STORMWATER ASSESSMENT REPORT
PREPARED FOR
COBRA WASTE SOLUTIONS PTY LTD
30 LOFTUS ROAD, YENNORA NSW 2161

Prepared for: Cobra Waste Solutions Pty Ltd

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Report No: 201156_Stormwater_Rev3
January 2022
(Released: 25 January 2022)

Benbow
ENVIRONMENTAL

Engineering a Sustainable Future for Our Environment

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DOCUMENT REVISION RECORD

Revision	Date	Description	Checked	Approved
1	23-7-2021	Draft / Rev1	L Zanotto	R T Benbow
2	29-7-2021	Draft / Rev2	L Zanotto	R T Benbow
3	25-1-2022	Rev3	E Hansma	R T Benbow

DOCUMENT DISTRIBUTION

Revision	Issue Date	Issued To	Issued By
1	23-7-2021	Cobra Waste Solutions Pty Ltd	Benbow Environmental
2	29-7-2021	Cobra Waste Solutions Pty Ltd	Benbow Environmental
3	25-1-2022	Cobra Waste Solutions Pty Ltd	Benbow Environmental

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EXECUTIVE SUMMARY

Benbow Environmental has been engaged by Cobra Waste Solutions Pty Ltd to prepare a Stormwater Assessment Report for the proposed resource recovery facility (RRF) at 30 Loftus Road, Yennora NSW 2161. The facility would receive, handle and process Construction and Demolition (C&D) and Commercial and Industrial (C&I) waste. The amount of waste to be received and processed is estimated to be up to 150,000 tonnes per year. The proposed maximum storage capacity for waste at the site at any one time is expected to be 2,600 m^3.

The purpose of this report is to provide a description of the site's existing stormwater system, proposed changes to this system and to qualitatively assess the potential impacts to stormwater from the proposed development. This is a qualitative assessment and therefore no sampling or testing of stormwater has been undertaken.

Existing stormwater infrastructure on site includes stormwater pits in external hardstand areas and downpipes for roof water. Stormwater pits and drainage lines direct surface waters southward, away from the development and activity area into an existing drainage swale on the adjacent property that discharges to Prospect Creek.

Minor upgrades to stormwater infrastructure will include the installation of a new 4.6 metre wide swale at the rear of the property which would collect stormwater from the rear hardstand area and connect to the existing swale on the adjacent property. An "SPEL Stormceptor" stormwater treatment device will be installed in the new pit to reduce pollutant discharge. MUSIC modelling undertaken by Intrax Projects for the site (provided in the Stormwater Management Drawings – Attachment 1) demonstrate that the Holroyd DCP stormwater quality targets will be achieved with the current and proposed stormwater infrastructure.

The site lies within the Georges River Catchment. There are no waterbodies onsite and the nearest watercourse, Prospect Creek, is situated approximately 660 m west.

The site is connected to mains water and the proposed development would use mains water for all water related activities which is limited to office and amenities, and dust suppression. The site is connected to the domestic sewer system. Dust suppression sprays generate a fine mist that encapsulates dust generated during processing activities. Dust suppression spray evaporates quickly and would not contribute to surface waters or wastewater. There will be no wastewater generated during material handling processes on site and a tradewaste agreement (TWA) is not required. All waste accepted at the site is solid and inert, no liquid waste is to be accepted and no processes involve water therefore no wastewater would be generated.

The proposed development would utilise the existing drainage network and a new swale to capture stormwater on the rear hardstand area. The proposed changes have been designed in accordance with the Holroyd DCP 2013 and will comply with Part A, Section 7.0 – Stormwater Management of the DCP.

The nature of the materials to be stored at the site are solid and inert general C&D and C&I waste (including bricks, wood, concrete, tiles and metal). However, where not managed correctly, dusts and sediments generated during waste material processing may impact stormwater. Additionally, truck and vehicle movements on site and storage of diesel may generate oil, grease and heavy metals. Potential pollutants include:

- Heavy metals (e.g: lead, cadmium, chromium, copper and zinc).
- Total suspended solids (TSS);
- Elevated pH;
- Total recoverable hydrocarbons (TRH);
- BTEX (Benzene, Toluene, Ethylbenzene and Xylenes); and
- Polycyclic Aromatic Hydrocarbons (PAH).

A risk assessment was undertaken and considered proposed activities, potential pollutants, pathways to stormwater, mitigation measures and safeguards to be put in place. The risk assessment found that with preventative measures and adequate controls in place, the risk of contamination to stormwater as a result of site activities was found to be low.

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1. INTRODUCTION

Benbow Environmental has been engaged by Cobra Waste Solutions Pty Ltd to prepare a Stormwater Assessment Report for the proposed resource recovery facility (RRF) at 30 Loftus Road, Yennora NSW 2161. The facility would receive, handle and process Construction and Demolition (C&D) and Commercial and Industrial (C&I) waste. The amount of waste to be received and processed is estimated to be up to 150,000 tonnes per year. The proposed maximum storage capacity for waste at the site at any one time is expected to be 2,600 m^3.

The purpose of this report is to provide a description of the site's existing stormwater system, changes to this system and to qualitatively assess the potential impacts to stormwater from the proposed development. This is a qualitative assessment and therefore no sampling or testing of stormwater has been undertaken.

1.1 SCOPE OF WORKS

The assessment is qualitative, and the scope of works includes the following:

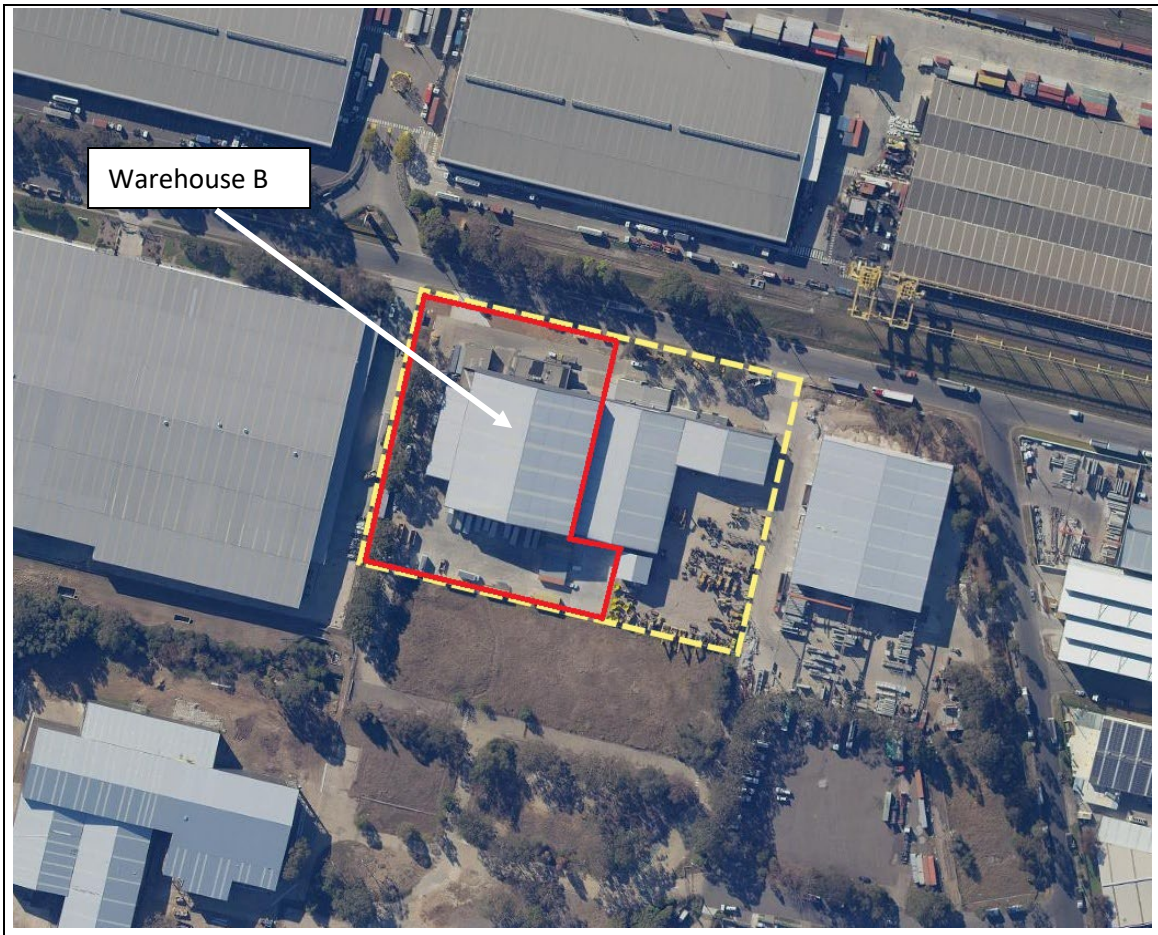
- Review of relevant plans and documentation relating to the site and proposed development;
- A description of the existing site and stormwater infrastructure;
- A description of the proposed development and proposed water usage requirements;
- Relevant planning provisions that apply;
- Identification of potential pollutants and pathways on site; and
- Qualitative assessment of the potential impacts on stormwater as a result of the proposed development.

2. SITE DETAILS AND PROPOSED DEVELOPMENT

2.1 SITE LOCATION

The proposed development is to be located at 30 Loftus Road, Yennora NSW 2161 (legally described as Lot 8 DP 1233715). 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.

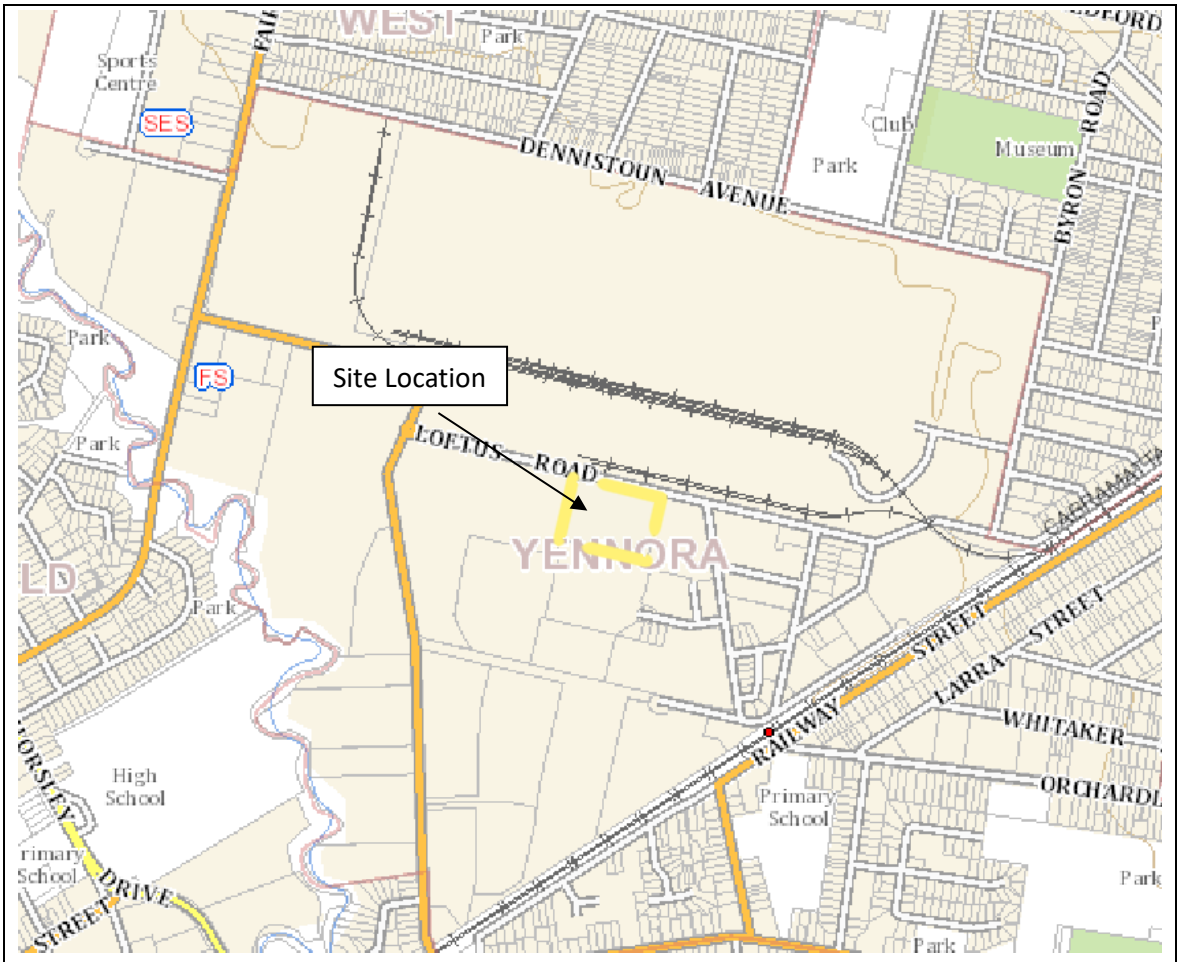
Figure 2-1: Site Location (Aerial View)



Source: NSW Planning Portal ePlanning Spatial Viewer 2021

N Not to scale	**LEGEND:** Site Boundary Proposed Development Area	Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

Figure 2-2: Site Location (Local Context)



Source: NSW Planning Portal ePlanning Spatial Viewer 2021

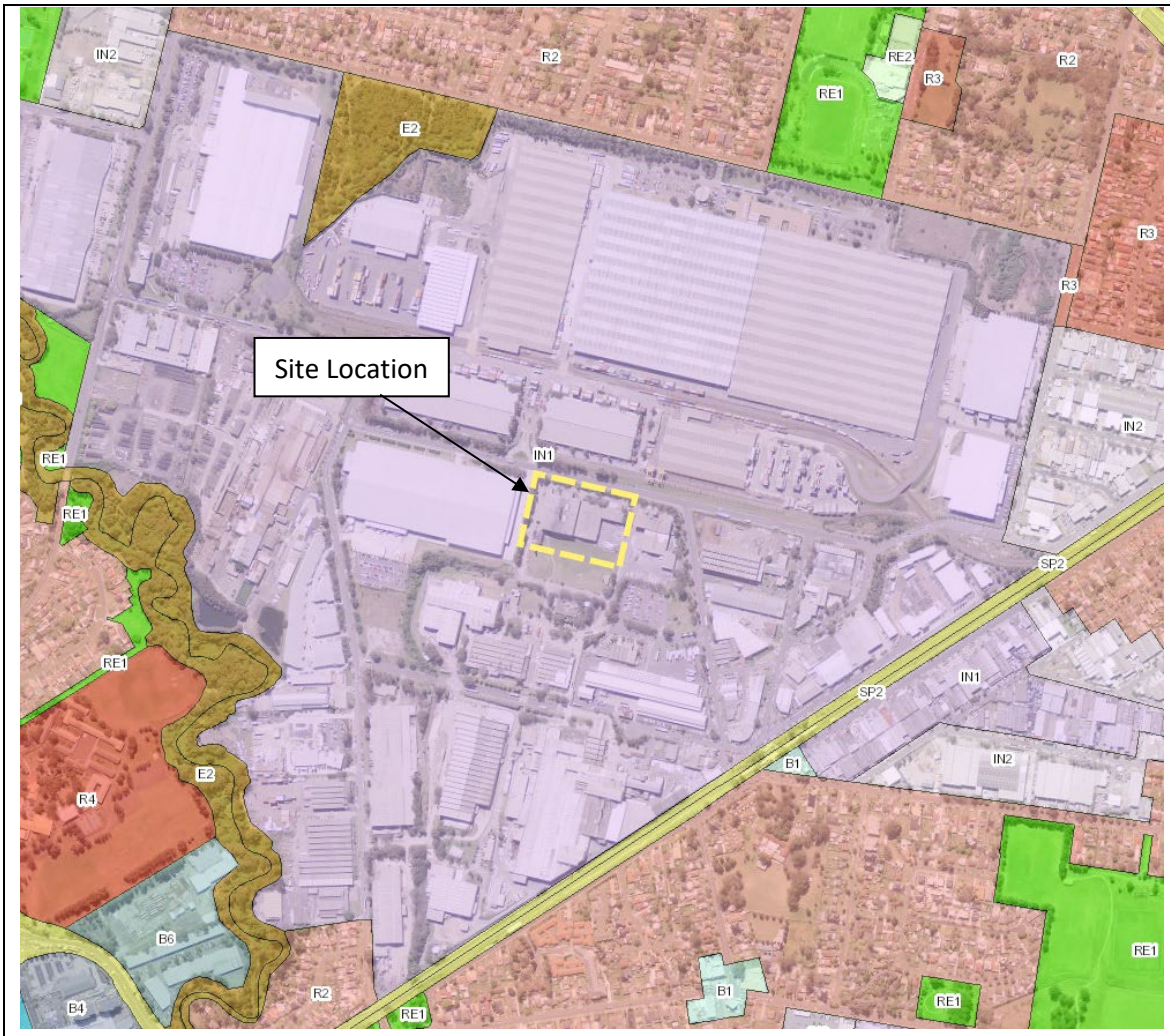
↑N	**LEGEND:** Site Boundary	Benbow Environmental 25-27 Sherwood Road Northmead NSW 2152

2.2 Description of the Site and Surrounds

The site is situated in IN1 – General Industrial land use zoning under the *Holroyd Local Environmental Plan 2013* (Holroyd LEP), as shown in the land zoning map in in Figure 2-3. The site is surrounded on all sides by IN1 – General Industrial zoned land.

Beyond the immediate surrounds are SP2 – Special Infrastructure zoned land (South Western Motorway) further south, areas of R2 – Low Density Residential and RE1 — Public Recreation zoning to the south-west, west, north and east. Approximately 610 m west of the site is Prospect Creek , E2 – Environmental Conservation zoned land.

Figure 2-3: Land Zoning Map



Source: NSW Planning Portal ePlanning Spatial Viewer 2021

N

Not to scale

LEGEND:

Site Boundary

B1	Neighbourhood Centre	R1	General Residential
B2	Local Centre	R2	Low Density Residential
B4	Mixed Use	R3	Medium Density Residential
B5	Business Development	R4	High Density Residential
B6	Enterprise Corridor	RE1	Public Recreation
B7	Business Park	RE2	Private Recreation
E2	Environmental Conservation	RU6	Transition
E3	Environmental Management	SP2	Infrastructure
E4	Environmental Living		
IN1	General Industrial		
IN2	Light Industrial		

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2.2.1 Existing Stormwater Infrastructure

Existing stormwater infrastructure on site includes stormwater pits in external hardstand areas and downpipes for roof water. These existing stormwater pits and drainage lines direct surface waters southward, away from the development and activity area into an existing drainage swale on the adjacent property. This swale discharges to Prospect Creek.

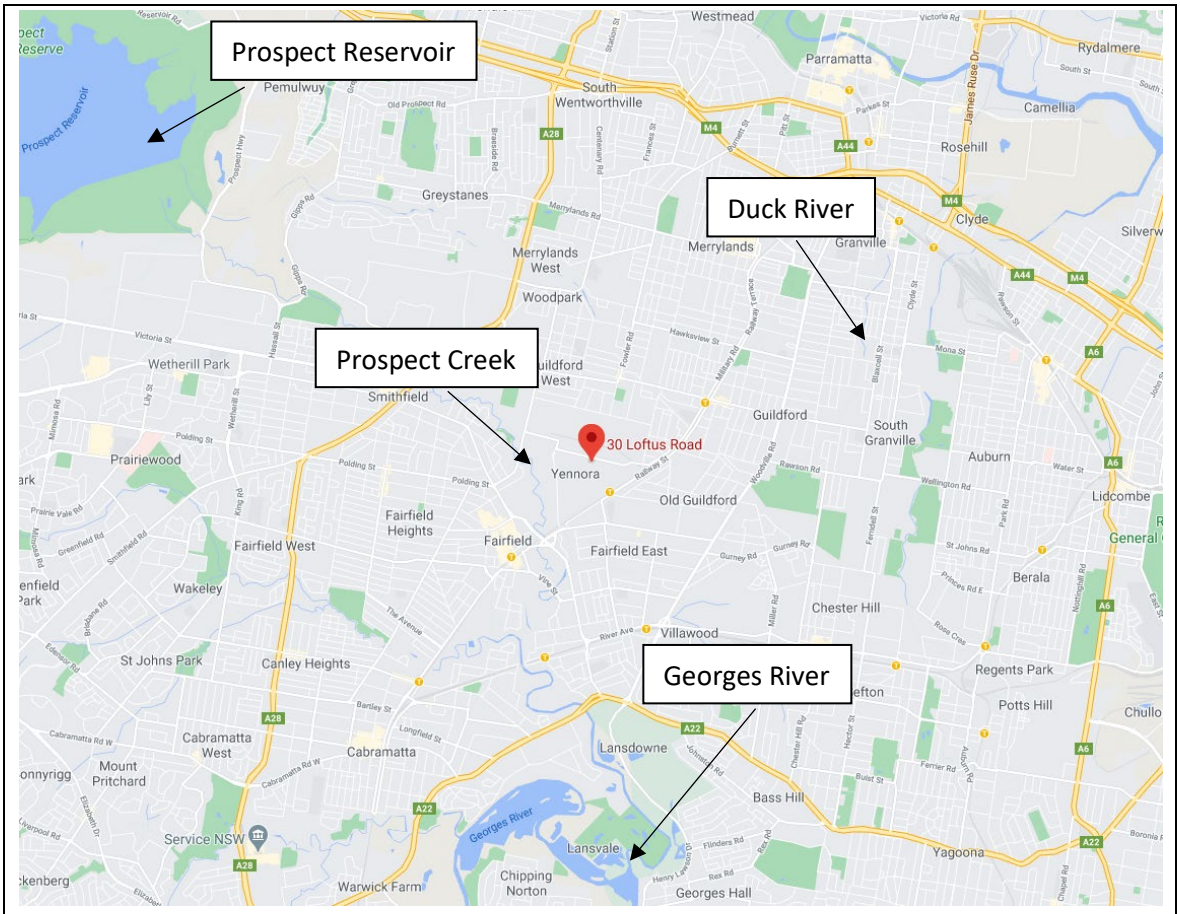
A drainage easement exists along the southern boundary of the site as shown on site plans. Mitigation measures are proposed to ensure flood waters do not rise up to the back of the building.

2.3 CATCHMENT AREA AND NEAREST WATERWAYS

Figure 2-4 shows the nearest watercourse and waterbodies to the site. There are no waterbodies onsite and the nearest watercourse, Prospect Creek, is situated approximately 660 m to the west of the site.

Prospect Creek is within the Georges River Catchment (displayed in Figure 2-5) and rises beneath Prospect Reservoir, 7.1 km northwest of the site. No surface or stormwaters generated on site are discharged to natural watercourses or waterways.

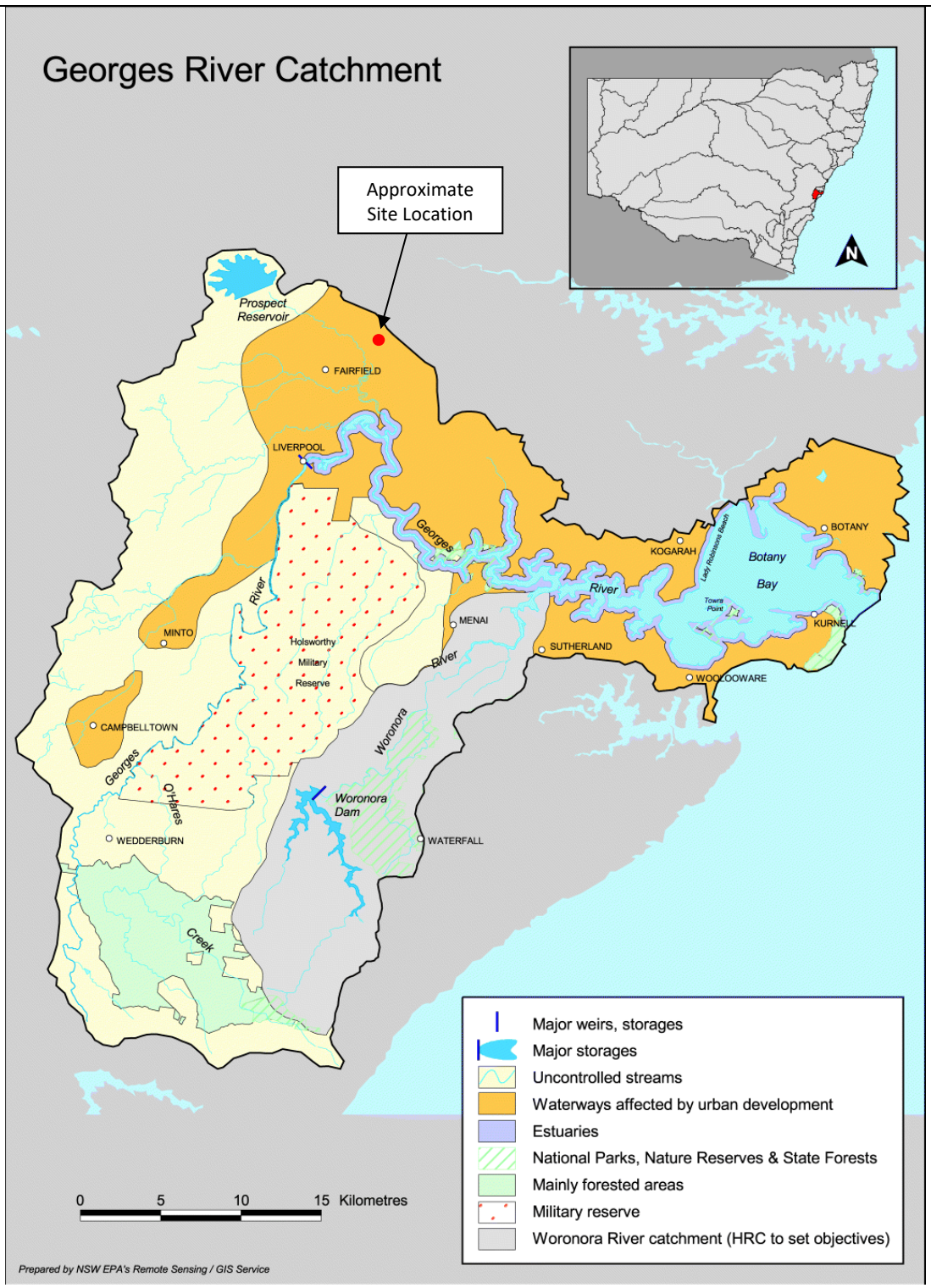
Figure 2-4: Nearest Waterways Map



Source: Google Maps 2021

↑N Not to scale	**LEGEND:** Site Location	Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

Figure 2-5: Georges River Catchment



Source: NSW EPA 2021

↑N Not to scale	**LEGEND:** ● Approximate Site Location	Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

2.4 PROPOSED DEVELOPMENT

Figure 2-6 displays the proposed development site layout. The proposal is for a RRF that would process an estimated 150,000 tonnes per annum of C&D and C&I waste from construction and infrastructure projects around Sydney. Wastes from home renovations would also be accepted.

All resource recovery activities and storage of waste would be undertaken within the existing building. A new resource recovery system has been developed with components being pre-fabricated off site for installation. The system would consist of a pre-sorting and material inspection area, feed hopper, series of waste/flip flow screens for sorting heavy and light material, conveyors, air separators, an enclosed picking station and three (3) magnets to enable efficient recovery and separation of material. Separated material would be captured in bays or bins at various points on the line.

Storage bunkers for waste would be established inside the building and would be constructed of structural steel walls. There would be storage bunkers and bins located along the processing line to capture recovered material at various points. These storage bunkers and bins are expected to store a maximum of 2,600 m^3 of waste wholly within the building at any one time

No structural changes to the existing building will be required. The site contains existing infrastructure that would be utilised for the proposed development. This includes extensive fire protection equipment and a sprinkler system. On-site car parking would be established in the rear and front hardstand areas. Two (2) weighbridges would also be installed on the eastern driveway of the site.

2.4.1 Wheel Wash Facility

A wheel wash facility is not proposed nor considered warranted. The resource recovery facility has been designed in accordance with current best practice within an enclosed building and all waste processing activities and storage is to be within the building. Trucks would remain on sealed surfaces for the duration of their visit to the site. No external stockpiling or unsealed surfaces are included in the proposed development.

2.4.2 Water Misting System

A water misting system would be installed within the building for dust suppression. Water for this purpose would be sourced from mains water. The misting system would contain purpose designed spray nozzles that would focus on points in the system where there is potential for emissions of dust.

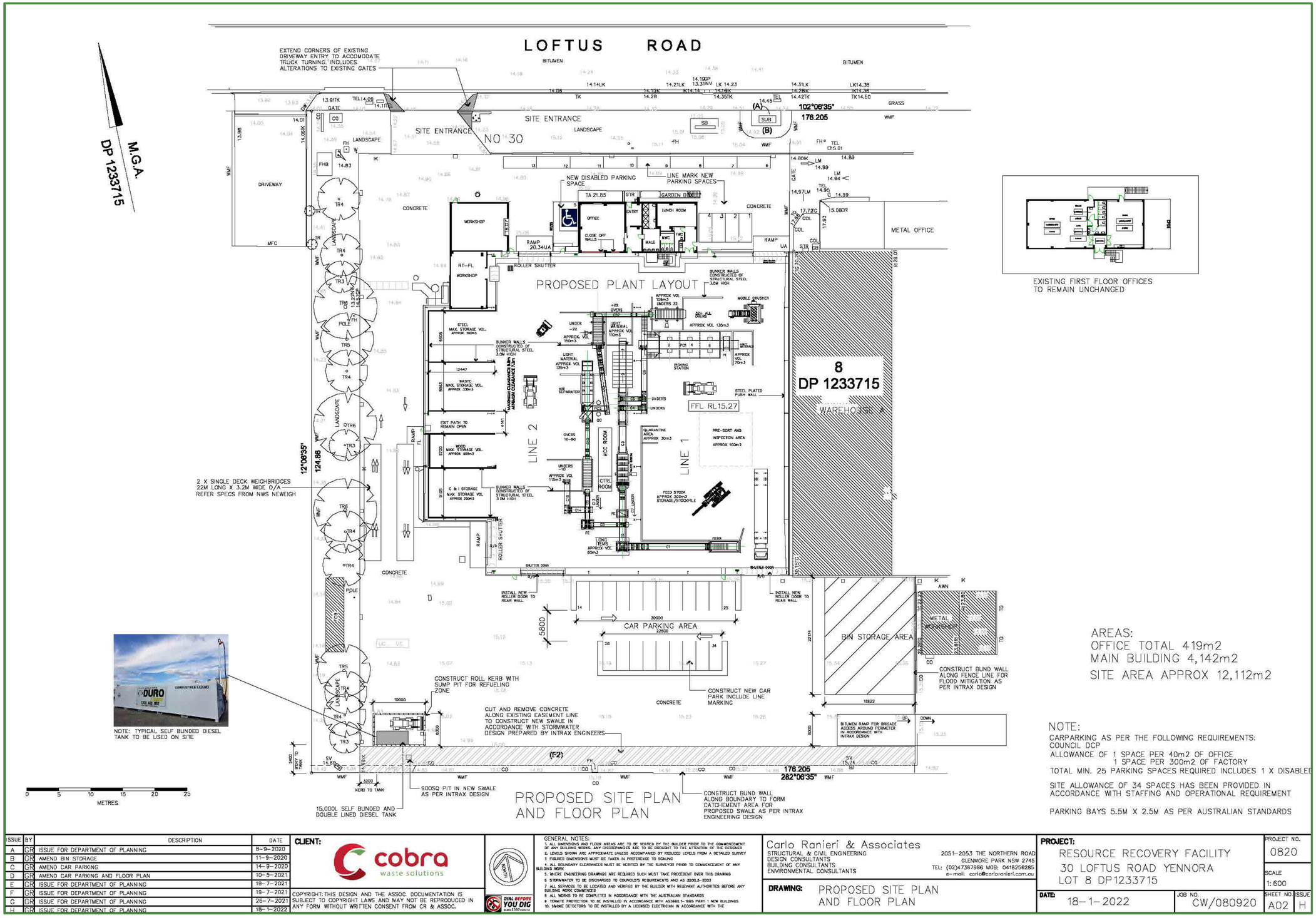
Misting systems are designed to produce a fine mist by pressurising water through nozzles to produce tiny water droplets that effectively encapsulate dust particles in the air. The mist effectively suppresses dust by sticking to the dust particles and causing them to fall to the ground while the water droplets evaporate.

The misting system would not have a set “evaporation rate” as evaporation depends on temperature, humidity and wind speed. The mean annual average evaporation rate for Sydney is approximately 3 mm per day, then for every square meter of surface area, an average of 3 Litres of water per square metre per day is potentially lost to evaporation. Over the surface area of the building with an area of 4142m^2, the potential evaporation rate would be 12,426 Litres per day.

The misting system would use less than 2 litres per minute, which equates to 1,920 Litres per day. As the evaporation rate is higher than the total daily water use of the misting system, there would be no surface water generated by the misting system.

This would result in no water runoff.

Figure 2-6: Proposed Development Site Layout



2.4.3 Proposed Stormwater Mitigation Measures

Stormwater infrastructure servicing the existing roof and hardstand area to the front and east of the building will remain. This existing catchment area drains via an existing stormwater pipe to the existing drainage swale on the property adjacent to the southern boundary of the site.

The 4.6m wide new swale drain is proposed along the southern boundary of the site to cater for 1% AEP flow from upstream catchment. This would capture water from the rear hardstand area of the property and drain to a GSIP with SPEL stormsack filter and non-return valve which would connect to the existing swale on the adjacent property.

Therefore, all stormwater drainage from the site would be discharged into the existing stormwater swale on the adjacent property which is released to Prospect Creek.

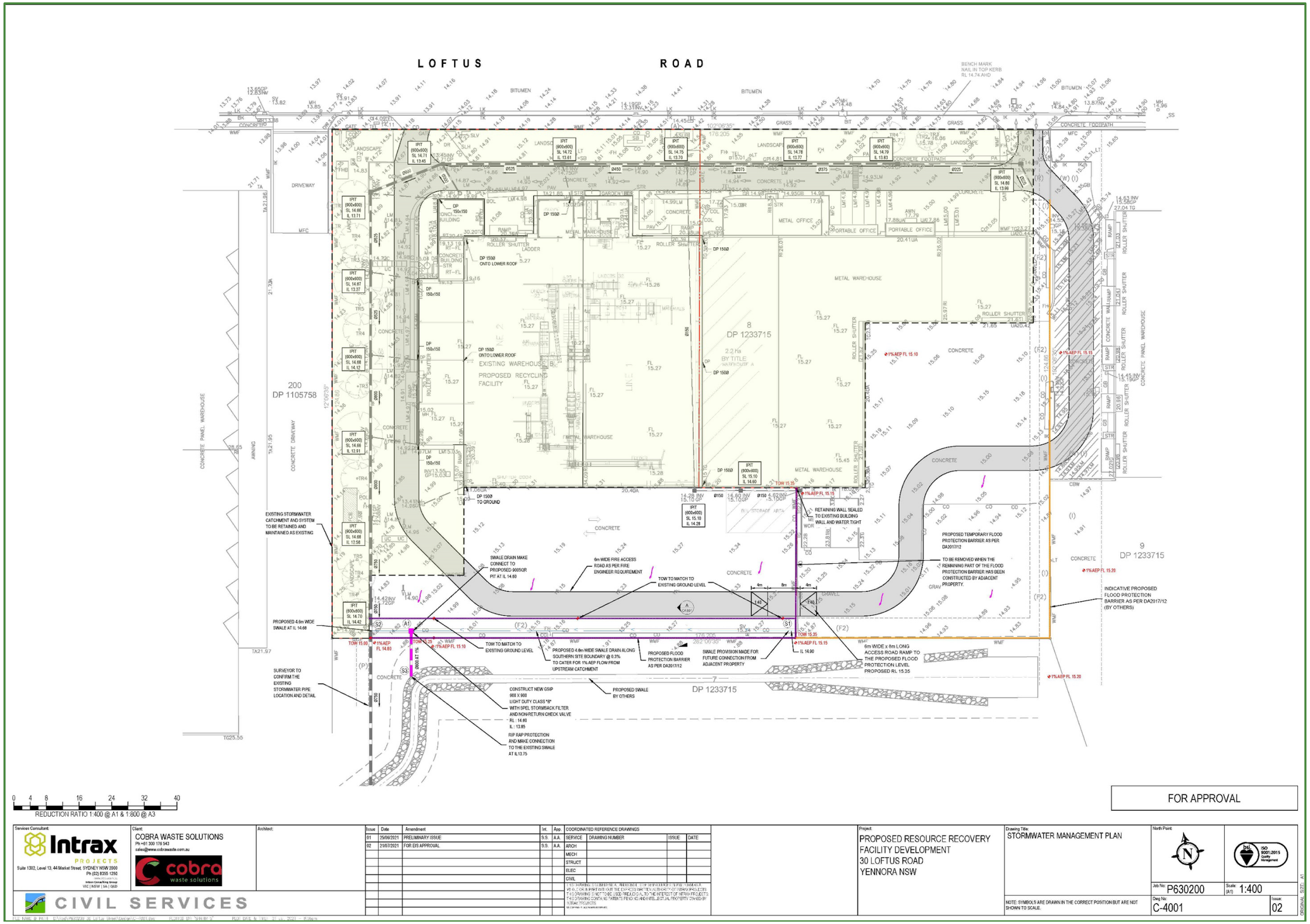
No stormwater drainage from the site would be connected to the Council stormwater system.

A set of stormwater plans has been prepared by Intrax Projects as part of the development application and are provided as Attachment 1. These include:

C-0000:	Cover Sheet
C-0001:	General Notes & Legend
C-1001:	Erosion and Sediment Control Plan
C-1011:	Erosion and Sediment Control Details And Notes
C-4001:	Stormwater Management Plan
C-4011:	Roof Drainage Plan
C-4101:	Stormwater Catchment Plan
C-4201:	Stormwater Longitudinal Sections
C-4301:	Stormwater Management Detail
C-4401:	Water Quality Detail and Catchment Plan

The Stormwater Management Plan (Ref: C-4001) is displayed below in Figure 2-7.

Figure 2-7: Stormwater Management Plan



3. PLANNING PROVISIONS

The following identifies planning provisions in relation to stormwater management on site.

3.1 HOLROYD LOCAL ENVIRONMENTAL PLAN 2013

Clause 6.7(2) of the *Holroyd Local Environmental Plan 2013* (Holroyd LEP) identifies requirements for stormwater management to ensure the development:

(a) is designed to maximise the use of water permeable surfaces on the land having regard to the soil characteristics affecting on-site infiltration of water, and
(b) includes, if practicable, on-site stormwater retention for use as an alternative supply to mains water, groundwater or river water, and
(c) avoids any adverse impacts of stormwater runoff on adjoining properties, native vegetation and receiving waters, or if that impact cannot be reasonably avoided, minimises and mitigates the impact.

Comment:

The proposed development complies with the requirements of Clause 6.7 as follows:

- The site is an existing industrial site with existing stormwater infrastructure that is deemed sufficient for the proposed development;
- Water permeable surfaces exist at the front and rear of the site. No changes to these areas are proposed;
- There is currently no on-site stormwater retention used as an alternative supply to mains water. Water use is considered minimal and limited to office and amenities, and dust suppression water sprayers;
- The proposed development would utilise the existing stormwater infrastructure, with additional upgrades to the system to ensure efficient management of stormwater; and
- A “SPEL Stormceptor” stormwater treatment device will be installed in the new pit to reduce pollutant discharge into the drainage swale.

3.2 HOLROYD DEVELOPMENT CONTROL PLAN 2013

Compliance with the *Holroyd Development Control Plan 2013* (Holroyd DCP), Part A, Section 7.0 Stormwater Management is achieved and is demonstrated in Table 3-1.

Table 3-1: Holroyd DCP Part A, Section 7.0 Stormwater Management Requirements

Requirement	Comment	Complies?
7.1 Roof and Surface Water		
C1. Design the eave, gutter and downpipe systems to prevent overflows for storms up to the 5% Annual Exceedance Probability (AEP) storm event.	The building would utilise existing stormwater infrastructure. The drainage system discharges into an existing swale with outlet to Prospect Creek.	Yes
C2. Design box gutter and downpipe systems to prevent overflows for storms up to the 1% AEP storm event. Council's on-site detention policy may also require a design standard for storms up to the 1% AEP storm event.		
C3. Discharge the drainage system to an open-grated surface inlet pit and then into Council's drainage system.		
C4. Design stormwater drainage pipelines to the following minimum standards:		
C5. Pits shall be installed to facilitate maintenance of stormwater pipes, orifice plates, and debris screens. Cleaning eyes will be permitted at pipe junctions, pipe change in direction or reflux valves.		
C6. All drainage systems draining to Council's drainage system or to a public road must have a grated drainage pit of not less than 450mm x 450mm within the site over the outlet pipe and adjoining the site boundary.	The drainage system does not drain to Council's system.	Yes
C7. Runoff, whether generated on-site or by upstream properties, shall not be obstructed or redirected so as to alter flow distributions and velocities to the detriment of any other property.	Complies	Yes
C8. Where the efficiency of an existing drainage system (as outlined within Council's works specification for subdivisions and development) on the property will be compromised by the proposed development, modify the existing system to comply with this part of the DCP and to offset any adverse impacts.	Not relevant.	Yes
C9. Mechanical means, such as pump out systems, will not be permitted for discharge of roof and surface water.	There is no pump out system proposed.	Yes
7.2 Stormwater Drainage-Acceptable Systems – Development Controls		
C1. Gravity fed drainage systems, consisting of a combination of underground pipes/conduits (i.e kerb and gutter etc) shall be implemented to discharge stormwater from a site. This may include discharge to natural watercourse or creek.	Existing drainage system to be used. A new swale would be implemented for the rear hardstand to discharge into an existing swale then to Prospect Creek.	Yes

Table 3-1: Holroyd DCP Part A, Section 7.0 Stormwater Management Requirements

Requirement	Comment	Complies?
C2. Where a site slopes away from the street, drainage shall occur through access to, or the creation of, an easement to enable inter allotment drainage through properties downstream (i.e via gravity).	The site slopes away from the street into an easement in the south of the boundary.	Yes
C3. Charged Systems are only acceptable for minor development types such as garages, shed, single and secondary dwellings and dual occupancies (not subject to OSD), where attempts to gain access to an easement for a gravity fed system have been unsuccessful, and subject to criteria in Section 7.3.	Not applicable	N/A
C4. Pump systems are permitted for basement car parks, for seepage and runoff from access ramps, and subject to criteria in Section 7.3.	Not applicable	N/A
7.3 Stormwater Drainage-Technical – Gravity Systems		
C1. Stormwater outlets discharging to the public road shall generally do so in front of the development site or to a point on the kerb requiring a pipeline less than 45 degrees relative to the front property boundary alignment.	Stormwater does not discharge to the public road.	N/A
C2. Stormwater outlets shall not be permitted to cross a public road. However, consideration may be given to the extension of Council's stormwater system to the site frontage, subject to compliance with the preceding clause.	Stormwater does not cross a public road.	Yes
C3. Discharge to a suitable natural watercourse or creek may be allowed subject to approval by Council. Approval and compliance with the standard guidelines from the NSW Office of Water and The NSW EPA are also required.	Site discharge is to an existing swale and to Prospect Creek.	Yes
C4. Where stormwater is to discharge into a natural watercourse, bushland, or open space, full details of the proposed method of stormwater discharge shall be supplied to Council detailing the means of preventing scouring or erosion at the point of discharge.	Drainage swale and stormwater discharge location are displayed in the site plans and stormwater drawings.	Yes
7.3 Stormwater Drainage-Technical – On-site detention		
C5. On-site detention systems shall be provided for all new developments, except for single dwellings, extensions, additions and improvements on existing single residential lots.	On-site detention is not needed for this development.	N/A
C6. Despite C5, on-site detention shall be required for development associated with single dwellings where this is specified by a restriction on the title of the property (generally only lots created after 1991) or where the impervious area of the site is increased beyond that permitted for single dwellings by this DCP.	Not applicable	N/A

Table 3-1: Holroyd DCP Part A, Section 7.0 Stormwater Management Requirements

Requirement	Comment	Complies?
C7. Any agreement, covenant or similar instrument which would otherwise prohibit or restrict an on-site detention system required by this DCP, does not apply.	Not applicable	N/A
C8. Fully documented On-Site Detention (OSD) drawings, prepared by a suitably qualified person, shall be submitted with the development application, along with a completed Holroyd City Council On-Site Detention drawing submission checklist.	Not applicable. OSD not required.	N/A
C9. Upon completion of a site stormwater drainage system and prior to occupation of the development, a suitably qualified and registered engineering consultant must certify that the stormwater system has been constructed and can be maintained in accordance with the approved design.	Noted.	N/A
C10. Where an on-site detention system is required, a restriction on use of land and positive covenant shall be registered on the title of the subject property, requiring that the on-site detention system constructed on the site: (i) not be altered, unless approved by Council; and (ii) be maintained in good working order.	Not applicable. OSD not required.	N/A
7.3 Stormwater Drainage-Technical – Charged Lines		
Not applicable	N/A	N/A
7.3 Stormwater Drainage-Technical – Pump systems		
Not applicable	N/A	N/A
7.3 Stormwater Drainage-Technical – General		
C13. Development shall not take place on any land unless arrangements satisfactory to the Council have been made for the carrying out of drainage works, on or for the land.	Noted pending approval.	N/A
C14. Where development increases the flow of stormwater from the site, Council may require the upgrading / augmentation of the existing downstream drainage system, dependent upon the scale of the increase. This may be in the form of actual construction work to be carried out by the developer at the time of development, or in the form of a contribution to be determined by Council at the development application stage.	The proposed development does not increase the impervious area of the site and will not increase flows from the site.	N/A

Table 3-1: Holroyd DCP Part A, Section 7.0 Stormwater Management Requirements

Requirement	Comment	Complies?
C15. A hydraulic analysis may be required, to demonstrate that the development will not adversely affect any existing overland flow paths, if the development has: i) existing public drainage structures within the site; ii) or existing public drainage structures on an adjoining property; iii) or the site is located wholly or partially within a natural overland flow path	Not applicable.	N/A
C16. On sites where localised flooding has occurred, submission of a "stormwater master plan" may be required.	Stormwater plans are provided.	Yes
C17. Where a site includes either an existing or a proposed overland flow path, register a restriction on use of land and a positive covenant on the title of the subject property.	Not applicable.	N/A
C18. Stormwater quality control measures shall be provided in accordance with the current version of Council's Stormwater Management Plan.	Stormwater measures are included in the Stormwater Plans.	Yes
C19. Where a stormwater quality control system is required under Council's Stormwater Management Plan, a restriction on use of land and positive covenant shall be registered on the title of the subject property requiring that the stormwater quality control system: i) not be altered, unless approved by Council; and ii) be maintained in good working order.	A copy of Council's Stormwater Management Plan is not provided on Council website.	N/A
C20. Approval of engineering drawings and specifications for the construction of any stormwater drainage line will be required prior to release of development consent. Council will require the payment of a checking and inspection fee, which will be determined prior to release of development consent	The proposal will utilise the existing stormwater drainage line. The construction of a drainage line is not proposed.	N/A
C21. All engineering works, including those within public property, shall be designed and undertaken in accordance with the relevant aspects of the current version of Holroyd City Council's Specification for Subdivisions and Developments.	Shown on Stormwater plans.	Yes

Table 3-1: Holroyd DCP Part A, Section 7.0 Stormwater Management Requirements

Requirement	Comment	Complies?
C22. Where stormwater drainage is being constructed on public land, Council easements or adjoining private property, a bond and/or bank guarantee shall be lodged to cover that construction. The amount of the bond will be determined at the development application stage and payment is to be made prior to the release of the construction certificate.	Not applicable.	N/A
7.4 Easements		
C1 – C8	A drainage easement exists at the rear of the property. See Stormwater Plans for details.	Yes
7.5 Water Sensitive Urban Design (WSUD)		
C1 – C5	Complies as shown in MUSIC modelling in Stormwater Plans.	Yes

The proposed development is consistent with the aims and objectives of the Holroyd DCP and complies with requirements.

4. ASSESSMENT OF RISK TO STORMWATER

Potential impacts to water from the proposed development include sediment/contaminant runoff into stormwater and chemical storage and use. Additionally, groundwater and groundwater dependent ecosystems may be impacted by contaminants seeping into groundwater.

All waste processing activities will be undertaken within the building. All truck loads will be covered and there would be no waste storage external to the building. No liquid waste is accepted. Minimal chemicals will be used and stored on site. A 13 kL self-bunded diesel storage tank will be located externally in accordance with AS1940. This tank will be located on sealed hardstand with an available spill kit nearby.

4.1 WATER SUPPLY AND USE

The site is connected to mains waster and the proposed development would use mains water for all water related activities which are limited to office and amenities, and dust suppression. The site is connected to the domestic sewer system.

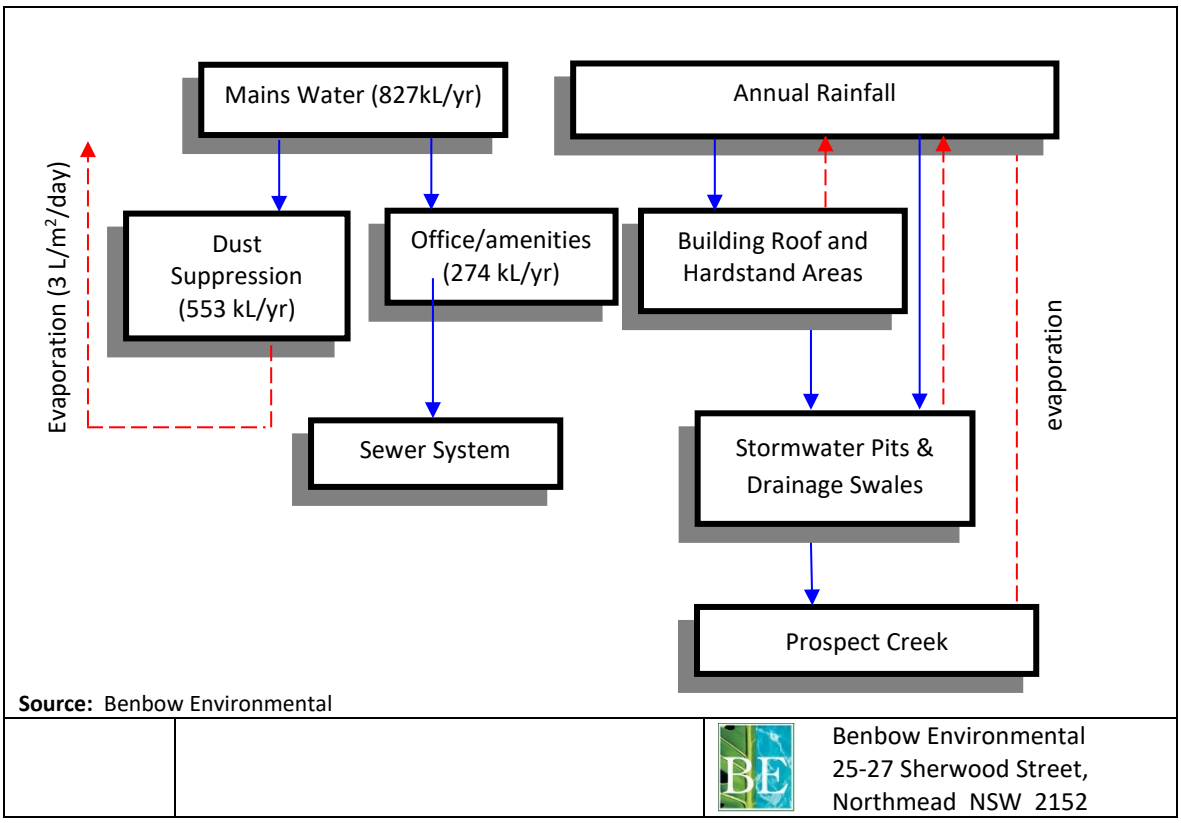
There will be no wastewater generated and a tradewaste agreement (TWA) is not required. Waste accepted and recovered materials generated during onsite processes is solid and inert and therefore involves no wastewater discharge.

The following are estimated daily and annual water requirements:

Office use:	951 Litres per day (274 kL/yr)
Dust suppression:	1,920 Litres per day (553 kL/yr)
TOTAL water requirement:	2,871 Litres per day (827 kL/yr)

Figure 4-1 displays a simple site water balance for the development.

Figure 4-1: Site Water Balance



4.1.1 Wastewater

No wastewater would be generated from the proposed C&D and C&I processing operations. Additionally, the site will not accept or generate liquid wastes. Water use on site is limited to office and amenities, and dust suppression water sprayers.

Office and amenities wastewater is connected to the domestic sewer system and would not enter the stormwater network.

Dust suppression sprays generate a fine mist that encapsulates dust generated during processing activities. Dust suppression spray evaporates quickly and would not contribute to surface waters or wastewater.

4.1.2 Stormwater

Storm and surface water generation on site is limited to rainwater falling on external hardstand and roofed areas. Storm and surface waters flow away from the building and processing areas; stormwater will not enter the building, nor be generated within the building.

The nature of the materials to be stored at the site is solid and inert. No wastewater would be generated during C&D and C&I processing operations. All activity areas on site are fully sealed and all C&D and C&I processing operations are undertaken inside the existing building; there are limited avenues for surface waters to be contaminated from site operational activities.

Surface waters flow into stormwater pits intermittently located along the northern and western perimeter of the site. Rainwater that falls on rooftops is directed through downpipes that into a drainage line. The drainage line runs along the northern and western boundary of the site, collects stormwater from hardstand areas along the front and western driveways and discharges into an existing drainage swale south of the site.

Minor upgrades to stormwater infrastructure will include the installation of a new 4.6 metre wide swale at the rear of the property which would collect stormwater from the rear hardstand area and connect to the existing swale on the adjacent property. An "SPEL Stormceptor" stormwater treatment device will be installed in the new pit to reduce pollutant discharge. MUSIC modelling undertaken by Intrax Projects for the site (provided in the Stormwater Management Drawings – Attachment 1) demonstrate that the Holroyd DCP stormwater quality targets will be achieved with the current and proposed stormwater infrastructure.

4.1.2.1 Potential Pollutants

The nature of the materials to be stored at the site are solid and inert general C&D and C&I waste (including bricks, wood, concrete, tiles and metal). However, where not managed correctly, dusts and sediments generated during waste material processing may impact stormwater. Additionally, truck and vehicle movements on site and diesel storage may generate oil, grease and heavy metals. Potential pollutants include:

- Heavy metals (e.g: lead, cadmium, chromium, copper and zinc).
- Total suspended solids (TSS);
- Elevated pH;
- Total recoverable hydrocarbons (TRH);
- BTEX (Benzene, Toluene, Ethylbenzene and Xylenes); and
- Polycyclic Aromatic Hydrocarbons (PAH).

4.1.2.2 Risk Assessment

Proposed site activities, potential pollutants, possible pathways and mitigation measures have been assessed for risk of contamination to stormwater associated with the use of the site. The assessment considers the consequences and likelihood of contaminants entering the stormwater system with all mitigation measures in place. This has been undertaken following the risk assessment methodology outlined in the following sections.

4.1.2.2.1 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 4-1.

Table 4-1: 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.

4.1.2.2.2 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 4-2.

Table 4-2: 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.

4.1.2.2.3 Level of Risk

The level of risk is defined by Table 4-3.

Table 4-3: 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.

The results are presented as a Hazard and Risk Register in Table 4-4.

Table 4-4: Stormwater Risks

Proposed Use / Activity	Potential Pollutants	Potential Pathways	Proposed Prevention & Mitigation Measures	Consequence	Likelihood	Risk Level
Processing, handling and storage of C&D/C&I waste	• TSS • Elevated pH	Surface waters coming into contact with waste materials and migrating into stormwater.	• All C&D and C&I processing operations are undertaken inside the building. • All activity areas on site are fully sealed. • Surface waters do not come into contact with waste materials. • Regular workplace inspection.	Minor	Rare	L
Truck/vehicle movements	• Heavy metals • TSS • BTEX • PAH	Vehicle fuel spills and leaks resulting in resulting in discharge of contaminants to stormwater. Tracking of sediment offsite and into the stormwater system.	• All activity areas on site are fully sealed. • Regular vehicle servicing. • Regular workplace inspection.	Minor	Rare	L
Refuelling of vehicles (13 kL self-bunded diesel storage tank)	• BTEX • PAH	Spills and leaks during refuelling activities.	• Diesel stored in self-bunded tank. • Tank stored on sealed hardstand. • Spill kits provided. • Regular workplace inspection.	Moderate	Rara	L

4.1.3 Potential Impacts to Stormwater

The risk assessment undertaken considers the potential for contaminants entering stormwater from the use of the site. The assessment found the overall risk to be low.

A discussion of potential impact to stormwater from construction works and operation of the site is provided in the following sub-sections.

4.1.3.1 Construction Works

The construction phase of the proposed development has a low potential to impact surface and stormwaters. Construction would be limited to installation of pre-fabricated components of the RRF, construction of internal storage bunkers and installation of the weighbridges. Minor excavation works are limited to establishing the new swale and stormwater discharge point. There would be no importation of fill to the site.

The erosion and sediment control plan provided with the stormwater drawings would minimise risk during construction.

4.1.3.2 Operational Works

Surface and stormwater have the potential to become contaminated during operational activities, refuelling activities or improper management of chemicals or waste at the site.

Preventative and mitigation measures to be implemented include:

- All activity areas on site are fully sealed;
- All C&D and C&I processing operations are undertaken inside the existing building;
- No wastewater would be generated during C&D and C&I processing operations.
- Surface waters will not come into contact with waste materials;
- The nature of the materials to be stored at the site are solid and inert;
- Minor quantities of chemicals stored on site and within the building;
- Diesel stored externally in self-bunded tank on a hardstand area in accordance with AS1940;
- Refuelling area will be bunded;
- Spill kits to be provided adjacent to diesel tank and refuelling area;
- Staff trained in spill response and emergency procedures; and
- Regular workplace inspection and high standard of housekeeping.

Potential impacts to water from the proposed development and recommended safeguards are identified in Table 4-4. The risk assessment indicates that with mitigation measures in place, the potential for contamination to stormwater from the proposed use of the site is low.

5. CONCLUSION

This Stormwater Assessment Report presents risk assessment of the potential for stormwater contamination resulting from the proposed resource recovery facility (RRF) at 30 Loftus Road, Yennora NSW 2161.

A risk assessment was undertaken and considered proposed activities, potential pollutants, pathways to stormwater, mitigation measures and safeguards to be put in place. The risk assessment found that with preventative measures and adequate controls in place, the risk of contamination to stormwater as a result of site activities was found to be low.

This concludes the report.

Linda Zanotto	Emma Hansma	R T Benbow
Senior Environmental Engineer	Senior Engineer	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 Cobra Waste Solutions Pty Ltd, as per our agreement for providing environmental services. Only Cobra Waste Solutions 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 Cobra Waste Solutions Pty Ltd for the purposes of preparing this report.

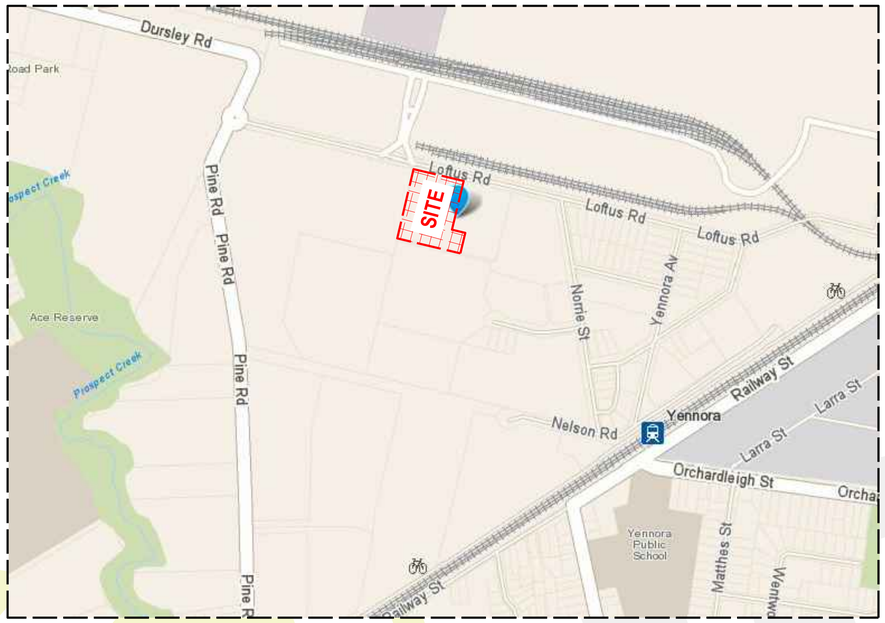
Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.

ATTACHMENTS

Attachment 1: Stormwater Management Drawings

PROPOSED RESOURCE RECOVERY FACILITY DEVELOPMENT
30 LOFTUS ROAD YENNORA NSW
FOR APPROVAL

CIVIL SERVICES



LOCALITY PLAN

DRAWING SCHEDULE

DRAWING NUMBER	DRAWING TITLE	DRAWING SCALE
C-0000	Cover Sheet	N.T.S
C-0001	General Notes and Legend	N.T.S
C-1001	Erosion and Sediment Control Plan	1:400
C-1011	Erosion and Sediment Control Details & Notes	N.T.S
C-4001	Stormwater Management Plan	1:400
C-4011	Roof Drainage Plan	1:400
C-4101	Stormwater Catchment Plan	1:400
C-4201	Stormwater Longitudinal Sections	As Noted
C-4301	Stormwater Management Detail	As Noted
C-4401	Water Quality Detail and Catchment Plan	As Noted

FOR APPROVAL

Services Consultant:
Intrax PROJECTS
Suite 1302, Level 13, 44 Market Street, SYDNEY NSW 2000
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Intrax Consulting Group
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Client:
COBRA WASTE SOLUTIONS
Ph +61 300 176 643
sales@www.cobrawaste.com.au

Architect:

Issue	Date	Amendment	Int.	App.
01	25/06/2021	PRELIMINARY ISSUE	S.S.	A.A.
02	21/07/2021	FOR EIS APPROVAL	S.S.	A.A.

COORDINATED REFERENCE DRAWINGS

SERVICE	DRAWING NUMBER	ISSUE	DATE
ARCH			
MECH			
STRUCT			
ELEC			
CIVIL			

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Project:
PROPOSED RESOURCE RECOVERY FACILITY DEVELOPMENT
30 LOFTUS ROAD
YENNORA NSW

Drawing Title:
COVER SHEET

NOTE: SYMBOLS ARE DRAWN IN THE CORRECT POSITION BUT ARE NOT SHOWN TO SCALE.

North Point:

Job No: P630200

Scale: (A1) N.T.S.

Dwg No: C-0000

Issue: 02

ORIGINAL SIZE: A1

CIVIL SERVICES

FILE NAME & PATH: D:\Rod\P630200 30 Loftus Street\Design\C-0000.dwg PLOTTED BY: 'SHAHIR S' PLOT DATE & TIME: 21 Jul, 2021 - 8:06pm

GENERAL NOTES

REFER TO CUMBERLAND CITY COUNCIL'S WORKS SPECIFICATION - CIVIL, AND ENGINEERING GUIDE FOR DEVELOPMENT FOR STANDARD DETAILS AND ENGINEERING SPECIFICATION. ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH THIS CODE UNO.

N1. ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS IN m AHD UNO.
N2. NO DIMENSIONS ARE TO BE OBTAINED BY SCALING FROM DRAWINGS.
N3. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONSULTANT'S DRAWINGS AND SPECIFICATIONS.
N4. IN PREPARING THESE DRAWINGS WE HAVE RELIED ON THE ACCURACY AND COMPLETENESS OF INFORMATION PROVIDED BY THE UTILITY PROVIDERS AND SURVEYORS REGARDING ONSITE LOCATION OF ASSETS. WE ACCEPT NO LIABILITY FOR ANY ERROR OR OMISSION IN THESE DRAWINGS TO THE EXTENT THE SAME RESULTS FROM ERROR OR OMISSION IN THE INFORMATION PROVIDED.
N5. ANY DISCREPANCIES OR OMISSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE SUPERINTENDENT PRIOR TO PROCEEDING WITH THE WORKS.
N6. THE CONTRACTOR SHALL OBTAIN ALL LEVELS FROM ESTABLISHED BENCH MARKS ONLY AS SUPPLIED BY A REGISTERED SURVEYOR.
N7. THE CONTRACTOR MUST VERIFY ALL DIMENSIONS, EXISTING LEVELS AND PROPOSED SET-OUT ON SITE PRIOR TO THE COMMENCEMENT OF WORKS. ANY DISCREPANCIES OR OMISSIONS ARE TO BE REPORTED TO THE SUPERINTENDENT.
N8. THE SUPERINTENDENT IS TO BE GIVEN 48 HOURS NOTICE OF ANY INSPECTION REQUESTS.
N9. ALL EXISTING STRUCTURES, SERVICES AND UTILITIES ARE TO BE LOCATED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS. THE LOCATION OF EXISTING SERVICES SHOWN ON PLANS ARE INDICATIVE ONLY AND ARE NOT GUARANTEED TO BE COMPLETE OR CORRECT. THE RESPONSIBILITY FOR LOCATING, AVOIDANCE AND WHERE NECESSARY, TEMPORARY PROTECTION OF THESE EXISTING SERVICES IS THAT OF THE CONTRACTOR. ANY DAMAGE TO EXISTING STRUCTURES, SERVICES AND UTILITIES IS TO BE REPORTED TO THE SUPERINTENDENT IMMEDIATELY.
N10. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH AUSTRALIAN STANDARDS AND CODES OF PRACTICE EXCEPT WHERE VARIED BY THE DRAWINGS. THE APPLICABLE STANDARDS SHALL BE THE REFERENCED STANDARDS CURRENT AT DATE OF DRAWING ISSUE.
N11. WHERE NOTED ON THE DRAWINGS THAT WORKS ARE TO BE CARRIED OUT BY OTHERS, (e.g. ADJUSTMENT OF SERVICES) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CO-ORDINATION OF ANY THIRD PARTY WORKS.
N12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STABILITY OF THE WORKS AND SURROUNDING AREA UNTIL PROJECT COMPLETION AND SHALL ENSURE THAT NO PART OF THE WORKS ARE OVERSTRESSED BY CONSTRUCTION LOADING.
N13. ALL TESTING IS TO BE CARRIED OUT BY A NATA REGISTERED LABORATORY. TESTING METHODS ARE TO BE IN ACCORDANCE WITH THE APPLICABLE AUSTRALIAN STANDARD.
N14. ON COMPLETION OF THE WORKS THE CONTRACTOR SHALL PROVIDE AN AS-CONSTRUCTED SURVEY OF THE SITE.
N15. WHERE PROPRIETARY PRODUCTS ARE SPECIFIED ON THE DRAWING, THE CONTRACTOR MAY PROPOSE AN ALTERNATIVE PRODUCT TO THE SUPERINTENDENT FOR APPROVAL. THE CONTRACTOR SHALL PROVIDE SUFFICIENT INFORMATION TO DEMONSTRATE TO THE SUPERINTENDENT'S SATISFACTION THAT THE ALTERNATIVE PROPOSED IS OF EQUIVALENT QUALITY TO THE PRODUCT SPECIFIED.
N16. EXISTING SERVICES ARE SHOWN AS PER SITE SURVEY COMPLETED BY INTRAX LAND SURVEYOR. LOCATIONS ARE INDICATIVE ONLY AND MAY NOT BE EXHAUSTIVE. PRESENCE AND LOCATIONS OF SERVICES TO BE CONFIRMED BY CONTRACTOR PRIOR TO CONSTRUCTION.
N17. ALL SERVICE PIT COVERS TO BE RECESSED AND IN-FILLED WITH PAVERS TO SUIT SURROUNDING FINISH. EXISTING DAMAGED PAVERS TO BE REPLACED.
N18. SUBGRADE DENSITY TESTS WILL BE REQUIRED DURING PUBLIC DOMAIN CONSTRUCTION WORKS. REFER TO THE PUBLIC DOMAIN OFFICER AT PRELIMINARY PUBLIC DOMAIN WORKS SITE MEETING FOR QUANTITY AND LOCATIONS OF TESTING REQUIRED.

ROADWORKS GENERAL

G1. THE SUB-CONTRACTOR SHALL OBTAIN ALL LEVELS FROM ESTABLISHED BENCH MARKS ONLY AS SUPPLIED BY THE APPOINTED SURVEYOURS.
G2. SERVICES SHOWN ON THESE PLANS ARE LOCATED FROM INFORMATION SUPPLIED BY THE RELEVANT AUTHORITIES AND FIELD INVESTIGATIONS AND ARE NOT GUARANTEED COMPLETE OR CORRECT. ALL SERVICE LOCATIONS ARE TO BE VERIFIED BY THE SUB-CONTRACTOR PROIR TO CONSTRUCTION.
G3. ALL REMOVING, DIVERSION AND PROTECTION WORKS RELATED TO EXISTING SERVICES NEED TO BE VERIFIED AND APPROVED BY RELATIVE AUTHORITIES.
G4. NO WORK TO BE CARRIED OUT ON ADJOINING PROPERTIES WITHOUT THE WRITTEN PERMISSION FROM THE OWNER.
G5. VEHICULAR ACCESS AND ALL SERVICES ARE TO BE MAINTAINED AT ALL TIMES TO AREAS AFFECTED BY CONSTRUCTION UNLESS OTHERWISE AGREED.

PAVEMENT GENERAL

P1. SUBGRADE, SUBBASE AND BASE COURSES ARE TO BE COMPACTED TO THE REQUIREMENTS OF THE SPECIFICATION AND SHALL BE REVIEWED BY THE GEOTECHNICAL INSPECTION AND TESTING AUTHORITY.
P2. TRANSITION KERB FROM KO TO K&G AT KERB RETURN T.P OVER A LENGTH OF 1m.
P3. ALL EXISTING STRUCTURES, SERVICES AND UTILITIES ARE TO BE LOCATED BY THE SUB-CONTRATOR PRIOR TO COMMENCEMENT OF WORKS. THE LOCATION OF EXISTING SERVICES SHOWN ON PLANS ARE INDICATIVE ONLY AND ARE NOT GUARENTEED TO BE COMPLETE OR CORRECT. THE RESPONSIBILITY FOR LOCATING, AVOIDANCE AND WHERE NECESSARY, TEMPORARY PROTECTION OF THESE EXISTING SERVICES IS THAT OF THE SUB-CONTRACTOR. ANY DAMAGE TO EXISTING STRUCTURES, SERVICES AND UTILITIES IS TO BE REPORTED TO THE SUPERINTENDENT IMMEDIATELY.

DRAINAGE NOTES

D1. ALL PIPES TO BE LAID ON 75mm SAND BED WITH THE BARRELS FULLY SUPPORTED.
D2. 100mm AND 150mm DIAMTER PIPES TO BE LAID ON MINIMUM 1% GRADE.
D3. MINIMUM DEPTH OF COVER FOR PIPES NOT SUBJECT TO VEHICULAR LOADING TO BE 300mm.
D4. ALL DRAINAGE PIPES LAID UNDER PAVEMENT SHALL BE REINFORCED CONCRETE WITH RUBBER RING JOINTS.
D5. BACKFILL TRENCHES WITH COMPACTED SAND OR APPROVED AGGREGATE MATERIAL.
D6. HEAVY DUTY GRATES AND COVERS ARE TO BE PROVIDED IN TRAFFICABLE AREAS.
D7. PIT GRATE TO BE TYPE WELDOCK OR APPROVED EQUIVALENT.
D8. ALL PITS SHALL BE PROVIDED WITH LOCKING CLIP.
D9. ALL PITS SHALL BE MAINTAINED REGULARLY.
D10. TOP OF BENCHING SHALL BE TO THE HALF OF THE OUTLET PIPE DIAMETER.
D11. Ø100mm SUBSOIL DRAINAGE PIPE 3000mm LONG WRAPPED IN FABRIC SOCK TO BE PROVIDED ADJACENT TO INLET PIPES.
D12. COMPRESSIVE STRENGTH fc FOR CAST INSITU CONCRETE TO BE MINIMUM OF 20MPa AT 28 DAYS.
D13. PROVIDE CLEANING EYES TO ALL DOWNPIPES NOT DIRECTLY CONNECTED TO PITS.
D14. ISOLATED JOINTS TO BE PROVIDED TO ISOLATE CONCRETE PAVEMENTS FROM PITS.
D15. ALL TRENCH GRATES PROVIDED SHALL HAVE A MINIMUM CLEAR WIDTH OF 200mm.
D16. STORMWATER DRAINAGE CONNECTIONS TO THE MAIN SYSTEM SHALL BE TO THE REQUIREMENTS AND THE SATISFACTION OF LOCAL COUNCIL.

DEMOLITION

M1. ALL DEMOLITION WORK IS TO BE UNDERTKEN IN ACCORDANCE WITH REQUIREMENTS OF AUSTRALIAN STANDARDS AS2601 - 1991 - "THE DEMOLITION OF STRUCTURES".
M2. HAZARDOUS MATERIALS (INCLUDING ASBESTOS) ARE TO BE HANDLED, STORED, TREATED, RTANSPORTED AND DISPOSED OF IN ACCORDANCE WITH THE REQUIRMENTS OF THE WORK HEALTH & SAFETY ACT 2011 AND ANY RELEVANT REQUIREMENTS OF THE WORK COVER AUTHORITY OF NSW.

SURVEY GENERAL NOTES

S1. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN. THE INFORMATION SHOWN ON THIS PLAN OR IN THE ASSOCIATED CAD FILE IS SUPPLIED ON THE CONDITION THAT THESE GENERAL NOTES ARE ALWAYS SHOWN/KEPT ON ANY COPY OR EXTRACT OF THE HARD COPY/DATA FILE.
S2. INFORMATION SHOWN ON THE SUPPLIED HARD COPIES TAKES PROCEDURE OVER ANY DIGITAL OR ELECTRONIC DATA.

ETC 1. THIS PLAN HAS BEEN PREPARED FOR FEATURE & LEVEL PUPOSES ONLY OVER THE SUBJECT SURVEY AREA.
2. LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD). THE ORIGIN OF WHICH IS SSM 154508 RL 15.55 AHD (SOURCE: SCIMS 29-03-2020)
3. THE LOCATION OF PROPOERTY BOUNDARIES ARE INDICATIVE. BOUNDARIES HAVE BEEN COMPILED FROM SURVEY MEASUREMENTS & REGISTERED PLANS OBTAINED FROM NSW LAND REGISTRY SERVICES AND REPRESENT TITLE DIMENSIONS.
4. ANY CONSTRUCTION OR WORKS RELYING ON CRITICAL SETBACKS FROM BOUNDARIES WILL REQUIRE ADDITIONAL BOUNDARY SURVEY & PLACEMENT OF BOUNDARY/SETOUT MARKS PRIOR TO COMMENCEMENT OF ANY WORKS. REALSERVE WILL NOT BE HELD RESPONSIBLE FOR ANY ISSUES RESULTING FROM NON COMPLIANE WITH THIS ADVICE.
5. THE LOCATION OF EASEMENTS HAVE BEEN COMPILED FROM PLANS & RECORDS OBTAINED FROM N.S.W. LRS AND ARE SUBJECT TO ADDITIONAL SURVEY IF LOCATION IS CIRITICAL CADASTRAL SURVEY.
6. THE LOCATION & LEVELS OF BUILDING RIDGES AND ROOF FEATURES HAVE BEEN DETERMINED BY INDIRECT METHODS (WHERE VISIBLE) & ACCURATE TO APPROXIMATELY +/- 0.02m.
7. THE LOCATION OF ADJOINING BUILDING FEATURES HAVE BEEN OBTAINED WHERE VISIBLE FROM THE SUBJECT PROPERTY.ANY ADDITIONAL SURVEY & ACCESS BEING GRANTED TO ADJOINING PROPERTIES.
8. THE RECORDS OF THE SERVICE AUTHORITIES HAVE NOT BEEN INVESTIGATED. ONLY THOSE SERVICES VISIBLE / APPARENT AT THE TIME OF SURVEY HAVE BEEN SHOWN.

EASEMENT (S) - ENCUMBERANCE(S) AFFECTING SUBJECT PROPERTY

(A) - EASEMENT FOR PADMOUNT SUBSTATION 2.75m WIDE (VIDE DP 1258374)
(B) - RESTRICTION ON USE OF LAND (VIDE DP 1258374)
(I) - EASEMENT TO DRAIN WATER 10.675 AND 15.24m WIDE (VIDE DP 53333)
(F2) - EASEMENT FOR FLOOD MITIGATION WORKS 5m WIDE & VARIABLE (VIDE DP 1233715)
(P) - EASEMENT TO DRAIN WATER 1.5 & 3m WIDE (VIDE DP 1233715)
(R) - RIGHT OF ACCESS 9.6m WIDE & VARIABLE (VIDE DEALING AM754799)
(W) - RIGHT OF ACCESS 12.58m WIDE (VIDE DP 1233715)

LEGEND

EXISTING FEATURES

- SUBJECT BOUNDARY
- EASEMENT BOUNDARY
- FENCE
- OHP — APPROX. LOCATION OVERHEAD POWER SUPPLY
- UGP — APPROX. LOCATION UNDERGROUND POWER SUPPLY
- W — APPROX. LOCATION UNDERGROUND WATER MAINS
- S — APPROX. LOCATION UNDERGROUND SEWER MAINS
- T — APPROX. LOCATION U'GROUND TELECOMMUNICATIONS LINE
- G — APPROX. LOCATION UNDERGROUND GAS MAINS
- STORMWATER PIPE
- TOP OF KERB
- LIP OF KERB
- EDGE OF FOOTPATH
- EDGE OF DRIVEWAY
- CROWN OF ROAD FORMATION
- EDGE OF BITUMEN
- EDGE OF CONCRETE
- TB — TOP OF BANK
- BB — BOTTOM OF BANK
- LINEMARK
- GUARDRAIL
- DP — DOWNPIPES
- PP — POWER POLE
- PB — POWER BOX
- HYD — HYDRANT
- WM — WATER METER
- CPT — TELECOMMUNICATIONS PIT
- KERB INLET STORMWATER PIT
- 1 — PHOTO ASPECT
- G19.53+ — GUTTER LEVEL
- R20.82+ — RIDGE LEVEL
- T10 — TREE

LEGEND

PROPOSED FEATURES

- BOUNDARY - SITE
- BOUNDARY - EXISTING
- CASTIN
- 00.00 — CONTOUR - MAJOR
- 00.00 — CONTOUR - MINOR
- X — DISCONNECTED SERVICE
- FS — FIRE SERVICE
- GAS — GAS SERVICE
- GROUND PLANE BOUNDARY
- INSET BORDER
- PLANT LINE
- PROJECT WORKS EXTENTS
- S — SEWER
- SILT FENCE
- STORMWATER DRAINAGE
- SWRM — STORMWATER RISING MAIN
- SS — SUBSOIL DRAINAGE
- TREE
- W — WATER
- OF — OVERFLOW PIPE
- SWALE DRAIN
- STEEL POST FENCE
- STABILIZED SITE ACCESS
- STOCK PILE
- SANDBAGS
- PROPOSED TRENCH DRAIN
- KERB INLET PIT
- STORMWATER PIT - GRATED
- STORMWATER PIT - COVER
- OVERLAND FLOW ARROW
- MESH & GRAVEL INLET FILTER
- TILTING FLOOD GATE
- FLOOD PROTECTION BARRIER
- WATERTAP AND HOSE
- WATERMAIN PATHBOX
- GAS PATHBOX
- SEWER MANHOLE
- RWT — RAINWATER TANK
- AC ROAD PAVEMENT
- VEHICULAR LAYBACK PAVEMENT
- FOOTPATH PAVERS TO COUNCIL SPECIFICATIONS
- DRIVEWAY PAVERS TO COUNCIL SPECIFICATIONS
- DRIVEWAY PAVERS TO COUNCIL SPECIFICATIONS
- RIP RAP PROTECTION
- UTILITIES PROTECTION
- TO BE REMOVED/ DEMOLISED
- RETAINING WALL
- TOW 00.00 — TOP OF WALL LEVEL
- RL 00.00 — PROPOSED GROUND LEVEL
- 1% AEP FL 00.00 — 100 YR FLOOD LEVEL
- DP — DOWNPIPES
- FFL XX.XX — PROPOSED FINISHED FLOOR LEVEL

FOR APPROVAL

NOTE: THIS IS A STANDARD LEGEND. ALL SYMBOLS MAY NOT NECESSARILY BE USED IN THESE DRAWINGS.

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Architect:

Issue	Date	Amendment	Int.	App.
01	25/06/2021	PRELIMINARY ISSUE	S.S.	A.A.
02	21/07/2021	FOR EIS APPROVAL	S.S.	A.A.

COORDINATED REFERENCE DRAWINGS

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Project:
PROPOSED RESOURCE RECOVERY FACILITY DEVELOPMENT
30 LOFTUS ROAD
YENNORA NSW

Drawing Title:
GENERAL NOTES & LEGEND

NOTE: SYMBOLS ARE DRAWN IN THE CORRECT POSITION BUT ARE NOT SHOWN TO SCALE.

North Point:

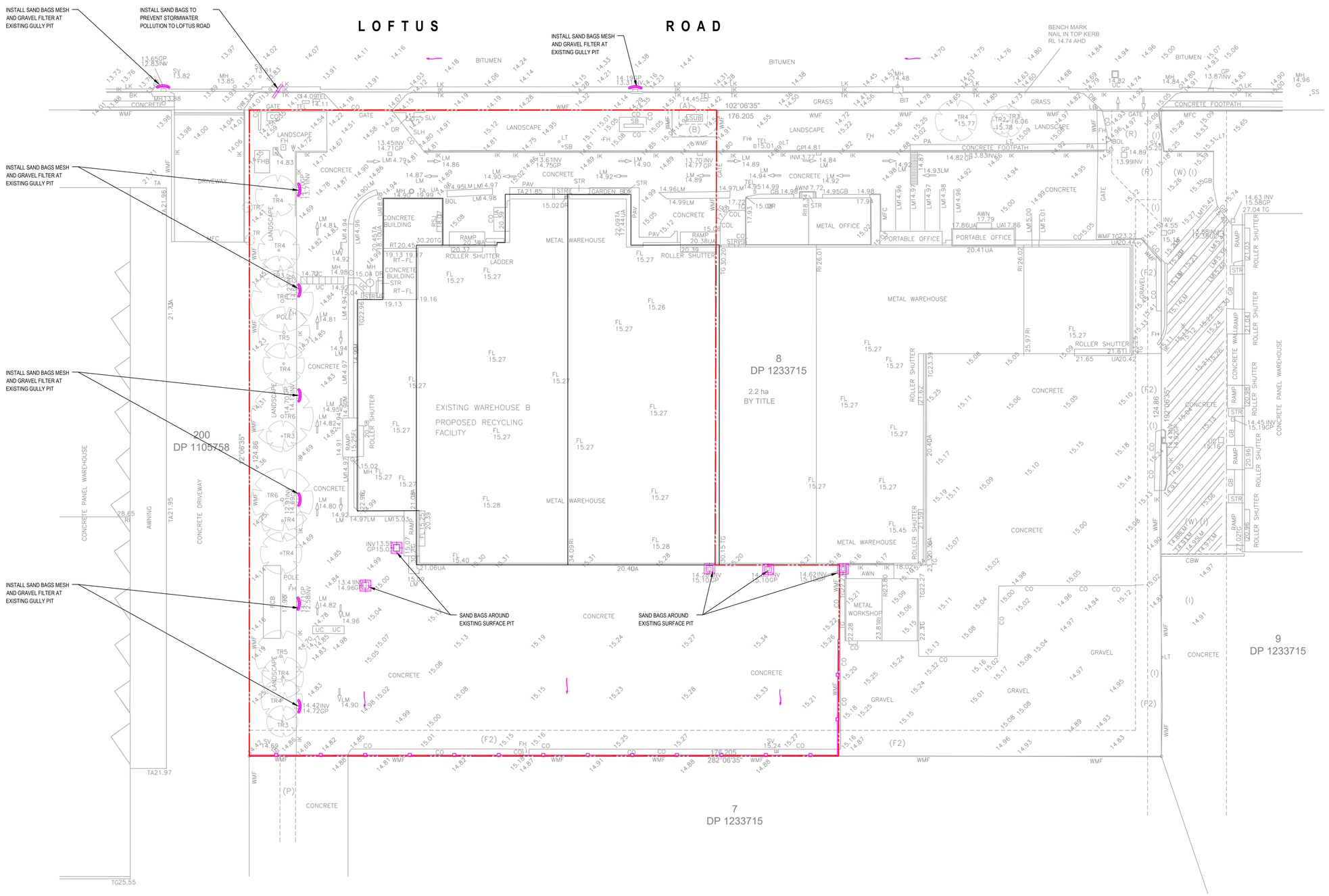
DSL ISO 9001:2015 Quality Management

Job No: P630200
Scale: (A1) N.T.S.
Dwg No: C-0001
Issue: 02

ORIGINAL SIZE: A1

CIVIL SERVICES

FILE NAME & PATH: D:\Rod\P630200 30 Loftus Street\Design\C-0001.dwg PLOTTED BY: 'SHAHIR S' PLOT DATE & TIME: 21 JUL, 2021 - 8:06pm



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REDUCTION RATIO 1:400 @ A1 & 1:800 @ A3

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Architect:

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02	21/07/2021	FOR EIS APPROVAL	S.S.	S.S.

COORDINATED REFERENCE DRAWINGS			
SERVICE	DRAWING NUMBER	ISSUE	DATE
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MECH			
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Project:
PROPOSED RESOURCE RECOVERY FACILITY DEVELOPMENT
30 LOFTUS ROAD
YENNORA NSW

Drawing Title:
EROSION AND SEDIMENT CONTROL PLAN

NOTE: SYMBOLS ARE DRAWN IN THE CORRECT POSITION BUT ARE NOT SHOWN TO SCALE.

North Point:

ISO 9001:2015 Quality Management

Job No: P630200
Scale: (A1) 1:400
Dwg No: C1001
Issue: 02

ORIGINAL SIZE: A1

CIVIL SERVICES

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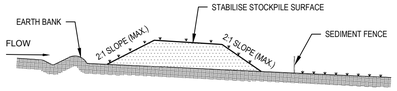
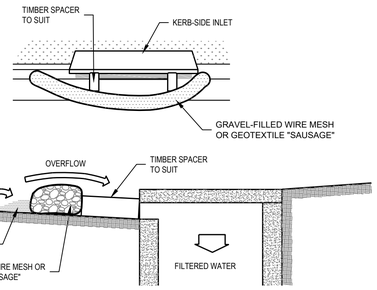


STOCKPILE CONSTRUCTION NOTES:
1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
4. WHERE THEY ARE TO BE PLACED FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED E.S.C.P. OR S.W.M.P. TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 TO 2 METRES DOWNSLOPE.

STOCKPILES

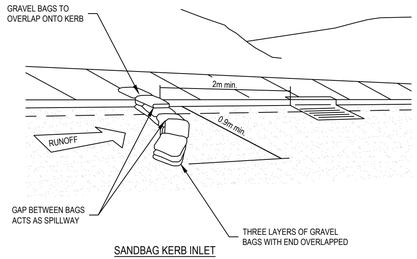
SCALE N.T.S.



MESH & GRAVEL INLET FILTER CONSTRUCTION NOTES:
1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
2. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
3. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
4. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
5. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY CAN FIRMLY ABUT EACH OTHER AND SEDIMENT / LADEN WATERS CANNOT PASS BETWEEN.

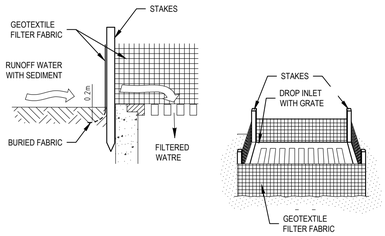
MESH & GRAVEL INLET FILTER

SCALE N.T.S.



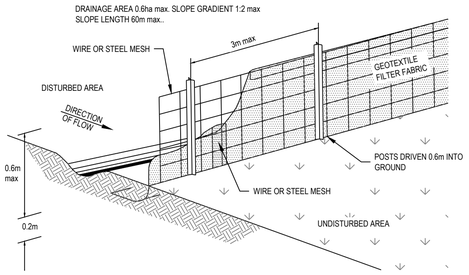
SANDBAG KERB INLET SEDIMENT TRAP

SCALE N.T.S.



GEOTEXTILE FILTER FABRIC DROP INLET SEDIMENT TRAP

SCALE N.T.S.



SEDIMENT FENCE

SCALE N.T.S.

NOTES:

1. FOR GENERAL NOTES AND LEGEND, REFER TO DRAWING NO C-0001.
2. REFER TO DRAWING C-1001 FOR EROSION & SEDIMENT CONTROL PLAN

EROSION AND SEDIMENT CONTROL

1. THE EROSION AND SEDIMENT CONTROL PLAN ADDRESSES THE MANAGEMENT OF ON SITE STORMWATER RUNOFF DURING CONSTRUCTION. IT DOES NOT ADDRESS BASEMENT EXCAVATION, GROUND WATER MANAGEMENT/ DEWATERING REQUIREMENTS. IT IS TO BE READ IN CONJUNCTION WITH ALL OTHER GEOTECHNICAL, RAP, ENVIRONMENTAL AND STRUCTURAL DOCUMENTATION.
2. THE PLAN IS CONCEPT ONLY. SITE CONDITIONS AND PHASING OF WORKS ARE LIKELY TO INFLUENCE CONTROL MEASURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AMENDING THE SCHEME TO SUIT CONDITIONS AT THE TIME OF WORKS AND CONSTRUCTION PROGRAM.
3. THE CONTRACTOR IS TO INFORM ALL BUILDERS AND SUBCONTRACTORS OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO ROADWAYS AND WATERWAYS.
4. THE CONTRACTOR IS TO IMPLEMENT AN APPROPRIATE ENVIRONMENTAL MANAGEMENT PLAN INCLUDING SPILL/ POLLUTION CONTAINMENT AND TREATMENT PROCEDURES. THE CONTRACTOR IS TO ENSURE THAT ANY SPILL/POLLUTION COLLECTED IN THE STORMWATER SUMP IS IMMEDIATELY TREATED.
5. WATER SHALL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, i.e. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
6. ALL SOIL AND WATER CONTROL MEASURES ARE TO BE PROVIDED IN ACCORDANCE WITH THE GUIDELINES FOR EROSION AND SEDIMENT CONTROL ON AUBURN DEVELOPMENT CONTROL PLAN (2010), LANDCOM SOIL AND CONSTRUCTION MANUAL VOLUME 1, MARCH 2004. ("BLUE BOOK") AND THE NSW PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997.
7. STOCKPILE LOCATIONS TO BE DEPENDENT ON THE LOAD OUT LOCATION AND THE POINT OF EXCAVATION. STOCKPILE LOCATIONS TO BE MARKED ON THE SITE PLAN AT THE SITE OFFICE AS THE PROJECT PROGRESSES.
8. SHOULD ANY MATERIAL BE WASHED FROM EQUIPMENT, SUCH AS CONCRETE SLURRIES FROM CONCRETE TRUCKS, A WASHING/CLEANING AREA WITH APPROPRIATE SEDIMENT CONTROL MEASURES IS TO BE SETUP ON A FLAT AREA OF THE SITE.
9. THE CONTRACTOR SHALL MAINTAIN A LOG BOOK DETAILING:
   - RECORDS OF ALL RAINFALL (I.E. DAILY RAINFALL)
   - CONDITION OF SOIL AND WATER MANAGEMENT CONTROL MEASURES ANY ADDITIONAL REMEDIAL WORKS REQUIRED.

   THE LOG BOOK SHALL BE MAINTAINED ON A WEEKLY BASIS AND BE MADE AVAILABLE TO ANY AUTHORISED PERSON UPON REQUEST. THE ORIGINAL LOG BOOK SHALL BE ISSUED TO THE PROJECT MANAGER AT THE COMPLETION OF THE WORKS.
10. DUST CONTROL MEASURES SHALL BE IMPLEMENTED CONTINUOUSLY DURING CONSTRUCTION WORKS TO THE SATISFACTION OF THE SUPERINTENDENT.
11. CONTROL MEASURES AFFECTED BY WORKS ARE TO BE RE-ESTABLISHED PRIOR TO THE COMPLETION OF EACH DAYS WORK.
12. ALL CONTROL MEASURES ARE TO BE CLEANED AND MAINTAINED AT LEAST WEEKLY OR AFTER EVERY RAINFALL EVENT.
13. FOLLOWING THE COMPLETION AND RESTORATION OF SITE, THE CONTRACTOR IS TO REMOVE ALL CONTROL MEASURES.
14. PERMANENT DRAINAGE STRUCTURES INCLUDING PIPES AND PITS ARE TO BE HANDED OVER IN A CLEAN CONDITION AT THE COMPLETION OF THE CONTRACT MAINTENANCE PERIOD.
15. TEMPORARY STORMWATER SUMPS (LOCATIONS TO SUIT SITE PHASING).
   - DISCHARGE PUMP NOM. FLOW RATE = 3 l/s
   - RUNOFF COEFFIENT = 1.00.
   - SIZING OF SUMPS BASED ON STORAGE REQUIRED FOR A 3 MONTH ARI STORM EVENT UP TO 12 HOURS IN DURATION INTENSITIES FROM AUSTRALIAN BUREAU OF METEROLOGY IFD DATA SYSTEM.
16. PRIOR TO DISCHARGING COLLECTED WATER TO INCLUDING THOSE IDENTIFIED IN THE RAP, IT IS TO BE TESTED TO ENSURE COMPLIANCE WITH WATER QUALITY REQUIREMENTS. SHOULD TESTING GIVE RESULTS THAT DO NOT COMPLY WITH THE ABOVE, TREATMENT MEASURES (SUCH AS THE APPLICATION OF A pH NEUTRAL FLOCCULANT) AND SUBSEQUENT RETESTING ARE REQUIRED. DOCUMENTARY RESULTS OF WATER QUALITY TESTING PRIOR TO DEWATERING ARE TO BE KEPT. A FILE IS TO BE KEPT ONSITE OF ALL WATER TESTING/DEWATERING EVENTS. FOLLOWING DEWATERING THE SUMP IS TO BE CLEARED OF SEDIMENT AND THE GEOTEXTILE ON THE PUMP WELL IS TO BE REPLACED.
17. ALL STORMWATER PITS TO BE COVERED OR DROP INLET SEDIMENT TRAPS SHALL BE PROVIDED. KERB INLET TRAPS ARE TO BE INSTALLED AFTER COMPLETION OF PAVING.
18. ALL SERVICE TRENCHES MUST BE FILLED IN AND COMPACTED IMMEDIATELY AFTER SERVICES HAVE BEEN LAID.
19. ROADS AND FOOTPATHS AFFECTED BY THE WORKS MUST BE SWEPT CLEAN DAILY. SOILS MUST BE RETAINED BEHIND CONTROL DEVICES.
20. CONTRACTOR MUST ENSURE THAT ALL VEHICLES LEAVING SITE ARE HOSED DOWN (OR SIMILAR) TO REMOVE SEDIMENT.
21. CONTRACTOR SHALL PROVIDE SEDIMENT FENCING MATERIAL DURING CONSTRUCTION TO THE LOW SIDE OF THE WORKS. TIE SEDIMENT FENCING MATERIAL TO CYCLONE WIRE SECURITY FENCE. SEDIMENT CONTROL FABRIC SHALL BE AN APPROVED MATERIAL (EG. HUMES PROPEX SILT STOP) STANDING 300mm ABOVE GROUND & EXTENDING 150mm BELOW GROUND.
22. EXISTING DRAINS LOCATED WITHIN THE SITE SHALL ALSO BE ISOLATED BY SEDIMENT FENCING MATERIAL.
23. NO PARKING OR STOCKPILING OF MATERIALS IS PERMITTED ON THE LOWER SIDE OF THE SEDIMENT FENCE.
24. GRASS VERGES SHALL BE MAINTAINED AS MUCH AS PRACTICAL TO PROVIDE A BUFFER ZONE TO THE CONSTRUCTION SITE.
25. CONSTRUCTION ENTRY/EXIT SHALL BE VIA THE LOCATION NOTED ON THE DRAWING. CONTRACTOR SHALL ENSURE ALL DROPABLE SOIL & SEDIMENT IS REMOVED PRIOR TO CONSTRUCTION TRAFFIC EXISTING SITE. CONTRACTOR SHALL EMSURE ALL CONSTRUCTION TRAFFIC ENTERING & LEAVING THE SITE DO SO IN A FORWARD DIRECTION.

CLAY SOILS:

STORMWATER SYSTEM AT GRANGE ROAD SHALLE BE INSTALLED TO EITHER:
1. TRANSPORT STORMWATER RUNOFF WITH SUSPENDED SOILS FROM SITE VIA PUMP TRUCKS
2. TREAT THE STORMWATER RUNOFF WITH SUSPENDED SOLIDS SO THE DISCHARGE WATER QUALITY TO COUNCIL STORMWATER DRAINAGE SYSTEM HAS A MAXIMUM CONCENTRATION OF SUSPENDED SOLIDS THAT DOES NOT EXCEED 50 MILLIGRAMS PER LITRE IN ACCORDANCE WITH THE PROTECTION OF THE ENVIRONMENT OPERATION ACT (POEO 1997), AND SHALL BE APPROVED BY LOCAL COUNCIL.

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Architect:

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CIVIL SERVICES

Project:
PROPOSED RESOURCE RECOVERY FACILITY DEVELOPMENT
30 LOFTUS ROAD
YENNORA NSW

Drawing Title:
EROSION AND SEDIMENT CONTROL DETAILS AND NOTES

NOTE: SYMBOLS ARE DRAWN IN THE CORRECT POSITION BUT ARE NOT SHOWN TO SCALE.

North Point:

ISO 9001:2015 Quality Management

Job No: P630200
Scale: (A1) N.T.S.
Dwg No: C-1011
Issue: 02

ORIGINAL SIZE: A1

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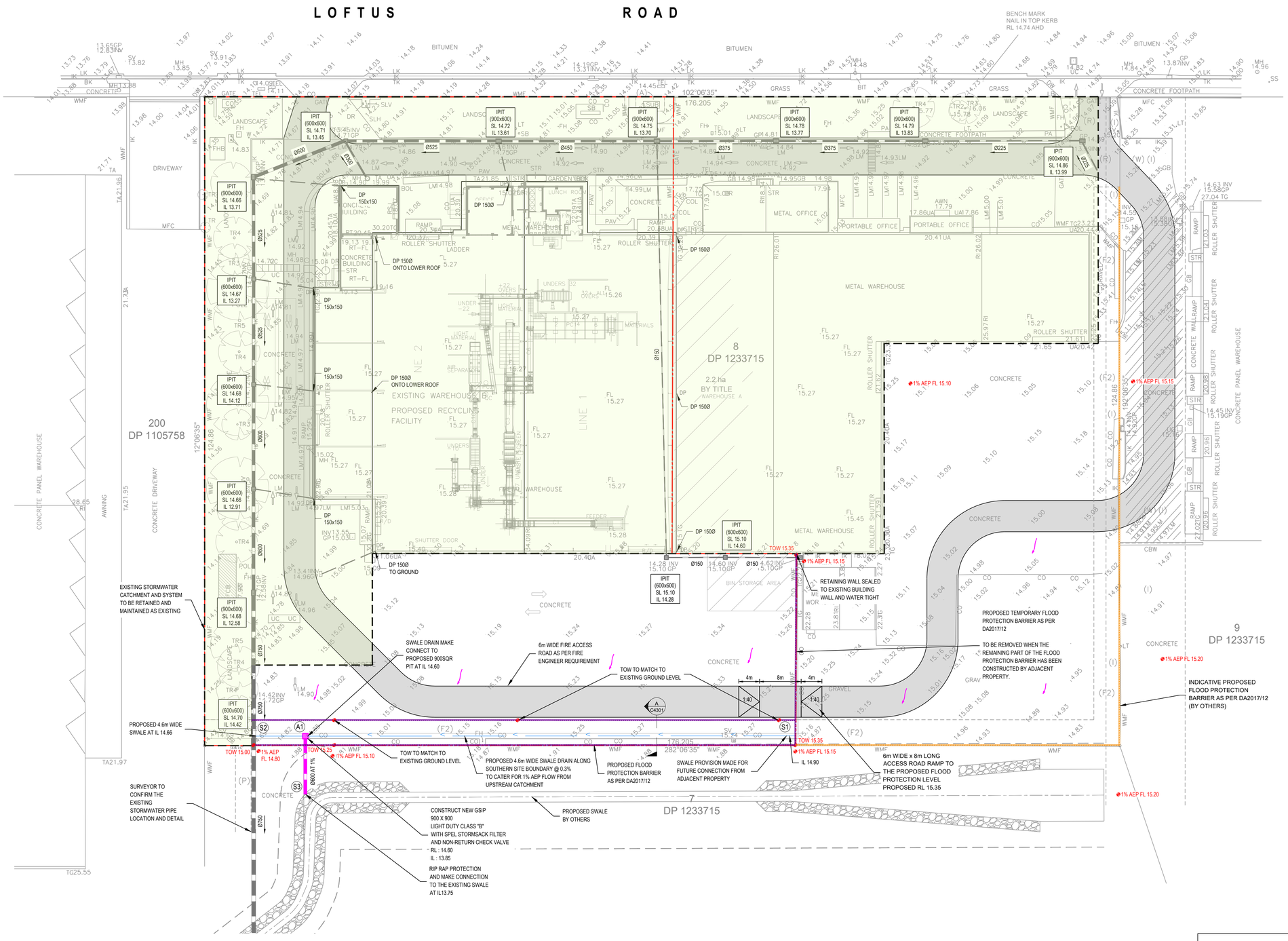

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Project:
PROPOSED RESOURCE RECOVERY FACILITY DEVELOPMENT
30 LOFTUS ROAD
YENNORA NSW

Drawing Title:
STORMWATER MANAGEMENT PLAN

NOTE: SYMBOLS ARE DRAWN IN THE CORRECT POSITION BUT ARE NOT SHOWN TO SCALE.

North Point:

ISO 9001:2015 Quality Management

Job No: P630200
Scale: (A1) 1:400
Dwg No: C-4001
Issue: 02

ORIGINAL SIZE: A1

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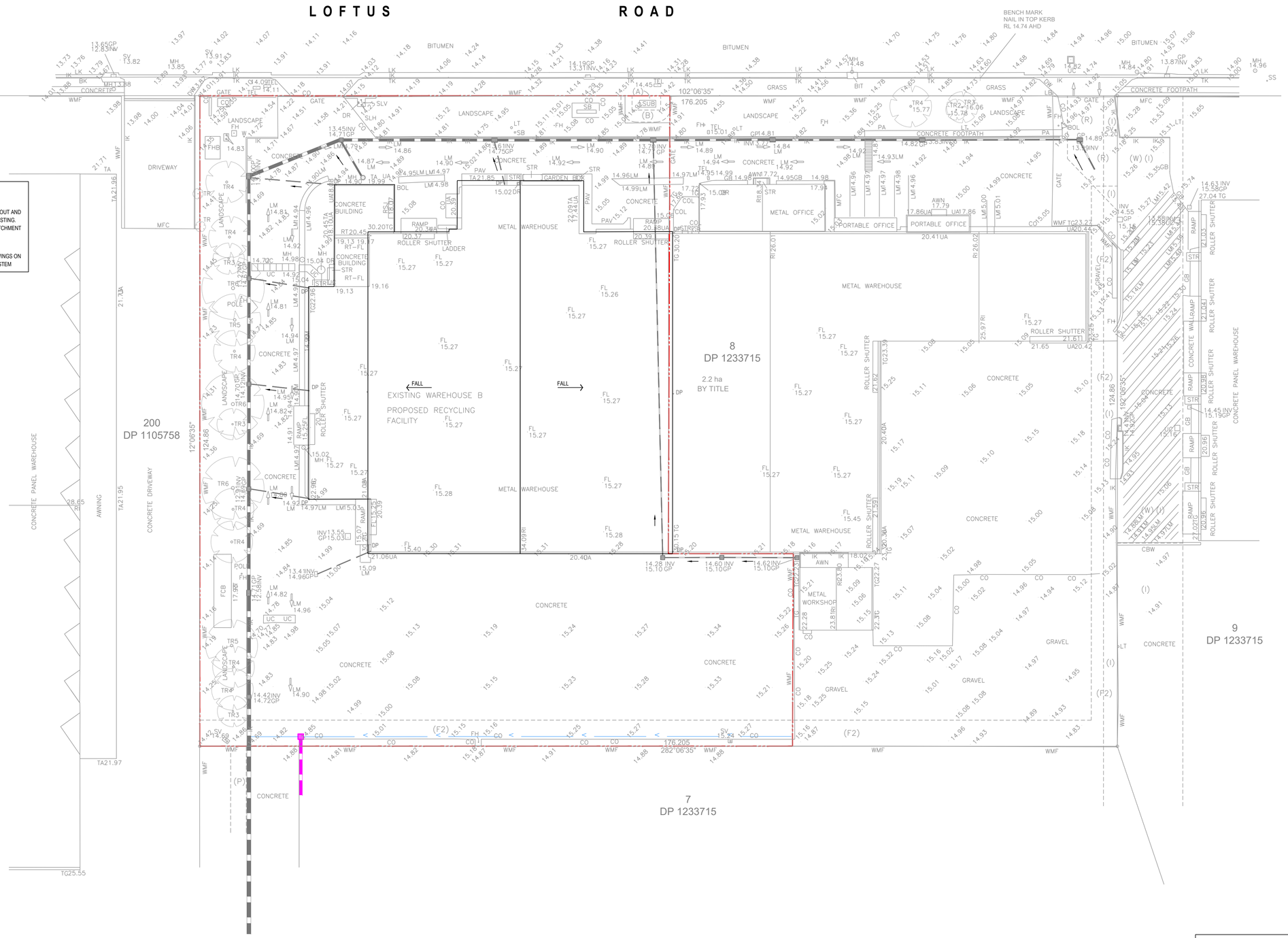

DRAINAGE NOTE:

1. ALL EXISTING ROOFTOP DRAINAGE LAYOUT AND DOWNPIPE SYSTEM TO BE MAINTAINED AS EXISTING. THERE IS NO CHANGES ON THE ROOFTOP CATCHMENT PLAN AND CONFIGURATION.

2. REFER TO HYDRAULIC ENGINEER DRAWINGS ON THE DETAIL OF THE INTERNAL HYDRAULIC SYSTEM

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CIVIL SERVICES

Project:
PROPOSED RESOURCE RECOVERY FACILITY DEVELOPMENT
30 LOFTUS ROAD
YENNORA NSW

Drawing Title:
ROOF DRAINAGE PLAN

NOTE: SYMBOLS ARE DRAWN IN THE CORRECT POSITION BUT ARE NOT SHOWN TO SCALE.

North Point:

ISO 9001:2015 Quality Management

Job No: P630200

Scale: (A1) 1:400

Dwg No: C-4011

Issue: 02

ORIGINAL SIZE: A1

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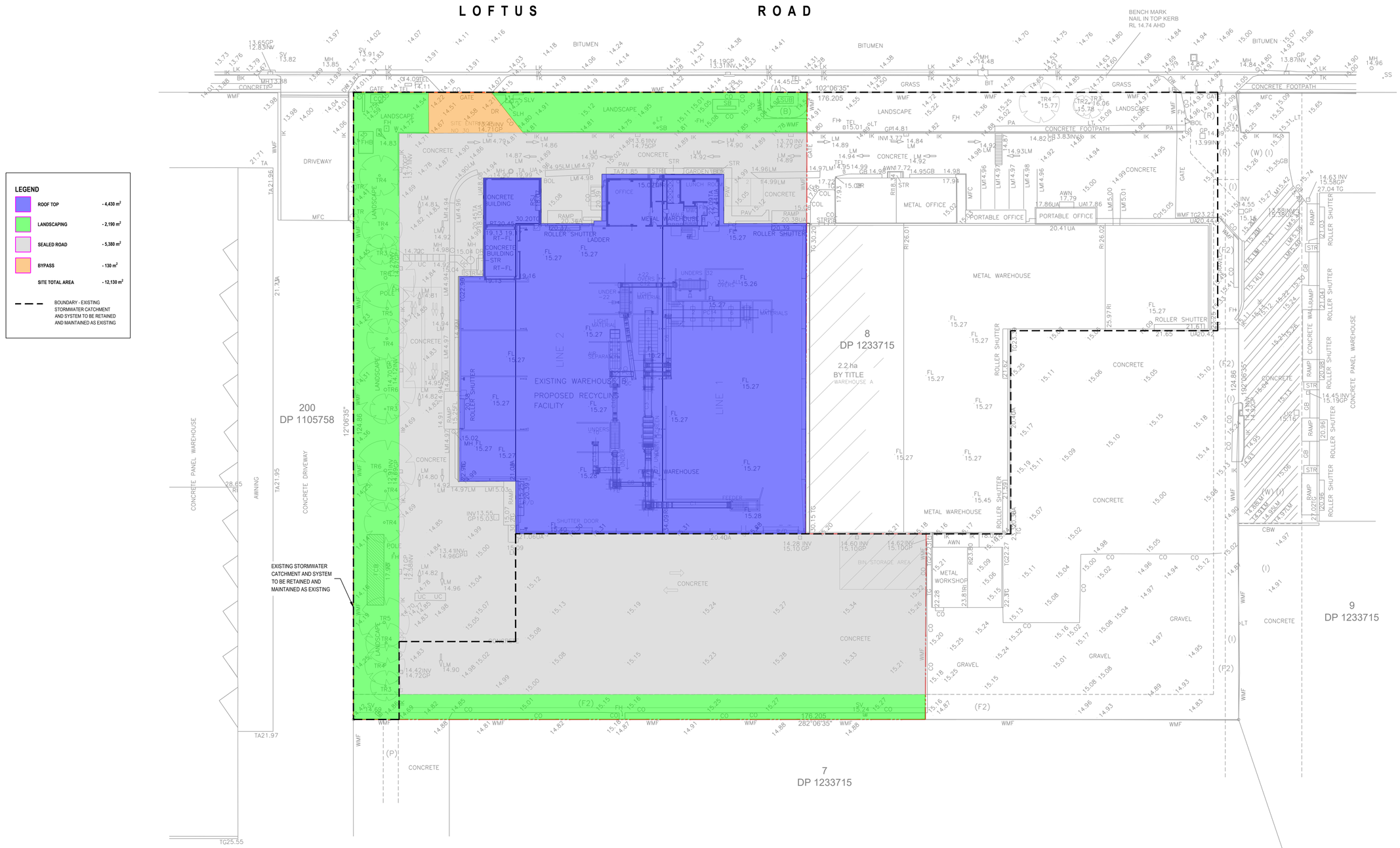

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Architect:

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CIVIL SERVICES

Project:

PROPOSED RESOURCE RECOVERY FACILITY DEVELOPMENT
30 LOFTUS ROAD
YENNORA NSW

Drawing Title:

STORMWATER CATCHMENT PLAN

NOTE: SYMBOLS ARE DRAWN IN THE CORRECT POSITION BUT ARE NOT SHOWN TO SCALE.

North Point:

BSI. ISO 9001:2015 Quality Management

Job No: P630200

Scale: (A1) 1:400

Dwg No: C-4101

Issue: 02

ORIGINAL SIZE: A1

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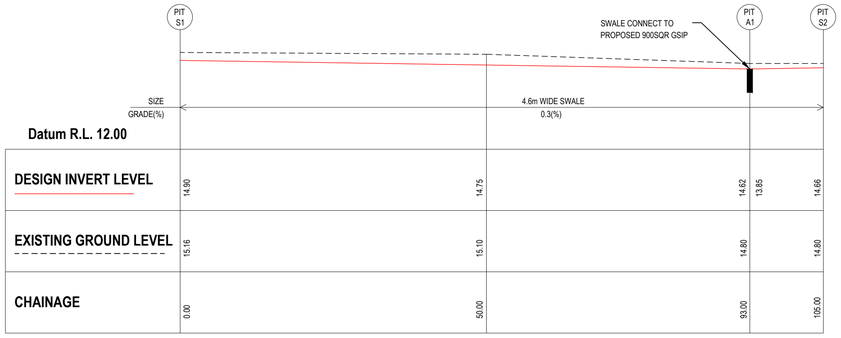
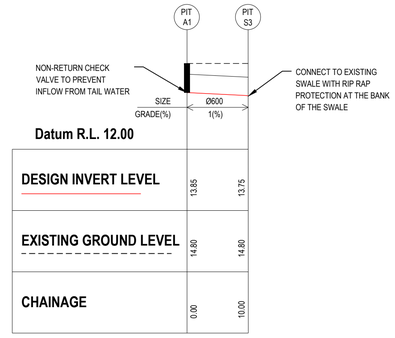


SWALE WITHIN F2 EASEMENT LONGITUDINAL SECTION

HORIZONTAL SCALE 1: 500 @ A1 & 1:1000 @ A3
VERTICAL SCALE 1:100 @ A1 & 1:200 @ A3



STORMWATER LONGITUDINAL SECTION

HORIZONTAL SCALE 1: 500 @ A1 & 1:1000 @ A3
VERTICAL SCALE 1:100 @ A1 & 1:200 @ A3

0 1 2 4 6 8 10
REDUCTION RATIO 1:100 @ A1 & 1:200 @ A3

0 5 10 20 30 40 50
REDUCTION RATIO 1:500 @ A1 & 1:1000 @ A3

FOR APPROVAL

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cobra waste solutions

Architect:

Issue	Date	Amendment	Int.	App.
01	25/06/2021	PRELIMINARY ISSUE	S.S.	A.A.
02	21/07/2021	FOR BIS APPROVAL	S.S.	A.A.

COORDINATED REFERENCE DRAWINGS

SERVICE	DRAWING NUMBER	ISSUE	DATE
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Project:
PROPOSED RESOURCE RECOVERY FACILITY DEVELOPMENT
30 LOFTUS ROAD
YENNORA NSW

Drawing Title:
STORMWATER LONGITUDINAL SECTIONS

NOTE: SYMBOLS ARE DRAWN IN THE CORRECT POSITION BUT ARE NOT SHOWN TO SCALE.

North Point:

ISO 9001:2015 Quality Management

Job No: P630200
Scale: (A1) AS NOTED
Dwg No: C-4201
Issue: 02

ORIGINAL SIZE: A1

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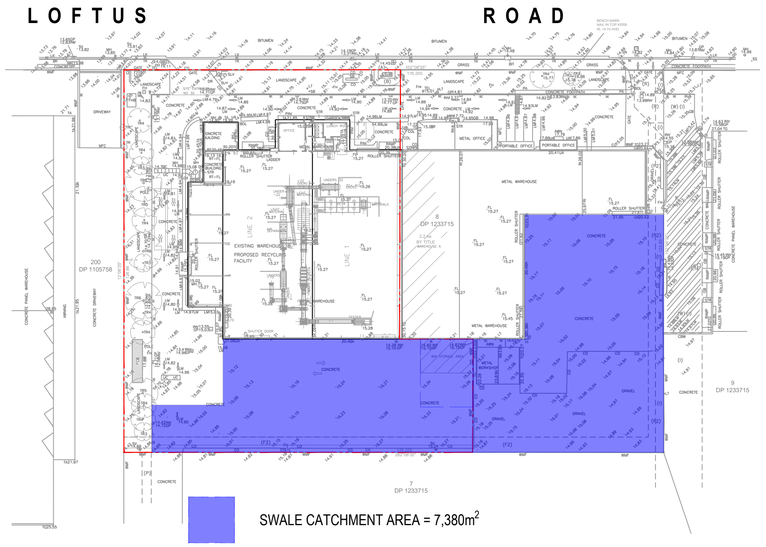
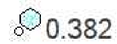


SWALE CATCHMENT PLAN

SCALE 1: 1000 @ A1 & 1:2000 @ A3



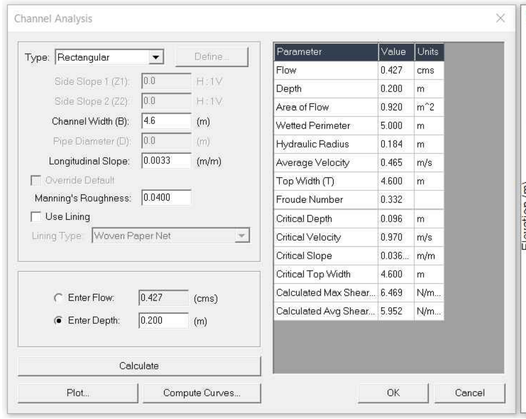
DRAINS MODEL FOR SWALE CATCHMENT

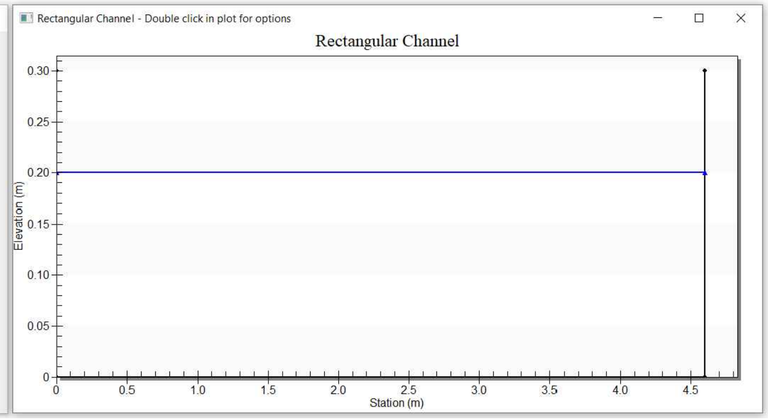
SCALE : NTS

CATCHMENTS RUNOFF CALCULATIONS

UPSTREAM CATCHMENT AREA TO PROPOSED SWALE = 7,380 m^2

OVERLAND FLOW RATE FOR 1% AEP STORM EVENT, Q^{100} = 0.382 m^3/s



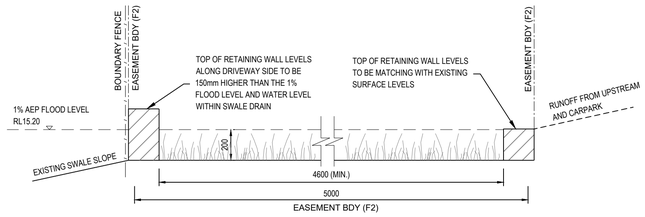


SWALE CAPACITY DESIGN CHECK

SCALE : NTS

SWALE CAPACITY CALCULATION

SWALE CAPACITY = 0.427 m^3/s > Q^{100} (0.382 m^3/s)



A / C4001 SWALE DRAIN DETAIL

4.6m WIDE (MIN.) SWALE DRAIN ALONG SOUTHERN SITE BOUNDARY

SCALE 1:20

0 0.2 0.4 0.8 1.2 1.6 2.0

REDUCTION RATIO 1:20 @ A1 & 1:40 @ A3

0 10 20 40 60 80 100

REDUCTION RATIO 1:1000 @ A1 & 1:2000 @ A3

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Project:

PROPOSED RESOURCE RECOVERY FACILITY DEVELOPMENT
30 LOFTUS ROAD
YENNORA NSW

Drawing Title:

STORMWATER MANAGEMENT DETAIL

NOTE: SYMBOLS ARE DRAWN IN THE CORRECT POSITION BUT ARE NOT SHOWN TO SCALE.

North Point:

ISO 9001:2015 Quality Management

Job No: P630200

Scale: (A1) AS NOTED

Dwg No: C-4301

Issue: 02

ORIGINAL SIZE: A1

CIVIL SERVICES

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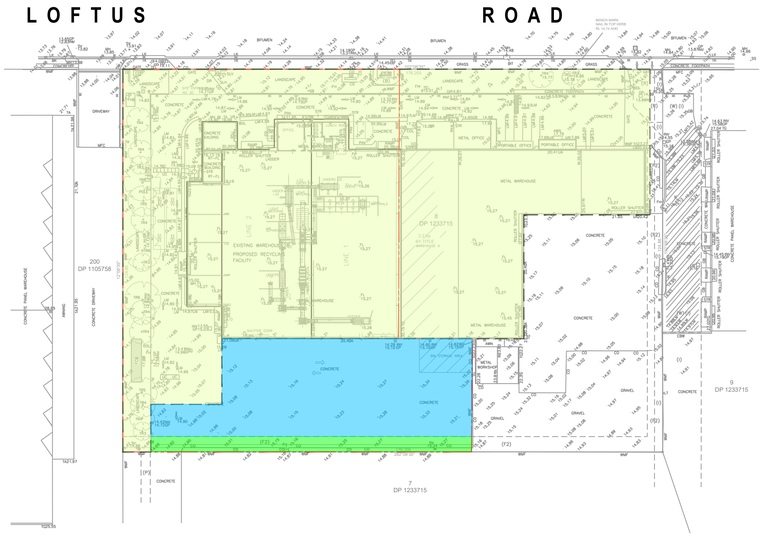
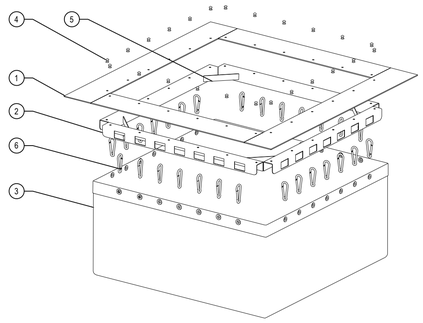


MUSIC MODEL CATCHMENT PLAN

SCALE 1: 1000 @ A1 & 1:2000 @ A3

LEGEND

- EXISTING STORMWATER CATCHMENT AND SYSTEM TO BE RETAINED AS EXISTING = 14,370 m^2
- CARPARK CATCHMENT TO SWALE = 2,820 m^2
- SWALE CATCHMENT TO STORMSACK = 525 m^2
- TOTAL CATCHMENT AREA TO WATER QUALITY TREATMENT = 3,345 m^2

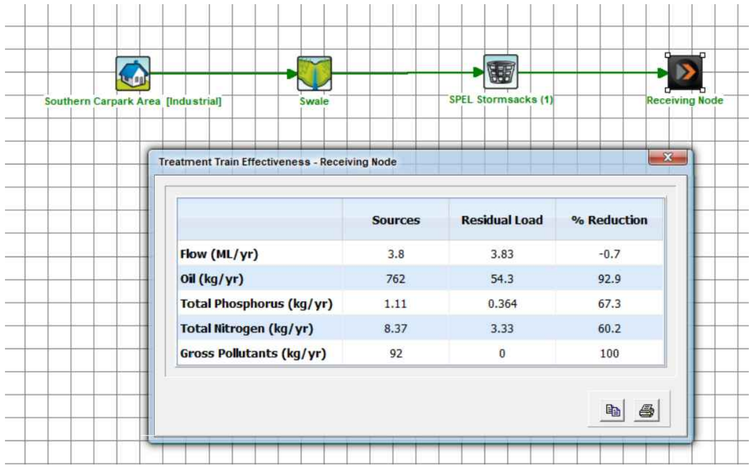


ISOMETRIC VIEW

SCALE N.T.S.

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	PLASTIC SHEETING	HDPE
2	4	SHEET METAL BINDING	STAINLESS STEEL 304
3	1	TEXTILE FABRIC & MESH LINER	HDPE
4	24	BLIND RIVIT 7 DIA.	STAINLESS STEEL 304
5	4	CORNER ESTIFFENER - FLAT BAR 25 x 2 -141 LG	STAINLESS STEEL 304
6	28	CARABINER CLIP 6	ALUMINIUM

SPEL STORMSACK 900 x 900 DETAIL



	Sources	Residual Load	% Reduction
Flow (ML/yr)	3.8	3.83	-0.7
Oil (kg/yr)	762	54.3	92.9
Total Phosphorus (kg/yr)	1.11	0.364	67.3
Total Nitrogen (kg/yr)	8.37	3.33	60.2
Gross Pollutants (kg/yr)	92	0	100

MUSIC MODEL RESULT

Table 5 Pollutant reduction requirements for various development types – sites 2,500m² & greater in area:

Development type	Litter	Coarse sediment	Nutrients	Fine particles	Cooking oil & grease	Hydro-carbons
Low density residential subdivision (sites ≤5ha)	YES	YES	YES	NO	NO	NO
Low density residential subdivision (sites >5ha)	YES	NO	NO	YES	NO	YES
Medium & high density residential	YES	NO	NO	YES	NO	YES
Commercial & retail	YES	NO	NO	YES	NO	YES
Industrial	YES	NO	NO	YES	NO	YES
Food & drink premises	YES	YES	NO	NO	YES	NO
Service stations, car washes & other automotive uses	YES	NO	NO	YES	NO	YES

Table 6 Stormwater quality targets for sites 2,500m² and greater in area

Pollutant	Description	Reduction in Load[1]
Litter e.g. cans, bottles, wrapping materials, food scraps	All anthropogenic materials with a minimum dimension >5mm	70%
Coarse sediment	Coarse sand and soil particles (<0.5mm diameter)	80%
Nutrients	Total phosphorus & nitrogen	45%
Fine particles	Coarse sand and soil particles (<0.05mm diameter)	50%
Cooking oil & grease	Free floating oils that do not emulsify in aqueous solutions	90%
Hydrocarbons inc. motor fuels, oils & greases	Anthropogenic hydrocarbons that can be emulsified	90%

WATER QUALITY TARGET

(REF: CUMBERLAND/HOLROYD DEVELOPMENT CONTROL PLAN 2013, PART A, SECTION 7.5)

0 10 20 40 60 80 100

REDUCTION RATIO 1:1000 @ A1 & 1:2000 @ A3

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YENNORA NSW

Drawing Title:
WATER QUALITY DETAIL AND CATCHMENT PLAN

NOTE: SYMBOLS ARE DRAWN IN THE CORRECT POSITION BUT ARE NOT SHOWN TO SCALE.

North Point: N

ISO 9001:2015 Quality Management

Job No: P630200
Scale: (A1) AS NOTED
Dwg No: C-4401
Issue: 02

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