

# RAYMOND TERRACE WASTEWATER TREATMENT WORKS STAGE 3 UPGRADE

AUGUST 2022

MINOR WORKS – REVIEW OF  
ENVIRONMENTAL FACTORS

HUNTER WATER



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Draft	Steve Farrar	Johnny Landman	July 2022
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## 1 INTRODUCTION

The potential environmental impacts of the proposal to upgrade components of the Raymond Terrace Wastewater Treatment Works (WWTW) (the 'Proposal') have been assessed in accordance with the environmental impact assessment requirements of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Hunter Water Corporation (Hunter Water) is the determining authority of the proposal in accordance with Division 5.1 of the EP&A Act.

The purpose of this Minor Works Review of Environmental Factors (MWREF) is to describe the proposed works and assess the potential construction and operation environmental impacts with consideration of the factors listed in Section 171 of the *Environmental Planning and Assessment Regulation 2021*. This MWREF identifies safeguards to mitigate identified impacts.

## 2 PROPOSAL DETAILS

### 2.1 Proposal identification

Proposal name	Raymond Terrace WWTW Stage 3 Upgrade
Proposal location	The Raymond Terrace WWTW is located at 22 Elizabeth Avenue, Raymond Terrace NSW. The regional context and location of the proposal is shown in Figure 2-1 and the existing WWTW is shown on Figure 2-2.
Local Government Area	The proposal is located in the Port Stephens Local Government Area (LGA).
Land zoning	The proposal site is zoned SP1 – Special Activities.

### 2.2 Existing environment

The proposal would be located within the existing Raymond Terrace WWTW site, which is mostly cleared of vegetation. The proposal area has been disturbed during construction and operation of the existing WWTW. The existing Raymond Terrace WWTW is located on Hunter Water owned land at Lot 1 DP159023. Access to the site is via a shared road (shared with 20 Elizabeth Avenue, Raymond Terrace) that runs off Elizabeth Avenue.

The adjacent lot to the west consists of a dam and vegetation. To the east is a private rural property, to the north is the Grahamstown Drain and to the south is Windeyer's Creek and the Raymond Terrace bypass. The Raymond Terrace Cemetery located to the north of the Raymond Terrace WWTW, on the other side of the Grahamstown Drain, is listed as a local heritage item on the Port Stephens Local Environmental Plan 2013 (Port Stephens LEP) (Item Number: 139) however will not be impacted by the proposal.



Figure 2-1 Proposal location and site context

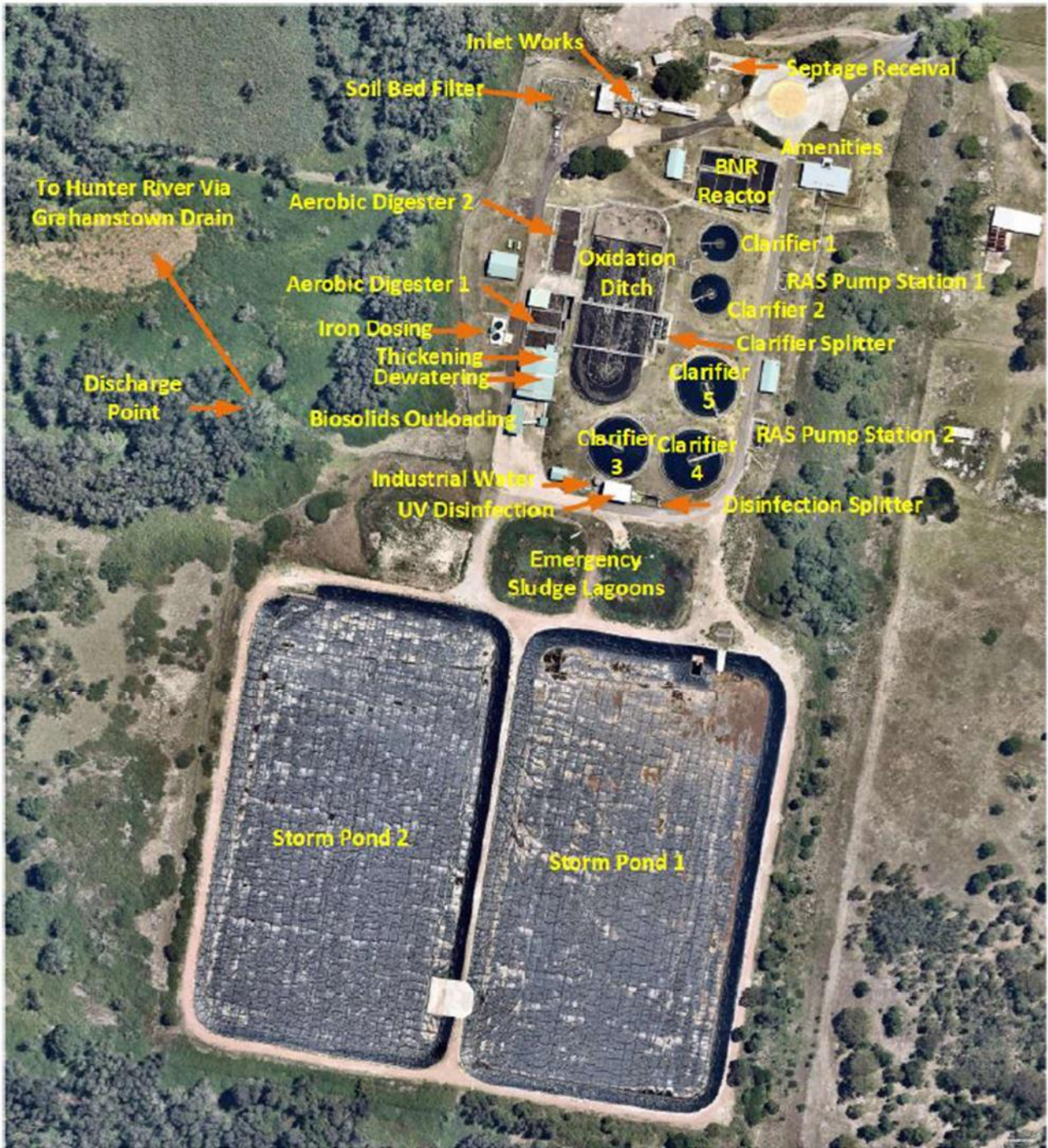


Figure 2-2 Existing WWTW



## 2.3 Proposal description

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Following a capacity assessment in 2017, Hunter Water proposed a two-stage upgrade approach to address the unacceptable levels of compliance risk with the existing WWTW:

- Short Term (Stage 3 – This Upgrade) – Addresses immediate non-compliance risks, without impeding or negatively impacting a range of potential long-term upgrades
- Long Term (Stage 4 – Future Upgrade) – The long-term upgrade is scheduled to be completed in 2028 which would provide sufficient design and construction time once the outcomes of the Hunter River Estuary Master Plan are known.

This upgrade would provide sufficient capacity to 2028 across the four key areas of the plant as identified during previous investigations:

- Inlet Works – Cater for projected peak flows at 2028 without surcharge by installation of a by-pass stainless steel channel.  
Additionally:
  - Rectify concrete condition issues identified during previous condition assessments
  - Modify balance tank covers to prevent covers being dislodged during high flows
  - Modify the manual bypass screen to reduce risks associated with manual handling
- Carousel Aeration - Provide sufficient additional aeration capacity by adding aeration units to service peak 2028 loads with one large surface aerator offline
- UV Disinfection – Provide UV disinfection capacity by adding to the existing system to cater for at least 3 x ADWF at 2028 plus internal recycle flows to a 90<sup>th</sup>ile Faecal Coliform concentration of 200 cfu / 100 mL
- Sludge Lagoon – Reline one of two existing lagoons currently connected to the sludge handling system. Decommission the other remaining lagoon.

Description of works

The design drawings and further project details are attached in Appendix A.

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The construction methodology of the proposal would include:

- Site establishment, including ancillary facilities for amenities, offices and material laydown/storage
- Concrete condition rectification, manufacture and install bypass stainless steel channel, modify balance tank covers and manual bypass screen at the inlet works
- Carousel upgrades with manufacture and installation of new jet aerators
- UV system upgrade
- Sludge lagoon preparation and lining
- Commissioning and testing
- Site revegetation.

Construction methodology

The proposal would include the establishment of a site compound to provide worker facilities, material and plant storage.

No vegetation removal would be permitted for establishment of the compound and the site would be located away from surface drainage flow paths within the existing WWTW site. An existing area may be utilised for this purpose located to the north of the Inlet Works.

Ancillary facilities

Following construction, the ancillary facilities would be removed and the site restored.

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Operational requirements	Operation of the proposal would be included in the operation of the existing WWTW, currently contracted to Veolia.
Equipment and plant	<ul style="list-style-type: none"> <li>• Light vehicles</li> <li>• Delivery trucks</li> <li>• Mobile crane(s)</li> <li>• Grinder</li> <li>• Compactor</li> <li>• Concrete Saw</li> <li>• Compressors</li> <li>• Hand tools</li> <li>• Forklift</li> <li>• Backhoe</li> <li>• Excavator(s)</li> <li>• Concrete trucks</li> <li>• Generator(s)</li> <li>• Pumps</li> <li>• Power saws</li> </ul>
Land tenure	The proposal is located within the existing Raymond Terrace WWTW site owned by Hunter Water. No land acquisition or leasing would be required.
Commencement and expected duration of construction work	Construction of the proposal would commence in early-2023 and take approx. 12 months to complete.
Hours of construction work	<p>Working hours would be standard construction hours:</p> <ul style="list-style-type: none"> <li>• Monday to Friday – 7am to 6pm</li> <li>• Saturday 8am to 1pm</li> <li>• No work on Sundays or public holidays.</li> </ul> <p>No out-of-hours works are proposed. If out-of-hours works are required, approval must be sought from Hunter Water prior, and respective landholders notified as advised by Hunter Water communications and stakeholder team.</p>
Proposal objectives	The key objectives of the proposal for each component of the proposal are to upgrade the existing plant to meet capacity requirements and structural integrity to 2028 while addressing non-compliance risks.
Options considered and justification	<p><b>Inlet Works</b></p> <p>Following initial investigations, the preference was to avoid committing significant capital investment as the upgrade will have a short design life due to the Stage 4 long term upgrade planned to be completed in 2028. To this end, options considered focused on modifying the existing inlet works as described below. Six potential options were considered as part of the design process.</p> <p><i>Option 1: Do nothing</i></p> <p>This option would not upgrade the WWTW and it would continue to have non-compliance risks and not be able to operate to the flow capacity anticipated to 2028.</p> <p><i>Option 2: Screened Sewage Bypass</i></p> <p>This option involves installing a large diameter pipeline/channel from the outlet of the screenings channel directly into the storm bypass channel. This option allows the inlet works to remain online while in construction however it relies on a penstock to operate remotely and a portion of stormwater flows would not receive grit removal, transferring grit downstream in the treatment process.</p> <p><i>Option 3: Flume Inlet Chamber Weirs</i></p>

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This option involves removing concrete that has been used to infill part of the chamber (2m high, 1m long and 0.5m across) and installing weirs to pass flow directly into the adjoining bypass channels. These works would require a number of inlet work shutdowns and provide a unique constructability challenge, coupled with restricted access, this option is likely the most challenging to construct.

*Option 4: Grit Chamber Bypass Pipeline*

This option involves installing pipe penetrations along the length of the grit chamber bypass channel that gravity flow into the storm bypass channel. Some odour control pipework will have to be relocated. Works could be undertaken with limited interruptions and this option is hydraulically fail safe. Another advantage is that all flows would receive grit removal.

*Option 5: Flume Inlet Chamber Bypass Penetrations*

This option relies on reducing the quantity of flow to reduce system headloss by cutting penetrations in a concrete wall to allow storm flows to enter the bypass channel. Construction would require a number of shutdowns but this option is less complicated than Option 2. The major disadvantage of this option is it relies on actuated penstocks and if it failed it would lead to excessive bypass or surcharge of the inlet works structure.

*Option 6: Flume Inlet Channel Modifications*

This option relies on modifying the flume inlet channel to reduce the magnitude of the hydraulic restriction. Although construction would require a number of shutdowns, construction is considered less complicated than Option 2. Access to cut the concrete walls is readily available and the weir plate can be prefabricated and installed using appropriate masonry anchors. It would be necessary to complete removal and installation of the replacement weir plate within a single shutdown to prevent wet weather bypass.

*Preferred Option*

The options assessment identified Option 4 – Grit Chamber Bypass Pipeline/channel as the preferred approach due to its far superior non-cost criteria scores.

The major advantages associated with Option 4 include:

- Fail safe operation – the system does not rely on actuated penstocks to function
- Provides grit removal of all flows
- Achieves the lowest residual water level of all hydraulically fail-safe option (i.e. greatest freeboard)
- The grit bypass chamber can be effectively isolated during construction, minimising both construction and non-compliance risks associated with multiple inlet works shutdown.

**UV System**

*Option 1: Do nothing*

This option would result in the current system not being able to treat future flows.

*Option 2: New UV Disinfection System*

This option involves installing a new UV system with the capability to treat up to 350 L/s. It would include new pipework and road realignment but the pump station and effluent flow meter would be retained. The current channel would be decommissioned.

*Option 3: Additional UV Disinfection System*

In this option effluent flow would be split between parallel UV disinfection channels to achieve a combined hydraulic capacity of 300 L/s. Road

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realignment would be required and new pipework as the split system would be located near clarifier 4 due to limited space.

#### *Option 4: Upgrade Current UV Disinfection System*

This option involves installing the final two banks of UV lamps in the current system to provide a sufficient UV dose to treat up to 350 L/s. Concerns were expressed about the 90-degree bend in the channel immediately upstream, however there is potential to design around it.

#### *Preferred option*

The assessment identified Option 4 as the preferred approach. The option represented the lowest cost option in terms of initial capital expenditure as well as being similar in operating costs to Options 1 and 2 as they all utilise the same UV system model. This option also provided a number of benefits, including:

- Simplest construction of all options
- Avoids constraints associated with limited footprint around the existing UV
- Avoids potential limitations with hydraulic grade downstream of secondary clarification
- Operationally the system is not expected to provide any major challenges and avoids issues associated with operating two parallel trains
- The system has treatment capacity for 2045 loads but it would be expected that the unit would need to be replaced around 2036, or sooner. Compared to the civil works required for construction of a new UV system the replacement of the existing at that time comes at a significantly lower cost.

### **Carousel Aeration**

#### *Option 1: Do nothing*

This option would result in the current system continuing to represent a substantial compliance risk if one of the existing aerators is offline.

#### *Option 2: Aspirating Aerators*

Aspirating aerators utilise a submerged impellor rotating within a hollow shaft to induce a vacuum. The vacuum draws atmospheric air into the shaft that is then directed into the water body. The impellor generates high turbulence at the end of the shaft to produce fine bubbles, allowing oxygen to diffuse into the mixed liquor.

#### *Option 3: Jet Aerators*

Jet aerators rely on similar principles of drawing atmospheric air into the water body as the aspirating aerators. In this instance, the vacuum is created by a standard centrifugal pump located on the base of the reactor vessel. A snorkel pipe (or group of snorkels) draws surface air into the outlet pipework as flow passes the snorkel connection point. This option includes a sub option (Option 3b) that involves repurposing jet aerators from another Hunter Water facility.

#### *Option 4: Venturi Aerators*

Venturi aerators are another variant on the operational mechanism of jet and aspirating aerators. The prefabricated venturi units consist of a nozzle within an outer pipework casing. A pump is used to draw mixed liquor from the carousel that is then passed under pressure through the aerator. Vents within the casing allow atmospheric air to be drawn into the unit via the 'venturi' effect as pumped mixed liquor accelerates through the nozzle.

#### *Preferred option*

The assessment identified Option 3b, reusing the jet aerators from another Hunter Water facility, as the preferred option. However, the venturi aerators

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scored extremely close. Given the almost identical ranking of the two options, a subsequent meeting was held to discuss the merits of both approaches. It was identified that reusing existing aerators or procurement of new aerators contributed to Hunter Water's sustainability goals, as well as being proven aeration technology at other Hunter Water treatment plants.

Key risks associated with the reuse of the jet aerators were found to be manageable:

- Grit Accumulation – Placing the aerators in the immediate vicinity of the existing surface aerators should avoid issues with placement on the reactor floor due to greater turbulence in this region. This has been demonstrated at the previous facility.
- Lifting Chain Damage – Following previous issues, the lifting chain arrangement has been changed to avoid damaging the pump casing in future installations
- Timing – Procurement and delivery of new Jet Aerators delays due to Manufacture and COVID restrictions.

### **Sludge Lagoons**

#### *Option 1: Do nothing*

This option involves leaving the sludge lagoons as they are. The sludge lagoons have deteriorated to a point where they are no longer fit for purpose and pose a risk of contamination to groundwater.

#### *Option 2: Reline One Sludge Lagoon*

This option involves relining one existing sludge lagoon and the second sludge lagoon would be decommissioned as it is not required for future operations.

#### *Preferred option*

Reline one of the sludge lagoons with HDPE and a concrete base for future use. Decommission the other sludge lagoon so this area may be used in future upgrades.

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### 3 STATUTORY CONTEXT

#### 3.1 Environmental Planning and Assessment Act 1979

The *Environment Planning and Assessment Act 1979* (EP&A Act) is the principal legislation for environmental planning and assessment in NSW. The EP&A Act provides for creation and implementation of State Environment Planning Policies (SEPPs) and Local Environment Plans (LEPs), collectively referred to as Environmental Planning Instruments (EPIs). Relevant EPIs for the proposal are listed in the following sections. Also discussed below are other legislative requirements of relevance to the proposal.

The description of the proposal and associated environmental impacts has been carried out with consideration of Section 171(2) of the *Environmental Planning and Assessment Regulation 2021* (summarised in Appendix B), the BC Act, the FM Act, and the EPBC Act. In doing so, the MWREF helps to fulfil the requirements of section 5.5 of the EP&A Act that Hunter Water examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

#### 3.2 Environmental planning instruments

##### 3.2.1 Port Stephens Local Environmental Plan 2013

The *Port Stephens Local Environmental Plan 2013* (Port Stephens LEP) provides for land use zones and planning controls associated with the site.

Clause 5.12 of the Port Stephens LEP states that this LEP does not restrict or prohibit the carrying out of any development, by or on behalf of a public authority, that is permitted to be carried out with or without development consent under the State Environmental Planning Policy (Infrastructure) 2007 (ISEPP). Hunter Water is a public authority and is the proponent and determining authority under Part 5, Division 5.1 of the EP&A Act for the proposal.

The site is zoned SP1 – Special Activities. The zone objectives for SP1 land are:

1. To provide for special land uses that are not provided for in other zones.
2. To provide for sites with special natural characteristics that are not provided for in other zones.
3. To facilitate development that is in keeping with the special characteristics of the site or its existing or intended special use, and that minimises any adverse impacts on surrounding land.
4. To ensure the protection of water catchment areas to safeguard the quality and quantity of groundwater and surface water.
5. To facilitate the provision of infrastructure provided by Hunter Water Corporation.

##### 3.2.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

The State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) describes certain developments that may be carried out without consent in order to facilitate the delivery of infrastructure in NSW.

Chapter 2, Division 18, Section 2.126(2) of the T&I SEPP enables development for the purpose of sewage treatment plants to be carried out without consent on land in a prescribed zone in the prescribed circumstances. The proposal would be located on land zoned SP1 Special Activities which is a prescribed zone and would be carried out by, or on behalf of, a public authority (a prescribed circumstance). As the proposal would form part of an existing WWTW and Hunter Water is a public authority, it is considered permissible without consent pursuant to the provisions of T&I SEPP and can be assessed under Division 5.1 of the EP&A Act. Development consent from Council is not required.

### **3.2.3 State Environmental Planning Policy (Biodiversity and Conservation) 2021**

#### *Chapter 2 – Vegetation in non-rural areas*

The proposal is within land to which Chapter 2 of the State Environmental Planning Policy (Biodiversity and Conservation) 2021 (B&C SEPP) applies, being SP1 zoning. A permit to clear vegetation from the Council must be sought for any vegetation that is declared by a Development Control Plan (DCP) to be vegetation to which Part 3 of the B&C SEPP applies. No vegetation listed in the Port Stephens DCP within the proposal site would be cleared and therefore a permit would not be required. In addition, Chapter 2, Section 2.4 (1) of the B&C SEPP states: '*This Policy does not affect the provisions of any other SEPP....*'. As the works are permissible under the T&I SEPP, a Council permit to clear vegetation under this Chapter is not required. Potential ecological impacts have been considered in Section 5.3.

#### *Chapter 4 – Koala habitat protection 2021*

Chapter 4 of the B&C SEPP aims to encourage the proper conservation and management of natural vegetation areas that provide habitat for koalas to ensure that permanent, free living areas are maintained over their present range. The policy applies to a number of LGAs across NSW, including the Port Stephens LGA.

The proposal may be carried out without development consent and as such the provisions of B&C SEPP do not apply. The potential ecological impact of the proposal has been considered in Section 5.3.

### **3.2.4 State Environmental Planning Policy (Resilience and Hazards) 2021**

#### *Chapter 3 – Hazardous and offensive developments*

Chapter 3 of the State Environmental Planning Policy (Resilience and Hazards) 2021 (R&H SEPP) presents a systematic approach to the assessment of development projects for potentially hazardous and offensive industry or storage. Section 3.12 states that an applicant who proposes to make a development application to carry out development for the purposes of a potentially hazardous industry must prepare a preliminary hazard analysis in accordance with the current circulars or guidelines published by the DPIE and submit the analysis with the development application.

The '*Hazardous and Offensive Development Application Guidelines*' (DPIE, 2011) provides advice on interpreting and implementing this Chapter. The guidelines state that this Chapter strictly applies only to proposals which fall within Part 4 of the EP&A Act (that is, those proposals which require development consent or project approval). However, if a Division 5.1 determining authority considers that an assessment of hazard or offence is relevant to its environmental considerations of a proposal, it could follow the assessment principles set out in these guidelines. As this proposal relates to an existing WWTW and upgrades to components thereof, an assessment in accordance with the guidelines is not required.

#### *Chapter 4 – Remediation of land*

Chapter 4 of the R&H SEPP promotes the remediation of contaminated land to reduce the risk of harm to human health or other environmental systems. Section 4.6 of this Chapter requires consideration of whether the land is contaminated and whether it is suitable (or can be made suitable) for proposed development. As the proposal is being assessed under Division 5.1 of the EP&A Act, Hunter Water is not required to consider this Chapter however land contamination has been discussed. The proposal is not located on, or adjacent to any known contaminated lands (refer Section 5.1).

### 3.3 Relevant legislation

#### 3.3.1 Protection of the Environment Operations Act 1997 (NSW)

The Raymond Terrace WWTW is licenced under the *Protection of the Environment Operations Act 1997* (POEO Act). The Environment Protection Licence (EPL) 217 refers to the operation of the site as a WWTW. No variations are anticipated to the existing EPL for this upgrade.

#### 3.3.2 Biodiversity Conservation Act 2016 (NSW)

The *Biodiversity Conservation Act 2016* (BC Act) sets out the legislative requirements needed to maintain a healthy, productive and resilient environment in NSW, consistent with the principle of Ecologically Sustainable Development (ESD). If any of the listed threatened species or ecological communities under the BC Act are impacted by the proposal, the proponent may either apply the Biodiversity Offset Scheme or prepare a Species Impact Statement (SIS).

The biodiversity impacts associated with this proposal are assessed in Section 5.3. The proposal is unlikely to have a significant impact on any threatened species or ecological communities as the works are within the existing WWTW site and no vegetation requires removal.

#### 3.3.3 Biosecurity Act 2015

Under the *Biosecurity Act 2015*, which came into effect on 1 July 2017, 'all plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable'.

A number of weed species may be present within the proposal site. Management of these weed species during the work would be undertaken in a manner to minimise their further proliferation under the *Biosecurity Act 2015*. The REF includes measures to address the weed management, refer to Section 5.3.

#### 3.3.4 National Parks & Wildlife Act 1974 (NSW)

The *National Parks and Wildlife Act 1974* (NPW Act) aims to conserve nature and objects, places or features of cultural value by applying the principles of ESD.

Sections 86, 87 and 90 of the NPW Act require an Aboriginal Heritage Impact Permit (AHIP) to harm or desecrate Aboriginal objects or Aboriginal places. An assessment of the potential impacts on Aboriginal heritage is provided in Section 5.6. The proposal is assessed as having low potential for containing areas or impacting on items of Aboriginal heritage, and therefore does not trigger the requirement for an AHIP for the proposed works.

#### 3.3.5 Rural Fires Act 1997

Under section 63 of the *Rural Fires Act 1997*, public authorities must take all practicable steps to prevent the occurrence and spread of bush fires on or from land vested in or under its control or management. The proposal is located in bushfire-prone land and is discussed in Section 5.12.

#### 3.3.6 Waste Avoidance and Resource Recovery Act 2001

The *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) aims to encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ESD. The proposal would involve efficient use of resources, including utilising resources from local sources where practicable. Waste generation and management is discussed in Section 5.11.



### 3.3.7 Water Management Act 2000

The *Water Management Act 2000* (WM Act) aims to ensure sustainable and integrated management of water resources for the benefits of both current and future generations. The WM Act applies to the proposed activity as it is within the area of the Water Sharing Plan for the North Coast Coastal Sands Groundwater Sources 2016. Section 56 of the WM Act requires an access licence for extraction of groundwater. Clause 21 and Schedule 4 of the Water Management (General) Regulation 2018 provides an exemption where extraction of groundwater does not exceed three (3) megalitres (ML). If construction activities require extraction of >3ML of groundwater, then a water access licence may be required.

As a public authority, Hunter Water is exempt from the requirement for a controlled activity approval under clause 41 of the Water Management (General) Regulation 2018. Management of potential impacts to water quality in nearby water bodies is discussed in Section 5.2.

### 3.3.8 Hunter Water Act 1991

The *Hunter Water Act 1991* provides for the establishment and operation of Hunter Water as a state-owned corporation to supply water, provide sewerage and drainage services, and dispose of wastewater. Hunter Water's primary functions are established in the Act and are regulated by the NSW Government through the current Operating Licence administered by the Independent Pricing and Regulatory Tribunal. The Operating Licence sets out conditions relating to wastewater transport as well as drinking water quality and environmental requirements.

### 3.3.9 Environment Protection & Biodiversity Conservation Act 1999 (Cth)

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) a referral is required to the Australian Government Department of Agriculture, Water and the Environment (DAWE) for proposed actions that have the potential to significantly impact on Matters of National Environmental Significance (MNES) or the environment of Commonwealth land.

The assessment of the proposal's impact on nationally listed threatened species, endangered ecological communities and migratory species has found that there is unlikely to be a significant impact on relevant MNES. These are considered in Section 5.3 and Appendix C.

## 4 CONSULTATION

### 4.1 T&I SEPP consultation

Chapter 2, Part 2.2, Division 1 of the T&I SEPP prescribes consultation to be undertaken by a public authority prior to the commencement of certain activities. A review of the T&I SEPP consultation requirements for the proposal is provided in Table 4-1.

Table 4-1 T&I SEPP consultation requirements

Is consultation required under Sections 2.10 – 2.14 of T&I SEPP?	Yes/No
Is the proposal likely to have a substantial impact on stormwater management services which are provided by council?	No
Is the proposal likely to generate traffic to an extent that will strain the capacity of the existing road system in a local government area?	No
Will the proposal involve connection to a council owned sewerage system? If so, will this connection have a substantial impact on the capacity of any part of the system?	No
Will the proposal involve connection to a council owned water supply system? If so, will this require the use of a substantial volume of water?	No
Will the proposal involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a minor or inconsequential disruption to pedestrian or vehicular flow?	No
Will the proposal involve more than minor or inconsequential excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?	No
Is the proposal likely to have a more than minor or inconsequential impact on a local heritage item (that is not also a State heritage item) or a heritage conservation area?  <i>(Note: local heritage item means —</i> <i>(a) a place, building, work, relic, tree, archaeological site or Aboriginal object that is identified as a heritage item (or by a similar description) in a local or regional environmental plan, or</i>  <i>(b) an item of local heritage significance, as defined by the Heritage Act 1977, that is the subject of an interim heritage order in force under that Act or is listed as an item of local heritage significance on the State Heritage Inventory under that Act.)</i>	No
Is the proposal located on flood liable land? If so, will the works change flood patterns to more than a minor extent?	No

Is consultation required under Sections 2.10 – 2.14 of T&I SEPP?	Yes/No
<p>Is the proposal characterised as stormwater management systems under Division 20 and located on flood liable land? If so, do the works comprise more than minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance?</p> <p><i>Note: Flood liable land means land that is susceptible to flooding by the probable maximum flood event, identified in accordance with the principles set out in the manual entitled Floodplain Development Manual: the management of flood liable land published by the New South Wales Government.</i></p>	No
<p>Is the proposal within the coastal vulnerability area and is inconsistent with a certified coastal management program applying to that land?</p> <p>Note: See interactive map here: <a href="https://www.planning.nsw.gov.au/policy-and-legislation/coastal-management">https://www.planning.nsw.gov.au/policy-and-legislation/coastal-management</a>. Note the coastal vulnerability area has not yet been mapped.</p> <p>Note: a certified coastal zone management plan is taken to be a certified coastal management program.</p>	No
Is consultation with a public authority other than Council required under Section 2.15 of T&I SEPP?	Yes/No
Is the proposal adjacent to a national park or nature reserve, or other area reserved under the <i>National Parks and Wildlife Act 1974</i> , or on land acquired under that Act?	No
Is the proposal on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	No
Does the proposal consist of a fixed or floating structure in or over navigable waters?	No
Is the proposal on land in a mine subsidence district within the meaning of the <i>Coal Mine Subsidence Compensation Act 2017</i> ?	No

## 4.2 Community consultation

Consultation would occur with relevant community members and would be outlined in the site requirements as part of the Consultation and Stakeholder Engagement Plan (CSEP).

## 4.3 Department of Primary Industries – Fisheries

Will the proposal involve dredging or reclamation works in a waterway?	Yes/No
This includes any excavation within, or filling or draining of, water land or the removal of woody debris, snags, rocks or freshwater native aquatic vegetation or the removal of any other material from water land.	No

## 5 ENVIRONMENTAL ISSUES IDENTIFICATION

This section provides a description of potential impacts associated with the proposal and specifies measures to mitigate identified impacts. All aspects of the environment potentially impacted by the proposal are considered. A summary of the consideration of factors specified in Section 171(2) of the *Environmental Planning and Assessment Regulation 2021* is provided in Appendix B. A summary of the matters of national environmental significance under the EPBC Act is provided in Appendix B.

### 5.1 Topography, soils and geology

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the work require excavations or other ground disturbing activities?	Yes	Minor excavations would be required for structural footings and cabling etc. The sludge lagoon would require some excavation for a concrete base and preparation of the embankments for lining. An erosion and sediment control plan will be prepared and implemented.	
Would the work require plant/vehicular movements on unsealed areas?	No	The proposal would take place on sealed roads within the existing WWTW.	
Could the work occur in an area of high erosion risk (eg, due to nature of soils, topography)?	No		eSPADE viewed on 14 July 2022
Could the work impact on or have the potential to impact on Acid Sulfate Soils (ASS)?	Yes	The acid sulfate soil (ASS) mapping under the <i>Port Stephens LEP 2013</i> classifies the lot as mainly Class 4 ASS land. There is a small portion of Class 2 ASS but this is outside of the area required for the proposal. Class 4 ASS land means works >2m may encounter ASS. As the works are not planned to be 2m in depth it is unlikely ASS would be encountered during works.	Port Stephens LEP Maps accessed 14 July 2022
Could the work impact on areas of known salinity risk?	No		eSPADE viewed on 14 July 2022
Could the work result in disturbance of contaminated land?	No	A search of the EPA contaminated land database did not identify any of the proposal area to be on contaminated land.	NSW EPA contaminated land record of notices and list of notified NSW contaminated sites accessed on 14 July 2022

## 5.2 Hydrology and water quality

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Could the work impact a water catchment area? Do any of the work areas drain directly to Hunter Water special areas?	No	The proposal site is not located in a water catchment area.	
Could the work impact directly or indirectly on a waterway? (including creek crossings and underboring a waterway)	Yes	Grahamstown Drain is located immediately North of the WWTW and Windeyer's Creek is located immediately South of the WWTW. The WWTW is located East of the confluence of these two drainage lines which is approximately 3km from the Hunter River. Measures to mitigate any risks associated with the proposal and impacts to these drainage lines are included in Section 6.	
Is the work located on flood prone land? Could the work result in impacts to flooding regimes and flows? Could the work be impacted by flooding?	Yes	The <i>Port Stephens LEP 2013</i> indicates that the area of the Raymond Terrace WWTW is within a Flood Planning Area. However, the work is highly unlikely to result in changes to flooding regimes or flows.	NSW Planning Portal accessed 14 July 2022
Would the work be likely to encounter groundwater or require discharge of accumulated water?	No	No deep excavations have been proposed.	
Would the works result in permanent changes to existing surface drainage patterns?	No	The proposal would have minimal impact on the current hydrology of the existing WWTW site and surrounding area. It is unlikely that there would be any impacts on local flooding as a result of the proposal.	

## 5.3 Biodiversity

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the work require vegetation removal?	No	The proposal would be located within the cleared area of the existing Raymond Terrace WWTW.	Appendix A
Would the work occur within the Tree Protection Zone of any trees? (Defined as: 12 x diameter of the trunk at 1.4m high)	No	The proposal would not occur within the Tree Protection zone of any trees.	

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Could the work impact directly or indirectly on <i>Biodiversity Conservation Act 2016</i> or <i>Fisheries Management Act 1994</i> listed species or threatened ecological community or areas of outstanding biodiversity value under the BC Act or critical habitat under the FM Act?	No	As no vegetation is required to be removed, the site consists of maintained lawns and the minor nature of the works (refer to Appendix A) the proposal is highly unlikely to affect any BC Act listed species, populations or ecological communities. No native vegetation is proposed to be removed for the proposal. Measures to mitigate any risks associated with excavation are included in Section 6.	NSW Bionet Atlas search in February 2021
Could the work impact directly or indirectly on an <i>Environment Protection and Biodiversity Conservation Act 1999</i> listed species, ecological community or migratory species?	No	It is unlikely that the works would affect any EPBC Act listed species, ecological communities or migratory species given the proposal would occur within the already cleared Raymond Terrace WWTW and the minor nature of the work, refer to Appendix A. No native vegetation is proposed to be removed for the proposal. Measures to mitigate any risks associated with excavation are included in Section 6.	Protected Matters database Search in February 2021 (Appendix C)
Could the work impact (directly or indirectly) on areas mapped in the R&H SEPP (Chapter 2), coastal management, littoral rainforests, marine parks, national parks estate, biodiversity stewardship sites or wilderness areas?	No	The site is located >2km from the nearest Coastal Wetland and ~1.9km from the Tilligerry State Conservation Area. Measures to mitigate any risks associated with impacts to coastal wetlands are included in Section 6.	R&H SEPP 2021 ePlanning spatial viewer on 14 July 2022
Could the work impact (directly or indirectly) on aquatic or riparian vegetation including seagrasses, mangroves or saltmarshes?	No	There is aquatic/riparian vegetation located within the lot boundary of the Raymond Terrace WWTW but no vegetation would be cleared for the proposal.	R&H SEPP 2021 ePlanning spatial viewer on 14 July 2022
Would the work require the disturbance or removal of any priority or environmental weeds listed in the <i>Hunter Regional Strategic Weed Management Plan 2017-2022</i> ?	Uncertain	The presence of weeds is unknown at this stage so measures to mitigate any risks associated with weeds, if present, are included in Section 6.	
Would the work impact on fish passage?	No	The proposal would not impact on fish passage.	

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the work have potential to displace fauna or create a barrier to fauna movements?	No	The proposal area is considered fragmented and would not displace or create a barrier to fauna movements.	

#### 5.4 Noise and vibration

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Are there any sensitive receivers in the vicinity of the proposal? (eg residential, schools, church, important native fauna populations)	Yes	Nearest residential receiver located approx. 160m east. Other residential receivers located approx. 270m north and north-east. Nearest non-residential receiver is the Raymond Terrace cemetery located 325m north.	Refer to Appendix D
Could the proposal result in construction noise impacts for longer than three weeks, or outside of standard working hours? Was a quantitative noise assessment undertaken?	Yes	The proposal is expected to take up to twelve (12) months to complete and a quantitative noise assessment has been carried out to predict noise levels during construction using the Roads and Maritime Construction and maintenance Noise Estimator tool available on the Transport for NSW website.	Road and Maritime Construction and Maintenance Noise Estimator – February 2021 (refer Appendix D)
Could the proposal result in noise impacts on receivers during construction?	Yes	<p><b>Construction noise</b></p> <p>Construction of the proposal would include noise generating activities as a result of machinery operations and concrete sawing/cutting activities. The impacts on receivers would be intermittent with periods of low noise work.</p> <p>The distance based (noisiest plant) assessment method contained within the Roads and Maritime Construction and Maintenance Noise estimator tool was used to assess impacts on receivers (refer to Appendix D). The noisiest plant selected was a concrete saw. The estimator tool uses pre-defined representative noise environments. Attended and unattended noise monitoring was carried out for the Raymond Terrace WWTW HAZCHEM Upgrade REF (Hunter Water, 2019) at two locations. The monitoring location at the eastern boundary (NM01) has been adopted to guide the determination of an appropriate representative noise environment for the proposal. The location indicated a rating background level of 52 dB(A) during</p>	Road and Maritime Construction and Maintenance Noise Estimator – February 2021 (refer Appendix D)

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
		<p>standard construction hours. As such, the R3 category in the estimator tool was selected as the most appropriate.</p> <p>The resultant noise management level (NML) for standard working hours is 60 dB(A).</p> <p>The outcomes of the assessment identified that noise levels during the operation of the concrete saw would exceed the NML during standard working hours at receivers within 155 metres of the proposal area.</p> <p>The closest residential receiver is approx. 160 metres to the east of the proposal. There are no other residences within 270m of the proposal. Noise levels would not be expected to exceed the NML at the closest residential receiver.</p> <p>No receivers would be highly noise affected, defined by noise levels above 75 dB(A).</p> <p>No out of hours work is predicted, therefore no impacts at night are predicted.</p> <p>Noise levels would be intermittent and with the measures proposed to mitigate any noise impacts, refer to Section 6, noise impacts should be acceptable.</p> <p><b>Vibration assessment</b></p> <p>Certain construction activities would require the use of vibration intensive equipment that may affect the nearest sensitive receivers. Based on the specific fleet provided and the large separation distances to nearby receivers, it is unlikely that construction works would result in the potential for vibration impacts at any structures or residences in the project area.</p> <p>No construction vibration impacts are anticipated.</p>	
<p>Could the proposal result in noise impacts on receivers during operation?</p>	<p>No</p>	<p>Operation of the proposal would not permanently change the background noise.</p>	
<p>Could the proposal result in vibration impacts on nearby properties or infrastructure?</p>	<p>No</p>	<p>Some vibration-intensive equipment may be used during the proposal including sawing equipment. The closest residents are located about 160 m east of the proposal. Cosmetic damage (BS7385-2: 1993) and Human response safe (DECC, 2006) working distances are 1m and 1m for handheld hammering equipment, respectively. As such vibration impacts would not be expected to arise during the works.</p>	



## 5.5 Non-Aboriginal heritage

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Were all relevant heritage database searches carried out?	Yes	The search of the heritage registers identified no heritage items within the proposal area. The closest heritage item is located approx. 300 m north of the proposal. The heritage item is the Raymond Terrace Cemetery and Pioneer Hill Cemetery (item No. 139) located at 1A Elizabeth Avenue, Raymond Terrace listed as a local heritage item on the Port Stephens LEP.	Searched on 14 July 2022: <ul style="list-style-type: none"> <li>• NSW Heritage database (inventory)</li> <li>• Port Stephens LEP</li> <li>• Hunter Water's s.170 register</li> </ul>
Could the works impact on an item of heritage significance or a heritage conservation area?	No		
Could the works impact on areas of archaeological potential?	No		

## 5.6 Aboriginal heritage

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the work require ground disturbance?	Yes	The proposal includes minor ground excavation for Inlet works access flooring, UV installation cabling, aerators cabling and to clean and prepare the sludge lagoon for lining.	
Has an Aboriginal Heritage Information Management System (AHIMS) search been completed and were any known Aboriginal items or places identified within or in the vicinity of the proposal site?	Yes	An AHIMS search was carried out on 14 July 2022 and no Aboriginal objects/sites are listed within 50m of the proposal site. A search of the Hunter Water WebGIS for Aboriginal objects/sites also shows no sites within the proposal area.	AHIMS searched on 14 July 2022, refer to Appendix E Hunter Water WebGIS accessed 14 July 2022
Would the work occur in or near sensitive landscape features as defined in the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (2010)?	No	The proposal would occur within an existing WWTW that has been constructed and operated for some time.	
Could harm to AHIMS listed sites or places or landscape features be avoided?	Yes	None listed.	

## 5.7 Traffic and access

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the works occur on a public road and could the proposal disrupt traffic flow or access during construction?	Yes	The adjacent residential property approximately 160m east of the proposal may be interrupted during deliveries etc as there is a shared access road. Consultation with the adjacent land owner should occur prior to works commencing.	N/A
Could the proposal disrupt pedestrian or cycle access during construction?	No	The proposal would not result in impacts on pedestrian or cyclist access.	N/A
Could the proposal result in permanent changes to traffic flow or access during operation?	No	The proposal would not result in any permanent changes to traffic flow or access following completion of work.	N/A
Could the proposal result in impacts on available parking during construction or operation?	No	The proposal would not require the use of existing public parking areas during construction or operation.	N/A

## 5.8 Visual environment

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Could the proposal be visible by residential or other sensitive receivers?	Yes	The nearest residential receiver is located approximately 160m east of the proposal. The works would likely be visible to the neighbouring resident, however the existing plant is also visible. Consultation with the adjacent land owner will occur prior to works commencing.	N/A
Would the proposal result in permanent changes to the visual environment through installation of any above ground infrastructure or removal of vegetation?	No	The proposal is for upgrades or improvements to existing infrastructure. Therefore, the operation of the proposal would be consistent with the current visual environment of an operating WWTW and would not result in permanent changes.	N/A
Would the work be located in an area of high scenic value?	No	The location of the proposal is not located in an area of high scenic value as the proposal is located within an existing WWTW site. The proposal would not be visually intrusive and would not result in a noticeable impact on the scenic value of the area or views. The proposal would be keeping in with the current industrial surroundings.	N/A

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the work require additional lighting during construction or operation?	No	The proposal would be constructed during standard construction hours and no lighting would be required during construction. Operation of the proposal would not result in additional lighting within the proposal area.	N/A

### 5.9 Socioeconomic, land use and services

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Could the work impact private property including access?	Yes	The nearest residential receiver is located approximately 160m east of the proposal and shares a common access road. Consultation with the adjacent land owner will occur prior to works commencing.	N/A
Could the work impact busy commercial areas or local businesses?	No	Impacts on commercial areas or local businesses are not expected as a result of the proposal.	N/A
Could the work result in a loss of an existing landuse either during construction or operation?	No	The proposal would not result in a loss of existing land use. The proposal area is located within an existing Hunter Water operational WWTW. No change in land use would occur.	N/A
Would the proposal result in the installation of a structure or facility that could be considered objectionable or a nuisance?	No	The proposal would not be considered objectionable or a nuisance and would be consistent with the existing land use.	N/A
Would the work require disruption to water or sewerage services?	No	The proposal would not disrupt water or sewer services.	N/A

### 5.10 Air quality and energy

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Could the work result in air quality impacts on sensitive receivers during construction or operation? (eg dust, odours)	Yes	The closest residential receiver is located approximately 160m east of the proposal. The proposal would have the potential to generate dust during construction. Given the minor nature of ground disturbance and distance to receivers, sensitive receivers are unlikely to be impacted.	

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
		Measures would be implemented to minimise the generation of dust during the work if required (refer to Section 6). There would be no long-term potential for air quality impacts once the disturbed areas are stabilised.	
Would the work involve the use of fuel-driven machinery or equipment (other than from vehicles transporting personnel to site)?	Yes	The work would involve the use of a small number of fuel driven plant and equipment on site. This would result in minor emissions.	
Would the operation of the proposal result in high energy use and was energy use considered in the design development?	No	The proposal would only require minor increases to electricity use following construction as some additional equipment is being installed to supplement operations of existing equipment.	

### 5.11 Waste and resource use

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the work result in generation of 'non-hazardous' waste? If so, how would this be managed?	Yes	<p>The proposal would result in generation of the following waste:</p> <ul style="list-style-type: none"> <li>• Spoil – small volumes of spoil may be generated and would be reused onsite if suitable or separated and sent for recycling or disposal at an appropriate facility</li> <li>• Sludge lagoons – small volumes of spoil are anticipated to be generated to facilitate the relining of the sludge lagoon. This material may be placed in the adjacent lagoon, classified for potential reuse as biosolids, or disposed of at an appropriately licenced facility.</li> <li>• Building waste – building waste would be generated from the augmentation of the inlet works etc. The materials would be separated and sent to an appropriately licensed recycling facility or for disposal.</li> </ul> <p>All waste generated from the proposal would be managed in accordance with the principles of waste minimisation. Material would be reused on site if possible. If not suitable for reuse material would be classified and</p>	

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
		disposed of in accordance with the NSW EPA's <i>Waste Classification Guidelines</i> .	
Would the work result in the generation of 'wastewater' (e.g. process wastewater, chlorinated water, sediment-laden water, drilling fluid, groundwater generated by drilling)?	No	The proposal is not expected to generate any wastewater.	
Would the work result in asbestos, contaminated soils or other hazardous waste?	No		
Have opportunities for waste reduction and/or reuse been considered?	No	Given the minimal resources required and potential waste generation, waste reduction opportunities were not considered.	

## 5.12 Hazards and risks

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Would the proposal be located in a bushfire risk area or have potential to result in a bushfire risk?	Yes	The Raymond Terrace WWTW is located on land identified as Bushfire Prone Land: Vegetation Category 1 and 2 and Buffer Land. The proposal however would be constructed in cleared areas with no native vegetation to be removed. A Hot Work Permit is to be used in areas identified as Bushfire Prone Land to minimise risks of starting a fire.	ePlanning spatial viewer on 14 July 2022
Would the work include handling hazardous chemicals or dangerous goods?	No		N/A
Would the proposal be located in a coastal area that could be subject to coastal hazards?	No		N/A
Would the work result in any other hazards or risks to the environment?	No		N/A

### 5.13 Cumulative impacts

Risk identification	Yes/No	Description of potential impact	Source and date (if relevant)
Could impacts from other projects interact with the proposal?	No	There are no known projects planned for the WWTW that would interact with this proposal.	

## 6 ENVIRONMENTAL SAFEGUARDS AND OTHER REQUIREMENTS

### 6.1 Mitigation measures

This section provides a list of environmental mitigation measures to be implemented to reduce the potential for environmental impacts during the construction and operation of the proposal. The measures must be incorporated as conditions of contract in any contract or work specification for the proposal and a Construction Environmental Management Plan (CEMP) for the works.

Table 6-1 Summary of mitigation measures

Aspect	Ref no.	Mitigation measure	Responsibility	Timing
General	G1	<p>A Construction Environmental Management Plan (CEMP) will be prepared prior to commencement of work and will address the following:</p> <ul style="list-style-type: none"> <li>• Any requirements associated with statutory approvals</li> <li>• Details of how the project will implement the identified safeguards outlined in this REF</li> <li>• Issue-specific environmental management plans</li> <li>• Roles and responsibilities</li> <li>• Communication requirements</li> <li>• Induction and training requirements</li> <li>• Procedures for monitoring and evaluating environmental performance, and for corrective action</li> <li>• Reporting requirements and record-keeping</li> <li>• Procedures for emergency, incident and hazard management</li> <li>• Procedures for audit and review.</li> </ul> <p>The endorsed CEMP will be implemented during the undertaking of the proposal.</p>	Contractor	Pre-construction
	G2	All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the project.	Contractor	Pre-construction
	Topography, Soils & Geology	TSG1	The CEMP prepared for the activity will include a site-specific Erosion and Sediment Control Plan (ESCP). The ESCP will include arrangements for managing wet weather events, including monitoring of potential high-risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.	Contractor
TSG2		Erosion and sediment controls are to be implemented and maintained consistent with Managing Urban Stormwater: Soils and Construction. Fourth Edition ed. Sydney (NSW) (Landcom, 2004) (the Blue Book). Controls will:	Contractor	Construction

Aspect	Ref no.	Mitigation measure	Responsibility	Timing
		<ul style="list-style-type: none"> <li>Prevent sediment moving off-site and sediment laden water entering any watercourse, drainage line, or drain inlets</li> <li>Divert clean surface flow around exposed areas and stockpiles</li> <li>Reduce water velocity and capture sediment</li> <li>Minimise the amount of material tracked onto paved surfaces</li> <li>Be cleaned out before 70% capacity of controls is reached.</li> </ul> <p>Controls will be regularly monitored and maintained until such time as the affected area is stabilised.</p>		
	TSG3	Stockpiles will be placed away from the Tree Protection Zones (TPZ) of trees and have appropriate erosion control devices installed to control runoff and prevent sedimentation.	Contractor	Construction
	TSG4	Disturbed areas will be stabilised as soon as practical after completion of works. Erosion and sediment controls will not be removed until suitable ground cover is achieved in accordance with the Blue Book.	Contractor	Construction
	TSG5	If Acid Sulphate Soils (ASS) are encountered notify the Hunter Water Project Manager. Typical management measures include: minimising exposure times of excavated materials; replacing soils below the water table; and neutralising acid production, e.g. adding lime or other measures	Contractor	Construction
Hydrology & Water Quality	HWQ1	<p>Control measures to minimise the risk of water pollution will be included in the ESCP. The following measures will be included to limit sediment and other contaminants entering waterways:</p> <ul style="list-style-type: none"> <li>All fuels, chemicals, and liquids will be stored at least 50 metres away from any waterway and stored in an impervious bunded area within the site and spill kits must be available</li> <li>Plant and maintenance machinery will be refuelled in impervious bunded areas at least 40 metres from waterways and spill kits must be available</li> <li>Run-off from ancillary sites will be controlled and treated before discharging into downstream waterways</li> <li>Vehicle washdowns and/or concrete truck washouts would be carried out within a designated bunded area of an impervious surface or carried out off-site</li> <li>Vehicle movements will be restricted to designated pathways and hardstand areas</li> </ul> <p>Areas that will be exposed for extended periods, such as car parks and main access roads, will be stabilised where feasible.</p>	Contractor	Pre-construction
	HWQ2	Water quality testing is to be carried out prior to the commencement of any dewatering (if required) to confirm the water meets appropriate standards. Dewatered volumes are to be reported to Hunter Water monthly using the 'Contractor – Monthly Environmental & Sustainability Report' form	Contractor	Construction



Aspect	Ref no.	Mitigation measure	Responsibility	Timing
Biodiversity	B1	All work will be contained to inside the nominated area and adjoining vegetation is to be avoided. If works requiring vegetation removal are required notify the Hunter Water Project Manager immediately as additional approvals may be required	Contractor	Construction
	B2	If weeds are identified during works then control/removal should be undertaken in accordance with the Hunter Strategic Weed Management Plan. Details of the typical controls will be included in the CEMP for the activity	Contractor	Construction
	B3	Vehicles or equipment will not be stored in the dripline of any trees	Contractor	Construction
Noise and vibration	N1	<p>Personnel will be inducted and trained in noise mitigation measures to reduce impacts on receivers during inductions and toolbox talks, including:</p> <ul style="list-style-type: none"> <li>• Minimise talking loudly; no swearing or unnecessary shouting, or loud stereos/radios onsite</li> <li>• No dropping of materials from height where practicable, no throwing of metal items and slamming of doors</li> <li>• Turning plant and equipment off when not in use and only operating this equipment within the approved hours</li> <li>• Work deliveries to occur during approved hours</li> <li>• Ensure items/spoil is placed and not dropped into waiting trucks</li> <li>• Regularly inspect and maintain plant to avoid increased noise levels from rattling hatches, loose fittings etc</li> <li>• Use non-tonal reversing/movement alarms such as broadband (non-tonal) alarms or ambient noise-sensing alarms for all plant used regularly onsite and where possible minimise reversing (e.g. forward in, forward out movements).</li> </ul>	Contractor	Pre-construction
	N2	Prepare community information leaflets outlining the expected level of noise impact, as well as the noise mitigation measures that may apply for this type of work	Contractor	Construction
	N3	Undertake specific residential notifications (the proposals Consultation and Stakeholder Engagement Plan (CSEP) may have specific requirements) as required, particularly for the resident located directly east of the site	Contractor	Construction
	N4	A complaint management procedure and register will be developed. Community complaints will be allocated to a responsible contractor representative immediately to investigate, facilitate the implementation of corrective actions and respond to the complainant. Complaints should be reported to the Hunter Water Project Manager. The details of the complaint will also be circulated to the applicable construction personnel for action, where required	Contractor	Construction

Aspect	Ref no.	Mitigation measure	Responsibility	Timing
Non-Aboriginal heritage	H1	If Non-Aboriginal heritage items are discovered during the course of the project, all work will cease in the area and the Contractor will inform the Hunter Water Project Manager as soon as possible. Hunter Water will determine the preferred management approach and the local council and/or Heritage NSW will be notified via the Hunter Water Project Manager if required.	Contractor	Construction
Aboriginal heritage	AH1	If previously unidentified Aboriginal objects are discovered during operations, all work will cease in the area and the Contractor will inform the Hunter Water Project Manager as soon as possible. Hunter Water will determine the preferred management approach and contact DPIE and relevant local Aboriginal stakeholders if required.	Contractor	Construction
	AH2	In the unlikely event that human skeletal material is uncovered during the proposed construction works, all works should cease within 20 metres of the skeletal remains. Should the remains be verified as human, the NSW Police and DPIE will be contacted. No works will proceed within the vicinity of the skeletal remains until an appropriate course of action has been determined in consultation with NSW Police, Heritage NSW and Aboriginal parties (if the remains are identified as Aboriginal).	Contractor	Construction
Traffic and access	T1	Current traffic movements and property accesses will be maintained during the works	Contractor	Construction
	T2	As access is shared with the residential neighbour approx. 160m east, they will be will be consulted with prior to the commencement of works	Contractor	Construction
Visual environment	V1	Sensitive receivers, i.e. residential neighbour approx. 160m east, will be consulted prior to the commencement of works	Contractor	Pre-construction
	V2	Work areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day	Contractor	Construction
	V3	On completion of the works, all vehicles, construction equipment, materials, and refuse relating to the works will be removed from the work site(s) and any adjacent affected areas	Contractor	Construction
	V4	Work sites will be restored as close to their original condition as possible following the completion of the proposed works	Contractor	Construction
Socio-economic, landuse and services	SLS1	As access is shared with the residential neighbour approx. 160m east, they will be will be consulted with prior to the commencement of works	Contractor	Pre-construction
Air quality and energy	A1	<p>During construction, the following measures will be implemented:</p> <ul style="list-style-type: none"> <li>Odour or air pollutant emission complaints will be dealt with promptly and the source will be eliminated wherever practicable</li> </ul>	Contractor	Construction

Aspect	Ref no.	Mitigation measure	Responsibility	Timing
		<ul style="list-style-type: none"> <li>All work sites, general work areas and stockpiles will be closely monitored for dust generation and watered down (with clean water) or covered (via seeding or tarpaulins) in the event of dry and/or windy conditions</li> <li>Regularly review local meteorological conditions and scale back or suspend activities as necessary during inclement (ie, dry, windy) conditions</li> <li>Remove debris from plant and vehicles prior to entering the existing road network, and apply street sweeping as necessary to remove any tracked materials from the site</li> <li>Cover loads entering or leaving the site</li> <li>Potentially dust generating work will not be carried out during strong winds</li> <li>Plant and equipment will be switched off when not in use</li> <li>Vehicles, plant and construction equipment will be appropriately sized for the task and properly maintained so as to achieve optimum fuel efficiency</li> <li>Materials will be delivered with full loads and will come from local suppliers, where possible</li> <li>Energy efficiency and related carbon emissions will be considered when selecting vehicles and equipment.</li> </ul>		
Waste and resource use	WR1	Resource management hierarchy principles are to be followed (in accordance with the <i>Waste Avoidance &amp; Resource Recovery Act 2001</i> ): <ul style="list-style-type: none"> <li>Avoid unnecessary resource consumption as a priority</li> <li>Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery)</li> <li>Disposal is undertaken as a last resort.</li> </ul>	Contractor	Construction
	WR2	All waste generated during the course of the works will be reused or removed from the work areas as soon as practicable and disposed of in accordance with waste regulations, e.g. NSW EPA 'Waste Classification Guidelines'. Spoil from the sludge lagoon may be stored in the adjacent lagoon, classified for reuse as biosolids or disposed of at an appropriately licenced facility.	Contractor	Construction
	WR3	Evidence of the lawful disposal or reuse of waste will be retained and provided to the Hunter Water Project Manager on request	Contractor	Construction
	WR4	The work site(s) will be left clean and free of weeds, debris and other rubbish at the end of works	Contractor	Construction
Hazards and risks	HR1	Emergency contacts will be kept in an easily accessible location. All workers will be advised of these contact details and procedures.	Contractor	Construction
	HR2	Works generating sparks etc are to be undertaken utilising a 'Hot Work Permit' or similar process that outlines measures to mitigate potential fire risks. Fire extinguishers should be located within the work sites and/or on machinery/vehicles.	Contractor	Construction

Aspect	Ref no.	Mitigation measure	Responsibility	Timing
Cumulative impacts	C1	If other projects at the Raymond Terrace WWTW overlap with this proposal thought should be given to the timing of certain activities, e.g. deliveries, and communication should be kept open to assist in minimising any cumulative impacts	Contractor	Construction

## 6.2 Licensing and other requirements

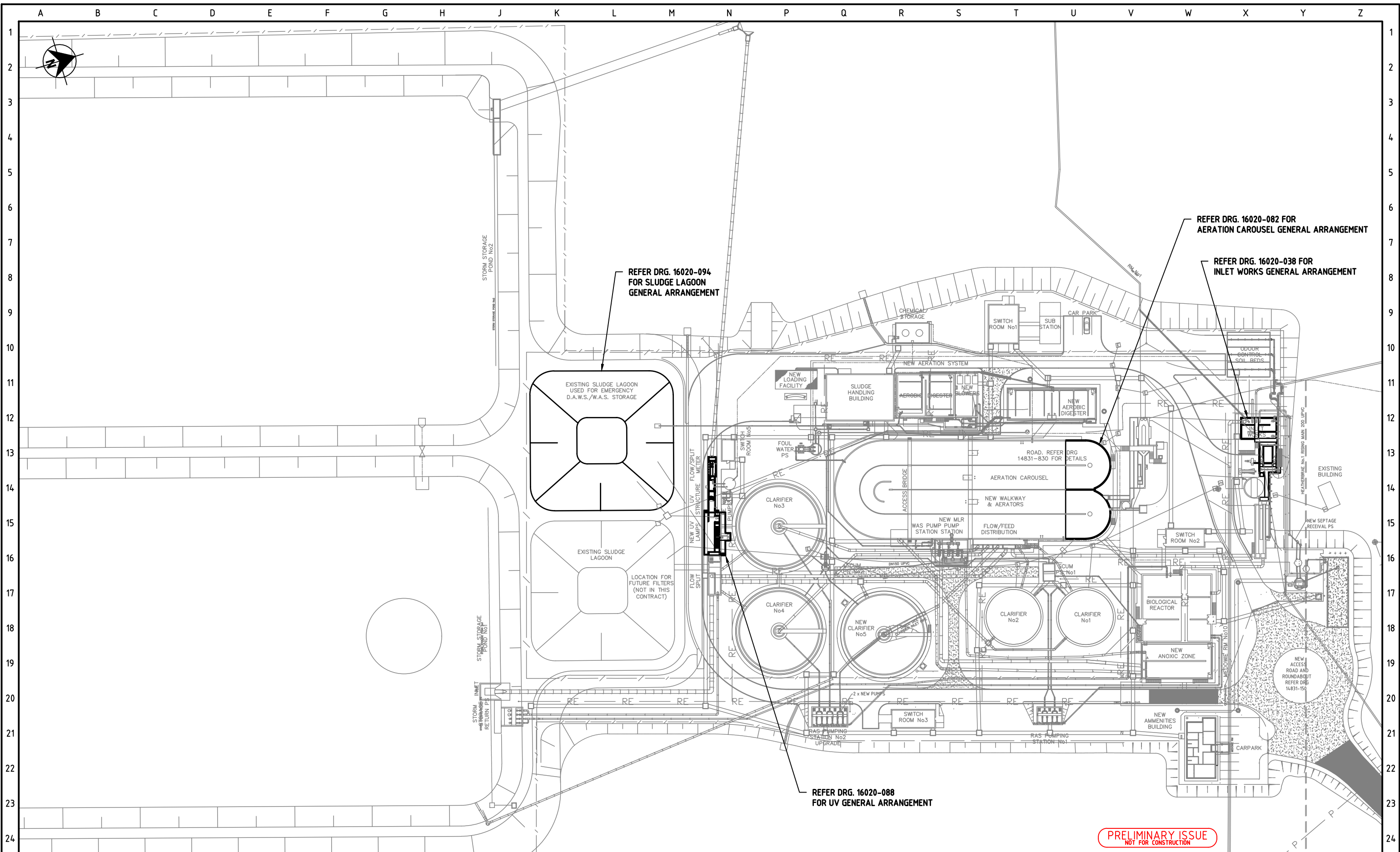
No licenses or approvals in addition to the Division 5.1 of the (EP&A Act) approval is required for the proposal.

**APPENDIX A DESIGN DRAWINGS AND PROJECT DETAIL**

## Raymond Terrace WWTW Stage 3 Upgrade – Project Details

The proposed Raymond Terrace WWTW Stage 3 Upgrade includes the following components:

- Inlet Works:
  - Provision of a stainless steel bypass channel from the grit chamber bypass to the storm channel to remove current hydraulic restriction
  - Modification to the manually raked screen to address manual handling and access risks
  - Modification balance tank covers to prevent uplift during high flow events
  - Concrete remediation in key areas identified during previous condition assessments (the inlet works screening channels and flume channel outlet)
  - Installation of level instrumentation and cabling to the existing PLC rack in Switchroom 2
  - Installation of a flow paced autosampler at the grit chamber
- Carousel:
  - Installation of three 37 kW jet aerators into the carousel.
  - Instrumentation and cabling to the existing PLC rack in Switchroom 1
  - Modifications to MCC1001 and installation of VSDs, local control station cabling for the jet aerators
- Modification of existing UV disinfection system:
  - Installation of two new lamp modules per UV bank
  - Replacement of the existing weighted flow control gate with a modulating penstock for level control
  - Replacement of the existing UV controller with an M580 PLC
  - Like for like replacement of the actuator on the inlet valve to the UV disinfection system
  - Installation of a “ChemScan” unit to provide online Ammonia and Nitrate monitoring
  - Associated instrumentation and cabling to the new PLC racks and existing PLC rack in Switchroom 5.
- Lining of the western sludge lagoon (Sludge Lagoon 1) and decommissioning of the eastern lagoon by capping the inlet and outlet pipework.
- PLC, SCADA and network system hardware, software and programming to include the functionality for all new equipment associated with this upgrade
- Control system upgrade stage 1:
  - Upgrade of the sitewide networks to be compliant with the “PLC/RTU and Control Network Design Guide”
  - Replacement of the existing Quantum PLC with Schneider M580 model
  - Connect existing power meters to the PLC using NOM200 modules
- Control system upgrade stage 2:
  - Variable Speed Drives and other devices equipment that require communications added by this project are to be added to the Ethernet Control network
  - Modifying the existing PLC and SCADA software and control functionality to allow for the new infrastructure.



REFER DRG. 16020-094  
FOR SLUDGE LAGOON  
GENERAL ARRANGEMENT

REFER DRG. 16020-082 FOR  
AERATION CAROUSEL GENERAL ARRANGEMENT

REFER DRG. 16020-038 FOR  
INLET WORKS GENERAL ARRANGEMENT

REFER DRG. 16020-088  
FOR UV GENERAL ARRANGEMENT

**PRELIMINARY ISSUE**  
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VERSION	DESCRIPTION	DATE	BY
B	ISSUED FOR DRAFT IFC.	10.06.22	R.L.
No.	REVISION DETAILS	DATE	DWN

CONSULTANT DETAILS:

**hunterh Q**

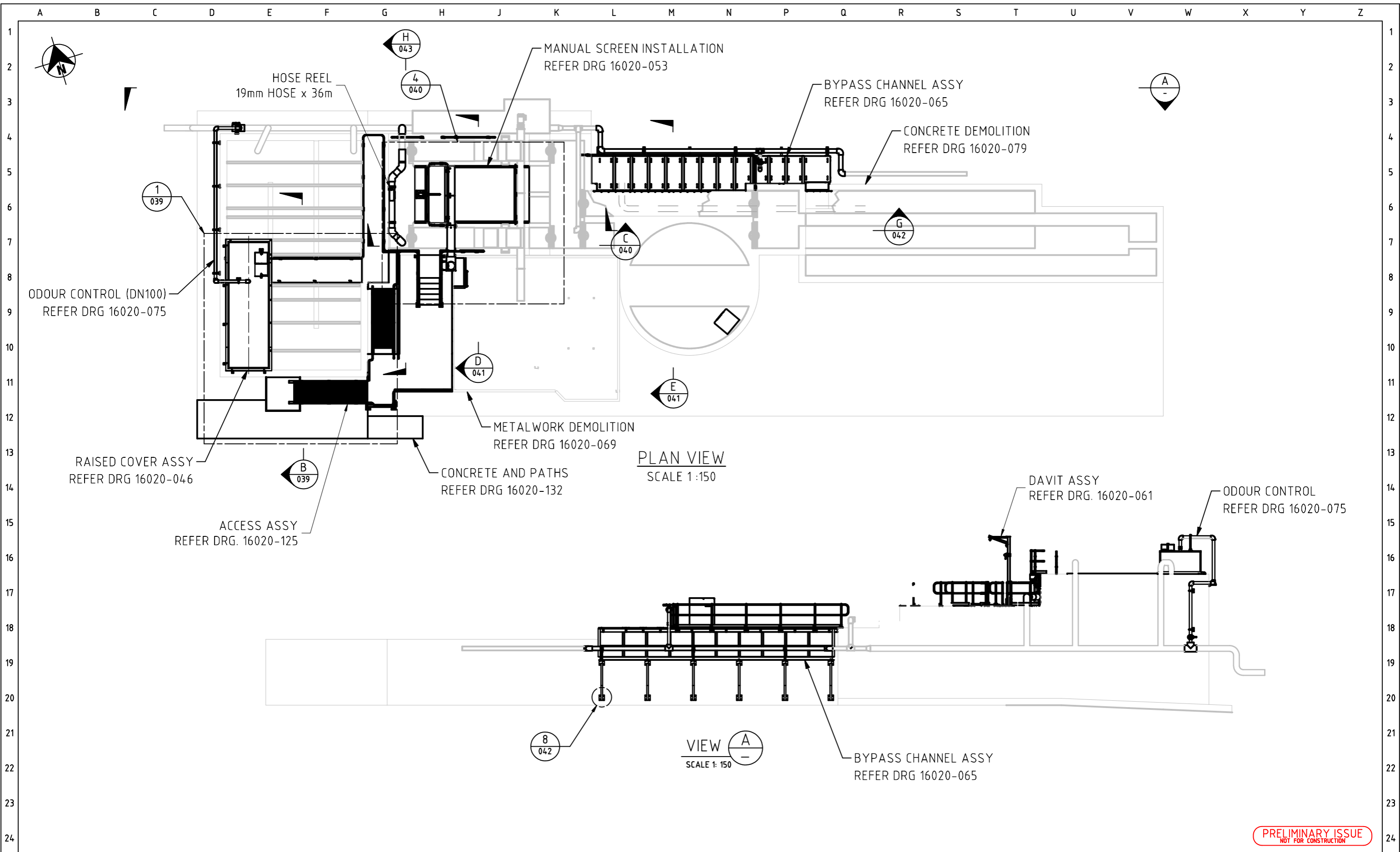
HEAD OFFICE  
19 SPIT ISLAND CLOSE  
MAYFIELD WEST NSW 2304  
T +61 2 4941 5000  
info@hunterh2o.com.au  
Hunter H2O Holdings Pty Limited  
ABN 16 602 201 552

CONSULT. REFERENCE No. 10068



DESIGNED:	T.G.	DATE:	02.02.22.	COMPANY:	HUNTER H2O
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CHECKED:	R.K.B.	DATE:	10.06.22.	COMPANY:	HUNTER H2O
APPROVED:	J.L.S.	DATE:	10.06.22.	COMPANY:	HUNTER H2O

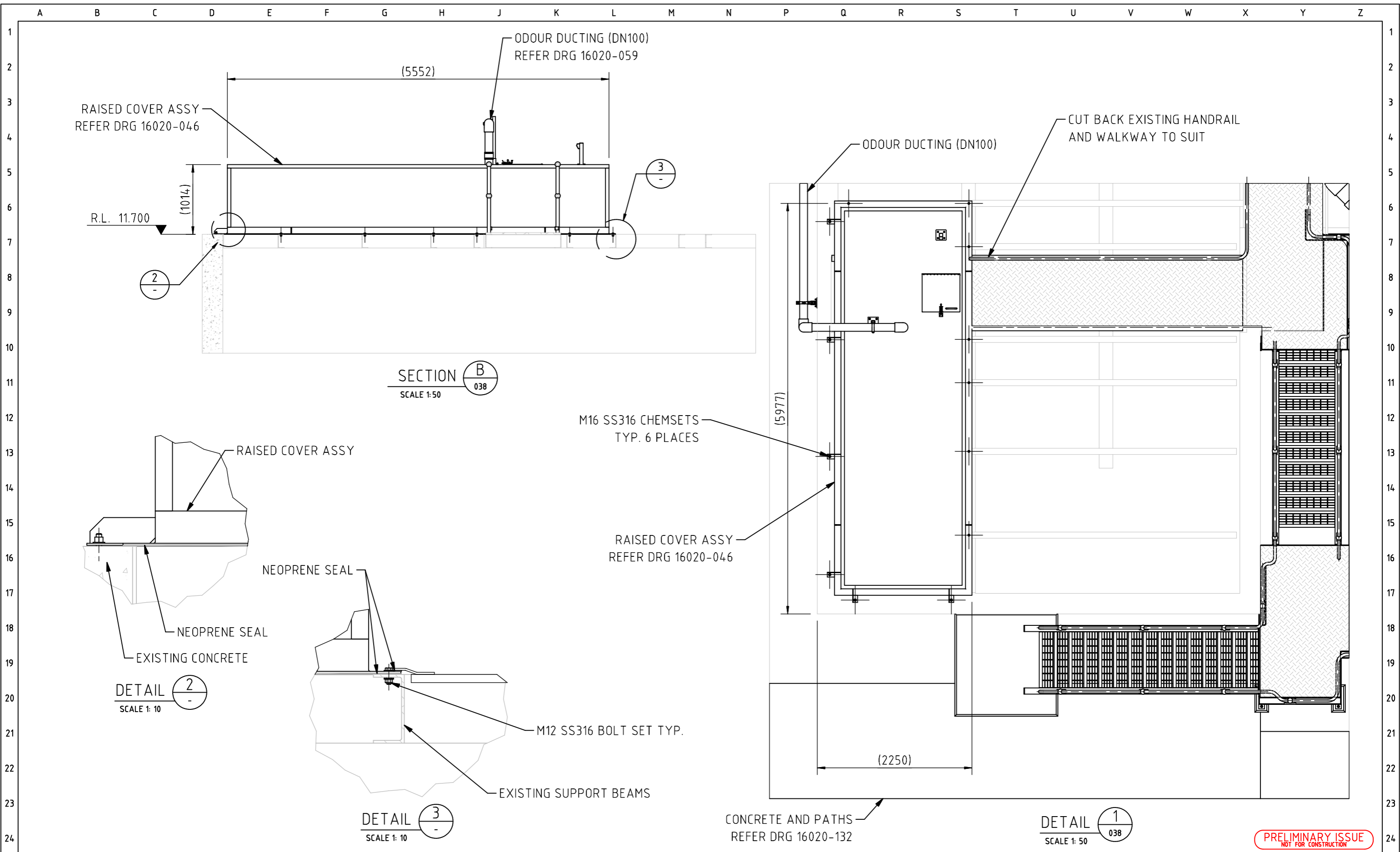
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INDEX No.	-	DRAWING No.	16020
SHEET	034	REV No.	0B



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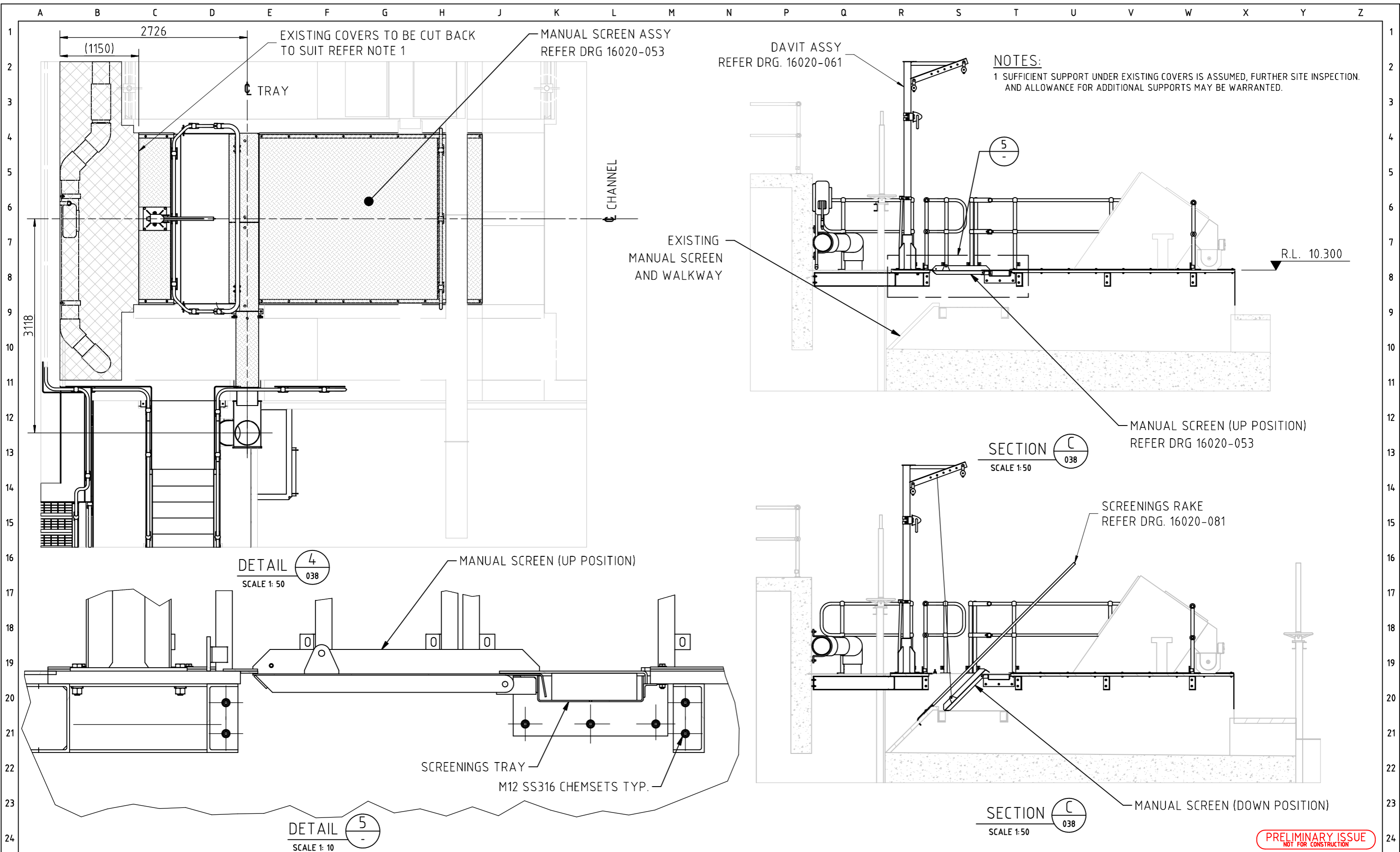
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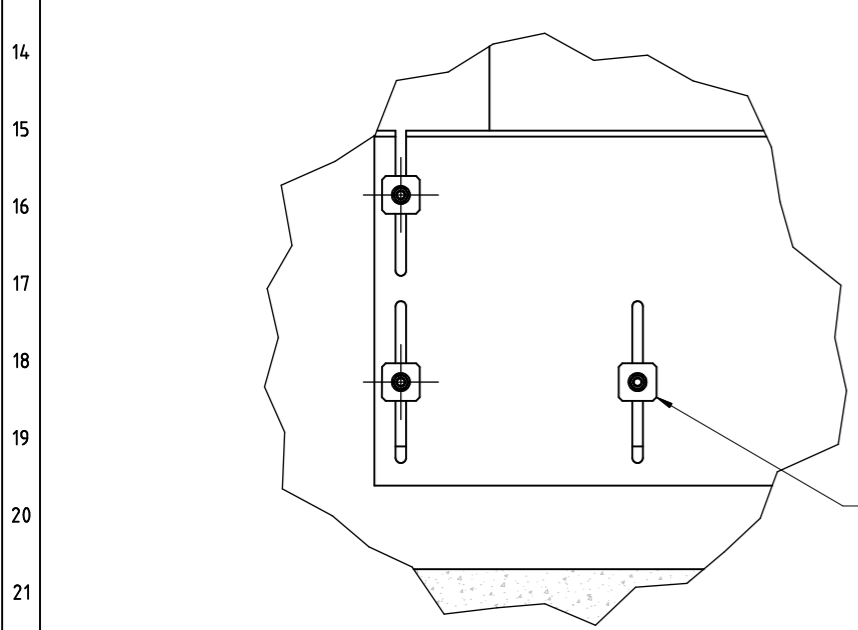
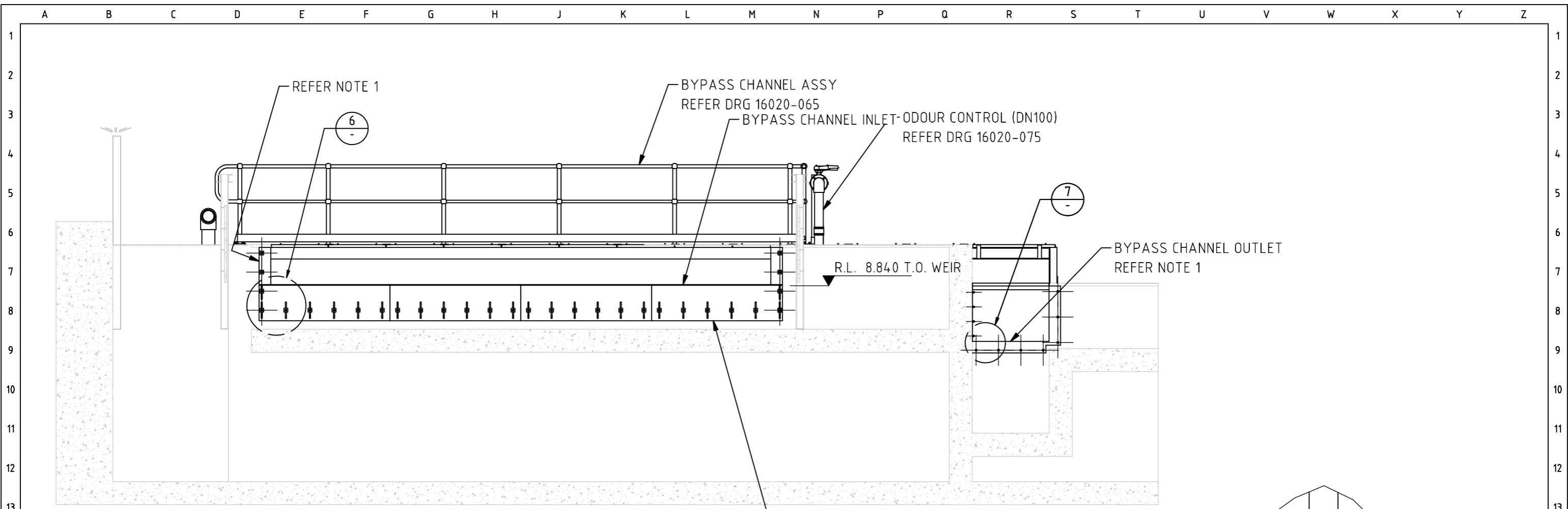


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<b>CONSULTANT DETAILS:</b> <b>hunterh2o</b> <small>HEAD OFFICE 19 SPIT ISLAND CLOSE MAYFIELD WEST NSW 2304 T +61 2 4941 5000 info@hunterh2o.com.au Hunter H2O Holdings Pty Limited ABN 16 602 201 552</small>				<b>CONSULT. REFERENCE No.:</b> 10068	
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<b>ISSUED FOR DRAFT IFC.</b>					

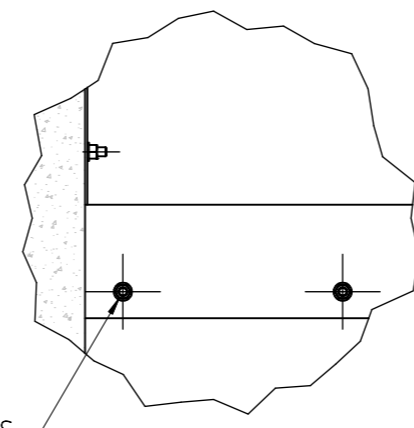
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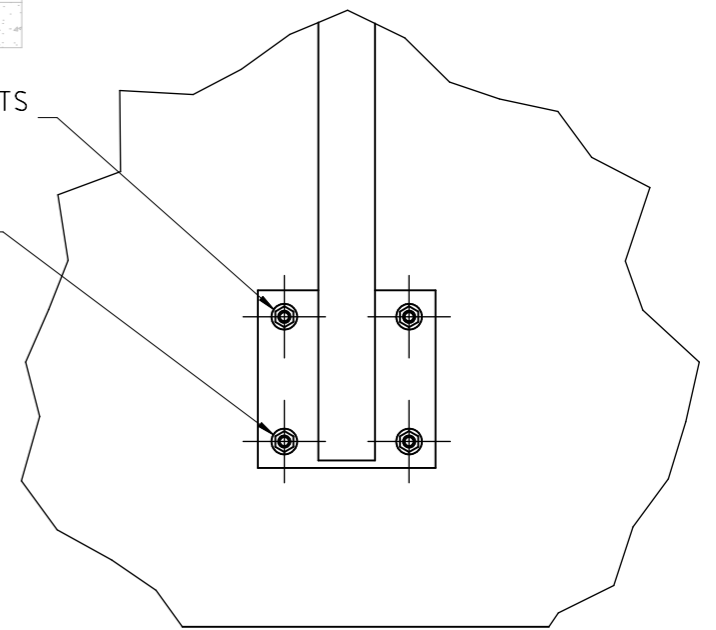


DETAIL 6  
SCALE 1: 10

SECTION G  
SCALE 1: 50



DETAIL 7  
SCALE 1: 10

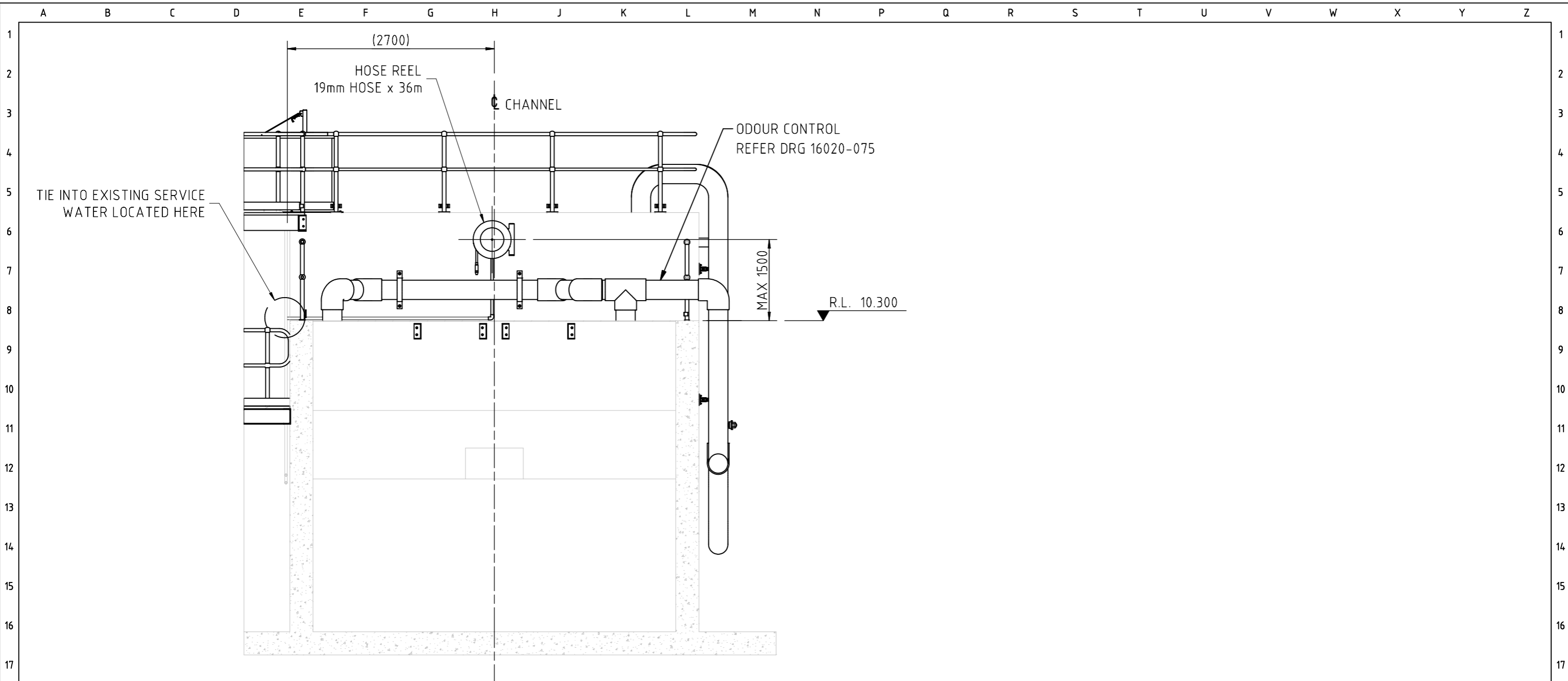


DETAIL 8  
SCALE 1: 10

**NOTES:**  
1. PROVIDE CONTINUOUS 5mm EPDM GASKET WITH NO JOINTS BETWEEN FACE OF CONCRETE AND STAINLESS STEEL FLANGES.

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<b>CONSULTANT DETAILS:</b>  <small>HEAD OFFICE 19 SPIT ISLAND CLOSE MAYFIELD WEST NSW 2304 T +61 2 4941 5000 info@hunterh2o.com.au Hunter H2O Holdings Pty Limited ABN 16 602 201 552</small>				DESIGNED: T.G. DATE: 02.02.22. COMPANY: HUNTER H2O DRAWN: R.L. DATE: 02.02.22. COMPANY: HUNTER H2O CHECKED: R.K.B. DATE: 10.06.22. COMPANY: HUNTER H2O APPROVED: J.L.S. DATE: 10.06.22. COMPANY: HUNTER H2O	TITLE: CS1175 - SR00068 RAYMOND TERRACE WWTW - STAGE 3 ST-RAY INLET WORKS GENERAL ARRANGEMENT SHEET 5		
B ISSUED FOR DRAFT IFC. R.L. 10.06.22. CONSULT. REFERENCE No. 10068				SIZE: A3 SCALE: 1:50 INDEX No. - DRAWING No. 16020 SHEET 042 REV No. 0B			
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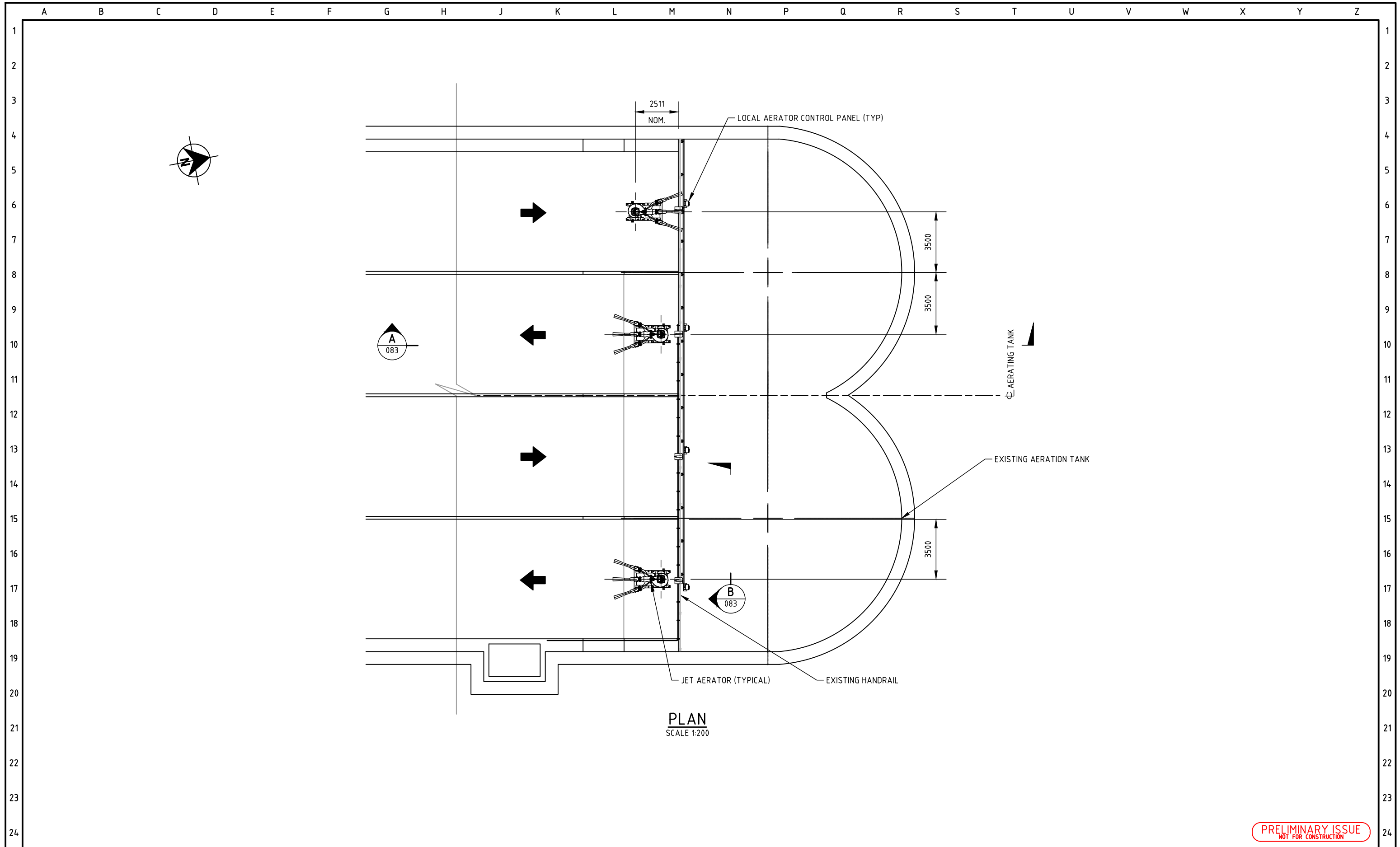


SECTION H  
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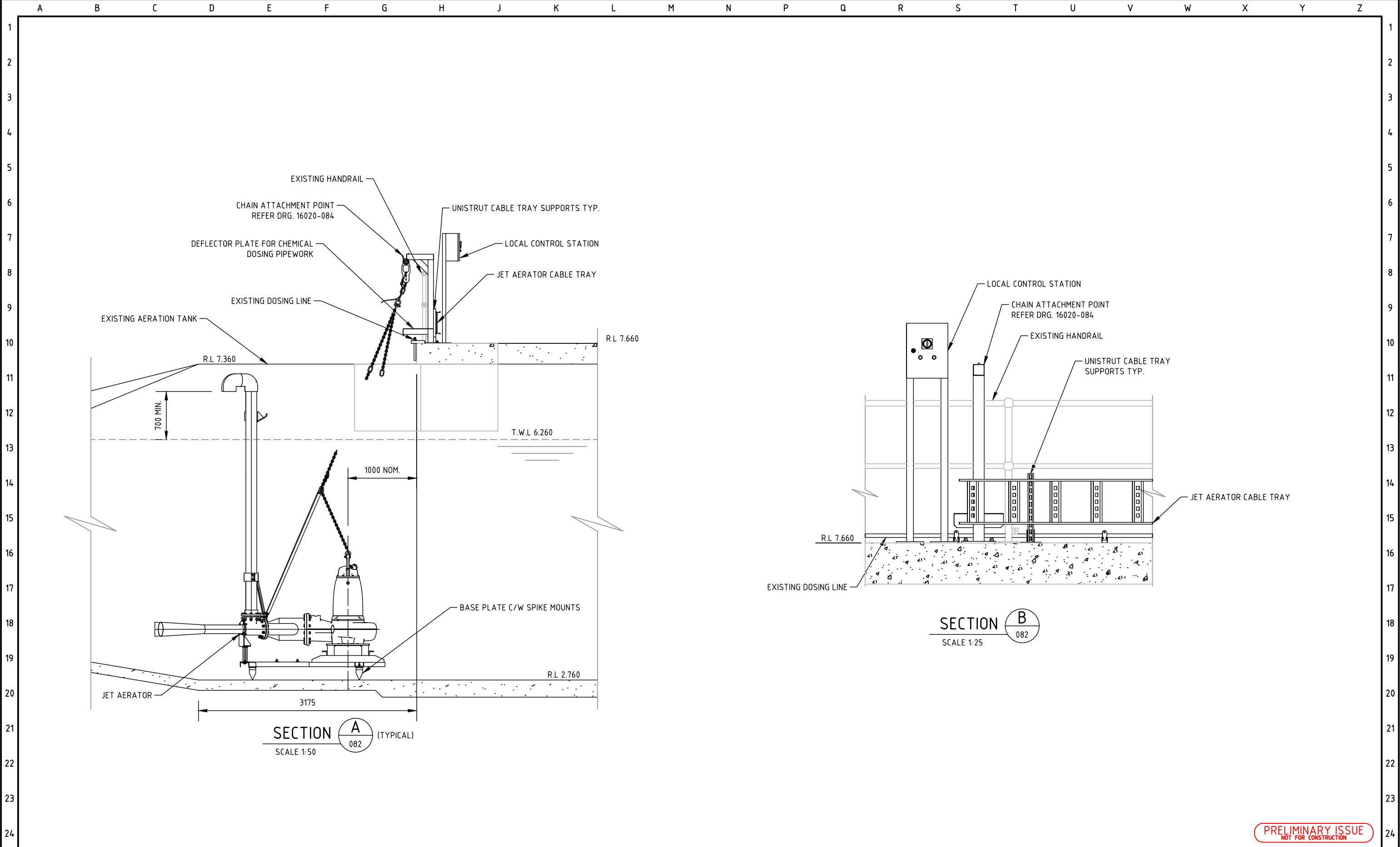
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CONSULT. REFERENCE No. 10068



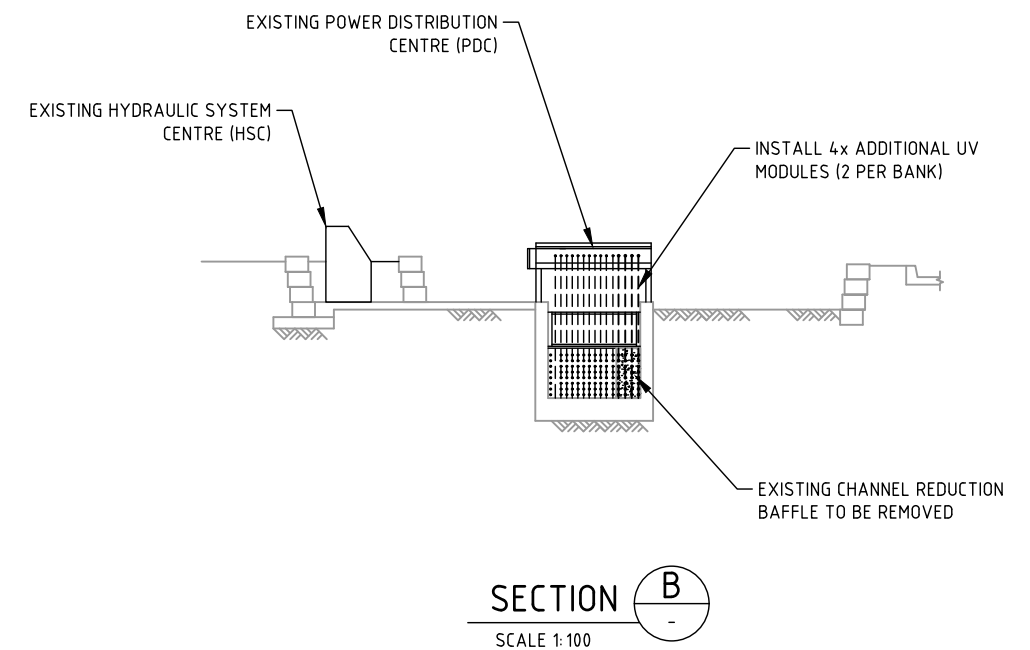
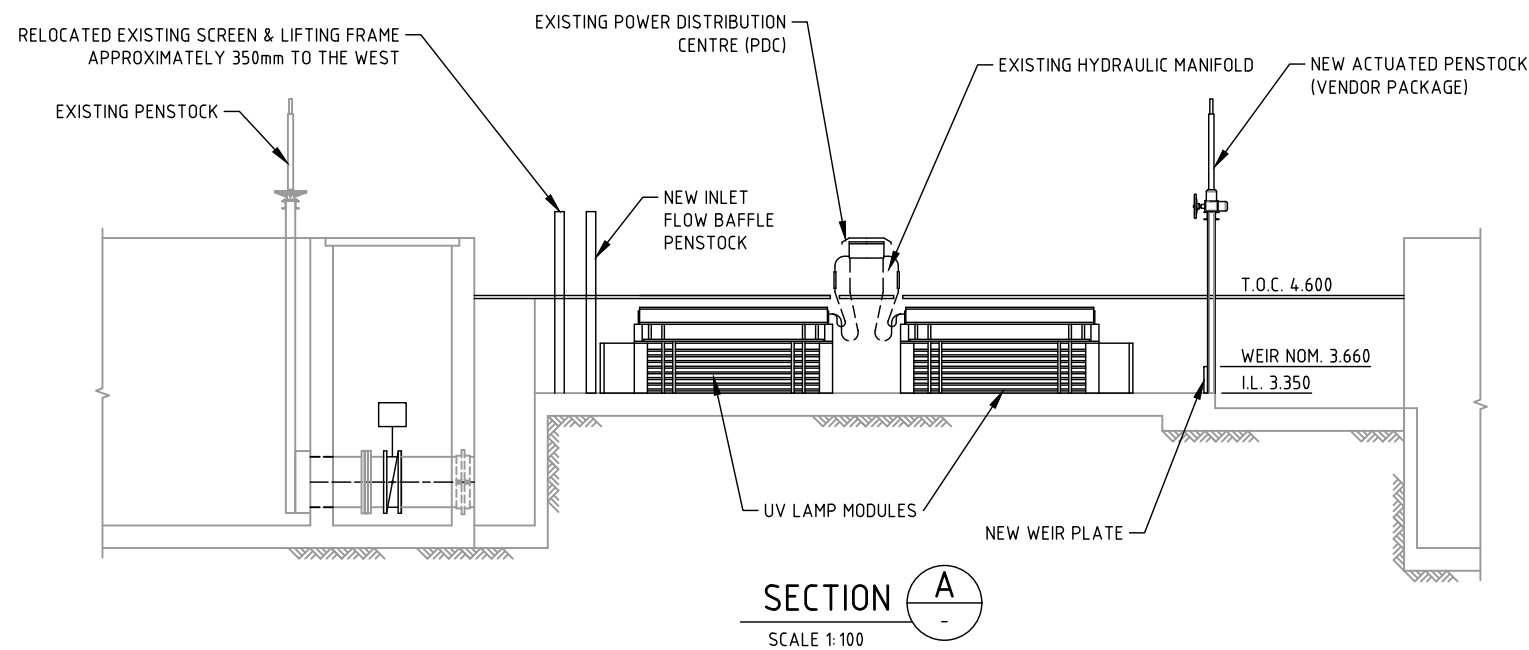
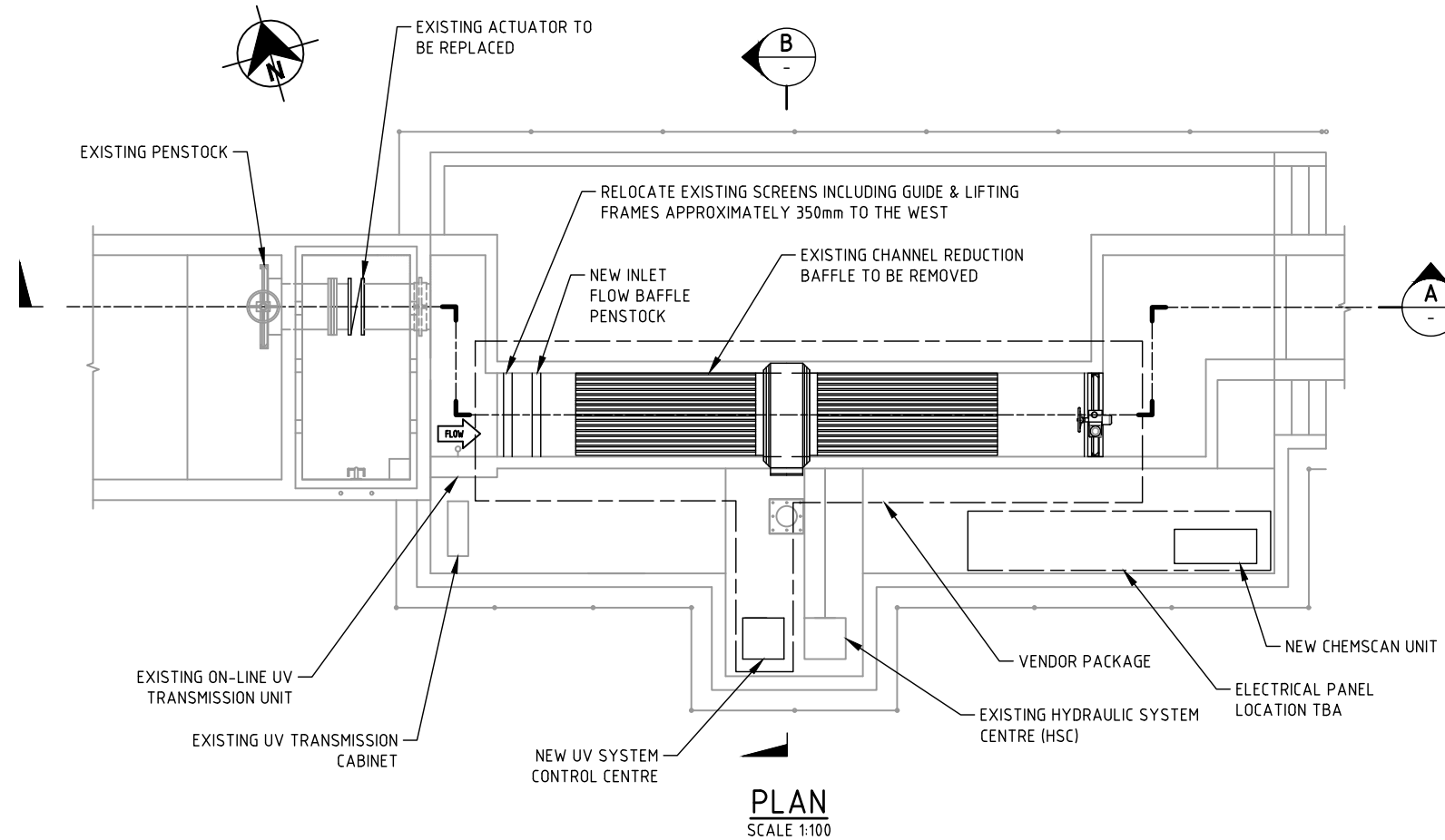
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		<b>hunterh<sub>2</sub>o</b>		T.G.		02.02.22.		HUNTER H2O		CS1175 - SR00068	
		HEAD OFFICE 19 SPIT ISLAND CLOSE MAYFIELD WEST NSW 2304 T +61 2 4941 5000 info@hunterh2o.com.au Hunter H2O Holdings Pty Limited ABN 16 602 201 552		DRAWN:		02.02.22		HUNTER H2O		RAYMOND TERRACE WWTW - STAGE 3	
		CONSULT. REFERENCE No. 10068		CHECKED:		10.06.22.		HUNTER H2O		ST-RAY AERATION CAROUSEL GENERAL ARRANGEMENT	
B ISSUED FOR DRAFT IFC.		R.L. 10.06.22.		APPROVED:		10.06.22.		HUNTER H2O		SIZE: A3	
No. REVISION DETAILS		DWN DATE		J.L.S.						SCALE: 1:200	
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**hunterh q**

HEAD OFFICE  
19 SPIT ISLAND CLOSE  
MAYFIELD WEST NSW 2304  
T +61 2 4941 5000  
info@hunterh2o.com.au  
Hunter H2O Holdings Pty Limited  
ABN 16 602 201 552

CONSULT. REFERENCE No. 10068



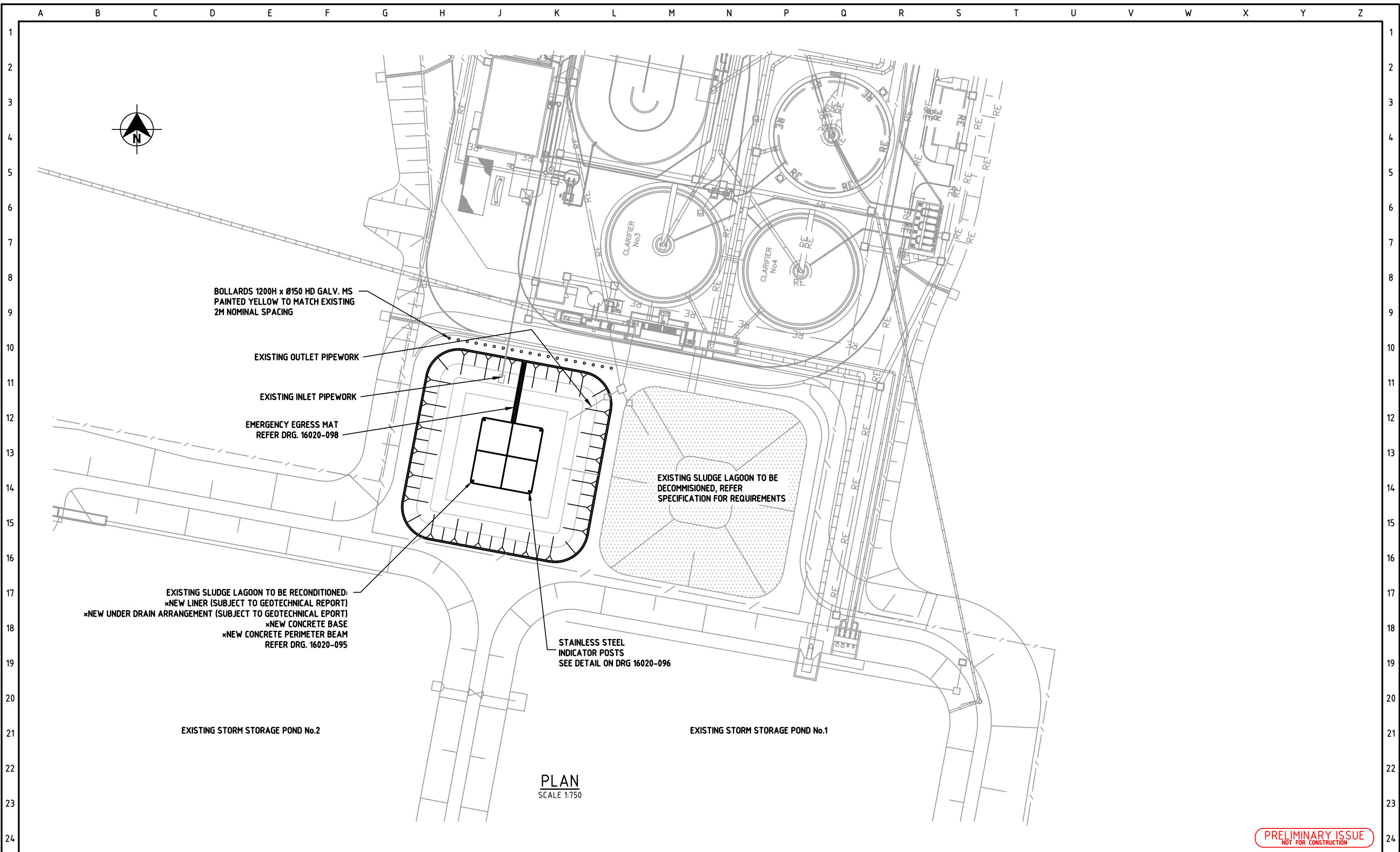
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CHECKED:	R.K.B.	DATE:	10.06.22.	COMPANY:	HUNTER H2O
APPROVED:	J.L.S.	DATE:	10.06.22.	COMPANY:	HUNTER H2O

TITLE:  
CS1175 - SR00068  
RAYMOND TERRACE WWTW - STAGE 3  
ST-RAY  
UV SYSTEM  
GENERAL ARRANGEMENT

SIZE:	A3	SCALE:	1:100	INDEX No.		DRAWING No.	16020	SHEET	088	REV No.	0B
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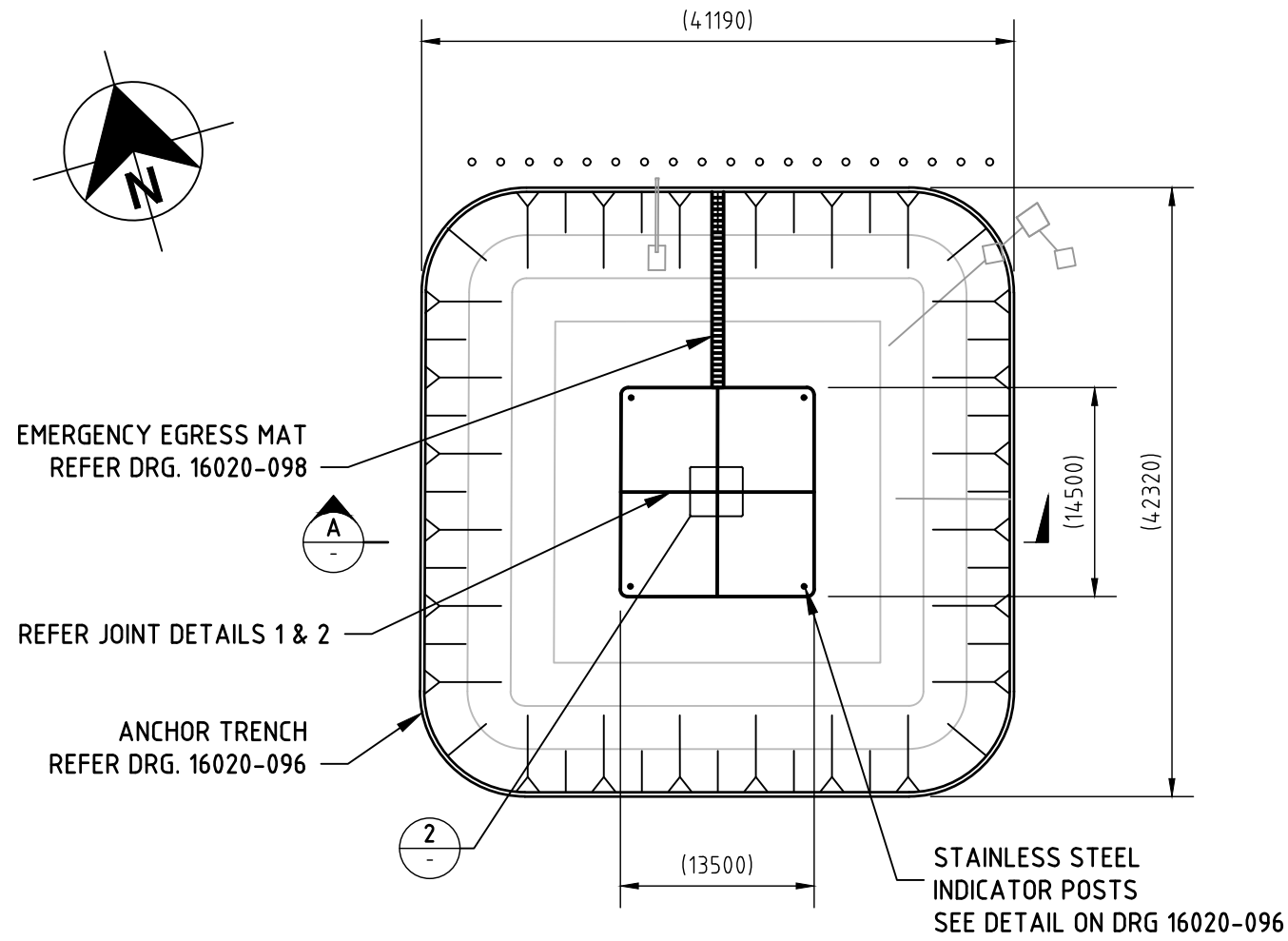
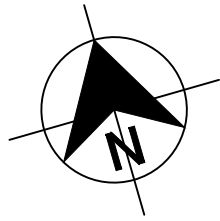
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No.	REVISION DETAILS		DWN	DATE



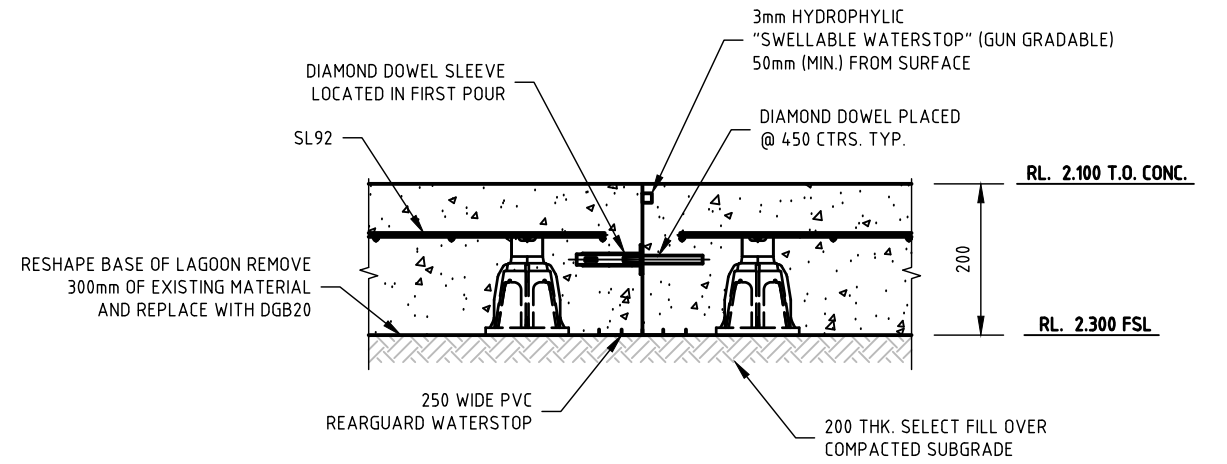
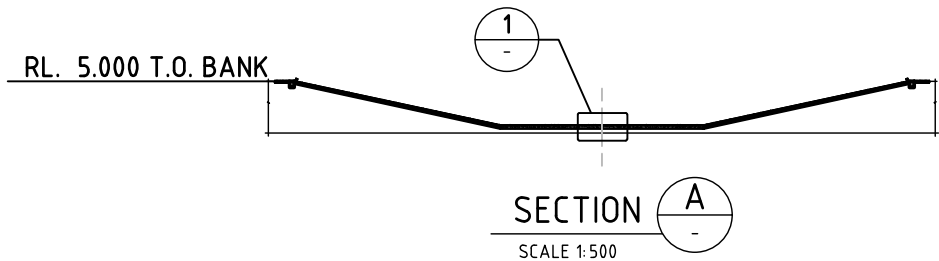


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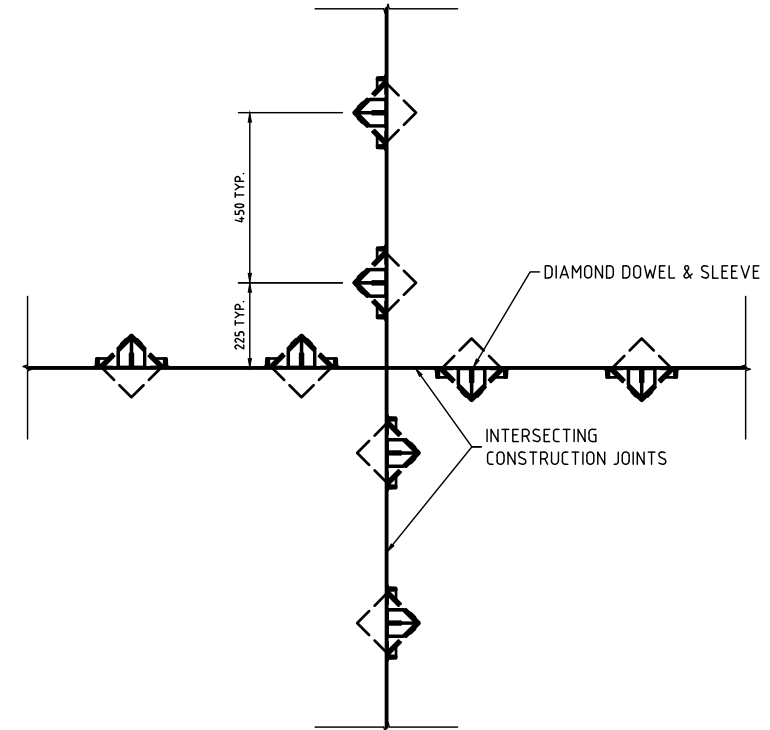
CONSULTANT DETAILS: <b>hunterh<sub>2</sub>o</b> <small>HEAD OFFICE 19 SPIT ISLAND CLOSE MAYFIELD WEST NSW 2304 T +61 2 4941 5000 info@hunterh2o.com.au Hunter H2O Holdings Pty Limited ABN 16 602 201 552</small>				DESIGNED: T.G. DATE: 02.02.22. COMPANY: HUNTER H2O	DRAWN: R.L. DATE: 02.02.22. COMPANY: HUNTER H2O	CHECKED: R.K.B. DATE: 10.06.22. COMPANY: HUNTER H2O	APPROVED: J.L.S. DATE: 10.06.22. COMPANY: HUNTER H2O	TITLE: CS1175 - SR00068 RAYMOND TERRACE WWTW - STAGE 3 ST-RAY SLUDGE LAGOON SITE ARRANGEMENT	SIZE: A3	SCALE: 1:750	INDEX No. -	DRAWING No. 16020	SHEET 094	REV No. 0B
CONSULT. REFERENCE No. 10068														
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No. REVISION DETAILS DWN DATE														



**PLAN ON SLUDGE LAGOON**  
SCALE 1:500



**DETAIL 1 - TYPICAL DOWELLED CONSTRUCTION JOINT (DCJ)**  
SCALE 1:10



**DETAIL 2 - TYPICAL DIAMOND DOWEL @ 4 WAY INTERSECTION**  
SCALE 1:20

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CONSULTANT DETAILS:

**hunterh<sub>2</sub>o**

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19 SPIT ISLAND CLOSE  
MAYFIELD WEST NSW 2304  
T +61 2 4941 5000  
info@hunterh2o.com.au  
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ABN 16 602 201 552

CONSULT. REFERENCE No. 10068

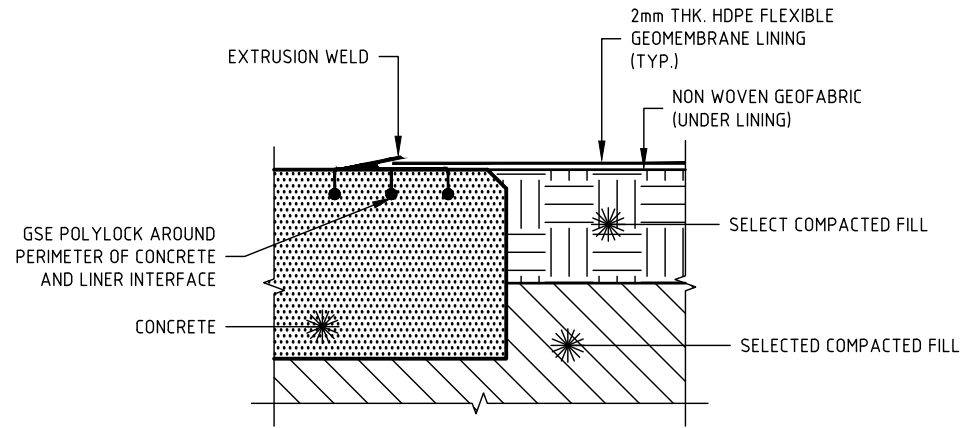


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DRAWN:	R.L.	DATE:	02.02.22	COMPANY:	HUNTER H2O
CHECKED:	R.K.B.	DATE:	10.06.22.	COMPANY:	HUNTER H2O
APPROVED:	J.L.S.	DATE:	10.06.22.	COMPANY:	HUNTER H2O

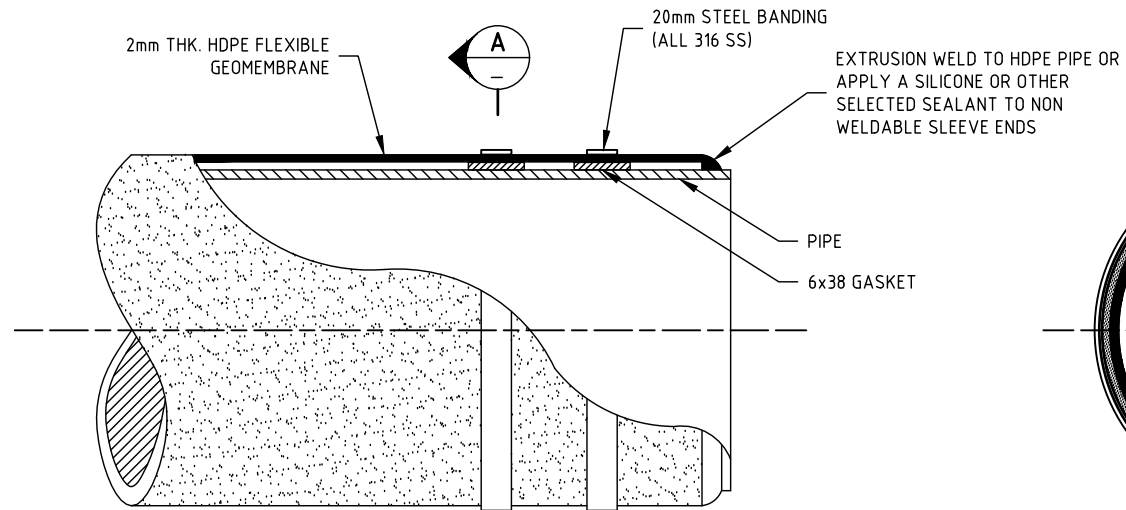
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CS1175 - SR00068  
RAYMOND TERRACE WWTW - STAGE 3  
ST-RAY  
SLUDGE LAGOON  
GENERAL ARRANGEMENT

SIZE:	A3	SCALE:	1:500/1:20	INDEX No.	-	DRAWING No.	16020	SHEET	095	REV No.	0B
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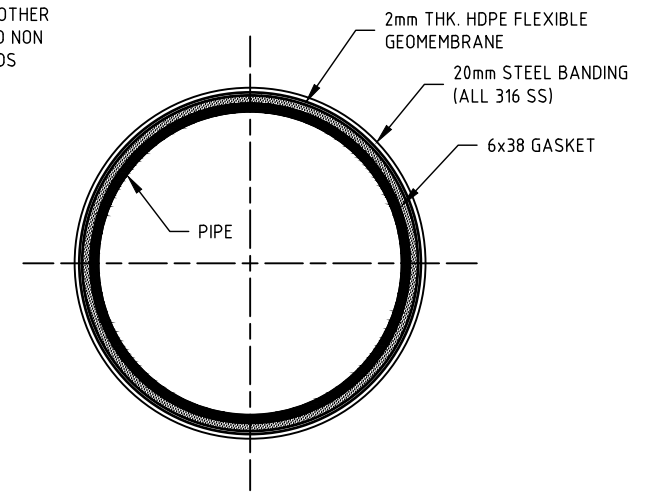
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No.	REVISION DETAILS		DWN	DATE



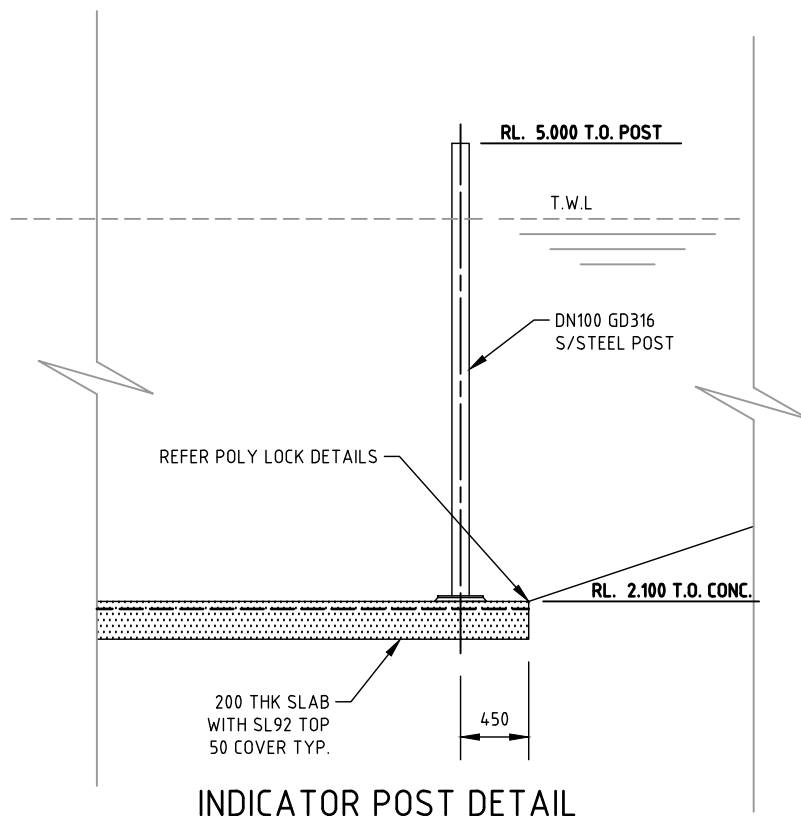
**TYPICAL POLYLOCK ATTACHMENT TO HORIZONTAL CONCRETE**  
SCALE 1:10



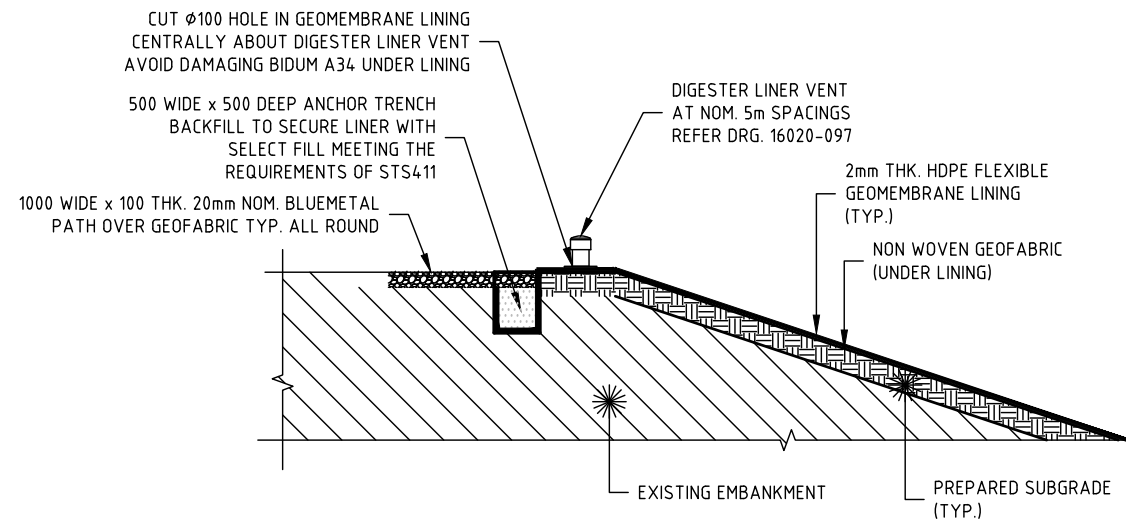
**TYPICAL PIPE PENETRATION SEAL**  
SCALE 1:5



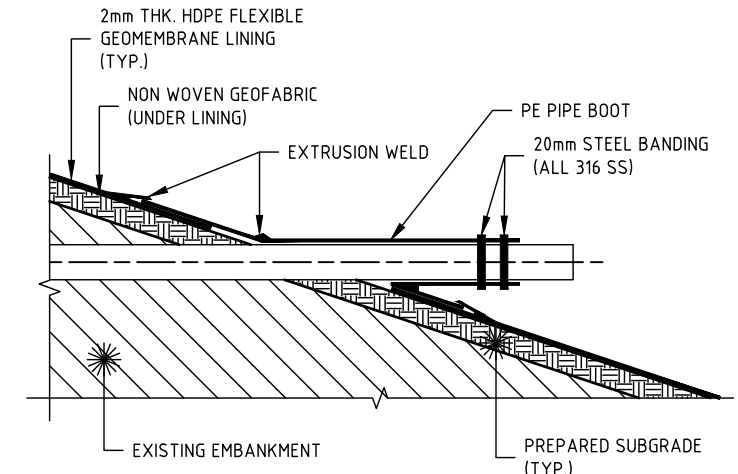
**SECTION A**  
SCALE 1:5



**INDICATOR POST DETAIL**  
SCALE 1:50



**TYPICAL ANCHOR TRENCH BEAM**  
SCALE 1:50



**TYPICAL PIPE PENETRATION**  
SCALE 1:50

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**CONSULTANT DETAILS:**  
**hunterh<sub>2</sub>o**  
HEAD OFFICE  
19 SPIT ISLAND CLOSE  
MAYFIELD WEST NSW 2304  
T +61 2 4941 5000  
info@hunterh2o.com.au  
Hunter H2O Holdings Pty Limited  
ABN 16 602 201 552

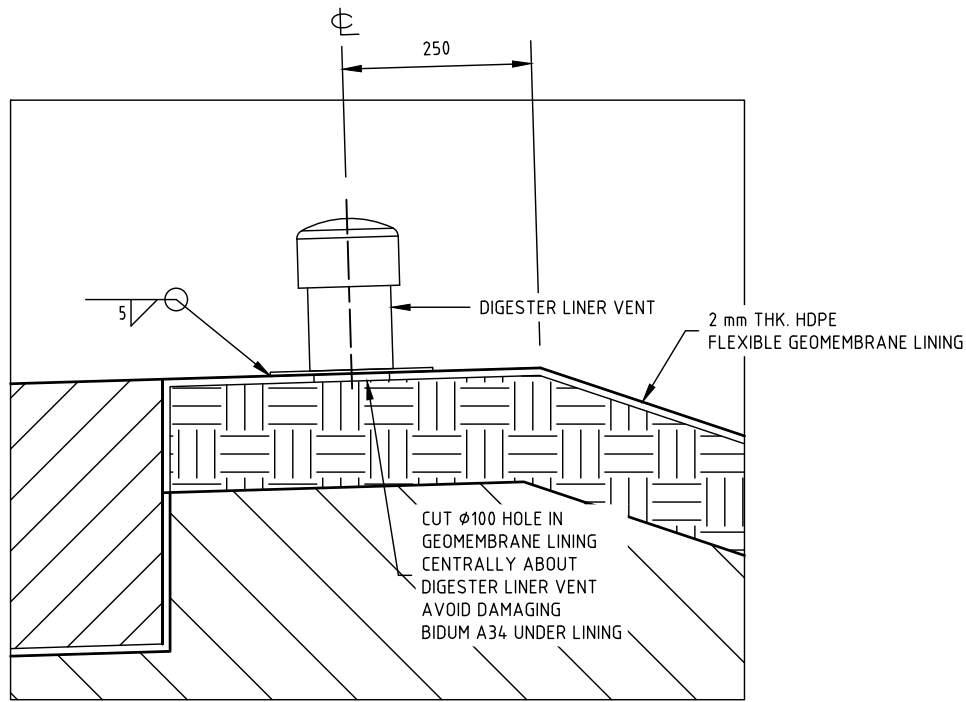


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DRAWN:	R.L.	DATE:	02.02.22.	COMPANY:	HUNTER H2O
CHECKED:	R.K.B.	DATE:	10.06.22.	COMPANY:	HUNTER H2O
APPROVED:	J.L.S.	DATE:	10.06.22.	COMPANY:	HUNTER H2O

**TITLE:**  
CS1175 - SR00068  
RAYMOND TERRACE WWTW - STAGE 3  
ST-RAY  
SLUDGE LAGOON  
TYPICAL DETAILS SHEET 1

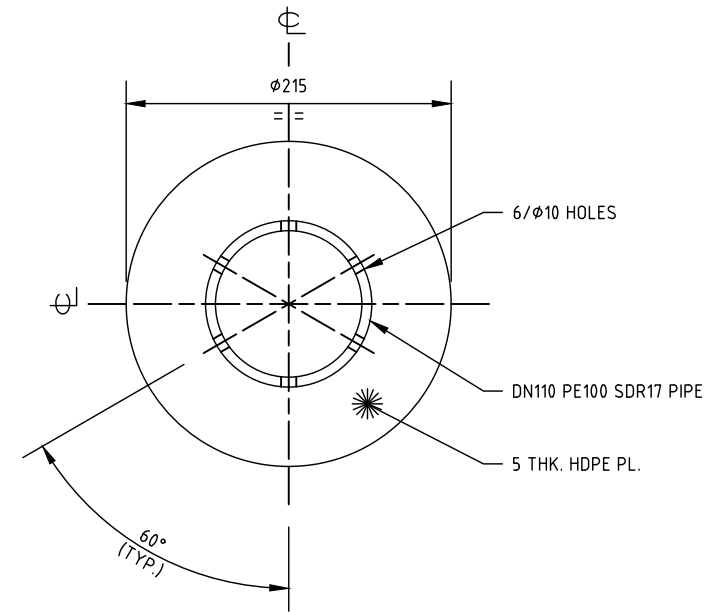
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SIZE:	A3	SCALE:	AS NOTED	INDEX No.	-	DRAWING No.	16020	SHEET	096	REV No.	0B
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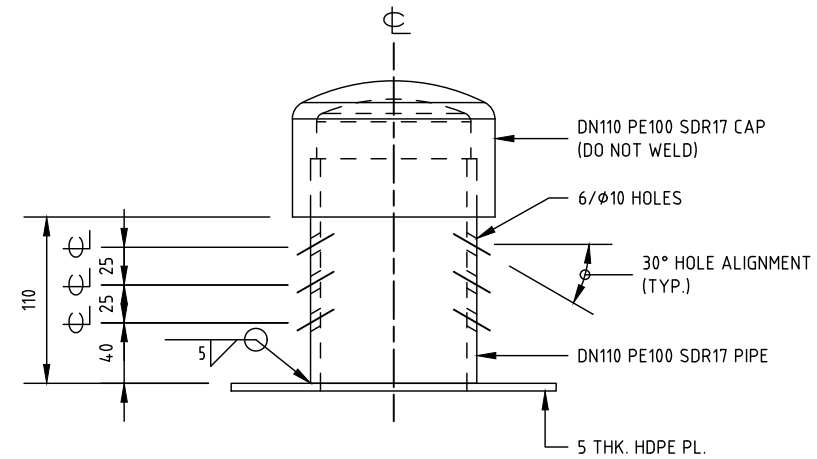
**TYPICAL LINER VENT INSTALLATION DETAIL**

SCALE 1:10



**PLAN**

NOTE: CAP REMOVED FOR CLARITY



**ELEVATION**

**DIGESTER LINER VENT - 28 REQD.**

SCALE 1:5

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**hunterh<sub>2</sub>o**

HEAD OFFICE  
19 SPIT ISLAND CLOSE  
MAYFIELD WEST NSW 2304  
T +61 2 4941 5000  
info@hunterh2o.com.au  
Hunter H2O Holdings Pty Limited  
ABN 16 602 201 552

CONSULT. REFERENCE No. 10068



DESIGNED:	T.G.	DATE:	02.02.22.	COMPANY:	HUNTER H2O
DRAWN:	R.L.	DATE:	02.02.22.	COMPANY:	HUNTER H2O
CHECKED:	R.K.B.	DATE:	10.06.22.	COMPANY:	HUNTER H2O
APPROVED:	J.L.S.	DATE:	10.06.22.	COMPANY:	HUNTER H2O

TITLE:  
CS1175 - SR00068  
RAYMOND TERRACE WWTW - STAGE 3  
ST-RAY  
SLUDGE LAGOON  
TYPICAL DETAILS SHEET 2

SIZE:	A3	SCALE:	AS NOTED	INDEX No.	-	DRAWING No.	16020	SHEET	097	REV No.	0B
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VERSION 4

B	ISSUED FOR DRAFT IFC.	R.L.	10.06.22.
No.	REVISION DETAILS	DWN	DATE

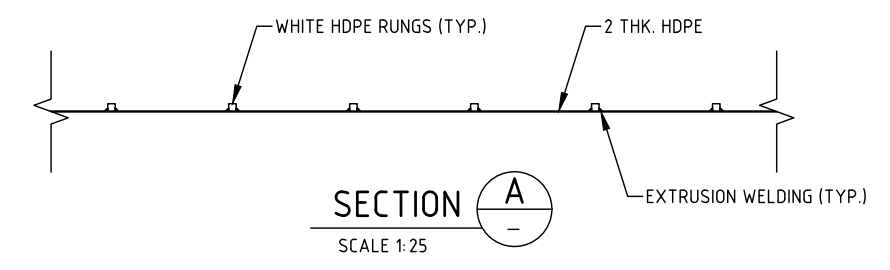
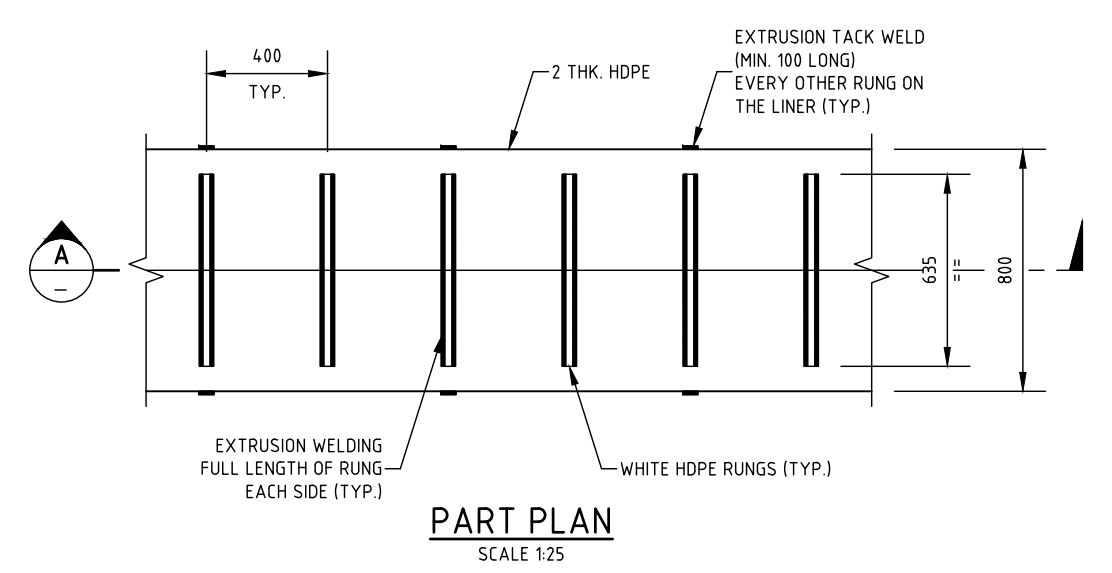
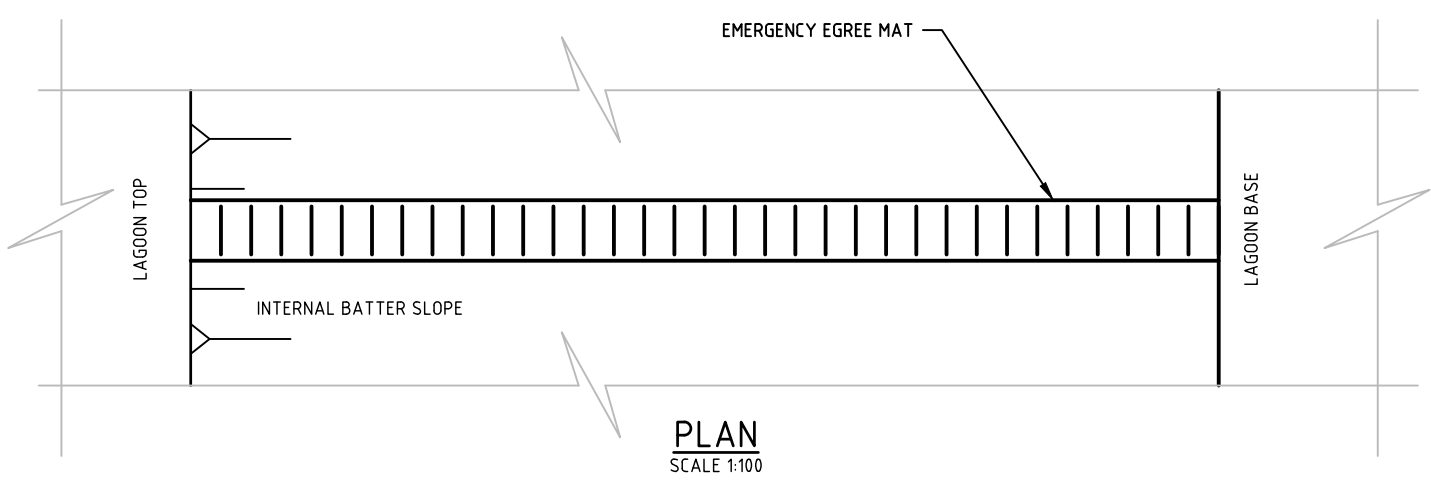


IMAGE OF EMERGENCY EGREE MAT  
TYPICAL RUNG ARRANGEMENT

PRELIMINARY ISSUE  
NOT FOR CONSTRUCTION

VERSION 4	B	ISSUED FOR DRAFT IFC.	R.L.	10.06.22.
	No.	REVISION DETAILS	DWN	DATE

CONSULTANT DETAILS:

**hunterh<sub>2</sub>o**

HEAD OFFICE  
19 SPIT ISLAND CLOSE  
MAYFIELD WEST NSW 2304  
T +61 2 4941 5000  
info@hunterh2o.com.au  
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TITLE:			CS1175 - SR00068		
			RAYMOND TERRACE WWTW - STAGE 3		
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			SLUDGE LAGOON		
			EMERGENCY EGREE MAT DETAILS		
SIZE:	A3	SCALE:	AS NOTED	INDEX No.	-
DRAWING No.	16020	SHEET	098	REV No.	0B

## APPENDIX B SECTION 171 FACTORS AND MNES

### Section 171(2) checklist

The following factors listed in Section 171(2) of the *Environmental Planning and Assessment Regulation 2021* have been considered to assess the likely impacts of the proposal on the environment.

Factor	Impact	Section
(a) Any environmental impact on a community?	Short-term negative	5
(b) Any transformation of a locality?	Nil	5
(c) Any environmental impact on the ecosystems of a locality?	Nil	5
(d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?	Negligible	5
(e) Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?	Nil	5
(f) Any impact on habitat of any protected animals (within the meaning of the <i>Biodiversity Conservation Act 2016</i> )?	Nil	5
(g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?	Nil	5
(h) Any long-term effects on the environment?	Nil	5
(i) Any degradation of the quality of the environment?	Nil	5
(j) Any risk to the safety of the environment?	Nil	5
(k) Any reduction in the range of beneficial uses of the environment?	Nil	5
(l) Any pollution of the environment?	Nil	5
(m) Any environmental problems associated with the disposal of waste?	Negligible	5
(n) Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?	Nil	5
(o) Any cumulative environmental effect with other existing or likely future activities?	Nil	5
(p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?	Nil	5
(q) Any applicable local strategic planning statements, regional strategic plans or district strategic plans?	Nil	5
(r) Any other relevant factors?	Nil	5

## Matters of National Environmental Significance

The following matters of national environmental significance have been considered as required by the environmental assessment provisions of the EPBC Act. This review assists in determining whether the proposal should be referred to the Australian Government Department of Agriculture, Water and the Environment.

Environmental factor	Impact
<p><b>Any impact on a World Heritage property?</b> There would be no impact to World Heritage properties by the proposal.</p>	Nil
<p><b>Any impact on a National Heritage place?</b> There would be no impact to National Heritage places by the proposal.</p>	Nil
<p><b>Any impact on a wetland of international importance?</b> There would be no impact to wetlands of international importance by the proposal.</p>	Nil
<p><b>Any impact on nationally threatened species, ecological communities or migratory species?</b> The proposal would not impact any nationally threatened species, ecological communities or listed migratory species.</p>	Nil
<p><b>Any impact on a Commonwealth marine area?</b> There would be no impact to Commonwealth marine areas by the proposal.</p>	Nil
<p><b>Does the proposal involve a nuclear action (including uranium mining)?</b> The proposal does not involve a nuclear action (including uranium mining).</p>	Nil
<p><b>Any impact on a water resource, in relation to coal seam gas development and large coal mining development?</b> The proposal would not impact on a water resource, in relation to coal.</p>	Nil
<p><b>Additionally, any impact (direct or indirect) on the environment of Commonwealth land?</b> The proposal does not involve any impact on Commonwealth land.</p>	Nil

## APPENDIX C PROTECTED MATTERS SEARCH RESULTS





# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 26/02/21 14:52:29

[Summary](#)

[Details](#)

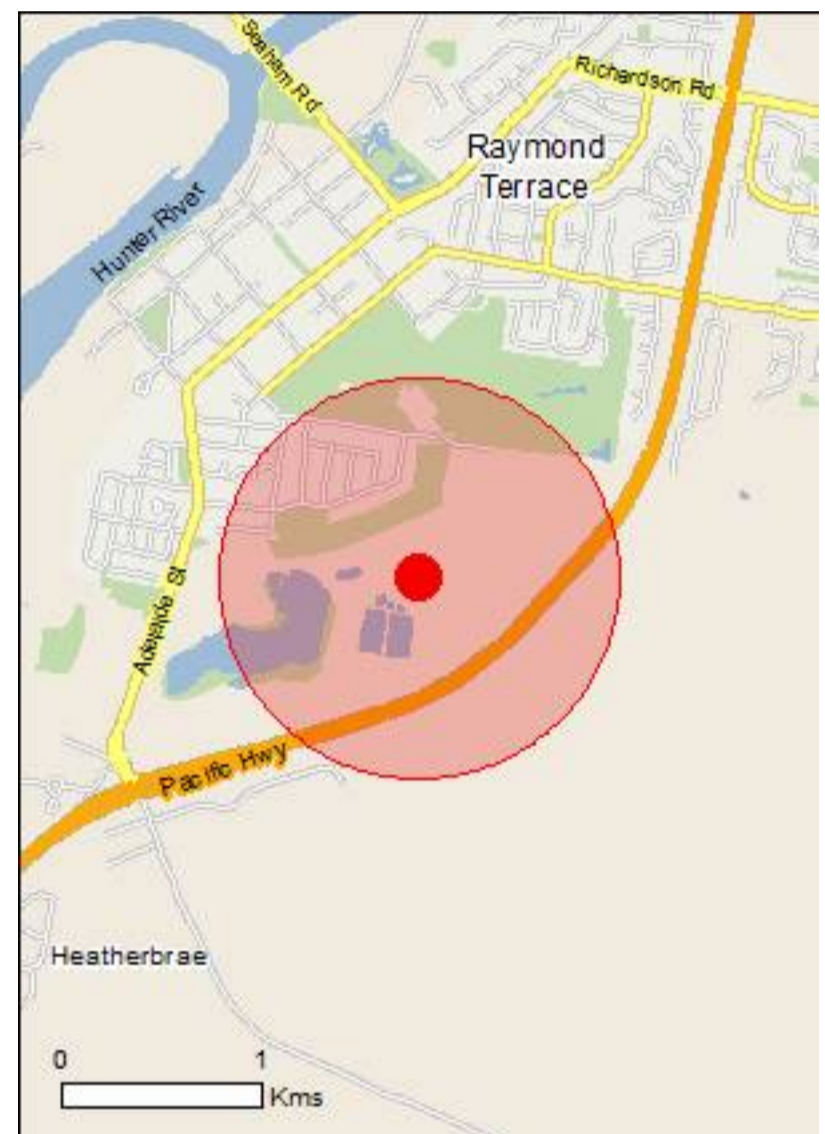
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

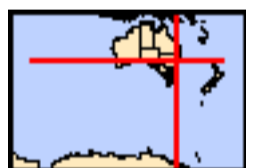
[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

[Coordinates](#)

[Buffer: 1.0Km](#)



# Summary

## Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance:</a>	1
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	4
<a href="#">Listed Threatened Species:</a>	39
<a href="#">Listed Migratory Species:</a>	16

## Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

<a href="#">Commonwealth Land:</a>	1
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	23
<a href="#">Whales and Other Cetaceans:</a>	None
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None

## Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

<a href="#">State and Territory Reserves:</a>	None
<a href="#">Regional Forest Agreements:</a>	1
<a href="#">Invasive Species:</a>	41
<a href="#">Nationally Important Wetlands:</a>	None
<a href="#">Key Ecological Features (Marine)</a>	None

# Details

## Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[ Resource Information ]
Name	Proximity
<a href="#">Hunter estuary wetlands</a>	Within 10km of Ramsar

## Listed Threatened Ecological Communities

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
<a href="#">Central Hunter Valley eucalypt forest and woodland</a>	Critically Endangered	Community may occur within area
<a href="#">Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community</a>	Endangered	Community likely to occur within area
<a href="#">Lowland Rainforest of Subtropical Australia</a>	Critically Endangered	Community may occur within area
<a href="#">River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria</a>	Critically Endangered	Community likely to occur within area

## Listed Threatened Species

Name	Status	Type of Presence
Birds		
<a href="#">Anthochaera phrygia</a> Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Botaurus poiciloptilus</a> Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Erythrotriorchis radiatus</a> Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Falco hypoleucos</a> Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
<a href="#">Grantiella picta</a> Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Lathamus discolor</a> Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species

Name	Status	Type of Presence
<a href="#">Pachyptila turtur subantarctica</a> Fairy Prion (southern) [64445]	Vulnerable	habitat likely to occur within area Species or species habitat likely to occur within area
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
<a href="#">Thinornis cucullatus cucullatus</a> Hooded Plover (eastern), Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat may occur within area
<b>Frogs</b>		
<a href="#">Heleioporus australiacus</a> Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat may occur within area
<a href="#">Litoria aurea</a> Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area
<b>Mammals</b>		
<a href="#">Chalinolobus dwyeri</a> Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Dasyurus maculatus maculatus (SE mainland population)</a> Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
<a href="#">Petauroides volans</a> Greater Glider [254]	Vulnerable	Species or species habitat may occur within area
<a href="#">Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)</a> Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Potorous tridactylus tridactylus</a> Long-nosed Potoroo (SE Mainland) [66645]	Vulnerable	Species or species habitat may occur within area
<a href="#">Pseudomys novaehollandiae</a> New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pteropus poliocephalus</a> Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<b>Plants</b>		
<a href="#">Angophora inopina</a> Charmhaven Apple [64832]	Vulnerable	Species or species habitat may occur within area
<a href="#">Caladenia tessellata</a> Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat may occur within area
<a href="#">Commersonia prostrata</a> Dwarf Kerrawang [87152]	Endangered	Species or species habitat likely to occur within area
<a href="#">Cryptostylis hunteriana</a> Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Cynanchum elegans</a> White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
<a href="#">Eucalyptus camfieldii</a> Camfield's Stringybark [15460]	Vulnerable	Species or species habitat may occur within area
<a href="#">Eucalyptus parramattensis subsp. decadens</a> Earp's Gum, Earp's Dirty Gum [56148]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Euphrasia arguta</a> [4325]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Grevillea parviflora subsp. parviflora</a> Small-flower Grevillea [64910]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Melaleuca biconvexa</a> Biconvex Paperbark [5583]	Vulnerable	Species or species habitat may occur within area
<a href="#">Persicaria elatior</a> Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Phaius australis</a> Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
<a href="#">Prasophyllum sp. Wybong (C.Phelps ORG 5269)</a> a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Rhizanthella slateri</a> Eastern Underground Orchid [11768]	Endangered	Species or species habitat may occur within area
<a href="#">Rhodamnia rubescens</a> Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Rhodomyrtus psidioides</a> Native Guava [19162]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Syzygium paniculatum</a> Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Tetradlea juncea</a> Black-eyed Susan [21407]	Vulnerable	Species or species habitat likely to occur within area

### Listed Migratory Species [\[ Resource Information \]](#)

\* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
<b>Migratory Marine Birds</b>		
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<b>Migratory Terrestrial Species</b>		
<a href="#">Cuculus optatus</a> Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Monarcha melanopsis</a> Black-faced Monarch [609]		Species or species habitat known to occur

Name	Threatened	Type of Presence within area
<a href="#">Monarcha trivirgatus</a> Spectacled Monarch [610]		Species or species habitat may occur within area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat likely to occur within area
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]		Species or species habitat known to occur within area
<a href="#">Rhipidura rufifrons</a> Rufous Fantail [592]		Species or species habitat likely to occur within area
<b>Migratory Wetlands Species</b>		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat likely to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat likely to occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

## Other Matters Protected by the EPBC Act

### Commonwealth Land [\[ Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Defence Service Homes Corporation

### Listed Marine Species [\[ Resource Information \]](#)

\* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
<b>Birds</b>		

<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat likely to occur within area
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Name	Threatened	Type of Presence
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Ardea alba</a> Great Egret, White Egret [59541]		Breeding known to occur within area
<a href="#">Ardea ibis</a> Cattle Egret [59542]		Species or species habitat may occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Lathamus discolor</a> Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area
<a href="#">Monarcha melanopsis</a> Black-faced Monarch [609]		Species or species habitat known to occur within area
<a href="#">Monarcha trivirgatus</a> Spectacled Monarch [610]		Species or species habitat may occur within area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat likely to occur within area
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]		Species or species habitat known to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Pachyptila turtur</a> Fairy Prion [1066]		Species or species habitat likely to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat likely to occur within area
<a href="#">Rhipidura rufifrons</a> Rufous Fantail [592]		Species or species

Name	Threatened	Type of Presence
<a href="#">Rostratula benghalensis (sensu lato)</a> Painted Snipe [889]	Endangered*	habitat likely to occur within area Species or species habitat likely to occur within area
<a href="#">Thinornis rubricollis rubricollis</a> Hooded Plover (eastern) [66726]	Vulnerable*	Species or species habitat may occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

## Extra Information

### Regional Forest Agreements [\[ Resource Information \]](#)

Note that all areas with completed RFAs have been included.

Name	State
<a href="#">North East NSW RFA</a>	New South Wales

### Invasive Species [\[ Resource Information \]](#)

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
<b>Birds</b>		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur



Name	Status	Type of Presence within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
<b>Frogs</b>		
Rhinella marina Cane Toad [83218]		Species or species habitat known to occur within area
<b>Mammals</b>		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
<b>Plants</b>		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area

# Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

# Coordinates

-32.77363 151.75164

# Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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Department of Agriculture Water and the Environment

GPO Box 858

Canberra City ACT 2601 Australia

+61 2 6274 1111

## APPENDIX D NOISE ASSESSMENT



Figure D1: Raymond Terrace WWTW and surrounding receivers



## APPENDIX E AHIMS SEARCH RESULTS





# AHIMS Web Services (AWS) Search Result

Your Ref/PO Number : Hunter Water

Client Service ID : 700374

WSP Australia Pty Ltd - Newcastle  
Level 3, 55 Bolton Street  
Newcastle New South Wales 2300

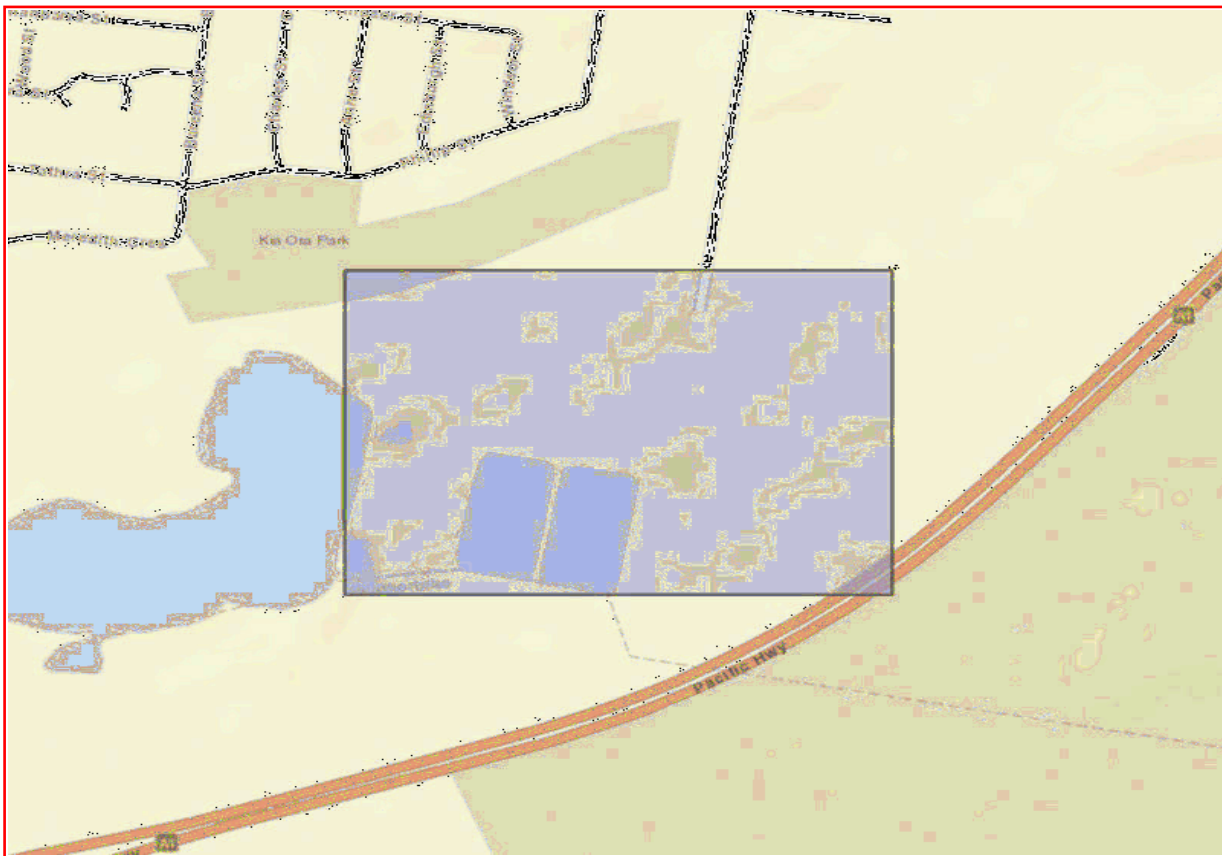
Date: 14 July 2022

Attention: Steve Farrar  
Email: [steve.farrar@wsp.com](mailto:steve.farrar@wsp.com)

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lat, Long From : -32.7767, 151.7473 - Lat, Long To : -32.7722, 151.755, conducted by Steve Farrar on 14 July 2022.**

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

<b>0</b>	<b>Aboriginal sites are recorded in or near the above location.</b>
<b>0</b>	<b>Aboriginal places have been declared in or near the above location. *</b>

### **If your search shows Aboriginal sites or places what should you do?**

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(https://www.legislation.nsw.gov.au/gazette\)](https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

### **Important information about your AHIMS search**

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.