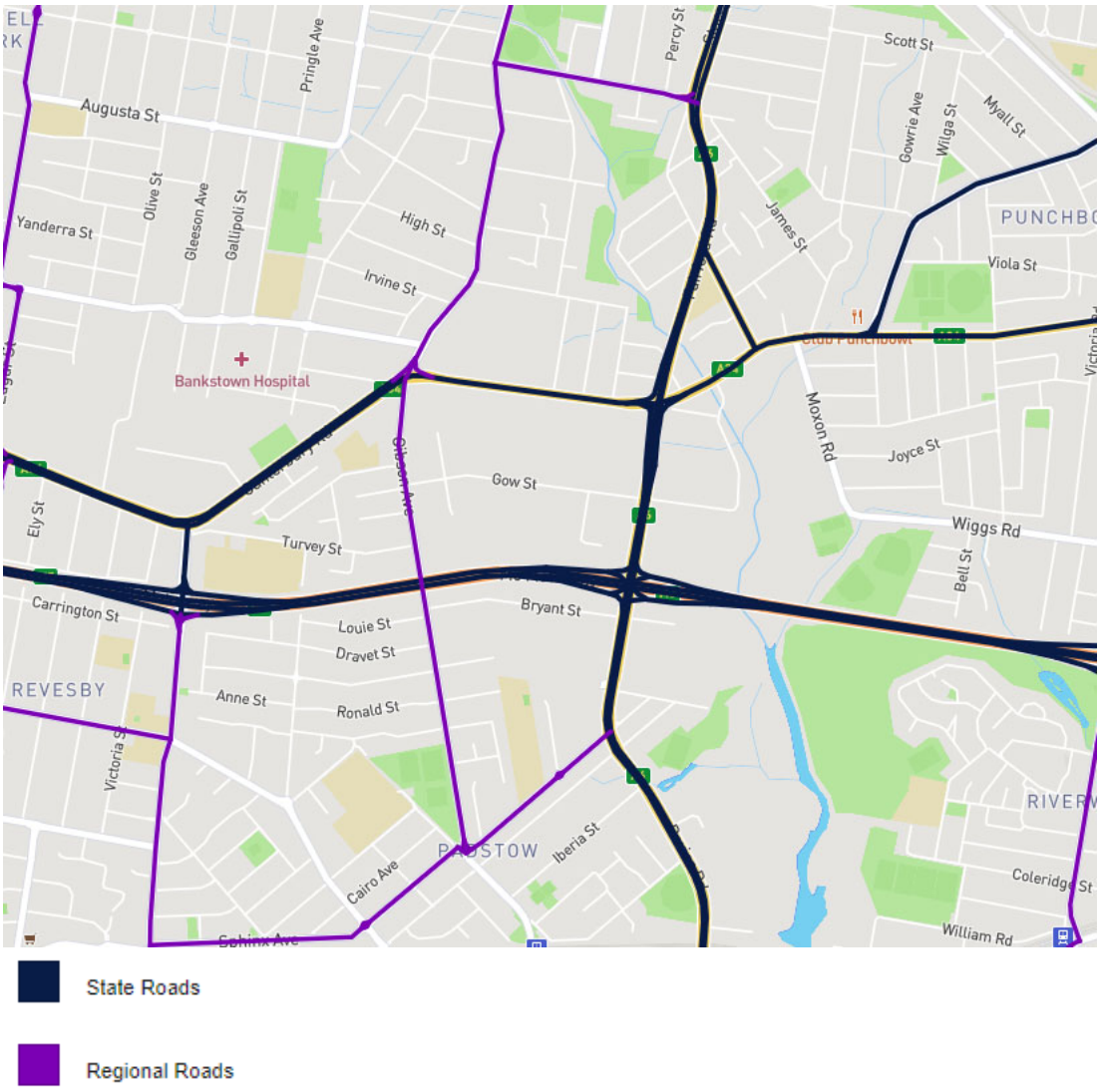
The map below shows vehicles routes for 19 m B-doubles (over 50 tonnes), 23 m B-double, and 25/26 m B-double routes. All of the surrounding roads (the South Western Motorway, Fairford Rd, Canterbury Rd, Gibson Ave) connecting to and including Gow St are possible routes for heavy vehicles.

Figure 3-3: Heavy Vehicle Routes.



© Transport for NSW 2021

Figure 3-4: NSW Road Network Classifications.



© Mapbox © OpenStreetMap © Transport for NSW 2021

3.2 UNLOADING/LOADING

There is ample area on the site to accommodate loading, unloading and waiting trucks. Swept paths are provided to demonstrate the movement of vehicles through the development for loading, unloading and waiting. These swept paths are provided in Attachment 1 and include the following:

- a heavy vehicle reversing into the queuing spots adjacent to the dewatering facility while another vehicle is queueing
- a heavy vehicle backing into and egressing from the dirty water pit
- a heavy vehicle unloading into the dirty water pit and egressing while other trucks are queueing.
- a heavy vehicle loading from the filter cake bunker on the northern side of the development and exiting while other trucks are queueing
- a heavy vehicle picking up aggregates from the dewatering facility.

3.2.1 Dewatering Facility

Full tankers entering the site to unload liquid will enter in a forward direction via Gow St and drive through the dewatering building in accordance with the swept paths shown in Attachment 1. If the building is occupied by another truck, the next vehicle may queue in areas clear of swept paths, shown in Attachment 1.

Once the tanker is empty, it may manoeuvre and leave the facility in a forward direction, passing through the wheel wash and weighbridge upon exit.

3.2.2 C&D facility

Trucks entering the site to unload/load C&D materials will enter in a forward direction via Gow St and manoeuvre into the loading/unloading areas in accordance with the swept paths shown in Attachment 1. If the desired loading/unloading is occupied by another truck, the next vehicle may wait in the designated waiting bays or in the waiting area at the front of the site.

Once the C & D truck has completed its required unloading/loading, it may manoeuvre and leave the facility in a forward direction, passing through the wheel wash and the weighbridge upon exit.

3.3 TRAFFIC QUEUING

Queuing of vehicles and overflow traffic is a potential hazard during peak traffic times. Trucks are not to queue on the street. Figure 3-5 shows the layout of the site to accommodate 5 entering rigid trucks queuing 7 exiting rigid trucks. If necessary, there is ample space onsite for trucks to wait before queuing to exit the site.

Staff would be on site at all times to direct trucks if necessary.

The following table provides a breakdown of vehicle waiting and activity during peak operations.

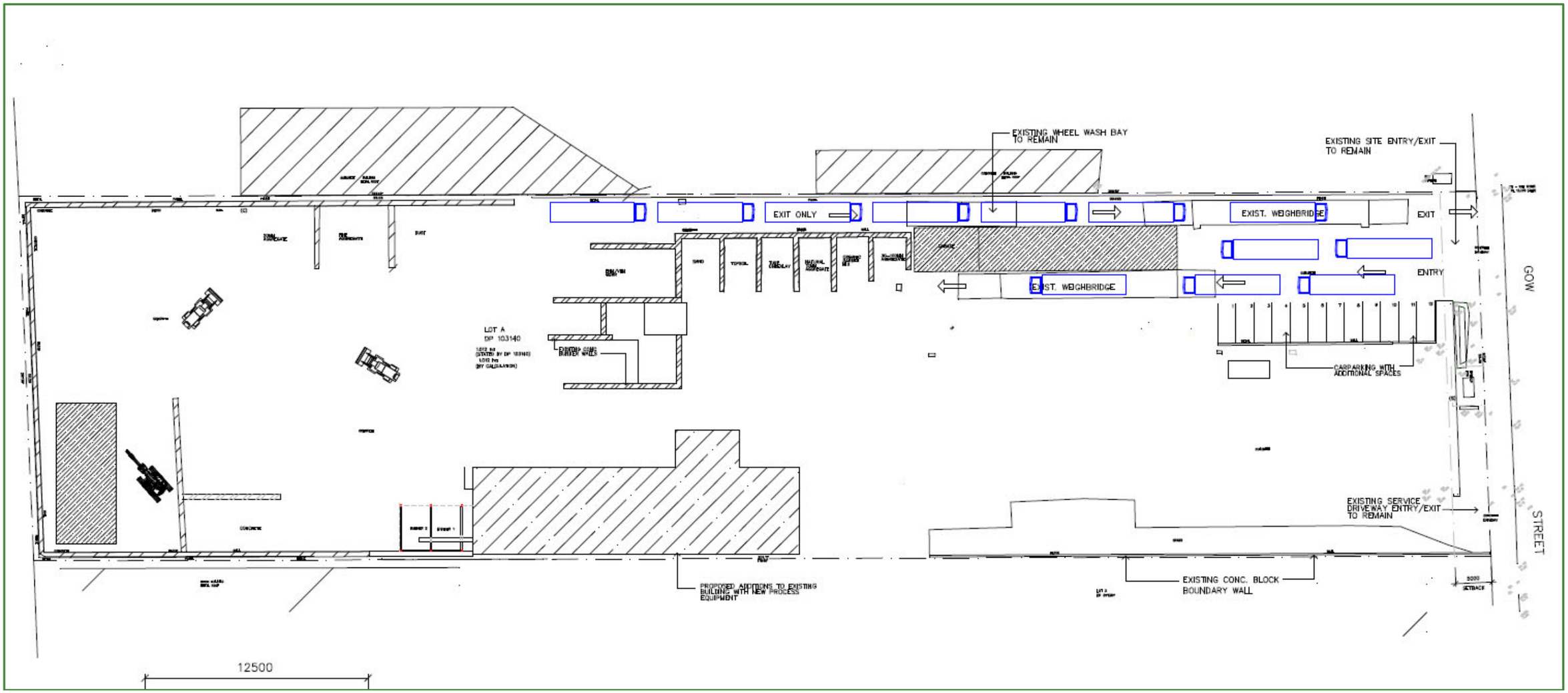
Table 3-1: Vehicle Waiting and Activity - Peak Operations

Activity	Details
Vehicles waiting to access the site	Up to 2 vehicles can wait in-front of the weighbridge prior to entering the site;
Vehicles at weighbridge	Up to 2 vehicles can weigh on the weighbridge at any one time;
Vehicle load inspections	Up to 3 vehicles either on the weighbridge or in front of the weighbridge can be untarped for load inspection prior to entering the site.
Vehicles within the site, waiting to access unloading areas	Up to 4 vehicles can wait behind the entrance weighbridge at any one time waiting to access the unloading/loading areas. Up to 5 onsite waiting spots for loading and unloading are available.

Table 3-1: Vehicle Waiting and Activity - Peak Operations

Activity	Details
Vehicles unloading/loading times	1 vehicle can unload at the dewatering plant at any one time (typically 10-25 mins). 1 vehicle can load at the dewatering plant at any one time (typically 15 min). 1 vehicle can unload at the C&D facility at any one time (typically <5min). 2 vehicles can load at the C&D facility at any one time (typically 15 min).
Vehicles exiting the site	Up to 6 vehicles can wait behind the weighbridge at any one time waiting to leave the site
Difference between weekdays and weekends	Weekdays are busier than weekends. Total number of vehicles on weekends is approximately 30% of the total number of vehicles on a weekday. The weekends often have more box trailers, as smaller jobs (households) arrive on site on the weekends.

Figure 3-5: Truck queuing



3.3.1 Emergency Plant Shut Down

In the event of an emergency plant shut down, up to 5 rigid truck can queue in the driveway safely. Any planned incoming trucks will be contacted and directed away from the site.

3.4 Parking Arrangements

There are 9 existing car spaces. An additional 6 will be provided. In total the proposed development will comprise 15 car spaces including 12 spaces adjacent to the entrance driveway and 3 spaces in the garage adjacent to the office building.

3.5 Notification on Arrival

3.5.1 Trucks

All loads are required to be weighed on arrival and departure. Upon entering the facility all truck loads are required to report to the weighbridge staff. The load will be weighed and recorded at the weighbridge. The following information is recorded as per the Waste Management Plan:

Incoming Loads:

- Date & time received;
- Name of customer;
- Address of facility received from/customer address;
- Weight of load;
- Vehicle registration number;
- Name of driver; and
- Details of any unauthorised waste found in load.

Outgoing Loads:

- Date & time dispatched;
- Name of destination;
- Address of destination;
- Weight of load;
- Vehicle registration number;
- Name of driver; and
- Contents of load.

This information is kept in the logbook on site.

Should any unauthorised waste be found within the load, the truck driver will be instructed to leave the site immediately via the on-site routes.

3.5.2 Cars

All staff and personnel are required to park in designated spaces on site and report to the office on arrival. Visitors are required to sign in at reception. Signage indicating the location of reception is provided on site.

Only authorised vehicles will be allowed access on-site past the weighbridge. All cars must enter and leave the site in a forward direction.

3.6 RESPONSIBILITIES

Site Manager

- Oversees the implementation of the traffic management plan;
- Ensure all traffic signage and markings are provided and maintained;
- Ensure staff and contractors are aware of their responsibilities under the site TMP;
- Review and update the site TMP.

Weighbridge personnel

- Record all incoming and outgoing truck loads as per Section 3.5.1;
- Direct trucks to appropriate loading and/or unloading areas;
- Ensure drivers are aware of the site speed limit;
- Ensure unauthorised loads are not accepted;
- Report all incidents and near misses to site manager.

Drivers

- Report to weighbridge staff;
- Undertake loading and/or unloading in dedicated areas;
- Obey the site speed limit, all traffic signage on site and instructions given by site staff;
- Ensure all care and safety is taken to prevent personal injury and injury to others.
- Report all incident and near misses to site personnel.

Contractors and visitors

- Report to reception;
- Park in dedicated car parking spaces;
- Obey the site speed limit and other traffic signage on site;
- Ensure all care and safety is taken to prevent personal injury and injury to others.
- Report all incident and near misses to site personnel.

3.7 SPEED LIMITS

Workplace speed limits are set at 5 km/hr with clearly displayed signage at the entrance to the site. Figure 3-6 displays an example of a speed limit sign to be installed at the site entrance.

Figure 3-6: Speed Limit Sign



3.8 Traffic Control Officer

The traffic control officer responsibilities are provided below:

- A nominated traffic control officer is to be present on site at all times during operation.
- The traffic control officer(s) is/are responsible for truck scheduling.
- The traffic control officer(s) is/are responsible for directing vehicles to the waiting areas and loading or unloading areas.
- The traffic control officer(s) are to be allocated a working CB radio to undertake communications with truck drivers.
- The traffic control officer(s) is/are to ensure vehicles follow instructions given as per the procedures presented in the traffic management plan.

3.9 Site Inspections & Audits

Site inspections and audits will be undertaken in accordance with the site's Environmental Management Plan (EMP). Issues related to traffic management are included in the Workplace Inspection Checklist as part of the site's EMP.

3.10 Incident Reporting

Incidents and near misses in relation to on-site traffic will be dealt with in accordance with the incident response and investigation procedures in Site's EMP.

This concludes the report.

Kate Barker
Environmental Scientist

R T Benbow
Principal Consultant

4. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of Gow Street Recycling Centre, as per our agreement for providing environmental services. Only Gow Street Recycling Centre is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

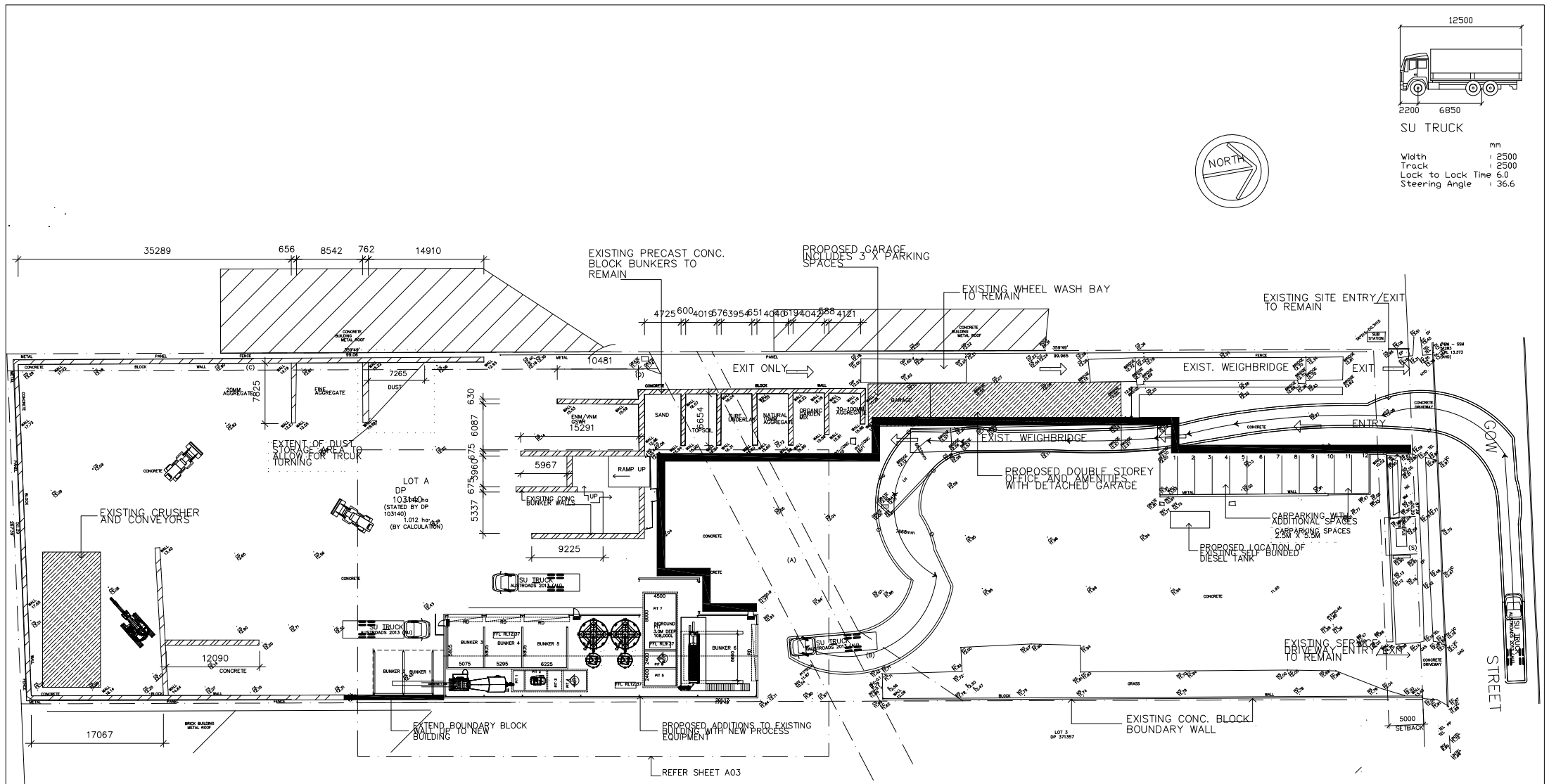
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Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.

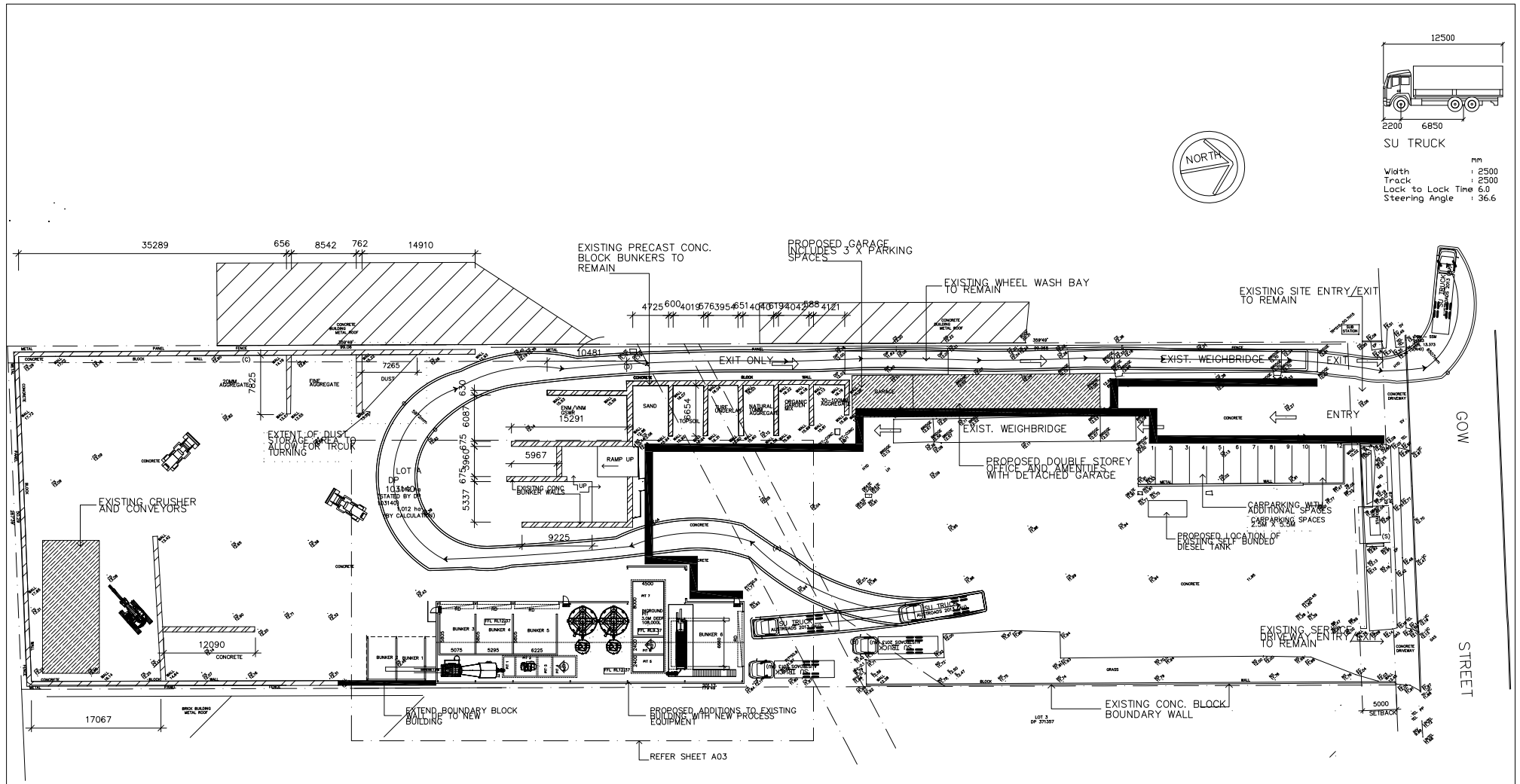
ATTACHMENTS

Attachment 1: Site Plans (Swept paths and queuing plans)

A heavy vehicle reversing into the queuing spots adjacent to the dewatering facility while another vehicle is queueing


12500
2200
6850
SU TRUCK
mm
Width : 2500
Track : 2500
Lock to Lock Time 6.0
Steering Angle : 36.6
NORTH
35289
656
8542
762
14910
EXISTING PRECAST CONC. BLOCK BUNKERS TO REMAIN
PROPOSED GARAGE INCLUDES 3 X PARKING SPACES
EXISTING WHEEL WASH BAY TO REMAIN
EXISTING SITE ENTRY/EXIT TO REMAIN
4725
600
4019
576
3954
651
4046
619
4045
588
4121
10481
EXIT ONLY
EXIST. WEIGHBRIDGE
EXIT
ENTRY
GOW STREET
7265
DUST
7825
COMM. AGGREGATE
FINE AGGREGATE
6308
6087
6754
6754
6754

A heavy vehicle from the filter cake bunker on the northern side of the development while other trucks are queueing



PROPOSED SITE PLAN

SCALE 1:250

DENOTES CHANGE

EXISTING BUILDING

EXTENSION TO BUILDING

PEDESTRIAN PATHWAY TO BE LINE MARKED ON PAVEMENT

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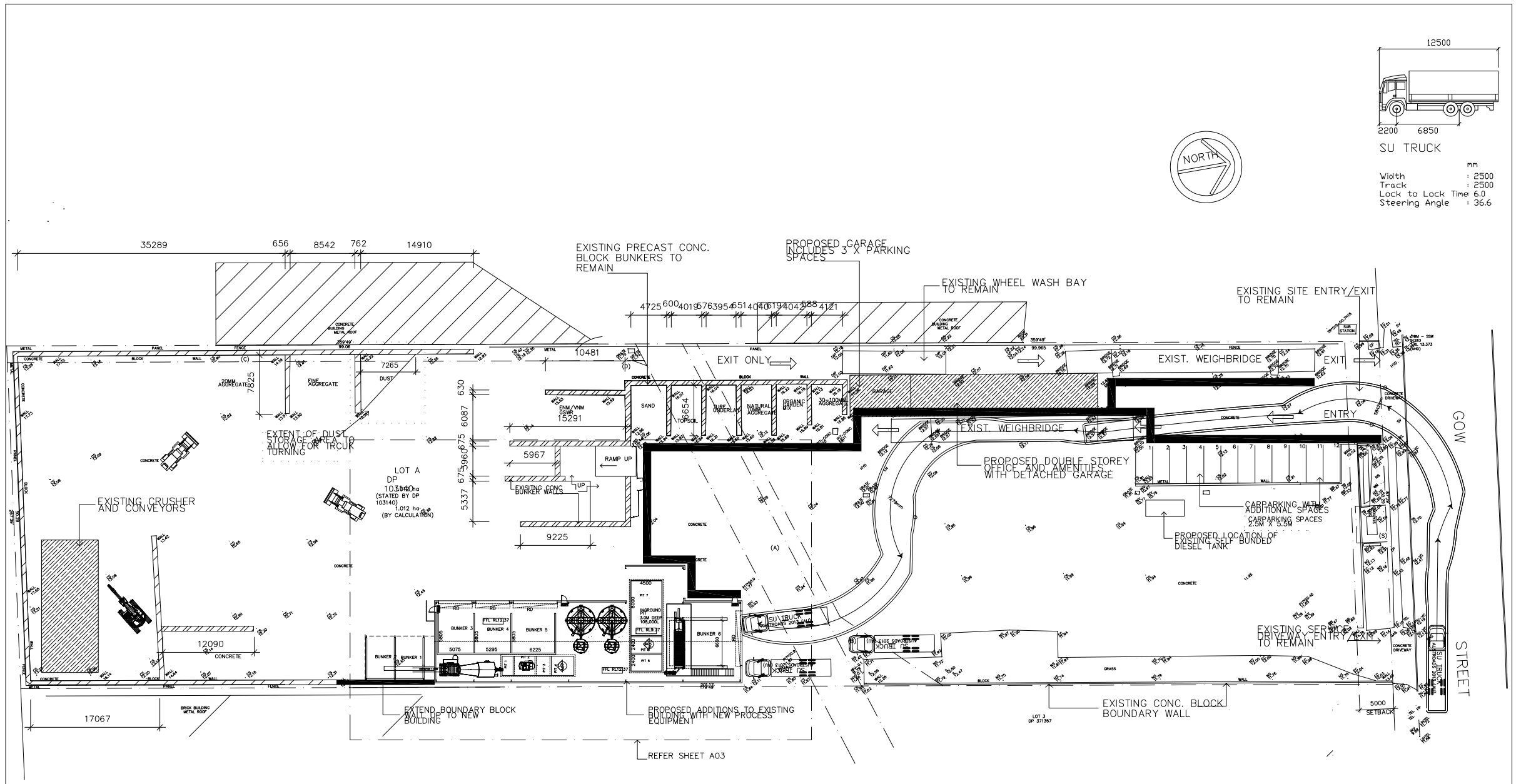
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A heavy vehicle loading from the filter cake bunker on the northern side of the development while other trucks are queueing



PROPOSED SITE PLAN

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DENOTES CHANGE

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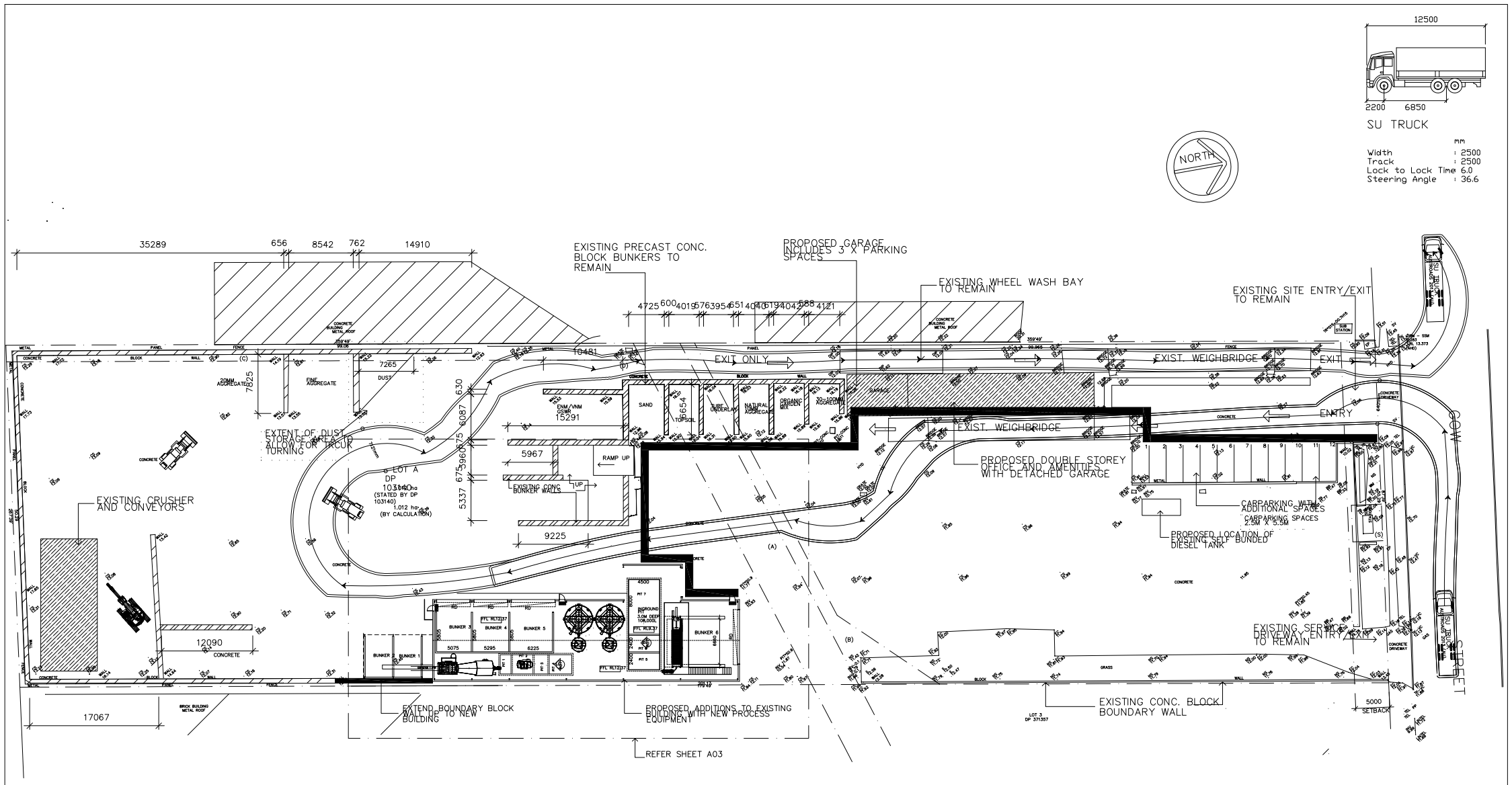
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A heavy vehicle picking up aggregates from the dewatering facility.



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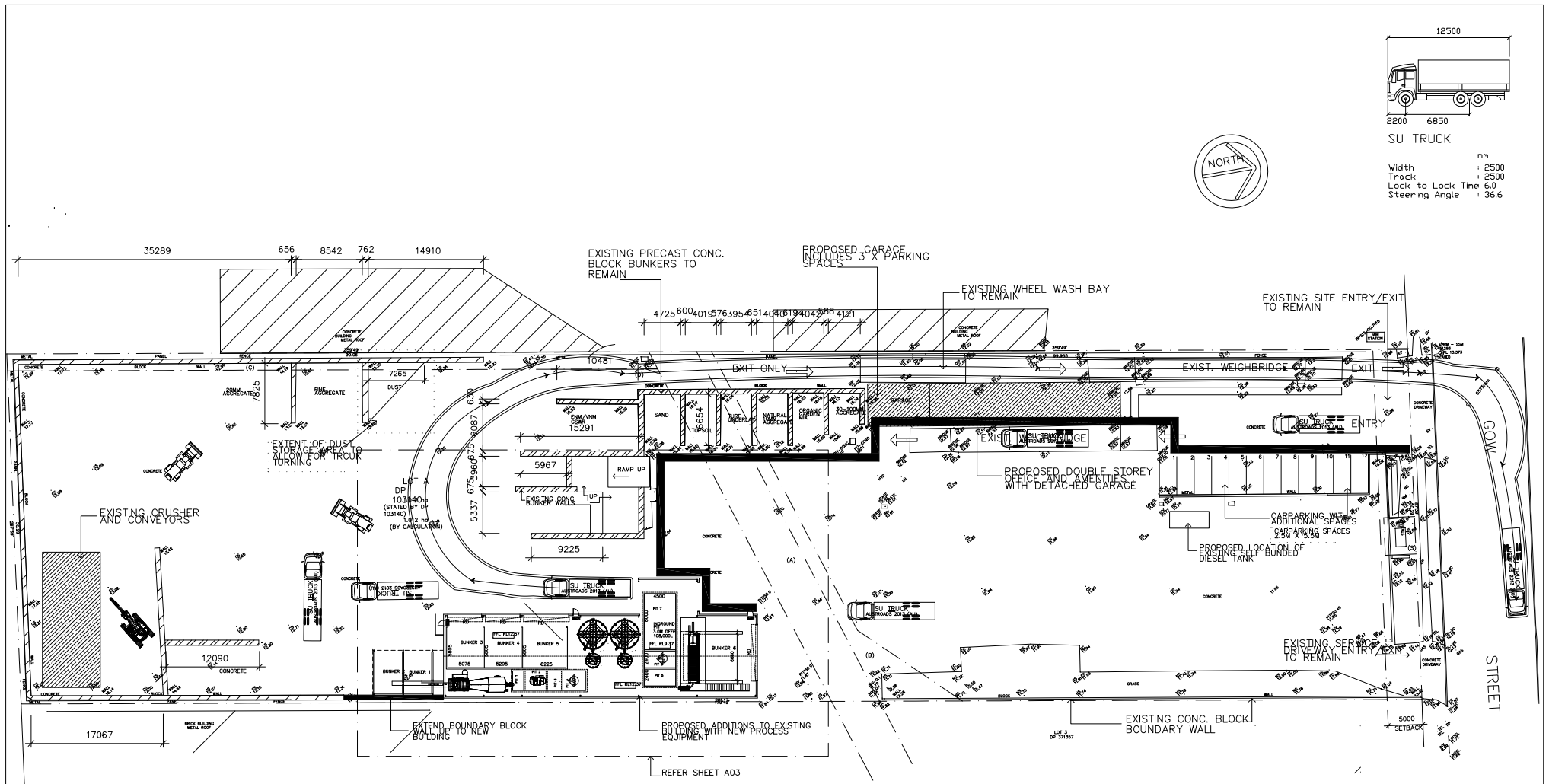
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JOB NO.	0212/20
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A heavy vehicle egressing from the dirty water pit



PROPOSED SITE PLAN

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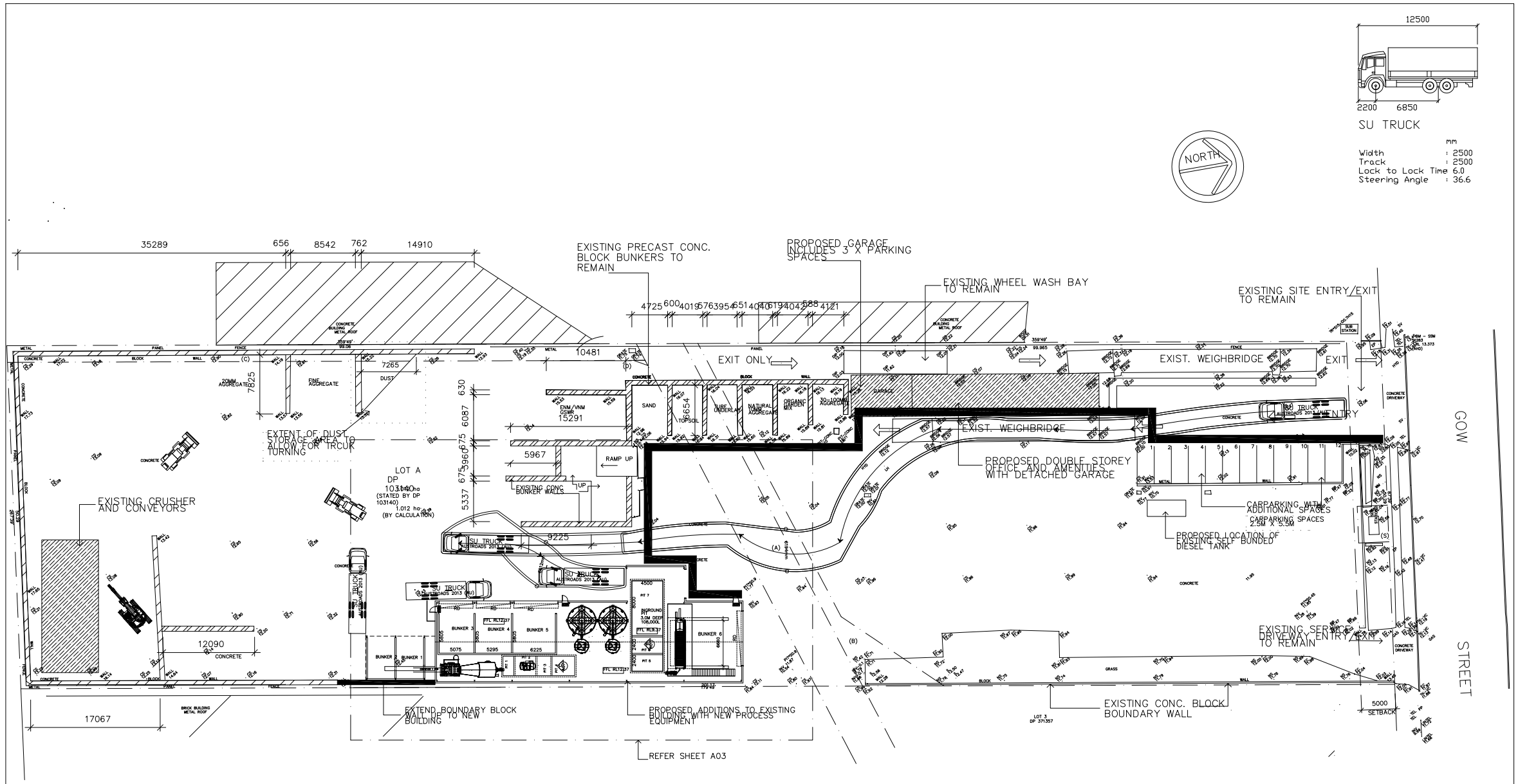
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A heavy vehicle backing into the dirty water pit

A heavy vehicle unloading into the dirty water pit while other trucks are queueing.



PROPOSED SITE PLAN

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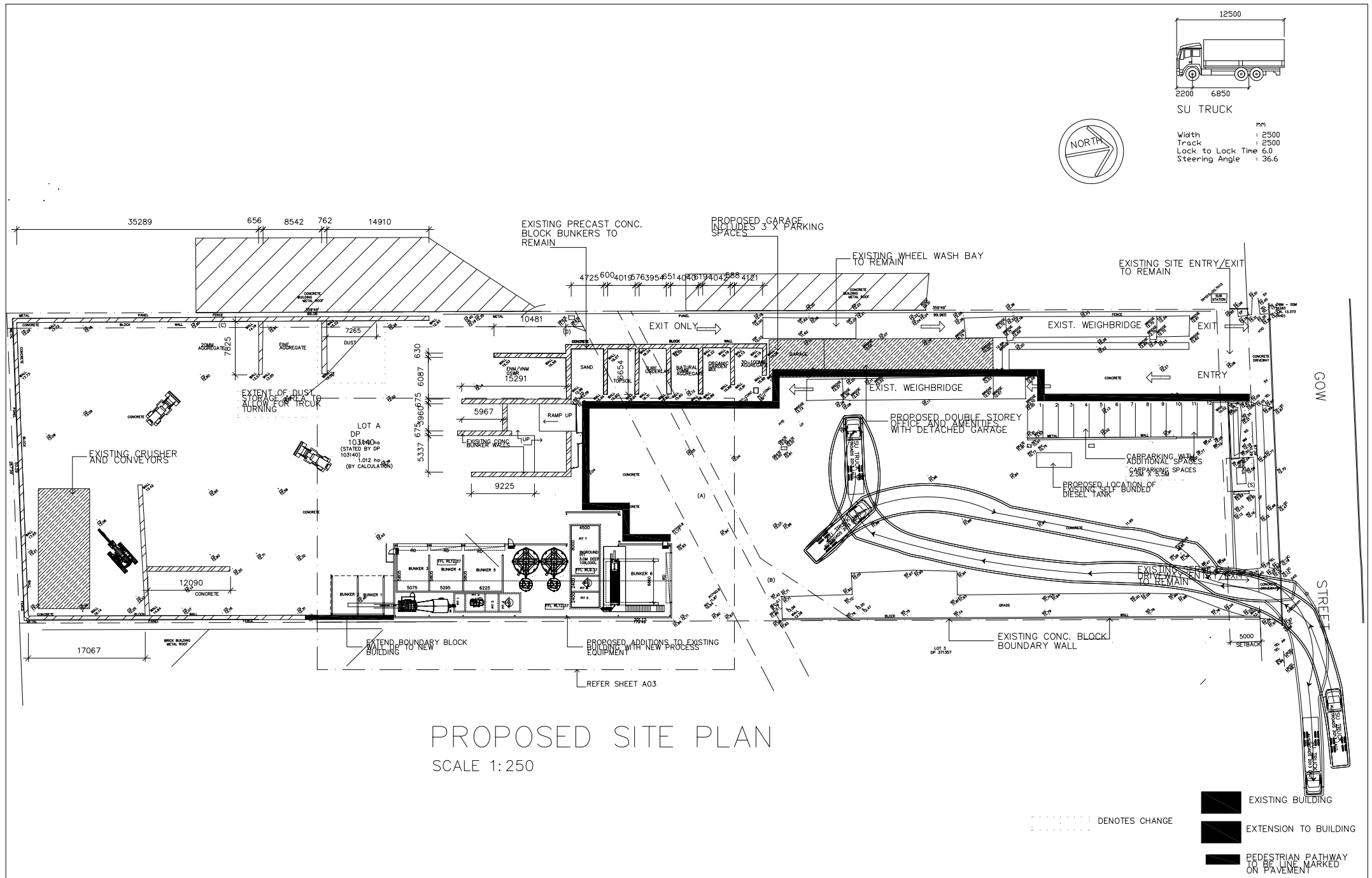
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A swept path assessment showing a service vehicle entering and leaving the eastern driveway in a forward direction



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SCALE: 1:250
TITLE: PROPOSED SITE PLAN
JOB NO.: 0212/20
SHEET NO: A02
ISSUE: D
A1 SHEET

SOIL AND WATER ASSESSMENT
PREPARED FOR
GOW STREET RECYCLING PTY LTD.
81 GOW STREET, PADSTOW 2211

Prepared for: Gow Street Recycling Pty Ltd

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Report No: 191290_Soil-Water_Rev5
February 2022
(Released: 14 February 2022)

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Attachments

Attachment 1: Certificate of Analysis

1. INTRODUCTION

Benbow Environmental has been engaged by Gow Street Recycling Centre to undertake a Soil and Water assessment to support an Environmental Impact Statement (EIS) for the proposed construction and operation of a liquid waste dewatering facility to be located at 81 Gow Street, Padstow NSW 2211.

The assessment is a qualitative study that addresses the potential impacts to soil and water from the proposed operations in accordance with the Secretary's Environmental Assessment Requirements (SEARs No. 10450). The assessment is based on the Stormwater Drainage Design and Flood Modelling undertaken by Indesco.

1.1 SEARS REQUIREMENTS

Water and soil requirements are listed in the Secretary's Environmental Assessment Requirements (SEAR 10450) as a key issue. Table 1-1 provides the details of requirements addressed in this Soil and Water assessment.

Table 1-1: SEARS Requirements

Requirement	Comment
DPIE REQUIREMENTS	
A description of local soils, topography, drainage and landscapes.	Section 4.1
The details of stormwater, leachate and wastewater management.	Section 3.4.4.1
The details of sediment and erosion controls.	Provided in erosion and sediment control plans.
A detailed site water balance.	Section 3.2.1
An assessment of impacts to surface and groundwater resources, flooding impacts and impacts to groundwater dependent ecosystems.	Section 3.4
An assessment in accordance with ASSMAC Guidelines for the presence and extent of actual acid sulfate soils (AASS) and potential acid sulfate soils (PASS) on the site.	Section 4.1.3
Details of the stormwater and wastewater management systems (including sewage), water monitoring program and other measures to mitigate surface and groundwater impacts.	Section 3.4.4.1
The identification of an adequate, secure, reliable and appropriately authorised water supply for the life of the project. Including assessment of current market depth where a water entitlement is required to be purchased.	Section 3.2
Quality and quantity assessment of impacts on surface and ground water sources	Section 3.4.4
Assessment of impacts and proposed mitigating measures to reduce impacts on: 1. related infrastructure 2. adjacent licensed water users 3. basic landholder rights 4. watercourses, riparian land, and groundwater dependent ecosystems	 Section 3.4.3 Section 3.4.4.1.2 Section 3.4.5.1
Proposed surface and groundwater monitoring activities and methodologies	Section 3.4.5.1

Table 1-1: SEARS Requirements

Requirement	Comment
Consideration of relevant legislation, policies and guidelines, including the NSW Aquifer Interference Policy (2012), the Guidelines for Controlled Activities on Waterfront Land (2018) and the relevant Water Sharing Plans.	Section 3.1
EES recommends the SEARs include the attached EES standard flooding requirements. (from DPI)	Section 3.4.8
EPA REQUIRMENTS	
Provide details of the project that are essential for predicting and assessing impacts to waters including: a) the quantity and physio-chemical properties of all potential water pollutants and the risks they pose to the environment and human health, including the risks they pose to Water Quality Objectives in the ambient waters (as defined on http://www.environment.nsw.gov.au/ieo/index.htm, using technical criteria derived from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC 2000) b) the management of discharges with potential for water impacts c) drainage works and associated infrastructure; land-forming and excavations; working capacity of structures; and water resource requirements of the proposal.	Section 3.4.4.1 Section 3.2 Section 2.10
Outline site layout, demonstrating efforts to avoid proximity to water resources (especially for activities with significant potential impacts e.g. effluent ponds) and showing potential areas of modification of contours, drainage etc.	Section 2
Outline how total water cycle considerations are to be addressed showing total water balances for the development (with the objective of minimising demands and impacts on water resources). Include water requirements (quantity, quality and source(s)) and proposed storm and wastewater disposal, including type, volumes, proposed treatment and management methods and re-use options.	Section 3.2 and 3.2.1
Provide an overview of: Provide an overview of the affected environment to place the proposal in its local and regional environmental context including: a) meteorological data (e.g. rainfall, temperature and evaporation, wind speed and direction); b) topography (landform element, slope type, gradient and length); c) surrounding land uses (potential synergies and conflicts); d) geomorphology (rates of landform change and current erosion and deposition processes); e) soil types and properties (including erodibility, engineering and structural properties, dispersibility, permeability, presence of acid sulfate soils and potential acid sulfate soils);	Section 2.7 Section 4.1.2 Section 2.2 Section 4.2.3 Section 4.1.3
Describe the catchment including proximity of the development to any waterways and provide an assessment of their sensitivity/significance from a public health, ecological and/or economic perspective. The Water Quality and River Flow Objectives on the website: http://www.environment.nsw.gov.au/ieo/index.htm should be used to identify the agreed environmental values and human uses for any affected waterways. This will help with the description of the local and regional area.	section 2.5 and 2.6 Section 2.5.1
Describe existing surface and groundwater quality – an assessment needs to be undertaken for any water resource likely to be affected by the proposal and for all conditions (e.g. a wet weather sampling program is needed if runoff events may cause impacts).	Section 2.4

Table 1-1: SEARS Requirements

Requirement	Comment
Provide site drainage details and surface runoff yield.	Section 3.4.4
State the ambient Water Quality and River Flow Objectives for the receiving waters. These refer to the community's agreed environmental values and human uses endorsed by the Government as goals for the ambient waters.	Section 2.5.1
State the indicators and associated trigger values or criteria for the identified environmental values. This information should be sourced from the ANZECC 2000 Guidelines for Fresh and Marine Water Quality (http://www.environment.gov.au/water/publications/quality/nwqms-guidelines-4-vol1.html)	Section 3.1.7
State any locally specific objectives, criteria or targets, which have been endorsed by the government e.g. the Healthy Rivers Commission Inquiries or the NSW Salinity Strategy (DLWC, 2000) (http://www.environment.nsw.gov.au/salinity/government/nswstrategy.htm).	Section 2.5 Section 2.6
Where site specific studies are proposed to revise the trigger values supporting the ambient Water Quality and River Flow Objectives, and the results are to be used for regulatory purposes (e.g. to assess whether a licensed discharge impacts on water quality objectives), then prior agreement from the EPA on the approach and study design must be obtained.	N/A
Describe the state of the receiving waters and relate this to the relevant Water Quality and River Flow Objectives (i.e. are Water Quality and River Flow Objectives being achieved?). Proponents are generally only expected to source available data and information. However, proponents of large or high-risk developments may be required to collect some ambient water quality / river flow / groundwater data to enable a suitable level of impact assessment. Issues to include in the description of the receiving waters could include: a) lake or estuary flushing characteristics b) specific human uses (e.g. exact location of drinking water offtake) c) sensitive ecosystems or species conservation values d) a description of the condition of the local catchment e.g. erosion levels, soils, vegetation cover, etc e) an outline of baseline groundwater information, including, but not restricted to, depth to water table, flow direction and gradient, groundwater quality, reliance on groundwater by surrounding users and by the environment f) historic river flow data where available for the catchment.	Section 2.5
No proposal should breach clause 120 of the Protection of the Environment Operations Act 1997 (i.e. pollution of waters is prohibited unless undertaken in accordance with relevant regulations).	Section 3.1.4
Identify and estimate the quantity of all pollutants that may be introduced into the water cycle by source and discharge point including residual discharges after mitigation measures are implemented.	Section 3.4
Include a rationale, along with relevant calculations, supporting the prediction of the discharges.	Section 3.4
Describe the effects and significance of any pollutant loads on the receiving environment. This should include impacts of residual discharges through modelling, monitoring or both, depending on the scale of the proposal. Determine changes to hydrology (including drainage patterns, surface runoff yield, flow regimes, wetland hydrologic regimes and groundwater).	Section 3.4

Table 1-1: SEARS Requirements

Requirement	Comment
Describe water quality impacts resulting from changes to hydrologic flow regimes (such as nutrient enrichment or turbidity resulting from changes in frequency and magnitude of stream flow).	Section 3.4
Identify any potential impacts on quality or quantity of groundwater describing their source.	Section 3.4.5
Identify potential impacts associated with geomorphological activities with potential to increase surface water and sediment runoff or to reduce surface runoff and sediment transport. Also consider possible impacts such as bed lowering, bank lowering, instream siltation, floodplain erosion and floodplain siltation.	N/A
Identify impacts associated with the disturbance of ASS and PASS.	Section 4.1.3
Containment of spills and leaks shall be in accordance with EPA's guidelines section 'Bunding and Spill Management' at http://www.epa.nsw.gov.au/mao/bundingspill.htm and the most recent versions of the Australian Standards referred to in the Guidelines. Containment should be designed for no-discharge.	Section 3.4.7
The significance of the impacts listed above should be predicted. When doing this it is important to predict the ambient water quality and river flow outcomes associated with the proposal and to demonstrate whether these are acceptable in terms of achieving protection of the Water Quality and River Flow Objectives, in particular the following questions should be answered: a) will the proposal protect Water Quality and River Flow Objectives where they are currently achieved in the ambient waters; and b) will the proposal contribute towards the achievement of Water Quality and River Flow Objectives over time, where they are not currently achieved in the ambient waters.	Section 2.5.1
Consult with the EPA as soon as possible if a mixing zone is proposed (a mixing zone could exist where effluent is discharged into a receiving water body, where the quality of the water being discharged does not immediately meet water quality objectives. The mixing zone could result in dilution, assimilation and decay of the effluent to allow water quality objectives to be met further downstream, at the edge of the mixing zone). The EPA will advise the proponent under what conditions a mixing zone will and will not be acceptable, as well as the information and modelling requirements for assessment.	N/A
Where a licensed discharge is proposed, provide the rationale as to why it cannot be avoided through application of a reasonable level of performance, using available technology, management practice and industry guidelines.	Section 3.2
Where a licensed discharge is proposed, provide the rationale as to why it represents the best environmental outcome and what measures can be taken to reduce its environmental impact. Reference should be made to Managing Urban Stormwater: Soils and Construction (Landcom, 2004) and Guidelines for Fresh and Marine Water Quality ANZECC 2000).	Section 3.2 Section 3.4.4.1
Outline stormwater management to control pollutants at the source and contain them within the site. Also describe measures for maintaining and monitoring any stormwater controls.	Section 3.4.4.1
Outline erosion and sediment control measures directed at minimising disturbance of land, minimising water flow through the site and filtering, trapping or detaining sediment. Also include measures to maintain and monitor controls as well as rehabilitation strategies.	Section 3.4.4.1.2

Table 1-1: SEARS Requirements

Requirement	Comment
Describe waste water treatment measures that are appropriate to the type and volume of waste water and are based on a hierarchy of avoiding generation of waste water; capturing all contaminated water (including stormwater) on the site; reusing/recycling waste water; and treating any unavoidable discharge from the site to meet specified water quality requirements.	Section 3.4.4.1
Outline pollution control measures relating to storage of materials, possibility of accidental spills (e.g. preparation of contingency plans), appropriate disposal methods, and generation of leachate.	Section 3.4.4.1 Section 3.4.7
Describe hydrological impact mitigation measures including: a) site selection (avoiding sites prone to flooding and waterlogging, actively eroding or affected by deposition); b) minimising runoff; c) minimising reductions or modifications to flow regimes; d) avoiding modifications to groundwater.	Section 3.4.4.2
Describe groundwater impact mitigation measures including: a) site selection; b) retention of native vegetation and revegetation; c) artificial recharge; d) providing surface storages with impervious linings; e) monitoring program.	Section 3.4.5
Describe geomorphological impact mitigation measures including: a) site selection; b) erosion and sediment controls; c) minimising instream works; d) treating existing accelerated erosion and deposition; e) monitoring program.	Section 4.2.3
Identify any likely impacts resulting from the construction or operation of the proposal, including the likelihood of: a) disturbing any existing contaminated soil b) contamination of soil by operation of the activity c) subsidence or instability d) soil erosion e) disturbing acid sulfate or potential acid sulfate soils.	Section 4.1.4 Section 4.1.3
Describe and assess the effectiveness or adequacy of any soil management and mitigation measures during construction and operation of the proposal including: a) erosion and sediment control measures b) proposals for site remediation – see Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land (Department of Urban Affairs and Planning and Environment Protection Authority, 1998) c) proposals for the management of these soils	Section 4.1.3
Sydney Water	
The proponent of the development should determine service demands following servicing investigations and demonstrate that satisfactory arrangements for drinking water, wastewater, and if required, recycled water services have been made.	Section 3.2.4
The proponent must obtain endorsement and/or approval from Sydney Water to ensure that the proposed development does not adversely impact on any existing water, wastewater or stormwater main, or any other Sydney Water asset, including any easement or property. When determining landscaping options, the proponent should take into account that certain tree species can cause cracking or blockage of Sydney Water pipes and therefore should be avoided.	Section 3.2.4

Table 1-1: SEARS Requirements

Requirement	Comment
Strict requirements for Sydney Water's stormwater assets (for certain types of development) may apply to this site. The proponent should ensure that satisfactory steps/measures been taken to protect existing stormwater assets, such as avoiding building over and/or adjacent to stormwater assets and building bridges over stormwater assets. The proponent should consider taking measures to minimise or eliminate potential flooding, degradation of water quality, and avoid adverse impacts on any heritage items, and create pipeline easements where required.	Section 3.2.4
As this development creates trade wastewater, Sydney Water has trade wastewater requirements which need to be met. By law, the property owner must submit an application requesting permission to discharge trade wastewater to Sydney Water's sewerage system. The proponent must obtain Sydney Water approval for this permit before any business activities can commence. Given this development comprises industrial operations, wastewater may discharge into a sewerage area that is subject to wastewater reuse. Please contact Sydney Water's Business Customer Services to send your permit application or to find out more information. They can be contacted at the following email address: businesscustomers@sydneywater.com.au.	Section 3.2.4
The proponent should outline any sustainability initiatives that will minimise/reduce the demand for drinking water, including any alternative water supply and end uses of drinking and non-drinking water that may be proposed, and demonstrate water sensitive urban design (principles are used), and any water conservation measures that are likely to be proposed. This will allow Sydney Water to determine the impact of the proposed development on our existing services and required system capacity to service the development.	Section 3.2
Soil and Water (SEARS)	
An assessment of potential impacts to soil and water resources, topography, hydrology, groundwater, drainage lines, watercourses on or nearby the site, including mapping and description of existing background conditions and cumulative impacts.	Section 2 Section 3.4 Section 4.
A detailed site water balance including identification of water requirements for the life of the development, measures that would be implemented to ensure an adequate and secure water supply is available for the development and a detailed description of the measures to minimise the water use at the site.	Section 3.2.1
Characterisation of water quality at the point of discharge to surface and/or groundwater against the relevant water quality criteria (including details of the contaminants of concern that may leach from the waste into the wastewater and proposed mitigation measures to manage any impacts to receiving water).	Section 2.4
Details of stormwater/wastewater management system including the capacity of onsite detention system(s), onsite sewage management and measures to treat, reuse or dispose of water.	Section 3.4.4.1
A detailed flooding assessment.	Section 3.4.8
A description of erosion and sediment controls.	Provided in erosion and sediment control plans.

1.2 SCOPE OF WORKS

The assessment is qualitative, and the scope of works includes the following:

- Review of relevant plans and documentation relating to the site and proposed development;
- Addressing the key issues for "soil and water" identified in the Secretary's Environmental Assessment Requirements (SEARs) reference: SEAR 10450;
- Identify the existing environment;
- Assess the proposed development against the relevant legislation, policies and guidelines;
- Describe proposed water usage (including a water balance) and impacts on Sydney Water Infrastructure;
- Obtain baseline water quality data; and
- Assessment of potential impacts to soil and water during construction and operation and providing mitigation measures where required.

The report has been prepared based on the information provided by the client, the Phase II Detailed Environmental Investigation to assess existing site contamination prepared by Benbow Environmental and the stormwater drainage (including management of leachate) design and flood modelling undertaken by INDESCO. Baseline water sampling and analysis of the discharge outlet from the site was undertaken as part of this assessment. Recommendations for further studies to support the findings of this report are provided where considered necessary.

2. SITE DETAILS AND PROPOSED DEVELOPMENT

This section provides a description of the site, surroundings and proposed development.

2.1 SITE LOCATION

The site is located at 81 Gow Street Padstow NSW, 2211, and consists of a single rectangular lot (Lot A, DP103140). It is located within the Canterbury-Bankstown Local Government Area.

Figure 2-1 shows the aerial of the site location within its local setting.

Figure 2-1: Site Location (Local Setting)



Source: Land and Property Information – SixMaps

↑N Not to scale	LEGEND: Site Boundary	Benbow Environmental 25-27 Sherwood Road Northmead NSW 2152

2.2 DESCRIPTION OF THE SITE AND SURROUNDING AREA

The site is located within the Georges River Catchment and covers an area of approximately 10,115 m^2. It is of a single rectangular shape; predominately flat with a slight rise at its southern end. The property contains a site office and large built structure currently used as a workshop and storage for site tools and equipment; the remaining surface areas are covered in concrete hardstand. Other commercial/industrial premises surround the premises on all sides.

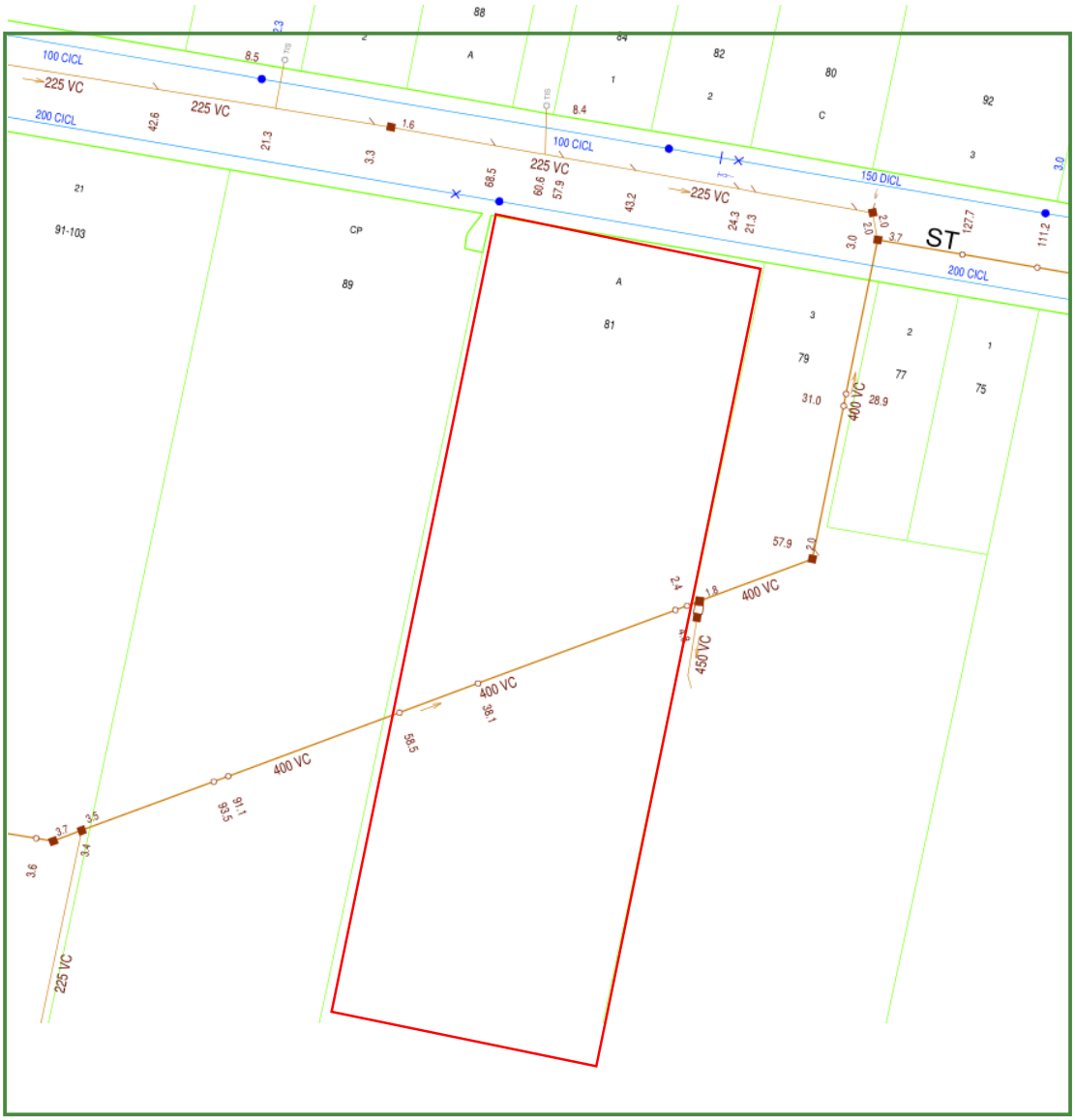
The site is situated within zone IN1 (General Industrial), under the Bankstown Local Environmental Plan (LEP) 2015. Surrounding zonal land classes include: to the south, SP2, Special Infrastructure (the South Western Motorway), to the far west, IN2 (Light Industrial) and to the south-west, west, north and east, R2 (Low Density Residential) and RE1 (Public Recreation).

The site contains no waterbodies, with the nearest water source being Salt Pan Creek, located approximately 760 m SE from the site (Figure 2-3). The creek flows south-easterly before reaching its confluence with the Georges River, at Riverwood.

2.3 EXISTING STORMWATER INFRASTRUCTURE

Two large Sydney Water stormwater drainage pipelines (diameter 1,500 mm), traverse underground in the centre of the site. Eight existing onsite stormwater pits connect to these two lines via 1,050 mm, 450 mm, 300 mm and 250 mm diameter through the site's underground pipelines. Existing infrastructure is presented in the stormwater concept plans and dial before you dig Sydney Water map (Figure 2-2). The site's stormwater system will be upgraded as detailed in section 2.11, however there will be no changes to Council's stormwater drainage easement/pipes, the existing connection will be retained.

Figure 2-2: Existing Stormwater Infrastructure



Source: Dial Before You Dig, Sydney Water

2.4 EXISTING WATER QUALITY

The existing water quality at the point of discharge has been sampled and analysed as described in Section 3.3.

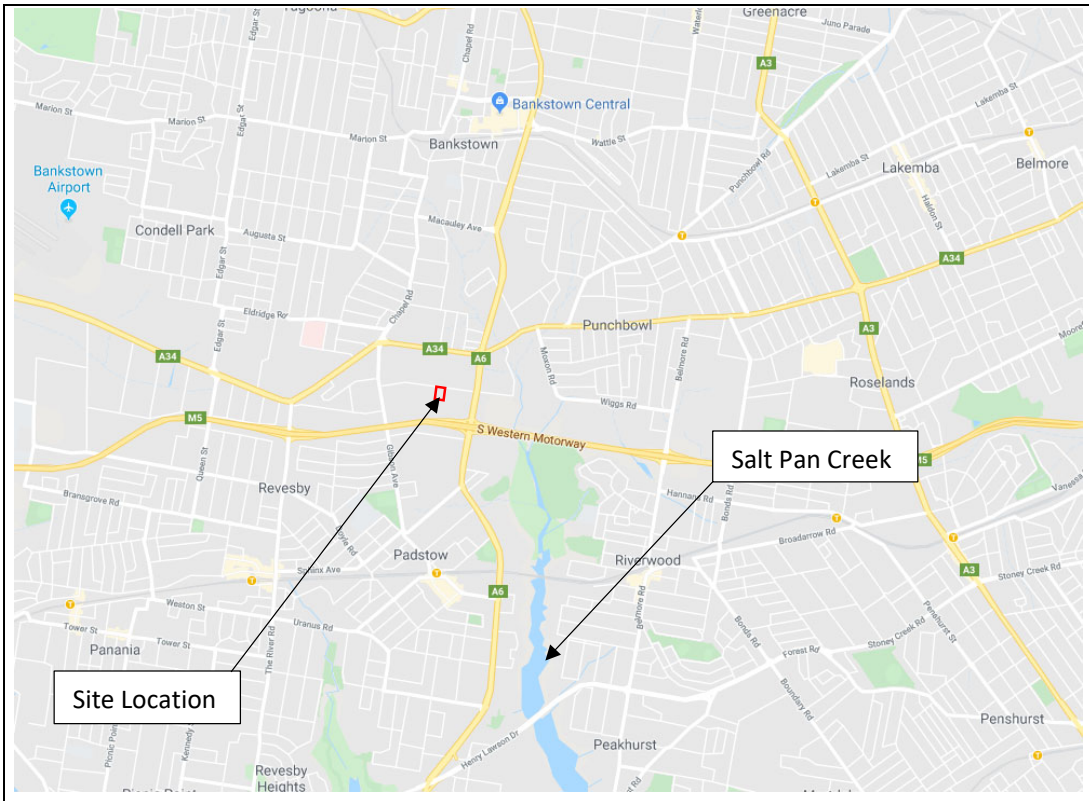
The default guideline values (DVG) adopted for the site is the 95% level of species protection recommended for application for slightly to moderately disturbed ecosystems under the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018). The results complied with the guideline values for "Slightly-moderately disturbed ecosystems" with the exception of pH which was slightly higher than the criteria. Therefore based on this data, the

stormwater runoff can be described as “slightly-moderately disturbed”. Guidelines are discussed further in Section 3.1.7.

2.5 NEAREST WATERWAYS

The site contains no waterbodies with the nearest water source being Salt Pan Creek, located approximately 760 m SE from the site, as shown in Figure 2-3. The creek’s headwaters are located at Mt Lewis, approx. four km NE from the site. The creek flows south-easterly before reaching its confluence with the Georges River, at Riverwood. Salt Pan Creek’s catchment is approx. 26 km^2 and is prone to flooding from stormwater overflows due to urban development and the removal of vegetation.

Figure 2-3: Nearest Water Course



Source: SixMaps 2021

N Not to scale	LEGEND Site Boundary	Benbow Environmental 25-27 Sherwood Road Northmead NSW 2152

2.5.1 Water Quality and River Flow Objectives

Water Quality Objectives (WQOs) and the River Flow Objectives (RFOs) identify the agreed environmental values and long-term goals for NSW’s surface waters.

The site has been designed so that on-site stormwater will be captured and treated onsite prior to release to the street stormwater system. Stormwater discharges would be only during heavy rain events, expected to be up to 12 times per year.

The subject site is located within 'Waterways affected by Urban Development'. The relevant WQOs and RFOs are summarised below in Table 2-1 and Table 2-2 respectively. If needed, key water quality indicators and related numerical criteria (default trigger values, included in section 3.4.6) relevant to assessing and monitoring the health of aquatic ecosystems can be found at: http://www.environment.nsw.gov.au/ieo/GeorgesRiver/report-02.htm

Table 2-1: Relevant Water Quality Objectives

WQO	Objective
Aquatic Ecosystems	*Maintaining or improving the ecological condition of waterbodies and their riparian zones over the long term*
Visual Amenity	*Aesthetic qualities of waters*
Secondary Contact Recreation	*Maintaining or improving water quality for activities such as boating and wading, where there is a low probability of water being swallowed*
Primary Contact Recreation	*Maintaining or improving water quality for activities such as swimming in which there is a high probability of water being swallowed*

Table 2-2: Relevant River Flow Objectives (RFOs)

RFO	Objective
Maintain wetland and floodplain inundation	*Maintain or restore the natural inundation patterns and distribution of floodwaters supporting natural wetland and floodplain ecosystems*
Maintain Natural Flow Variability	*Maintain or mimic natural flow variability in all streams*
Maintain Natural Rates of Change in Water Levels	*Maintain rates of rise and fall of river heights within natural bounds*
Minimise Effects of Weirs and Other Structures	*Minimise the impact of instream structures*

2.6 CATCHMENT MANAGEMENT PLAN

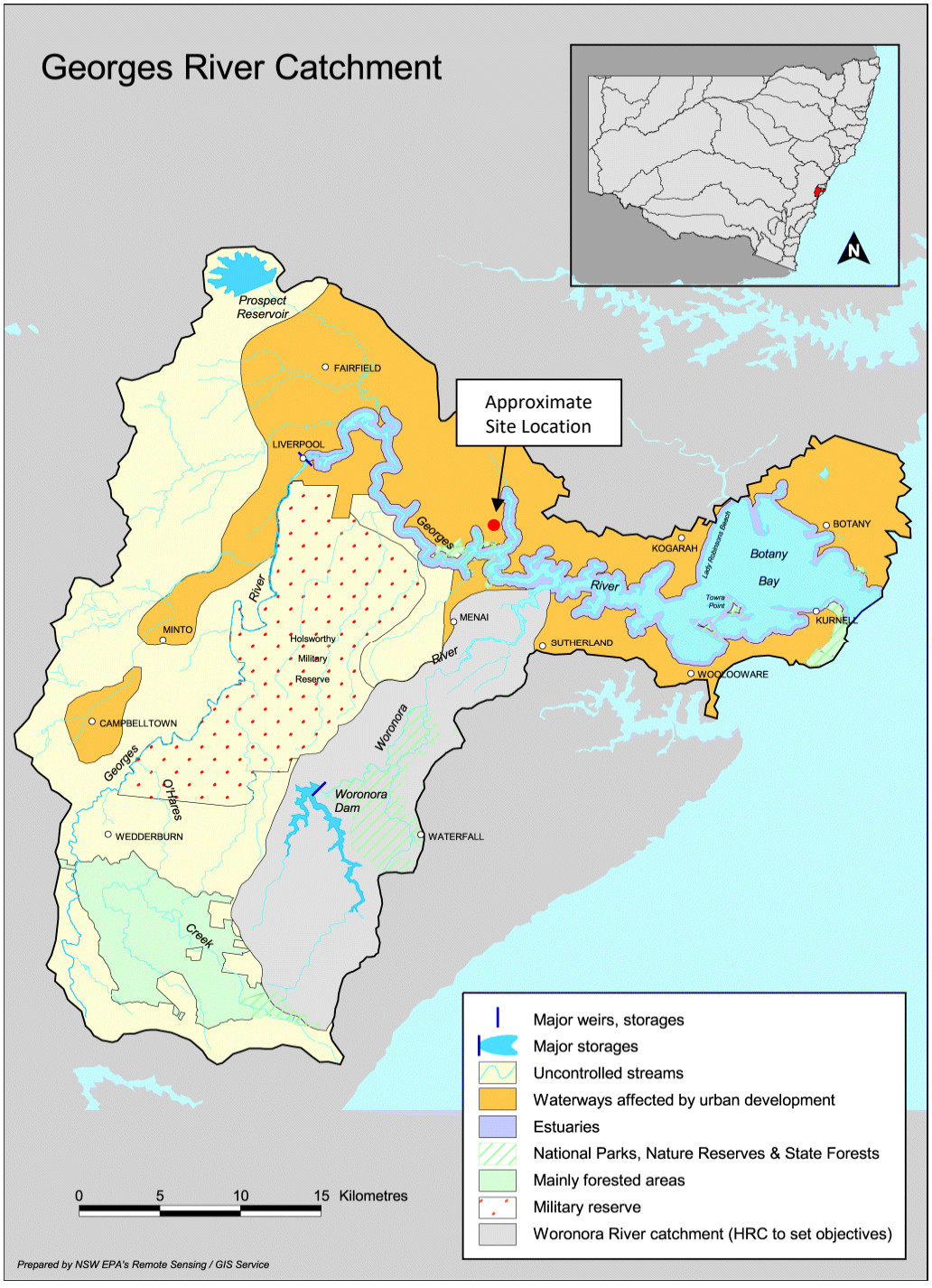
The site is located within the Georges River Catchment. Georges Riverkeeper Strategic Plan 2018-2022 is a four-year plan produced by Georges Riverkeeper, a catchment management group. The Group facilitates proactive waterway management that is adaptive and integrated across other areas of member councils, rather than being reactive and piecemeal. There are five focus areas in the Strategic Plan. These are:

- Catchment Actions Program (previously the Riverkeeper Program);

- River Health Monitoring Program;
- Storm water Program;
- Research Program; and
- Education and Capacity Building Program.

The proposed development aims support the aspirational goals of the storm water logic program, “Best practice environmental management for a liveable urban river”.

Figure 2-4: Georges River Catchment Map



Source: NSW EPA

↑N Not to Scale	LEGEND: ● Subject Site Location	Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

2.7 RAINFALL

The BoM IFD Design Rainfall Depth (mm) for the site area and location (-33.9375, 151.0319) is provided in Table 2-3 below, based on the 2016 Rainfall IFD Data System.

Table 2-3: Annual Exceedance Probability (AEP) Depth (-33.9375, 151.0319)

Duration	63.20%	50%#	20%*	10%	5%	2%	1%
1 min	2.15	2.38	3.07	3.54	3.98	4.56	5.00
2 min	3.53	3.84	4.84	5.54	6.22	7.09	7.79
3 min	4.91	5.36	6.79	7.78	8.75	9.99	11.0
4 min	6.17	6.77	8.63	9.90	11.1	12.7	14.0
5 min	7.31	8.04	10.3	11.9	13.3	15.3	16.8
10 min	11.6	12.8	16.7	19.2	21.6	24.8	27.2
15 min	14.4	16.0	20.8	24.0	27.1	31.0	34.0
30 min	19.6	21.7	28.1	32.3	36.4	41.7	45.6
1 hour	25.3	27.7	35.5	40.8	46.0	52.7	58.0
2 hours	32.0	35.0	44.6	51.3	58.0	67.0	74.1
3 hours	37.0	40.5	51.8	59.7	67.7	78.6	87.3
6 hours	48.4	53.3	69.3	80.7	92.3	108	121
12 hours	64.5	72.1	96.7	114	132	157	176
24 hours	85.9	97.7	136	163	190	227	257
48 hours	110	127	182	221	259	310	350
72 hours	124	144	208	252	296	352	396
96 hours	133	154	222	269	315	374	419
120 hours	139	161	230	278	324	385	430
144 hours	144	166	235	282	328	389	433
168 hours	148	170	238	284	329	390	434

2.8 EXISTING RESOURCE RECOVERY FACILITY

The site contains an existing resource recovery facility with approval under DA-51/1997 to process up to 80,000 tonnes per year and store tpa of construction and demolition (C&D) waste and has a storage capacity of 7,300 tonnes at any one time. The facility is authorised to accept the following wastes:

- General solid waste (non-putrescible) including:
  - Glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal;
  - Virgin excavated material;
  - Building and Demolition waste;
  - Asphalt waste;
  - Cured concrete waste;
  - Any mixture of the wastes referred to above.

- Drilling mud, meaning a mixture of naturally occurring rock and soil, including but not limited to materials such as sandstone, shale and clay, and drilling fluid generated during drilling operations such as horizontal or directional drilling or potholing. This does not included drilling mud that has been generated by:
  - Deep drilling for mineral, gas or coal exploration; or
  - Drilling through contaminated soils, acid sulphate soils (ASS) or potential acid sulphate soils (PASS).

It should be noted that the facility currently does not accept drilling mud and this waste type is currently not included on the Site's EPL.

The site is fully developed and consists of two weighbridges, a wheel wash, a warehouse building, demountable office and a demountable lunchroom. Crushing and screening equipment are located in the south-east corner and there are 12 pre-cast concrete external storage bunkers for the storage of incoming wastes and recovered materials.

The existing development site is a fully developed industrial premises with a total area of approximately 10,115 m^2. The entire site consists of sealed concrete hardstand.

Approved hours of operation of the existing resource recovery facility are between 6.00am - 6.00pm on weekdays and 7.00 am - 6.00 pm weekends.

A description of the existing processes is provided in the following section.

2.8.1 Existing Process Description

The following steps are undertaken at the existing approved resource recovery facility:

- Incoming waste is received pre-sorted from skip bin facilities and is inspected at the weighbridge upon arrival at the site.
- Acceptable waste is weighed and recorded.
- Trucks unload the waste at the pre-crushed storage area.
- Material is crushed and screened to suitable sizes.
- Recovered material is stored in designated external storage bunkers.
- Materials are loaded onto trucks and weighed before leaving the site via the wheel wash for off-site reuse as road-base material.

Waste dockets are maintained for record keeping purposes.

2.9 Proposed Liquid Waste Dewatering Facility

Establishment and operation of a liquid waste dewatering plant is proposed. This plant would essentially operate separately from the existing approved resource recovery facility, however, there would be some minor interactions between processes. The proposal consists of the following elements:

- Construction of purpose-built building to enclose the dewatering facility. This would replace the existing warehouse building that would be demolished.

- A new office building would be constructed. This would replace the existing demountable office and amenities building as well as the demountable lunchroom that would be removed from site. The new office building would be used by staff of both the existing and proposed developments.
- Installation of dewatering equipment including a flocculant station/pit, screw separator and screen, slurry homogeniser, 2 x 60 kL silos, and filter press.
- A truck unloading area inside the building.
- Seven (7) inground pits and sumps inside the building. Pits and sump details are as follows:
  - Pit 7 - Inground Pit Receivals (1), 8.0 x 4.5 x 3.0 m deep (Volume: 108,000 L)
  - Pit 6 - Inground Pit Receivals (2), 2.4 x 4.5 x 3.0 m deep (Volume: 32,400 L)
  - Pit 5 - Inground Pit Receivals (3), 2.4 x 4.5 x 3.0 m deep (Volume: 32,400 L)
  - Pit 4 - Floc Plant: Dirty water pit (2), 3.33 x 2.835 x 2.5 m deep (Volume: 23,601 L)
  - Pit 3 - Floc Plant: Dirty water pit (1), 2 x 2.835 x 2.5 m deep (Volume: 14,175 L)
  - Pit 2 - Floc Plant: Clean water pit, 3.0 x 2.835 x 2.5 m deep (Volume: 21,263 L)
  - Pit 1 - Floc Plant: Sump Pit, 1.6 x 2.835 x 2.5 m deep (Volume: 11,340 L)
- Six (6) bunkers. Four (4) bunkers would be located inside the building and two (2) would be located external to the building under an awning. Bunker contents and dimensions are:
  - Bunker 1: Aggregate, 6.2 x 4.0 m
  - Bunker 2: Aggregate, 6.2 x 4.0 m
  - Bunker 3: Sand 5.07 x 5.805 m
  - Bunker 4: Sand 5.295 x 5.805 m
  - Bunker 5: Sand 5.295 x 5.805 m
  - Bunker 6: Filter cake 6.7 x 8.9 m
- Extension of the boundary wall up to new building behind the new aggregate bunkers.
- Connection to Sydney Water tradewaste under an agreement.
- Stormwater upgrades including a first flush system that directs the first 25 mm of on-site stormwater to a silt arrester and detention tank which will be used in the dewatering plant while the clean overflow is discharged to the stormwater easement using the existing stormwater connection during a heavy rain event.

A proposed site plan and equipment layout are provided in Appendix 8. A description of the dewatering process is provided in the following sub-section.

2.9.1 Proposed Process Description

The dewatering facility would operate as a recycling facility for the drilling mud and concrete washout water and stormwater captured onsite. The facility would involve the following activities:

- Unloading of drilling mud/concrete washout water into dirty water containment pits.
- This liquid is transferred into the dirty water pit and then into the flocculent station.
- The flocculants assist in settling sediments at the bottom of the tank.
- The sand/rock/sediment slurry is pumped from the bottom of the tank and into a screw separator.
- The screw separator removes the solids from the water.
- The solids are then transferred to a vibrating screen where the aggregates and sands are conveyed to internal and external storage bays.
- The water from the flocculent station and the screw separator is pumped to the two 60 kL silos, the slurry homogeniser tank and then into the filter press.

- The filter press removes the remaining silts and the cleaned water is pumped to the clean water pit.
- The sediments/silt from the filter press becomes a fine biscuit which is removed offsite as for application to land under the Treated Drilling Mud Exemption 2014 or to landfill.
- The filter press requires intermittent backwashing where backwash water is pumped to the dirty water pit to be reprocessed through the system.
- The clean water pit would be pH adjusted and then used for cleaning aggregates and sand during the screening process, dust suppression and washdown onsite. Excess water would be sent to tradewaste under a Trade Waste Agreement.

Site washdown water and stormwater will be collected in a 200 kL underground tank and through the above dewatering system.

The maximum quantity of liquid waste that can be processed through the dewatering plant in a 24-hour period is approximately 1,500 tonnes. This can easily accommodate stormwater runoff and the proposed 250,000 tonnes per annum.

2.10 LAND FORMING AND EXCAVATION WORKS

Excavations will be required for upgrading the stormwater system and the installation of the water containment pits required for the dewatering plant. Minor excavation will also occur to allow laying of concrete bedding for machinery footings etc. It is expected less than 1,000 m^3 of material will require excavation.

Some of the proposed areas requiring earthworks contain Acid Sulfate Soils (ASS). Therefore, an ASS Management Plan (ASSMP) is required. Further details regarding ASS are discussed in Section 4.1.3.

2.11 SITE STORMWATER AND LEACHATE SYSTEM

Currently there is a drainage easement that runs across the site with stormwater drainage lines underground. Overland flooding is an issue under the existing conditions and has resulted in sediment laden runoff on occasions.

The proposed development involves modification to the stormwater system to enable adequate management of leachate and on-site stormwater which has been designed to Council requirements. The proposed stormwater system will provide onsite detention and water quality treatment and include, BCP Stream Guard Pollution Control Pit or equivalent at stormwater pits; a silt arrestor; 200kL underground containment and stormwater isolation valve. The design is shown in the INDESCO Engineering Plans.

The system would capture first flush site stormwater (leachate) which would initially be treated through an arrestor and detained within the two underground storage tanks before being treated through the dewatering plant.

2.11.1 Leachate

Leachate is defined under the NSW EPA Environmental Guidelines: Solid Waste Landfills, Second Edition 2016 as:

> ***Leachate:*** *the liquid that passes through, or is released by, waste. It arises from the inherent moisture content of the waste and from rainwater (and sometimes groundwater) percolating through or contacting the waste mass. Leachate may contain high levels of dissolved solids, ammonia, organic matter, and sometimes metals and other pollutants. These levels are typically well above background levels for undisturbed or slightly disturbed groundwater and surface water systems. The levels are also well above national quality guidelines for drinking water and other beneficial reuses of water.*

In this case, leachate is created by stormwater percolating through the external stockpiles on site and essentially leachate and stormwater are the same thing. Therefore, these terms are used interchangeably and cannot be treated as separate sources of water.

2.12 EXISTING SITE CONTAMINATION

A limited Phase II Environmental Site Assessment (ESA) undertaken by Benbow Environmental in February 2020 (Ref: 191290_Phase II), found no evidence of soil or water contamination. The Phase II ESA was targeted to examine areas involved in this and future proposals that will require earthworks. The remainder of the site is covered in concrete hardstand.

3. WATER ASSESSMENT

This section provides the water assessment for the proposed development.

3.1 LEGISLATION POLICIES AND GUIDELINES

The two key pieces of legislation for the management of water in NSW are the *Water Act 1912* and the *Water Management Act 2000*.

Other legislation, policies and guidelines also considered in this section include:

- Water Sharing Plans;
- Protection of the Environment and Operation Act;
- NSW Aquifer Interference Policy;
- Guidelines for Controlled Activities on Waterfront Land; and
- Guidelines for Fresh and Marine Water Quality.

3.1.1 Water Act 1912

Licences for water conservation, irrigation, water supply or drainage as well as changing the course of a river can be applied for under the *Water Act 1912*.

The proposed development does not involve works for water conservation, irrigation, water supply or drainage and does not involve works that would change the course of a river; therefore, the *Water Act 1912* does not apply.

3.1.2 Water Management Act 2000

The *Water Management Act 2000* provides requirements for the extraction of water, water use, floodplain and drainage management, the construction of works such as dams and weirs, and undertaking activities on or near water sources in NSW. Approvals for the extraction and use of water, construction of works relating to water use and controlled activities carried out on waterfront land can be obtained under the Act.

This does not apply to the proposed development.

3.1.3 Water Sharing Plans

Two water sharing plans apply to the area where the subject site is located. These are:

- Water Sharing Plan for the Greater Metropolitan Region Unregulated River Sources; and
- Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources.

These do not apply to the proposed development.

3.1.4 Protection of the Environment Operations Act 1997

Clause 120 of the *Protection of the Environment Operations Act 1997* states the following:

> *120 Prohibition of pollution of waters*
> *(1) A person who pollutes any waters is guilty of an offence.*
> *Note. An offence against subsection (1) committed by a corporation is an offence attracting special executive liability for a director or other person involved in the management of the corporation—see section 169.*
> *(2) In this section:*
> *pollute waters includes cause or permit any waters to be polluted.*

The proposed development will not breach the above clause with regard given to the proposed mitigation measures and safeguards to be implemented as described throughout this report.

3.1.5 NSW Aquifer Interference Policy (2012)

The proposed development does not constitute an aquifer interference activity and therefore no further assessment is warranted.

3.1.6 Guidelines for Controlled Activities on Waterfront Land (2018)

The proposed development is not located on or in the vicinity of waterfront land. Therefore, no further assessment is warranted.

3.1.7 Guidelines for Fresh and Marine Water Quality

The default guideline values (DVG) adopted for the site is the 95% level of species protection recommended for application for slightly to moderately disturbed ecosystems under the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018). Where DVGs are not available the ANZECC guidelines have been adopted in the interim. Potential pollutants are presented in Section 3.4.1 and the applicable criteria is presented in the water monitoring program, Section 3.4.5.1.

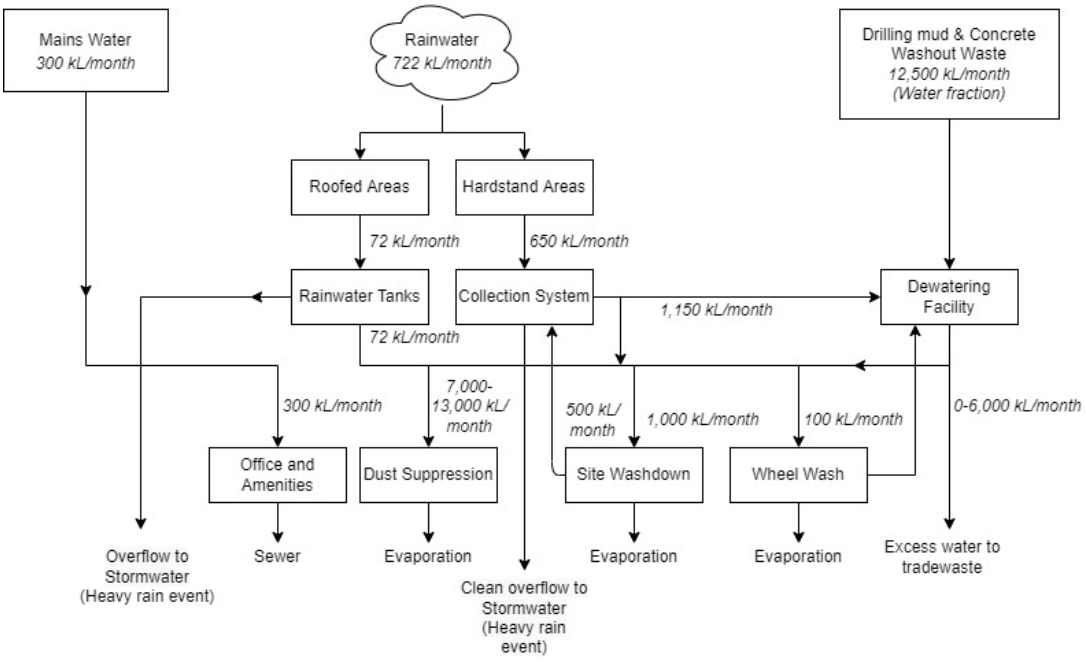
3.2 WATER USAGE & SUPPLY

The site will use mains water for the office and amenities. All other water usage will be recycled water sourced from the proposed dewatering facility and rainwater tanks onsite. Recycled water and captured rainwater would be used for dust suppression, wheel wash and aggregate washing. Any excess recycled water will be discharged into the sewer in accordance with the TWA until an EPA granted licence for a stormwater management of stormwater characterisation and discharge, can be provided.

3.2.1 Site Water Balance

Figure 3-1 shows the site's water balance.

Figure 3-1: Site Water Balance Diagram



The rainwater is based on an annual rainfall of 866.4 mm per year from Bankstown AWS climate data, and a site area of 10,000 square meters, 90% of which is assumed to be hardstand. The dust suppression requirements are based on an assumption of 1.5L per square meter per 20 minute period typically used for haul road dust suppression. Assuming this application is done 75% of the time for 60% of the site area this would result in an approximate maximum water usage quantity of 13,000 kL/month for dust suppression.

3.2.2 Wastewater

The proposed dewatering facility will accept wastewater from drilling mud and concrete washout water. Additionally, site generated stormwater will be collected from hardstand areas and recycled through the facility. This will be processed through the dewatering plant with the recycled water used for onsite activities such as dust suppression and aggregate washing. Any excess of recycled water will be disposed directly into the sewer as per a trade waste agreement. Sewerage water generated from the office and amenities buildings will be discharged directly into the sewer.

No other wastewater will be generated from the proposed facility.

3.2.3 Wheel Wash

The wheel wash is a fully bunded and closed loop system that recirculates water for the washing of truck wheels. The system periodically requires top up with mains/recycled/rainwater. The

wastewater generated during washing would be directed to a water filtration system that would remove oil, grease, detergent and suspended solids. Treated water is stored in a tank for reuse in the system. No chemicals are used in the wheel wash. Regular servicing is undertaken to maintain the wheel wash and periodic cleaning of the wheel wash is undertaken by a licensed waste contractor.

3.2.4 Sydney Water Infrastructure and Services

The proposed development will utilise recycled water for dust suppression etc., reducing the site's use of mains/potable water. Therefore, the proposed development will have minimal impact on the Sydney Water drinking assets.

The proposed development will upgrade the stormwater system, to allow better capture of sediment laden water (see INDESCO's Engineering Drawings for Water Reuse and Drainage Upgrade). This will reduce sediment impact on the existing stormwater infrastructure. However, the easement is council infrastructure.

In addition, the dewatering plant will require a trade waste agreement and trade waste infrastructure connection. This will be in consultation with Sydney Water and will be undertaken following approval.

3.3 STORMWATER CHARACTERISATION

Stormwater sample collection and analysis for the purposes of characterisation of water quality and providing baseline data was undertaken on 27 October 2020 (Attachment 1). Chemicals and parameters selected for analysis included those associated with industrial activities such as heavy metals, TPH/TRH and BTEXN. Physicochemical attributes such as suspended solids, pH and electrical conductivity (EC) were also analysed.

Samples were collected from one (1) on site stormwater pit at the commencement of an independent rain event. The pit was located near the centre of the site, beside the north-western corner of the existing workshop structure and is the current point of discharge from the site.

Results of analysis were reviewed against the criteria outlined in the recommended water monitoring program (see Section 3.4.6). Criteria was obtained from the Australian and New Zealand Guidelines for Fresh and Marine Water (ANZG, 2018), or the Australian and New Zealand Environment and Conservation Council (ANZECC) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality Guidelines* (2000) where trigger levels are not provided by the 2018 guidelines. The criteria parameters relevant to the site are "slightly–moderately disturbed systems" and the conservative 95% protection value for freshwater was selected. All analysis was undertaken at NATA accredited facility, ALS Environmental.

Results of stormwater characterisation showed that the sample below LOR or within the adopted and selected ANZECC criteria for all parameters except pH. The adopted pH level criteria for the site is 6.5-8 (for slightly-moderately disturbed systems).

3.4 ASSESSMENT OF POTENTIAL IMPACTS ON WATER

Assessment of potential impacts of the proposed development to surface and groundwater resources and flooding, is presented in this section.

3.4.1 Potential Pollutants

This section identifies potential pollutants of concern at the site, the relevant source materials, the potential receptors (including Salt Pan Creek and downstream tributaries) and the potential exposure pathways. Pollutants are listed below in Table 3-1.

Table 3-1: Conceptual Model of Potential Contaminants and their Source

Known and Potential Primary Sources of Contamination	Primary Release Mechanism	Contaminants of Potential Concern	Potential Environmental Receptors	Exposure Pathways	Risk Level	Controls	Residual Risk Level
Concrete	Crushing	pH (highly alkaline) Sediments	Wetlands, streams, groundwater ecosystems and native habitats	Surface water runoff Alkaline surface waters seeping into ground water	Moderate	Stormwater pits Silt Arrestor Pit 200 KL ROCLA PLASTREAM underground containment and stormwater isolation valve Underground containment outlet water sampling EMP -Water Monitoring & Housekeeping	Low
Diesel Fuel and Oils	Leaks/spills from transport vehicles	TRH* BTEX^ PAH#	Wetlands, streams, groundwater ecosystems and native habitats	Surface water runoff, dissolved pollutants seeping into ground water	Low	Spill kits 200 KL ROCLA PLASTREAM underground containment and stormwater isolation valve Underground containment outlet water sampling ; EMP -Water Monitoring & Housekeeping Concrete barriers for vehicle collision protection	Low

Table 3-1: Conceptual Model of Potential Contaminants and their Source

Known and Potential Primary Sources of Contamination	Primary Release Mechanism	Contaminants of Potential Concern	Potential Environmental Receptors	Exposure Pathways	Risk Level	Controls	Residual Risk Level
Bricks and Tiles	crushing	sediment	Wetlands, streams, groundwater ecosystems and native habitats	Surface water runoff	Low	Stormwater pits Silt Arrestor Pit 200 KL ROCLA PLASTREAM underground containment and stormwater isolation valve Underground containment outlet water sampling EMP -Water Monitoring & Housekeeping	Low
Soil, Organic Matter	Release of chemicals of concern	Nitrogen Phosphorus Ammonia	Wetlands, streams, groundwater ecosystems and native habitats	Surface water runoff, dissolved pollutants seeping into ground water	Low	Stormwater pits Silt Arrestor Pit 200 KL ROCLA PLASTREAM underground containment and stormwater isolation valve Underground containment outlet water sampling EMP -Water Monitoring & Housekeeping	Low

Table 3-1: Conceptual Model of Potential Contaminants and their Source

Known and Potential Primary Sources of Contamination	Primary Release Mechanism	Contaminants of Potential Concern	Potential Environmental Receptors	Exposure Pathways	Risk Level	Controls	Residual Risk Level
Asphalt Waste	Debris generated during sorting procedures	Hydrocarbons, PAH	Wetlands, streams, groundwater ecosystems and native habitats	Surface water runoff, dissolved pollutants seeping into ground water	Negligible	Stormwater pits Silt Arrestor Pit 200 KL ROCLA PLASTREAM underground containment and stormwater isolation valve Underground containment outlet water sampling EMP -Water Monitoring & Housekeeping	Negligible

*TRH: Total Recoverable Hydrocarbons
^BTEX: Benzene, Toluene, Ethylbenzene and Xylenes
#PAH: Polycyclic Aromatic Hydrocarbons

3.4.2 Catchment Impacts

The prime risk to the catchment from the proposed development is associated with surface water and groundwater impacts; these are assessed in the following sections.

3.4.3 Wetland Impacts

There are no wetlands near the site.

3.4.4 Surface Water Impacts

Surface water would be generated from rain events and some surface water may be generated from the use of fine mist water sprayers for dust suppression and site washdown.

The proposal does not require use of or access to groundwater. No water from the facility will be discharged into groundwater.

The operation of the facility would contribute negligible additional quantities of sediment to surface water runoff. That is, almost nil contaminants will reach off site receptors due to surface water runoff.

3.4.4.1 Stormwater Management

3.4.4.1.1 Operational Phase

Most of the surface water will be from rain events, with a smaller portion attributed to site operations such as dust suppression and site washdown.

Surface water from hardstand areas would be captured within two Rocla Plastream underground storage tanks with a combined capacity of 200 kL to be processed within the dewatering plant. Roofwater from the facility would be captured within rainwater tanks. This water is to be reused for dust suppression.

The water from the dust suppression is unlikely to contribute much to surface waters as the volume of applied water would be minimal and the majority of it would evaporate. Dust suppression would consist of water sprays/water cannon that provide a mist to adequately dampen materials and working areas. This would be a fine mist that would be switched off once stockpiles are damp. Any residual water from dust suppression would be captured within the 200 kL stormwater containment system.

Site washdown water and most of the rainwater will be collected by the stormwater capture and reuse system. This provides two direct benefits:

- Firstly, the site will reduce the use of potable water from the mains system to use in processes where potable water is not required (such as dust suppression, washing and sorting of aggregate materials). This reduces the demand on Sydney Water as the current site operations have a licence to process C&D material where mains water is sourced.

- Secondly, the site will reduce the volume of stormwater it currently discharges, as the proposal includes a capture and storage system for stormwater. This lessens the pressure on the stormwater infrastructure.

The stormwater system will be upgraded, as shown in the stormwater concept plans provided by INDESCO. It involves installing BCP Stream Guard Pollution Control Pit or equivalent at stormwater pits; connecting to the stormwater lines, which will all connect to a new silt arrestor pit with gas BCP SAP-400 or other approved equivalent, before entering the 200 kL Rocla Plastream underground containment. This will be connected to an existing stormwater drainage line that is presently connected to the central drainage pipeline (easement). The other existing drainage lines will be decommissioned so all runoff from the site will go through the proposed silt arrestor pit and underground containment.

A stormwater isolation valve will be installed after the 200kL underground containment to prevent contaminated discharge if required.

The sediment collected in the silt arrestor pit and ROCLA underground containment will be periodically serviced by the proponent, and then processed through the dewatering plant.

The system is designed to only discharge rainwater after a heavy rain event (>25 mm) which according to the Bureau of Meteorology Design Rainfall Data System, occurs on average 12 times per year.

3.4.4.1.2 Construction Phase

The prime impact from surface water due to construction works would be release of sediments into receiving stormwater drains. Erosion and sediment controls have been prepared by INDESCO as part of the Engineering Drawings for Water Reuse and Drainage Upgrade and shall be installed in accordance with Councils' specifications. They will be maintained throughout the period of works and replace/repaired when necessary e.g., after storm events.

The proposed construction works involve the excavation of a small area of the site including the water containment pits for the dewatering plant and the upgrades to the stormwater system. During the construction phase erosion and sediment controls will be implemented.

A Construction Environmental Management Plan (CEMP) (Ref: 191290-03_CEMP) has been provided for the proposed development to ensure effective management of surface water runoff during construction.

Excavations

The proposed pits for the dewatering plant require excavation to a depth of approximately 3.0 m. No groundwater is expected to be encountered at this depth. The proposed area for excavation is 11.7 m AHD (Australian Height Datum).

The site is within 500 m of Class 2 ASS. As the proposal requires some earthworks and the presence of ASS has been confirmed, an ASSMP is required before earthworks commence.

Excavations are expected to have a minimal impact on groundwater.

Erosion & Sediment Controls

Erosion and sediment controls have been prepared by INDESCO as part of the Engineering Drawings for Water Reuse and Drainage Upgrade. These show the concept design details of the stabilised site access, stockpile stabilisation, earth banks, straw bale filters, kerbside turf strip, sediment fence, stormwater pit drainage protection measures (inlet filters), design maintenance and notes.

3.4.4.2 Hydrological Impacts

Flooding is assessed in Section 3.4.8 and is considered to be adequately addressed. Stormwater concept plans have been provided, which control runoff on site to minimise impacts. The site is covered by concrete hardstand. Negligible impacts to groundwater are expected.

3.4.5 Groundwater Impacts

The site is covered by concrete hardstand and there is expected to be minimal impacts to groundwater. No further assessment is considered warranted.

3.4.5.1 Groundwater Dependant Ecosystems

Groundwater Dependant Ecosystems (GDEs) are defined ecosystems which require access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain their communities of plants, animals, ecological processes and ecosystem services.

Types of GDEs have been defined which can be split into three categories:

1. Ecosystems that depend on the surface expression of groundwater (lacustrine, palustrine, riverine, estuarine and marine);
2. Ecosystems that depend on the subsurface presence of groundwater (riverine wetlands, terrestrial) and;
3. Ecosystems dependent on the subterranean presence of groundwater (aquifer, cave).

If groundwater sources are altered, polluted or contaminated, surrounding GDEs would be impacted.

There are no wetlands within close proximity to the site. No groundwater is accessed by any current or proposed onsite activities. The site is fully concreted which is a robust barrier against contaminants entering the groundwater. Thus, any onsite activities would cause minimal impacts on groundwater. The site will store only a limited volume of contaminants (fuel and oils) for onsite use only. These are kept in a covered, bunded area. The proposal has a stormwater catch and reuse system that would collect any contaminants captured by surface water from onsite activities. Therefore, there is little to no risk to GDE from this proposal. No further assessment is considered warranted.

3.4.6 Water Monitoring Program

This section details the water monitoring program recommended for the proposed development. Monitoring should be undertaken in accordance with the *Approved Methods for the Sampling and Analysis of Water Pollutants in NSW* (DEC, 2004).

3.4.6.1 Water Discharge Monitoring

It is recommended the water discharged to the stormwater system after the underground stormwater silt arrestor and underground containment before entering before entering the council stormwater easement pipeline. This water is to be monitored after heavy rain events. When constructing the stormwater system, access to this location for monitoring will be installed. Stormwater monitoring is currently not required under any licence or approval for the site.

Contaminants and their respective trigger values were obtained from the Australian and New Zealand Environment and Conservation Council (ANZECC) Water Quality Guidelines (2000). Trigger values were selected for "typical slightly–moderately disturbed systems" and "Lowland Rivers", as they are representative of the nearest waterways to the site. The species level of protection of 95% was selected for this system and stormwater monitoring procedure.

It is recommended water be tested for pollutants listed in Table 3-2

Table 3-2: Stormwater Monitoring List and Relevant Trigger Values

Analytes	ANZECC Trigger Value	Test Method /Reference	Analytical Limit
Metals			
Arsenic	24 (as III), 13 µg L^{-1} (as V)	ICP-MS	0.001 mg/L
Copper	1.4 µg L^{-1}	ICP-MS	0.001 mg/L
Chromium	1.0 µg L^{-1} (as Cr VI)	ICP-MS	0.001 mg/L
Zinc	8 µg L^{-1}	ICP-MS	0.005 mg/L
Lead	3.4 µg L^{-1}	ICP-MS	0.001 mg/L
Aluminium	55 µg L^{-1} (pH>6.5)	ICP-MS	0.01 mg/L
Nickel	11 µg L^{-1}	ICP-MS	0.001 mg/L
Cadmium	0.02 µg L^{-1}	ICP-MS	0.0001 mg/L
Mercury (Inorganic)	0.06 µg L^{-1}	ICP/MS	0.0001 mg/L
Nutrients			
Oxides of Nitrogen	40 µg L^{-1}	APHA 4500	0.002 mg/L
Filterable Reactive Phosphorus	20 µg L^{-1}	APHA 4500	0.01 mg/L
Total Ammonia	900 µg L^{-1} (at pH 8)	APHA 4500	0.01mg/L
Physical			
pH	6.5-8 (Lower-Upper Limit)	APHA 4500 or in situ	0.01 (pH units)
Electrical Conductivity	200-300 µScm^{-1}	APHA 2510 or in situ	1µS/cm
Suspended Solids	<50 mg/L[(2)]	APHA 2540	1 mg/L

Table 3-2: Stormwater Monitoring List and Relevant Trigger Values

Analytes	ANZECC Trigger Value	Test Method /Reference	Analytical Limit
Polycyclic Aromatic Hydrocarbons			
Naphthalene	16 µg L^{-1}	EP075B Sim	1 µg/L
BTEX			
Benzene	950 µg L^{-1}	EP080	1 µg/L
Toluene	ID	EP080	2 µg/L
Ethylbenzene	ID	EP080	2 µg/L
O-Xylene	350 µg L^{-1}	EP080	2 µg/L
Total Recoverable Hydrocarbons			
TRH (C6-C40)	ID	EP071,80	20-100 µg/L
Organochlorine Pesticides			
Chlordane	0.03 µg L^{-1}	EP068A	0.5 µg/L
Endosulfan	0.003 µg L^{-1}	EP068A	0.5 µg/L
Endrin	0.01 µg L^{-1}	EP068A	0.5 µg/L
Heptachlor	0.01 µg L^{-1}	EP068A	0.5 µg/L
Organophosphorus Pesticides			
Azinphos methyl	0.01 µg L^{-1}	EP068B	0.5 µg/L
Chlorpyrifos	0.01 µg L^{-1}	EP068B	0.5 µg/L
Diazinon	0.01 µg L^{-1}	EP068B	0.5 µg/L
Malathion	0.05 µg L^{-1}	EP068B	0.5 µg/L
Parathion	0.004 µg L^{-1}	EP068B	2 µg/L
Herbicides and Fungicides			
2,4-D	280 µg L^{-1}	EP202	10 µg/L
2,4,5-T	36 µg L^{-1}	EP202	10 µg/L

Note: "ID" = insufficient data in ANZECC

The stormwater outlet pit should be checked after/during any rain event greater than 25 mm/day and sampled if water is being released. Stormwater monitoring events must be undertaken by a suitably qualified person. If no water is being released, this should be recorded. After the first year, this data will provide an indication of the rain events that will result in release of water. The monitoring program and sampling regime can then be revised.

The EMP provides an action plan for measures to be implemented if the trigger values are exceeded.

3.4.7 Bunding and Containment

Minimal chemicals will be used and stored on site. They will be stored inside on bunded pallets. A 33,000 L self-bunded diesel storage tank will be located externally in accordance with AS1940. The tank will be protected from vehicle collision using concrete barriers. This tank be located on a sealed concrete hardstand with an available spill kit nearby.

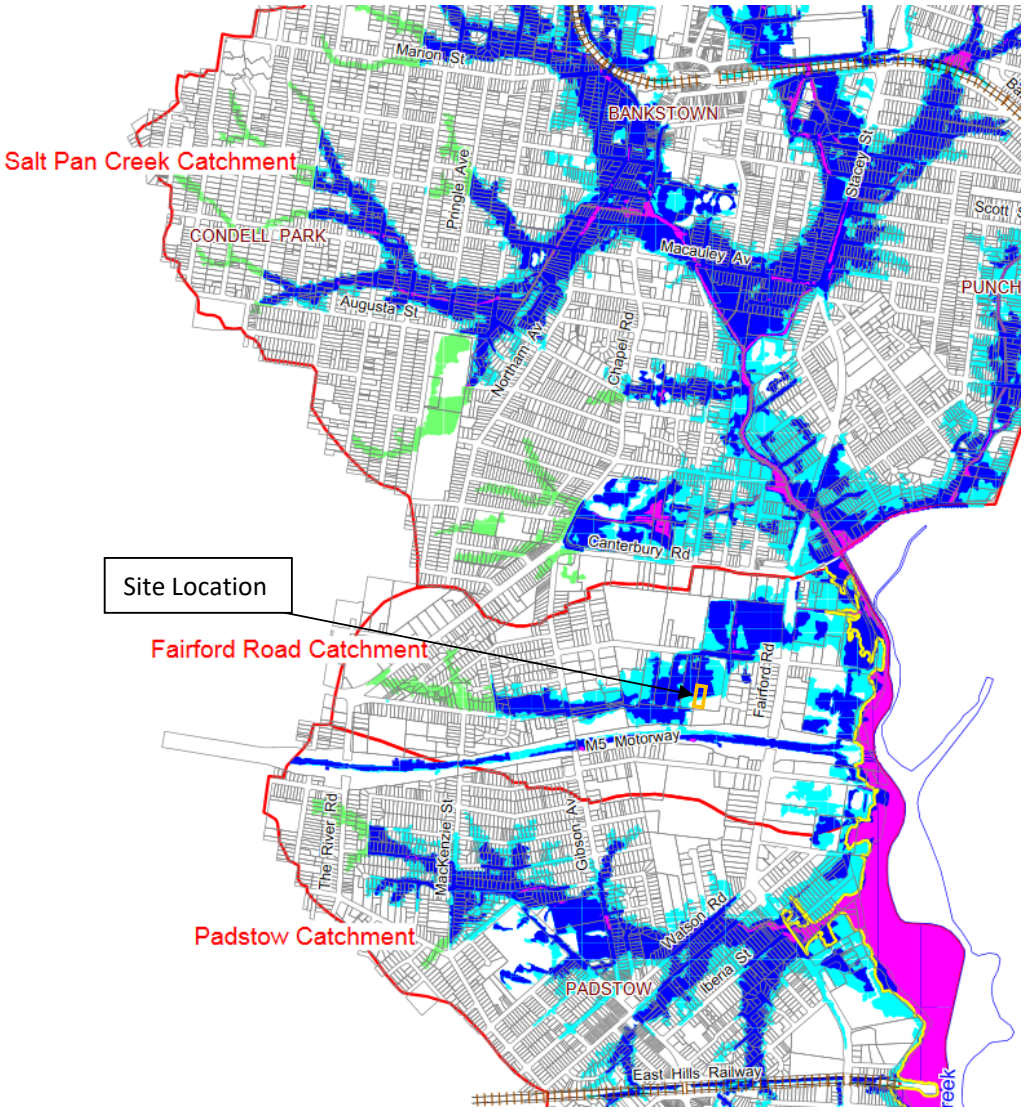
3.4.8 Flooding

The Section 10.7 (2) Certificate (Ref: #20202885) for the subject site states the property is subject to flood related development controls. The property is affected by a policy known as *Bankstown Development Control Plan 2015, Part B12 - Flood Risk Management and clause 6.3 – Flood planning of the LEP 2015*, by reference to the *Fairford Road Catchment Flood Study, February 2010*, which categorises land affected by the 1:100 ARI (Average Recurrence Interval), into the following two flood risk precincts:

- High flood risk precinct – Land below the 100-year flood that is either subject to a high hydraulic hazard or where there are significant evacuation difficulties; and
- Medium flood risk precinct - Land below the 100-year flood that is not subject to a high hydraulic hazard and where there are no evacuation difficulties.

The Fairford Road Catchment Flood Study risk precincts map shows the site situated in a medium risk flood area due to stormwater (see Figure 3-2).

Figure 3-2: Flood Risk Precincts



Source: Canterbury Bankstown Council 2019

To address flood concerns, a Flood Impact Assessment Report (Ref: 7524) was undertaken by INDESCO for the proposed development. The findings of the assessment demonstrate that:

> *The proposed development does not generate any considerable flood impacts with respect to the local overland flow. In particular, the results indicate that:*
>
> - *The proposed development does not lead to adverse flooding impact on the surrounding residential areas;*
> - *The proposed development does not create any safety issue at the subject site and the surrounding areas;*
> - *Minor ponding difference reflected from existing to post development scenarios, occurring in the eastern adjoining neighbour, which is considered negligible;*
> - *Minor ponding difference reflected from existing to post development scenarios, occurring within the eastern boundary due to the level difference in the merged surfaces between Post Development TIN (1 meter grid) and ALS TIN (2 meter grid). In reality, the proposed development will be aligned to the adjoining neighbour and this ponding would disappear; and*
> - *Minor ponding difference reflected from existing to post development scenarios, occurring at the south of the subject site area, possibly due to the underground OSD built in TUFLOW 1D with grated pit (not impermeable pit lid). It is noted that the proposed stormwater system has been designed to comply with Council requirements.*

A Flood Impact Assessment Report was undertaken by INDESCO which concludes: *The results of the flood assessment generally indicate that the proposed development:*

1. Do not generate flooding issues at the subject site due to local overland flow;
2. Do not lead to adverse flooding impacts on the surrounding areas; and
3. Does not create safety issues at the subject site and the surrounding areas.

3.5 CLIMATE CHANGE

Rising temperature and sea levels are expected to increase the frequency and severity of storm events. This may increase the likelihood of wet weather events leading to more frequent storm events (and thus greater stormwater flooding). An increase of 10% precipitation has been is not expected to significantly impact the site.

4. SOIL ASSESSMENT

This soil assessment addresses the following:

- A description of local soils, topography, drainage and landscapes; and
- Consideration of any contaminated soil, including ASS.

Reference is made to the limited Phase II ESA (Ref: 191290-02_Phase II) throughout this soil assessment.

4.1 EXISTING SOIL CONDITIONS

4.1.1 Local Soils

The 'Sydney 1:100 000 Geological Map Sheet 9130' describes the geological composition of the area as *Ashfield Shale (Rwa)* which is part of the Wianamatta Group and comprises of dark-grey to black claystone-siltstone and fine sandstone-siltstone laminate.

The soil map 'Soil Landscape of Sydney 1:100,000 Sheet 9130' shows that the subject site is located in a 'Blacktown' (bt) area and is described as follows:

> *Blacktown (bt)*
>
> *Landscape – gently undulating rises on Wianamatta Group shales and Hawkesbury shale. Local relief to 30 m, slopes are usually <5%. Broad rounded crests and ridges with gently inclined slopes. Cleared Eucalypt woodland and tall open-forest (wet sclerophyll forests).*
>
> *Soils – shallow to moderately deep (<100 cm) Red and Brown Podzolic Soils (Dr3.21, Dr3.11, Db2.11) on crests, upper slopes and well-drained areas, deep (150-300 cm) Yellow Podzolic Soils and Soloths (Dy2.11, Dy3.11) on lower slopes and in areas of poor drainage.*
>
> *Limitations – moderately reactive highly plastic subsoil, low soil fertility, poor soil drainage*

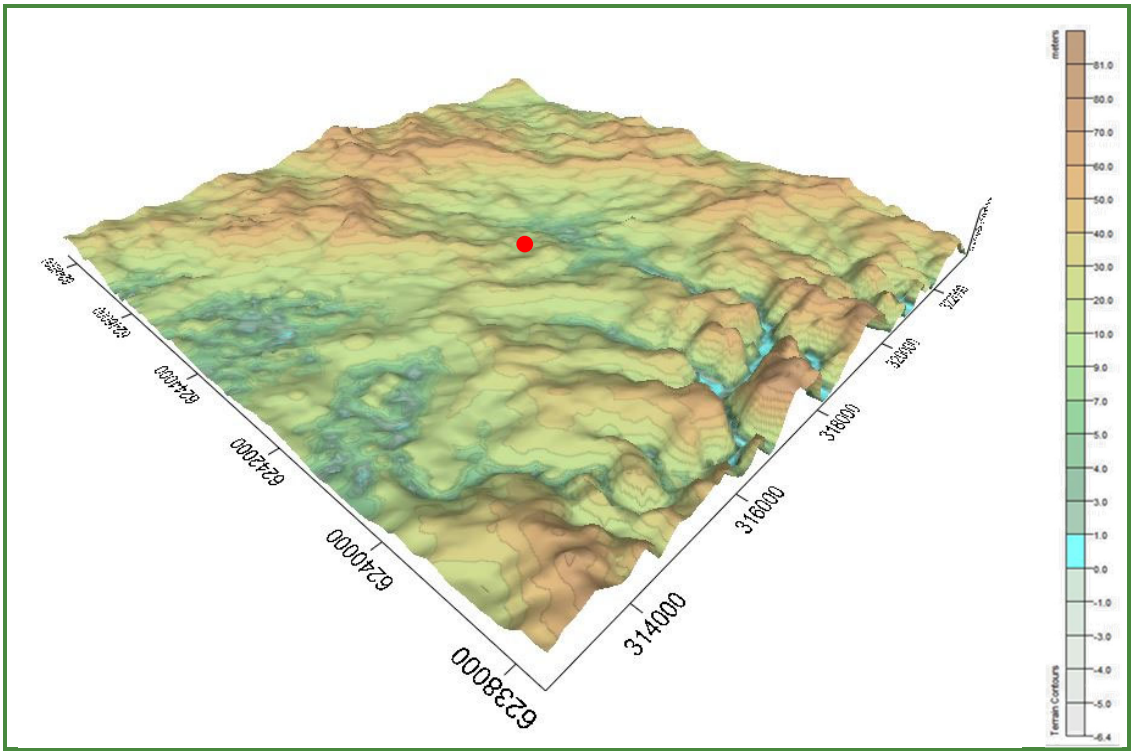
Soil logs from the recent limited Phase II ESA confirm the site as having red and brown Podzolic soils with highly plastic (high clay content) subsoils.

4.1.2 Topography, Drainage and Landscapes

The site is located within an industrial area. Its surface is covered in concrete hardstand and is generally flat, rising slightly at the southern end of the property.

A three-dimensional view of the local topography surrounding the site has been provided in Figure 4-1, with the terrain/vertical axis exaggerated by a factor of 10. It should be noted that this figure is an approximation of the actual terrain, based on information that has been digitised from local contour maps.

Figure 4-1: Local Topography with Vertical Exaggeration of 10



Note: ● = Approximate Site Location

4.1.3 Acid Sulfate Soils (ASS)

Information on the SEED (Sharing and Enabling Environmental Data) Map Viewer of Acid Sulfate Soils Risk indicates the site lies in an area of low probability ASS. The subject site is located on Class 5 ASS land, as per the Bankstown LEP 2015. Class 5 areas are generally low risk of containing ASS. As per the LEP, development consent is required for works in Class 5 areas that are located within 500 m of adjacent class 1, 2, 3 or 4 land that is below 5 metres AHD and by which the water table is likely to be lowered below 1 metre AHD on adjacent class 1, 2, 3 or 4 land. Class 2 land is approximately 365 m north-east of the site perimeter

6.1 Acid sulfate soils

(2) Development consent is required for the carrying out of works described in the Table to this subclause on land shown on the Acid Sulfate Soils Map as being of the class specified for those works.

Class of land Works

5 Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.

Due to the potential risk of ASS occurrence, sampling for ASS was included during the Phase II ESA. The results from this found the site does contain ASS, therefore an ASSMP has been provided to manage ASS during excavation.

4.1.4 Existing Contaminated Soil

The conclusions of the limited Phase II ESA found no evidence of soil contamination within the proposed areas marked for excavation. Laboratory results from all soil samples showed any contaminants detected were all below the adopted site criteria (of HIL-D).

4.2 Potential Impacts on Soil

4.2.1 Construction

An impact to soil during the construction phase may occur from erosion; this is addressed in Section 0. There are no likely impacts to soil based on the construction activities proposed.

An acid sulfate soil management plan is required for excavation works.

4.2.2 Operation

The most likely contamination sources are from the onsite use of fuel and oils, either through spillage during refuelling and/or maintenance activities or from waste materials stored onsite. Any contaminants left on the hardstand surface would likely be collected by stormwater runoff. However, as stormwater is intended to be collected and reused onsite, any contaminates in surface waters will also be captured and removed. Stormwater will be sent and processed through the proposed dewatering plan. Potential contaminants are shown in Table 3-1.

- Potential spillages of diesel and lubricating oil could occur during refuelling and equipment maintenance; the risk would be minimised through procedures and training in appropriate methods and signage showing how to avoid spills and the use of appropriately trained contractors. The tank will be self bunded with concrete barriers to protect against vehicle collision.

- Good housekeeping practices are important to prevent contamination. These include regular cleaning of all hardstand areas, inspection of the integrity of equipment and inspection, cleaning and maintenance of stormwater/surface water system.

4.2.3 Geomorphological Impacts

Minimal earthworks are proposed, therefore geomorphological impacts are considered minor. Erosion and sediment controls are provided. No further assessment of geomorphological impacts is considered warranted.

5. SAFEGUARDS AND MITIGATION MEASURES

A summary of the soil and water environmental safeguards are provided as follows:

- Implementation of a Construction Environmental Management Plan that includes:
  - an Acid Sulfate Soil Management Plan; and
  - Erosion and Sediment Control Plan;
- Construction of the proposed stormwater capture, storage and reuse system;
  - Stormwater pits – BCP Steam Guard Pollution Control Pits or approved equivalent;
  - Underground stormwater pipelines;
  - Underground Silt Arrestor Pit (with gas BCP SAP-4000 or other approved equivalent);
  - 200 KL ROCLA PLASTREAM underground containment;
  - Stormwater isolation valve; and
  - Underground containment outlet water sampling point;
- Staff trained in spill response and emergency procedures, including maintenance and EMP procedures;
- Implementation of an Environmental Management Plan that includes the water monitoring program presented in this report and regular workplace inspection to maintain a high standard of housekeeping;

5.1 EROSION & SEDIMENT CONTROLS

An Erosion and Sediment Control Plan is provided with the INDESCO Engineering Drawings reference 7524-104 and 7524-104A. A description of the erosion and sediment control measures to be implemented on site during construction include:

- Geotextile inlet filter: Sediment barrier made from geotextile or straw bales to protect existing stormwater pits.
- Mesh and gravel inlet filter: Filters at kerb inlets to be gravel-filled wire mesh or geotextile sausage placed at sag point applied to pits as required.
- Sediment fences used along any disturbed/excavated constructed parallel to the site contours and around stockpiles and at site boundary.
- Shaker pad at site entrance and stabilised construction site access (if required). Existing concrete driveways would be used to enter the site from Gow Street where the shaker pad would be located. A stabilised site access consisting of geotextile fabric with road base or 30 mm aggregate to form a thick pad at the entrance of the construction area of the site if needed.

5.2 STORMWATER MANAGEMENT SYSTEM

The upgrades to the stormwater system include stormwater pits to capture on-site stormwater contaminated with suspended sediment (leachate) within underground pipelines that are directed to a silt arrestor. A silt arrestor is a purpose built underground storage pit that treats stormwater by trapping it within the unit and slowing the flow velocity with internal baffles providing gravitational separation of fine particles within the stormwater. Filtered stormwater is then discharged via an outlet pipe to the underground storage tanks. This water will be processed

within the dewatering plant, with the exception of heave rainfall events where water in excess of 200kL will be discharged to the stormwater system utilising the existing connection to the stormwater drainage easement.

5.3 WATER MONITORING REGIME

The monitoring program is provided in section 3.4.6.

There are no onsite groundwater monitoring bores.

6. CUMULATIVE IMPACTS

With the controls in place the site's impacts to soil and water will be improved. Therefore cumulative impacts will be reduced. No further assessment of cumulative impacts is considered warranted.

7. CONCLUDING REMARKS

Benbow Environmental has been engaged by Gow Street Recycling Centre Pty to undertake a Soil and Water assessment to support an Environmental Impact Statement (EIS) for the proposed construction and operations of a dewatering facility to be located at 81 Gow Street Padstow NSW 2211. The assessment is a qualitative study that addresses the potential impacts to soil and water from the proposed operations in accordance with the Secretary's Environmental Assessment Requirements (SEARs No. 1188).

With the control measures and monitoring procedures recommended in this report, the potential soil and water impacts of the proposed development are considered low.

This concludes the report.

Damien Thomas
Environmental Scientist

Emma Hansma
Senior Engineer

Linda Zanotto
Senior Environmental Engineer

R T Benbow
Principal Consultant

8. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of Gow Street Recycling Centre Pty Ltd, as per our agreement for providing environmental services. Only Gow Street Recycling Centre Pty Ltd is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that otherwise required by law) in relation to any of the information contained within this document. We accept no responsibility for the accuracy of any data or information provided to us by Gow Street Recycling Centre *Pty Ltd* for the purposes of preparing this report.

Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.

9. REFERENCES

ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines

Australian and New Zealand Environment and Conservation Council (ANZECC), 2000. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* [Online] Available at: https://www.environment.gov.au/water/quality/publications/australian-and-new-zealand-guidelines-fresh-marine-water-quality-volume-1

Australian Government Bureau of Meteorology, 2016. *Design Rainfall Data System (2016).* [Online]
Available at: http://www.bom.gov.au/water/designRainfalls/revised-ifd/?

Hawkesbury City Council, 2012. *Hawkesbury Floodplain Risk Management Study and Plan.* [Online]
Available at: http://www.hawkesbury.nsw.gov.au/development/development-information/planning-policies/strategies-and-policies/draft-hawkesbury-floodplain-risk-management-study-and-plan

Hawkesbury Council, 2012. *Hawkesbury Local Environmental Plan 2012 - Acid Sulfate Soils Map - Sheet ASS_008DB.* [Online]
Available at: https://legislation.nsw.gov.au/maps/c0f85098-b4c2-c19e-f8bb-acd217104649/3800_COM_ASS_008DB_020_20120316.pdf

New South Wales Consolidated Acts, 1997. *PROTECTION OF THE ENVIRONMENT OPERATIONS ACT.* [Online]
Available at: http://www.austlii.edu.au/au/legis/nsw/consol_act/poteoa1997455/

New South Wales Consolidated Acts, 2000. *WATER MANAGEMENT ACT.* [Online]
Available at: http://www.austlii.edu.au/au/legis/nsw/consol_act/wma2000166/

NSW Government, 2006. *NSW Water Quality and River Flow Objectives.* [Online]
Available at: https://www.environment.nsw.gov.au/ieo/

NSW Government, 2015. *Water Act 1912 No 44.* [Online]
Available at: http://www.legislation.nsw.gov.au/#/view/act/1912/44

NSW Government, 2016. *Sydney Regional Environmental Plan No 20—Hawkesbury-Nepean River (No 2—1997).* [Online]
Available at: http://www.legislation.nsw.gov.au/#/view/EPI/1997/592

NSW Government-Six Maps, 2018. *Land Property and Information.* [Online]
Available at: http://maps.six.nsw.gov.au/

ATTACHMENTS

Attachment 1: Certificate of Analysis

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2037665**	Page	: 1 of 4
Client	: **BENBOW ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: Matthew Taylor	Contact	: Customer Services ES
Address	: 25-27 SHERWOOD STREET NORTHMEAD NSW, AUSTRALIA 2152	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: 191290_Stormwater	Date Samples Received	: 27-Oct-2020 11:00
Order number	: 191290	Date Analysis Commenced	: 27-Oct-2020
C-O-C number	: ----	Issue Date	: 03-Nov-2020 12:07
Sampler	: Matthew Taylor		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP080: Positive result is confirmed by re-analysis.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW1	----	----	----	----
			Client sampling date / time	27-Oct-2020 10:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2037665-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.14**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**214**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	1	mg/L	**41**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.008**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	**50**	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	**50**	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	**50**	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----
^ **Total Xylenes**	----	2	µg/L	<2	----	----	----	----
^ **Sum of BTEX**	----	1	µg/L	<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**104**	----	----	----	----
Toluene-D8	2037-26-5	2	%	**115**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**103**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

Attachment 7: Amended Environmental Management Plan

ENVIRONMENTAL MANAGEMENT PLAN
PREPARED FOR
GOW STREET RECYCLING CENTRE
81 GOW STREET, PADSTOW NSW 2211

Prepared for: Gow Street Recycling Centre

Prepared by: Kate Barker, Senior Environmental Scientist
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Report No: 191290-03_EMP_Rev4
February 2022
(Released: 14 February 2022)

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Attachments

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Attachment A2: Environmental Aspects Register
Attachment A3: Environmental Forms
Attachment A4: Environmental Procedures Manual
Attachment A5: Environmental Policy
Attachment A6: Current development consent conditions (DA-51/1997)

1. INTRODUCTION

Benbow Environmental have been engaged by Gow Street Recycling Centre (GSRC) to prepare an Environmental Management Plan (EMP) for the proposed liquid waste processing facility located at 81 Gow Street, Padstow NSW 2211.

The site contains an existing construction and demolition (C&D) resource recovery facility and operates under an existing consent from Canterbury-Bankstown Council (DA-51/1997). The facility is approved to process up to 80,000 tonnes of waste per year and store 7,300 tonnes of waste at any one time. It undertakes scheduled activities on site (resource recovery and waste storage), and as such holds an Environment Protection Licence (EPL) (No. 10943).

GSRC seeks to modify consent to operate a liquid waste dewatering facility on site. The dewatering plant would process up to 250,000 tonnes of liquid waste per year and have a maximum processing capacity of 1,500 tonnes per day.

This EMP details the necessary procedures and safeguards to effectively manage the on-site and off-site environmental impacts of the site operations. It includes a review of existing operations (C&D activities) and the proposed operations (liquid waste processing operations).

The EMP identifies environmental legal requirements and assesses specific impacts based on the site activities. It is the guiding document to facilitate the implementation of environmental management at the site including specific objectives and targets for both the short and long term. A copy of this EMP will be available on site at all times.

A description of the site's operations and the scope and objectives of this EMP are outlined in the following sections.

1.1 OBJECTIVES OF THE EMP

The objectives of the EMP are:

- To ensure all staff and contractors are aware of the legal requirements and responsibilities pertaining to environmental management related to all site operations covered by this EMP;
- To ensure that all staff and contractors are aware of the environmental aspects and impacts related to the site operations;
- To ensure staff and contractors are aware of their responsibilities and are competent in implementing the specific environmental safeguards that apply to their activities;
- To ensure that review processes are incorporated into the plan to reaffirm continual improvement;
- To ensure all relevant legislation is complied with; and
- To minimise any environmental harm as a result of the site operations.

In addition to these objectives, it shall be the aim of senior management to change and improve the EMP with the updating of environmental legislation, the development of new practices and

technology, and in the case of complaints or incidents. The EMP should be updated to reflect such changes.

1.2 EMP REQUIREMENTS

This EMP has been prepared in line with the *Guideline for the Preparation for Environmental Management Plans* (NSW DIPNR, 2004). Requirements for the EMP are categorically addressed in Table 1-1.

Table 1-1: EMP Requirements

EMP Requirement	Section of EMP
Background	
Introduction	Section 1
Project Description	Section 2.2
EMP Context	Section 2
EMP Objectives	Section 1.1
Environmental Policy	Section 3.3 and Attachment A5
Environmental Management	
Environmental Management Structure and Responsibility	Section 4.1
Approval and Licencing Requirements	Section 3.2
Reporting	Section 4.4.1 and Attachment A4
Environmental Training	Section 4.2
Emergency Contacts and Response	Section 4.4.1
Implementation	
Risk Assessment	Section 3.4 and Attachment A2
Environmental Management Activities and Controls	Section 3.5 and Attachment A4
Environmental Management Plans or Maps	Attachment A4
Environmental Schedules	
Monitor and Review	
Environmental Monitoring	Section 5 and Attachment A4
Environmental Auditing	Section 5.2
Corrective Action	Section 5.4
EMP Review	Section 5.3

1.3 ENVIRONMENTAL PROCEDURES, RECORDS & FORMS

A set of environmental procedures and plans has been compiled into a manual and provided as Attachment A4. These procedures are a pragmatic way for staff and contractors carry out activities in an environmentally responsible way and ensure this EMP is adequately implemented.

Attachment A4 includes environmental procedures for the following:

- Air Quality Management
- Noise & Vibration Management
- Water Management

- Storage & Handling of Hazardous Materials
- Spill Procedure
- Waste Management
- Fire Prevention Management
- Workplace Inspection

Likewise, a set of records and forms associated with the environmental management of the site are also provided as Attachment A3. These registers and forms include:

1. Environmental Training Register
2. Incident Reporting Forms
3. Complaints Forms
4. Corrective and Preventative Actions Form

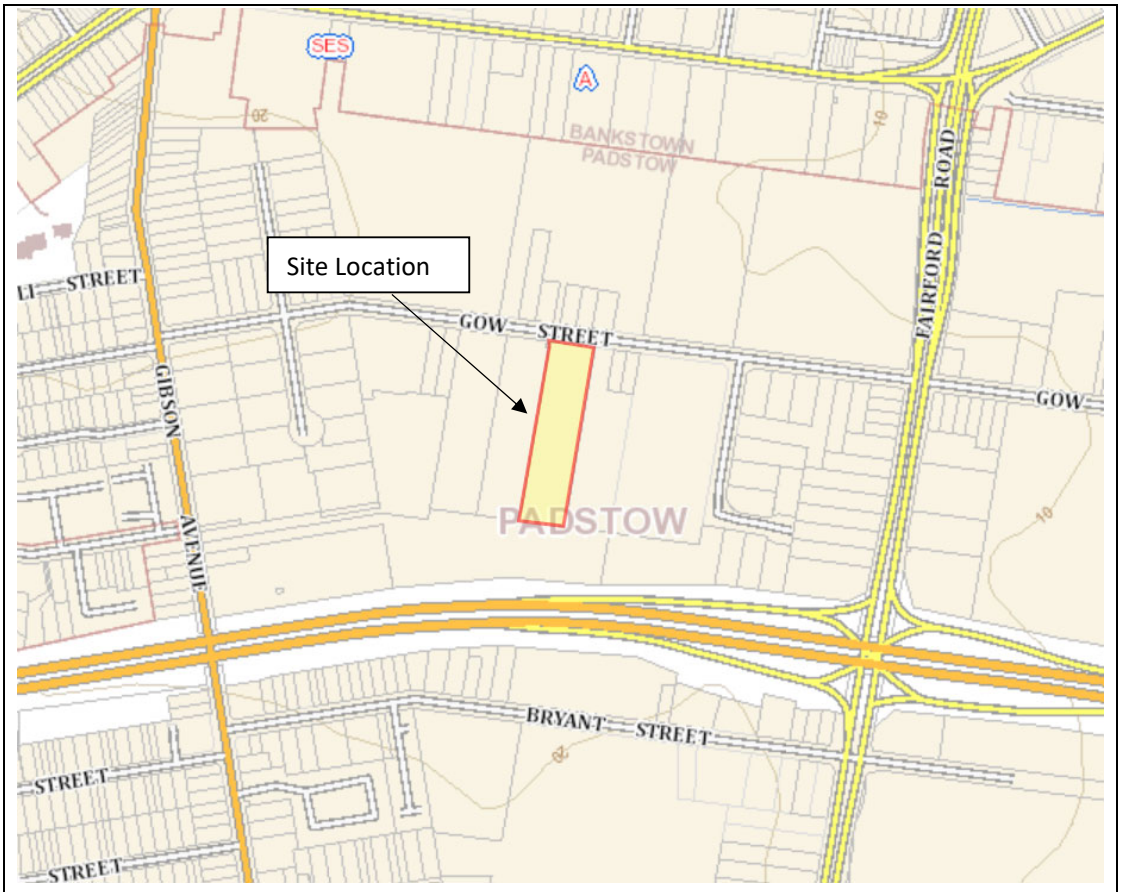
2. SITE DESCRIPTION

2.1 SITE LOCATION

The site is located at 81 Gow Street, Padstow NSW 2211 (also known as Lot A DP 103140), as shown in Figure 2-1 and Figure 2-2.

The site is a fully developed industrial site of approximately 10,115 m^2 within IN1 – General Industrial zoned land, as per the *Bankstown Local Environmental Plan 2015*. The entire site consists of sealed concrete hardstand that contains three (3) existing buildings; an existing warehouse that is to be demolished and is the proposed location for the new dewatering plant, an existing office and amenities building that is to be demolished and a demountable that is used as a lunchroom that is to be removed. There is also an existing awning located to the east of the car parking spaces that is to be removed.

Figure 2-1: Site Location



Source: SIX Maps 2021

N Not to scale	LEGEND: Site Boundary	Benbow Environment 25-27 Sherwood Street Northmead NSW 2152

Figure 2-2: Site Aerial



Source: SIX Maps 2021

N Not to scale	LEGEND: Site Boundary	Benbow Environment 25-27 Sherwood Street Northmead NSW 2152

2.2 SITE OPERATIONS

Site operations covered in this EMP include existing and proposed operations, as detailed below.

2.2.1 Existing Operations

The site contains an existing C&D resource recovery facility with approval under DA-51/1997. The facility can process up to 80,000 tonnes per year and store 7,300 tonnes at any one time. The C&D facility is authorised to accept the following wastes:

- General solid waste (non-putrescible) including:
  - Glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal;
  - Virgin excavated material;
  - Building and Demolition waste;
  - Asphalt waste;
  - Cured concrete waste;
  - Any mixture of the wastes referred to above.

- Drilling mud, meaning a mixture of naturally occurring rock and soil, including but not limited to materials such as sandstone, shale and clay, and drilling fluid generated during drilling operations such as horizontal or directional drilling or potholing. This does not included drilling mud that has been generated by:
  - Deep drilling for mineral, gas or coal exploration; or
  - Drilling through contaminated soils, acid sulphate soils (ASS) or potential acid sulphate soils (PASS).

Note: At the time of writing, the facility does not currently accept drilling mud (liquid waste). This waste type is currently not included on the Site's EPL. The proposed liquid waste facility described below will receive and process drilling mud under a separate approval and an EPL variation will be submitted.

2.2.2 Proposed Operations

The liquid waste facility would process up to 250,000 tonnes of waste per year. Liquid wastes to be accepted on site are drilling mud and concrete washout waste.

The dewatering facility would operate as a recycling facility for the drilling mud and concrete washout water. The facility would involve the following activities:

- Unloading of drilling mud/concrete washout water into dirty water containment pits;
- This liquid is transferred into the dirty water pits.
- The sand/rock/sediment slurry is pumped from the bottom of the tank and into a screw separator.
- The screw separator removes the solids from the water.
- The solids are then transferred to a vibrating screen where the aggregates and sands are conveyed to external storage bays.
- The water from the screw separator and vibrating screen is pumped to the silo, the slurry homogeniser tank and then into the flocculant station and then into the filter press.
- The filter press removes the remaining silts and the cleaned water is pumped to the clean water pit.

- The sediments/silt from the filter press becomes a fine biscuit which is removed offsite as for application to land under the Treated Drilling Mud Exemption 2014 or to landfill.
- The clean water is to be used for dust suppression and washdown onsite. Excess water would be sent to tradewaste under a Trade Waste Agreement.

Site washdown water will be collected on site before being processed through the above dewatering system.

The maximum quantity of liquid waste that can be processed through the dewatering plant in a 24-hour period is approximately 1,500 tonnes.

2.3 SITE FACILITIES

Establishment and operation of a liquid waste dewatering plant is proposed. This plant would essentially operate separately from the existing approved resource recovery facility, however, there would be some minor interactions between processes. The proposal consists of the following elements:

- The existing warehouse would be renovated to accommodate and enclose the proposed dewatering facility.
- A new office building would be constructed. This would replace the existing demountable office and amenities building as well as the demountable lunchroom that would be removed from site. The new office building would be used by staff of both the existing and proposed developments.
- Installation of dewatering equipment including a flocculant station/pit, screw separator and screen, slurry homogeniser and filter press.
- A truck unloading area partially inside the renovated building.
- Seven (7) inground pits and sumps inside the building. Pits and sump details are as follows:
  - Pit 7 - Inground Pit Receivals (1), 8.0 x 4.5 x 3.0 m deep (Volume: 108,000 L)
  - Pit 6 - Inground Pit Receivals (2), 2.4 x 4.5 x 3.0 m deep (Volume: 32,400 L)
  - Pit 5 - Inground Pit Receivals (3), 2.4 x 4.5 x 3.0 m deep (Volume: 32,400 L)
  - Pit 4 - Floc Plant: Dirty water pit (2), 3.33 x 2.835 x 2.5 m deep (Volume: 23,601 L)
  - Pit 3 - Floc Plant: Dirty water pit (1), 2 x 2.835 x 2.5 m deep (Volume: 14,175 L)
  - Pit 2 - Floc Plant: Clean water pit, 3.0 x 2.835 x 2.5 m deep (Volume: 21,263 L)
  - Pit 1 - Floc Plant: Sump Pit, 1.6 x 2.835 x 2.5 m deep (Volume: 11,340 L)
- Six (6) bunkers. Four (4) bunkers would be located inside the building and two (2) would be located external to the building under an awning. Bunker contents and dimensions are:
  - Bunker 1: Aggregate, 6.2 x 4.0 m
  - Bunker 2: Aggregate, 6.2 x 4.0 m
  - Bunker 3: Sand 5.07 x 5.805 m
  - Bunker 4: Sand 5.295 x 5.805 m
  - Bunker 5: Sand 5.295 x 5.805 m
  - Bunker 6: Filter cake 6.7 x 8.9 m
- Extension of the boundary wall up to new building behind the new aggregate bunkers.
- Connection to Sydney Water tradewaste under an agreement.
- Stormwater upgrades

2.4 HOURS OF OPERATION

The approved operational hours for the existing C&D facility are: 06:00 and 18:00 Monday to Friday, and 07:00 and 18:00 on weekends. The existing facility will continue to operate within these hours.

The liquid waste processing facility proposes to operate 24 hours, seven days a week.

3. PLANNING

The legal requirements that affect the operation of this site include any legislation which relates to activities or potential environmental impacts of the operations.

The following federal and state acts and associated regulations are key legislation pertaining to the environmental management of the site:

- Protection of the Environment Operations Act, 1997 (POEO Act);
- Environmental Planning and Assessment Act, 1979 (EP&A Act); and
- Work Health and Safety Act, 2011 (WHS Act).

Note that changes to legislation or regulations during operations would require a corresponding change to the EMP and specific procedures. Visit http://www.legislation.nsw.gov.au/ for further details.

All licences, permits and approvals required for the project are also presented.

3.1 LEGAL REQUIREMENTS

A register of legal and other requirements for the facility is provided in Attachment A1. Changes to legislation or regulations may require a corresponding change to the EMP.

Affected procedures would need to be modified accordingly.

3.2 LICENCES, PERMITS & APPROVALS

Attachment A1 contains a list of environmental licences, permits and approvals that are required for the site operations. This list needs to be maintained by the Managing Director or delegate and should be reviewed at regular intervals.

3.2.1 Development Consent Conditions

The development consent conditions (DCC) are issued by Council on acceptance of a proposed development or alteration/addition to existing developments under the NSW *Environmental Planning and Assessment Act 1979*. The DCCs that apply to the site need to be fulfilled in order to comply with current environmental and planning legislation, policies and guidelines.

A copy of the current development consent conditions (DA-51/1997) is provided as Attachment A6. Conditions of consent relevant to environmental issues are considered throughout this EMP.

3.2.2 Environmental Protection Licence

The site will handle up to a maximum of 250,000 tonnes of waste per year, and therefore is required to vary the company's environment protection licence (EPL) under the *Protection of the Environment Operations Act 1997*.

3.3 ENVIRONMENTAL POLICY

Values and environmental commitments have been formalised in an Environmental Policy, provided as Attachment A5. This policy is considered integral to the way the company conducts itself and would be incorporated into all operations and functions of the business.

3.4 SIGNIFICANT ENVIRONMENTAL ASPECTS & POTENTIAL IMPACTS

A register of environmental aspects and potential impacts is provided as Attachment A2. A risk assessment was undertaken on each identified potential impact to determine its significance using a risk rating based on the likelihood and consequence descriptors. The risk assessment methodology is provided in the sub-sections that follow.

- Air emissions;
- Noise impacts;
- Water management;
- Hazardous material management;
- Waste management; and
- Fire prevention management.

Mitigation measures were considered in the register.

3.4.1 Risk Assessment Methodology

The methodology described in the following sections was used in assessing the risks associated with site activities.

The following sub-section defines the risk criteria used in this assessment.

3.4.1.1 Consequence Estimation

Consequence descriptor is used to quantify the potential on-site and off-site impacts in terms of environmental, health and financial impacts. Consequence is described in Table 3-1.

Table 3-1: Consequence Table

Level	Descriptor	Consequences Or Impact Description
1	Insignificant	Confined on-site environmental impacts able to be promptly rectified. No injuries. Financial loss less than $2,000.
2	Minor	Confined environmental impacts requiring short term recovery with potentially little or no off-site impacts. First Aid treatment. Financial loss $2,000 to $20,000.
3	Moderate	Confined environmental impacts requiring medium term recovery both on-site and off-site. Medical treatment required. Financial loss $20,000 to $200,000,
4	Severe	Unconfined environmental impacts requiring long term recovery and leaving residual damage both on-site and off-site. Extensive injuries, loss of product capability. Financial loss $200,000 to $1M.

Table 3-1: Consequence Table

Level	Descriptor	Consequences Or Impact Description
5	Catastrophic	Widespread environmental impact requiring long term recovery and leaving major damage both on-site and off-site. Death. Financial loss more than $1M.

3.4.1.2 Likelihood Estimation

This aspect involves determining how likely an event is to occur. Likelihood is the chance that something might happen and is defined for the purposes of this assessment in Table 3-2.

Table 3-2: Likelihood Table

Level	Descriptor	Likelihood Description
A	Almost Certain	Very likely. The event is expected to occur in most circumstances.
B	Likely	Strong possibility. The event will probably occur in most circumstances.
C	Possible	The event might occur at some time.
D	Unlikely	Not expected. There is a slight possibility the event could occur at some time.
E	Rare	Highly unlikely. The event may occur only in exceptional circumstances.

3.4.1.3 Level of Risk

The level of risk is defined by Table 3-3.

Table 3-3: Level of Risk Table

		Consequence				
		Insignificant 1	Minor 2	Moderate 3	Severe 4	Catastrophic 5
Likelihood	A (almost certain)	M (5)	H (10)	H (15)	V (20)	V (25)
	B (likely)	L (4)	M (8)	H (12)	H (16)	V (20)
	C (possible)	L (3)	M (6)	M (9)	H (12)	H (15)
	D (unlikely)	L (2)	L (4)	M (6)	M (8)	H (10)
	E (rare)	L (1)	L (2)	L (3)	L (4)	M (5)

The area shown in red indicates a very high level of risk (V) where mitigation measures are essential.

The area in orange is a high level of risk which is intolerable and where risk reduction is required.

The area shown in yellow indicates a moderate level of risk (M). Whilst the risk is not unacceptable, there should be practical measures taken to lower the risk. For risks where further mitigation is not economically viable, judgment needs to be exercised as to whether the level of risk is acceptable or not. While risk of an incident may be tolerable, steps still need to be taken to reduce the risk level to as low as reasonably practicable.

The area, shown in green, indicates a low level of risk (L) and is broadly considered to be acceptable. Further risk mitigation may not be required/appropriate. However, low and accepted risks should be monitored and routinely reviewed to ensure that they remain acceptable.

3.5 Environmental Objectives, Targets and Programmes

This section details the site environmental objectives, targets and programs to manage the significant environmental aspects identified in Section 3.4.

The recommended environmental objectives, targets and programs for the sites are summarised in Table 3-4. Procedures presented in Attachment A4 provide a detailed description of the management and monitoring for each aspect.

Table 3-4: Environmental Objectives & Performance Targets

Objectives	Actions	Performance Indicators and Targets	Frequency	Responsibility
Maintain 100% environmental compliance	1. Implement this EMP 2. Ensure EMP is implemented by undertaking internal or external audits 3. Comply with applicable environmental laws 4. Comply with conditions in EPL 5. Supply Annual Return to NSW EPA	• No compliance issues	Annually	Managing Director
Minimise dust emissions	1. Implement control measures 2. Undertake weekly inspection	• Weekly inspection checklist complete • No excessive dust observed on site	As per Air Quality Management procedure	Site/ Operations Manager

Table 3-4: Environmental Objectives & Performance Targets

Objectives	Actions	Performance Indicators and Targets	Frequency	Responsibility
Minimise noise emissions	1. Implement control measures 2. Undertake weekly inspection	• Weekly inspection checklist complete • No noise complaints	As per Noise Management Procedure	Site/ Operations Manager
Prevent surface water contamination	1. Implement control measures 2. Undertake weekly inspection of stormwater pits	• Weekly inspection checklist complete • Visual water quality indicators met	As per Water Management Procedure	Site/ Operations Manager
Reduce waste generation	1. Identify waste reduction opportunities 2. Review waste records	• Weekly inspection checklist complete • 10% reduction in waste generated in 2nd year of operation	As per Waste Management Procedure	Site/ Operations Manager
General	1. Improve employee awareness of environmental issues	• Train employees on specific issues related to this EMP within one year of operations	As per Section 4.2	Site/ Operations Manager

4. IMPLEMENTATION AND OPERATION

Successful implementation of this EMP requires knowledge, skills and training, as well as the appropriate allocation of resources, and the clear delegation of responsibilities. It is also important that appropriate communication is established with the various stakeholders involved (e.g. surrounding residential community and regulatory authorities).

This section discusses the following:

- The key environmental roles and responsibilities; and
- Environmental training and appropriate communication strategies/procedures.

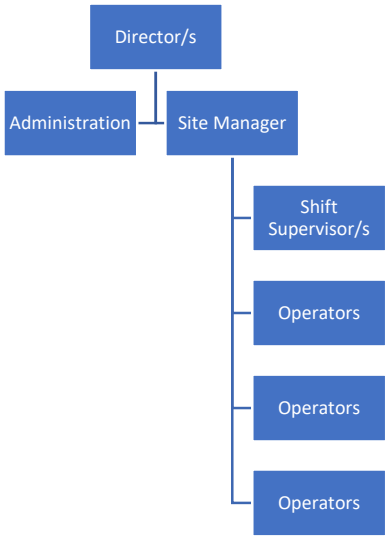
4.1 KEY ROLES AND RESPONSIBILITIES

Key roles and responsibilities for protecting the environment and implementing environmental procedures are provided in Table 4-1. This description provides a guide to the roles the facility would require during operation. The structure of these roles is provided in Figure 4-1.

Table 4-1: Key Roles & Responsibilities

Role/Position	Responsibilities
Managing Director	• Ensure the company environmental policy is implemented in the EMP for the site. • Allow adequate resources to ensure satisfactory implementation and maintenance of the EMP. • Monitor overall EMP performance.
Site/Operations Manager	• Implement EMP across all functions and maintenance areas of the site. • Manage changes to EMP from changes across site operations. • Ensure responsibilities of others are delegated and understood. • Implement corrective and preventative actions as required.
Environmental Officer/Delegate	• Implement EMP across all business functions. • Maintain EMP documentation including updating changes to business activities, legislation, procedures, objectives, targets and programmes and training. • Delegate tasks to other staff members in order to achieve objectives and implement EMP programs. • Annually review and update the EMP. • Ensure appropriate training relating to environmental management is undertaken and assess staff's competence.
Shift Supervisors	• Undertake any delegated EMP tasks to enable effective implementation of the EMP. • Carry out work activities in accordance with the EMP and procedures. • Ensure operators & staff are aware of their environmental responsibilities and legal requirements. • Inform the Environmental manager of any issues with implementing the EMP or if amendments are needed as soon as practicable.
All Staff and Contractors	• Undertake work activities in accordance with the EMP and procedures. • Inform manager of any issues with implementing the EMP, corrective and/or preventative actions required or amendments needed as soon as practicable.

Figure 4-1: Example Organisational Structure Chart



4.2 ENVIRONMENTAL TRAINING

Environmental training is essential for all staff working at the site to ensure that the environmental aspects of the site activities, and their management, are understood.

Training of staff will need to be assessed on a periodic basis, while contractors would be assessed on a job-by-job basis. It is recommended that environmental training be included as part of the site induction and revisited annually. Two separate site induction training programs need to be developed – one for Employees and one for Contractors.

This training shall be conducted by site management prior to those persons carrying out their works on site.

4.2.1 Site Induction

All employees must have successfully completed the site induction training prior to starting work at the site. Employee site induction training would contain an environmental component that would cover the following areas:

- How to communicate and respond in an emergency situation, who to contact and what assistance is available.
- Where to go in an emergency, how to evacuate to a safe location and who will co-ordinate an evacuation.
- Incident response and reporting requirements.
- Aspects of the site operations and how these could potentially impact on the environment.
- Awareness of potential impacts of staff work activities and the environmental benefits of improved personal performance.
- Awareness of the corporate environmental policy and objectives of the site EMP.
- Awareness of legal requirements and individual accountability under environmental legislation applicable to the site, including penalties for offences under environmental legislation.

- How the potential impacts are managed on site – including monitoring, site inspections and any regular maintenance undertaken.
- Understanding of the various roles and responsibilities, with relevant procedures; e.g.: Administration staff should understand how the complaints register is implemented, and Staff responsible for daily site operations should be trained in any inspection checklists and how to follow up on any non-conformances.

Shortfalls could be addressed in toolbox talks or by specific on-site training.

4.2.2 Training for Contractors

Contractors would be physically inducted by the Site/Operations Manager, who would provide a tour of the site and outline site policy, procedures, and scope of works during the tour. Also included in the site induction for contractors would be where to go in the event of an emergency, how to evacuate to a safe location and who will co-ordinate an evacuation.

4.2.3 Regular Site Meetings/Toolbox Talks

Site meetings/Toolbox talks would be undertaken monthly. In addition to safety aspects, the agenda for the meetings should include the following environmental components:

- Any environmental spills, incidents or complaints;
- Results of any environmental monitoring undertaken; and
- Outcomes of the Workplace Inspection.

4.2.4 Specific Environmental Training

Specific environmental training should be arranged for any environmental matters that need to be communicated to employees. These would be organised on an as needs basis. These would include but not be limited to:

- Training in this EMP;
- Dangerous goods and hazardous chemicals training –including storage and handling of diesel, spill kit use; understanding SDS's in relation to incoming drilling mud waste additives.

4.2.5 Training Register

At the completion of the site induction, all employees and contractors must sign a document stating that they understand and agree to abide by the site's procedures.

Details of all environmental training programs need to be recorded. A training register has been provided as a form in Attachment A3.

4.3 COMMUNICATION

The Managing Director and/or Site/Operations Manager would communicate with relevant stakeholders when required. Stakeholders may include community groups, sub-contractors, regulatory authorities, non-regulatory agencies and the State Government.

4.3.1 Community Relations

It is important to foster open communications with the other stakeholders of the site to ensure that an integrated approach is used to deal with issues which reflect on all stakeholders. Regular communications with adjacent facilities should be undertaken to ensure any environmental management issues from either party are addressed promptly.

4.3.1.1 Complaints Response

All complaints or enquiries should be handled in a courteous manner. Every complaint is a potential opportunity for improvement in environmental management. A procedure for handling complaints is provided below:

- Record in Log Book and on a Complaint Response Form:
  - Name of Complainant;
  - Address;
  - Telephone Number; and
  - Details of Complaint: date, time of occurrence, precise location of event.

- Connect/refer caller to one of the following staff members who are authorised to discuss the complaint with the caller:
  - Managing Director/s; and
  - Personnel with environmental responsibilities.

- Authorised staff member requests details of the complaint or information required by the caller and completes the Complaint Response Form and the Complaint Response Logbook Index (Attachment A3).

- Complaint is investigated and discussed at a toolbox meeting to determine whether it warrants being added to the incident register and whether a more detailed investigation is required.

- If further investigation is required, an incident number is allocated and recorded on the Complaint Response Logbook & Incident Register. If no investigation is warranted, the complaint can be closed out.

- Any response, investigations and actions taken to rectify the issue are recorded in the incident register.

4.3.2 Regulatory Authorities

Communications with regulatory authorities, such as the local council, shall occur on an as-needed basis. All communication with regulatory authorities concerning environmental matters is to be noted and records of any subsequent actions appropriately filed.

4.3.3 Internal Communication

The site management is to establish simple yet effective communication channels for implementation of the EMP. Typical methods of communication that may suit the size of the operation include the Regular Site Meetings or Toolbox Talks with formal records.

Document control and written communication would be necessary when new contractors or employees are trained or changes are made to the EMP or any other matters that affect the holistic environmental management of the site.

4.4 INCIDENTS & EMERGENCIES

Emergency and pollution incident situations shall be dealt with in accordance with the site-specific Emergency Plan (EP) and Pollution Incident Response Management Plan (PIRMP).

These plans identify potential emergency situations that may have an impact on the environment and details how to respond to them. The site-specific EP has been provided by Benbow Environmental. Additionally, as per Clause 153A of the POEO Act, GSRC are required to maintain a Pollution Incident Response Management Plan (PIRMP) as a condition of the sites EPL. The PIRMP (as well as the EPL) can be viewed on the GSRC website: https://gsrc.com.au/epa.html.

An Emergency Control Organisation (ECO) needs to be established for the site and should consist of a group of personnel that has the responsibility of providing first response action to an emergency in terms of organising the necessary resources, communications, evacuation of personnel and implementing any corrective actions that may be necessary to return the emergency situation back to normal. The same applies for a pollution incident. Specific details of the ECO need to be provided in the Site's Emergency Plan.

4.4.1 Response Actions for Pollution Incidents

In the event of a pollution incident, the site's Pollution Incident Response Management Plan should be implemented. The first response of personnel on site based on their initial assessment is to phone 000 in an emergency.

Initial assessment needs to be made by ECO members present on site. If safe to do so:

1. Remove all persons from immediate danger
2. Secure the area
3. Commence evacuation

Under Part 5.7 of the POEO Act, a pollution incident that occurs in the course of an activity so that material harm to the environment is caused or threatened must be notified immediately to relevant authorities.

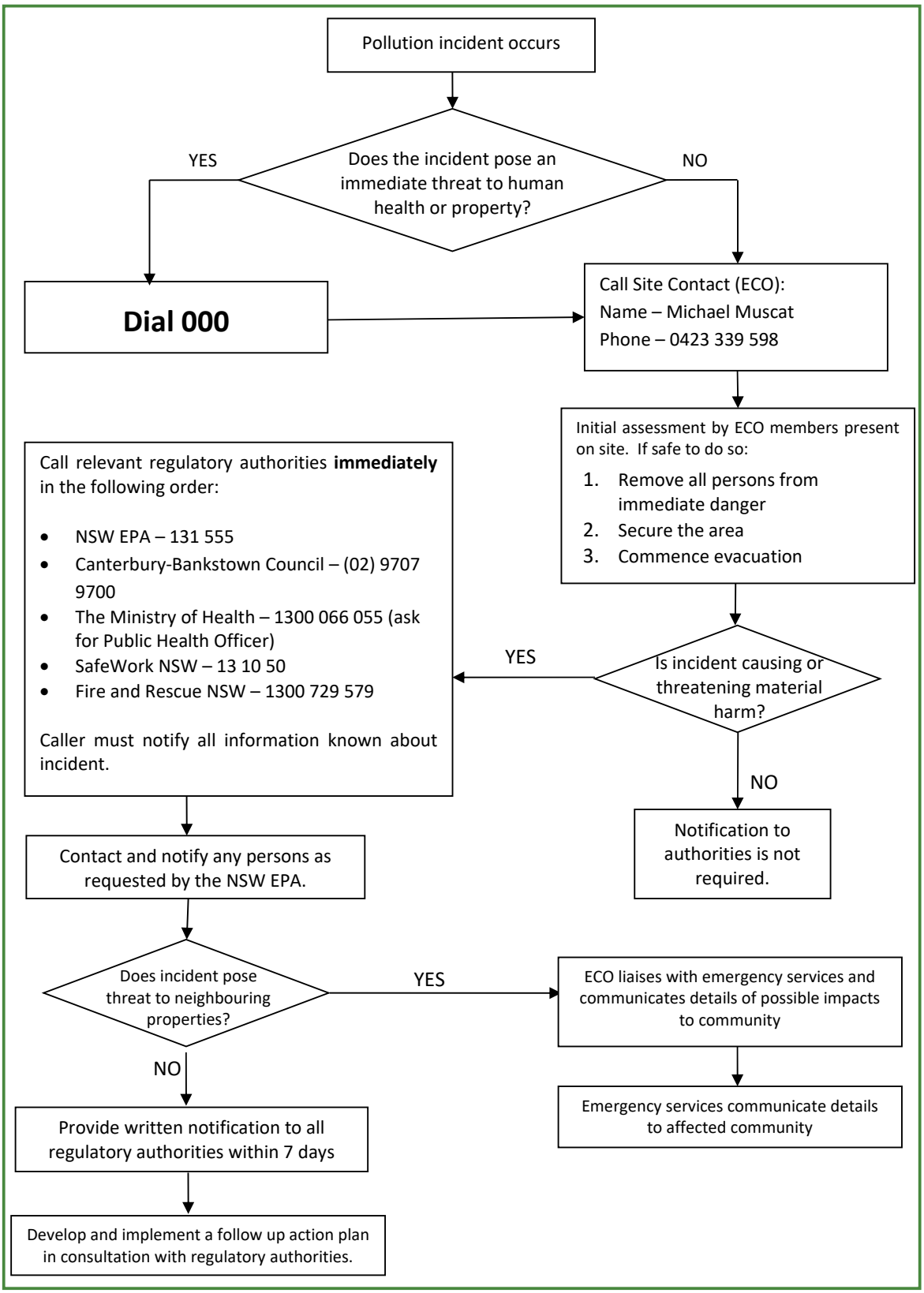
If the incident presents an immediate threat to human health or property, call 000 immediately. If the incident does not require emergency services, notify the following regulatory bodies, in order of relevance, as follows:

1.	NSW Environment Protection Authority	131 555
2.	Canterbury-Bankstown Council	(02) 9707 9700
3.	The Ministry of Health	1300 066 055 (ask for Public Health Officer)
4.	SafeWork NSW	13 10 50
5.	Fire and Rescue NSW	1300 729 579

Note: The above order for notification purposes is at the time of writing the correct order in accordance with the duty to notify sections of the POEO Act. This may need to be updated upon approval of the dewatering plant.

A simple flowchart detailing how to respond in the event of a pollution incident is provided as Figure 4-2.

Figure 4-2: Response Plan for Pollution Incident



5. MONITORING, CORRECTIVE & PREVENTATIVE ACTIONS

This section details the monitoring and inspection plan to facilitate proper implementation, maintenance and due diligence of the EMP. Corrective and preventative actions are also detailed to facilitate continuous improvement of environmental management across operations.

5.1 ENVIRONMENTAL INSPECTIONS

Regular inspections of the facility would assess the adequacy of control measures implemented at the site, so that corrective and/or preventative action can be taken where required.

Weekly inspections are recommended. An Inspection Checklist as a procedure is provided in Attachment A4. This covers air, noise, water, waste/litter and general management of the site.

5.2 ENVIRONMENTAL AUDITING

Auditing is necessary to evaluate compliance and shall be conducted on a regular basis. It is recommended that external consultants conduct a review of the audit every 2-5 years. Independence must be demonstrated by the freedom from responsibility for the activity being audited or freedom from bias and conflict of interest.

Internal environmental management system audits shall be undertaken. The audit shall encompass the assessment of the following:

- Assess the effectiveness of the environmental control implemented on site, and the procedures used in the application of the EMP;
- Review of Monitoring and Inspection Plan results and/or reports for non-conformances, and records of corrective and preventive actions on areas of non-compliance to the EMP. Assessment of the adequacy of these actions;
- Degree of conformance to nominated procedures, and review of complaint register;
- Identification of areas of the system which could be improved, and identifying where possible missing procedures, procedures which require updating, documentation which could be simplified, or other target areas;
- Overall commitment to, and implementation of, the EMP;
- Updates in industry best practice;
- Changes in legislation;
- Annual set of objectives/target; and
- Revisions to objectives/targets due to Regional or Global initiatives by Government.

5.3 EMP Review

Throughout operation, certain circumstances may change and as a result, modifications and/or refinements to the EMP may be required. Therefore, a review of the EMP is recommended to be annually.

The reviews shall be undertaken by the Managing Director and/or Appointed Environmental Officer and delegates and would need to consider the following:

- Changes to site activities, raw materials and/or chemicals;
- Changes to legislation;
- Variations to licences, approvals, consents or permits;
- Any monitoring, inspection and audit results;
- Any pollution incidents or complaints; and
- The effectiveness of safeguards and controls.

Outcomes of the EMP reviews may require modifications to the EMP and related documentation.

5.4 Corrective and Preventative Actions

This section of the EMP details non-conformance with the EMP, and corrective and preventative actions. Non-conformances include errors and deficiencies that can be identified through the Inspection Checklist, Environmental Monitoring results and/or from any complaints received in relation to site activities. Non-conformances should be effectively logged and promptly resolved. Non-conformances are to be reviewed by site management who will coordinate the appropriate corrective and preventative actions to address the respective non-conformances. Site management will then inform any staff or contractors who are affected by significant non-conformances about the subsequent required actions.

5.4.1 Request for Corrective Action

Corrective Actions are an ideal way to demonstrate and account for any issues and improvements to the EMP. A Corrective Action Request (CAR) should be issued and processed using the CAR form provided in Attachment A3. A CAR can be initiated by any staff member, and should be passed to the appropriate staff or contractors responsible for the source of the non-conformance. Different events often initiate a CAR being raised, some typical ones follow:

- Council or other regulatory agency direction or request;
- Detection of non-conformances during site inspection;
- Public complaints;
- Periodic meetings; and/or
- Environmental incident or near miss.

Site management shall ensure that CARs are actioned within a reasonable time frame. Records shall be maintained by the site management for all relevant corrective actions.

5.5 RECORDS

Records relating to non-conformances, and their corrective and/or preventive action request forms, are maintained by site management. Other types of records, such as environmental monitoring results or correspondence between any regulatory authorities, shall also be maintained by site management.

These records would be kept in the office on site and would be compiled, as access to these records may occasionally be required by stakeholders and by regulatory authorities.

Reports and records concerning any environmental audits and regular inspections of the operations should also be maintained and archived.

This concludes the EMP.





Kate Barkerr
Senior Environmental Scientist

R T Benbow
Principal Consultant

6. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of Gow Street Recycling Centre, as per our agreement for providing environmental services. Only Gow Street Recycling Centre is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that otherwise required by law) in relation to any of the information contained within this document. We accept no responsibility for the accuracy of any data or information provided to us by Gow Street Recycling Centre for the purposes of preparing this report.

Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.

ATTACHMENTS

Attachment A1: Legal Register

Attachment A1: Legal and Other Requirements

Legislation	Activity / Aspect	Section / Clause	Requirements	Comments
Environmental Planning and Assessment Act 1979	All	All	Comply with development consent conditions (DA-51/1997) as set out by Canterbury-Bankstown Council	Compliance with all development consent conditions is required.
Protection of the Environment Operations Act 1997	Environmental Harm	S115 S116 S117	The principal objective of the legislation is to avoid causing environmental harm. Harm is defined in the Act as being: ***"harm"**, in relation to the environment includes any direct or indirect alteration of the environment that has the effect of degrading the environment and, without limiting the generality of the above includes any act or omission that results in pollution.* ***"Pollution"** means:* *(a) water pollution, or* *(b) air pollution, or* *(c) noise pollution, or* *(d) land pollution.* Clause 115 relates to the offence for wilful or negligent disposal of waste likely to harm the environment. Clause 116 relates to offences for wilful or negligent causing leaks, spills or escapes of substances likely to harm the environment. Clause 117 relates to offences for wilful or negligent emission of ozone depleting substances likely to harm the environment.	The implementation of the EMP would ensure that the environmental impacts of the activities taking place on site are minimised. Safeguards and procedures would ensure that site operations avoid causing environmental harm or pollution.

Legislation	Activity / Aspect	Section / Clause	Requirements	Comments
	Water Pollution	S120 S123	Clause 120 relates to the prohibition of pollution of waters: *A person who pollutes any waters is guilty of an offence.* Clause 123 details the maximum penalty for water pollution offences. Tier 2 penalties apply. *A person who is guilty of an offence under this Part is liable, on conviction.*	Applies. Safeguards exist to prevent waste/sediments entering the stormwater network and migrating off-site. Additional safeguards will be implemented to prevent liquid waste from leaving the site from the dewatering facility. Responsibility extends to all employees. If found guilty of a water pollution offence, both the company and the individual can be held liable.

Legislation	Activity / Aspect	Section / Clause	Requirements	Comments
	Air Pollution and Odour	Part 5.4	Clause 124 relates to the operation of plant (other than domestic plant): *The occupier of any premises who operates any plant in or on those premises in such a manner as to cause air pollution from those premises is guilty of an offence if the air pollution so caused, or any part of the air pollution so caused, is caused by the occupier's failure:* *(a) to maintain the plant in an efficient condition, or* *(b) to operate the plant in a proper and efficient manner.* Clause 125 relates to maintenance work on plant. Clause 126 relates to dealing with materials. Clause 128 relates to standards of air impurities not to be exceeded. Clause 129 relates to the emission of odours from licensed premises. Clause 132 details the maximum penalty for air pollution offences. Tier 2 penalties apply. *A person who is guilty of an offence under this Division is liable, on conviction*	Potential for air pollution to occur is associated with dust emissions from waste handling and transfer operations. C&D waste operations will include a water spray system for dust control. Drilling mud accepted on site would be odourless. No odorous materials are accepted or handled on site, and therefore odour is not considered a potential pollutant to air quality. Responsibility extends to all employees. If found guilty of an air pollution offence, both the company and the individual can be held liable.

Legislation	Activity / Aspect	Section / Clause	Requirements	Comments
	Noise Pollution	S139 S140 S141	Clause 139 relates to the operation of plant: *The occupier of any premises who operates any plant (other than control equipment) at those premises in such a manner as to cause the emission of noise from those premises is guilty of an offence of the noise so caused, or any part of it, is caused by the occupier's failure:* *(a) To maintain the plant in an efficient condition, or* *(b) To operate the plant in a proper and efficient manner.* Clause 140 relates to dealing with materials: *The occupier of any premises who deals with materials in or on premises in such a manner as to cause the emission of noise from those premises is guilty of an offence if the noise so caused, or any part of it, is caused by the occupier's failure to deal with those materials in a proper and efficient manner.* Clause 141 details the maximum penalty for noise offences. Tier 2 offences apply. *A person who is guilty of an offence under this Part is liable, on conviction.*	Applies. The main sources of noise are associated with waste handling (crushing/screening) and on-site vehicle movements. A Noise Impact Assessment (NIA) has been undertaken and found that noise levels would be met at all surrounding residential receivers during all time periods. Any noise monitoring requirements under the EPL would need to be complied with. Noise management is included in the EMP (Attachment A4).
	Land Pollution	S142A	Clause 142A relates to the pollution of land. Tier 2 penalties apply. *A person who pollutes land is guilty of an offence.*	Waste management is included in the EMP (Attachment A4).

Legislation	Activity / Aspect	Section / Clause	Requirements	Comments
	Waste	S88 S143 S144 S145	Waste needs to be disposed of in a manner which does not create or is likely to create environmental harm. Clause 88 relates to waste facilities required to pay EPA contributions in respect of all waste received at the facility. Clause 143 relates to the unlawful transporting or depositing of waste: *If a person transports waste to a place that cannot lawfully be used as a waste facility for that waste, or causes or permits waste to be so transported:* *(a) the person, and* *(b) if the person is not the owner of the waste, the owner,* *are each guilty of an offence.* Clause 144 deals with the use of land as waste facility without lawful authority: (*1) A person who is the owner or occupier of any land and who uses the land, or causes or permits the land to be used, as a waste facility without lawful authority is guilty of an offence.* *(2) In any proceedings for an offence under this section the defendant bears the onus of proving that there is lawful authority to use the land concerned as a waste facility.* *All waste must be classified in accordance with the EPA's Waste Classification Guidelines.*	Any waste disposal required must be undertaken in accordance with the NSW EPA's *Waste Classification Guidelines*. All waste should be stored in an environmentally safe manner. False or misleading information regarding pollution incidents is an offence under the Act.

Legislation	Activity / Aspect	Section / Clause	Requirements	Comments
	Duty to notify pollution incidents	S148	Clause 148 *Pollution incidents causing or threatening material harm to be notified.* • *Kinds of incidents to be notified* *This Part applies where a pollution incident occurs in the course of an activity so that material harm to the environment is caused or threatened.* • *Duty of person carrying on activity to notify* *A person carrying on the activity must, immediately after the person becomes aware of the incident, notify each relevant authority of the incident and all relevant information about it.*	In the event of an incident, the duty to notify extends to all staff and contractors of the site. Staff and/or contractors are required to notify the employer. When management is not contactable, they are required to notify the relevant authorities. Refer to Reporting Requirements in Section 4.4.1 of the EMP.
	Duty to prepare and implement pollution incident response management plans	S153A	Clause 153A *The holder of an environment protection licence must prepare a pollution incident response management plan that complies with this Part in relation to the activity to which the licence relates.*	The development undertakes scheduled activities, is the holder of an EPL and has therefore implemented a PIRMP.
	Control equipment	S167	Clause 167 relates to the responsibility of the occupier of any premises to maintain and operate any control equipment installed at the premises in a proper and efficient manner.	This applies to the water spray system and stormwater network.
Protection of the Environment Operations (Clean Air) Regulation 2010	Standards of concentration for scheduled premises	Sch 4	General standards of concentration apply to the activities at the site and include: Solid Particles (total) for any crushing, grinding, separating or materials handling activity: Group 6 = 20 mg/m^3	Any release of air impurities is required to comply with this requirement.

Legislation	Activity / Aspect	Section / Clause	Requirements	Comments
Protection of the Environment Operations (Waste) Regulation 2014	Waste and transport	Part 2 Part 3 Part 4 Part 5	Part 2 relates to contributions by occupiers of scheduled waste facilities. Part 3 relates to records, measurement of waste and monitoring at scheduled waste facilities Part 4 relates to the tracking of certain waste transported within, out of and into NSW. Part 5 relates to reporting on transportation of waste from NSW to an interstate waste facility if the waste has been generated in the metropolitan levy area.	The site operates a scheduled waste facility and therefore Parts 2 and 3 apply. No trackable waste would be received or generated.
Water Management Act 2000	Water access licence	S56 S60A S89 S91A	A licence may be required in the relevant water sharing plan area for the right to share available water from a particular water source. Water cannot be taken from a waterbody without a licence.	Does not apply
	Water management works	S90 S91B S91C S91D	Approval is required for construction and/or use of a water supply work, drainage work or flood work.	Does not apply
	Waterfront land	S91	A controlled activity approval is required for works on or under waterfront land.	Does not apply
Water Act 1912 Applies to water sources in NSW where water sharing plans have not commenced.	Surface water	S10	A licence or permit may be required for the taking and using of water from a stream or river, capture of water in a farm dam.	Does not apply
	Groundwater	S112	A licence may be required for extraction of groundwater.	Does not apply

Legislation	Activity / Aspect	Section / Clause	Requirements	Comments
Work Health and Safety Regulation 2017	Labelling of hazardous chemicals	S341	Hazardous chemical used, handled or stored at the workplace must be correctly labelled in accordance with clause 335. Schedule 9, Part 3 of the Regulation sets out requirements for labelling.	All hazardous chemicals on site must be correctly labelled.
	Hazardous chemicals register	S346	A register of hazardous chemicals used, handled and stored at the site needs to be prepared and maintained and include the current safety data sheets for each hazardous chemical listed.	A copy of the hazardous chemical register will be available within the office.
	Manifest of hazardous chemicals	S347	If quantities of hazardous chemicals exceed manifest quantities in Schedule 11, a manifest of hazardous chemicals must be prepared. The manifest must comply with Schedule 12 of the regulation.	Does not apply.
	Manifest Quantities	S348	Notification to SafeWork is required if manifest quantities in Schedule 11 are exceeded.	Does not apply.
	Placarding Requirements	S349 S350	Outer warning placards are to be displayed if the placard quantity in Schedule 11 is exceeded. A placard must comply with Schedule 13.	Placarding of hazardous chemicals needs to comply with Schedule 13.
	Emergency Plans and Safety Equipment	S359 S360 S361 S362	Fire protection and firefighting equipment designed for the types of hazardous chemicals used and stored at the site must be installed, tested and maintained. Equipment must be available for use in an emergency.	Appropriate fire protection equipment is required at the facility.
Dangerous Goods (Road and Rail Transport) Act 2008	Transport of dangerous goods	S9	Clause 9 requires transport of dangerous goods by road or rail to be in a safe manner.	DGs shall be transported by a licensed contractor.

Legislation	Activity / Aspect	Section / Clause	Requirements	Comments
Waste Avoidance and Resource Recovery Act, 2001	Waste Strategy	S12	Promotes waste avoidance and resource recovery and provides for a state-wide Waste Strategy to achieve a continual reduction in waste generation. The NSW Waste Avoidance and Resource Recovery Strategy 2014-21 provides the framework for waste management until 2021.	The facility meets the objectives of the Act and strategy in providing resource recovery.
Contaminated Land Management Act 1997	Reporting contamination	S60	Clause 60 relates to the duty of a person undertaking activities that have contaminated land and the land owner to report contamination.	Applies upon discovery and/or incident.
Noxious Weeds Act 1993	Weed control & reporting	S12 S15	Clause 12 relates to private occupiers of land responsibility to control noxious weeds on land. Clause 15 requires occupiers of land to notify local control authority of notifiable weeds.	Applies upon discovery.
Biodiversity Conservation Act 2016 No 63	Protection of animals and plants	Part 2	Clause 2.1 relates to offences for harming animals that are a threatened species, part of a threatened ecological community or a protected animal. Clause 2.2 relates to offences for picking plants. Clause 2.3 and 2.4 relate to offences for damaging areas of outstanding biodiversity and habitat of threatened species or ecological community.	Applies upon discovery.
	Clearing of native vegetation	S2.11	A biodiversity conservation licence is required for clearing of native vegetation	Does not apply
Environment Protection and Biodiversity Conservation Act 1999 (Cth)	Flora and fauna conservation	Part 13	A permit is required for activities that will affect listed species and ecological communities within a commonwealth area.	Does not apply

Legislation	Activity / Aspect	Section / Clause	Requirements	Comments
Heritage Act 1977	Heritage	S57 S139 S146	Clause 57 requires approval for work to any item to which an interim heritage order or listing on the state heritage register applies. Clause 139 requires that an excavation permit is required to disturb any land knowing or having reasonable cause to suspect disturbance may uncover a relic. Clause 146 requires that discovery of a relic must be notified to the Heritage Council.	Applies upon discovery
Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)	Protection of places and objects	S20 S22	Clause 20 relates to reporting of any discovery of Aboriginal remains to the Minister. Clause 22 requires compliance with the provisions of any declaration in relation to a significant Aboriginal area or object.	Applies upon discovery
National Greenhouse and Energy Reporting Act 2007 and Regulations 2008	Greenhouse Gas emissions	S13	Requirement for the accounting and reporting of greenhouse gases emitted and energy consumed or produced during a financial year if the facility meets the thresholds in Clause 13.	Does not apply.
Fisheries Management Act 1994	Permits	S144 S201 S205 S219	Clause 144: Aquaculture permit Clause 201: Permit to carry out dredging or reclamation work Clause 205: Permit to cut, remove, damage or destroy marine vegetation on public water land or an aquaculture lease, or on the foreshore of any such land or lease. Clause 219: Permit to: (a) set a net, netting or other material, or (b) construct or alter a dam, floodgate, causeway or weir, or (c) otherwise create an obstruction, across or within a bay, inlet, river or creek, or across or around a flat	Does not apply.

Table A1-1: Licences, Approvals and Permits

Type	Relevant Legislation	Required?	Agency
LICENCES			
Environment Protection Licence	Schedule 1 of the Protection of the Environment Operations Act 1997	**Yes**	NSW EPA
Surface Water Licence	Water Act 1912	No	Office of Water
Groundwater Licence	Water Act 1912	No	Office of Water
Water Access Licence	Water Management Act 2000	No	Office of Water
PERMITS			
Permits under the Fisheries Management Act	Fisheries Management Act 1994	No	DPI Fishing and Aquaculture
Aboriginal Heritage Impact Permit	National Parks & Wildlife Act 1974	No	OEH
Permits under the Heritage Act 1977	Heritage Act 1977	No	OEH
APPROVALS			
Development Consent (C&D activities)	Environmental Planning and Assessment Act 1979	**Yes**	Canterbury-Bankstown Council
Development Consent (Dewatering Plant)	Environmental Planning and Assessment Act 1979	**Yes**	The Minister for Planning
Alter or erect improvements within a mine subsidence district	Mine Subsidence Compensation Act 1961	No	Mine Subsidence Board
Consent for works and structures in a public road	Roads Act 1993	No	RMS
Sub-division or development of bush fire prone land	Rural Fires Act 1997	No	Commissioner of the NSW Rural Fire Service

Attachment A2: Environmental Aspects Register

Environmental Aspects Register

Environmental Aspects Register for Gow Street Recycling Centre – 81 Gow Street, Padstow NSW 2211										
Activity	Aspect	Potential Impacts on the Environment	Pre-Control Risk			Mitigation Measures (Physical, Procedures and Plans)	Post-Control Risk		
			Consequence	Likelihood	Raw Risk		Consequence	Likelihood	Residual Risk
WASTE HANDLING (C&D WASTE)	Handling activities (loading and unloading)	Noise emissions	2	C	M	Unloading activities undertaken at rear of site surrounded by 8.5 m walls, separation distance from sensitive receivers, weekly inspection checklist	2	D	L
		Generation of air pollutants (dust)	3	C	M	Unloading activities undertaken at rear of site surrounded by 8.5 m walls, sealed surfaces, dust suppression sprays, weekly inspection checklist	2	D	L
		Contamination of stormwater runoff	3	B	H	C&D materials are inert solid waste, operational areas are fully sealed surfaces, stormwater pits covered in filters, hardstand surfaces swept daily, stormwater captured and treated through on site dewatering plant, weekly inspection checklist	2	D	L
		Excess accumulation of unwanted waste	2	D	L	Dedicated waste storage bins/bays, weekly inspection checklist	1	D	L
	Processing activities (sorting, crushing, screening)	Noise emissions	2	C	M	Processing activities undertaken at the rear of the site surrounded by 8.5 m walls, crusher/excavator not used during night period, separation distance from sensitive receivers, weekly inspection checklist	2	D	L
		Generation of air pollutants (dust)	3	C	M	Handling activities undertaken at rear of site surrounded by 8.5 m walls, crusher and screener covered with hood and vacuum ducting to reduce and capture air emissions, sealed surfaces, dust suppression sprays, weekly inspection checklist	2	D	L
		Contamination of stormwater runoff	3	B	H	C&D materials are inert solid waste, operational areas are fully sealed surfaces, stormwater pits covered in filters, hardstand surfaces swept daily, stormwater captured and treated through on site dewatering plant, weekly inspection checklist	2	D	L
		Excess accumulation of unwanted waste	2	D	L	Dedicated waste storage bins/bays, weekly inspection checklist	1	D	L
	Storage areas	Generation of air pollutants (dust)	3	C	M	Waste stored inside dedicated bays in enclosed bunkers, bunded bases to storage bays, sealed surfaces, dust sprays, weekly inspection checklist	2	D	L

Environmental Aspects Register for Gow Street Recycling Centre – 81 Gow Street, Padstow NSW 2211									
Activity	Aspect	Potential Impacts on the Environment	Pre-Control Risk			Mitigation Measures (Physical, Procedures and Plans)	Post-Control Risk		
			Consequence	Likelihood	Raw Risk		Consequence	Likelihood	Residual Risk
		Contamination of stormwater runoff	3	B	H	C&D materials are inert solid waste, operational areas are fully sealed surfaces, stormwater pits covered in filters, hardstand surfaces swept daily, stormwater captured and treated through on site dewatering plant, weekly inspection checklist	2	D	L
		Excess accumulation of unwanted waste	2	D	L	Dedicated waste storage bins/bays, weekly inspection checklist	1	D	L
WASTE HANDLING (LIQUID WASTE)	Handling activities (loading and unloading)	Noise emissions	2	C	M	Handling activities undertaken within building, roller doors closed during handling activities, vacuum truck pump not used during night period, prohibition of extended periods of on-site revving/idling, separation distance from sensitive receivers, weekly inspection checklist	2	D	L
		Contamination of stormwater runoff	3	B	H	Liquid waste transfer undertaken in building, loading/unloading liquid waste fully sealed process, bunded operational areas, operational areas are fully sealed surfaces, stormwater pits covered in filters, stormwater captured and treated through on site dewatering plant, weekly inspection checklist	2	D	L
		Excess accumulation of wastewater	2	D	L	Discharged as tradewaste under TWA, weekly inspection checklist	1	D	L
	Processing activities (pumping, dewatering, storage)	Noise emissions	2	C	M	Processing activities undertaken within building, roller doors closed during handling activities, vacuum truck pump not used during night period, prohibition of extended periods of on-site revving/idling, separation distance from sensitive receivers, weekly inspection checklist	2	D	L
		Contamination of stormwater runoff	3	B	H	Liquid waste transfer undertaken in building, loading/unloading liquid waste fully sealed process, bunded operational areas, operational areas are fully sealed surfaces, stormwater pits covered in filters, stormwater captured and treated through on site dewatering plant, weekly inspection checklist	2	D	L

Environmental Aspects Register for Gow Street Recycling Centre – 81 Gow Street, Padstow NSW 2211										
Activity	Aspect	Potential Impacts on the Environment	Pre-Control Risk			Mitigation Measures (Physical, Procedures and Plans)	Post-Control Risk		
			Consequence	Likelihood	Raw Risk		Consequence	Likelihood	Residual Risk
		Excess accumulation of wastewater	2	D	L	Discharged as tradewaste under TWA, weekly inspection checklist	1	D	L
VEHICLE MOVEMENTS	Deliveries of C&D waste	Noise emissions	2	C	M	Unloading activities undertaken at rear of site surrounded by 8.5 m walls, limit idling time, separation distance from sensitive receivers, weekly inspection checklist	2	D	L
		Generation of air pollutants (dust)	3	C	M	Handling activities undertaken at rear of site surrounded by 8.5 m walls, sealed surfaces, covered by shade sails, dust suppression sprays, weekly inspection checklist	2	D	L
		Excessive use of energy, fossil fuel resources	1	E	L	None	1	E	L
	Deliveries of Liquid Waste (Drilling Mud)	Noise emissions	2	C	M	Deliveries undertaken within building, roller doors closed during handling activities, vacuum truck pump not used during night period, prohibition of extended periods of on-site revving/idling, separation distance from sensitive receivers, weekly inspection checklist	2	D	L
		Excessive use of energy, fossil fuel resources	1	E	L	None	1	E	L
	Staff/visitor vehicles	Noise emissions	2	D	L	Low visitor vehicle movements, separation distance from sensitive receivers, weekly inspection checklist	2	D	L
		Generation of air pollutants (dust)	2	D	L	Sealed driving surfaces, weekly inspection checklist	1	D	L
		Excessive use of energy, fossil fuel resources	1	E	L	None	1	E	L
WASTE MANAGEMENT	General Waste (including C&D and liquid waste)	Potential for waste to escape onto land or into waterways resulting in contamination	3	D	M	Waste stored inside dedicated bays in enclosed bunkers, bunded bases to storage bays, sealed surfaces, dust sprays, weekly inspection checklist	2	D	L

Environmental Aspects Register for Gow Street Recycling Centre – 81 Gow Street, Padstow NSW 2211										
Activity	Aspect	Potential Impacts on the Environment	Pre-Control Risk			Mitigation Measures (Physical, Procedures and Plans)	Post-Control Risk		
			Consequence	Likelihood	Raw Risk		Consequence	Likelihood	Residual Risk
		Contamination of stormwater runoff	3	B	H	C&D materials are inert solid waste, operational areas are fully sealed surfaces, stormwater pits covered in filters, hardstand surfaces swept daily, weekly inspection checklist Liquid waste transfer undertaken in building, loading/unloading liquid waste fully sealed process, bunded operational areas, operational areas are fully sealed surfaces, stormwater pits covered in filters, weekly inspection checklist Stormwater and surface waters are captured and treated through on site dewatering plant	2	D	L
		Generation of odour	2	D	L	Non-odorous wastes accepted, designated waste bins/bays, weekly inspection checklist	2	D	L
		Incorrect management or disposal of wastes	3	D	M	Designated waste bins/bays, weekly inspection checklist	2	D	L
	Paper use & other office waste	Incorrect management of waste, litter	1	C	L	Designated waste bins, weekly inspection checklist	1	E	L
	Combustible material/diesel storage	**Fire** In the event of fire: -Generation of significant air pollutants -Release of contaminated fire fighting water to surface water, ground water, soil	5	D	H	Strict control of ignition sources in storage and handling areas. Hot-work permit system to be implemented. Buildings and site entry are locked when unattended, employees trained in emergency response and evacuation procedures, excavator and truck driver training, fire services (e.g. hose reel, extinguishers) available in the vicinity of storage area, water sprayer, no smoking policy, segregation of waste build up of dust to be controlled by housekeeping including routine cleaning of machinery, segregated Dangerous Goods Stores, storage and handling of flammable and combustible liquid in compliance with AS 1940-2017, oil/diesel leakages promptly attended to, preventative maintenance program, fire services onsite comply the BCA and where feasible the NSW FR Fire Safety in Waste Facilities 2019	5	E	M

Environmental Aspects Register for Gow Street Recycling Centre – 81 Gow Street, Padstow NSW 2211									
Activity	Aspect	Potential Impacts on the Environment	Pre-Control Risk			Mitigation Measures (Physical, Procedures and Plans)	Post-Control Risk		
			Consequence	Likelihood	Raw Risk		Consequence	Likelihood	Residual Risk
EXCAVATIONS/ CONSTRUCTION	Refer to CEMP								

Notes:
Pre-Control risk is the risk of the identified potential impacts without controls in place
Post-Control risk is the risk assessed once controls and procedures are in place.
Risk assessment is undertaken following the methodology outlined below (Reference: Standards Australia, HB-203 2006 Environmental Risk Management – Principles and process)
L = Low M = Medium H = High V = Very High

Activity: This is the process/activity undertaken at the site
Aspect: These are the aspects of the activity that may have impacts. For example: Generation of wastewater, Noise emission, Air/Odour emissions, Sediment laden runoff, Spills of chemical, Disturbance of acid sulfate soils, Vehicle movements, etc.
Potential Impacts on the Environment: These are the potential impacts of each aspect - these are assessed for risk separately.

Attachment A3: Environmental Forms

GOW STREET RECYCLING CENTRE ENVIRONMENTAL MANAGEMENT PLAN

FORMS

Gow Street Recycling Centre

81 Gow Street, Padstow NSW 2211

Issued and Approved by:	Date:

Document Reference: 191290-03_EMP_Att A3_Forms
Date of Issue: 11 February 2022

Prepared by:

Benbow ENVIRONMENTAL

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NO:	**F1.1**	**DATE:**	**February 2022**
PREPARED BY:	Benbow Environmental	**ISSUE NO.:**	1
SUBJECT:	**1.1 ENVIRONMENTAL TRAINING REGISTER**		

Course Name:	Date:
Trainers Name:	Location:

Training Course Content:

Attendees:

Name	Position	Signature

Course Name:	Date:
Trainers Name:	Location:

Training Course Content:

Attendees:

Name	Position	Signature

NO:	**F1.2**	**DATE:**	**February 2022**
PREPARED BY:	Benbow Environmental	**ISSUE NO.:**	1
SUBJECT:	**1.2 INCIDENT REPORT FORM**		

INCIDENT REPORTING – BASIC FACTS	FORM

Date & Time of Incident: .....

Site Address: .....

Reference No. .....

Expected cause, duration & specific location of the event/incident:

The type, volume and concentration (if known) of every pollutant discharged or spilt as a result of the incident:

Immediate action taken in relation to the event:

The name, address and telephone number of any witnesses of the event:

Any other relevant matters:

I verify that all the information provided herein is a true and accurate of the events that have occurred.

Signed: .....

Name: .....

Date: .....

INCIDENT REPORTING			REGISTER
Date	**Reference No.***	**Nature & cause of the incident**	**Verification of corrective / preventative actions**
			I verify that all the nominated corrective and preventative actions have been implemented effectively. Signed:..... Name: ..... Date: .....
			I verify that all the nominated corrective and preventative actions have been implemented effectively. Signed:..... Name: ..... Date: .....
			I verify that all the nominated corrective and preventative actions have been implemented effectively. Signed:..... Name: ..... Date: .....
			I verify that all the nominated corrective and preventative actions have been implemented effectively. Signed: ..... Name: ..... Date: .....
			I verify that all the nominated corrective and preventative actions have been implemented effectively. Signed: ..... Name: ..... Date: .....
			I verify that all the nominated corrective and preventative actions have been implemented effectively. Signed: ..... Name: ..... Date: .....

* The reference number quoted would reference related incident reports with details of each incident.

NO:	**EP1.3**	**DATE:**	**February 2022**
PREPARED BY:	Benbow Environmental	**ISSUE NO.:**	1
SUBJECT:	**1.3 COMPLAINTS RESPONSE FORM**		

REF: …… REV: 1

LOG BOOK REFERENCE NO: ……

DATE: ……TIME: ……AM/PM

NAME OF PERSON WHO RECEIVED CALL: ……

NAME OF COMPLAINANT: ……TELEPHONE NO: ……

ADDRESS: ……

DETAILS OF COMPLAINT:

DATE OF OCCURANCE: ……TIME AM/PM: ……

TYPE OF INCIDENT:

NOISE	☐	STORMWATER	☐
AIR EMISSIONS	☐	ODOUR	☐
TRAFFIC/TRANSPORT	☐	FIRE	☐
EROSION/SEDIMENT	☐	WASTE	☐
OTHER	☐	DETAILS: ……	

PRECISE LOCATION OF INCIDENT: ……

PARTICULAR DETAILS RELATING TO THE INCIDENT: ……

……

……

COMPLAINTS RESPONSE FORM **PAGE 2 OF 2**

ACTION TAKEN:

COMPLAINANT TRANSFERRED TO:

MESSAGE TAKEN FOR: ……..

CORRECTIVE AND PREVENTATIVE ACTION:

INFORMATION BULLETIN SENT ☐

COMPLAINT INVESTIGATED BY: .....CPAR NO.....

RESULTS OF INVESTIGATION: .....

.....

.....

.....

ON COMPLETION OF CORRECTIVE AND PREVENTATIVE ACTION:

LETTER SENT TO COMPLAINANT YES NO N/A DATE: .....

WORK PRACTICE MODIFIED YES NO N/A DATE: .....

COMPLAINT RESPONSE COMPLETE: .....
PRINT NAME

SIGNATURE: .....

DATE: ..... TIME: .....AM/PM

COMPLAINTS REGISTER

Ref no.	Date	Complaint details	Action Taken	Sign

NO:	**EP1.4**	**DATE:**	**February 2022**
PREPARED BY:	Benbow Environmental	**ISSUE NO.:**	1
SUBJECT:	**1.4 CORRECTIVE & PREVENTATIVE ACTION FORM**		

REF: …… REV: 1

☐ CORRECTIVE ACTION ☐ PREVENTATIVE ACTION

Name of personnel requesting corrective/preventative action:

……

Signature:

……

Personnel responsible for action:

……

Date:

……

Outline of the 'Initiating Event' and necessary corrective and/or preventative actions (to be filled out by those requesting action):

……

……

……

……

Actions taken to fulfil the requirement of the corrective and/or preventative action:

……

……

……

……

Corrective and/or preventative action complete:

Signature: …… **Date:** ……

NO:	**F1.5**	**DATE:**	**February 2022**
PREPARED BY:	Benbow Environmental	**ISSUE NO.:**	1
SUBJECT:	**1.5 INDUCTION TRAINING FORM**		

INDUCTION TRAINING	FORM

This is to certify that _____ (name) has completed induction training at _____ (site name & address) and is competent in the following areas:

Training Completed:	**(Tick)**
• Awareness of the purpose and objectives of the site EMP.	☐
• Awareness of legal requirements and individual accountability under environmental legislation applicable to the site, including penalties for offences under environmental legislation.	☐
• Aspects of site operations that could potentially impact the environment.	☐
• How potential impacts are managed on site including monitoring, site inspections and any regular maintenance undertaken.	☐
• Understanding of the various roles and responsibilities, with relevance to procedures.	☐
• Mitigation measures and controls.	☐
• Incident response and reporting requirements including site's PIRMP.	☐
• How to communicate, respond and where to go in an emergency situation	☐

I verify that I understand the information provided herein as part of the induction training and agree to abide by the site's procedures.

Signed: .....

Name: .....

Date: .....

Confirmed by _____ (Name of person providing training)

Signed: .....

Date: .....

Gow Street Recycling Centre ENVIRONMENTAL MANAGEMENT PLAN

ENVIRONMENTAL PROCEDURES MANUAL

81 Gow Street, Padstow NSW 2211

Issued and Approved by:	Date:

Document Reference: 191290-03_EMP_Att A4_Env Proc_Rev2
Date of Issue: 11 February 2022

Prepared by:

Benbow ENVIRONMENTAL

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PROCEDURE NAME:	**AIR QUALITY MANAGEMENT**	**DATE:**	**February 2022**
PREPARED BY:	Benbow Environmental	**ISSUE NO.:**	1

1. AIR QUALITY MANAGEMENT

1.1 PURPOSE

The purpose of this procedure is to set out the process relating to management and monitoring of air emissions (dust) from site activities.

Dust generating activities associated with site operations include the transport, handling, processing and storage of C&D waste materials. Dust and particulate matter is not expected to be generated during drilling mud dewatering handling or processing activities.

1.2 RESPONSIBILITIES

- All staff and contractors of Gow Street Recycling Centre; and
- General Manager/Shift Supervisor.

1.3 REFERENCES

- Canterbury-Bankstown Notice of Determination (DA-51/1997)
- Environment Protection Licence (No. 10943);
- Protection of the Environment Operations Act 1997;
- NSW EPA *Approved Methods for Modelling and Assessment of Air Pollutants in New South Wales* (2016); and
- NSW EPA *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales* (2007).

1.4 DEFINITIONS

Air Emissions
Any particles or odour discharged to the local air amenity.

Air impurity
Includes smoke, dust (including fly ash), cinders, solid particles of any kind, gases, fumes, mists, odours and radioactive substances.

Air pollution
Means the emission into the air of any air impurity.

1.5 PROCEDURE

1.5.1 Operations

- Crushing/screening activities will only take place at the rear (southern area) of the site.
- Crusher/screener will be covered with a with hood and vacuum ducting to capture air emissions during operations.
- Water sprays will operate during all handling activities (unloading/loading, crushing, screening, storage) and/or when visible dust is generated during handling activities.
- Working and operational areas are swept daily and accumulated residual waste is stored in a designated general waste bin and disposed of appropriately.
- Trafficable surfaces to be cleaned regularly with sweeper vehicle.
- Vehicle loads are covered when transporting materials on site.
- Low on-site speed limits for all vehicles (<15 km/h)
- Activities are ceased where levels of dust cannot be controlled using available means.
- Vehicles are serviced and maintained according to manufacturer's specifications.
- On-site vehicles and plant are switched off when not in use.
- Employees must ensure no visible dust leaves the premises.
- Employees must ensure that no material, including sediment, is tracked from the premises.
- All operations and activities occurring at the premises must be carried out by employees in a manner that prevents and minimises the emission of air pollutants from the premises.

1.5.2 Material Storage

- Minimise the amount of material stockpiled at any one time.
- Stockpiled material must be restricted to <4 m in height. The 4m height is indicated on storage bay walls.
- Water sprays will operate during stockpiling activities or when visible dust is generated during storage activities.
- External stockpiled materials are within walled bays.
- Entries to storage bays are bunded to minimise materials/sediments escaping.
- Activities are ceased where levels of dust cannot be controlled using available means.

- All storage activities occurring at the premises must be carried out by employees in a manner that prevents and minimises the emission of air pollutants from the premises.

1.6 COMPLAINTS HANDLING

All complaints or enquiries should be handled in a courteous manner. A procedure for handling complaints is provided below:

- Record in Log Book and on a Complaint Response Form:
  - Name of Complainant;
  - Address;
  - Telephone Number; and
  - Details of Complaint: date, time of occurrence, precise location of event.

- Connect/refer caller to one of the following staff members who are authorised to discuss the complaint with the caller:
  - Director/s; and
  - Personnel with environmental responsibilities.

- Authorised staff member requests details of the complaint or information required by the caller and completes the Complaint Response Form and the Complaint Response Logbook Index (Attachment A3 of the Environmental Management Plan).

- Complaint is investigated and discussed at a toolbox meeting to determine whether it warrants being added to the incident register and whether a more detailed investigation is required.

- If further investigation is required, an incident number is allocated and recorded on the Complaint Response Logbook & Incident Register. If no investigation is warranted, the complaint can be closed out.

- Any response, investigations and actions taken to rectify the issue are recorded in the incident register and recorded with *Corrective Action Procedure.*

1.7 COMPLIANCE MONITORING

- Records of any air compliance monitoring undertaken at the site should be maintained in accordance with the *EPL and* DCCs.

PROCEDURE NAME:	**NOISE MANAGEMENT**	**DATE:**	**February 2022**
PREPARED BY:	Benbow Environmental	**ISSUE NO.:**	1

2. NOISE & VIBRATION MANAGEMENT

2.1 PURPOSE

The purpose of this procedure is to set out the process relating to management and monitoring of noise from the site operations and includes:

- Any noise management controls and techniques to be implemented for minimising noise on a day to day basis; and
- Noise complaint procedure and details of any monitoring required.

2.2 NOISE SOURCES

Noise sources associated with the facility include:

- C&D waste handling activities (unloading/loading, sorting, crushing, screening and storage);
- Drilling mud waste handling activities (unloading/loading, liquid waste transfer and dewatering processes); and
- Vehicle movements.

2.3 PROCEDURE

The following practices should be implemented to minimise noise impacts.

2.3.1 Hours of Operation

The dewatering facility proposes to operate for 24 hours / seven days a week.

The approved operational hours for the C&D facility are: 06:00 and 18:00 Monday to Friday, and 07:00 and 18:00 on weekends. The existing facility will continue to operate within these hours.

2.3.2 General Site Activities

- All C&D waste handling, sorting, crushing and screening activities are to be undertaken at the rear of the site.

- Regular inspections shall be conducted in accordance with the Workplace Inspection Procedure to identify areas of potential noise generation. Indicators may include:
  - Evidence of oil leaks or damage to equipment/vehicles;
  - Un-secured or damaged noise guards or equipment;
  - Noticeable, excessive or unusual sources of noise; and
  - General wear and tear of equipment.

- If problem areas of additional noise generation are identified, action should be taken to alleviate any additional noise as soon as practicable by site management.

- Noise shall be included in the awareness training and induction of staff and contractors.

2.3.3 Equipment and Infrastructure

- **During the night from 10pm – 6am the vacuum truck pump should not be used. An internal pump can be used at night such that the tanker truck vacuum pump is not needed.**

- All C&D waste handling, sorting, crushing and screening activities are to be undertaken at the rear of the site.

- Close doors to building while liquid waste transfer and dewatering activities are undertaken.

- Preventative maintenance of all noise generating equipment including on-site plant and vehicles shall be undertaken. Maintenance should be undertaken in accordance with manufacturer's specifications.

- To minimise noise levels, site management shall endeavour to position any external noisy equipment behind structures to act as barriers. If this cannot be accomplished, equipment should be placed at the greatest distance from residential areas and orientated such that noise emissions are directed away from residential areas.

2.3.4 Vehicle Movements

- **During the night from 10pm – 6am the vacuum truck pump should not be used. An internal pump can be used at night such that the tanker truck vacuum pump is not needed.**

- Liaise with drivers to ensure that they are aware of noise impacts on neighbouring receivers and that they adopt the recommended practices to minimise such problems.

- On-site vehicles to be maintained in accordance with a preventative maintenance program to ensure optimum performance and early detection of wearing or noisy components.

- Enforcing the following practices for on-site vehicle movements:
  - Low on-site speed limits (<15 km/h);
  - Minimise the use of truck exhaust brakes on site;
  - Minimising reversing distances and hence noise generated by reversing beepers;
  - No extended periods of on-site revving/idling.

The implementation of the above strategies should sufficiently minimise the potential for noise to cause annoyance at the nearest sensitive receptors.

2.4 COMPLAINTS

Any complaints received regarding noise pollution should be handled in accordance with the *Complaints Response Procedure* in the EMP. Any noise complaint would trigger the need for monitoring as described in the following section.

2.5 NOISE MONITORING

Noise monitoring is to be undertaken with Class 1 sound level meter/logger sets to comply with AS 1259 and was set on A-weighted, fast response. The microphone is to be positioned at 1.5 metres above ground level and fitted with a windsock. The instrument needs to be calibrated prior and subsequent to the measurement period to ensure the reliability and accuracy of the instrument sets. The instrument sets are also to be calibrated by a NATA accredited laboratory within two years of the measurement period.

Noise monitoring should be undertaken at the location of the complaint or best available location to adequately determine the noise at the location of the complaint.

The attended measurements are recommended to be undertaken with the following conditions:

- Where feasible when the background levels are predicted to be low;
- Wind speed <5 m/s; and
- No rainfall.

The measurements are recommended to be undertaken when the background levels are predicted to be low, with negligible wind and no rain during standard operational conditions.

Any exceedance to noise limits need further investigation is required to mitigate impacts.

Results of all noise monitoring undertaken need to be presented in a report and kept on record. Should a noise complaint be received, either through a regulatory body or directly by the facility, the Complaints Procedure of the EMP should be followed.

2.6 INSPECTION AND RECORDS

A Workplace Inspection Checklist has been prepared to assist staff in checking that all procedures and equipment used to control and mitigate potential pollution are functioning effectively.

Any issues or non-conformances noted during workplace inspections must be recorded. Documentation for any corrective and preventative actions (e.g. CAR forms) must also be maintained, as described in the *Corrective and Preventative Actions* section of the EMP. Any other relevant records must also be kept for inspection by regulatory authorities.

PROCEDURE NAME:	**STORM & SURFACE WATER MANAGEMENT**	**DATE:**	**February 2022**
PREPARED BY:	Benbow Environmental	**ISSUE NO.:**	1

3. STORM & SURFACE WATER MANAGEMENT

3.1 PURPOSE

This procedure serves to ensure that storm and surface waters on site are not impacted or contaminated from site activities.

Accumulated dust and sediments from C&D waste handling and processing activities have the potential to impact stormwater where not managed correctly.

Additionally, liquid (C&I) waste from drilling mud dewatering and concrete washout processing have the potential to generate wastewater that may harm natural waters if not managed correctly.

Two large stormwater drainage pipelines (diameter 1,500 mm) traverse underground in the centre of the site. Eight (8) existing onsite stormwater pits connect to these two main lines via 1,050 mm, 450 mm, 300 mm and 250 mm diameter underground pipelines.

Operational surface areas on site are fully sealed with hardstand material. Storage bays are to have sealed bases, be enclosed (3-sides) and fully bunded with a lip to prevent escape of waste materials from designated bays. This will prevent surface waters coming into contact with waste materials and migrating into storm or groundwaters.

The water spray dust suppression system would emit a fine mist that would evaporate quickly and not generate excessive surface waters. All on-site stormwater will be captured and recycled through the dewatering plant.

3.2 DEFINITIONS

The Environment
For the purpose of this procedure, the environment is defined to include air, soil, natural waterways, groundwater, surface water (including stormwater drainage system).

Stormwater
Rainwater runoff over hardstand or impermeable surfaces.

Sediment
Dust and particulate matter deposited in hardstand areas that during wind or rain may cause the release of these contaminants.

3.3 PROCEDURE

3.3.1 General

- Install a float sensor and a buzzer in the underground detention tank, so that site management will be alerted when first flush water requires processing.
- When alerted, the de-watering facility should process and remove sufficient water front he UDT so that the first flush capacity is returned.
- Keep the premises clean and tidy at all times.
- Bases of external storage areas are fully sealed.
- External stockpiled materials are within enclosed (3-sided) storage bays.
- Entries to storage bays are bunded to minimise materials/sediments escaping.
- Stormwater inlet pits should be fitted with geotextile material filters to prevent sediments and debris entering the stormwater network.
- All hardstand areas shall be inspected and maintained to ensure the integrity of the hardstand surface be maintained, with any cracks repaired immediately.
- Surface water control equipment must be maintained in optimum working condition. This means broken piping or drain lines are repaired, drain pit filters and/or covers are unblocked and sediment build up in pits is periodically removed.
- No waste or items of any description shall be tipped down stormwater drains.
- Regular cleaning/sweeping of hardstand areas shall be undertaken to prevent accumulation of sediment and debris.
- A hydrocarbon spill kit should be provided adjacent to the self-bunded diesel tank. Diesel tank will also be protected from vehicle collision with concrete barriers.
- Bucket/spill tray available to be used during refuelling operations to catch residual fuel; and
- If contaminated surface waters have exited the site or is strongly suspected to be contaminated but cannot be sampled, incident reporting should be undertaken and management shall notify all relevant authorities, and co-operate in the investigations clean-up process.

3.3.2 C&D Waste Storage

- Water use associated with C&D wastes is restricted to the dust suppression spray system.
- Water from dust suppression is unlikely to contribute to surface waters as the volume of applied water would be minimal and the majority of it would evaporate.

- Any residual water from dust suppression would be captured within the stormwater containment system for reuse.

3.3.3 Stormwater Monitoring

Stormwater monitoring is currently not required under any licence or approval for the site. This procedure is included should stormwater monitoring be required as a result of a suspected release of stormwater or as a future requirement of the EPL.

It is recommended that water is monitored after the underground stormwater silt arrestor and underground containment, and before entering the Sydney Water stormwater easement pipeline. Stormwater monitoring events must be undertaken by a suitably qualified person and prior to release; the stormwater outlet pit should be checked after/during any rain event greater than 25 mm/day and sampled if water is being released. If no water is being released, this should be recorded. After the first year, this data will provide an indication of the rain events that will result in release of water. The monitoring program and sampling regime can then be revised.

Contaminants and their respective trigger values were obtained from the Australian and New Zealand Environment and Conservation Council (ANZECC) Water Quality Guidelines (2000). Trigger values were selected for "typical slightly–moderately disturbed systems" and "Lowland Rivers", as they are representative of the nearest waterways to the site. The species level of protection of 95% was selected for this system and stormwater monitoring procedure.

Stormwater sample collection and analysis should include any potential contaminants that may be generated on site, including but not limited to, those listed in Table 3-1.

Table 3-1: Stormwater Monitoring List and Relevant Trigger Values

Analytes	ANZECC Trigger Value	Test Method /Reference	Analytical Limit
Metals			
Arsenic	24 (as III), 13 µg L^{-1} (as V)	ICP-MS	0.001 mg/L
Copper	1.4 µg L^{-1}	ICP-MS	0.001 mg/L
Chromium	1.0 µg L^{-1} (as Cr VI)	ICP-MS	0.001 mg/L
Zinc	8 µg L^{-1}	ICP-MS	0.005 mg/L
Lead	3.4 µg L^{-1}	ICP-MS	0.001 mg/L
Aluminium	55 µg L^{-1} (pH>6.5)	ICP-MS	0.01 mg/L
Nickel	11 µg L^{-1}	ICP-MS	0.001 mg/L
Cadmium	0.02 µg L^{-1}	ICP-MS	0.0001 mg/L
Mercury (Inorganic)	0.06 µg L^{-1}	ICP/MS	0.0001 mg/L
Nutrients			
Oxides of Nitrogen	40 µg L^{-1}	APHA 4500	0.002 mg/L
Filterable Reactive Phosphorus	20 µg L^{-1}	APHA 4500	0.01 mg/L
Total Ammonia	900 µg L^{-1} (at pH 8)	APHA 4500	0.01mg/L
Physical			
pH	6.5-8 (Lower-Upper Limit)	APHA 4500 or in situ	0.01 (pH units)

Table 3-1: Stormwater Monitoring List and Relevant Trigger Values

Analytes	ANZECC Trigger Value	Test Method /Reference	Analytical Limit
Electrical Conductivity	200-300 µScm^{-1}	APHA 2510 or in situ	1µS/cm
Suspended Solids	<50 mg/L$^{(2)}$	APHA 2540	1 mg/L
Polycyclic Aromatic Hydrocarbons			
Naphthalene	16 µg L^{-1}	EP075B Sim	1 µg/L
BTEX			
Benzene	950 µg L^{-1}	EP080	1 µg/L
Toluene	ID	EP080	2 µg/L
Ethylbenzene	ID	EP080	2 µg/L
O-Xylene	350 µg L^{-1}	EP080	2 µg/L
Total Recoverable Hydrocarbons			
TRH (C6-C40)	ID	EP071,80	20-100 µg/L
Organochlorine Pesticides			
Chlordane	0.03 µg L^{-1}	EP068A	0.5 µg/L
Endosulfan	0.003 µg L^{-1}	EP068A	0.5 µg/L
Endrin	0.01 µg L^{-1}	EP068A	0.5 µg/L
Heptachlor	0.01 µg L^{-1}	EP068A	0.5 µg/L
Organophosphorus Pesticides			
Azinphos methyl	0.01 µg L^{-1}	EP068B	0.5 µg/L
Chlorpyrifos	0.01 µg L^{-1}	EP068B	0.5 µg/L
Diazinon	0.01 µg L^{-1}	EP068B	0.5 µg/L
Malathion	0.05 µg L^{-1}	EP068B	0.5 µg/L
Parathion	0.004 µg L^{-1}	EP068B	2 µg/L
Herbicides and Fungicides			
2,4-D	280 µg L^{-1}	EP202	10 µg/L
2,4,5-T	36 µg L^{-1}	EP202	10 µg/L

Note: "ID" = insufficient data in ANZECC

3.4 Inspection And Records

A Workplace Inspection Checklist has been prepared to assist staff in checking that all procedures and equipment used to control and mitigate potential pollution are functioning effectively.

Any issues or non-conformances noted during workplace inspections must be recorded. Documentation for any corrective and preventative actions (e.g. CAR forms) must also be maintained, as described in the *Corrective and Preventative Actions* section of the EMP. Any other relevant records must also be kept for inspection by regulatory authorities.

PROCEDURE NAME:	**STORAGE & HANDLING OF HAZARDOUS MATERIALS**	**DATE:**	**February 2022**
PREPARED BY:	Benbow Environmental	**ISSUE NO.:**	1

4. STORAGE & HANDLING OF HAZARDOUS MATERIALS

4.1 PURPOSE

This procedure aims to outline aspects of the management of hazardous chemicals stored at the site in accordance with the relevant legislation. For information on specific chemicals, refer to the safety data sheet.

4.2 DEFINITIONS

Bund
An embankment of earth, or a wall of brick, stone, concrete or other approved material which may form part or all of the perimeter of a compound.

Dangerous Goods
Substances that are listed in The Australian Dangerous Goods (ADG) Code or that meet the classification criteria specified in that Code.

Hazardous Chemicals
A substance, mixture or article that satisfies the criteria for a hazard class in the GHS (including a classification referred to in Schedule 6), but does not include a substance, mixture or article that satisfied the criteria solely for the following hazard classes:

a) acute toxicity – oral, dermal and inhalation – category 5;
b) skin corrosion/irritation – category 3;
c) serious eye damage/eye irritation – category 2B;
d) aspiration hazard – category 2;
e) flammable gas – category 2;
f) acute hazard to the aquatic environment – category 1, 2 and 3;
g) chronic hazard to the aquatic environment – category 1, 2, 3, and 4; and
h) hazard to the ozone layer.

Flammable Liquids
Liquids that are classified as Class 3 flammable liquids in The Australian Dangerous Goods (ADG) Code and classified as "Flammable Liquids" under the Global Harmonised System of Classification and Labelling of Chemicals (GHS) or that meet the classification criteria specified in that Code for flammable liquids. Flammable substances ignite on contact with ignition sources.

Hazardous substance
A substance which is toxic, harmful, corrosive, irritating, sensitising, carcinogenic, mutagenic, teratogenic or radioactive.

Safety Data Sheet (SDS)
A document that provides information on the identification, health hazards, precautions for use and the safe handling of specific chemical product, which complies with ASCC:2011 (1994).

These data sheets are obtained from the supplier and provide essential information required to allow safe handling of hazardous substances at work. Employers must ensure that all employees have access to SDS and must encourage employees to read the SDS's for all hazardous substances, which they may encounter in their work.

All SDS's include the following information:

- Product name and classification by UN No., GHS category, hazard statement and signal word;
- Product identification including physical and chemical properties;
- Health hazard information detailing acute effects and first aid advice;
- Precautions for use;
- Safe handling information including storage and transport, spills and disposal and fire explosion hazards;
- Recommend on the use of PPE; and
- Miscellaneous information.

The information in a SDS is very important and all members of staff must be familiar with the location of the SDS's and their contents. For new chemicals on site, an SDS must be provided from manufacturers and read by the staff.

Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
A new classification system for hazardous chemicals based on the GHS came into effect as of the 1 January 2012, and the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code) was terminated after the 31 December 2016. The requirements of both the ADG Code and GHS are addressed in this procedure.

Occupier
The person who has overall management or control of the workplace.

Packing Group (PG)
*One of three hazard groups into which dangerous goods (of Classes other than 1, 2, 6.2 & 7) are designated in the ADG Code, in decreasing order of hazard by the Roman numerals **"I"** (great danger), **"II"** (medium) and **"III"** (minor danger).*

Incompatible
In relation to substances or the containers in which such substances are kept, having the ability to react or combine with one another in a manner that increases the hazard of an individual substance, that could cause deterioration of any of those substances and increase the hazards presented by them, or that could increase the hazards in the event of fire.

NOHSC
National Occupational Health & Safety Commission (NOHSC) now known as Safe Work Australia – website: http://www.safeworkaustralia.gov.au.

PPE
Personal Protective Equipment.

4.3 HAZARDOUS CHEMICALS STORED ONSITE

Hazardous chemicals on site are displayed in Table 4-1.

The site will store 33,000 L of diesel in a self-bunded diesel tank. This tank is to be protected from vehicle collision using concrete barriers. Additionally, the site will also hold other various chemicals that are used for trucks and machinery, including degreaser, oils and lubricants. Small quantities of a flocculant (a non-dangerous good) will be stored on site to aid in recovery of mineral ores and remove suspended material from wastewater. All of these chemicals will be stored inside on bunded pallets.

Table 4-1: Chemical Storage

Product Name	UN No.	ADG/GHS	GHS Signal Word	Quantity Storage Capacity	Storage Type	Storage Location
Diesel	3082	ADG: non-dangerous good (Combustible Liquid C1) GHS: Aspiration Hazard: Category 1; Carcinogenicity: Category 2; Flammable Liquids: Category 4; Hazardous to the Aquatic Environment – Long-term hazard: Category 2	DANGER	33,000 L	Self-bunded storage tank	Outside
Polyelectrolyte flocculant	N/A	Eye Damage/ Irritation: Category 1	N/A	250 kg	Bunded pallets	Inside
Degreaser	Not regulated	Eye Damage/ Irritation: Category 2A Skin Corrosion/Irritation: Category 2	WARNING	200 L	Bunded pallets	Inside
Truck Wash	Not regulated	Eye Damage/ Irritation: Category 2A Skin Corrosion/Irritation: Category 2	WARNING	200 L	Bunded pallets	Inside
Engine Oil	Not regulated	N/A	N/A	1000 L	Bunded pallets	Inside
Transmission Oil	Not regulated	N/A	N/A	200 L	Bunded pallets	Inside
Diff Oil	Not regulated	N/A	N/A	200 L	Bunded pallets	Inside

Table 4-1: Chemical Storage

Product Name	UN No.	ADG/GHS	GHS Signal Word	Quantity Storage Capacity	Storage Type	Storage Location
Grease and Lubricants	Not regulated	Grease: N/A Lubricant: Flammable Aerosol Category 1 Gas Under Pressure: Compressed gas Aspiration Toxicity Category 1 Specific Target Organ Toxicity Single Exposure Category 3 (Nervous System effects)	Grease: N/A Lubricant: Danger	200 kg	Bunded pallets	Inside

Note: Lubricant is assumed to be WD-40.

The management of hazardous materials is regulated under the *Work Health and Safety Regulation 2017*. The regulation has two basic limits on storage quantities listed in Schedule 11; these are the Placarding quantity and the Manifest quantity. If the quantities of hazardous chemicals at the site exceed the Manifest quantity, notification to SafeWork NSW is required.

The facility would not require Notification to SafeWork as chemical quantities do not exceed the manifest quantities. However, the basic requirements of having a Manifest in place, an active Emergency Plan in use, sign posting and placarding of hazardous material storage containers would be implemented to assist site management and Fire and Rescue NSW.

4.4 PROCEDURE

4.4.1 Storage and Handling

- All employees are to under Dangerous Goods training.
- Hazardous materials would be stored separately and within approved containers/bunds.
- Hazardous material containers/bunds would be inspected for cracks and integrity weekly.
- If spillage occurs, act ***immediately*** in accordance with the *Spill Procedure*. Ensure that all spilled materials and materials used for clean-up are disposed of safely.
- All personnel engaged in the handling of hazardous chemicals shall be aware of the hazards involved and be trained in the use of personal protective equipment, its care and maintenance, actions to be taken in various emergencies, the properties of hazards associated with, the substances handled.
- A register of safety data sheets on all chemicals used or stored on site is to be maintained.

- All installations in which flammable or combustible liquids are stored shall be implemented in accordance with AS 1940–2017, *The storage and handling of flammable and combustible liquids*.

- Self-bunded diesel tank to be protected from vehicle collision using concrete barriers.

- Smoking would be prohibited on site.

4.4.2 Disposal of Dangerous Goods/Hazardous Chemicals

- Dangerous goods and hazardous chemicals that require disposal may be classified as hazardous waste and must be disposed of in accordance with the Waste Management Procedure (Procedure No. 6).

- Appropriate staff shall be designated with the responsibility for ensuring the safe disposal or recycling of empty containers.

- A designated area for waste chemical containers is to be maintained for adequate storage and handling. This area needs to be under cover/roofed and bunded. Labels indicating the contents of the area and containers needs to be provided.

- Spills of hazardous waste should be handled in accordance with the *Spill Procedure* (Procedure No. 5) and any relevant safety data sheets.

4.4.3 Labelling

- Labelling must follow Safe Work Australia's Code of Practice for the Labelling of Workplace Hazardous Chemicals (2018)

- Labelling of tanks must include the following, in addition to the specific information listed in Table 4-2.

- Label must be kept exhibited in such a position as to be clearly legible by any person approaching or at the dangerous goods area.

- All access points to the tank area require clear signage.

- All lettering on the labels must be a minimum of 100 mm high in black on a white or silver background.

- Table 4-2 provides guidance for pictograms and notices to be exhibited for dangerous goods/hazardous chemicals stored on site.

Table 4-2: Dangerous Goods Stored On Site

Dangerous Goods/ Hazardous Chemicals Description	GHS Classification	ADG Class	GHS Category Signage	Placarding	Signal Word
Diesel Fuel	Flammable Liquids Cat 4	Non-Dangerous Good		COMBUSTIBLE LIQUID	Danger

4.5 INSPECTION AND RECORDS

Any issues or non-conformances noted during workplace inspections must be recorded. Documentation for any corrective and preventative actions must also be maintained, as described in the *Corrective and Preventative Actions* section of the EMP. Any other relevant records must also be kept of professional periodic inspections.

PROCEDURE NAME:	**SPILL PROCEDURE**	**DATE:**	**February 2022**
PREPARED BY:	Benbow Environmental	**ISSUE NO.:**	1

5. SPILL PROCEDURE

5.1 PURPOSE

The purpose of this procedure is to ensure the containment of all spills on site to prevent the entry of spilled materials/debris into stormwater systems (and public waterways), reducing the risk of environmental pollution and exposure to breaches and penalties under environmental pollution legislation.

5.2 DEFINITIONS

The Environment
For the purpose of this procedure, the environment is defined to include air, soil, natural waterways, groundwater and surface water (including stormwater drainage system).

Environmental Incident/Release
An environmental incident/release is defined as any spillage, release, upset, out of limits operation, procedural violation, which potentially:

- *Harms human health;*
- *May cause environmental harm; and*
- *May result in non-compliance with regulations, permits and/or intervention of environmental authorities or results in penalties or fines.*

Minor Spillage
A minor spillage is one that can be contained quickly and efficiently using the provisions of the Spill Kits located at various points around the site. It is typically less than 50 L. A minor spill would not be expected to reach the stormwater system. If the minor spill does reach the stormwater system the same action as outlined for a major spill will need to be taken.

Major Spillage
A major spillage has the potential to leave the site and is characterised by the spillage of a quantity greater than 50 L. A spill of this size must be prevented from reaching the stormwater system, and requires the sealing of stormwater drainage pits and the stormwater outlets, which is necessary to isolate the site from surrounding waterways.

Safety Data Sheet (SDS)
A document that provides information on the identification, health hazards, precautions for use and the safe handling of specific chemical product, which complies with ASCC:2011 (1994).

These data sheets are obtained from the supplier and provide essential information required to allow safe handling of hazardous substances at work. Employers must ensure that all employees have access to SDS and must encourage employees to read the SDS's for all hazardous substances, which they may encounter in their work.

All SDS's include the following information:

- Product name and classification by UN No., GHS category, hazard statement and signal word;
- Product identification including physical and chemical properties;
- Health hazard information detailing acute effects and first aid advice;
- Precautions for use;
- Safe handling information including storage and transport, spills and disposal and fire explosion hazards;
- Recommend on the use of PPE; and
- Miscellaneous information.

The information in an SDS is very important and all members of staff must be familiar with the location of the SDS's and their contents. For new chemicals on site, an SDS must be provided from manufacturers and read by the staff.

5.3 EQUIPMENT

To properly contain any spill it is important to know the name of the material (shipping and/or common name) and the type (solid, liquid, granulated), as well as the GHS classification or Dangerous Good class. It is also important to ensure the listed resources are present on site:

- SDS outlining any recommended method for containing the spill and preventing environmental damage.

- Spill control tools to contain and clean up spills, such as a Hazchem spill kit. Spill kits must include at least the following items: inert absorbent material, shovels, brooms, chemically resistant boots and gloves, disposal bags for contaminated waste and portable containment barriers. An additional spill kit specifically for flammable/combustible liquids must also be available on site.

- Spill control tools should be kept together at one location and communicated to all personnel. Signage should indicate the designated locations of the Hazchem spill kits/spill control tools.

5.4 PROCEDURES

If a spill occurs on the site the following procedure is to be followed.

5.4.1 For Minor Spillage

- Take action to stop or reduce the source of the spill, or divert the flow to safe containment, to the extent that personal safety will permit;
- For spills of solid materials, the spilled material should be carefully returned to the appropriate waste container;

- Contain the spillage to minimise spread of material;
- Consult SDS for recommended clean-up procedure and follow these instructions. Use spill control tools to aid in clean-up procedure;
- Dispose of material and all contaminated material (including soil contaminated from liquid spill) according to the Disposal Procedure outlined in the SDS or contact a licensed waste contractor for assistance;
- Inform the Site Manager on the details of the spill; and
- Record details of the spill.

5.4.2 For Major Spillage

- Take action to stop or reduce the source of the spill, or divert the flow to safe containment, to the extent that personal safety will permit;
- For spills of solid materials, the spilled material should be carefully returned to the appropriate waste container;
- Contain the spillage to minimise spread of material. Materials should be directed to blind sumps and bunds monitored to ensure integrity and no escape of materials;
- Inform the Site Manager and/or Principal Contractor on the details of the spill;
- Consult SDS for recommended clean-up procedure;
- Under the direction of the Site Manager and/or with the assistance of the emergency response crews (if required), clean up the spill;
- Dispose of material and all contaminated material (including contaminated absorbent material and soil contaminated from liquid spill) according to the Disposal Procedure outlined in the SDS or contact a licensed waste contractor for assistance; and
- Record details of the spill.

5.4.3 Notifying Authorities

- Under section 148 of the Protection of the Environment Operations Act, 1997, there is a duty to report pollution incidents. Site Management is responsible for notifying the relevant authorities.
- Relevant authorities include one or more the following, depending on the type and extent of the spill:

1.	NSW Environment Protection Authority	131 555
2.	Canterbury-Bankstown Council	(02) 9707 9000
3.	The Ministry of Health	1300 066 055
4.	SafeWork NSW	13 10 50
5.	Fire and Rescue NSW	1300 729 579

- The following provides guidance on notifying pollution incidents:

  - Any pollution incident that causes or threatens material harm to the environment must be notified immediately.
  - A 'pollution incident' includes a leak, spill or escape of a substance, or circumstances in which this is likely to occur.
  - Material harm includes on-site harm, as well as harm to the environment beyond the premises where the pollution incident occurred.
  - Notification must be given immediately after the person becomes aware of the incident.

5.5 INSPECTION AND RECORDS

A Workplace Inspection Checklist has been prepared to assist staff in checking that all procedures and equipment used to control and mitigate potential pollution generated by site activities are functioning effectively.

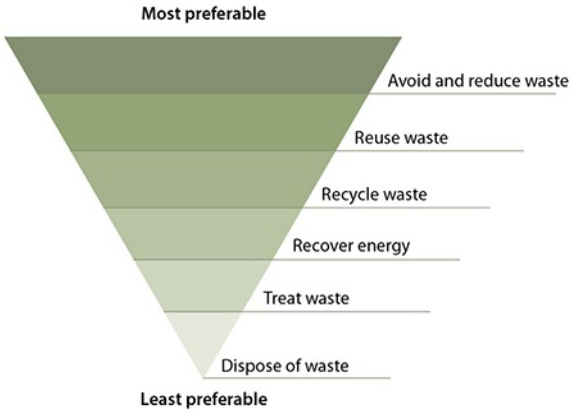
Any issues or non-conformances noted during workplace inspections must be recorded. Documentation for any corrective and preventative actions must also be maintained, as described in the *Corrective and Preventative Actions* section of the EMP. Any other relevant records must also be kept of professional periodic inspections.

PROCEDURE NAME:	**WASTE MANAGEMENT**	**DATE:**	**February 2022**
PREPARED BY:	Benbow Environmental	**ISSUE NO.:**	1

6. WASTE MANAGEMENT

6.1 PURPOSE

To guide waste management practices on site and encourage waste minimisation and resource recovery in line with the principles of Ecologically Sustainable Development (ESD).



6.2 WASTE CLASSIFICATIONS

Special Waste
Special waste includes clinical and related wastes, asbestos waste and waste tyres.

Liquid Waste
Liquid waste is waste that has an angle repose <5degrees; waste that becomes free flowing at or below 60ºC and is not generally capable of being picked up by a spade or shovel.

Hazardous Waste
Hazardous waste is waste with a pH ≤2 or ≥12.5 and containers that have not been cleaned and contained dangerous goods within the meaning of the Australian Code for the Transport of Dangerous Goods by Road and Rail.

Restricted Solid Waste
This type of waste is determined by chemical tests.

General Solid Waste (Putrescible)
General solid waste (putrescible) is waste from litter bins collected by local councils, food waste and grit or screenings from sewage treatment systems that have been dewatered so that the grit of screenings do not contain free liquids.

General Solid Waste (Non-Putrescible)
General solid waste (non-putrescible) is paper or cardboard, glass, plastic, rubber, plasterboard, ceramic, bricks, concrete or metal and containers previously containing dangerous goods as defined under the Australian Code for the Transport of Dangerous Goods by Road and Rail, from which residues have been removed by washing or vacuuming.

6.3 WASTE HANDLING AND TRANSPORT

6.3.1 C&D Waste Transport

C&D waste is sourced from other recycling/sorting facilities in NSW, these facilities typically receive mixed C&D waste skip bins and sort the material into various streams. One of these streams is concrete/bricks/tiles/soil which is then transported via tipper truck to the site. Alternatively, some construction sites sort their waste materials onsite, into similar streams, in bins or stockpiles, which are appropriately classified, and suitable wastes (concrete/bricks/tiles/soil) are sent to the site.

Trucks/truck-and-dogs receive construction and demolition wastes such as bricks, tiles, concrete etc. in trucks that enter the site via Gow Street.

The material is pre-sorted from construction and demolition sites at other resource recovery facilities or at the construction site source such that the material does not contain contamination such as plasterboard, plastics, metal etc. and is exclusively material destined for processing as recovered aggregates and recovered fines.

The trucks drive over the weighbridge and into the site where the material is tipped at the unprocessed stockpile area in the south east of the site. The material is fed via a front end loader into a crusher and screen in the south eastern corner of the site where the material is crushed, and screened and automatically sorted into various aggregate grades.

The aggregates are then transferred to stockpiles western side of the site at the rear half of the property. These materials are classified in accordance with the *Recovered Aggregates/Recovered Fines Order* and then sold for the re-use as road-base material.

Trucks exit the site via the wheel wash and then the weighbridge before exiting onto Gow Street.

6.3.2 C&I Waste Transport

C&I waste for the dewatering plant includes drilling mud from industrial or manufacturing processes and concrete washout water.

Drilling mud is sourced from construction sites across NSW where wet drilling or non-destructive digging takes place where the soil/water slurry is sucked up using a vacuum truck.

Concrete washout waste is sourced from concrete mixing trucks which contain residue concrete after the completion of a job and this material needs to be washout out before a new batch of concrete can be loaded in the concrete mixing truck.

6.4 WASTE TYPES

Two waste streams would be accepted at the facility including Commercial and Industrial (C&I) waste and Construction and Demolition (C&D) waste.

Table 6-1 details the incoming waste (incoming; waste accepted at the site for processing) and Table 6-2 details recovered waste (outgoing; materials recovered from the processing and separation of waste on site). Shaded cells indicate the existing waste types received and despatched at the site. Volumes are displayed as received and generated per week, month and year.

Wastes that are not to be accepted on site include:

- Asbestos;
- Batteries;
- Cardboard;
- Electrical waste;
- Flammable waste;
- Green waste;
- Household appliances; and
- Any other waste type not listed above in the accepted waste list.

Section 7 details the procedures should non-confirming or hazardous materials are present in incoming waste.

Table 6-1: Incoming Waste Types, Quantities and Management

Waste Stream	Estimated Total Incoming Quantity	Waste Classification	Waste Description	Weekly Quantity (tonnes)	Monthly Quantity (tonnes)	Yearly Quantity (tonnes)	Management
C&D Waste	80,000 tpa	General Waste (Non-putrescible)	Bricks	308	1333	16,000	Incoming pre-sorted waste loads undergo initial inspection via the weighbridge then is placed in designated storage bays to be crushed and screened through existing infrastructure. Recovered products are stored on site within existing designated bays.
			Tiles	154	667	8,000	
			Concrete	492	2133	25,600	
			Asphalt	154	667	8,000	
			Sandstone	123	533	6,400	
			VENM/ENM	308	1333	16,000	
C&I Waste	250,000 tpa	Liquid waste	Drilling mud	3846	16667	200,000	Drilling mud and concrete washout waste would be brought onto site in tankers and unloaded into onsite tanks. The liquid is treated within the enclosed facility.
			Concrete washout water	962	4167	50,000	

Table 6-2: Recovered and Generated Waste Types, Quantities and Management

Waste Type	Estimated Maximum Quantity	EPA Waste Classification[1]	Relevant Resource Recovery Order	Management
Aggregates – 20mm or 10mm	60,000 tpa	General soil waste (non-putrescible)	The Recovered Aggregate Order 2014	This crushed then screened into varying standard sizes and directed to the designated external storage bay. Sold for reuse in construction projects under the recovered aggregates order 2014.
Fines (-60 aggregate)	4,000 tpa	General soil waste (non-putrescible)	The Recovered Aggregate Order 2014	The smallest aggregate size that is screened through the process. Sold for reuse in landscape supplies.

Table 6-2: Recovered and Generated Waste Types, Quantities and Management

Waste Type	Estimated Maximum Quantity	EPA Waste Classification[1]	Relevant Resource Recovery Order	Management
Soil	16,000 tpa	General soil waste (non-putrescible)	The Recovered Aggregate Order 2014	Excavated material that is brought on site is processed into soils that are reused as engineered materials off-site under the recovered aggregate order 2014.
Treated water	150,000 tpa	Liquid waste	N/A	This is the treated water from the dewatering plant that is stored in the clean water tank. This water would be of a suitable quality to reuse on site for various dust suppression and cleaning purposes.
Aggregates & Sand	95,000 tpa	General soil waste (non-putrescible)	The Treated Drilling Mud Order 2014 The Recovered Aggregates Order 2014	Aggregates and sand generated from the dewatering process are transferred via conveyor to two storage bays within the enclosed dewatering facility. These aggregates may be further processed through the C&D plant or sold for reuse off site under the treated drilling mud order 2014 or the recovered aggregates order if applicable.
Filter cake (biscuit)	5,000 tpa	General soil waste (non-putrescible)	The Treated Drilling Mud Order 2014 The Recovered Aggregates Order 2014	Filter cake (biscuit) is generated from the filter press and stored in a bin. The majority of the filter cake will be disposed of and applied to landfill. Where possible, the filter cake would be processed through the C&D plant to produce an engineered material that can be reused off site under the treated drilling mud order 2014 or the recovered aggregates order if applicable.
Non-recyclable waste	150 tpa	General solid waste (non-putrescible)	N/A	General waste that cannot be recycled may be generated from time to time. This is stored within a designated bin on site and sent to a licensed landfill.

Table 6-2: Recovered and Generated Waste Types, Quantities and Management

Waste Type	Estimated Maximum Quantity	EPA Waste Classification[1]	Relevant Resource Recovery Order	Management
Office & Amenities Waste	10 tpa	General solid waste (Putrescible)	N/A	This waste is ancillary to the process and is serviced by a licensed waste contractor.
Office Recyclables	24 tpa	General solid waste (non-putrescible)	N/A	This waste is ancillary to the process. It is transferred offsite to a licensed recycling facility for further processing. E.g. Visy Recycling

Note: [1]Waste classification according to *Waste Classification Guidelines* provided.

6.5 WASTE STORAGE

The current waste storage capacity on site is 7,300 tonnes. The proposed dewatering plant would require storage of an estimated additional 900 tonnes of waste at the site; therefore, up to 8,200 tonnes of waste would be stored on site at any one time.

Waste storage areas are to be labelled, enclosed and bunded to prevent migration or mixing of materials from their designated areas.

6.5.1 C&D Waste Storage

There are 15 pre-cast concrete external storage bunkers located predominantly on the western side of the site. Bunkers are used for the storage of incoming wastes and recovered materials awaiting transport off site. A maximum of 7,300 tonnes of C&D materials are stored on site at any one time.

The contents of the bunkers consist of various sized aggregates, soil, sand, turf, concrete and garden mix. The existing site plan (TBA) shows the contents of each storage bunker, as listed below:

- **Area 1:** DGB Roadbase Bay
- **Area 2:** Uncrushed material – Brick/tile/concrete Bay
- **Area 3:** Uncrushed concrete Bay
- **Area 4:** Aggregate Bays (1 x AGG 10mm bay, 1 x s20mm AGG bay, 1 x crusher dust bay)
- **Area 4:** ENM Bay
- **Area 5:** Screened ENM Bays (3 bays)
- **Area 6:** Soil bays (5 bays)

6.5.2 Dewatering Plant

Liquid waste and recovered aggregates from the drilling mud dewatering facility will be stored in below ground pits and newly formed storage bays.

A total of approximately 812 tonnes of waste would require storage for the dewatering plant. With a factor of safety, it is assumed an increase of 900 tonnes of waste would be stored on site at any one time in relation to the dewatering facility.

Storage area and contents are displayed below:

- **Area 7: Dirty water pit**

This would consist of a 250 m^3 below ground pit located within the proposed dewatering facility building. It would have the capacity to store 250 tonnes of incoming liquid waste and is the pit where vacuum tankers unload at the start of the dewatering process. This pit is shown in the detailed drawings of the dewatering facility.

- **Area 8: Clean water pit**

This is a below ground pit for clean water supply and has a capacity of 20,000 Litres (20 tonnes).

- **Area 9: Stainless steel silo**

This is a cylindrical tank that has the capacity to hold 62,000 Litres or 62 tonnes.

- **Area 10: New Aggregate Bays**

Two aggregate bays would be located external to the dewatering plant as shown on the proposed site plan. These bays are 10m x 3.5m in area and have a maximum capacity to store 450 tonnes.

- **Area 11: Filter press bin**

A bin would be provided under the filter press to capture the biscuit or filter cake. This would hold approximately 30 tonnes.

- **Area 12: Quarantine Area**

A quarantine area would be established for any non-conforming waste.

PROCEDURE NAME:	**INCOMING WASTE PROCEDURE**	**DATE:**	**February 2022**
PREPARED BY:	Benbow Environmental	**ISSUE NO.:**	1

7. INCOMING WASTE PROCEDURE

7.1 PURPOSE

The purpose of this procedure is to facilitate the process of dealing with unauthorised or non-conforming waste brought onto the site. The procedure will enable the identity of waste types found within incoming loads and brought onto site to be confirmed and deal with any unexpected or non-conforming wastes such as asbestos.

7.2 DEFINITIONS

For the purposes of the procedure, the following definitions of relevance:

Contaminated Material
Materials that contain substances that are of sufficient concentration to potentially cause harm to human health or the environment. (EPA Act)

Acceptable wastes
Acceptable wastes include construction and demolition (C&D) waste and commercial and industrial (C&I) waste from reputable sources (drilling mud and concrete washout water) and is expected to include:

- Bricks or Concrete (BC);
- Ceramics, tiles, pottery (CER);
- Asphalt (ASPH);
- Aggregate, road base or ballast (AGG);
- Soil – not contaminated or VENM (SOIL);
- Virgin excavated natural material (VENM);
- Drilling mud;
- Concrete washout water

Suspect material / Not accepted

Not accepted at the site are any contaminated or non-conforming wastes such as:

- Tyre waste
- Household waste
- Food waste
- Animal waste
- Garden waste
- Wood waste
- Radioactive waste
- Flammable material

- Medical waste
- Hazardous material
- Asbestos;
- Fibro;
- Villaboard
- Glass
- Plastic
- Rubber
- Plasterboard
- Gyprock
- Metal
- Paper and Cardboard
- General waste.
- Oil-based or synthetic based muds.
- Drilling mud containing barium sulphate.

7.3 TRAINING REQUIREMENTS

Training of personnel responsible for inspections, sorting and waste storage at the facility would include:

- Training in legal and other requirements for waste including:
  - Relevant requirements of the POEO Act (including the waste regulation);
  - Requirements of any waste conditions in the facility's EPL;
  - The five standards of the *Standards for managing construction waste in NSW*.
  - Successful completion of a nationally accredited asbestos awareness course;
- Personnel involved in removing bonded asbestos must complete nationally accredited course in bonded asbestos removal before undertaking any task that involves removing bonded asbestos.
- Personnel responsible for inspecting or accepting incoming loads of drilling mud must have knowledge of the waste specifications as required for acceptance at the site.

Other relevant environmental awareness training and details regarding maintenance of training records would be included in the site's Environmental Management Plan.

7.4 PROCEDURE

7.4.1 C&D Loads

Loads are to be inspected at the following points in the process:

1. At the weighbridge.
2. While unloading in the waste storage bay.

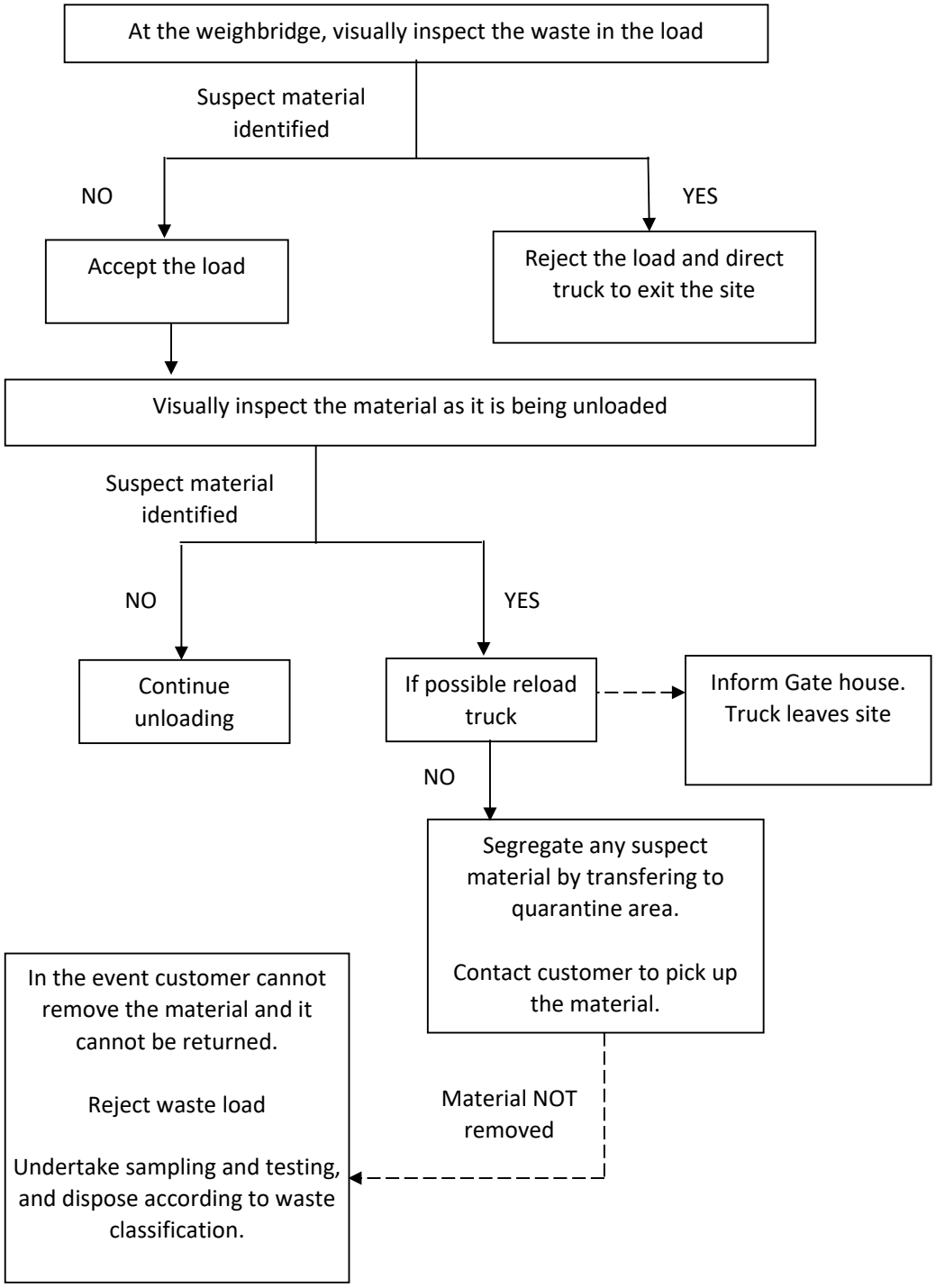
Upon the finding of suspect or contaminated material at the weighbridge, the non-conforming load shall be directed by the gate house personnel to immediately leave the property. Record details in the rejected loads register.

Upon the finding of suspect or contaminated material within a load during unloading in the pre-sorting area, the following actions are required:

- If possible, re-load the truck.
- Report the non-conforming material to the gate house personnel. Weighbridge personnel will need to record details in the rejected loads register.
- Direct the truck to leave the facility.
- If re-loading the truck is not possible, secure the area, secure the material using temporary barricades within the quarantine area.
- Contact the customer and direct them to pick up the material.
- As a contingency, should the customer be unable to collect the material, contact a suitably qualified consultant to determine the appropriate waste classification. This may involve sampling and testing of the material in accordance with regulatory guidelines. Once the waste classification for the material is known, dispose of this lawfully using a licensed waste contractor.

The following figure presents the steps to be followed in the event of suspect or contaminated material being found:

Figure 7-1: Incoming load inspection



7.4.2 Liquid Waste Loads

All liquid waste tankers entering the site must enter via the weighbridge. At the weighbridge:

- Maintain a list of reputable customers for liquid waste.
- The weighbridge operator must obtain appropriate paperwork from tanker driver confirming contents of the load.
- Upon receipt of paperwork, check the type and source of the load. Eg: concrete washout waste, drilling mud.
- If the waste load contains drilling mud, confirm the following:
  - Source of the drilling mud;
  - The drilling mud is not odorous;
  - The drilling mud is not oil or synthetic based;
  - The drilling mud does not contain barium sulphate
  - If additives are used SDS's must be provided and reviewed prior to entering the site.
- For incoming loads of drilling mud, ensure that waste specification is met and signed for.
- Record load details and direct driver to dewatering plant.
- If appropriate paperwork is not provided, direct tanker driver to leave the site.

7.4.3 Drilling Mud Waste Specification

Drilling mud received at the site would need to comply with the following waste specification criteria. Customers would need to confirm the load complies with this specification prior to receipt of any deliveries.

1. A mixture of naturally occurring rock and soil, including but not limited to materials such as sandstone, shale and clay, and drilling fluid generated during drilling operations such as horizontal directional drilling or potholing.

2. Does not include drilling mud generated by:
   a. deep drilling for mineral gas or coal exploration; or
   b. drilling through contaminated soils, acid sulphate soils (ASS) or potential acid sulphate soils (PASS); or
   c. drilling through soil contaminated by a hazardous contaminant

3. Does not contain any of the following:
   a. Restricted simulation fluids
   b. Any characteristics under the Australian dangerous goods code (e.g: explosives, flammable or emitting flammable gases, oxidising, containing organic peroxides, poisonous, infectious, corrosive, toxic)
   c. Oil-based or synthetic-based mud
   d. barium sulphate
   e. additives where the SDS, which must be provided, show that the chemical may cause adverse ecological effects.

4. Free from:
   a. Detectable offensive odours;
   b. Glass, metal, plastics, rubber and coatings; and
   c. Pests or vermin infestations

7.5 INSPECTION AND RECORDS

7.5.1 Records of Incoming Loads

The following details for incoming waste need to be maintained:

- Date & time received;
- Name of customer;
- Address of facility received from/customer address;
- Environment Protection Licence Number for the facility/customer (if applicable);
- Estimated Weight/Volume of load to two decimal points (eg: 14.22 tonnes);
- Waste Stream;
- Vehicle registration number (including any trailer(s));
- Name of driver;
- If the load contains drilling mud, signed waste specification sheet;
- Location of where the material is placed at the site; and
- Details of any unauthorised waste found in load.

7.5.2 Rejected Loads Register

Any non-conforming waste must be recorded in the rejected loads register and include the following details:

1. Date and time the load was rejected.
2. Vehicle registration number including any trailers transporting the rejected load of waste both to and from the facility.
3. The type of waste(s) in the rejected load of waste.
4. The reason the load was rejected.

7.5.3 Other Non-Conforming Waste

Any non-conforming waste would be immediately removed from site. If customer cannot remove this waste, sampling and testing by a suitably qualified consultant is to be undertaken to determine the waste classification. Waste is to be managed in accordance with requirements relating to its determined waste classification.

Documentation for any sampling, testing and alternate disposal of the waste must also be maintained.

PROCEDURE NAME:	**FIRE PREVENTION MANAGEMENT**	**DATE:**	**February 2022**
PREPARED BY:	Benbow Environmental	**ISSUE NO.:**	1

8. FIRE PREVENTION MANAGEMENT

8.1 PURPOSE

To guide fire prevention management practices on site to reduce fire related risks.

8.2 FIRE IN WASTE FACILITIES

Fire and Rescue NSW developed guidelines regarding fire safety within waste facilities titled, 'Fire safety guideline – Fire safety in waste facilities', and dated February 2020. The proposed development does not apply, as per section 3 of the Fire Safety Guidelines (February 2020):

> *This guideline does not apply to any waste facility, or areas of, that are being used for:*
>
> *a) Landfill (but, may apply to a waste facility on the landfill site)*
> *b) composting, including in-vessel, green waste and anaerobic digestion*
> *c) Liquid waste treatment*
> *d) Hazardous chemicals or special waste treatment (e.g. waste tyres), or*
> *e) Less than 50 m^3 of combustible waste material.*
>
> ***Note:** Fire safety requirements still apply to waste facilities not covered by this guideline.*

The site will store less than 50 m^3 of combustible waste material therefore this guideline does not apply.

8.3 COMBUSTIBLE MATERIALS

Combustible materials stored on site are restricted to diesel fuel storage. Maximum storage quantity at any one time on site are shown in Table 8-1.

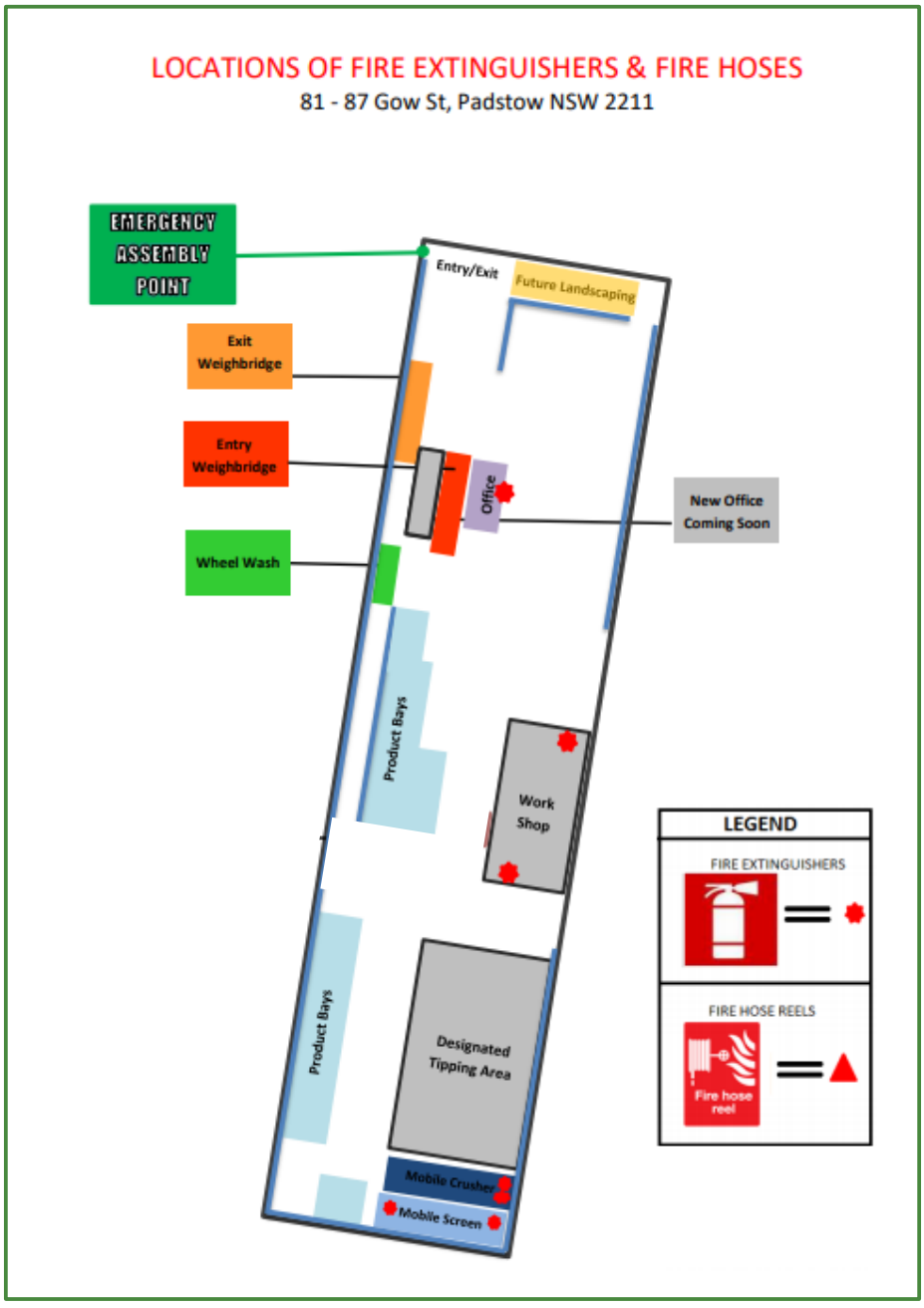
Table 8-1: Combustible Material Properties

Waste Type	Approximate Storage Quantity at Any One Time	Burn Temperature	Fire risk	Auto-ignition Temperature
Diesel	33,000 L	Up to 1,400°C	High	399°C

8.4 Fire Fighting Equipment

Figure 8-1 presents the existing firefighting equipment present at site.

Figure 8-1: Fire Extinguishers & Hose Reels



8.5 Procedures

Minimal combustible materials will be present on site and therefore unlikely to pose a fire risk.

Accepted wastes on site are predominantly non-combustible C&D and C&I materials such as bricks, masonry, metals, drilling mud and concrete washout liquid waste. However, where non-

conforming/accepted wastes are received and are awaiting disposal, there is the potential for combustible materials to be present on site. Additionally, diesel fuel will be stored on site.

Both of which are combustible materials.

8.5.1 Combustible Liquids/Fuels

- Segregated Dangerous Goods Stores.
- The storage and handling of flammable and combustible liquid will be in compliance with AS 1940-2017.
- Oil/diesel leakages promptly attended to.
- Preventative maintenance program.
- Diesel would be stored in a self-bunded tank.
- Diesel tank will be protected from vehicle collision using concrete barriers.
- Hydraulic oils/chemicals would be stored within a bund.
- Containment of fuels and oils would be regularly inspected for leaks and deterioration.
- A hose reel with foam attachment would be provided in the vicinity of the fuel storage area.

8.6 INSPECTION AND RECORDS

Accurate record keeping is required. Inspection of combustible waste storage areas and fire services is to be undertaken in accordance with the Workplace Inspection.

Any issues or non-conformances noted during workplace inspections must be recorded. Documentation for any corrective and preventative actions must also be maintained, as described in the *Corrective and Preventative Actions* section of the EMP. Any other relevant records must also be kept for inspection by regulatory authorities.

An Emergency Plan has been prepared which includes an Emergency Services Information Package (ESIP) and contains a manifest which details the combustible waste storage locations and quantities, dangerous goods storage and fire services. This is to be undertaken in accordance with NSW Fire and Rescue *Fire safety guideline – Emergency services information package and tactical fire plans* (2019).

PROCEDURE NAME:	**WORKPLACE INSPECTION**	**DATE:**	**February 2022**
PREPARED BY:	Benbow Environmental	**ISSUE NO.:**	1

9. WORKPLACE INSPECTION

9.1 PURPOSE

The purpose of this procedure is to ensure an adequate level of environmental management at the site is maintained. The procedure can help determine whether action needs to be taken, in order to rectify any identified issues with the potential to cause environmental harm.

9.2 DEFINITIONS

Site Inspections
Inspections conducted using the Site Inspection Checklist provided to ensure a good environmental standard of the construction area is maintained.

Environmental Harm
Any direct or indirect alteration of the environment that has the effect of degrading the environment and, without limiting the generality of the above includes any act or omission that results in pollution. (Ref: POEO Act)

Due Diligence
The systematic identification of the environmental risks and liabilities associated with an organisation's sites and operations.

9.3 PROCEDURE

- An Inspection Checklist is provided overleaf to be completed and recorded on a weekly basis. This information is used to ensure an adequate level of environmental management at the site is maintained. It is also used to determine whether action needs to be taken to rectify issues that have arisen that may have the potential to cause environmental harm.

- If any action is required, this should be decided at the discretion of the Site Manager.

- Any issues or non-conformances noted during site inspections must be recorded. Documentation for any corrective and preventative actions (e.g. CAR forms) must also be maintained, as described in the *Corrective and Preventative Actions* section of the EMP. Any other relevant records must also be kept for inspection by regulatory authorities.

WEEKLY SITE INSPECTION CHECKLIST			EXAMPLE ONLY	
Inspected by:			Date & time:	
ITEM CHECKED	**YES**	**NO**	**ACTION REQUIRED**	**SIGN**
Is there any excessive noise from equipment or activities (or any noise complaints) from the site?				
Is there any excessive or unusual dust emissions or odour (or any complaints regarding dust) from the site?				
Is waste being stored in correct designated bins/bays/tanks?				
Is solid waste overflowing from bins/bays?				
Is there evidence of any spills or leaks within the storage areas or any other area of the site?				
Do all waste storage bins/bays/tanks have a unique identification number/name?				
Is there evidence of waste materials (C&D, liquid, litter or other wastes) in areas outside designated bins/bays/tanks?				
Are any safety signs out of place, obstructed or missing?				
Are stormwater pits working and free of blockages/debris?				
Does the hardstand or stormwater pit covers contain any unsealed cracks, tears or joints?				
Are water sprays being used during C&D handling activities?				
Is any dust/sediment being tracked from the premises?				
Are the hood and vacuum affixed to the crusher/screener and working correctly?				
Are building doors closed during loading/unloading of liquid waste?				
Are there any other areas that have not been maintained?				
OTHER				
Pollution Control Equipment				
Firefighting equipment				

NEXT INSPECTION DUE IN 7 DAYS. DATE:……/……/……

Housekeeping (circle): **Exceptional** **Good** **Average** **Poor** **Very Poor**

Additional Comments / Actions Required:

Inspected by:…… Signature:……..

Attachment A5: Environmental Policy

GOW STREET RECYCLING CENTRE
ENVIRONMENTAL POLICY

Gow Street Recycling Centre is a resource recovery facility located in Padstow, Sydney NSW. Gow Street Recycling Centre receives construction and demolition (C&D), and commercial and industrial (C&I) waste from residential and commercial developments within the greater Sydney area. Recovered materials are recycled for reuse in building and construction projects.

This policy applies to all Gow Street Recycling Centre facilities, offices, employees and contractors. Gow Street Recycling Centre has adopted a pragmatic approach to environmental management and is committed to continually improving our environmental performance and minimising the impacts of our activities on the environment by:

- Minimising the consumption of energy and water at our facility;
- Applying the waste hierarchy by reusing and recycling waste and water wherever possible;
- Maximising our plant efficiency by investing in viable technologies and implementing preventative maintenance techniques;
- Making environmentally sound purchasing decisions;
- Working with suppliers and customers to reduce the environmental impact of transportation;
- Complying with all relevant environmental legislation and other requirements;
- Educating our employees, contractors and customers to minimise environmental impact through staff awareness, participation and feedback;
- Setting realistic environmental objectives and targets and developing programs to achieve these; and
- Incorporating environmental sustainability principles into all business functions.

Gow Street Recycling Centre will endeavour to integrate strategies for the prevention of pollution by minimising the risks of our operations on the environment.

Michael Muscat
Managing Director

March, 2021

Attachment A6: Current development consent conditions (DA-51/1997)

DETERMINATION NOTICE NO. 0051.97

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979.

NOTICE TO APPLICANT OF DETERMINATION OF A DEVELOPMENT APPLICATION

Endorsed Date of Consent: 29 August 1997
(Council's File No. DA 51/97)

TO: PMT Pty Ltd
28 Hebe Street
GREENACRE NSW 2190

Being the applicant in respect of Development Application No. DA 51/97 and pursuant to Section 92 of the Act, Notice is hereby given of the determination of the Consent Authority of Development Application No. DA 51/97 relating to:

PROPERTY: **Lot A DP 103140, 81 Gow Street, Padstow**

PROPOSAL: **Transfer Station Handling 80,000 Tonnes per Annum of Road Waste Material**

The Development Application has been determined by GRANTING OF CONSENT subject to conditions specified in this Notice.

CONDITIONS OF APPROVAL:

1. Development shall take place generally in accordance with plans and details submitted to Council on 30 January 1997 in respect of Development Application 51/97 except where varied by the conditions that follow.

2. This consent will lapse five years from the endorsed date of consent unless either the use together with the completion of necessary building works has physically commenced, or an extension of the consent has been granted by Council.

3. The submission of a Certificate under Section 73 of the Water Board (Corporatisation) Act, 1994, prior to the release of the Building Application. For further information contact the Urban Development Officer at the Parramatta Office of Sydney Water, Telephone 9843 6236 or 9843 6241.

.../2

SOIL AND WATER MANAGEMENT

4. All activity shall be conducted in a manner that has no impact upon the amenity and environment of the nearby area by reason of the emission or discharge of dirt, dust, silt, sand or otherwise from the site. In this regard a soil and water management plan prepared by a registered surveyor or engineer shall be submitted to Council with the Building Application for approval showing the existing sediment controls together with proposed control methods to ensure compliance with this condition. Soil and water management controls shall include the heavy duty concrete paving of all areas subject to vehicle movements and connection to the stormwater drainage system via a sediment trap, and the method of ensuring that all vehicles that access the site do not trail waste material onto the roadway. Soil and water management controls detailed in the approved plan shall be implemented and maintained to the satisfaction of Council at all times.

STORMWATER DRAINAGE

5. All stormwater runoff shall be collected and conveyed to an inspection pit on the site and adjacent to the existing drainage easement in accordance with a drainage design approved by Council. The drainage design submitted for approval with the building plans shall comply with the requirements of Council's policy of Control of Stormwater Runoff from Development Sites.

CARPARKING

6. Carparking spaces for 30 vehicles shall be provided for the overall site in marked spaces in the manner generally shown on the approved site plan and such spaces are to be kept clear and available at all times.

USE OF THE SITE

7. All waste materials shall be stored in containers located either within the building or behind screen walls in accordance with the requirements of Council.

8. All loading and unloading of vehicles, storage of goods or materials and all industrial activity shall take place wholly within the site, in a manner that does not interfere with parking areas, driveways or landscaping.

9, The hours of operation shall be limited to between 6.00am - 6.00pm on weekdays and 7.00 am - 6.00 pm weekends.

ENVIRONMENTAL PROTECTION

10. The use of the premises shall incorporate facilities that will prevent the discharge of any pollutant, including noise, which may degrade the environment or be prejudicial to its inhabitants.

.../3

11. All pollution control devices (including drainage systems, sumps and traps) shall be regularly maintained.

12. All liquid wastes shall be collected and disposed of in a manner which does not pollute the stormwater system.

13. All paints, chemicals and other liquids shall be stored in approved receptacles which are to be located in a bunded area constructed in accordance with Council's guidelines.

ADVICE TO APPLICANT
(Not Conditions of Approval)

A. Prior to commencement of any building work for fitout a Building Application must be submitted and approved by Council. You should ensure that the drawings submitted with the Building Application comply with Council's requirements.

B. The WorkCover Authority of N.S.W. should be consulted regarding registration of the proposed use (ph. 9370-5378 or 9370-5380).

C. The Environment Protection Authority of NSW should be contacted regarding the need for Licensing of the proposed facility.

D. Please also be advised that:

(1) This Consent operates or becomes effective from the endorsed date of Consent (See top of first page).
(2) If you are dissatisfied with this decision, section 97 of the Environmental Planning and Assessment Act, 1979 gives you the right to appeal to the Land and Environment Court within 12 months after the date on which you receive this notice.
(3) These conditions are imposed taking into account the matters for consideration in determining a Development Application under Section 90(1) of the Environmental Planning and Assessment Act, 1979.
(4) The reasons for imposing the above conditions are to achieve the objectives of the relevant planning instruments and policies including appropriate provision of landscaping, parking and manoeuvring areas, drainage structures, and the minimisation of any adverse impact arising from the construction and occupation of the development.

For further information, please contact Michael Tierney of Council's Civic Approvals Unit on 9707 9942 .

Yours faithfully,

RICHARD MARSHMAN
PRINCIPAL PLANNER
das0051.97

.../4

24 September 2013

RPS Australia East P/L
PO Box 428
HAMILTON NSW 2303

Dear Sir/Madam,

APPLICATION NUMBER: DA-51/1997/2
PROPOSAL: Transfer Station Handling 80,000 Tonnes Per Annum of Road Waste Material - S96(1A) Amendment: Clarify material permitted under "road waste material", changes to car parking and 24-hour operation
PROPERTY: Lot A DP 103140, No. 81 Gow Street, PADSTOW NSW 2211

I refer to your application to modify the above development consent under the provision of Section 96(1A) of the *Environmental Planning and Assessment Act, 1979.* It is advised that the modifications, seeking to:

- clarify the material permitted under "road waste material";
- changes to car parking; and
- 24-hour operation,

have been approved.

Accordingly, Conditions 1, 6 and 9 of Determination Notice No. DA-51/1997 dated 29 August 1997, as amended by Section 96 Modification No. DA-51/1997/1 dated 1 June 1999, are amended to read as follows (amendments in italics):

1) Development shall take place generally in accordance with plans and details submitted to Council on 30 January 1997 in respect of Development Application 51/97, *unless altered amended or superseded by the Section 96(1A) Amendment Application No. DA-51/1997/2, lodged with Council on 1 June 2012, and accompanied by Plans: REF: 1229-1 dated 3 June 2013, prepared by G.J. Atkins & Associates and CAD REF: 116785 – 2A, dated 20 June 2013, prepared by RPS Australia East P/L (indicative layout only – no building works approved), all affixed with Council's approval stamp dated 24 SEP 2013,* except where varied by the conditions that follow.

6) Carparking spaces for *sixteen (16)* vehicles shall be provided for the overall site in marked spaces in the manner generally shown on the approved site plan, *as amended in red,* and such spaces are to be kept clear and available at all times.

9) The hours of operation shall be limited to between 6.00am – 6.00pm on weekdays and 7.00am – 6.00pm on weekends.

a) The hours of operation of the approved use shall be unlimited, 24 hours a day, 7 days per week, for a period of 12 months from the date of this determination notice. Once the 12-month trial period has lapsed, the hours of operation shall revert to the approved hours detailed in Condition 9 above, unless a further application has been submitted to and approved by Council for hours outside those specified in Condition 9.

The 24 hour operation of the facility shall at all times comply with the relevant recommendations/conclusions of the Noise Assessment Report No. 13151 Version A, prepared by Wilkinson Murray, dated 6 June 2013, noting that no approval has been granted for the installation and/or operation of a crushing machine under the subject determination notice.

The following additional condition shall also be imposed:

16) For the purposes of a transfer station operating on the site, the types of materials permitted to be brought to the site under the term "road waste material" and resulting purely from roadworks, are limited to the following:

a) General solid waste (non-putrescible):

i) Glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal;
ii) Virgin excavated material;
iii) Building and Demolition waste;
iv) Asphalt waste;
v) Cured concrete waste;
vi) Any mixture of the wastes referred to above.

b) Drilling mud, meaning a mixture of naturally occurring rock and soil, including but not limited to materials such as sandstone, shale and clay, and drilling fluid generated during drilling operations such as horizontal or directional drilling or potholing. This does not include drilling mud that has been generated by:

i) Deep drilling for mineral, gas or coal exploration; or
ii) Drilling through contaminated soils, acid sulphate soils (ASS) or potential acid sulphate soils (PASS).

The approval is subject to full compliance with all other conditions contained within Development Consent DA-51/1997 and any associated Building Approval/Construction Certificate.

Copies of the approved plans are attached for your information.

If you have any enquiries, please contact Nicholas Aley in Development Services on 9707 9473 and please quote the application number.

Yours sincerely,



Nicholas Aley
DEVELOPMENT ASSESSMENT OFFICER

17 February 2015

Stuart Greville
RPS Australia East P/L
PO Box 428
HAMILTON NSW 2303

Dear Sir/Madam,

APPLICATION NUMBER: DA-51/1997/3
PROPOSAL: Transfer Station Handling 80,000 Tonnes Per Annum of Road Waste Material – S96(1A) Amendment
PROPERTY: Lot A DP 103140, No. 81 Gow Street, PADSTOW NSW 2211

I refer to your application to modify the above development consent under the provision of Section 96(1A) of the *Environmental Planning and Assessment Act, 1979*. It is advised that the modification, seeking to extend the trial period for 24 hour/7 days-a-week operation for a further period of 12 months, has been approved.

Accordingly, Condition Nos. 1 and 9 of Determination Notice No. DA-51/1997 dated 29 August 1997, as amended by Section 96 Modification No. DA-51/1997/1 dated 1 June 1999 and Section 96(1A) Modification No. DA-51/1997/2 dated 24 September 2013, are amended to read as follows (amendments in italics):

1) Development shall take place generally in accordance with plans and details submitted to Council on 30 January 1997 in Respect of Development Application 51/97, unless altered, amended or superseded by the Section 96(1A) Amendment Application No. DA-51/1997/2, lodged with Council on 1 June 2012, and accompanied by Plans: REF: 1229-1 dated 3 June 2013, prepared by G.J. Atkins & Associates and CAD REF: 116785 – 2A, dated 20 June 2013, prepared by RPS Australia East P/L (indicative layout only – no building works approved), all affixed with Council's approval stamp dated 24 SEP 2013, *or unless altered, amended or superseded by the Section 96(1A) Amendment Application No. DA-51/1997/3, lodged with Council on 24 September 2014,* except where varied by the conditions that follow.

9) The hours of operation shall be limited to between 6.00am – 6.00pm on weekdays and 7.00am – 6.00pm on weekends.

   a) The hours of operation of the approved use shall be unlimited, 24 hours a day, 7 days per week, for a *further* period of 12 months from the date of this determination notice. Once the 12-month trial period has lapsed, the hours of operation shall revert to the approved hours detailed in Condition 9 above, unless a further application has been submitted to and approved by Council for hours outside those specified in Condition 9.

The 24 hour operation of the facility shall at all times comply with the relevant recommendations/conclusions of the Noise Assessment Report No. 13151 Version A, prepared by Wilkinson Murray, dated 6 June 2013, noting that no approval has been granted for the installation and/or operation of a crushing machine under the subject determination notice.

The approval is subject to full compliance with all other conditions contained within Development Consent No.: DA-51/1997 dated 29 August 1997, as amended by Section 96 Modification No.: DA-51/1997/1 dated 1 June 1999 and Section 96(1A) Modification No.: DA-51/1997/2 dated 24 September 2013, and the associated Building Approval/Construction Certificate.

If you have any enquiries, please contact Nicholas Aley in Development Services on 9707 9473 and please quote the application number.

Yours sincerely,

Nicholas Aley
DEVELOPMENT ASSESSMENT OFFICER

SERVICES AND UTILITIES IMPACT ASSESSMENT
REPORT FOR
GOW STREET RECYCLING CENTRE
PROPOSED DEWATERING PLANT

Prepared for: Gow Street Recycling Centre

Prepared by: Emma Hansma, Senior Engineer
R T Benbow, Principal Consultant

Report No: 191290_Services&Utilities_Rev3
February 2022
(Released: 14 February 2022)

Benbow
ENVIRONMENTAL

Engineering a Sustainable Future for Our Environment

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DOCUMENT CONTROL

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Approved by:	Position:	Signature:	Date:
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2	7-7-2021	Rev2	L Zanotto	R T Benbow
3	14-2-2022	Rev3	L Zanotto	R T Benbow

DOCUMENT DISTRIBUTION

Revision	Issue Date	Issued To	Issued By
1	3-9-2020	Gow Street Recycling Centre	Benbow Environmental
2	7-7-2021	Gow Street Recycling Centre	Benbow Environmental
3	14-2-2022	Gow Street Recycling Centre	Benbow Environmental

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Figure 2-1: Existing Stormwater Infrastructure (Dial Before You Dig, Sydney Water Map) 3

1. INTRODUCTION

Benbow Environmental has been engaged by Gow Street Recycling Centre to prepare a Services and Utilities Impact Assessment for a resource recovery facility at 81 Gow Street, Padstow (Lot A DP 103140). This report has been completed as part of an Environmental Impact Statement (EIS) for the proponent, which aims to vary their existing Environmental Protection License (10943) which currently allows them to have a processing capacity of 80,000 tpa, and a maximum storage quantity of 7,300 at any one time.

The proposal will include a staged development. Stage 1 of the development is the focus of this report and includes establishment of a drilling mud processing plant, with a capacity of 250,000 tonnes per year and storage of a maximum of 300,000 litres of liquid waste on site at any one time. These operations will take place on site 24/7.

Ausgrid has requested the following in an email attached to the SEARS:

> *In consultation with relevant agencies prepare a services and utilities impact assessment which:*
>
> *- assesses the capacity of existing services and utilities and identify any upgrades required to facilitate the development*
>
> *- assesses the impacts of the proposal on existing utility infrastructure and service provider assets and describe how any potential impacts would be managed*

1.1 SCOPE OF WORKS

The scope of this report is limited to the following:

- Assess the capacity of existing services and utilities and identify any upgrades required to facilitate the development; and
- Assess the impacts of the proposal on existing utility infrastructure and service provider assets and describe how any potential impacts would be managed.

1.2 OVERVIEW OF PROPOSED DEVELOPMENT

The site is an existing resource recovery facility that processes construction and demolition (C&D) waste. It consists of crushing and screening equipment and areas for truck movements and waste storage. Additionally, the site contains existing amenities and offices.

Stage 1 of the proposed development is for the construction and operation of a drilling mud processing plant that will process and store liquid waste including drilling mud and concrete washout waste. This will require construction of the processing plant within an existing building on site and construction of a new office building, including:

- Upgrading the stormwater infrastructure and containment system;
- Installation of dewatering plant equipment, footings, water containment pits.
- Installation of additional dust controls for the existing construction and demolition waste recycling facility.
- Construction of the proposed office building.

Essentially, wastewater (including site washdown water and stormwater) is treated to remove sediments and heavy material, leaving clean water which will be used for dust suppression and site washdown in the existing C&D recycling plant on site. Any excess water would need to be discharged to tradewaste.

Key utilities discussed in this report include:

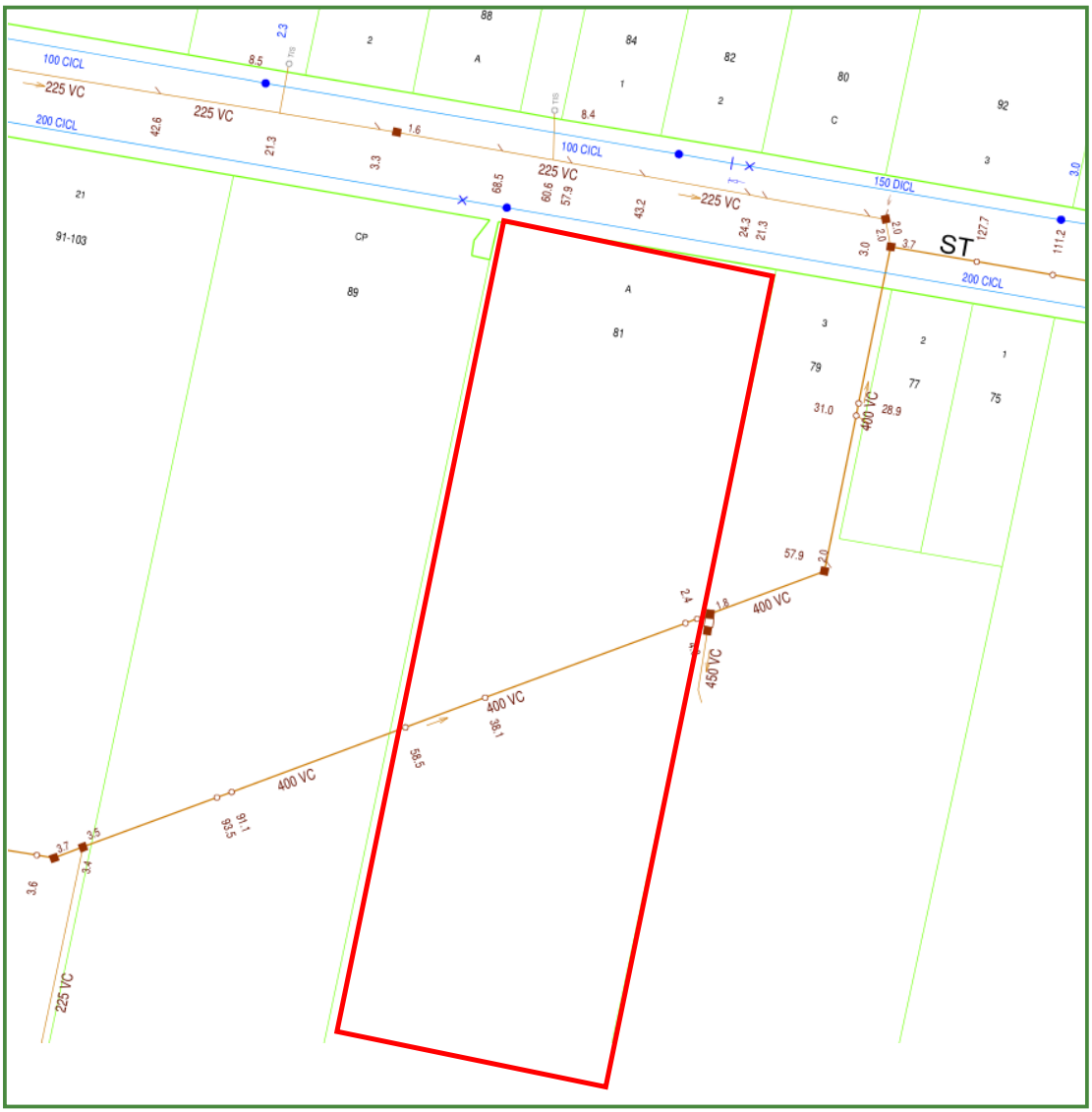
- Stormwater drainage
- Sewer/tradewaste
- Drinking water
- Natural gas
- Telecommunications
- Electricity

2. STORMWATER INFRASTRUCTURE

2.1 EXISTING STORMWATER INFRASTRUCTURE

Two large (diameter 1500 mm) stormwater drainage pipe lines run underground through the centre of the site. Eight existing onsite stormwater pits connect to these two main lines via 1050mm, 450 mm, 300 mm and 250 mm diameter underground stormwater pipelines. Existing infrastructure is presented in the stormwater concept plans and dial before you dig Sydney water map (Figure 2-1). A stormwater pipe condition & adequacy report has been prepared and included with this development application. There will be no changes to the council's drainage easement/pipes as part of this development, the existing connection will be utilised.

Figure 2-1: Existing Stormwater Infrastructure (Dial Before You Dig, Sydney Water Map)



2.2 STORMWATER INFRASTRUCTURE UPGRADES

The stormwater system will be upgraded as shown in the stormwater concept plans. It involves constructing several new stormwater lines, which all connect to a silt arrestor pit (with gas BCP SAP-400 or other approved equivalent, before entering the 200 KL ROCLA PLASTREAM underground containment. This will be connected to an existing stormwater drainage line that is presently connected to the central drainage pipeline (easement). The other existing drainage lines will be decommissioned so all runoff from the site will go through the proposed silt arrestor pit and underground containment.

The sediment collected in the silt arrestor pit and ROCLA underground containment will be periodically serviced by the proponent and processed through the dewatering plant.

3. SEWER/TRADEWASTE

3.1 EXISTING SEWERAGE INFRASTRUCTURE

The site typically generates less than 10 kL of wastewater a month as sewerage from office and amenities. The existing office and amenities are connected to sewer.

The existing site does not have a tradewaste agreement with Sydney Water.

3.2 SEWERAGE/TRADEWASTE INFRASTRUCTURE UPGRADES

No upgrades will be required for connecting office and amenities to the sewerage system.

A tradewaste agreement with Sydney Water will be required in the event that not all water is able to be reused on site. This will be sought following approval. Infrastructure upgrades will be required, including a connection to tradewaste, metering system and sampling system as per Sydney Water's requirements.

4. DRINKING WATER

4.1 EXISTING DRINKING WATER INFRASTRUCTURE

The site is connected to mains water and typically uses 400 kL of water per month. This supplies existing office and amenities and dust suppression of existing C&D recycling facility.

4.2 DRINKING WATER INFRASTRUCTURE UPGRADES

Demand for drinking water is expected to decrease, as the site will reuse water from the dewatering plant for dust suppression. Therefore no upgrades will be required.

5. NATURAL GAS

The site does not use natural gas. The site will not use natural gas as part of the proposed development. No upgrades are required.

6. TELECOMMUNICATIONS

The site has standard internet and phone line connection to offices. No changes to internet or phone lines are expected to be required.

7. ELECTRICITY

7.1 EXISTING ELECTRICITY INFRASTRUCTURE

The site is located within and connected to the Ausgrid electrical supply network. The existing operation of the site uses approximately 5,600 kwh of electricity per month.

7.2 PROPOSED DEVELOPMENT

The electricity consumption is expected to increase from 5,600 kwh to 48,000 kwh of electricity per month. This will require upgrades to the existing on-site infrastructure. It is likely the dewatering plant will require its own separate connection to the mains supply.

8. CONCLUDING REMARKS

Benbow Environmental has been engaged by Gow Street Recycling Centre to prepare a Services and Utilities Impact Assessment for a resource recovery facility at 81 Gow Street, Padstow (Lot A DP 103140). In summary the major infrastructure upgrades include, upgrading the site's stormwater infrastructure, upgrading the electricity supply to the dewatering plant and installing a trade waste connection to the dewatering plant in consultation with Sydney Water.

This concludes the report.





Emma Hansma
Senior Engineer

R T Benbow
Principal Consultant

9. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of Gow Street Recycling Centre, as per our agreement for providing environmental services. Only Gow Street Recycling Centre is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that otherwise required by law) in relation to any of the information contained within this document. We accept no responsibility for the accuracy of any data or information provided to us by Gow Street Recycling Centre for the purposes of preparing this report.

Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.