

Belmont Desalination Plant

Construction Soil and Water Management Sub-Plan

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Revisions and Distribution

Revisions

Draft issues of this document are identified as Revision A, B, C, etc. Upon initial issue (generally Contract Award) this will be changed to a sequential number commencing at Revision 0. Revision numbers will continue at Revision 1, 2, etc.

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B	09/08/2024	A Grant	AG	S Vincent G Fletcher E Coleman B Wackett	SV GF EC BW	S MacNish	SM	Update post modification
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Distribution List

Client's Representative	S Farrar
Project Director	S MacNish
Construction Manager	J Nisbet
Environment Manager	A Grant
Environmental Representative	D Bone
Soil Conservationist	G Fletcher

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Terms and Abbreviations

Term/Abbreviation	Definition/Expanded text
AHD	Australian Height Datum
AMS	Activity Method Statements
ANZECC	Australian and New Zealand Environment and Conservation Council
ANZG	Australian and New Zealand Guidelines
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
ASS	Acid Sulfate Soil
ASSMAC	Acid Sulfate Soil Management Advisory Committee
ASSMP	Acid Sulfate Soils Management Plan
BoM	Bureau of Meteorology
CEMP	Construction Environmental Management Plan
CLM Act	<i>Contaminated Land Management Act 1997</i>
CLMP	Contaminated Land Management Plan
CoA	Conditions of Approval
CoPC	Contaminants of Potential Concern
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSMP	Contaminated Soil Management Plan
CSWMP	Construction Soils and Water Management Plan
DPI	Department of Primary Industries
DPHI	Department of Planning, Housing and Infrastructure
DPIE	Former Department of Planning, Industry and Environment
DSI	Detailed Site Investigation
ECM	Environmental Control Maps
EIS	Environmental Impact Statement
ENM	Excavated Natural Material
EPA	NSW Environment Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act
EPL	Environment Protection Licence
ESCP	Erosion and Sediment Control Plan
ESCS	Erosion and Sediment Control Strategy
FERSP	Flood Emergency Response Sub-Plan
HWC	Hunter Water Corporation
NSWF	NSW Fisheries
PASS	Potential Acid Sulfate Soil
PESCP	Progressive Erosion and Sediment Control Plan
PFAS	Per- and polyfluoroalkyl substances
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
RAP	Remediation Action Plan
REMM	Revised Environment Management Measures
RUSLE	Revised Universal Soil Loss Equation

Term/Abbreviation	Definition/Expanded text
SEARs	Secretary's Environmental Assessment Requirements
SMART	Specific, Measurable, Achievable, Relevant and Time-Bound
SSI	State Significant Infrastructure
TARP	Trigger Action Response Plan
TSS	Total suspended solids
UCP	Unexpected Contamination Procedure
WMP	Waste Management Sub-Plan
VENM	Virgin Excavated Natural Material

Construction Soil and Water Management Sub-Plan

Plan Profile

Management System	The Project will use John Holland's Environmental Management System (EMS) and core Project plans to support Project delivery. Additional functional plans have been developed for the Project.
Name	Construction Soil and Water Management Sub-Plan (CSWMSP)
Authorisation	All personnel employed on the Project will perform their duties in accordance with the requirements of this Plan and in compliance with Project system procedures and any specific Project instructions. This Plan is authorised by the Project Director.
Review and update	This Plan will be regularly reviewed, developed, and updated: • For changes in design or construction sequence, staging, methodology or resourcing • To consider progress of the Project Company's Work • For changes in access to the Project Site and Temporary Areas • To consider changes directed by Hunter Waters representative.

1. Introduction

1.1. Context

This Construction Soil and Water Management Sub-Plan (CSWMSP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the Belmont Desalination Plant ('the Project').

This CSWMSP has been prepared to address the requirements of the Conditions of Approval (CoA), the measures listed in the Belmont Desalination Plant Environmental Impact Statement (EIS) as amended by the Modification Report and Submissions Report (known as the Revised Environmental Management Measures (REMMs)), and all applicable guidelines and legislation.

1.2. Background

1.2.1. The Project

The Belmont Drought Response Desalination Plant ('the Project') was approved as SSI-8896 by the then New South Wales (NSW) Minister for Planning on the 23 July 2021. The approved Project involves the construction and operation of a drought response desalination plant producing up to 30 megalitres per day (ML/d) including seawater intake infrastructure; desalination units; brine discharge via existing ocean outfall; electricity/water supply; and ancillary works.

The approved Project is being developed on land (Part Lot 1 DP 433549) at 12a Ocean Park Road, Belmont South ('the Project area') that comprises a portion of the existing Belmont Wastewater Treatment Works (WWTW) which is located to the southeast of the town of Belmont, NSW within the Lake Macquarie City Council (LMCC) local government area (LGA). Belmont Lagoon, Cold Tea Creek and the residential area of Belmont is located to the west, with the Pacific Ocean bordering the site to the east and south.

The Modification EIS was exhibited by the Department of Planning and Environment (DPE) from 24 January 2024 to 20 February 2024. During the exhibition of the Modification EIS, 22 submissions were received from government agencies, stakeholders, and the community. A Submissions Report was prepared in May 2024 and made available via the Planning website.

Hunter Water completed a major review of the 2014 Lower Hunter Water Plan (LHWP) in 2022, now referred to as the Lower Hunter Water Security Plan (LHWSP) in accordance with the state-wide NSW Water Strategy and in consultation with DPE – Water, Lake Macquarie City Council, and the Lower Hunter community. Since the Project was approved the LHWP has been superseded by LHWSP (Hunter Water, 2022). The LHWSP outlines measures to ensure adequate water for the Lower Hunter region during drought including the change from a drought response Desalination Plant to a permanently available Desalination Plant at Belmont. A detailed Project description is provided in the CEMP.

1.2.2. Statutory Context

The Project was approved as State Significant Infrastructure (SSI-8896) by the then New South Wales (NSW) Minister for Planning and Public Spaces under Division 5.2 of Part 5 of the EP&A Act on the 23 July 2021 following submission of an EIS and Amendment Report to Department of Planning, Housing and Industry (DPHI) (formerly the Department of Planning, Infrastructure and Environment (DPIE)) in November 2019 and August 2020 respectively. The Project is identified as SSI as it satisfies Clause 4(1) of the then State Environmental Planning Policy (State and Regional Development) 2011 (SEPP SRD).

Under Section 5.25 of the EP&A Act, a proponent may request the Minister to modify the approval for State Significant Infrastructure. Such approval is required if the infrastructure as modified is not consistent with the existing approval issued under section 5.13 of the Act. After consultation with the DPHI, a Modification Report was prepared in 2023 to support a request by Hunter Water for the Minister to modify the approval to allow further changes to the approved project.

The Modification report was exhibited by the DPHI from 24 January 2024 to 20 February 2024. During the exhibition of the Modification EIS, 22 submissions were received from government agencies, stakeholders, and the community. A Submissions Report was prepared and made available in May 2024 via the Project website.

1.3. Environmental Management Systems Overview

The Environmental Management System (EMS) overview is described in the CEMP. The EMS also incorporates the Project-specific CEMP and sub-plans, strategies and procedures. The EMS provides for overarching environmental management actions for implementation by Project personnel and contractors and will apply for the duration of construction.

1.3.1. Relationship between this Plan and other Project documents

Other Project documents that interface with this Plan include:

- CEMP and associated Sub-Plans
- Construction Management Plan
- Safety Management Plan
- Sustainability Management Plan

The key CEMP Sub-Plan interfaces that ensure the Project CoA and REMMs are implemented are as follows:

- The Construction Flood Emergency Response Management Sub-Plan (FERSP), which addressed controls regarding the management of site in response to forecast and actual flood events.
- Construction Groundwater Management Sub-Plan (CGMP), which address controls regarding the management of groundwater quality, discharge, and availability.
- The Waste Management Sub-Plan addresses the removal of waste from the site.

The CEMP provides a full list of plans, procedures and other documents that form the EMS.

1.4. Consultation for Preparation

In accordance with CoA C15, this CSWMSP has been prepared as part of the CEMP in consultation with Lake Macquarie City Council (LMCC).

This CSWMSP was provided to the Lake Macquarie City Council (LMCC) on 11 September 2024. All comments received were considered and the CSWMSP updated accordingly. Consultation records are provided in Appendix A.

Community feedback and complaints relating to soil and surface water impacts will be dealt with in accordance with the Communication Strategy and the Complaints Management System detailed in the CEMP.

In accordance with CoA C15, the following suitably qualified specialists have been involved in the development and preparation of this plan and associated appendices:

- Grant Fletcher of SOS Environmental (an accredited Certified Practising Erosion and Sediment Control (CPESC #7556) expert)0020
- Emma Coleman of Qualtest (a Certified Environmental Practitioner – Site Contamination Specialist (CEnvP-SC)).
- Ben Wackett, specialist contamination consultant at Cavvanba – appointed Site Auditor for the Belmont Desalination Plant.

In accordance with CoA A43, this Plan was endorsed by the Environmental Representative (ER) on **XX XX 2024** prior to submission to the Planning Secretary for approval no later than one month before the commencement of construction.

2. Purpose and Objectives

2.1. Purpose

The purpose of this Plan is to describe how the Project will manage and protect soil and surface water during construction of the Project.

2.2. Objectives

The key objective of the CSWMSP is to ensure all approval and contractual requirements relevant to soil and surface water including water quality are described, scheduled, and assigned responsibility as outlined in the Project environmental assessment documentation:

- EIS Chapters 7.1, 7.2 and 7.3
- EIS Appendix H – Contamination Assessment
- EIS Appendix M – Coastal Processes Assessment
- Modification Report Section 6.8 (surface water) and 6.10 (coastal hazards).
- Douglas Partners – Additional Acid Sulphate Soils Investigations (May 2023)
- GHD – Detailed Site Investigation (October 2020)
- GHD – Additional Contamination Investigation Report (July 2023)
- Jacobs – Response to Submissions Report (May 2024)

To achieve compliance with the conditions and objectives of the Project documents above, the Project will implement control measures (Section 6 of this Plan) to address the relevant CoA outlined in Section 3.2 and the safeguards detailed in the REMMs in Section 3.3.

3. Environment Requirements

3.1. Relevant Legislation and Guidelines

Table 3-1 details the principal legislation, regulation, guidelines, specifications, and Australian Standards that are relevant to soil and surface water management.

Table 3-1: Legislation and Regulatory Requirements

Legislation	<i>Environment Protection and Biodiversity Conservation Act 1999</i> <i>Environmental Planning and Assessment Act 1979</i> <i>Protection of the Environment Operations Act 1997</i> <i>Water Management Act 2000 and Water Act 1912</i> <i>Fisheries Management Act 1994</i> <i>Hunter Water Act 1991</i> <i>Hunter Water Regulation 2015</i> <i>Contaminated Land Management Act 1997</i>
Plans and Policies	State Environmental Planning Policy (Resilience and Hazards) 2021 NSW Aquifer Interference Policy (DPI 2012) NSW Wetlands Policy NSW State Rivers and Estuaries Policy NSW Fisheries, November 2003. Fishnote – Policy and Guidelines for Fish Friendly Waterway Crossings (Ref: NSWF – 1181). PFAS National Environmental Management Plan
Guidelines and Specifications – Acid Sulfate Soils	Acid Sulfate Soil Manual (ASSMAC 1998) Acid Sulfate Soils Assessment Guidelines (Department of Planning 2008) National Acid Sulfate Soils Guidance (Sullivan et al, 2018) Guidelines for the Management of Acid Sulphate materials: Acid Sulphate Soils, Acid Sulphate Rock and Monosulphidic Black Ooze (RTA 2005) NSW EPA (2014) Waste Classification Guidelines – Acid Sulfate Soils Acid Sulfate Soils Assessment Guidelines (Acid Sulfate Soil Management Advisory Committee, 1998) Queensland Acid Sulfate Soil Technical Manual, Soil Management Guidelines Version 5 (Department of Resources and Department of Environment and Science, Queensland, 2023) National Acid Sulfate Soils Guidance - National Acid Sulfate Soils Sampling and Identification Methods Manual (Department of Agriculture Water and the Environment 2022) National Acid Sulfate Soils Guidance - National Acid Sulfate Soils Identification and Laboratory Methods Manual (Department of Agriculture Water and the Environment 2022).
Guidelines and Specifications – Contamination	National Environmental Protection Measure (Assessment of Site Contamination) 1999 (as amended 2013) (National Environment Protection Council 2013) Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ 2000) ANZG (2018) Water Quality Guidelines Australian Drinking Water Guidelines (NHMRC 2011) Guidelines for Consultants Reporting on Contaminated Land (NSW EPA, 2020) Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997 (NSW Environment Protection Authority 2015) Guidelines for the NSW Site Auditor Scheme, 3rd Edition (NSW Environment Protection Authority 2017) Guideline for the Management of Contamination (Roads and Maritime Services 2013c) Environment Protection Authority: Sampling design part 1 - application, Contaminated Land Guidelines (NSW EPA, 2022) Environment Protection Authority: Sampling design part 2 - interpretation, Contaminated Land Guidelines (NSW EPA, 2022) Preparing Environmental Management Plans for Contaminated Land (NSW EPA, 2022) NSW EPA (2014) Waste Classification Guidelines

	WA Department of Health (2009) Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia Resource Recovery Orders/Exemptions under Part 9, Clause 91 to 93 of the Protection of the Environment Operations (Waste) Regulation 2014
Guidelines and Specifications – Erosion & Sediment Control	Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (2022) Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ 2000) ANZG (2018) Water Quality Guidelines Australian Drinking Water Guidelines (NHMRC 2011) Department of Environment and Conservation (DEC): Bunding & Spill Management. Insert to the Environment Protection Manual for Authorised Officers - Technical section "Bu" November 1997 Environmental Best Management Practice Guideline for Concreting Contractors, DEC (2004) Fairfull, S. and Witheridge, G. (2003) Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings, NSW Fisheries Guidelines for Controlled Activities on Waterfront Land NSW Department of Primary Industries (2014) Salinity Training Handbook National Water Quality Management Strategy (Australian Government 2018) NSW Water Quality and River Flow Objectives (DECCW 2006) Managing Urban Stormwater (Volume 1 and 2) (Landcom 2004) (DECC 2008) Managing Urban Stormwater: Soils and Construction. Landcom, (4th Edition) March 2004 (reprinted 2006) (the "Blue Book"). Volume 1 and Volume 2 Guidelines for Construction Water Quality Monitoring (RTA 2003b) Volume 2A Installation of Services (DECCW 2008) Volume 2C Unsealed Roads (DECCW 2008)

3.2. Conditions of Approval – SSI-8896

The CoA relevant to this Plan are listed in Table 3-2. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-2: Conditions of Approval relevant to the CSWMSP

CoA No.	Commitment	Document reference
A2	The development may only be carried out: a) in compliance with the conditions of this approval; b) in accordance with all written directions of the Planning Secretary; c) in accordance with the EIS, Amendment Report, Response to Submissions and additional information provided in support of the application during the assessment period; d) in accordance with the management and mitigation measures in Appendix 2. e) in accordance with the Modification Report, Submissions Report and additional information provided in support of the application during the modification assessment period.	This Plan CEMP
A8	Where conditions of this approval require consultation with an identified party, the Proponent must: (a) consult with the relevant party prior to submitting the subject document to the Planning Secretary for approval; and (b) provide details of the consultation undertaken including: i. the outcome of that consultation, matters resolved and unresolved; and ii. details of any disagreement remaining between the party consulted and the Proponent and how the Proponent has addressed the matters not resolved.	Section 1.4 Appendix A Communications Strategy

CoA No.	Commitment	Document reference
B4	A Complaints Management System must be prepared and implemented before the commencement of any Work and maintained for the duration of construction and for a minimum of 12 months following completion of construction of the SSL.	Section 7.3
C15	The Proponent must prepare a Construction Soil and Water Management Sub-Plan (CSWMSP) and the plan must address, but not be limited to the following: (a) be prepared by a suitably qualified expert, in consultation with Council;	Section 1.4
	(b) a detailed plan for the containment of all runoff from the site on the site and detail of the management of any overflows;	Appendix C
	(c) measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site;	Table 6-1
	(d) describe all erosion and sediment controls to be implemented prior to the commencement of construction, including as a minimum, measures in accordance with the publication Managing Urban Stormwater: Soils & Construction (4th edition, Landcom 2004) commonly referred to as the 'Blue Book';	Appendix C
	(e) include an Acid Sulfate Soils Management Plan, if required, including measures for the management, handling, treatment and disposal of acid sulfate soils, including monitoring of water quality at acid sulfate soils treatment areas;	Appendix D
	(f) prevent cross-contamination of clean and sediment laden water.	Appendix C
	(g) provide a plan of how all construction works will be managed in a wet-weather events (i.e. storage of equipment, stabilisation of the Site);	Table 6-1
	(h) detail all off-Site flows from the Site; and	Appendix C
	(i) describe the measures that must be implemented to manage stormwater and flood flows for small and large sized events, including, but not limited to 1 in 5-year ARI and 1 in 100-year ARI.	Appendix C
C23	Prior to the commencement of earthworks, the Proponent must prepare an unexpected contamination procedure to ensure that potentially contaminated material is appropriately managed. Where any material identified as contaminated is to be disposed off-site, the disposal location and results of testing submitted to the Planning Secretary prior to its removal from the site.	Appendix E
C28	Prior to the commencement of construction, the Proponent must engage a NSW EPA-accredited Site Auditor to provide advice throughout the duration of works in relation to disturbance of A-horizon soils (as shown at Appendix 3) in the south of the site that have not been subject to disturbance to ensure that any work required in relation to soil or groundwater contamination is appropriately managed.	A NSW accredited site auditor has been engaged in accordance with this condition
D21	The Proponent must: (a) ensure that only VENM, ENM, or other material approved in writing by EPA is brought onto the site; (b) keep accurate records of the volume and type of fill to be used; and (c) make these records available to the Planning Secretary upon request.	Section 6.1.4
D22	Adequate provisions must be made to collect and discharge stormwater drainage during construction. The prior written approval of Council must be obtained to connect or discharge site stormwater to Council's stormwater drainage system or street gutter.	Section 6.1.2
D33	The Proponent must conduct site investigations to confirm the full nature and extent of the contamination in relation to disturbance of A-horizon soils (as shown at Appendix 3 of the Project Approval) in the south of the site that have not been subject to disturbance, and comply with the following requirements: (a) the site investigations must be undertaken, and the subsequent report(s), must be prepared in accordance with relevant guidelines made or approved by the EPA under section 105 of the Contaminated Land Management Act 1997; (b) the reports must be prepared, or reviewed and approved, by consultants certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) or the Soil	Section 6.1.4

CoA No.	Commitment	Document reference
	Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme; and (c) the recommendations of any Remedial Action Plan and the unexpected finds procedure must be updated following results of further site investigations and implemented throughout duration of project work.	
D34	The Proponent must ensure the proposed development does not result in a change of risk in relation to any pre-existing contamination on the site that would result in significant contamination.	Section 6.1.4

3.3. Revised Environmental Management Measures

Relevant REMMs are listed in Table 3-3 below. This includes reference to required outcomes, the timing of when the commitment applies and cross reference to indicate where the requirement is addressed in this Plan or other Project management documents.

Table 3-3: Environmental Management Measures relevant to this CSWMSP

Ref #	Commitment	Timing	Document Reference
SGC02	Hunter Water commits to undertaking a DSI prior to Project determination. The scope of the DSI will include analysis for heavy metals, TRH, BTEXN, PAHs, OCPs, PCBs and asbestos and has been based on existing contamination data and the low potential for significant contamination to be present on Project area. Hunter Water will also undertake a focused investigation within the area of TP204 to further assess potential asbestos impacts prior to construction. This assessment, and the outcomes of the DSI will inform the management measures in the Contaminated Soil Management Plan (CSMP) and if remediation is required.	Prior to construction	Additional assessments completed during design phase as required (GHD, 2023). Section 6.1.4
SGC03	Include contamination mitigation measures in an overall Contaminated Soil Management Plan (CSMP) for the construction to describe excavation, validation and disposal requirements for potentially contaminated soils. The CSMP must be prepared by appropriately qualified specialists and form a sub plan to the CEMP and will include the following as a minimum: • Method of identification, separation, management and tracking of contaminated soils • Stockpile any contaminated soil as far away from waterways / drainage lines as possible • Keep contaminated and non-contaminated soils separate at all times • Testing of soils to assess suitability if they are to be placed near sensitive receptors.	Prior to construction	Section 6.1.4
SGC04	Include an asbestos finds procedure in the overall CSMP. The asbestos finds procedure will be prepared by suitably qualified person or a competent person as determined under the Work Health and Safety Regulation (2017), and include: • Guidance on the identification of asbestos containing materials (ACM) • Steps to be undertaken if ACM is identified during works • Management and remediation/removal procedures • Required health and safety controls • Waste disposal requirements • Ongoing site management.	Prior to construction	Appendix E

Ref #	Commitment	Timing	Document Reference
SGC06	Conduct ASS testing within the Project area to confirm presence of ASS. If the ASSMAC Assessment Guidelines action criteria are triggered an Acid Sulphate Soil Management Plan (ASSMP) will be prepared as part of the CEMP in accordance with the Acid Sulphate Soil Laboratory Methods and Manual (ASSMAC, 1998). Include the following as a minimum: • Method for spoil material testing to confirm presence of ASS during construction and prior to excavation in an area • Conduct laboratory testing to calculate and verify treatment of ASS spoil material if it is to be treated on-site • Locate ASS treatment area within the Project area, which is already disturbed and is outside of flood liable land • Measures to manage any stockpiles of ASS materials, including bunding and cover to minimise leachate • Supervision and certification of treatment prior to removal from treatment areas for re-use.	Prior to construction	Section 4.2.5 Appendix D
SGC07	Prepare an Erosion and Sediment Control Plan (ESCP) as part of a SWMP in accordance with Blue Book - Managing Urban Stormwater: Soils and Construction (4th ed, Landcom, March 2004), which must include the following: • Establish all erosion and sediment control measures before ground disturbance work commences and these are to remain in place until all surfaces have been fully restored and/or stabilised • Outline the process for stabilisation and progressive revegetation of all disturbed area which will include species consistent with the dune restoration project to be undertaken within the greater Belmont WWTW site. • Maintenance and inspection program and checklist including: ○ Conditions that would trigger watering of exposed and revegetated areas ○ Requirements for maintenance of revegetated areas ○ Maintenance of erosion and sediment controls including clean out before 30% capacity remaining ○ Limiting traffic movements on disturbed areas ○ Exposed areas that is susceptible to wind generated dust particles, shall be progressively vegetated or watered. Where vegetation is not yet possible, dust suppression by watering shall be provided • Install a 40% porous, open weave barrier fence as a wind-break on the eastern side of the Project area (including the new area identified for the Proposed Modification where the 11 kV powerline connection will be located) in accordance with Standard Drawing SD6-15 (Blue Book) • Provide a clean water diversion around disturbed areas • Procedures for how any sediment laden water will be treated prior to leaving the Project area. The ESCP must be prepared by appropriately qualified specialists (e.g. completed an International Erosion Control Association (IECA) endorsed course, or passed the examination for Certified	Prior to construction	Section 6.1.2 Appendix C

Ref #	Commitment	Timing	Document Reference
	Professional in Erosion and Sediment Control (CPESC)) as a coordinated sub plan to the SWMP.		
SGC08	Include the management of material movements in the Soil and Water Management Plan, as follows: • Identification of materials during excavations including contaminated, ASS, ENM/VENM • Stockpiling and tracking of all materials throughout construction • Validation and certification of material stockpiles prior to re-use • Tracking of materials incoming and outgoing from site (e.g. as waste, quality of imported material) • Method of soil testing including number of samples and how samples will be taken to confirm any soil amelioration requirements. • Topsoil testing to include as a minimum fertility, sodicity and aluminium toxicity • Waste classification of soils that require offsite disposal using the six-step process and criteria detailed in Waste Classification Guidelines – Part 1: Classification of Waste (NSW EPA 2014).	Prior to construction	Section 6.1 See also the Waste Management Sub Plan
SGC11	Should unexpected, contaminated soils be identified during any ground works, seek advice from a suitably qualified environmental consultant and notify the Hunter Water Project Manager. Complete any additional investigations/abatement in general accordance with guidelines developed or endorsed by NSW EPA. Include contingency plans for unexpected finds protocols for contaminated soils in the CSMP.	Prior to construction	Appendix E
WR01	Vehicle wash down and/or cement truck washout will occur in a designated bunded area or offsite.	Construction	Included in Construction Groundwater Management Plan
WR02	Include provision in the ESCP for visual inspections of nearby waterways and drainage lines following rainfall events and corrective actions in the event of impacts.	Prior to construction	Table 7-3
WR03	Revegetation will be undertaken in all areas subject to ground disturbance, in accordance with the requirements listed in Table 7-2 of the EIS. Sediment and erosion controls (including dust) will be maintained until vegetation cover is established.	Prior to construction	Section 6.1.2 Erosion and Sediment Control Strategy
TFB07	Erosion and sediment controls will be installed and maintained in accordance with the measures outlined for soils, geology and contamination in this table.	During Construction	See reference to SGC REMMs in this table above Section 6.1.2
TFB09	Additional Acid Sulphate Soil sampling would be completed during the detailed design phase to confirm the risk of exposure of acid sulphate soils due to drawdown. If this sampling identifies that there is a risk associated with an acid sulphate soil a management plan	Detailed Design	This testing has been completed preconstruction.

Ref #	Commitment	Timing	Document Reference
	will be prepared in accordance with the measures outlined for soils, geology and contamination in this table.		
TFB15	Erosion and sediment controls will be implemented in accordance with Table 7-2 of the EIS before commencement of ground disturbance work and will be retained until all surfaces have been fully restored and stabilised.	Construction	Section 6.1.2 and Appendix C
CP01	Implement a coordinated erosion monitoring and mitigation program in conjunction with the existing strategies and dune restoration project implemented for the adjacent WWTW, including: - Site profiling and revegetation following completion of civil works in accordance with the final design which is to comply with the Lake Macquarie Coastal Zone Management Plan (CZMP) (2015) and DLWC (2001). - Monitoring of recession and implementation of mitigation measures below as needed: - Beach management works such as beach scraping to reshape dunes and increase dune volume/recovery after storms if necessary. - Stabilisation of the frontal dune system by removing invasive species and replacing with locally indigenous dune vegetation. - Installation of sediment fences to minimise the movement of sands during construction. - Control offroad vehicle access and surface runoff. - Potential positive cumulative impact to align these works with Hunter Water's proposed dune protection and restoration project between the Belmont Golf Course and WWTW. - Ensure the public are prevented from entering works areas and potential areas of impact.	Construction	This REMM no longer is considered to apply to the Project as the change in design between the EIS phase and Modification has resulted in the proposed construction of a vertical shaft for the Intake pipeline and therefore highly unlikely to be exposed by dune / coastal erosion.
HH01	- Should unexpected, contaminated soils be identified during any ground works, seek advice from a suitably qualified environmental consultant and notify the Hunter Water Project Manager. Complete any additional investigations/abatement in general accordance with guidelines developed or endorsed by NSW EPA - Include contingency plans for unexpected finds protocols for contaminated soils in the CSMP.	Construction	Appendix E

3.4. Environment Protection License (EPL)

The existing EPL for the Belmont WWTW may be amended to include the Belmont Desalination Plant for Project construction and commissioning water discharge into the existing WWTW

3.5. Other Permits and Licences

Other permits and licences which will be held by the Project during construction will likely include:

- Groundwater Licence including Water Access Licences
- Environmental Protection Licence (existing WWTW)

HWC will be responsible for obtaining such licences and permits for the duration of the project. JH will implement and maintain compliance with these permits and licences as required throughout all construction phases. Permits

and licenses relating to groundwater will be undertaken in accordance with the Construction Groundwater Management Plan (CGWMP).

4. Existing Environment

The following sections summarise what is known about factors influencing soils and surface water within the Project footprint.

4.1. Key Reference Documents

The key reference documents are detailed below:

- EIS Chapters 7.1, 7.2 and 7.3
- EIS Appendix H – Contamination Assessment
- EIS Appendix M – Coastal Processes Assessment
- Modification Report Section 6.8 (surface water) and 6.10 (coastal hazards).
- Douglas Partners – Additional Acid Sulphate Soils Investigations (May 2023)
- GHD - Detailed Site Investigation (October 2020)
- GHD – Additional Contamination Investigation Report (July 2023)
- Jacobs – Response to Submissions Report (May 2024)

4.2. Topography and Soil Characteristics

4.2.1. Topography

Topographically the Project area is in a relatively low-lying flat area, with elevation ranging from 2 m to 5 m Australian Height Datum (AHD). The surface has been modified to form evaporation ponds which are now decommissioned, including excavation below surrounding ground level within the ponds and build-up of the pond embankments, which vary in height between approximately 1.5 m – 3.0 m above surrounding ground level. To the north, the Belmont WWTW lies on top of a low rise, ranging from 4 m to 8 m AHD, and to the east are undulating sand dunes.

4.2.2. Geology

Reference is made to the Newcastle 1:100,000 scale Coalfields Regional Geology sheets (Department of Mineral Resources, 1995), the regional geological and coastal Quaternary geology maps ((Geological Survey of NSW, 2015) and (Geological Survey of NSW, 2016)).

These maps indicate the Project area is underlain by medium to fine grained dune and marine sand that has been disturbed by fill and excavation works related to the construction of the Belmont WWTW and previous Defence activities.

4.2.3. Soil Landscape and Characteristics

The Reference to the Gosford – Lake Macquarie soil landscape map (Department of Conservation and Land Management, 1993), identified that the project is underlain by the soil landscapes described in Table 7-1 and shown on Figure 7-1. The potential erosion hazard of each soil landscape was assessed in accordance with Figure 4.6 of the Blue Book - Managing Urban Stormwater: Soils and Construction (the Blue Book) (Landcom, 2004), reference Table 4-1.

Based on geotechnical investigations completed, the subsurface profile within the Project area generally consisted of fill or topsoil comprising silty sand, sandy gravel and clay to depths of up to 1.3 m, overlying alluvial sand and silty sands.

Table 4-1: Summary of soil landscapes within the construction footprint

Soil Landscape	Location	Description	Limitations
Tuggerah	Western extent of the desalination plant site	Gently undulating to rolling coastal dune fields. Local relief is up to 20 m and slope gradients are in the range of 1% to 10%. Soils include loose sands and are covered with heathland vegetation. Potential erosion hazard is low.	- Wind erosion hazard, high permeability soils, localized flooding, high water table, strongly acid soil in places and - the landscape coincides with a mine subsidence district.
Narrabeen	Eastern extent of the desalination plant site	- Beaches and foredunes along the coast on - mainland and barrier beaches exposed to - ocean swell and saltladen winds. Local relief is <10 m (beach plains) and <20 m (foredunes) and slope gradients are <3% for beach dunes - and up to 45% for foredunes. Soils are Sands. - Potential erosion hazard is high.	- Severe wave erosion hazard, severe wind erosion hazard, - extreme foundation hazard, non-cohesive highly permeable - strongly alkaline saline soils of very low fertility.



Figure 4-1 Soil Landscapes and Geotechnical Investigations

4.2.4. Contamination

Condition C20 of the Conditions of Approval require that the Construction Waste Management Sub Plan (CWMSP) reference the confirmation of the contamination status of the development areas of the site based on validation results. The CWMSP sub references here and Section 6.1.4.

A Site Auditor and Contamination specialists are employed on the project to validate as required, noting the site is suitable for industrial use and the intent is that soil will be retained on site unless it's identified as contaminated via the contamination processes set out in this Plan and as specified by the consultants on site. Where any material identified as contaminated is to be disposed off-site, the disposal location and results of testing submitted to the Planning Secretary prior to its removal from the site as per C23 of the CoA as referenced in the CWMSP. Reporting completed by the site auditor will be undertaken in accordance with Consultants reporting on contaminated land (*NSW EPA, 2020*).

Contamination assessments were undertaken by GHD in 2019, 2020 and 2023.

The assessments did not identify soil contamination above the adopted health assessment criteria for both recreational/open space and commercial/industrial land use for all samples analysed within the desalination plant site. PFAS was not detected at concentrations in soils that would pose a health or ecological risk under commercial/industrial use.

The assessments identified:

- One potential asbestos containing material (ACM) fragment was noted on the surface in the area of TP204 during the 2019 assessment. Further assessment in 2020 did not detect asbestos in shallow hand excavations adjacent and around TP204, indicating the impact was isolated;
- Non-friable Asbestos Containing Material (ACM) fragments were identified on the site surface in several locations. The majority of the site surface was unable to be assessed due to thick vegetation, and therefore asbestos impacts on the ground surface were not delineated; and,
- Non-friable Asbestos Containing Material (ACM) fragments were identified below ground level within TP410 and TP404.

The assessments indicated that there is a potential for isolated fragments of bonded ACM to be present on the surface, and within subsurface soils, at the Site.

Soils at the study area would generally be classified as General Solid Waste, with some minor exception areas of soils classified as Restricted Solid Waste. It is noted that the current Restricted Solid Waste classifications are based on results with no TCLP (Toxicity Characteristic Leaching Procedure) testing, and with further testing including TCLP testing would likely classify as General Solid Waste. In addition, soils where either asbestos fragments or acid sulfate soils are identified would also be classified as either asbestos waste or acid sulfate soil waste. It is noted that these classifications are preliminary only and further sampling and analysis would be required prior to disposal off site.

The previous assessments recommended preparation of a Contaminated Site Management Plan (CSMP) which would include an Unexpected Contamination Procedure (UCP) to manage the asbestos impacts. The contaminated site management will be undertaken in accordance with Section 6.1.4. This plan also includes an UCP in Appendix E.

4.2.5. Acid Sulfate Soils

The EIS provided reference to the Acid Sulphate Soil (ASS) Risk Map for Swansea (Department of Land and Water Conservation, 1997) and desktop review indicated that the southwestern portion of the Project area is located in an area with a high probability of occurrence of ASS. The northeastern portion of the Project area is mapped as having a low probability of occurrence of ASS.

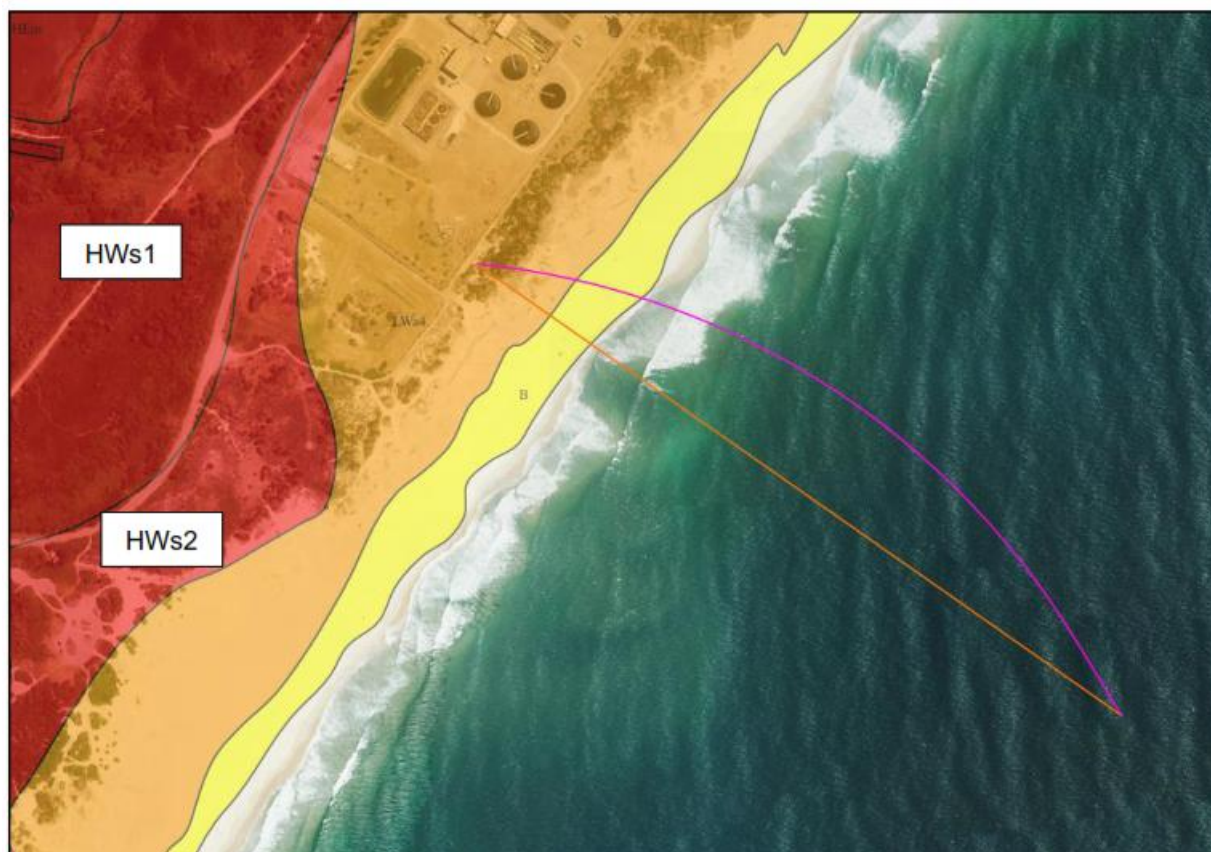


Figure 4-2 Acid Sulfate Soil mapping within proximity to the site

Shown in the figure above, the following colours are defined as:

- Red HWS1 - a high probability of occurrence of acid sulfate soils within 1 m of the ground surface;
- Red HWS2 - a high probability of occurrence of acid sulfate soils between 1 and 3 m below the ground surface;
- Orange LW4 - a low probability of occurrence of acid sulfate soils greater than 3 m below the ground surface; and
- Yellow B – beach deposits, no known occurrence of acid sulfate soils.

Two additional ASS assessments were completed during 2023:

- Douglas Partners ASS Assessment.
 - The purpose of this assessment was to determine the potential for ASS risk for the project, specifically considering the construction of the shaft and revised pipeline alignment as utilised for the Modification Report. The results of the report indicate that ASS is not likely to be encountered for the shaft and pipeline alignment to the depth of construction proposed.
 - PASS was detected in samples collected at depths between 1.25 - 2.0 mbgl that were tested for CRS within areas mapped as low and high probability risk of ASS occurrence. Field pH test results show PASS may extend above and below these depths. DP (2023) also detected PASS at 26.5 -28.28 mbgl in the onshore bore BH601, with PASS likely extending beyond this depth interval. If these soils were to be disturbed either through excavation or dewatering works development of an ASS Management Plan (ASSMP) would be required (refer to Appendix D).
- GHD ASS Assessment
 - This additional assessment was undertaken to provide data of potential ASS across the project site to gain additional data prior to construction to meet CoA D33.
 - The assessment found that PASS was detected in samples collected at depths between 1.25 and 2.0 mbgl in areas mapped as low and high probability of ASS risk occurrence. If these soils were to be disturbed either through excavation or dewatering works development of an ASSMP would be required (refer to Appendix D).

4.2.6. Mining

The Lake Macquarie Mine Subsidence District is located north of Belmont Swamp and west of the Fernleigh Track, including the residential areas of Jewells, more than 900 m north-west of the Project area. However, an initial review of publicly available data as part of the geotechnical assessment identified mine workings underlying the site (GHD, 2019b).

The review found that while the Project area is not within a mine subsidence district, underground mine workings of John Darling Colliery do underlay the Project area. Underground workings are within the Victoria Tunnel Seam (understood to be approximately 200 m below the existing surface of the Project area) and the deeper Borehole Seam. Mining of these seams was completed in the late 1980s and there are no current exploration or mining leases within the Project area.

4.2.7. Unexploded Ordinance

During World War Two the coastal area immediately east of Belmont was used as a field firing range and training area by Newcastle garrison units. The desktop review identified that the land directly to the north of the Belmont WWTW was a former Defence military area which is classified as having a slight potential for residual unexploded ordinance (UXO). This area, however, is outside the Project area and would not be impacted by the Project.

4.3. Surface Water

4.3.1. Hydrology and Flooding

The Project is located within a coastal dune environment which due to elevation and soil (sand) transmissivity lacks significant surface water features. Surface waterbodies and watercourses in close proximity to the Project area consist of:

- Belmont Lagoon located 30 m to the north-west. This is a shallow coastal saltwater lagoon which connects to Lake Macquarie in Belmont Bay via Cold Tea Creek. The lagoon is adjacent to protected (Coastal SEPP) wetlands.
- The South Pacific Ocean located 80 m to the east. This area of coastline between Redhead Headland to the north and Swansea Channel to the south contains three beaches. From north to south these beaches are known as Redhead Beach, Nine Mile Beach (adjacent to the site) and Blacksmiths Beach. With the exception of the Belmont WWTW and the Belmont Golf Course to the south, Nine Mile Beach and its dune system are relatively undeveloped and therefore have minimal surface impact from human activities. Due to the transmissivity of the sandy soils there is no significant standing water in the beach or dune environments close to the Project area.
- Belmont Bay located 1.2 km to the west. Belmont Bay forms part of Lake Macquarie which is a large (approx. 110 km²), relatively shallow (average depth approx. 8 m) coastal saltwater lake which drains to the Pacific Ocean through the Swansea Channel approximately 5 km to the south of the Project area.
- Sludge/effluent lagoons within the Belmont WWTW. A lined lagoon within the boundaries of the Belmont WWTW for the storage of sludge materials following wastewater processing. The WWTW also includes a number of aboveground concrete storage tanks such as clarifier tanks and aerobic digester tanks.

Runoff from the west of the Belmont WWTW access road generally drains to Belmont Lagoon, while runoff from the east of the Belmont WWTW access road is directed to the lowest point at the Belmont WWTW at the base of the existing sand dunes along Nine Mile Beach where it infiltrates into the sandy soils.

The Lake Macquarie Waterway Flood Study (WMAwater, 2012) indicates probable flood levels for Lake Macquarie of 1.23 m AHD for a 1 in 20 year flood, and 1.5 m AHD for a 1 in 100 year flood. The Project is located outside of Council's mapped 1 in 100 year flood extent; however, portions of the site are within the Lake Macquarie LEP flood planning area (defined as 1 in 100 year flood level plus 0.5 m).

4.3.2. Belmont WWTW Wet Weather Management

Effluent discharged via the Belmont WWTW ocean outfall includes transfers from three inland WWTWs (Edgeworth, Dora Creek and Toronto). At each of these WWTWs effluent overflows can occur in extreme wet weather events when pump capacity is exceeded. Additionally, flows to Belmont WWTW cease when high water level triggers are reached at the Belmont WWTW hydraulic control structure, which can also contribute to overflows at the inland WWTWs.

4.4. Climate

Climate data was obtained from the Bureau of Meteorology (BoM) Newcastle Nobbys Signal Station weather station (site number 061055), located approximately 17 km north of the Project area. The annual average maximum and minimum temperatures experienced at Newcastle are 21.8 degrees and 14.3 degrees respectively. On average, January is the hottest month with an average maximum temperature of 25.6 degrees. July is the coldest month, with an average minimum temperature of 8.5 degrees. Most of the annual 1,121 mm of rainfall occurs between January and June.

4.4.1. Rainfall Erosivity Factor

The rainfall erosivity factor is a measure of the ability of rainfall to cause erosion (referred as “R” in the Revised Universal Soil Loss Equation RUSLE). The rainfall erosivity factor is used to determine the soil loss in tonnes per hectare over one year and is used in calculations when sizing construction sediment basins.

The Project has a Rainfall Erosivity Factor of 2500 (EI) based on mapping contained in Appendix B of Managing Urban Stormwater: Soils and Construction Volume 1 Fourth Edition (The Blue Book). R-factor data is detailed in Table 4-5 below showing that more than half (53%) the annual rainfall is expected in February to June.

Table 4-2: Monthly % and annual rainfall erosivity (R-factor) values for Newcastle

Monthly % and annual rainfall erosivity (R-factor) values													
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Year
Mean monthly rainfall (mm)	71.6	81.3	135.5	125.2	118.1	87.5	131.9	64.1	57.1	66.2	68.2	102.3	1130.5
%	6.3	7.2	12	11.1	10.4	7.7	11.7	5.7	5.1	5.9	6.0	9.0	100.0
R-value	14	16	27	24	23	17	26	13	11	13	13	20	221

5. Environmental Aspects and Impacts

5.1. Construction Activities

The Project will involve a range of construction activities incorporating heavy machinery, plant and equipment. Construction activities with potential to result in adverse impacts to soils and surface water include:

- Vegetation clearing and topsoil stripping
- Soil compaction and road pavements, leading to reduced infiltration
- Temporary dewatering of water from the construction site, including dewatering of groundwater ingress to construction excavations
- Attenuated or delayed discharge of stormwater captured in temporary sediment basins
- Reuse of stormwater captured in temporary sediment basins
- Bulk earthworks, cutting and filling
- Site access
- Culvert and drainage works
- Material stockpiles including the treatment of acid sulfate soil (if encountered)
- Paving activities
- Water use / extraction
- Compounds operation including fuel and chemical storage, refuelling and chemical handling
- Noxious weed treatment including herbicide spraying
- Movement of heavy vehicles.

5.2. Impacts

The potential for impacts on soil and surface water will depend on several factors. Primarily impacts will be dependent on the nature, extent and magnitude of construction activities and their interaction with the natural environment. Potential impacts attributable to construction might include:

- Erosion and sedimentation
- Acid sulfate soils
- Spreading of contaminated soils to other areas of the site
- Pollution of nearby aquatic habitats, soils, watercourses, and groundwater systems
- Changes to the timing, rate, and volume of stormwater discharge
- Changes to existing flow regimes to receiving waterways and systems
- Scouring of watercourses.

Refer also to the Construction Groundwater Management Plan for management of potential impacts to groundwater including spill minimisation, containment and capture processes.

6. Environmental Control Measures

6.1. Soil and Surface Water Management During Construction

Specific measures and requirements to meet the objectives of this CSWMSP and to address impacts on soil and surface water are outlined in Table 6-1. Further explanatory detail on particular measures / requirements where noted in the evidence column is provided in the following sections.

Table 6-1: Soil and Surface Water Management and Mitigation Measures

ID	Measure/Requirement	When to Implement	Responsibility	Reference	Evidence
Erosion and sediment control					
CSWMSP01	A Soil Conservation Specialist will be engaged for the duration of construction of the Project to provide advice on the planning and implementation of erosion and sediment control design, installation and maintenance, and review ESCPs.	Pre-construction/ During construction	Environment Manager	Best Practice	Section 6.1.1, 7.1 and PESCPs
CSWMSP02	Progressive ESCPs will be prepared prior to commencing each stage of work and will be updated following any major change to construction activity that impacts site conditions such as flow path changes, basin changes or other relevant management plan changes. Progressive ESCPs will detail controls required to avoid erosion and sedimentation of the site, surrounding areas, watercourses, drainage systems, water bodies and wetlands.	Pre-construction/ During construction	Environment Manager Foreperson	REMM SGC07 REMM WR02	Section 6.1.1, 7.1 and Appendix C PESCPs
CSWMSP03	Erosion and sediment controls will be installed and maintained at all worksites and adjacent areas as per site specific ESCPs and in accordance with TfNSW Specifications and the "Blue Book" guidelines.	Pre-construction/ During construction	Environment Manager Foreperson	REMM TFB07 REMM TFB15	Section 6.1.1 and Appendix C PESCPs
CSWMSP04	Works will be designed and programmed to minimise the extent of disturbance to vegetation, ground disturbance and exposed soil where practical to minimise the potential for erosion	Pre-construction/ During construction	Environment Manager Foreperson	Best practice	Section 6.1.1 and Appendix C PESCPs
CSWMSP05	Measures will be implemented to minimise dust, soil, or mud from being deposited by vehicles onto public roads. This includes: • Site access and egress points to be fitted with rumble grids and/or wheel wash facilities (or similar) to prevent tracking of sediment off site • Residual tracking of material onto public roads will be managed with streetsweepers or equivalent as required • Cleaning of hardstand areas as soon as practicably possible	During construction	Environment Manager Foreperson	NSW CoA C15c	Section 6.1.1 and Appendix C PESCPs

ID	Measure/Requirement	When to Implement	Responsibility	Reference	Evidence
CSWMSP07	Prior to rainfall events of greater than 20 mm, the site will be inspected for the potential implementation of additional wet-weather event controls. These may include: - Removal / storage of equipment, - Additional stabilisation of the site such as covering of stockpiles and exposed areas with geofabric	Pre-construction / Construction	All Personnel	NSW CoA C15g	Section 6.1.1 and Appendix C PESCPs
CSWMSP08	Catch drains, contour and diversion drains across exposed areas will be installed immediately following clearing, and re-established and maintained during topsoil removal and earthwork operations. Drains will be appropriately stabilised with scour protection provided at outlets in accordance with Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004) and Volume 2D (DECC 2008). Scour protection will be provided at all locations necessary to prevent scour in waterways, including ephemeral waterways. Unless otherwise required Scour protection will be designed for a 5% AEP event.	Construction	Environment Manager Foreperson Design Manager Soils Conservationist	REMM SGC07	Section 6.1.1 and Appendix C PESCPs
CSWMSP09	Wastewater or “dirty” water generated during the construction process will be collected, treated, and disposed of by appropriate means, including the installation of sediment barriers downslope of all disturbed areas. In areas where it is not possible to direct dirty water to sediment basins, other sediment controls will be implemented in accordance with Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004) and Volume 2D (NSW DECC 2008).	Construction	Environment Manager Foreperson Soils Conservationist	NSW C15f	Section 6.1.1 and Appendix C PESCPs
CSWMSP10	Clean and dirty water runoff will be adequately separated to avoid mixing where possible using diversions	Construction	Environment Manager Foreperson Soils Conservationist	NSW C15f	Section 6.1.1 and Appendix C PESCPs
CSWMSP11	Sediment basins must be designed and constructed in accordance with Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004) and Volume 2D (NSW DECC 2008); and Best Practice Erosion and Sediment Control Appendix B (IECA 2018). Basin inlets, outlets and spillways will be constructed in accordance with specifications from HWC unless otherwise advised by the Soil Conservationist and documented in the PESCP.	Pre-construction / Construction	Environment Manager Foreperson Soils Conservationist	REMM SGC07	Section 6.1.1 and Appendix C PESCPs
CSWMSP12	Wherever possible, sediment basins and associated drainage will be installed during the clearing and grubbing phase in that catchment that could cause sediment to leave site (Except where clearing is required for basin installation and site access, material storage and safety requirements to facilitate sediment basin construction).	Pre-construction / Construction	Environment Manager Foreperson Soils Conservationist	REMM TFB15	Section 6.1.1 and Appendix C PESCPs

ID	Measure/Requirement	When to Implement	Responsibility	Reference	Evidence
CSWMSP13	Regular inspections are undertaken to evaluate the effectiveness of erosion and sediment control measures. Action lists are to be produced to address any maintenance requirements or additional controls required. Also, pre and post rainfall event inspections are to be undertaken.	Construction	Environment Manager Foreperson Soils Conservationist	REMM WR02	Inspection records
CSWMSP14	Ongoing risks associated with erosion and sediment control are to be addressed with the workforce during Project briefings, pre-starts and toolbox talks	Construction	Environment Manager Foreperson	Best practice	Project Briefing notes Toolbox talk records
CSWMSP15	Sediment and erosion controls (including dust) will be maintained until vegetation cover is established.	Construction	Environment Manager Foreperson Soils Conservationist	REMM WR03	Inspection records
CSWMSP16	JH commit to coordinating with HWC to implement the existing defined controls within HWC documentation to enable implementation of HWCs existing erosion monitoring and mitigation program for dune restoration, as implemented for the adjacent WWTW. including: - Site profiling and revegetation following completion of civil works in accordance with the final design which is to comply with the Lake Macquarie Coastal Zone Management Plan (CZMP) (2015) and DLWC (2001). - Monitoring of recession and implementation of mitigation measures below as needed: - Assist HWC in beach management works such as beach scraping to reshape dunes and increase dune volume/recovery after storms if necessary, if found to be exacerbated or caused by JH disturbance activities. - Assist HWC in stabilisation of the frontal dune system by removing invasive species and replacing with locally indigenous dune vegetation. - Installation of sediment fences to minimise the movement of sands during construction. - Control offroad vehicle access and surface runoff. - Potential positive cumulative impact to align these works with Hunter Water's proposed dune protection and restoration project between the Belmont Golf Course and WWTW. - Ensure the public are prevented from entering works areas and potential areas of impact.	Construction	Environment Manager Foreperson Soils Conservationist	REMM CP01	Monitoring program results

ID	Measure/Requirement	When to Implement	Responsibility	Reference	Evidence
Stockpile Management					
CSWMSP17	Stockpiles will comply with the following: • Locate stockpiles outside of the tree protection zone of trees or native vegetation identified for retention and in areas of low ecological or heritage conservation value • Locate stockpiles as far as possible from residential dwellings and other noise sensitive areas and at least 5 m from likely areas of concentrated water flows and at least 10 m from waterways that are classified as Class 1 and Class 2 from the DPI Fisheries guideline "Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings" • Minimise temporary stockpile durations and ensure slopes no steeper than 2:1 • Cover, or otherwise protect from erosion, stockpiles that will be in place for more than 10 days as well as any stockpiles that are susceptible to wind or water erosion, within 10 days of forming each stockpile • Keep topsoil that is not contaminated by noxious weeds in stockpiles for later spreading on fill batters and other areas. Other material may also be stockpiled but kept separated from the topsoil stockpiles • Monitor topsoil stockpile for potential growth of weeds • Materials must be stockpiled only in sites with appropriate erosion and sediment controls; • All stockpiles located within the project EPL premise boundary. • Different material types, i.e. VENM/ENM, contaminated, ASS, must be stockpiled separately.	Pre-construction / Construction	Environment Manager Foreperson Soils Conservationist	SGC08	Soil conservationist inspections Section 6.1.3
Contamination					
CSWMSP18	Contaminated Land Management measures (Section 6.1.4) will be implemented throughout construction works to detail areas of known contamination and potential contamination risk, procedures for unexpected contamination finds, processes for management, and disposal requirements.	Pre-construction/ During construction	Environment Manager	REMM SGC03	Section 6.1.4
CSWMSP19	An Unexpected Finds Procedure for Contamination has been developed and will be implemented throughout construction. Any previously unidentified contaminated material encountered during the works will be managed in accordance with this procedure. Where any material identified as contaminated is to be disposed off-site, the disposal location and results of testing submitted to the Planning Secretary prior to its removal from the site.	Pre-construction/ During construction	Environment Manager Foreperson	REMM SGC04 NSW CoA C23 REMM HH01	Unexpected Contamination Procedure – Appendix E Unexpected Find Reporting

ID	Measure/Requirement	When to Implement	Responsibility	Reference	Evidence
	Material must be waste classified prior to disposal offsite, in accordance with NSW EPA (2014) Waste Classification Guidelines.				Waste Classification Reports
CSWMSP20	Should unexpected, contaminated soils be identified during any ground works, seek advice from a suitably qualified environmental consultant and notify the Hunter Water Project Manager. Complete any additional investigations/abatement in general accordance with guidelines developed or endorsed by NSW EPA. Outcomes of RAPs and any advice from the site auditor will be followed as required.	Pre-construction/ During construction	Environment Manager Foreperson	REMM SGC04 NSW CoA C23 REMM HH01	Unexpected Contamination Procedure – Appendix E Unexpected Find Reporting Waste Classification Reports
CSWMSP21	Control measures will be implemented to divert any surface water away from contamination and to capture and treat any surface runoff contaminated by exposure to the contamination. Stockpiling of contaminated material during construction will be managed and maintained to prevent any release of liquids and contaminated runoff to stormwater drains, waters, and land. Contamination stockpiles will be kept separate from regular soil stockpiles	Pre-construction/ During construction	Environment Manager Foreperson	REMM SGC03 NSW CoA C15	Section 6.1.2 and 6.1.3 ECMs PESCPs
CSWMSP22	Disturbed areas, including site compounds, material storage areas, access and haul roads, will be restored before completion. Restoration will involve spill clean-up, soil remediation, ripping, topsoiling, weed control, seeding, planting, watering, and maintenance as required. A testing and validation regime will be developed to monitor water quality and sediment of existing dams used during construction (if proposed).	During construction	Environment Manager Foreperson	Best practice	Pre and Post Condition Reports
CSWMSP23	Prior to the commencement of construction, the Proponent must engage a NSW EPA-accredited Site Auditor to provide advice throughout the duration of works in relation to disturbance of A-horizon soils (as shown at Appendix 3) in the south of the site that have not been subject to disturbance and comply with the following requirements: - the site investigations must be undertaken, and the subsequent report(s), must be prepared in accordance with relevant guidelines made or approved by the EPA under section 105 of the Contaminated Land Management Act 1997; - the reports must be prepared, or reviewed and approved, by consultants certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme; and	Pre-construction/ During construction	Environment Manager	CoA C28	Section 6.1.4 Remedial Action Plan (s) Site Audit Statement(s)

ID	Measure/Requirement	When to Implement	Responsibility	Reference	Evidence
	the recommendations of the any Remedial Action Plan and the unexpected finds procedure must be updated following results of further site investigations and implemented throughout duration of project work.				
CSWMSP24	Drilling fluid and mud will be managed in accordance with a specific procedure to be developed in consultation with the selected drilling contractors. This may result in the construction of a specific drilling fluid retention basin which, if installed, will be emptied and disposed of to an appropriately licenced landfill in accordance with CoA and EPL requirements	Pre-construction/ During construction	Environment Manager	CoA C28	Section 6.1.6
Acid Sulfate Soils					
CSWMSP25	An Acid Sulfate Soils Management Plan (ASSMP) will be implemented throughout the works to handle, treat, manage, and dispose of any potential ASS that may be encountered during works. The ASSMP will be developed as an Attachment to this Plan and will be reviewed by all parties identified for reviewing this Plan. The ASSMP will be implemented throughout the Construction period.	Pre-construction/ During construction	Environment Manager	REMM SGC06	Section 6.1.7 Appendix D – ASSMP
CSWMSP26	Training will be provided to all project personnel, including relevant subcontractors on acid sulfate soils management practices and the requirements of this Plan through inductions, toolbox talks, and targeted training as required.	Pre-construction/ During construction	Environment Manager WHS Manager Foreperson	Best practice	Section 7.2 Induction records Toolbox talk records
Refuelling, washdown and chemical storage					
CSWMSP27	A schedule of all hazardous materials on the construction site will be maintained and complete records will be kept for the duration of the works	During construction	Environment Manager WHS Manager	Best practice	Health and Safety Management Plan Safety Data Sheets
CSWMSP28	Fuels, chemicals, and other hazardous materials must be stored in suitably located and bunded areas with an impermeable floor to minimise the impact of any spillage or contamination on the Site and adjoining areas. The bunded area must be able to contain 120% of the volume of the largest single stored volume within the bund.	During construction	Environment Manager WHS Manager Foreperson	Best Practice	ECMs
CSWMSP29	All fuels, chemicals, and liquids must be stored on slopes less than 1:10 and at least 50 m away from aquatic habitat.	During construction	Environment Manager WHS Manager Foreperson	Best Practice	ECMs

ID	Measure/Requirement	When to Implement	Responsibility	Reference	Evidence
CSWMSP30	Sites used for refuelling and chemical storage will be located away from areas of shallow groundwater or appropriately lined and bunded to protect groundwater.	Pre-construction/ Construction	Environment Manager Foreperson	Best Practice	ECMs

6.1.1. Environmental Control Maps

ECMs will be prepared for each construction site and provide detailed content on the type and location of protection measures, exclusion / no-go zones, monitoring requirements, site specific environmental obligations and environmentally sensitive areas. It is the practical application of the proposed control measures and an important tool to communicate these to all personnel including subcontractors.

6.1.2. Progressive Erosion and Sediment Control Plans

As required by CoA C15, Appendix C contains:

- a detailed plan for the containment of all runoff from the site on the site and detail of the management of any overflows;
- Erosion and sediment control measures will be guided by the Erosion and Sediment Control Strategy (ESCS) provided at Appendix C, which has been developed in accordance with the requirements of Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004) and Managing Urban Stormwater: Soils and Construction Volume 2A and 2D (DECC 2008) (the “Blue Book”).
- Measures to prevent cross-contamination of clean and sediment laden water.
- Detail all offsite flows from the site
- Describe the measures that must be implemented to manage stormwater and flood flows for small and large sized events, including, but not limited to 1 in 5-year ARI and 1 in 100-year ARI.

In accordance with REMM SGC07, the Erosion and Sediment Control plan includes the following:

- Establish all erosion and sediment control measures before ground disturbance work commences and these are to remain in place until all surfaces have been fully restored and/or stabilised
- Outline the process for stabilisation and progressive revegetation of all disturbed area which will include species consistent with the dune restoration project to be undertaken within the greater Belmont WWTW site.
- Maintenance and inspection program and checklist including:
 - Conditions that would trigger watering of exposed and revegetated areas
 - Requirements for maintenance of revegetated areas
 - Maintenance of erosion and sediment controls including clean out before 30% capacity remaining
 - Limiting traffic movements on disturbed areas
 - Exposed areas that is susceptible to wind generated dust particles, shall be progressively vegetated or watered. Where vegetation is not yet possible, dust suppression by watering shall be provided
- Install a 40% porous, open weave barrier fence as a wind-break on the eastern side of the Project area (including the new area identified for the Proposed Modification where the 11 kV powerline connection will be located) in accordance with Standard Drawing SD6-15 (Blue Book)
- Provide a clean water diversion around disturbed areas
- Procedures for how any sediment laden water will be treated prior to leaving the Project area.

The ESCS will guide the development of site-specific Progressive Erosion and Sediment Control Plans (PESCPs). PESCPs are planning documents that clearly show the site layout and location of erosion and sediment control structures onsite. They are produced for construction stages from initial vegetation clearing to rehabilitation when erosion and sediment control devices are no longer required and are removed. PESCPs will be developed and implemented prior to commencing activities at all work areas where there is a risk of erosion and sediment loss.

PESCPs may be produced in conjunction with an Activity Method Statements (AMS) or associated ECMs to provide more detailed site-specific management measures. PESCPs will be developed by suitably qualified environment staff in consultation with the Foreperson, and other relevant site personnel, as required. All PESCPs are to be prepared in accordance with the Blue Book - Managing Urban Stormwater: Soils and construction - Volume 2D.

The appointed CPESC will approve PESCPs in consultation with the Project Soil Conservationist in the first instance. Minor changes thereafter will be approved by the appointed CPESC during regular inspections in consultation with the Project Environment Manager, as required.

PESCPs will be developed for all work areas prior to commencing activities and maintained for currency throughout the duration of the works, until site stabilisation has been achieved and there is low risk of erosion and sediment loss.

Regular inspections will be undertaken to evaluate the effectiveness of controls and where deficits are identified make changes to the controls, refer to Section 7.4. A register of inspection and maintenance of erosion control and sediment capture measures will be maintained.

In accordance with CoA D22, JH will ensure that adequate provisions are made to collect and discharge stormwater drainage during construction. The prior written approval of Council must be obtained to connect or discharge site stormwater to Council's stormwater drainage system or street gutter.

6.1.3. Stockpile Management Protocol

The following outlines the locational criteria used to guide the placement of temporary stockpiles and provides both standard and site-specific mitigation measures to be implemented to minimise impacts on the environment. Stockpile sites may typically be required to store material including, but not limited to:

- Temporary storage of excavated material to be reused in fill embankments and other design features
- ASS subject to treatment prior to reuse
- Temporary storage of excavated material unsuitable for reuse on the Project, including contaminated soils/materials
- Excess concrete, pavement, rock, steel and other material stored for either future use on the Project or prior to removal from site
- Topsoil, mulch, excess timber for landscaping and revegetation works
- Gravels, fill and asphalt profiling's.

Waste classification of soils that require offsite disposal using the six-step process and criteria detailed in Waste Classification Guidelines – Part 1: Classification of Waste (NSW EPA 2014), and will be managed in accordance with the Construction Waste Management Plan.

6.1.3.1. Stockpile location

Stockpile sites are proposed within the construction footprint. Potential stockpile areas will be required for imported material, mulch, topsoil, and unsuitable spoil. Potential stockpile areas will also be suitable for the temporary storage of other materials such as unsuitable material, cleared vegetation mulch, rock and excess concrete.

Stockpiles on the Project will be located within an active construction zone within the construction footprint.

Where stockpiling is proposed to occur outside the Project boundary, or where impacts related to stockpiling are not assessed under the EIS, approval is required as per the mechanisms outlined within the CEMP.

6.1.3.2. Stockpile Management

Prior to the establishment of any stockpile for the Project, the person responsible will ensure that:

- The source of the stockpile and potential contamination and/or ASS status is known so that potential or known contaminated material can be kept separate. This includes the Environment Manager (or delegate) and foreperson observing excavations and differentiating between fill and natural material.
- Site-specific mitigation measures, where they are necessary to further reduced impacts, are identified.

Mitigation measures for each stockpile site, to be included as a minimum, are detailed below in Table 6-2.

Table 6-2: Stockpile Mitigation Measures

ID	Mitigation Measure	Responsibility
SMP01	Materials will not be stockpiled under the drip lines trees or native vegetation to be retained, and never pushed up around the base of trees. Mulch stockpiles are exempt from this requirement as they do not erode and are light, and area considered to have minimal impact on compaction of the root systems.	Foreman Environment Manager
SMP02	Erosion and sedimentation controls will be erected between the stockpile and any drainage lines.	Foreman Environment Manager
SMP03	Cover, or otherwise protect from erosion, stockpiles that will be in place for more than 10 days as well as any stockpiles that are susceptible to wind or water erosion, within 10 days of forming each stockpile	Foreman Environment Manager
SMP04	Stockpiles will be located separate from other material types to minimise waste, the potential for cross contamination and encourage resource recovery	Foreman

ID	Mitigation Measure	Responsibility
	(e.g. ASS stockpile, topsoil, contaminated material, concrete wastes, natural soils/VENM etc.). The different waste streams are identified in the Waste Management Plan, and in situ waste classifications will be carried out where required. Waste Classification will be undertaken in accordance with the approved EPA Waste Classification Guidelines and/or Resource Recovery Orders.	Environment Manager
SMP05	Testing of topsoil will include as a minimum fertility, sodicity and aluminium toxicity.	Foreman Environment Manager
SMP06	PASS or ASS treatment areas will be lined and bunded in accordance with the Guidelines for the Management of Acid Sulfate Materials (RTA 2005) and the Acid Sulfate Soil Manual (ASSMAC 1998) to prevent runoff or leachate contaminating groundwater or surface water	Foreman Environment Manager
SMP07	Stockpiles containing potentially contaminated material will be on hardstand or lined areas and be bunded to prevent runoff or leachate contaminating surrounding land, groundwater, or surface water. Any leachate or runoff water captured within the bunded area will be treated to meet the Water Quality Objectives of the receiving waters prior to discharge. Otherwise the water must be disposed of to an appropriately licenced facility as liquid waste.	Foreman Environment Manager

6.1.4. Contaminated Land Management Plan

6.1.4.1. Areas of Known Contamination

Contaminated land will require management in accordance with the CoAs and the REMMs, and relevant guidance made or approved by the EPA under Section 105 of the CLM Act.

In accordance with CoA D33, an additional contamination assessment has been completed and relevant mitigation measures incorporated below. A RAP will be prepared to manage the identified contamination (non-friable ACM fragments on surface soils and sub-soils). Remediation actions as provided within the RAP and any advice from interim site audit advice will be implemented by JH.

Remediation will occur prior to commencement of bulk earthworks or construction, where practical.

Following the completion of the remediation works, ECMs will clearly outline the areas where contamination specific management is to be implemented (i.e. if contamination has been capped and requires management). These will be updated as the Project progresses.

In-situ waste classification will occur where practical and be completed to allow material to be excavated and transported offsite to an appropriate facility. However, some stockpiling of material will be required. The project will mitigate the risks of the migration of contaminated materials and the associated exposure to human and ecological receptors. The in-situ classification will also allow for strategic planning of excavation, storage, and transport minimising the risk of occupational health exposure, environmental harm, and cross-contamination.

If development of an environmental management plan is part of a proposed remediation method, consideration will be given to feasibility of encapsulation (as risk described in CoA D34) and legal enforceability.

6.1.4.2. Contamination Management Overview

In accordance with REMM SGC03, this CSWMP includes contamination mitigation measures in the following sections. These mitigation measures describe excavation, validation and disposal requirements for potentially contaminated soils. Waste classification of soils that require offsite disposal will be carried out using the six-step process and criteria detailed in Waste Classification Guidelines – Part 1: Classification of Waste (NSW EPA 2014).

To ensure contamination management activities are completed in accordance with relevant guidelines and legislation, an EPA NSW accredited Site Auditor (Site Auditor) will be engaged for the duration of the works to provide reviews of contaminated land documents as required.

The contaminated land consultant will prepare validation reports/letters following completion of remediation and validation. These will be submitted to HWC and the Site Auditor.

A Site Audit Report, which states that the contaminated land disturbed by the works has been made suitable for the intended land use, will be submitted to the Planning Secretary and relevant council after remediation.

In the event contamination is caused by the project the Incident and Emergency Management Procedure and associated Spill response management procedure, detailed within Construction Groundwater Management Plan, will be implemented.

6.1.4.3. Contamination Management Mitigation and Management Measures

Where contamination is known or expected, mitigation and management measures will be implemented to manage and prevent the spread of contamination within and beyond the construction site. These measures will be site specific and where appropriate will be documented in ESCPs and associated ECMs for the individual sites. Mitigation and management measures include the following:

- Establishment and maintenance of a Contamination Register and plans to list and identify contamination locations, proposed future land use, and track investigations and their findings
- Tracking of spoil both within and off site as detailed in the WRMP
- Installation of asbestos specific WHS controls during remediation activities
- Asbestos controls include:
 - asbestos awareness induction for construction workers
 - an unexpected contamination procedure given the potential for surface ACM that may be identified in areas of the Site that could not be assessed due to thick vegetation (Appendix E).
 - Management of asbestos risks present on site may also require ongoing air monitoring to be undertaken during proposed excavation and construction works.
- Managing onsite stormwater runoff in accordance with the Blue Book
- Stockpile management (e.g. siting/location, stockpile height, etc) as detailed in 6.1.3
- Establishing and maintaining erosion control and sediment capture measures with regular review and update of the ESCP (when required)
- Diversion of offsite stormwater
- Signage and exclusion / no-go zones
- Odour controls (if required).

In accordance with CoA D34, JH will ensure the proposed development does not result in a change of risk in relation to any pre-existing contamination on the site that would result in significant contamination.

In accordance with CoA C23, JH have prepared an unexpected contamination procedure to ensure that potentially contaminated material is appropriately managed (refer to Appendix E). Where any material identified as contaminated is to be disposed off-site, the disposal location and results of testing submitted to the Planning Secretary prior to its removal from the site.

6.1.4.4. Waste Classification and Offsite Disposal

The waste classification and disposal of contaminated material will be carried out in accordance with WRMP and Earthworks Management Plan and the NSW EPA (2014) Waste Classification Guidelines.

In accordance with CoA D21, JH will:

- ensure that only VENM, ENM, or other imported material approved in writing by EPA.
- keep accurate records of the volume and type of fill to be used; and
- make these records available to the Planning Secretary upon request.

Engineered materials / products brought onto site for construction purposes are exempt from this requirement.

6.1.5. Acid Sulfate Soils Management Plan

An Acid Sulfate Soils Management Plan has been developed to address the requirements of REMM SGC06. A copy of the Acid Sulfate Soils Management Plan is provided at Appendix D. It is noted that the Acid Sulfate Soils Management Plan controls align with those in Table 6-1.

Where ASS are encountered, they will be effectively managed in accordance with the Acid Sulfate Soil Manual (Acid Sulfate Soil Management Advisory Committee, 1998) and the National Acid Sulfate Soils Guidance (Sullivan et al, 2018) . The manual includes procedures for the investigation, handling, treatment, and management of such soils.

6.1.6. Swale Drains and Site Sequencing

Construction phase drains and controls will be designed and constructed such that they will not intercept the groundwater table. Controls will be sized using the design considerations provided in the EIS and technical design information provided by the Detailed Design. Water that is collected onsite will be tested and treated (as required) in accordance with the Project water discharge process. This is further detailed in the Dewatering Management Procedure in the Construction Groundwater Management Plan.

Swale drains will routinely be inspected and maintained in accordance with the below:

- Removal of accumulated sediment from swales and traps in such a manner as not to damage the structures. Dispose of the sediment removed in such locations that the sediment will not be conveyed back into the construction areas, into watercourses or off site.
- Provide and maintain suitable access to swales and sediment traps to allow cleaning out in all weather conditions.

Removal of all construction swale drains and sediment traps will be completed progressively to restore the ground disturbed by the construction of the swale drains/traps to a similar condition to that previously existing. They will not be removed prior to all upstream areas being vegetated or otherwise stabilised. ESCP's will be updated to reflect the decommissioning and removal of construction swales and traps.

Drilling fluid and mud will be managed in accordance with a specific procedure to be developed in consultation with the selected drilling contractors. This may result in the construction of a specific drilling fluid retention basin which, if installed, will be emptied and disposed of to an appropriately licenced landfill in accordance with CoA and EPL requirements.

6.2. Soil and Water Management in Design

There are several CoA and REMMs that are to be managed as part of the Project detailed design preparation and review process. These will be subject to a design review process, including a review on compliance with relevant Project requirements.

JH -will work closely with the design team and HWC to coordinate appropriate technical inputs from the broader Project team and relevant subject matter experts, to ensure that design related REMMs and CoA are met.

7. Compliance Management

7.1. Roles and Responsibilities

The Project Team's organisational structure and overall roles and responsibilities are outlined in the CEMP. Specific roles not mentioned in the CEMP but required for the implementation of soil and surface water management controls are detailed in Table 7-1.

Table 7-1: Roles and responsibilities specific to this Plan

Role	Responsibilities
Soil Conservationist	- Review and approve ESCPs - Undertake regular site inspections
Contaminated Land Consultant	- Complete contaminated land risks assessments - Develop and implement SAQPs - Complete any additional DSI, RAP, Site Condition / Validation Reporting (as required) - Waste Classification (as required) - ASS sampling, verification, and validation reporting (as required)
Site Auditor	Review and approve RAPs, Site Condition / Validation Report (as required) in the form of interim site audit advice and site audit statements, site audit reports.

7.2. Training

All Project personnel, including employees, contractors and utility staff working onsite, will undergo site induction training relating to soil and surface water management issues. The induction training will address elements related to soil and surface water management including:

- Erosion and sediment control
- Stockpile management
- Contaminated land management
- ASS management
- Sediment basin construction and operation
- Water discharge management
- Unexpected Contamination Procedure

Targeted training in the form of toolbox talks or specific training will be provided to personnel with a key role in soil and surface water management. See Table 7-2 for details specific to this Plan.

Table 7-2: Training responsibilities relevant to this Plan

Training	Delivery
Erosion and sediment control plans, implementation, and maintenance Sediment and water quality basin construction. Stockpile management protocol requirements	Environment Manager (or delegate) Soil Conservationist.
Contaminated land management requirements ASS management requirements	Environment Manager (or delegate) Contaminated Land Consultant (As required)
Record-keeping to ensure accurate record-keeping, including how to document monitoring data, mitigation measures, and communication with stakeholders.	Environment Manager (or delegate)
Hunter Water reporting obligations for water licensing and EPL.	Environment Manager (or delegate) Foreperson
Planning, equipment use, clean-up, emergency response, regulatory compliance, communication, and record-keeping.	Environment Manager (or delegate) Foreperson Equipment Supplier (if applicable)

Further details regarding staff induction and training are outlined in the CEMP.

7.3. Complaints Management

In accordance with CoA Part B, all community feedback, enquiries, and complaints will be managed via the Communication Strategy and Complaints Management System. Further details of this processes are outlined in the CEMP.

A variety of communication tools will be used throughout construction to consult and inform stakeholders and the local community of impacts, including but not limited to:

- Tailored messaging regarding increased traffic volumes on detour routes and expected delays
- Meetings/briefing with MPs, local councils, local businesses, and other community organisations
- Information sessions and pop-up displays
- Functional advertising through print, radio, television, and digital channels
- Project website updates.

The Environment Manager (or delegate) will complete a site inspection and record observations and weather conditions in response to any community complaints associated with soil and surface water management. Actions or rectification (if required) will be undertaken by the construction team as soon as reasonably practicable.

7.4. Monitoring and Inspection

Monitoring, inspections, and reporting requirements are outlined in Table 7-3. Further soil and surface water monitoring may be required to meet the conditions of the EPL. Additional requirements and responsibilities relating more broadly to monitoring and inspections are documented in the CEMP.

Table 7-3: Monitoring, Inspection and Reporting Requirements

Type	Frequency	Standards	Location	Reporting	Responsibility
Inspections					
Weekly inspections	Once a week during environmental inspections	Weekly inspections which, as part of the weekly environmental inspection further outlined in the CEMP, will include inspection of the environmental controls and mitigation measures outlined in Section 6 of this Plan. Action lists are to be produced to address any maintenance issues or additional controls required, and a register of all actions raised and detailing the close out of actions is to be maintained.	Site-wide	Weekly environmental inspection	Environment Manager (or delegate) Foreperson
Pre rainfall and Post rainfall inspections	Pre-rainfall forecast 20mm. Post rainfall event inspections to be undertaken within 4 hours (normal work hours) or within 48 hours (outside of normal work hours) and during periods of prolonged rainfall.	Inspections are undertaken to evaluate the effectiveness of erosion and sediment control measures. Action lists are to be produced to address any maintenance requirements or additional controls required. A review of all controls will also be undertaken to ensure the controls are adequate for the expected conditions (as much as reasonably practical). This will include inspection of nearby drainage lines for potential impact from the project.	Site-wide	Inspection Report	Environment Manager (or delegate) Foreperson

Type	Frequency	Standards	Location	Reporting	Responsibility
Soil Conservationist Inspection	Fortnightly – unless otherwise agreed with HWC based on erosion and sedimentation risk	Inspections will be undertaken on erosion and sediment controls with regards to current works and upcoming works.	Site-wide	Inspection Report	Soil Conservationist Environment Manager (or delegate)
Monitoring					
Meteorological monitoring	Daily	Daily check of: - Daily BoM Hunter Forecast including 3-day look ahead. - BoM Latest Weather Observations for Belmont	Site Wide	Pre-starts - Weather notifications	Environment Manager (or delegate) Foreperson
ASS monitoring	As required	ASS Management Plan, Sullivan et al 2018 for open excavations and treated, and validated material and associated water run-off / leachate.	Treatment pad and water collection points Open excavations	Monitoring records	Environment Manager (or delegate) Foreperson

All environmental monitoring equipment (if required) will be maintained and calibrated according to the manufacturer's specifications, and appropriate records will be kept. Non-conformance reporting protocols are outlined in Section 7.7 of this Plan and the CEMP.

7.5. Auditing

Audits (both internal and independent) will be undertaken to assess the effectiveness of environmental controls, compliance with this Plan, CoA and other relevant approvals, licenses, and guidelines. These audits will be undertaken at planned intervals to provide information on whether the Project:

- Is meeting its compliance obligations
- Conforms to this Plan
- Determines if this Plan is effectively implemented and maintained.

The approach to internal and independent audits, including audit requirements and the auditing schedule, are detailed in the CEMP.

Note that this section does not apply to Contaminated Land Auditing under the meaning of the Contaminates Land Management Act.

7.6. Reporting

Table 7-4 presents the reporting requirements specific to soil and surface water management. A full list of reporting requirements and responsibilities are documented in the CEMP.

Table 7-4 Reporting requirements specific to soil and surface water management

Report	Requirement	Timing	Responsibility	Recipient
ER, HWC and / or EPA environmental inspection reports	Response to matters raised in ER, HWC and/or EPA site inspections.	As required. Typically, every two weeks for ER and HWC inspection reports and monthly for EPA inspection reports.	Project Environment Manager Project Construction Director	ER, HWC and/or EPA
Contaminated Land Reporting	Contaminated Land Management Plan. Contaminated Land Reporting	Prior to construction Post remediation	Project Environment Manager	HWC / DPE

Report	Requirement	Timing	Responsibility	Recipient
	must be undertaken to determine the nature and extent of contamination and to assess whether the contamination has the potential to pose an unacceptable risk to human health or the environment on or offsite. Reporting may include the following: • DSI • RAP • Post remediation validation report • Revised contaminated land risk assessment. • Interim Audit Advice • Site Audit Report / Site Audit Statement.		Contaminated Land Consultant Site Auditor	
ASS Validation Reporting	ASS Management Plan. ASS reporting must be undertaken and address treatment methods and validation for onsite reuse or disposal, disposal records, waste classification) must be provided in the validation / condition report.	Post treatment	Project Environment Manager Contaminated Land Consultant (if required)	Area Manager Foreperson
Waste classification	NSW EPA (2014) Waste Classification Guidelines	As required	Project Environment Manager Contaminated Land Consultant	Area Manager Foreperson
Incident reporting	Environmental incident classification, notification, and reporting. Refer CEMP Section 4.9.	As specified in the CEMP	Environment Manager (or delegate)	HWC Relevant Regulatory Agencies
	Environmental incident notification to the Planning Secretary that causes or threatens to cause material harm as defined within the CoA. Refer CEMP Section 4.9 and CoA	As soon as possible and no later than 24 hours after becoming aware. Refer CEMP and CoA.	Environment Manager (or delegate)	HWC DPE
Complaint Reporting	Complaint management and reporting in accordance with the Communication Strategy.	As specified within the CEMP and the Communication Strategy.	Environment Manager (or delegate) Community and Stakeholder Manager	HWC
RAP	Remediation Action Plans. Reporting on remediation must be undertaken to ensure commitments in the RAP and any advice from the site auditor statements are being implemented as required.	As required	Environment Manager (or delegate)	ER, HWC

7.7. Non-compliance and Non-conformance

An environmental non-compliance is defined as one or more of the following:

- An occurrence, set of circumstances or development that is a breach of the Project Approval
- For auditing purposes, the independent auditor has determined that one or more specific elements of the conditions or requirements have not been complied with within the scope of the audit (Independent Audit Post Approval Requirements [DPHI, 2020])
- Failure to implement for the duration of construction the CEMP and CEMP sub-plans (Condition of Approval D8).

Where environmental non-compliances are identified, they will be communicated to the HWC Project Environment Team. HWC will report in accordance with CoA A28 – A30 and via Appendix 1 of the CoA (written notification requirements) where required. This will then be recorded in the Project database. An environmental action list will be developed and issued to the relevant Project team personnel for implementation and close out. Actions will be assigned an implementation priority in a collaborative way by the Project Environment Team based on the environmental risk. Timeframes will be set to ensure any damage incurred is rectified and any chance of recurrence is eliminated as soon as practicable. Following corrective action, the Project Environment Team will close out the non-compliance.

HWC will notify the Secretary of any non-compliance as follows:

- Notification of a non-compliance will take place via the Major Projects Website within seven days of the Project being made aware of the non-compliance
- The notification will identify the SSI (including the application number) and the name of the SSI, set out the condition/s that is non-compliant, the nature of the breach; the reason for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

A non-compliance that has already been notified as an incident does not need to also be notified as a non-compliance. The ER will also include environmental non-compliances within the Environmental Representative Monthly Report.

Where a non-compliance/non-conformance is detected or monitoring indicates risks directly attributable to the Project (i.e. are influenced by factors under the direct control of the Project, e.g. water discharge, scour, contamination, etc.), the process will typically include:

- An analysis of the results by the Project Environment Manager or delegate in more detail, with the aim of determining possible causes
- A site inspection by the Project Environment Manager or delegate
- Advising relevant personnel of the problem
- Identifying and agreeing on actions to resolve or mitigate the risk
- Implementing actions to rectify or mitigate the risk.
- Monitor and review effectiveness of actions and/or additional measures.

The timing for any improvement will be agreed between the Foreperson and Project Environment Manager based on the level of risk (e.g. a significant risk will require immediate action).

8. Review and Improvement

8.1. Continuous Improvement

Continuous improvement of this Plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives, and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

8.2. ESCP Review

The effectiveness of PESCPs will be reviewed, at minimum:

- Fortnightly
- Immediately after each rainfall event exceeding 20 millimetres.

PESCPs will be updated following each review to address any identified deficiencies in the adequacy of the existing control measures and review the appropriateness of the design parameters used for Blue Book calculations. The ESCP will be kept updated to reflect any changes in the existing controls.

8.3. CSWMSP Version Control

In accordance with CoA C31, this plan will be reviewed and updated as required within three months of:

- a) the submission of a compliance report under condition A34;
- b) the submission of an incident report under condition A27;
- c) the submission of an Independent Audit under condition D36 or D37;
- d) the approval of any modification of the conditions of this approval; or
- e) the issue of a direction of the Planning Secretary under condition A2 which requires a review, the strategies, plans and programs required under this approval must be reviewed, and the Planning Secretary and the ER and Certifier must be notified in writing that a review is being carried out.

Review of this plan will also be undertaken following significant design changes or amendments to licencing conditions (i.e. EPL).

Only the Environment Manager (or delegate) has the authority to approve changes to the requirements of this Plan. Minor amendments to the Plan may be approved by the ER in accordance with CoA. Amendments not considered minor by the ER need to be approved by the Planning Secretary.

A copy of the updated Plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure, as detailed in the CEMP.

Appendix A – Consultation Records

Lake Macquarie City Council engagement per CoA C15a and CoA A8

Date	Details of Engagement / Attempted Engagement
14/08/2024	Meeting held with JH and LMCC to discuss upcoming plans and project.
11/09/2024	Draft plans were provided by JH for LMCC review and comment
11/09/2024	JH attempted contact via phone to confirm LMCC had received draft plans. No response was received by JH
12/09/2024	JH attempted contact via phone to confirm LMCC had received draft plans. No response was received by JH
18/09/2024	JH contacted LMCC via phone. LMCC provided a commitment to confirm plans were under review. No response was received by JH
26/09/2024	JH contacted LMCC via text message. No response was received by JH
01/10/2024	JH sent LMCC an email detailing comments received from TfNSW regarding the Plan. No response was received by JH
24/10/2024	JH Contacted LMCC final correspondence stating we were submitting to Planning

Comment Raised	Project Response	Where addressed	Status
N/A			

Appendix B – Site Auditor Review and Interim Site Audit Advice

Appendix C – Erosion and Sediment Control Strategy

Refer to CS1135-WT-BEL-EN-PLN-0019 – Erosion and Sediment Control Plan

Appendix D – Acid Sulfate Soil Management Plan

Refer to CS1135-WT-BEL-EN-PLN-0018 - Acid Sulfate Soils Management Plan

Appendix E – Unexpected Contamination Procedure

Refer to CS1135-WT-BEL-EN-PRO-0004 – Unexpected Contamination Procedure