McCONNELL DOWELL
CREATIVE CONSTRUCTION™

CEMP Appendix B6

Soil, Water and Contamination Management Plan

Kamay Ferry Wharves

June 2023

NSW GOVERNMENT

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Contents

Document control

Approval and authorisation

Title	Kamay Ferry Wharves Soil, Water and Contamination Management Sub Plan
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I	June 2023	Minor updates to address Site Auditor comments and approval from the ER	ER

Distribution of controlled copies

This SWMP as part of the CEMP is available to all personnel and sub-contractors via the Project document control management system.

The document is uncontrolled when printed.

Copy number	Issued to	Version

Glossary/ Abbreviations

Abbreviations	Expanded text
AEP	Average Exceedance Probability
ANZECC	Australian and New Zealand Environment and Conservation Council
ASS	Acid Sulfate Soil
CEMP	Construction Environmental Management Plan
CEMS	Contractors Environmental Management System
CoA	Conditions of Approval
CT	Contaminant Thresholds
CMO	HESQ compliance database software
Contractor	McConnell Dowell Contractors (Aust) Pty Ltd (MCD)
DPE	NSW Department of Planning and Environment
DPI	NSW Department of Primary Industries
EIS	Environmental Impact Statement
ESCP	Erosion and Sediment Control Plan
EMS	Environmental Management System
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
EPBC – CoA	*Environmental Protection and Biodiversity Conservation Act 1999* Conditions of Approval
EPI	Environment Protection Instruction
EPL	EPA Environment Protection Licence
EWMS	Environmental Work Method Statements
HSEQ	Health, Safety, Environment and Quality
JSEA	Job Safety and Environment Analysis
MCoA	Minister's Conditions of Approval

Abbreviations	Expanded text
MCD	McConnell Dowell Contractors (Aust) Pty Ltd
SDS	Safety Data Sheets
MWMP	Marine Works Management Sub Plan
POEO Act	*Protection of the Environment Operations Act 1997*
REMM	Revised Environmental Management Measures
RMS - Roads and Maritime	Now Transport for NSW (TfNSW)
RUSLE	Revised Universal Soil Loss Equation
Site	Area defined by the construction boundary at La Perouse and Kurnell
SWMP	Soil and Water Management Plan
Transport for NSW	Transport for New South Wales

1. Introduction

1.1. Context

This Soil, Water & Contamination Management Plan (SWMP) forms and integral part of the McConnell Dowell Management (MCD) System (MMS) and applies to the activities that are anticipated to occur during the Project activities in relation to soil, water and contamination management for the Kamay Ferry Wharves Project (the Project), see Figure 1-2.

This SWMP has been prepared to address the requirements of the Minister's Conditions of Approval (MCoA) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Conditions of Approval (EPBC-CoA), the Revised Environmental Management Measures (REMMs) listed in the Kamay Ferry Wharves Environmental Impact Statement (EIS) and all applicable legislation (refer to Attachment E).

The SWMP is part of a suite of Management Plans as detailed in figure 1.1 CEMP and subplans

Figure 1-1 Relationship with CEMP and other Key Management Plans

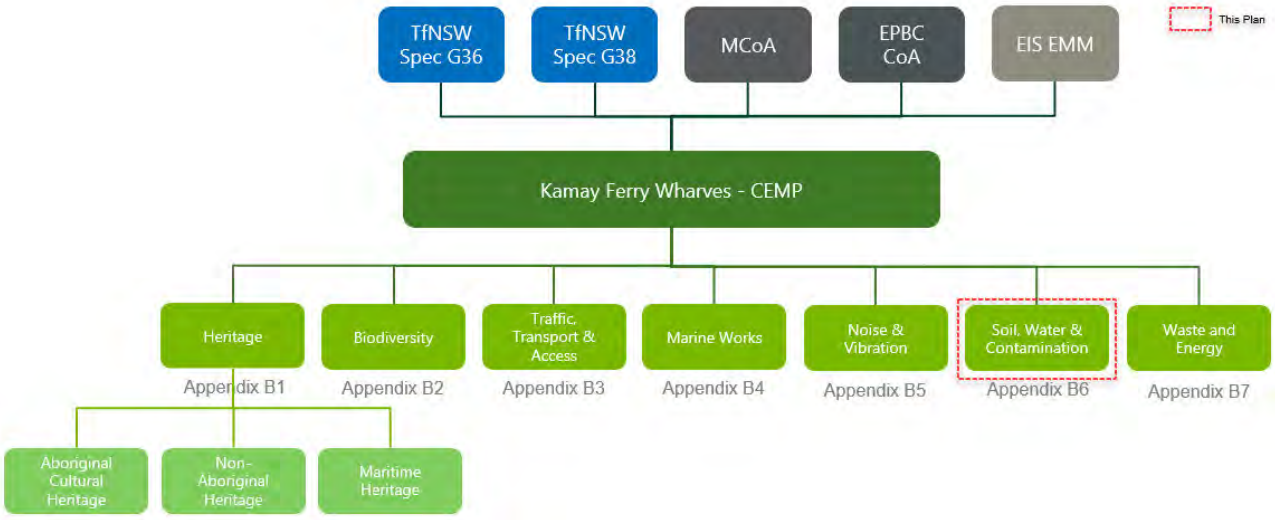

Figure 1-2 CEMP and Sub Plans

1.2. Background and project description

McConnell Dowell (MCD) is constructing for Transport for New South Wales (Transport for NSW) new ferry wharves at La Perouse and Kurnell in Botany Bay. Refer to Site location map in Section 1.3 of the CEMP. This would allow for an alternative connection between La Perouse and Kurnell other than by road. The primary purpose of this infrastructure would be to enable the operation of a public ferry service. It would also provide supplementary temporary mooring for non-ferry commercial vessels (such as whale watching vessels) and recreational boating. A detailed description of the Project is provided in Chapter 5 of the EIS.

The Kamay Ferry Wharves EIS assessed the impacts of construction and operation of the Project on soils and water within Chapter 17.

As part of the EIS development, detailed groundwater and surface water quality assessments were prepared to address the Environmental Assessment Requirements issued by NSW Department of Planning and Environment (DPE). The contamination, groundwater and surface water quality

assessments were included in the EIS as Appendix Q Targeted Site Investigation, Appendix R Groundwater Assessment Report and Appendix S Surface Water Assessment Report.

DPE Kamay Ferry Wharves project site: https://www.planningportal.nsw.gov.au/major-projects/project/34291

The EIS identified the potential for direct and indirect impacts on water quality but concluded that provided the proposed mitigation and management measures are implemented, no significant long-term impacts would be expected.

1.3. Scope of this SWMP

Implementing this SWMP effectively will ensure that the Project meets the requirements of the MCoA, EPBC-CoA and REMMs identified in the EIS (see Attachment E) are met.

This SWMP has been prepared in accordance with the below requirements:

- EIS Revised Environmental Mitigation Measures (REMMs)
- Minister's Conditions of Approval - MCoA and EPBC-CoA .
- AS/NZS ISO 14001.

The scope of the SWMP has been developed to cover the requirements outlined in the Ministers Conditions of Approval and best practice, an overview of these requirements and where they have been addressed in this SWMP is outlined below.

Table 1-1 Scope of the SWMP

Reference	Requirement	Addressed in this SWMP
MCoA C7	The CEMP Sub-plans must state how: a) the environmental performance outcomes identified in the documents listed in Condition A1 will be achieved; b) the mitigation measures identified in the documents listed in Condition A1 will be implemented; c) the relevant terms of this approval will be complied with; and d) (d) issues requiring management during construction (including cumulative impacts), as identified through ongoing environmental risk analysis, will be managed through SMART principles.	a) Section 4.7 b) Section 6.1 c) Section 1.3 d) Section 6.1 & Section 6.3
MCoA E61	Prior to the commencement of any Work, the Proponent must prepare a Soil and Water Management Plan (SWMP) to address any contamination found during construction works. The SWMP must be prepared in consultation with NPWS in respect of NPWS land. The SWMP must be prepared, or reviewed and approved, by consultants certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner	This Plan Consultation – Section 3 SWMP Review – Attachment K (a) Attachment C (b) Section 6.4 (c) Attachment C (d) Attachment J

	(Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme and include detailed measures to: (a) identify contamination during works; (b) store, test and appropriately dispose of disturbed groundwater and soils; (c) include a clear and detailed unexpected finds protocol for use and implementation throughout the duration of construction works; (d) include turbidity monitoring at both Kurnell and La Perouse at a frequency commensurate with the level of risk for each construction phase; and include a Trigger Action Response Plan (TARP) which includes contingencies to identify and manage any unpredicted impacts and their consequences to ensure corrective actions are implemented. The Plan must be submitted to the Planning Secretary for information prior to the commencement of construction.	

1.4. Environmental management systems overview

The Contractors Environmental Management System (CEMS) overview is described in section 1.4 of the CEMP.

2. Purpose and objectives

2.1. Purpose

The purpose of the SWMP is to describe how the McConnell Dowell Contractors Australia proposes to manage and protect soil and water quality during construction of the Project, including strategies for addressing any contamination found during construction works.

The SWMP will be prepared in consultation with NPWS in respect of NPWS land and has been reviewed and approved, by a consultant certified under the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) in accordance with MCoA E61 (refer to Attachment K).

TfNSW has engaged a NSW EPA-accredited site Auditor to review contamination reports relating to the site throughout the duration of the project in accordance with MCoA E62. Additionally, prior to the commencement of construction and in accordance with MCoA E63, TfNSW will obtain:

- Section B1 Site Audit Statement to certify that the nature and extent of the contamination has been appropriately determined; and
- Section B2 Site Audit Statement to certify that the Soil, Water & Contamination Management Plan is appropriate.

A copy of both the Section B1 and Section B2 Audit Statement will be provided to the Planning Secretary.

2.2. Objectives

The key objective of the SWMP is to ensure all MCoA and EPBC-CoA, environmental management measures relevant to land based soil and water including surface and ground water quality and contamination are described, scheduled and assigned responsibility as outlined in:

- The EIS prepared for the Project
- MCoA granted to the project on 21st July 2022
- EPBC-CoA granted to the project on 16th March 2023

2.3. Targets

The following targets have been established for the management of soil, water and contamination impacts during the Project:

- Ensure full compliance with the relevant legislative requirements, MCoA, EPBC-CoA and REMMs
- Will be constructed in a way that maintains the NSW Water Quality Objectives and contribute towards achievement of the NSW Water Quality Objectives.
- Manage downstream water quality impacts attributable to the Project (i.e. maintain water waterway health in accordance with the Australian and New Zealand Environment and Conservation Council (ANZECC) guidelines (2000)
- Ensure training on best practice soil, water & contamination management is provided to all construction personnel through site inductions; and
- Include detailed measures to:
    - identify contamination during works;

- store, test and appropriately dispose of disturbed groundwater and soils;
- include a clear and detailed unexpected finds protocol for use and implementation throughout the duration of construction works;
- include turbidity monitoring at both Kurnell and La Perouse at a frequency commensurate with the level of risk for each construction phase; and
- include a Trigger Action Response Plan (TARP) which includes contingencies to identify and manage any unpredicted impacts and their consequences to ensure corrective actions are implemented.

3. Consultation

The following stakeholders have been consulted in the development of this SWMP.

Table 3.1 Soil, Water and Contamination Management Sub Plan stakeholder consultation

Document	MCoA	Who	When
Soil, Water and Contamination Management Plan (this plan)	C6	DPE Water	Prior to construction
		EHG	Prior to construction
		Sydney Water (if Sydney Water's assets are affected)	Prior to construction
		NWPS	Prior to construction
		Sutherland Shire Council	Prior to construction
		Randwick City Council	Prior to construction
Construction Monitoring Program – Turbidity (SWMP – Attachment J)	C14	DPI Fisheries	Prior to construction

4. Existing Environment

The following sections summarises the factors influencing soils, water and contamination within and adjacent to the Site as described in the EIS.

The key reference documents are Chapter 17 of the EIS and the contamination, groundwater and surface water quality assessments which are included in the EIS as:

- Appendix Q Targeted Site Investigation
- Appendix Q1 – Preliminary Site Investigation La Perouse
- Appendix Q2 – Preliminary Site Investigation Kurnell
- Appendix R - Groundwater Assessment Report
- Appendix S - Surface Water Assessment Report.

4.1. Topography and soil characteristics

Regional topography at Kurnell is generally flat with a slight slope to the north / north east. The portion of the Site located on land at Kurnell slopes to the north in the direction of Botany Bay. Soils at Kurnell are described as deep podzols of dunes within swales and organic peats within swamp areas.

Regional topography at La Perouse is generally flat with a slight slope to the south / south east in the direction of the Pacific Ocean. Soils at La Perouse are described as shallow discontinuous earthy sands and yellow earths on crests and insides of benches. Shallow siliceous sands on leading edges, shallow to deep leached sands, grey sands and gleyed podzolic soils in poorly drained areas and localised yellow podzolic soils associated with shale lenses.

4.1.1. Acid Sulfate Soils

Left undisturbed, acid sulfate soils do not present any risk. But when they are exposed to air, the iron sulfides they contain react with oxygen to create sulfuric acid. The acid makes metals in the soil, such as iron and aluminium, more soluble. These metals can be released in toxic amounts and can have many damaging effects including; damaging waterways and killing aquatic, killing plants, corrosion and toxic water and dust.

Marine sediments within Botany Bay have a high probability of encountering ASS.

The EIS concludes that at on land at La Perouse there is an extremely low probability of encountering ASS, most likely due to the thin superficial deposits at the site (refer to Figure 4-1), while on land at Kurnell there is a low (6 – 70%) to extremely low (1-5%) probability (refer to Figure 4-2) of encountering ASS.

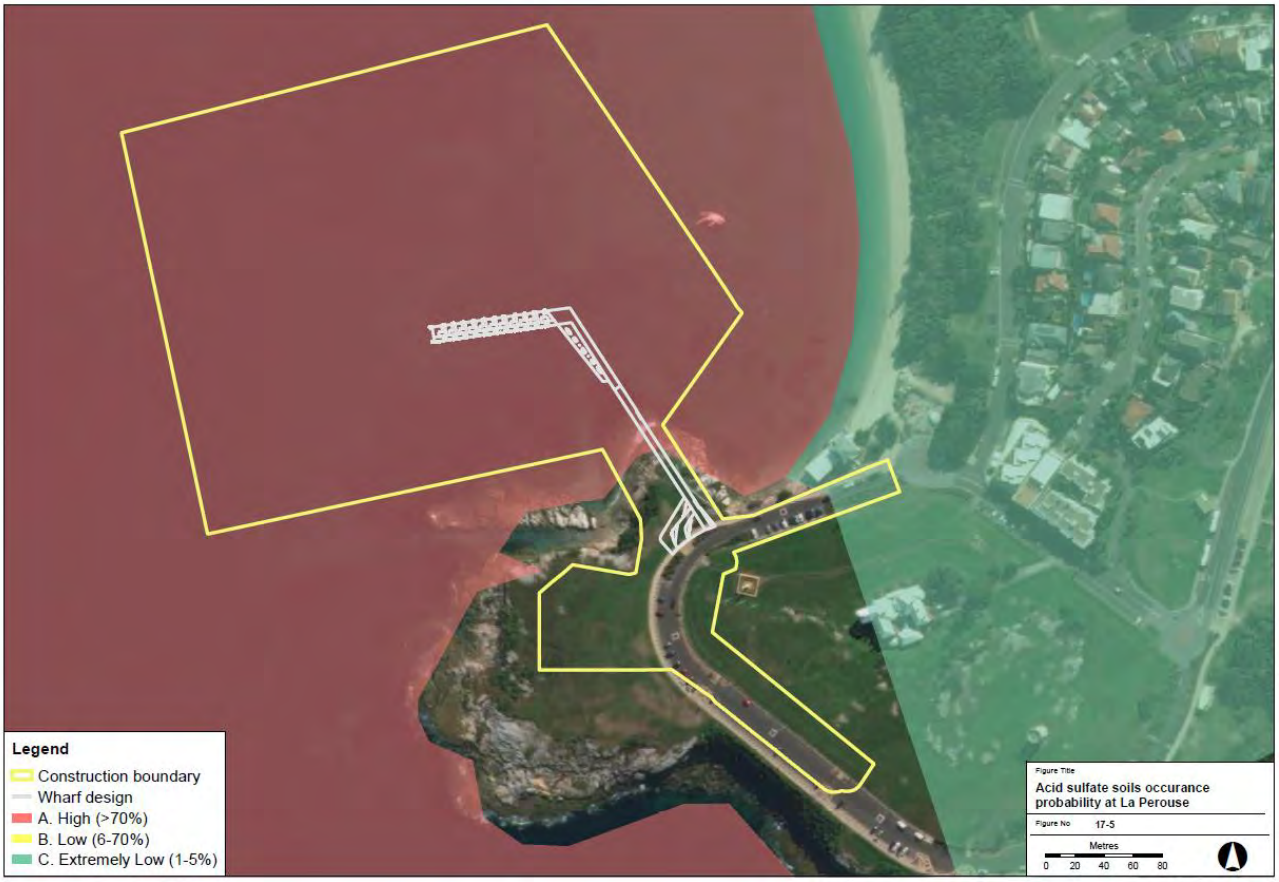

Figure 4-1 ASS occurrence probability at La Perouse

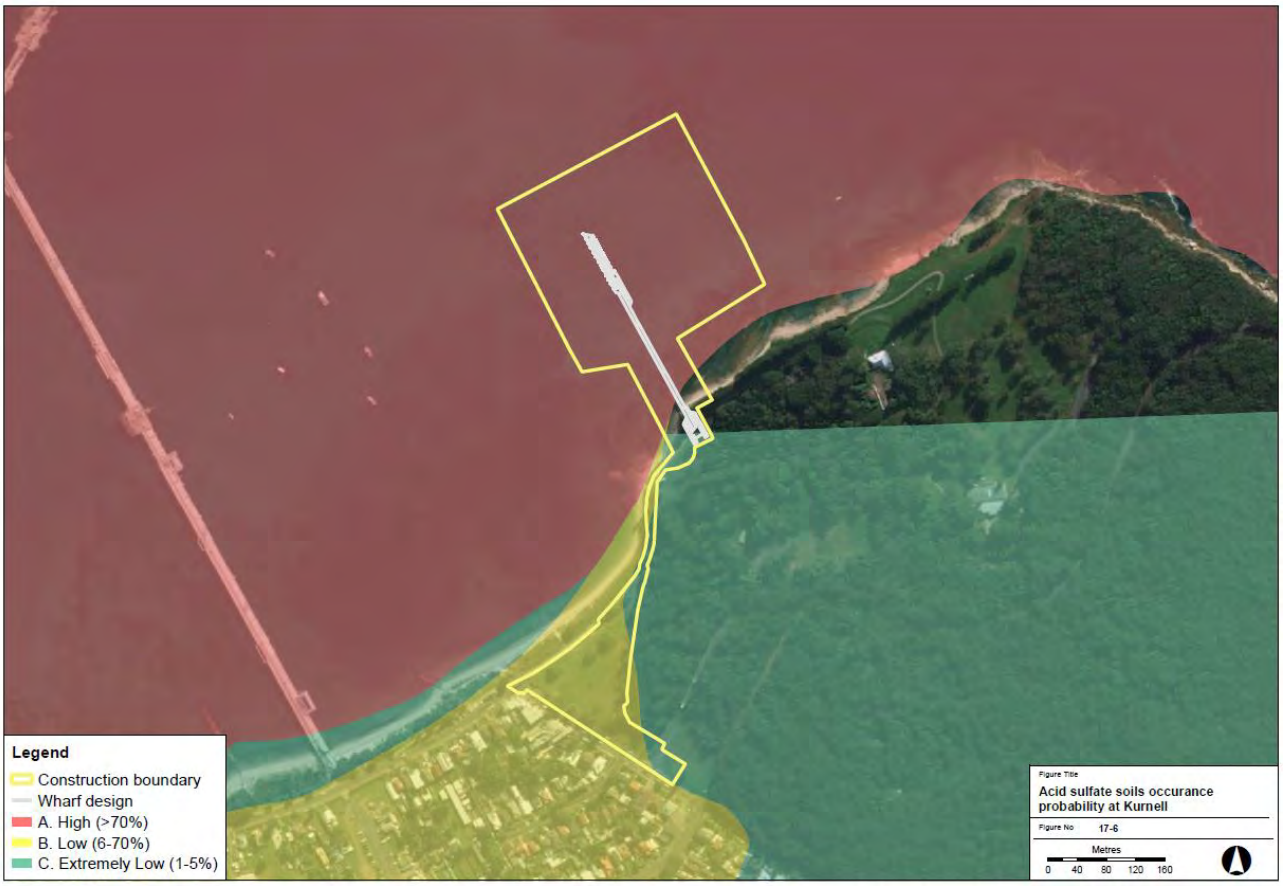

Figure 4-2 ASS occurrence probability at Kurnell

4.1.2. Contamination

Laboratory testing was carried out for soil and sediment samples taken in October and November 2020 as part of the EIS (Appendix Q, Targeted Site Investigation).

The adopted assessment criteria was been sourced from guidelines made or approved by the NSW EPA which includes the National Environmental Protection Council (NEPC) (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 and where alternative sources have been utilised appropriate justification has been provided – refer to Section 7 of Appendix Q, Targeted Site Investigation).

Table 4-1 summarises the contaminants identified and site management requirements. Note that other contaminants of potential concern were tested for but not identified in the laboratory analysis. Should unexpected contamination be identified, additional sampling and appropriate laboratory analysis will be completed to target the unexpected find to determine appropriate waste classification and/or management.

Table 4-1: Contaminants requiring site management

Contaminant	La Perouse	Kurnell	Concentration	Management
Asbestos	✓	✓	ACM was identified in fill material at several locations in La Perouse and Kurnell. Refer to Figure 4-3 and Figure 4-4	Refer to Attachment D
PFAS	✓	×	Above the level of reporting concentrations were detected in soil and sediment but the concentrations were below the adopted assessment criteria	No further assessment required Refer to Attachment C
Total Recoverable Hydrocarbons (TRH) C^{10}-C^{40}	✓	✓	Above the level of reporting but below the adopted ecological screening level of 3,300mg/kg. One of the sample locations returned a concentration of 6,800 mg/kg but this is expected to be associated with historical road base materials and not indicative of significant or widespread anthropogenic contamination.	No further assessment required Refer to Attachment C Waste management to be carried out in accordance with Waste and Energy Management Sub Plan

Contaminant	La Perouse	Kurnell	Concentration	Management
Benzo[a]Pyrene	✓	×	Above the restricted waste classification criteria in one sample location. However, this is likely associated with historical road infrastructure (bitumen) and not indicative of significant contamination.	No further assessment required Refer to Attachment C Waste management to be carried out in accordance with the Waste and Energy Management Sub Plan

Figure 4-3 Identified Asbestos Containing Material (ACM) at La Perouse

Figure 4-4 Identified Asbestos Containing Material (ACM) at Kurnell

4.2. Surface water

The Kurnell and La Perouse Wharves are located adjacent to Botany Bay an open oceanic embayment with primary inflows from the Georges River and Cooks River.

There are no freshwater rivers or streams within the construction boundaries. The closest freshwater watercourse is known as Captain Cooks Stream (about 200 metres northeast of the Kurnell construction boundary) which only flows during and shortly after rainfall.

Degradation of water quality in Botany Bay and its tributaries are generally caused by historic contamination and current operation of industrial facilities as well as catchment runoff, which may be characterised by elevated nutrients and sediments as a result of changed land use practices, sewage discharge and urban runoff.

As outlined in section 17.2.5 of the EIS, in 2012 modelling was undertaken at Kurnell to understand the potential dispersion of dissolved tributyltin (TBT) within the water column if marine sediments were disturbed (Cardno, 2012). TBT is a chemical substance that is toxic to marine ecology and human health. Its use was banned in 2003, however it is still possible that paint used on vessels/ships hulls prior to this, contained TBT as an antifouling agent. The study found that the sediments in Botany Bay have concentrations of TBT and exceed the water quality limits outlined in the Guidelines for Fresh and Marine Water Quality 2000 (ANZECC & ARMCANZ, 2000).

Suspended sediment concentrations in Botany Bay vary due to fluvial and oceanic conditions. Average sediment concentrations across Botany Bay were recorded at five milligrams per litre during calm conditions and 25 milligrams per litre after heavy rainfall (Cardno, 2012).

4.3. Groundwater

The Site is within the Sydney Basin Central Groundwater Source, part of the Greater Metropolitan Region Groundwater Sources Water Sharing Plan (NSW Government, 2015).

As outlined in Section 17.2.3 of the EIS, both La Perouse and Kurnell are underlain by two aquifer systems:

- An unconfined aquifer associated with the unconsolidated coastal sands of the Botany Sands aquifer
- An unconfined to regionally semi-confined aquifer associated with the underlying Hawkesbury Sandstone aquifer.
- There is likely a hydraulic connection between the two aquifers.

The EIS has concluded that there are no groundwater dependent ecosystems located within or adjacent to the Site.

There are seven existing groundwater boreholes within one kilometre of the La Perouse construction boundary, the nearest being 500 metres to the north of the proposed wharf. The closest monitoring boreholes (BOM, 2020) are located inland more than 200 metres from the La Perouse project area and do not provide information on the depth to groundwater. However, due to the project being located adjacent to the coastline, the groundwater level is expected to be at, or close to, sea level. Higher groundwater levels may be encountered along topographical high points, such as the cliff lines at La Perouse. This is due to these high points acting as recharge points for groundwater.

There are 98 groundwater boreholes within one kilometre of the Kurnell construction boundary, the nearest being 450 metres to the southwest of the proposed wharf. The groundwater level within the Kurnell project area is expected to be at, or close to sea level. Bores within 500 metres of the project area indicate that the groundwater level ranges from 0 to 3 metres below ground level.

There is currently a ban on domestic groundwater use around La Perouse as well as a ban on new applications for licences to extract groundwater from the Botany Sands aquifer due to contamination of underground water from past land uses/industries (NSW Government 2003; NSW Government, 2007; and DPIE, 2018).

No groundwater boreholes are proposed to be used for the construction of the project.

4.4. Rainfall

The rainfall records from Little Bay have been selected to reflect the potential rainfall conditions across the Site due to its location, and extent of available data (from 1925 to present). A summary of the rainfall records from the Bureau of Meteorology is provided in Table 4-2.

Table 4-2 Summary of rainfall records

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	92.8	105.4	114.9	116.9	119.3	129.1	79.1	74.0	69.0	68.0	79.6	72.8
Min	0.0	7.5	5.4	6.6	11.4	3.0	3.0	0.2	0.0	0.0	0.3	2.8
Max	356	434	355	405	534	401	332	546	221	229	283	263

Rainfall is typically higher during autumn and winter. Summer and spring are typically drier periods during the year.

Based on historical storm data (high winds and rain) for Botany Bay, storms typically occur during the summer and autumn months between November and April.

4.5. 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 Equitation 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 for inclusion in the Erosion and Sediment Control Plan.

The Site has a Rainfall Erosivity Factor of 3500 based on the Sydney Rainfall Erosivity map in the Blue Book (Managing urban storm water: soils and construction - Volume 1, 4th Edition).

4.6. Flooding

A preliminary topographical assessment was carried out as part of the EIS to identify any potential flooding/drainage risk within and adjacent to the Site.

At La Perouse, the headland is located well above the normal and extreme tidal levels. There are no depressions within the construction boundary that are likely to accumulate high flow rates during rainfall. Water from rainfall would likely flow over the land in shallow sheet flow until it is intercepted by man-made infrastructure.

The results presented in the flood study for Kurnell in 2009 (WMAwater, 2009) show shallow flooding up to a depth of 250 millimetres at Captain Cook Drive (the location of the proposed car parking) in the 20 percent Average Exceedance Probability (AEP) event (refer to Figure 4-5). Flood depths are shown to exceed 250 millimetres and 500 millimetres along the eastern kerb line of Captain Cook Drive in the five percent AEP and one percent AEP flood events respectively.

The runoff and offsite water will be diverted in accordance with the Blue Book and included in the PESCP.

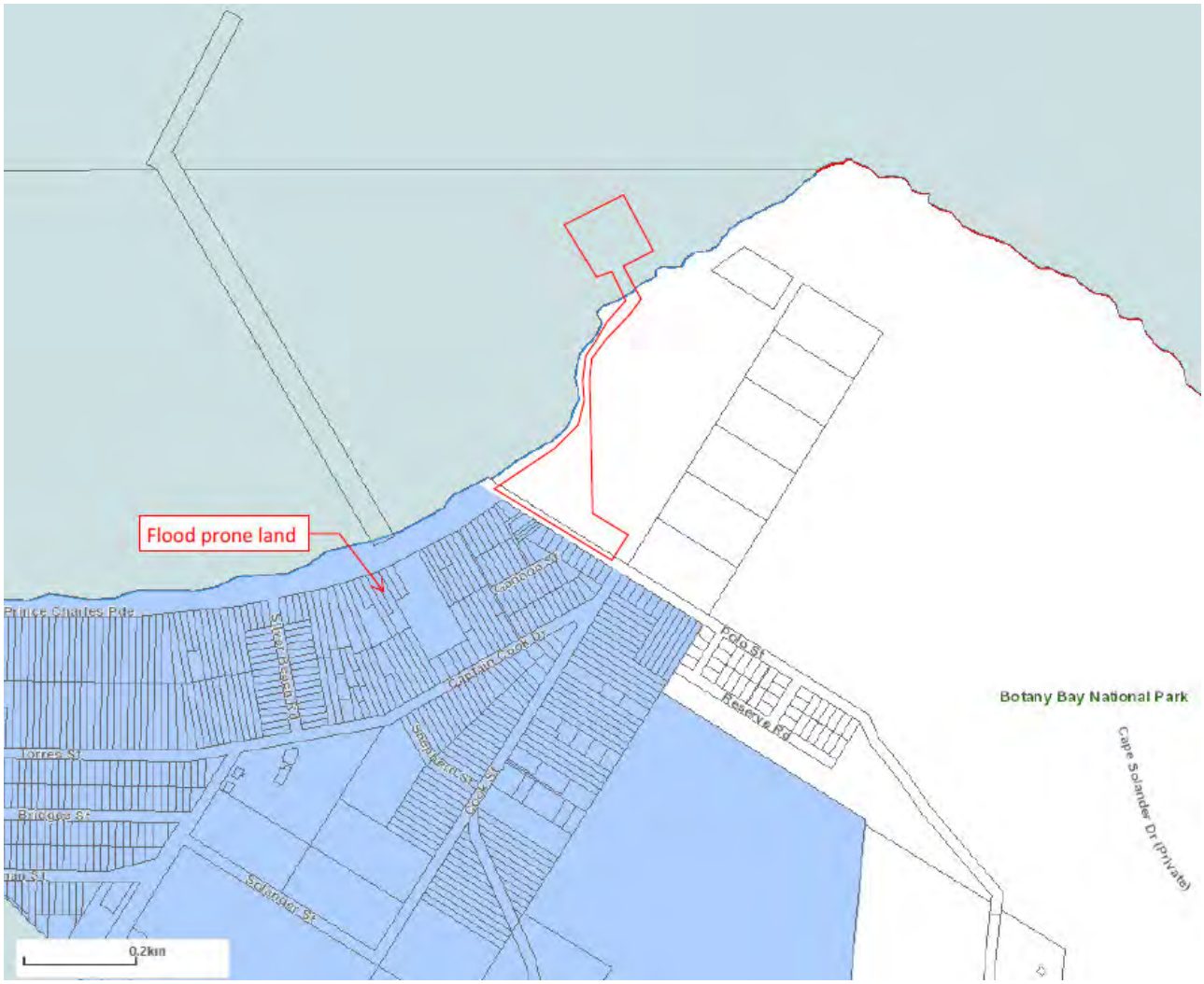

Figure 4-5 Areas subject to flooding – 20% AEP

4.7. Environmental Performance Outcomes

The project has been designed to avoid land and sediment disturbance as much as possible. No dredging is needed.

Any disturbed sediment will be managed through the CEMP and sub-plans and disposed of appropriately to avoid contamination or runoff into the receiving environment.

5. Environmental aspects and impacts

5.1. Construction activities

Key aspects of the Projects that could result in adverse impacts to soils and water include:

- Vegetation clearing and topsoil stripping within the construction boundary at La Perouse and Kurnell.
- Earthworks including excavation for utilities
- Transport of material to and from Site
- Site access tracks into the construction boundaries at La Perouse and Kurnell
- Wharf construction including piling activities and the temporary causeway at Kurnell and temporary crane platform at La Perouse
- Material stockpiles including the treatment of ASS (if encountered)
- Dewatering of shallow groundwater or surface water where encountered
- Operations within the construction compounds including fuel and chemical storage, refuelling and chemical handling.
- Piling operations (Acid Sulfate soils)
- Bund construction (Piling platform) Finds in rock
- Dewater B type piles, Turbid water

5.2. Impacts

The potential for impacts on soil, water & contamination will depend on a number of 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:

- Exposure of soils during vegetation clearing and earthworks, creating the potential for offsite transport of eroded sediments and pollutants
- Increased turbidity of waterway due to exposure, erosion, runoff, vehicle tracking, dust propagation and (riparian) vegetation removal)
- Encountering soil and/or groundwater contamination from historical onsite and surrounding land uses
- Disturbance of acid sulphate soils, creating the potential for oxidation of these soils and subsequent generation of acidic run-off
- Contamination of soils, and surface and groundwater from accidental spills or oil leaks. This might include grease or fuel from machinery and vehicles, construction sites or compounds, or spills of other chemicals that may be used during the course of construction
- Disturbance of unidentified contaminated land, and subsequent generation of contaminated runoff
- Flooding risks within and around the construction boundary
- Dewatering discharge to the environment (if encountered).

Some impacts on soil, water & contamination attributable to the Project are anticipated. Relevant aspects and the potential for related impacts have been considered in a risk assessment in

Appendix A of the CEMP. Chapter 6 provides a suite of mitigation measures that will be implemented to avoid or minimise those impacts.

6. Environmental control measures

6.1. Project specific environmental control measures

Specific measures and requirements to meet the objectives of this SWMP and to address impacts on soil, water and contamination are outlined in Table 6-1.

Table 6-1: Soil, water and contamination management and mitigation measures

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
General						
SW_01	A Soil and Water Management Plan (SWMP) is developed and maintained in accordance with the Blue Book – *Soils and Construction – Managing Urban Stormwater Volume 1* (Landcom, 2004) and Volume 2D (DEC, 2008a).	McConnell Dowell	Pre-construction Construction	Prior to construction commencement, and 6 monthly during construction	REMM SW3 Blue Book (Landcom, 2004)	This Plan

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
SW_02	Training will be provided to relevant Project personnel, including relevant sub-contractors on sound erosion and sediment control practices and the requirements from this plan through inductions, toolboxes and targeted training	McConnell Dowell	Pre-construction Construction	Prior to and during construction	Best Practice	Induction Toolbox Talks Training Register
SW_03	Progressive erosion and sediment control plans (PESCP) will be prepared in advance of construction, including marine works, earthworks and stockpiling. PESCP's will be updated as required and form part of this SWMP.	McConnell Dowell Environment & Sustainability Lead	Pre-construction Construction	Prior to and during construction	Blue Book (Landcom 2004)	Attachment A Template Progressive Erosion Sediment Control Plan

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
SW_04	Review the effectiveness of the PESCP at least fortnightly and immediately after each rainfall event > 10mm, update the PESCP 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. Keep the PESCP updated to reflect any changes in the existing controls.	McConnell Dowell Environment & Sustainability Lead	Pre-construction Construction	Prior to and during construction	Blue Book (Landcom 2004)	Attachment A Template Progressive Erosion Sediment Control Plan Attachment I Environment & Sustainability Inspection Checklist

SW_05	Environmental Work Method Statements (EWMS) will be prepared and implemented to manage soil and water impacts prior to commencing high risk activities including but not limited to: 1) Site Establishment 2) Demolition 3) Installation of Major Temporary Works 4) Installation of Piles, including Bored Rock Sockets where applicable 5) Installation of In-situ Concrete Pile Plugs, Precast Concrete Headstocks and Deck Planks 6) Installation of In-situ Concrete Deck 7) Installation and grouting of Steel Headstocks 8) Repair of Protective Coatings 9) Landside Civils Works	McConnell Dowell Environment & Sustainability Lead	Pre-construction Construction	Prior to and during construction	Best Practice	CEMP section 3.2.4 EWMS

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
	10) Services Installation Works 11) Working within or near a sensitive area 12) Clearing and grubbing 13) Refuelling 14) Anchor handling and placement 15) Any other activities identified by the EIS or any other activities identified as high risk.					
Erosion and sediment control						
SW_06	An ESCP will be prepared and implemented in accordance with Managing Urban Stormwater: Soils and Construction – Volume 1 and Volume 2 (Blue Book, Landcom, 2004).	McConnell Dowell Environment & Sustainability Lead	Pre-construction Construction	Prior to ground disturbance	REMM SW4 Blue Book (Landcom, 2004)	Attachment A Progressive Erosion and Sediment Control Plan
SW_07	Site compounds, access tracks, stockpile sites and temporary work areas must be located and constructed to minimise erosion	McConnell Dowell Environment & Sustainability Lead	Pre-construction	During construction	Blue Book (Landcom, 2004)	Attachment A Progressive Erosion Sediment Control Plan

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
		Site Supervisor				
SW_08	The works must be staged and sequenced in a manner that minimises the duration and extent of soil that is left exposed.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Blue Book (Landcom, 2004)	Attachment A Progressive Erosion Sediment Control Plan
SW_09	Minimise the time between clearing and initial earthworks and commencement of subsequent works in intermittent and permanent watercourses	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Blue Book (Landcom, 2004)	Attachment A Progressive Erosion Sediment Control Plan
SW_10	Installing and lining catch drains and diversion banks in accordance with the requirements of Specification Transport for NSW R11 before earthworks commence	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Blue Book (Landcom, 2004)	Attachment A Progressive Erosion Sediment Control Plan
SW_11	Installing scour protection at the base of permanent and temporary drainage outlets	McConnell Dowell Environment & Sustainability Lead	Construction	During construction	Blue Book (Landcom, 2004)	Attachment A Progressive Erosion Sediment Control Plan

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
		Site Supervisor				
SW_12	All runoff from disturbed areas must be directed to appropriate treatment devices deemed to have adequate sediment trapping/filtering capabilities.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Blue Book (Landcom, 2004)	Attachment A Progressive Erosion Sediment Control Plan
SW_13	Sediment must be filtered as required prior to water being discharged to any pit. Any discharge must meet the water quality objectives outlined in the Dewatering procedure (Attachment F)	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Blue Book (Landcom, 2004)	Attachment A Progressive Erosion Sediment Control Plan Attachment F – Dewatering procedure EWMS
SW_14	All erosion and sediment control measures must be maintained in good working order at all times throughout the site establishment and construction phases.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Blue Book (Landcom, 2004)	Attachment A Progressive Erosion Sediment Control Plan
SW_15	Soil binders are to be used in disturbed areas where possible.	McConnell Dowell Environment & Sustainability Lead	Construction	During construction	Blue Book (Landcom, 2004)	Attachment A Progressive Erosion Sediment Control Plan

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
		Site Supervisor				
Material storage and management						
SW_16	In the event of an environmental incident or emergency, the environmental incident and emergency response procedures will be implemented. These procedures are to include the initial actions required to be undertaken to avoid or minimise environmental harm and notify relevant project personnel.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	REMM SW3	Waste and Energy Management Sub Plan
SW_17	Storage of fuels and chemicals at least 50m from Botany Bay (where possible) or drainage lines and on an impervious surface flatter than a 10% grade.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Best Practice	EWMS Site inspection reports
SW_18	Storage of fuels and chemicals near or over water such as barges would be stored in double bunding when not in use.	McConnell Dowell Environment & Sustainability Lead	Construction	During construction	Best Practice	EWMS Site inspection report

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
		Site Supervisor				
SW_19	Storage of dangerous goods and hazardous materials is to occur in accordance with suppliers. instruction and relevant Australian Standards and may include bulk storage tanks, chemical storage cabinets / containers or impervious bunds.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	REMM SW3	SDS Register EWMS
SW_20	Emergency spill kits for the management of wet and dry chemical spills must be available at all compound and works areas.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	REMM SW3	Site inspection reports
SW_21	Marine emergency spill kits for the management of wet and dry chemical spills must be available at all compound areas and works area over marine waters.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Best Practice	EWMS Site inspection reports
SW_22	Safety Data Sheets (SDS) are to obtained for dangerous goods and	McConnell Dowell	Construction	During construction	Best practice	SDS register Site inspection report

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
	hazardous substances stored onsite prior to their arrival. A SDS register is to be maintained on Site at all times.	Environment & Sustainability Lead Site Supervisor H&S Representative				
SW_23	Land based equipment, plant and machinery refuelling and maintenance will be carried out in impervious bunded areas.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	REMM SW5	EWMS Attachment A Progressive Erosion Sediment Control Plan SAP
SW_24	Marine vessels and associated plant and equipment will be maintained and refuelled at appropriate facilities offsite or adhere to industry standards, Port Authority NSW and pollution prevention regulations during refuelling, transfer, storage and handling of hazardous materials.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	REMM SW5	EWMS Attachment A Progressive Erosion Sediment Control Plan
SW_25	Refuelling will occur in accordance with the EWMS for Refuelling, and always	McConnell Dowell	Construction	During construction	REMM SW5	EWMS

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
	be attended. Machinery will be checked daily to ensure that there are no oil, fuel, or other liquid leaks.	Environment & Sustainability Lead Site Supervisor				
SW_26	Vehicle wash-downs will be carried out offsite or within a designated bunded area with an impervious surface.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	REMM SW6	EWMS Attachment A Progressive Erosion Sediment Control Plan
SW_27	Concrete truck washouts are to be undertaken offsite at a suitable facility or in a dedicated concrete washout area.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	EPA Guidelines	Attachment H - Transport for NSW Technical Guide: Management of Road construction and maintenance wastes EWMS Attachment A Progressive Erosion Sediment Control Plan Site inspection reports
Groundwater and dewatering						
SW_28	Dewatering is a controlled action that must be accompanied by a Discharge Permit from the Environment &	McConnell Dowell	Construction	During construction	REMM SW7	Attachment F – Dewatering Procedure

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
	Sustainability Lead (or delegate). All dewatering will be undertaken and managed in accordance with the Technical Guideline for Environmental Management of Construction Site Dewatering (NSW Roads and Traffic Authority, 2011b) and in a manner than does not cause erosion and/or pollute the environment. No discharge of surface or groundwater is to occur unless the water quality is within project Water Quality limits and the water quality objectives outlined in Attachment F – Dewatering Procedure	Environment & Sustainability Lead Site Supervisor				
SW_29	Prior to the commencement of dewatering, inspect the entire system, including intakes and outlets, pumping and discharge locations.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Best Practice	Attachment F – Dewatering Procedure

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
SW_30	All dewatering activities are to be supervised directly. No dewatering is to occur unless accompanied by a Dewatering Permit from the Environment & Sustainability Lead (or delegate).	McConnell Dowell Environment & Sustainability Lead	Construction	Prior to and during dewatering	Best Practice	Attachment F – Dewatering Procedure
Contamination						
SW_31	An Asbestos Management Plan is to be prepared and implemented during construction	McConnell Dowell Environment & Sustainability Lead Certified Environmental Practitioner (Site Contamination)	Pre-construction Construction	Prior to ground disturbance	REMM SW3 Code of Practice: How to safely remove asbestos (SafeWork NSW)	Attachment D – Asbestos Management Plan
SW_32	An unexpected finds of contamination plan is be developed and implemented during construction. The plan is to identify or set out the actions to be taken when potential	McConnell Dowell Environment & Sustainability Lead	Pre-construction Construction	During construction	REMM SW3	Attachment C – Unexpected Contaminated Finds Guide

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
	contaminated soil/material is encountered during construction activities.	Certified Environmental Practitioner (Site Contamination)				
SW_33	An Acid Sulfate Soil Management Procedure is to be prepared and implemented during construction. This procedure is to set out the management for the possibility of ASS being encountered during the construction.	McConnell Dowell Environment & Sustainability Lead Certified Environmental Practitioner (Site Contamination) as required	Pre-construction Construction	During construction	REMM SW3	Attachment B – Acid Sulfate Soil Management Procedure
SW_34	Disposal of contaminated material and waste material is to be undertaken in accordance with the NSW EPA Waste Classification Guidelines and the Waste and Energy Management Sub Plan.	McConnell Dowell Environment & Sustainability Lead	Construction	During construction	REMM SW3	Appendix B7 – Waste and Energy Management Sub Plan
Revegetation						

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
SW_35	Re-vegetation of exposed work areas is to take place as soon as reasonably practicable. Areas of the Site in which works are no longer being undertaken are to be progressively re-vegetated through topsoiling and vegetation works.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Best Practice	Site inspection report Landscape Plan Construction Staging Reports
Water quality						
SW_36	All water discharge activities must be accompanied by a Discharge Permit from the Environment & Sustainability Lead (or delegate). Water discharged from the Site is to meet the water quality discharge criteria identified in Attachment F – Dewatering Procedure prior to being released.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Best Practice	Attachment F – Dewatering procedure
SW_37	Floating booms, silt curtains or other equivalent controls are to be installed prior to and around the area of works that may disturb the seabed as required.	McConnell Dowell Environment & Sustainability Lead	Construction	During construction	REMM SW3	Attachment A Progressive Erosion Sediment Control Plan

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
		Site Supervisor				
SW_38	Floating boom, silt curtains or equivalent controls are to be installed, monitored and maintained as needed to contain any sediment	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	REMM SW3	Attachment A Progressive Erosion Sediment Control Plan
Stockpile management						
SW_39	Locate stockpiles outside of the tree protection zone of trees or native vegetation identified for retention as part of the PESCP. Delineate the tree protection zone in accordance with AS 4970.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Best Practice	Attachment H - Transport for NSW Technical Guide: Management of Road construction and maintenance wastes Attachment A Progressive Erosion Sediment Control Plan
SW_40	Locate stockpiles at least 10 m from likely areas of concentrated water flows and at least 20 m from Botany Bay.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Best Practice	Attachment H - Transport for NSW Technical Guide: Management of Road construction and maintenance wastes Attachment A Progressive Erosion Sediment Control Plan

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
SW_41	Stockpile heights are to no be greater than 2 m, unless otherwise approved by the Principal, and slopes to no steeper than 2:1.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Best Practice	Site inspection report
SW_42	Stockpiles are to be covered, or otherwise protect from erosion within 10 days of forming each stockpile or immediately prior to rainfall events and strong wind warnings.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Best Practice	Site inspection report
SW_43	Topsoil that is not contaminated by noxious weeds is to be stockpiled separately and remain contaminant free for later use. Other material may also be stockpiled but kept separated from the topsoil stockpiles.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	Best Practice	Site inspection report
SW_44	Measures shall be implemented such as suppression cover, to	McConnell Dowell	Construction	During construction	Best Practice	Site inspection report

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
	prevent the growth of weeds in topsoil stockpiles.	Environment & Sustainability Lead Site Supervisor				
Dust and odour management						
SW_45	Where possible schedule construction activities that may generate dust to avoid periods with unfavourable wind conditions.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	REMM A1	Site inspection report
SW_46	Plan deliveries to Site and plant movements on site to minimise idling times and avoid vehicles idling in close proximity to adjacent residents and businesses.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	REMM A1	Site inspection report
SW_47	Ensure vehicles and mobile plant use designated haulage and access routes which are restricted to appropriate traffic speeds suitable to the route type and weather conditions.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	REMM A1	Site inspection report

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
SW_48	Undertake dust suppression for activities identified as having potential to cause dust within or adjacent to the Site. This includes by is not limited to regularly watering all exposed surfaces, including haul roads, using water sprays or sprinkler systems.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	REMM A1	Pre-starts/toolboxes Site inspection reports Attachment A Progressive Erosion Sediment Control Plan
SW_49	Progressively rehabilitate exposed areas on completion of different work stages, including providing temporary cover and commencing permanent landscaping as early as possible.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	REMM A1	Site inspection report
SW_50	Vehicle and mobile plant undercarriage and wheels are to be free of soil, dirt or vegetation material when entering or exiting the site.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	REMM A1	Site inspection report
SW_51	Maintain all vehicles and plant in accordance with manufacturer specifications.	McConnell Dowell Site Supervisor	Construction	During construction	REMM A1	Site inspection report

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
SW_52	If rotten egg odour (sulphur) is encountered onsite during excavation works, works are to stop and the Acid Sulfate Soil Management Procedure (attachment B) is to be implemented.	McConnell Dowell Site Supervisor Environment & Sustainability Lead	Construction	During construction	REMM SW3	Site inspection report Attachment B – Acid Sulfate Soil Management Procedure
Transport of materials						
SW_53	Ensure that all vehicles transporting soils, rock or other materials are covered at all times during vehicle movement activities.	McConnell Dowell Site Supervisor	Construction	During construction	REMM SW3 REMM A1	Site inspection report
Flooding						
SW_54	Identify how the potential impact of flooding and high rainfall events for work areas and construction compounds will be mitigated. This includes flow through waters.	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Pre-construction and Construction	During construction	Best practice	Attachment A Progressive Erosion and Sediment Control Plan
SW_55	At the end of each working day, stockpiles are to be secured and all loose materials are to be removed from the immediate	McConnell Dowell Site Supervisor	Construction	During Construction	Best Practice	Site Inspection Report Site Diary

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
	shorefront to reduce the risk of lost materials from inclement weather or high tides while the site is shut down (such as overnight and over weekends).					
SW_56	Prior to a prolonged site shutdown (such as long weekends & end of year shutdown), project leadership are to complete a shutdown inspection to ensure that all plant, materials, stockpiles and chemicals are adequately locked down and managed.	McConnell Dowell Project Manager Environment & Sustainability Lead Site Supervisors	Prior to prolonged site shutdowns	During Construction	Best Practice	Site Inspection Report
Temporary causeway at Kurnell						
SW_57	Temporary causeway armour (ie sandbags, rock) will be selected to account for and withstand the local wave climate	McConnell Dowell Environment & Sustainability Lead Site Supervisor	Construction	During construction	REMM CP1	Site inspection report
SW_58	A turbidity monitoring specification will be developed and implemented	McConnell Dowell	Pre-construction	During construction	REMM CP2	Site inspection report

ID	Measure/Requirement	Responsibility	When to implement	Timing/frequency	Reference	Evidence
	to achieve the limits in the Turbidity Water Quality Standards Criteria Summaries; A Compilation of State/Federal Criteria (USEPA, 1988) and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality Volume 1 (ANZECC& ARMCANZ, 2000). Should the monitoring record an exceedance, measures such as stopping work and rectifying the exceedances will be carried out.	Environment & Sustainability Lead	Construction			Attachment J Turbidity Monitoring Procedure

6.2. Progressive Erosion and Sediment Control Plans (PESCP)

Progressive erosion and sediment control plans (PESCP) will be prepared and implemented in accordance with Managing Urban Stormwater: Soils and Construction – Volume 1 and Volume 2 (Blue Book, Landcom, 2004). PESCPs will be developed in advance of construction, including marine works, earthworks and stockpiling and will be updated as required. An example PESCP is included in Appendix A.

6.3. Environmental Work Method Statements

As outlined in Section 4.4.5 of the CEMP, Environmental work method statements (EWMS) will be prepared to manage and control all high-risk activities and others that have the potential to negatively impact on the environment.

These EWMS are prepared prior to the commencement of relevant construction activities and will be developed to:

- Provide a description of the work activity, including any plant and equipment to be used
- Include relevant mitigation measures and controls developed through SMART principles
- Outline of the sequence of tasks for the activity, including interfaces with other construction activities and identify any cumulative impacts
- Communicate requirements, actions, processes and controls to construction personnel using plans, diagrams and simply written instructions
- Identify any environmental and/or socially sensitive areas, sites or place
- Identify of potential environmental risks/impacts due to the work activity

The following EWMS will be developed throughout construction (prior to the respective activity commencing) and will include, were applicable, heritage aspects and controls.

- Site Embellishment
- Anchor handling & Placement
- Services Installation Works
- Demolition
- Refuelling
- Landside Civil Works
- Installation of Major Temporary Works *(including the installation and removal of the construction platform at La Perouse, temporary causeway at Kurnell and any other temporary structures)*
- Working within or near a sensitive area
- Heritage Storage Work
- Piling - Install of Piles, including Bored Rock Sockets
- Installation of In-situ Concrete Pile Plugs, Precast Concrete Headstocks and Deck Planks
- Installation of In-situ Concrete Deck
- Installation and grouting of Steel Headstocks
- Repair of Protective Coatings

- Terrestrial Vegetation Disturbance
- Marine Vegetation Disturbance
- Treatment of Acid Sulfate Soils

6.4. Sediment Basins

In accordance with section 6.3.2 Managing Urban Stormwater: Soils and Construction – Volume 1 (Blue Book, Landcom, 2004), as the area of disturbed soil is less than 2,500m2 a sediment basin will not be required for this project.

6.5. Classification & Disposal of Spoil

6.5.1. Material Re-use Assessment

Material proposed for reuse onsite includes existing materials excavated during the works that will be replaced in the excavation. However if required and appropriate, samples of the materials proposed for site re-use may be assessed against the Recreational criteria stipulated in the Guideline on Investigation Levels for Soil and Groundwater (Schedule B1, NEPM 2013) to verify that they remain suitable for recreational use.

It is noted that any minor excess soil will be removed off-site to an appropriately licenced landfill after an appropriate waste classification in accordance with the Waste Classification Guidelines (NSW EPA, 2014).

6.5.2. Classification Spoil

(Refer to Section 5.2 of the Waste and Energy Sub Plan for further information on Classification of waste streams, All waste will be disposed in accordance with NSW EPA Waste Classification Guidelines)

During construction, spoil removed during piling works will be stockpiled appropriately onsite in accordance with controls outlined in the PESCP. If any indicators of Potential Acid Sulfate Soils (PASS) / Acid Sulfate Soils (ASS) are detected, the Acid Sulfate Soil Management Procedure (Attachment B) is to be followed.

A suitably qualitied professional will undertake the classification of stockpile spoil in accordance with NSW EPA Waste Classification Guidelines. The below proposed sampling methodology is for standard three-sample stockpile, allowing classification up to 75 m3.

- Preparation of a Safe Work Method Statement (SWMS) for the site mobilisation.
- Mobilisation of an experienced Environmental Consultant to complete sampling of stockpiles using hand tools or excavator (as required), assuming each stockpile is not larger than 75 m3;
- Onsite screening of samples for volatile organic compounds (VOCs) using a photoionisation detector (PID);
- In the event of an unexpected contaminated find, the Unexpected Contaminated Finds Procedure (Attachment C) is to be followed.
- Submission of soil samples to a National Association of Testing Authorities (NATA) accredited laboratory for analysis using the analytical suite identified in the EIS;
    - Three (3) primary samples for analysis of:
        - Eight metals;
        - Total recoverable hydrocarbons (TRH);
        - Benzene, toluene, ethylbenzene and xylenes (BTEX);

- Polycyclic aromatic hydrocarbons (PAHs);
- Chromium reducible sulphur (CRS);
- Asbestos NEPM 500mL;
- Per- and polyfluoroalkyl Substances (PFAS); and
- Tributyltin (TBT).

- One duplicate sample for analysis of metals, TRH, BTEX, PAH from each stockpile.
- One rinsate blank sample for metals, TRH, BTEX, PAH during each mobilisation.
- One trip blank and trip spike sample for TRH (C6-C10) and BTEX during each mobilisation.
- Preparation of a waste classification report outlining the classification of the stockpiled soil material in comparison to NSW EPA waste classification guidelines.

6.5.3. Disposal Spoil

(Refer to Section 5.1.4 of the Waste and Energy Sub Plan for further information on Waste disposal. All waste to be disposed in accordance with NSW EPA Waste Classification Guidelines).

Once the spoil has been appropriately classified it will be disposed of offsite to an appropriately licenced waste management facility in accordance with the Protection of the Environment Operations Act 1997 and the Waste Avoidance and Resource Recovery Act 2001.

6.6. Remediation Action Plans

Prior to impacting on any areas of known contamination, a Remediation Action Plan (RAP) will be prepared which will 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 reviewed by an EPA-accredited Site Auditor; and
- prepared in accordance with relevant guidelines made or approved by the EPA under section 105 of the Contaminated Land Management Act 1997 and must include measures to remediate the contamination at the site to ensure the site will be suitable for the proposed use when the Remedial Action Plan is implemented.

Prior to commencing with the remediation works, Transport for NSW will submit to the Planning Secretary for information the Remediation Action Plan and an Interim Audit Advice or a Section B Site Audit Statement prepared by a NSW EPA-accredited Site Auditor which certifies that the Remedial Action Plan is appropriate and that the site can be made suitable for the proposed use.

Once reviewed by the auditor, the Remedial Action Plan must be implemented, and any changes must be approved in writing by the EPA-accredited Site Auditor.

Where remediation has taken place, a Section A1 Site Audit Statement — or a Section A2 Site Audit Statement (SAS) accompanied by an Environmental Management Plan — and a Site Audit Report (SAR) must be prepared certifying that the remediation works have made the land suitable for the intended land use. The SAS and SAR must be submitted to the Planning Secretary no later than one (1) month prior to the commencement of operation of the approved land use.

Additional RAP’s may be required following an Unexpected Contamination Find upon the advice from the Contamination Consultant or the Site Auditor.

7. Compliance management

7.1. Roles and responsibilities

McConnell Dowell Contractors Australia organisational structure and overall roles and responsibilities are outlined in Section 4.4 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 6 of this SWMP.

7.2. Training

All employees, contractors and utility staff working on Site will undergo site induction training relating to soil, water and contamination management issues. The induction training will address elements related to soil, water and contamination management including:

- Existence and requirements of this sub plan
- Relevant legislation
- Roles and responsibilities for soil, water and contamination management
- Procedure to be implemented in the event of an unexpected find of ASS
- Water quality management and protection measures
- Procedure to be implemented in the event of an unexpected discovery of contaminated land.

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in soil, water and contamination management.

Further details regarding staff induction and training are outlined in Section 6.3 of the CEMP.

7.3. Monitoring and inspection

Inspection requirements for soil, water and contamination are identified below in Table 7-1.

Table 7-1 Soil, Water and Contamination Monitoring requirements

Type	Detail	Conducted by
Pre-work inspection	Prior to the commencement of works on each shift, an inspection will be carried out and will include a check of relevant environmental controls and resources required to ensure effective operation and maintenance. Works are not to commence unless inspections are found to be satisfactory.	Supervisors
Weekly and post-rainfall inspections	The construction Environment & Sustainability Lead will undertake weekly and post rainfall inspections of the work sites to evaluate the effectiveness of environmental controls	Construction Environment & Sustainability Lead
Environmental Representative	Regularly monitor the implementation of environmental mitigation measures onsite to ensure implementation is	Environmental Representative

(ER) Inspections	being carried out in accordance with the document and the terms of projects approval.	
Environmental Review Group inspections	undertaken on a monthly or two-monthly basis depending on the construction staging of the Project	Environmental Review Group
Turbidity Monitoring	Turbidity Sampling events are to occur fortnightly during any periods of piling and during the construction or demobilisation of the temporary causeway at Kurnell – refer to Attachment J – Turbidity Monitoring Program	Construction Environment & Sustainability Lead

Additional detail on the requirements and responsibilities in relation to inspections are documented in Section 8.1.1 of the CEMP.

7.4. Licences and permits

The Project would not involve undertaking or carrying out a scheduled activity. As such, an Environment Protection Licence would not be required.

7.5. Weather monitoring

Weather forecast will be monitored daily and discussed and recorded during the daily pre-start meeting.

Rainfall at the premises will be measured using the Sydney Airport AMO weather station which is located 7.09km from the La Perouse site and 7.60km from the Kurnell site. The Sydney Airport AMO weather station records rain in millimetres per 24-hour period at the same time each day.

Rainfall data is available publicly online via Daily Rainfall - 066037 - Bureau of Meteorology (bom.gov.au).

7.6. Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, MCoA and other relevant approvals, licenses and guidelines.

Internal auditing will be undertaken in accordance with Section 8.3 of the CEMP.

7.7. Reporting

Prior to, during and following construction, reporting will be prepared to fulfil Transport for NSW contractual conditions, and requirements under the Project approval. This includes monthly environmental reports and monthly Environmental Representative inspection reports.

Additional details on the reporting requirements and responsibilities are documented Section 8.2 of the CEMP.

8. Review and improvement

8.1. Review and endorsement

A suitably qualified specialist and/or the ER will review and endorse the SWMP.

Approval by DPE is required 30 days prior to construction commencement.

8.2. Continuous improvement

Continuous improvement of this SWMP 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.

8.3. SWMP update and amendment

The processes described in Section 3.1.1 of the CEMP may result in the need to update or revise this Plan. This will occur on an as needed basis.

McConnell Dowell will review and update the SWMP where required prior to significant changes in construction methodology that alter the risk rating identified in the Environmental Risk Assessment or after significant environmental incidents.

If the works are anticipated to extend beyond 18 months, the SWMP would be reviewed and updated where required within 12 months of approval.

Only the Environment & Sustainability Lead, or delegate, has the authority to change any of the environmental management documentation.

Where significant changes to the SWMP have occurred, a copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to Section 6.5 of the CEMP.

Attachment A – Template Progressive Erosion and Sediment Control Plan

Refer to below template Progressive Erosion and Sediment Control Plan, detailed PESCP will be prepared for each site prior to the commencement of construction and will be updated accordingly.

Progressive Erosion & Sediment Control Plan (PESCP)

Kamay Ferry Wharves – XXXX

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McCONNELL DOWELL
CREATIVE CONSTRUCTION™

General ERSED Notes

- This document will be read together with the Soil, Water & Contamination Management Plan (KFW02-MCD-ALL-EN-PLN-000004);
- This PESCP has been prepared and implemented in accordance with Managing Urban Stormwater: Soils and Construction – Volume 1 and Volume 2 (Blue Book, Landcom, 2004).
- Site works will not start until the erosion and sediment controls are installed and functional.
- Site compounds, access tracks, stockpile sites and temporary work areas must be located and constructed to minimise erosion.
- The works must be staged and sequenced in a manner that minimises the duration and extent of soil that is left exposed.
- Minimise the time between clearing and initial earthworks and commencement of subsequent works in intermittent and permanent watercourses
- Areas of the site are subject to salvage and monitoring pre and during construction as detailed in the Heritage Management Plan and Site Environmental Plans.

Monitoring, Maintenance and Refueling

- All erosion and sediment controls will be checked at least weekly and after 10 mm of rainfall or where runoff occurs to ensure they are maintained in a fully functional condition.
- All erosion and sediment control measures must be maintained in good working order at all times throughout the site establishment and construction phases.
- Monitor the Bureau of Meteorology forecast daily for potential heavy rainfall events and prepare the site to minimise impact of heavy rainfall events / high wind events

Refueling

- Land based equipment, plant and machinery refueling, and maintenance will be carried out in impervious bunded areas, all personnel are to review and sign onto the **Environmental Work Method Statement (EWMS) for Refueling** prior to undertaking activity.
- All hydrocarbons and chemicals are to be bunded. The bund is to be 110% capacity of the largest container stored.
- Keep adequate quantities of suitable materials to counteract spillage readily available. Clean up all chemical spills immediately.
- Marine vessels and associated plant and equipment will be maintained and refueled at appropriate facilities offsite or adhere to industry standards, Port Authority NSW and pollution prevention regulations during refueling, transfer, storage and handling of hazardous materials.

Erosion & Sediment Controls

- Sediment fences with be installed in accordance with the Blue Book (Landcom 2004) standard drawing.
- Floating booms, silt curtains or other equivalent controls are to be installed prior to and around the area of works that may disturb the seabed as required.
- Soil binders are to be used in disturbed areas where possible.
- The tracking of mud /soil material onto local roads to be monitored and controlled

Water Management

- Vehicle wash-downs will be carried out offsite or within a designated bunded area with an impervious surface.
- Concrete truck washouts are to be undertaken offsite at a suitable facility or in a dedicated concrete washout area.
- All runoff from disturbed areas must be directed to appropriate treatment devices deemed to have adequate sediment trapping/filtering capabilities.
- Any construction dewatering requires a **Water Discharge Permit** and is to be monitored for compliance with the SWMP.

Stockpile Management

- Locate stockpiles outside of the tree protection zone of trees or native vegetation identified for retention as part of the PESCP.
- Locate stockpiles at least 5 m from likely areas of concentrated water flows and at least 10 m from Botany Bay.
- Stockpile heights are to no be greater than 2 m, unless otherwise approved by the Principal, and slopes to no steeper than 2:1.
- Stockpiles that will be in place for more than 10 days as well as any stockpiles that are susceptible to wind or water erosion, are to be covered, or otherwise protect from erosion.

Air Quality Management

- Undertake dust suppression for all activities with potential to cause dust within or adjacent to the Site
- Progressively rehabilitate exposed soils on completion of each work stages, including providing temporary cover and commencing permanent landscaping as early as possible.

Rev	Date	Details	Author	Reviewer	Soil Con.
X	XX/XX/XXXX	Template PESCP	XXX	XXX	XXX

Progressive Erosion & Sediment Control Plan (PESCP)

Kamay Ferry Wharves – La Perouse – Marine Side

KFW02-MCD-ALL-EN-DRG-XXXXXX_RevX

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

Legend	
X	XX

Progressive Erosion & Sediment Control Plan (PESCP)

Kamay Ferry Wharves – La Perouse – Marine Side

KFW02-MCD-ALL-EN-DRG-XXXXXX_RevX

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

Legend	
x	xx

Progressive Erosion & Sediment Control Plan (PESCP)

Kamay Ferry Wharves – Kurnell – Marine Side

KFW02-MCD-ALL-EN-DRG-XXXXXX_RevX

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

Legend

X XX

Progressive Erosion & Sediment Control Plan (PESCP)

Kamay Ferry Wharves – Kurnell – Marine Side

KFW02-MCD-ALL-EN-DRG-XXXXXX_RevX

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

Legend	
X	XX

Progressive Erosion & Sediment Control Plan (PESCP)

Kamay Ferry Wharves – General ERSED Controls

KFW02-MCD-ALL-EN-DRG-XXXXXX_RevX

McCONNELL DOWELL
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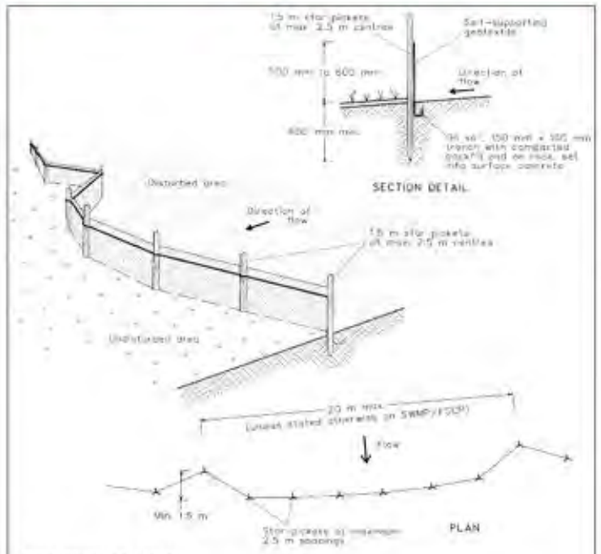
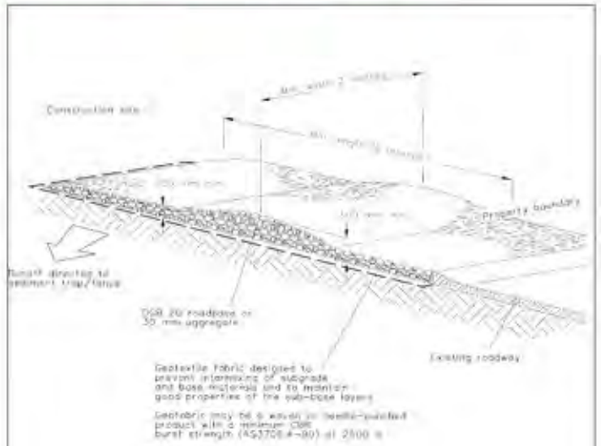
Typical details for erosion and sediment controls (Landcom 2004)



Construction Notes

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

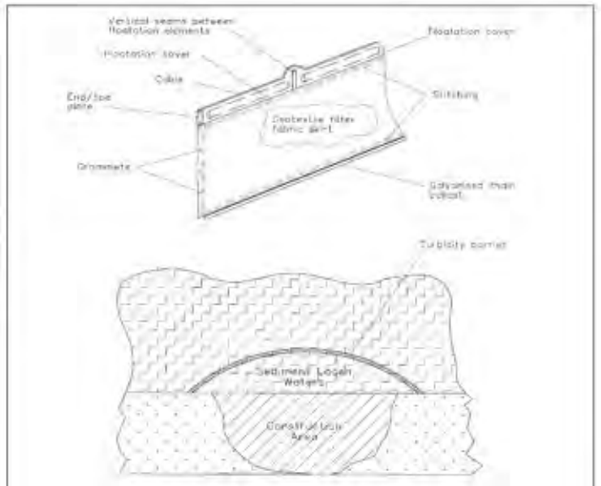
SEDIMENT FENCE **SD 6-8**



Construction Notes

1. Strip the topsoil, level the site and compact the subgrade.
2. Cover the area with needle-punched geotextile.
3. Construct a 200-mm thick pad over the geotextile using road base or 30-mm aggregate.
4. Ensure the structure is at least 15 metres long or to building alignment and at least 3 metres wide.
5. Where a sediment fence joins onto the stabilised access, construct a hump in the stabilised access to divert water to the sediment fence.

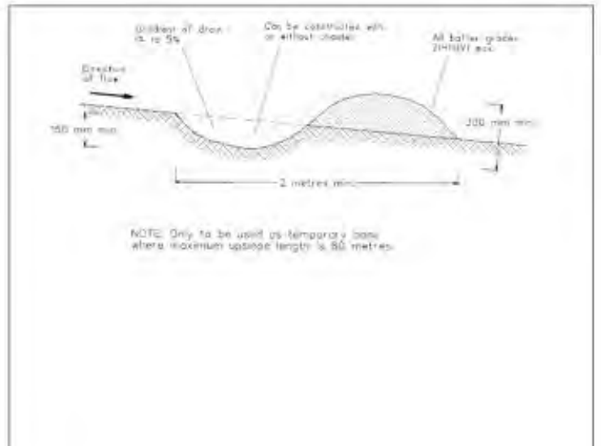
STABILISED SITE ACCESS **SD 6-14**



Construction Notes

1. Use turbidity barriers only where high flows are unlikely to remove accumulated sediment and/or move the curtain significantly.
2. Where the barrier is to remain in place for more than one month, ensure the floatation cover is a UV-resistant, durable material.
3. Use only closed cell foam or foam-filled PVC piping as floatation elements. Do not use unfilled pipes.
4. Use only woven or heat-set non woven geotextiles. Needle-punched, non woven geotextiles can become fouled with debris that fray and delaminate them as they move with the waves or currents.
5. Remove captured sediment before the barrier is decommissioned.
6. In tidal areas, ensure the barrier can rise and fall without being moved from its position.

TURBIDITY BARRIER **SD 6-10**



Construction Notes

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible – work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction.

EARTH BANK (LOW FLOW) **SD 5-5**

Progressive Erosion & Sediment Control Plan (PESCP)

Kamay Ferry Wharves – General ERSED Controls

KFW02-MCD-ALL-EN-DRG-XXXXXX_RevX

McCONNELL DOWELL
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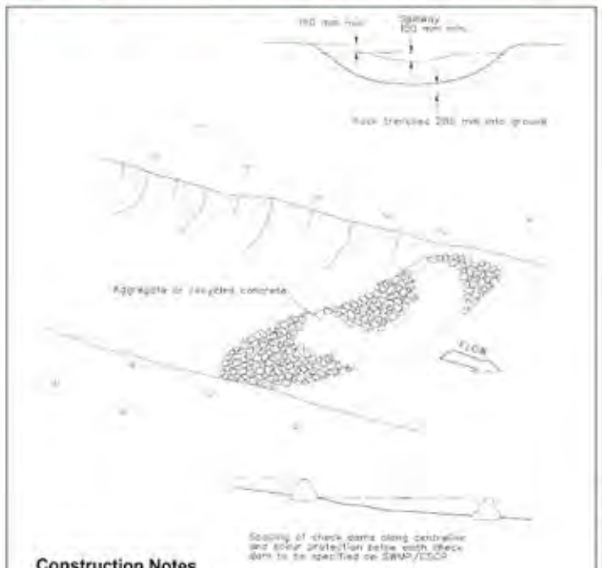
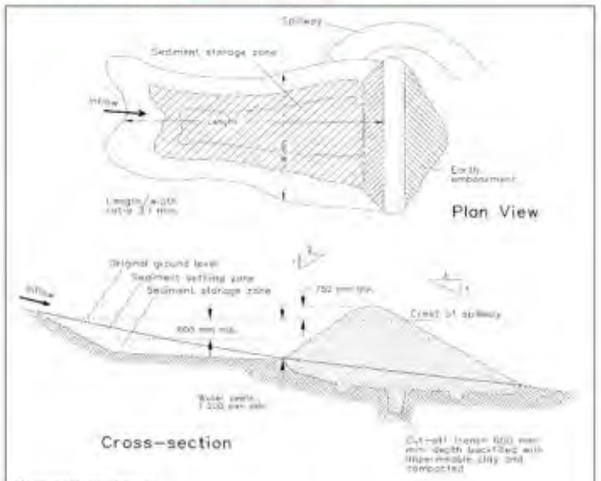
Typical details for erosion and sediment controls (Landcom 2004)



Construction Notes

1. Check dams can be built with various materials, including rocks, logs, sandbags and straw bales. The maintenance program should ensure their integrity is retained, especially where constructed with straw bales. In the case of bales, this might require their replacement each two to four months.
2. Trench the check dam 200 mm into the ground across its whole width. Where rock is used, fill the trenches to at least 100 mm above the ground surface to reduce the risk of undercutting.
3. Normally, their maximum height should not exceed 600 mm above the gully floor. The centre should act as a spillway, being at least 150 mm lower than the outer edges.
4. Space the dams so the toe of the upstream dam is level with the spillway of the next downstream dam.

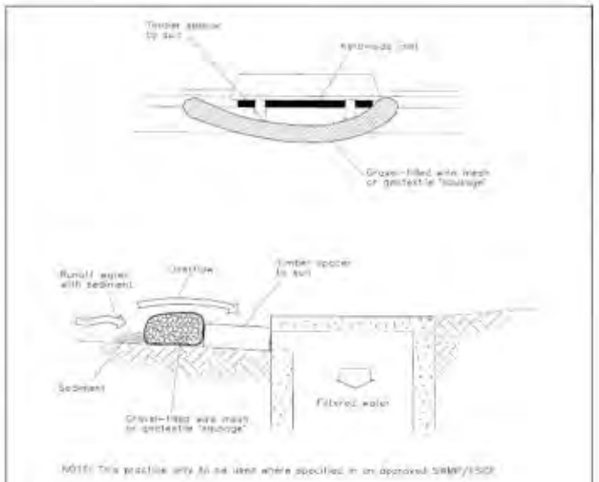
ROCK CHECK DAM SD 5-4



Construction Notes

1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Construct a cut-off trench 600 mm deep and 1,200 mm wide along the centreline of the embankment extending to a point on the gully wall level with the riser crest.
3. Maintain the trench free of water and recompact the materials with equipment as specified in the SWMP to 95 per cent Standard Proctor Density.
4. Select fill following the SWMP that is free of roots, wood, rock, large stone or foreign material.
5. Prepare the site under the embankment by ripping to at least 100 mm to help bond compacted fill to the existing substrate.
6. Spread the fill in 100 mm to 150 mm layers and compact it at optimum moisture content following the SWMP.
7. Construct the emergency spillway.
8. Rehabilitate the structure following the SWMP.

EARTH BASIN - WET SD 6-4
(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)

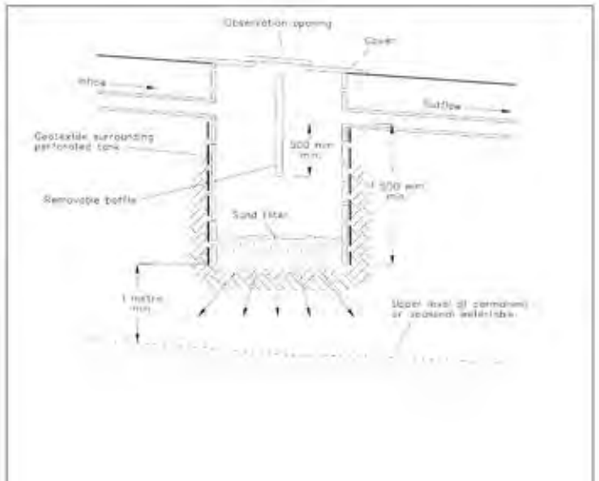


NOTE: This practice only to be used where specified in an approved SWMP/ESCP.

Construction Notes

1. Install filters to kerb inlets only at sag points.
2. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit and fill it with 25 mm to 50 mm gravel.
3. Form an elliptical cross-section about 150 mm high x 400 mm wide.
4. Place the filter at the opening leaving at least a 100-mm space between it and the kerb inlet. Maintain the opening with spacer blocks.
5. Form a seal with the kerb to prevent sediment bypassing the filter.
6. Sandbags filled with gravel can substitute for the mesh or geotextile providing they are placed so that they firmly abut each other and sediment-laden waters cannot pass between.

MESH AND GRAVEL INLET FILTER SD 6-11



Construction Notes

1. Join the inlet to the polluted supply taking any suitable step to remove bulky material before it can enter the sump.
2. Connect the outlet to a safe disposal area following the ESCP/SWMP.
3. Place a geotextile liner on the outside of the pit.
4. Install a removable baffle, central to the inflow/outflow and normal to the direction of flow, ensuring that it reaches 500 mm below the invert of the outlet pipe.
5. Install a cover over the pit with an observation port and access cover.

INFILTRATION SUMP SD 6-6

Attachment B – Acid Sulfate Soil Management Procedure

Introduction

Context

This Acid Sulfate Soils Management Procedure (ASSMP) has been prepared to address the requirements of the Minister's Conditions of Approval (MCoA). The ASSMP has been developed following the guidance from the NSW Acid Sulfate Soil Manual (1998).

Table 1 EIS Environmental Mitigation Measures

CoA No.	Condition	How Addressed
SW3	Identify all reasonably foreseeable risks relating to soil erosion, soil contamination, asbestos, acid sulfate soils and water pollution associated with undertaking the activity. Describe how these risks will be managed and minimised including the management of potential acid sulfate soils and potential contamination.	This Procedure

Purpose

The purpose of this ASSMP is to describe how McConnell Dowell proposes to manage the possibility of acidic sulfate soils being encountered during the construction of the Project.

Objectives

The key objective of this ASSMP is to ensure that a management procedure is in place so that if any acidic sulfate soils are encountered, they are controlled in a way that minimise the impact upon the surrounding environment during the construction of the project.

To achieve this objective, McConnell Dowell will undertake the following:

- ensure appropriate controls and procedures are in place and implemented during construction activities to avoid or minimise the impact of acidic sulfate soils on the Project and;
- ensure appropriate monitoring is carried out during the project to ensure controls are being implemented and maintained.

Scope of works

The scope of construction for the Project encompasses a land and water component.

A description of the land works is as follows:

- Setting up the construction compound
- Removing existing viewing platform at Kurnell
- Constructing the wharves including piling
- Constructing the wharf tie-in area including footpaths/landscaping
- Installing / relocating utilities

- Hardscaping & landscaping
- Removing construction compound

A description of the water works includes:

- Constructing the temporary crane platform (La Perouse) and temporary causeway (Kurnell)
- Constructing the wharves

Environmental aspects and impacts

Acid Sulfate Soils

Acid sulfate soils is the common name given to naturally occurring soil and sediment containing iron sulfides. A significant issue with acid sulfate soils is that when they are exposed to air, oxidation occurs and results in sulfuric acid as a bi-product. Depending on the environmental context, sulfuric acid can drain into waterways and can cause short and long-term consequences on humans and the environment; the potential impacts include:

- The sulfuric acid bi-product can be carried into water ecosystems and kill and influence mortality rates on local flora and fauna;
- Corrosion of infrastructure and;
- Exposure to sulfuric acid can cause skin irritation, eye damage, headaches, irritation of gastrointestinal tract, serious respiratory and heart problems, insomnia and prolonged exposure may lead to paralysis or meningitis.

Site characteristics

Site setting

Refer to Chapter 4 of SWMP.

Mapped ASS

The estimated amount of disturbance on land during construction is approx. 4,390 cubic metres at La Perouse and approx. 2,723 cubic metres at Kurnell. However, as discussed in section 17.2.6 of the EIS, there is an extremely low probability (1-5%) of ASS on land at La Perouse and a low (6–75%) to extremely low (1-5%) probability Kurnell.

While there is a high probability of ASS within Botany Bay, the estimated level of sediment that would be brought to the surface is low and therefore it is unlikely that ASS will pose a significant issue if material is not exposed to oxygen.

As such, the key area of risk for ASS / PASS at Kurnell for earthwork activities conducted within the low (6–75%) probability area. If ASS or PASS is encountered onsite, this procedure is to be followed.

Figure B-8-1 ASS occurrence probability at La Perouse

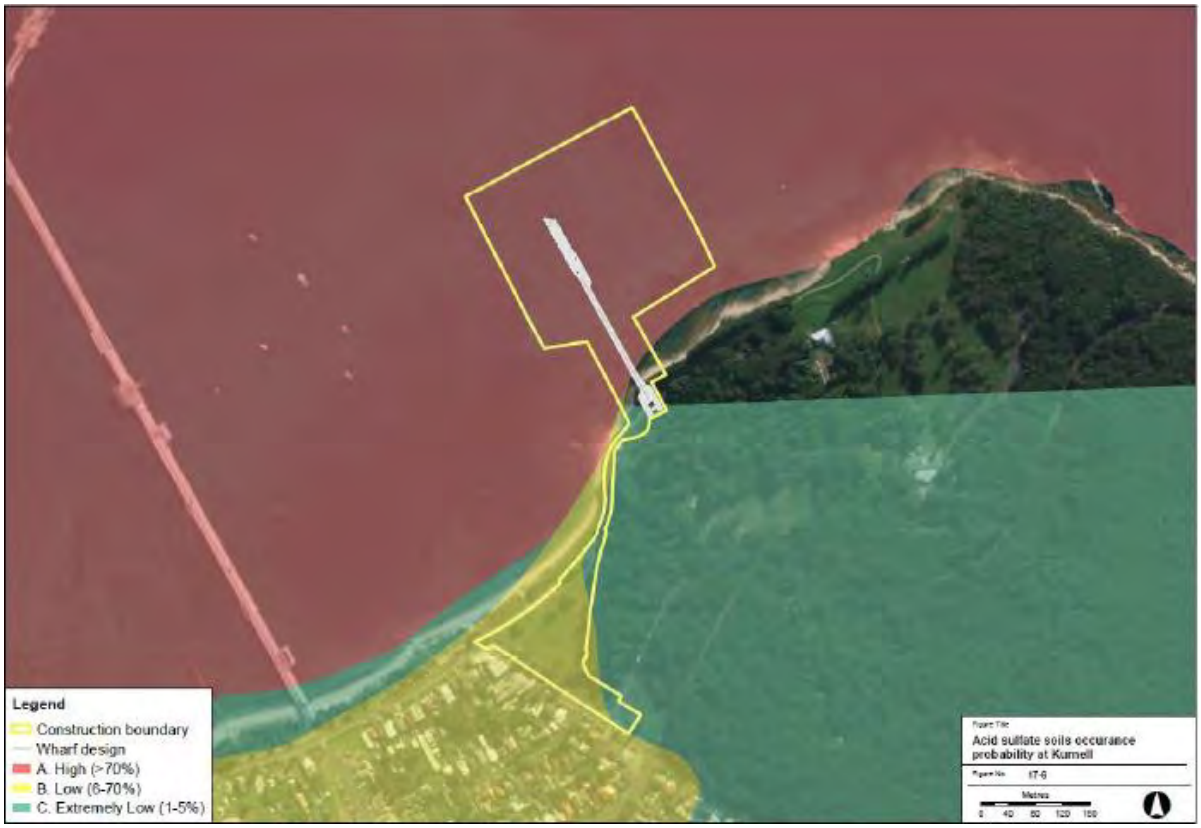


Figure B-2 ASS occurrence probability at Kurnell

Construction activities and other impacts

In general, aspects of the Project that may cause potential issues regarding acid sulfate soils include:

- Disturbing the natural state of the site through excavation works
- Temporary stockpiling of excavated materials for backfilling purposes;
- Dust suppression and/or other activities requiring the use of water where run-off is produced
- Existing stormwater drainage characteristics
- Open trenching works and human exposure to material and
- Carting-off excavated material.

Management and mitigation strategies

Identification of ASS

The first step to managing acid sulfate soils is being able to identify whether or not there is indeed a presence of it to begin with. Acid sulfate soils can be defined as either ‘actual’ or ‘potential’.

Actual acid sulfate soils are those that are exposed to the air and hence produce sulfuric acid.

Potential acid sulfate soils are those that are waterlogged but have the potential to produce sulfuric acid if exposed to the air. Physical indicators of potential and actual acid sulfate soils are listed in Table 2.

Table 2 Indicators of the Presence of Acid Sulfate Soils

Potential Acid Sulfate Indicators	Actual Acid Sulfate Indicators
a) Presence of mangroves, reeds, rushes, salt marsh or swamp vegetation etc b) Sulfurous (rotten egg) smell after rain, following a dry spell or when the soils are disturbed c) Marine or estuarine sediments d) Soils can be described as unripe muds/sediments (soft, buttery, blue grey or dark greenish grey) which can include sands and gravels e) Milky blue/green water f) Shell fragments in the soil g) Waterlogged, scalded or backswamp areas and h) Land below 5m AHD elevation.	i) Any jarosite (a pale-yellow mineral deposit) or iron oxide (rusty) colouring j) Extensive iron stains on any drain surfaces, or iron stained drain water and ochre (natural clay earth pigment) deposits k) Corrosion of concrete and/or steel structures l) Surface or ground water on or draining from the site with a pH < 5.5, an unusually clear or milky green colour and m) Sulfurous (rotten egg) smell when soils are disturbed.

Management and mitigation during construction

Management procedures

Not disturbing ASS by adjusting depths of proposed earthworks and construction layouts are the best measures of ASS management. Construction plans may change subsequent to the release of this ASSMP and such changes should be made with best practice of managing ASS in mind.
A staged excavation process should be undertaken, which has the following advantages:

a) Further characterisation and delineation of suspected PASS can take place quickly and more accurately in smaller sized excavations
b) The quantity of PASS required to be treated will be reduced
c) Stockpiling of PASS, and the associated environmental risks will be avoided and
d) The ability to identify stratified PASS layers within the soil profile with the allowance to treat/manage individually.

PASS should be kept separate from non-PASS soil at all times. Excavation works should be conducted during dry periods, where possible, to minimise risk of overflow of treatment areas.

Any fill material deemed to be ASS needs to be excavated and treated separately from the natural strata under controlled conditions considering it may be asbestos contaminated. Controls will need to be in place and an occupational hygienist engaged to ensure the excavations and treatment of asbestos contaminated ASS does not create an exposure risk.

See Table 3 for an outline of mitigation/control measures, monitoring requirements, responsibility and frequency of various aspects regarding managing acid sulfate soils during the dry works construction of the Project.

Environmental Work Method Statement

If ASS treatment is required onsite, an Environmental Work Method Statements (EWMS) will be prepared and implemented to outline the location and design of the treatment pad, specific volume of material expected to be treated, dosing rates, training requirements and additional environmental controls that may be required.
The development of the EWMS will be conducted in consultation with the subcontractor(s) that will be undertaking ASS treatment works and will include this ASSMP.

Neutralising materials

Agricultural lime (Aglime) is a cost effective and readily available neutralisation material to treat ASS and PASS due to its ease of handling and low solubility. Aglime contains pure calcium carbonate (CaCO3) and is made from limestone which is crushed and sieved into a fine powder.

Pure calcium carbonate has a neutralisation value (NV) of 100. The neutralisation value is a term used to rate the neutralising ability of different materials against pure calcium carbonate. Aglime is typically sold with a NV of 95 – 98 and pH of 8.5 – 9.

For treatment of small quantities of water, the application of Aglime may be a suitable treatment method but is difficult to effectively mix with water due to its low solubility.

Hydrated lime Ca(OH)2 is a slightly soluble, strongly alkaline (NV of up to 135), neutralising agent, commonly used to neutralise acidity in bodies of water such as sediment or containment ponds. However, great care is required when handling and applying hydrated lime so as to not overshoot the required pH adjustment.

Sodium bicarbonate is another agent used to neutralise acidic water which is less alkaline than hydrated lime but highly soluble. Usage of sodium bicarbonate allows more accurate monitoring of water pH levels, however is generally more expensive.

Treatment pads

Small volumes of PASS material are expected to be treated from earthworks undertaken on site, in particular the land side earthworks conducted within the low (6–75%) ASS / PASS probability area at Kurnell (refer to figure B-2).

All ASS neutralisation should be carried out on a treatment pad onsite. The treatment pad must collect and isolate the leachate from the surrounding environment, while being able to effectively accommodate the size and weight of machinery as well as the PASS itself.

The design requirements for a treatment pad and treatment methodology for ASS are outlined below:

- Identify a suitable location for the treatment pad on site. The treatment pad should be located on stable ground and away from overland flow paths and water bodies.
- Prepare an impervious base of compacted non-ASS clayey material at least 0.3 m thick to prevent stockpile seepage into soil and groundwater. Have the base slightly domed to prevent pooling of acidic leachate in the centre of the pad.
- Create guard layer of Aglime on top of the base to neutralise any acidic leachate generated on the treatment pile. As a minimum, 5 kgs of Aglime per square metre of vertical fill should be used for all ASS with <0.1% oxidisable sulfur. Guard layer thickness is to be monitored and maintained.
- Suitable bund walls and leachate collection drains should be established around the treatment pad to manage any leachate or stormwater runoff from the pad
- Surfaces inside the bund area should also be layered with Aglime to neutralise any acidic runoff. Drainage channels and a retention pond will need to be installed for large quantities of runoff
- During excavation, AASS or PASS material should be placed onto treatment pads in layers up to 0.3 m thick. Excavated PASS material may need to be dried before treatment on the limed pad. Treatment of ASS should commence as soon as the material is dry enough to be mixed effectively with the neutralising agent to minimise oxidisation
- A 1 m flat area should be left between the toe of the spread soil and the containment bund/drain. Care should be taken during spreading of the first layer not to disrupt the lime guard layer
- The application of Aglime should be done in accordance with the calculated liming rate and thoroughly mixed with the layer of ASS to be treated
- Once the batch of ASS has been mixed and verification tests confirm the ASS has been neutralised, this layer may be compacted and an additional layer added, or the stockpile of treated ASS may be removed from the pad
- The process of spreading, liming, mixing and verification testing is to be repeated for subsequent layers/batches of ASS until excavation is complete.

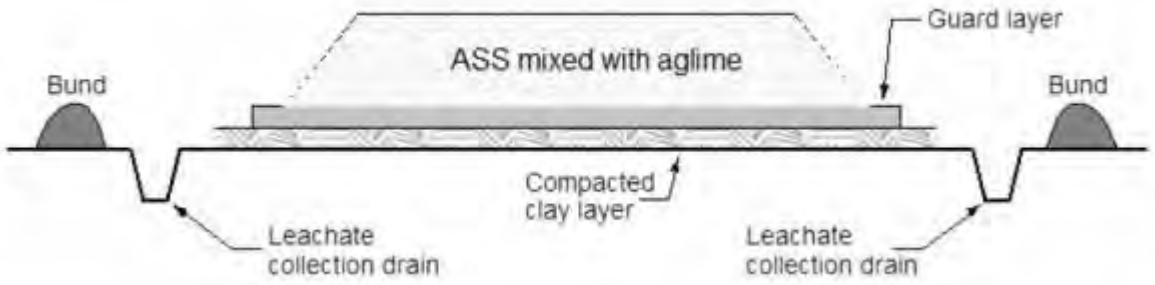


Figure 3: Schematic cross section of a treatment pad showing; base layer, guard layer and containment bunding with leachate collection drains (ASSMAC Acid Sulfate Soils Assessment Guidelines 1998).

Indicative lime rates

The below is an indicative lime application rate for treatment of ASS. A net acidity value of 28 mol H+/t for the site has been estimated. The following assumptions have been made:

- Aglime NV of 98%
- Bulk soil density of 1.3 t/m3 and
- A safety factor of 1.5.
    - = 2.1 kg aglime/ m3

It should be noted that this is an indicative liming rate only based on existing laboratory analysis conducted on the site. The lime application rate will need to be recalculated if further laboratory analysis identifies the net acidity varies from 28 mol H+/t.

Verification tests and performance

Management procedures

The recommended sample rate for treated ASS with <0.5% oxidisable sulfur is:

- A minimum of 2 samples initially, and then 1 sample per 1,000m3.
- Once a layer of ASS has been treated, sampling by Consara for analysis should be undertaken according to the above density.

The following performance criteria must all be met for soil that has been treated using neutralisation:

- Net acidity is zero or negative (neutralising capacity of the soil following treatment is greater than the sum of the existing and potential acidity)
- PH range for treated soil is 6.5<pH<8.5.

If results from the laboratory analysis do not comply with the above criteria, the ASS will require additional treatment. Following successful verification, the layer can be compacted, and another layer added on top for treatment.

Contingency plans

Failed ASS treatment

Where treatment of ASS on neutralisation pads has failed the verification test criteria, the following steps as part of this contingency plan include but are not limited to:

- Conduct additional Consara sampling and laboratory analysis on ASS (prior to treatment) to verify existing net acidity and recalculate liming rate if required
- Treat the failed ASS batch and future batches with additional Aglime

- Investigate the condition of the treatment pad and consider reconstruction or redesign
- Reduce the quantities of ASS to be treated at a time and
- Reconsider mixing methods to ensure adequate mixing

Table 3 Mitigation/Control Measures During Construction

Aspect	Controls/Mitigation Description	When to Implement	Responsibility	Monitoring Requirements
Staging Works	Construction activities during the Project will be scheduled to minimise the time acid sulfate soil material is exposed to air. This involves undertaking excavation works so that acid sulfate soil can be backfilled as quickly as possible and to minimise the exposure time of soils in open trenching works for services.	Ongoing	MCD Superintendent MCD Environment Representative	Program scheduling
Stockpile Management	Bunding to surround stockpiled material and/or appropriate battered diversion banks.	As required	MCD Superintendent MCD Environment Representative	Daily visual inspection
	Impermeable material (plastic) to be placed under and covering stockpiled material. Edges of cover to be weighed down appropriately.			
	Stockpile to be located away from overland stormwater paths, drainage infrastructure and water systems.			
	Distinct layers of excavated materials to be separated accordingly with geofabric or similar material.			
Sediment and Erosion Controls	See Attachment A of the SWMP for Sediment & Erosion Controls.	Daily	MCD Environment Representative	Daily & weekly EHS checklists
WHS	All workers on site must wear the mandatory PPE (hard hart, long sleeve shirt and long pants, steel cap boots, hi-visibility vest or clothing). In addition, during activities involving open trench works and excavation, glasses and safety glasses must be worn.	Daily	MCD Superintendent	Daily & weekly EHS checklists

Aspect	Controls/Mitigation Description	When to Implement	Responsibility	Monitoring Requirements
	Geofabric to line trench surfaces in open excavations to minimise contact with potential acid sulfate soil and/or other sources of contamination.	As required	MCD Superintendent MCD Environment Representative	Daily visual inspection

Implementation of the RAP

If required, a Remediation Action Plan (RAP) will be developed in accordance with MCoA E64, E65 E66 & E67 by a suitably qualified professional.

Unexpected Contaminated Finds Procedure

During construction works, if the material excavated is contaminated and cannot be distinguished as an acid sulfate soil and thus this ASSMP and its management and mitigation measures do not apply, the management procedures to be followed should be an outcome of the Unexpected Contaminated Finds Procedure. See Attachment C Unexpected Contaminated Finds Procedure.

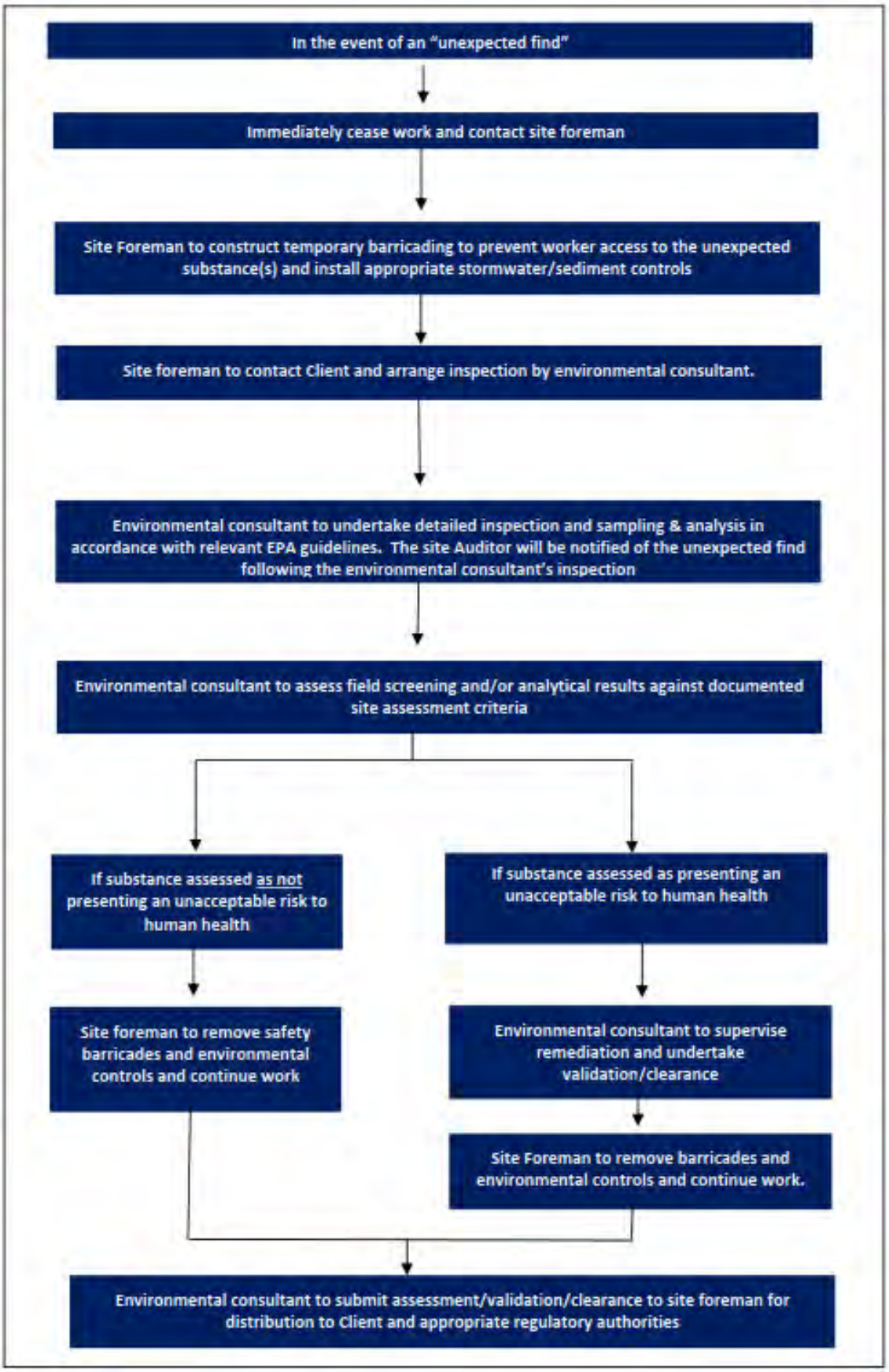


Figure 4: Unexpected Contaminated Finds Procedure

Attachment C – Unexpected Contaminated Finds Procedure

1 Introduction

1.1 Purpose

This Unexpected Discovery of Contaminated Land Procedure details the actions to be taken when potential contaminated soil/material is encountered during excavation/Construction activities. In the event that hazardous materials are discovered, this Procedure should be implemented.

This Procedure has been developed in accordance with best practice EPA contamination management guidelines and Transport for NSW specifications.

1.2 Scope

This Procedure is applicable to all activities conducted by site personnel (including sub-contractors) on the Project that have the potential to uncover/encounter contaminated soil/material. This procedure is not applicable to the identification of soils suspected to be contaminated with plant pathogens.

1.3 Induction / training

Where required, all site personnel (including sub-contractors) will be inducted on the identification of potential contaminated soil/material along with the requirements of this Procedure during inductions and/or regular toolbox talks. Site personnel will be informed of the potential sources of contamination within the Project and indications of contamination in soil and groundwater, such as:

- Odour
- Discolouration/staining of soils
- Evidence of landfilling/discarded drums.

1.4 Roles and responsibilities

The Environmental Representative (ER) will ensure that this Procedure is effectively implemented and all site personnel are aware of the requirements of this Procedure.

The Site Supervisor will be responsible for ensuring that in the event that contaminated land is discovered, site personnel are informed immediately and all work in the vicinity of the find ceases. The Site Supervisor will be advised of any required actions for the control of discovered contamination on site, such as implementation of exclusion zones and signage, and will be responsible for ensuring the actions are undertaken.

The Transport for NSW Environmental Manager (or delegate) will liaise with the relevant authorities (such as EPA and a Contaminated Land Specialist) where required, and will approve the recommencement of works following any remediation undertaken.

1.5 Review

This Procedure will be updated throughout Construction of the Project to include any new identified sites of contamination, if required, and subsequent additional management measures. This Procedure will be reviewed annually, or as required in accordance with the continuous improvement process described in the CEMP.

2 Procedure

The steps to be followed in the event that contaminated material is encountered during Construction are outlined below. Indicators of contamination in soils include:

- Discolouration of the soil, including staining and horizontal layers of discolouration
- Odours from soil
- Oily sheen on water leaving soils.

Step 1. Potential contaminated soil/material encountered during Construction activities

If potential contaminated soil/material is encountered during excavation/Construction activities:

- **Cease work** in the immediate/affected area
- The Supervisor will immediately notify the Environment & Sustainability Lead (also known as the Environmental Site Representative (ESR)). The ESR will notify the Transport for NSW Environmental Manager (or delegate) and Environmental Representative (ER).
- Install environmental controls around the site to contain the contaminated material, including diversion of water to minimise potential spread via surface water runoff
- If it is determined that there is a risk of environmental harm from the potential contamination, the EPA will be notified immediately in accordance with the Transport for NSW Environmental Incident and Classification Procedure (refer to Appendix G of the CEMP)
- Recommence works in an alternate area where practicable.

Step 2. Environmental management and work health safety management

Prior to any contamination investigation, management or remediation activities, appropriate Safe Work Method Statements (SWMS) and EWMS will be prepared.

Personal Protective Equipment (PPE) will be worn as per the relevant Material Safety Data Sheet/s. This may include, but not be limited, to:

- Eye goggles
- Face mask
- Rubber boots
- Rubber gloves
- Work clothes (i.e. long sleeve shirt/pants and steel capped boots)
- Disposable overalls (if required)

Step 3. Undertake a site/area contamination investigation

The Environment & Sustainability Lead for McConnell Dowell will assess the situation and if considered necessary, commission a suitably qualified contamination specialist to undertake a contamination investigation in the area of the find.

Material not suitable for reuse will be classified in accordance with the *Waste Classification Guidelines* (EPA, 2014).

The Environment & Sustainability Lead for McConnell Dowell (in consultation with specialists) will determine the appropriate management measures to be implemented. This may include leaving contamination undisturbed, capping of contamination, treatment or off-site disposal. Material to be disposed of off-site will be transferred to an appropriately licensed waste facility, as outlined in the Waste and Energy Management Sub Plan.

If the material is determined to be acid sulfate soil (ASS) or potential acid sulfate soil (PASS), the management procedures outlined in the *Acid Sulfate Soil Manual* (Acid Sulfate Soil Management Advisory Committee, 1998) will be followed.

Step 4. Remedial action

Remedial actions will be incorporated into specific Remediation Action Plans (RAPs) if required. RAPs will be prepared by a suitably qualified and experienced person and in accordance with all guidelines under the *Contaminated Land Management Act* (NSW).

Relevant EWMS or SWMS will be reviewed and updated when required.

Step 5. Remedial Validation

Prior to recommencing works, a report will be prepared to outline the contamination identified, remedial actions adopted, sampling results and the outcome of the site/area contamination investigation.

Step 5. Recommence works

Recommence works once remedial works have been implemented and sampling has validated that the remediation strategy has been successful. The Transport for NSW Environmental Manager (or delegate) will grant approval for McConnell Dowell to recommence works.

3 Records

The Environment & Sustainability Lead for McConnell Dowell will maintain a register of any unexpected contamination finds, including a map of all contaminated and/or remediated sites. The register will be made available to the Transport for NSW Environmental Manager (or delegate) on request for inclusion in Project Monthly Reports.

Report unexpected finds of contamination as required in the Transport for NSW Environmental Incident Classification and Response Procedure.

Attachment D – Asbestos Management Plan

D-1 Introduction

Where earthworks are required, there is potential to expose unexpected forms of contamination within the surface and subsurface. In such instances, action is required to mitigate potential contaminated soil/material encountered during excavation or Construction activities. If potentially contaminated material is encountered, the Unexpected Contaminated Finds Procedure (Attachment C of the SWMP) will be followed.

Unexpected finds of material suspected or confirmed to be contaminated by asbestos / ACM will be managed in accordance with the Asbestos Management Plan (this plan) and the McConnel Dowell Safe Operating Procedure (SOP) for Asbestos (REF-HSEQ-HS-SOP022-GEN-ALL).

Works in the vicinity will be stopped or modified and will not recommence until the material has been analysed and management measures developed.

Where contamination of the Project site is encountered or is required to be managed, McConnell Dowell, in consultation with contamination specialists, will develop site methodologies and risk controls in accordance with the relevant legislative requirements and guidelines as required. This will include, but not be limited, to:

- Work Health and Safety (WHS) requirements
- Safe Work Australia – Code of Practice – How to safely remove asbestos (July 2020).
- Safe Work NSW – Code of Practice – How to Manage and Control Asbestos in the Workplace (August 2019).
- Protection of the Environment Operations Act 1997;
- Community, agency and stakeholder notification, where required
- Identification of contamination extent
- Appropriate controls for on-site material management and/or off-site disposal
- McConnell Dowell Safe Operating Procedure (SOP) (HSEQ-HS-SOP022-GEN-ALL) Asbestos
- NSW Waste Classification Guidelines Part 1 Classifying Waste
- Site validation.

D-1.1 Purpose

This Asbestos Management Plan (AMP) has been prepared to document the procedure to be undertaken to manage areas of asbestos containing material (ACM) or actual asbestos or in the event that it is uncovered during Construction of the Project. Implementation of the AMP will ensure that asbestos is managed in such a way as to avoid harm to site personnel, visitors and the community.

Asbestos / ACM fragments that are remnant from previous activities may be scattered throughout the Project area or present in existing stockpiled material. Asbestos- contaminated ground may be encountered when undertaking excavation at unknown locations.

This AMP has been developed in accordance with relevant legislation, EPA-endorsed guidelines (including the waste guidelines), industry codes of practice and Transport for NSW MCD specifications.

D-1.2 Objectives

The key objectives of this AMP are to:

- Provide the procedure for assessment of asbestos / ACM in the Project area
- Maintain accurate records of the type of asbestos and location it was encountered in an Asbestos Register
- Avoid or minimise asbestos-related risks by implementing control measures
- Ensure control measures are effectively implemented
- Ensure asbestos removal is performed by a licensed asbestos removalist under the direction / recommendation of by a suitably qualified and experienced person / licensed asbestos assessor.
- Ensure that all waste contaminated with asbestos is appropriately classified and removed from the site to an appropriately licenced landfill.

D-1.3 Scope

Work involving, or likely to involve the disturbance of asbestos is considered a high-risk Construction activity. Implementation of the AMP will be done in addition to EWMS and Safe Work Method Statements (SWMS) for the management of materials containing asbestos. EWMS and SWMS will be completed and reviewed by the Transport for NSW Environmental Manager (or delegate) and ER prior to the commencement of activities to which they apply. EWMS and SWMS will support the implementation of this AMP.

D-1.4 Targeted Site Investigation – Detected Asbestos

During the development of the EIS, a Targeted Site Investigation (TSI) was undertaken by ERM to refined the current understanding of the Project Area and assisted in assessing potential constraints associated with site contamination that may require consideration prior to or during development of the proposed Kamay Ferry Wharf.

Investigation works involved the excavation of boreholes within offshore locations and test pits within onshore locations at both the Kurnell and La Perouse Sites.

The TSI unidentified that some fill materials within the onshore test pits located at Kurnell and La Perouse sites were identified to contain Asbestos Containing Materials (ACM) at several locations as outlined below in Figure D-1 and D-2.

As outlined in the TSI, following these results ERM recommended that prior to the commencement of construction works, an Asbestos Management Plan (this plan) will be required to outline the required processes / procedures to be adopted for the remediation and / or management of asbestos within the Site.

Procedures outlining the process for managing asbestos onsite is further outlined in Section D-2 and Section D-3 of this Asbestos Management Plan. Remediation of Asbestos is addressed in Section D-3.3.

Figure D-1 Targeted Site Investigation – ACM Detections – La Perouse

Figure D-2 Targeted Site Investigation – ACM Detections – Kurnell

D-1.5 Induction / training

All site personnel (including sub-contractors) will undertake an induction to ensure that they understand the types and location of ACM/potential ACM on site and control measures and safe work methods before they commence work. Site personnel will be adequately trained to recognise the health risks of asbestos, use of the Asbestos Register, processes and safe work procedures to be followed to prevent exposure and correct use of PPE.

Prior to commencement of each shift, or change in shift, the Construction Manager (CM) will inform all site personnel of any works disturbing asbestos impacted soils on site.

A copy of the AMP will be kept at the Construction work site where the work is being carried out.

D-1.6 Roles and responsibilities

All site personnel are responsible for ensuring they are familiar with the Asbestos Register and the locations where asbestos / ACM is identified. Any suspected asbestos / ACM finds will be reported to the CM and the Environment & Sustainability Lead.

Contamination Specialist

If required McConnell Dowell will engage a Contamination Consultant to provide a Contamination Specialist, who is appropriately degree qualified and has a minimum of five years' experience in contaminated land, asbestos in soil assessments and remediation.

The Contamination Specialist will be responsible for taking samples of suspected asbestos / ACM, arranging air monitoring and testing.

The Contamination Specialist will be on site:

- as required during advance contamination assessments (refer Section 2 below)
- at other times required within McConnel Dowell Safe Operating Procedure (SOP) for Asbestos (REF-HSEQ-HS-SOP022-GEN-ALL).

Removal of asbestos must be undertaken by the holder of a Class A or Class B Asbestos Removal Licence issued by SafeWork NSW, as required.

D-1.7 Review

Throughout Construction of the Project the location of any asbestos / ACM discovered on site will be documented. This plan will be updated which any changes to Construction methodologies and subsequent additional management measures. The AMP will be reviewed annually, or as required in accordance with the continuous improvement process described in Section 3 of the CEMP.

A register of known contamination will be recorded with reference to, *Kamay Wharf Project - Targeted Site Investigation report by Environmental Resources Management Australia Pty Ltd (KFW01-ARUP-BPW-EN-RPT-000056).*

D-2 Unexpected asbestos / ACM find procedure

In the event that a person on site identifies or disturbs asbestos / ACM that is not already identified in the Asbestos Register, McConnell Dowell will follow all reporting and notification requirements in the Transport for NSW Environmental Incident Classification and Reporting

Procedure, including notifying the ER. McConnell Dowell will also undertake the following actions:

1. Stop work in the area potentially impacted by ACM as soon as it is safe to do so and move to the upwind side of the area, or away from the area.
2. Assess the potential immediate risk to human health posed by the unexpected find and assess if evacuation is necessary.
3. Delineate an exclusion zone around the affected area using fencing and/or appropriate barriers and signage. Keeping soil damp will minimise the release of fibres to air.
4. Contact the Contamination Specialist for advice and request a site visit (as required) to undertake a risk assessment of the unexpected find and determine what further assessment and/or remediation works are required.
5. If the material determined for re-use presents an unacceptable risk to human health or ecology, then a Contamination Specialist is to supervise the appropriate remediation works and undertake validation/clearance in accordance with relevant NSW codes of practice and guidelines.
6. Implement advice and validate outcomes are assessed by the Contamination Specialist to be satisfactory. Document outcome, presenting recommendations to McConnell Dowell.
7. Following the clearance and validation of the impacted areas, the Contamination Specialist to is submit assessment/validation/clearance for distribution to the McConnell Dowell and appropriate regulatory authorities
8. The McConnell Dowell Environment & Sustainability Lead to confirm that works may resume in the affected area in consultation with the ER.

Note: Where a NSW EPA Accredited Site Auditor has been engaged, Transport for NSW in consultation with the specialist Contamination Specialist, will inform the Site Auditor of the unexpected find and proposed measures to remediate/manage risks from ACM. These measures should be endorsed by the Site Auditor before implementation

The unexpected asbestos management procedure during Construction is summarised in the flow chart in Attachment 1.

Where small fragments of ACM or suspected ACM are found, and provided that:

- the total number of fragments is < 20, or
- the total surface area of the fragment/piece is < 1 m^2, or
- the fragments are spread over an area of < 10 m^2, and
- the fragments are non-friable and located on ground surface or within the topsoil layer

If the unexpected find meets the criteria above, the Contamination Specialist will collect any fragments and place it in a 200 mm polythene bag for later disposal at an appropriate waste facility. A detailed visual inspection of the area will be carried out by the Contamination Specialist which will involve wet raking of the areas to a depth of 10 cm for any further fragments. If no further fragments are identified, works can continue.

If, during the visual inspection, the Contamination Specialist determines that the criteria described above are exceeded, or if suspected asbestos / ACM continues to be identified during excavation

works and/or if it is thought that any uncovered material might be considered asbestos containing and friable, works will cease, and the Contamination Specialist will assess the situation and determine an appropriate course of action in accordance with Section 4.

The Contamination Specialist will remove samples of the material for testing at a NATA-accredited laboratory and will monitor airborne dust levels. Following testing, the Contamination Specialist will determine and report:

- If the asbestos is non-friable or friable;
- The extent of the contamination;
- Options for the appropriate remediation of the area (Section 4);
- The requirement for a licenced asbestos removalist (Section 4);
- The control measures to be implemented; and
- The requirement for health screening of workers on site.

D-3 Asbestos management principles

D-3.1 Risk control

Asbestos-contaminated material encountered during Construction of the Project will be identified, managed, encapsulated on site, or removed and disposed off-site at a licenced waste facility. McConnell Dowell will engage only appropriately licensed, accredited and insured asbestos removalists to handle, remove, encapsulate and/ or dispose of asbestos / ACM in accordance with legislation.

The following risk control methods for asbestos / ACM will be used during Construction:

- Removal and disposal of ACM
- Encapsulation of ACM
- Safe work practices, tools and equipment
- Personal Protective Equipment (PPE)
- Decontamination process.

D-3.2 Management of ACM

Factors that influence how ACM in soil is managed include:

- The form of the ACM and the likelihood that it will release fibres into the air
- The location, lateral extent and depth of ACM-impacts within the Project and
- The current and future uses of the Project, and whether these uses could affect the risk posed by ACM.

The presence of other contaminants may also affect the option selected to manage ACM. Where there is uncertainty in how to assess these factors, the Project Manager will seek advice from Transport for NSW Environmental Manager (or delegate) or Contamination Specialist.

The checklists provided in table 4-1 and table 4-2 provide a method to evaluate the feasibility of source removal and encapsulation, and the selection of the most appropriate ACM management option.

D-3.3 Remediation of Asbestos

As outlined in Section 6.6 of the Soil, Water & Contamination Management Plan, prior to impacting on any areas of known contamination, a Remediation Action Plan (RAP) will be prepared which will 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 reviewed by an EPA-accredited Site Auditor; and
- prepared in accordance with relevant guidelines made or approved by the EPA under section 105 of the Contaminated Land Management Act 1997 and must include measures to remediate the contamination at the site to ensure the site will be suitable for the proposed use when the Remedial Action Plan is implemented.

Prior to commencing with the remediation works, Transport for NSW will submit to the Planning Secretary for information the Remediation Action Plan and an Interim Audit Advice or a Section B Site Audit Statement prepared by a NSW EPA-accredited Site Auditor which certifies that the Remedial Action Plan is appropriate and that the site can be made suitable for the proposed use.

Once reviewed by the auditor, the Remedial Action Plan must be implemented, and any changes must be approved in writing by the EPA-accredited Site Auditor.

Where remediation has taken place, a Section A1 Site Audit Statement — or a Section A2 Site Audit Statement (SAS) accompanied by an Environmental Management Plan — and a Site Audit Report (SAR) must be prepared certifying that the remediation works have made the land suitable for the intended land use. The SAS and SAR must be submitted to the Planning Secretary no later than one (1) month prior to the commencement of operation of the approved land use.

Additional RAP’s may be required following an Unexpected Contamination Find upon the advice from the Contamination Consultant or the Site Auditor.

D-3.4 Source removal and off-site disposal

Following advice from the Contamination Specialist, removal of ACM will be conducted by an appropriate asbestos removalist subcontractor.

The Contamination Specialist will attend and monitor any asbestos / ACM removal works or remediation measures undertaken for treatment of asbestos / ACM on site.

McConnell Dowell will provide appropriate validation to demonstrate removal of ACM using the above techniques has been successful.

D-3.5 Signage

McConnell Dowell will install warning signs and labels to clearly identify asbestos affected areas and where asbestos related work is being carried out. Protective barricades will be installed to delineate the asbestos related area/s and restrict unauthorised persons from entering the asbestos removal work. Stockpiles will be covered and labelled.

Signage and barricades will stay in place until all licensed asbestos removal work is complete and a clearance certificate is provided.

D-3.6 Control of airborne asbestos

An asbestos removalist may use techniques to eliminate or minimise the generation of asbestos fibres if required. The techniques include wet spraying method, saturation and water injection method and the dry method (only used if the wet spray method is not suitable due to safety reasons). McConnell Dowell will follow any directions provided by the asbestos removalist

D-3.7 Removal of asbestos / ACM

The Contamination Specialist will determine if a licensed asbestos removalist will be required for removal works. A licensed asbestos removalist will be required for removal works where there is friable asbestos, or at the discretion of the contamination specialist on whether removal needs to be conducted under licensed conditions..

There are two types of asbestos removal licences: Class A and Class B. The type of licence required depends on the type and quantity of asbestos or ACM to be removed, as outlined in Table 4-2.

Table 4-2: Asbestos removal licence classes

Licence type	What asbestos can be removed
Class A	Can remove any amount or quantity of asbestos or ACM, including: • any amount of friable asbestos or ACM • any amount of asbestos-contaminated dust or debris (ACD) • any amount of non-friable asbestos or ACM.
Class B	Can remove: • any amount of non-friable asbestos or ACM *Note: A Class B licence is required for removal of more than 10 m^2 of non-friable asbestos or ACM but the licence holder can also remove up to 10 m^2 of non-friable asbestos or ACM.* • ACD associated with the removal of non-friable asbestos or ACM *Note: A Class B licence is required for removal of ACD associated with the removal of more than 10 m² of non-friable asbestos or ACM but the licence holder can also remove ACD associated with removal of up to 10m² of non-friable asbestos or ACM*
No licence required	Can remove: • up to 10 m^2 of non-friable asbestos or ACM • ACD that is: o associated with the removal of less than 10 m^2 of non-friable asbestos or ACM o not associated with the removal of friable or non-friable asbestos and is only a minor contamination.

The licensed asbestos removalist will prepare an Asbestos Removal Control Plan prior to the removal of any asbestos / ACM. The Asbestos Removal Control Plan documents the specific

control measures to be implemented to ensure site personnel and others are not at risk when asbestos removal work is being conducted. It includes how the asbestos removal will be carried out, including the method, tools, equipment and PPE to be used and the asbestos ACM to be removed, including the location, type and condition of the asbestos / ACM.

The Transport for NSW Environmental Manager (or delegate) and Transport for NSW Project Manager will be informed prior to excavation or removal of asbestos or ACM.

If the removal activity is to occur in the vicinity of any occupied residence or business, McConnell Dowell's Community Relations Manager will notify the affected resident/s or business owner/s in accordance with the Community Communication Strategy.

D-3.8 Validation Report

In accordance with the Remediation Action Plan, following removal of asbestos / ACM and prior to commencing other works, a validation report will be prepared in accordance with NEPM (2013) to confirm that the remedial actions have been correctly adopted, sampling results have been collected and confirm the outcome of the site/area contamination investigation.

The Validation Report will be conducted by:

- an independent licensed asbestos assessor, for work that was carried out by a Class A licensed asbestos removalist
- an independent competent person, for asbestos work that is not required to be carried out by a Class A licensed asbestos removalist

To be independent, the licensed asbestos assessor must not be involved in the removal of asbestos for that specific job and is not involved in a business or undertaking involved in the removal of the asbestos for that specific job.

D-3.9 Disposal

The Asbestos Removal Control Plan prepared by the licensed asbestos removalist will include a waste disposal program that will detail the method of transport and location of disposal of asbestos / ACM removed from site and any other asbestos waste.

The licensed asbestos removalist will dispose of any asbestos waste at a licensed asbestos waste disposal site in accordance with NSW EPA guidelines (including *Waste Classification Guidelines* (EPA, 2014)) and relevant industry codes of practice. Disposal of ACM will be to an appropriate waste facility licenced to accept asbestos.

McConnell Dowell will notify the Transport for NSW Environmental Manager (or delegate) and Transport for NSW Project Manager at least 24 hours prior to removal of ACM from site and will provide details of the proposed method and location of disposal.

McConnell Dowell will maintain records of all asbestos / ACM disposed off site, the location of the facility at which it was disposed, and any receipt/certificate issued by the facility/disposal authority.

D-3.10 PPE & Decontamination

Decontamination of site personnel, PPE and tools used in asbestos removal work will be specified by the asbestos removalist subcontractor to minimise exposure and spread of asbestos outside of the removal area.

D-4 Monitoring, reporting and records

D-4.1 Monitoring

NATA accredited asbestos-fibre air monitoring shall be undertaken during asbestos remedial works, as required. Monitoring must be undertaken in accordance with the following:

- ISO 17025 – Test and Calibration
- *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC: 3003(2005)]* (National Occupational Health and Safety Commission, 2005)
- *How to Safely Remove Asbestos Code of Practice* (Safe Work Australia, August 2019).

D-4.2 Reporting

Reporting will be carried out in accordance with the requirements of the Asbestos Management Plan.

Any asbestos finds will be reported by the Environment & Sustainability Lead to the Transport for NSW Environment Manager (or delegate) and the EPA in accordance with the Environmental Incident Classification and Reporting Procedure (refer Appendix A7 of the CEMP).

D-4.3 Asbestos register

McConnell Dowell will maintain an Asbestos Register, that documents all identified or potential asbestos- containing material in the Project area. The Asbestos Register will contain the following information:

- Identification of any potential or asbestos-containing material
- Location, type and condition of the asbestos-containing material
- Date when the asbestos was identified
- Labelling of the asbestos
- Maps or photographs or diagrams detailing the location of the asbestos within the Project area.

The Asbestos Register will be made available to the Transport for NSW Environmental Manager on request for inclusion in Project Monthly Reports.

Attachment E – Environmental Requirements

Legislation

All legislation relevant to this SWMP is included in Appendix C of the CEMP.

Guidelines and standards

The main guidelines, specifications and policy documents relevant to this plan include:

- Acid Sulfate Soil Manual (ASSMAC 1998).
- Acid Sulfate Soil and Rock – Victorian EPA Publication 655.1 – July 2009.
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ 2018).
- Department of Environment and Conservation (DEC): Bunding & Spill Management. Insert to the Environment Protection Manual for Authorised Officers - Technical section "Bu" November 1997.
- Managing Urban Stormwater: Soils and Construction. Landcom, (4th Edition) March 2004 (reprinted 2006) (the “Blue Book”). Volume 1 and Volume 2.
- Volume 2A Installation of Services (DECCW 2008).
- Volume 2C Unsealed Roads (DECCW 2008).
- Volume 2D Main Roads Construction (DECCW 2008).
- Fairfull, S. and Witheridge, G. (2003) Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings. NSW Fisheries
- *NSW Fisheries, November 2003. Fishnote – Policy and Guidelines for Fish Friendly* Waterway Crossings (Ref: NSWF – 1181).
- Road and Maritime Dewatering Guideline (2011)
- Roads and Maritime Management of Wastes on Roads and Maritime Services Land (2014)
- Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (2004).
- RTA’s Code of Practice for Water Management – Road Development and Management (1999)
- Guidelines for the Management of Acid Sulphate materials: Acid Sulphate Soils, Acid Sulphate Rock and Monosulphidic Black Ooze (RTA 2005)
- Roads and Maritime Environment Direction Management of Tannins from Vegetation Mulch (2012)
- Roads and Maritime Stockpile Site Management Guideline (2011)
- Environmental Best Management Practice Guideline for Concreting Contractors, DEC (2004).

Minsters Conditions of Approval

The MCoA and EPBC-CoA relevant to this Plan are listed in Table E-1 and Table E-2 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table E-1 Minister's Conditions of Approval relevant to the SWMP

<table>
<tr><th>MCoA No.</th><th>Condition Requirements</th><th>Document Reference</th></tr>
<tr><td>C7</td><td>The CEMP Sub-plans must state how:
(a) the environmental performance outcomes identified in the documents listed in Condition A1 will be achieved;
(b) the mitigation measures identified in the documents listed in Condition A1 will be implemented;
(c) the relevant terms of this approval will be complied with; and
(d) issues requiring management during construction (including cumulative impacts), as identified through ongoing environmental risk analysis, will be managed through SMART principles.</td><td>This document
Section 1.3</td></tr>
<tr><td>C14</td><td>Except as provided by Condition A15, the following CMP must be prepared in consultation with the relevant government agencies identified for each to compare actual performance of construction of the SSI against the performance predicted in the documents listed in Condition A1 or in the CEMP:
<table>
<tr><th></th><th>Required CMP</th><th>Relevant government agencies to be consulted for each CMP</th></tr>
<tr><td>(b)</td><td>Turbidity</td><td>DPI Fisheries</td></tr>
</table></td><td>Attachment J</td></tr>
</table>

MCoA No.	Condition Requirements	Document Reference
C15	Each CMP must provide: (a) details of baseline data available; (b) details of baseline data to be obtained and when; (c) details of all monitoring of the project to be undertaken; (d) the parameters of the project to be monitored; (e) the frequency of monitoring to be undertaken; (f) the location of monitoring; (g) the reporting of monitoring results and analysis results against relevant criteria; (h) details of the methods that will be used to analyse the monitoring data; (i) procedures to identify and implement additional mitigation measures where the results of the monitoring indicate unacceptable project impacts; and (j) any consultation to be undertaken in relation to the monitoring programs.	Attachment J
E 60	Prior to the commencement of any Work, erosion and sediment controls must be installed and maintained, as a minimum, in accordance with the publication Managing Urban Stormwater: Soils & Construction (4th edition, Landcom 2004) commonly referred to as the 'Blue Book'.	SWMP Section 6.2

MCoA No.	Condition Requirements	Document Reference
E61	Prior to the commencement of any Work, the Proponent must prepare a Soil and Water Management Plan (SWMP) to address any contamination found during construction works. The SWMP must be prepared in consultation with NPWS in respect of NPWS land. The SWMP 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 include detailed measures to: (a) identify contamination during works; (b) store, test and appropriately dispose of disturbed groundwater and soils; (c) include a clear and detailed unexpected finds protocol for use and implementation throughout the duration of construction works; (d) include turbidity monitoring at both Kurnell and La Perouse at a frequency commensurate with the level of risk for each construction phase; and include a Trigger Action Response Plan (TARP) which includes contingencies to identify and manage any unpredicted impacts and their consequences to ensure corrective actions are implemented. The Plan must be submitted to the Planning Secretary for information prior to the commencement of construction.	SWMP Section 6.1 and Section 6.2
E 62	The Proponent must engage a NSW EPA-accredited site Auditor to review contamination reports relating to the site throughout the duration of the project to ensure that any work required in relation to sediment, soil or groundwater contamination is appropriately managed	Section 2.1
E 63	Prior to the commencement of construction, the Proponent must obtain: o Section B1 Site Audit Statement to certify that the nature and extent of the contamination has been appropriately determined; and o Section B2 Site Audit Statement to certify that the Soil and Water Management Plan required by Condition E61 is appropriate. A copy must be provided to the Planning Secretary.	Section 2.1

MCoA No.	Condition Requirements	Document Reference
E 64	Following the NSW EPA-accredited Site Auditor review of contamination reports, if it is determined that remediation is required, a Remedial Action Plan must be prepared in accordance with the guidelines made and approved under section 105 of the Contaminated Land Management Act 1997, and reviewed by the EPA-accredited Site Auditor.	Section 6.5
E 65	Where remediation is required, the Remedial Action Plan must be: a) 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 reviewed by an EPA-accredited Site Auditor; and b) prepared in accordance with relevant guidelines made or approved by the EPA under section 105 of the Contaminated Land Management Act 1997 and must include measures to remediate the contamination at the site to ensure the site will be suitable for the proposed use when the Remedial Action Plan is implemented.	Section 6.1
E 66	Where remediation is required, prior to commencing with the remediation works, the Proponent must submit to the Planning Secretary for information the Remedial Action Plan and an Interim Audit Advice or a Section B Site Audit Statement prepared by a NSW EPA-accredited Site Auditor which certifies that the Remedial Action Plan is appropriate and that the site can be made suitable for the proposed use.	Section 6.5
E 67	Once reviewed by the auditor, the Remedial Action Plan must be implemented, and any changes must be approved in writing by the EPA-accredited Site Auditor.	Section 6.5
E 68	Where remediation has taken place, a Section A1 Site Audit Statement — or a Section A2 Site Audit Statement (SAS) accompanied by an Environmental Management Plan — and a Site Audit Report (SAR) must be prepared certifying that the remediation works have made the land suitable for the intended land use.	Section 6.5

MCoA No.	Condition Requirements	Document Reference
E 69	The SAS and SAR must be submitted to the Planning Secretary no later than one (1) month prior to the commencement of operation of the approved land use.	Section 6.5
E 70	Where, following site auditor review, remediation is not considered necessary, an Unexpected Contamination Finds Procedure for Contamination must be prepared before the commencement of Work and must be followed should unexpected contamination including asbestos (or suspected contamination) be excavated or otherwise discovered. The procedure must include details of who will be responsible for implementing the unexpected finds procedure and the roles and responsibilities of all parties involved. The Procedure must be submitted to the Planning Secretary for information (if requested) before Work commences and must be implemented during all stages of work and construction. The unexpected finds procedure 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.	Attachment C
E115	The SSI must be designed, constructed and operated so as to maintain the NSW Water Quality Objectives where they are being achieved as at the date of this approval, and contribute towards achievement of the NSW Water Quality Objectives over time where they are not being achieved as at the date of this approval, unless an EPL in force in respect of the SSI contains different requirements in relation to the NSW Water Quality Objectives, in which case those requirements must be complied with	Appendix J

EPBC Conditions of Approval

EPBC Conditions relevant to construction are listed Table E-2 below. This includes the responsible owner of the condition and relevant compliance evidence.

Table E-2 EPBC Compliance table

Ref	Description	Owner	Evidence
1)	The approval holder must not clear outside of the project area.	All	CEMP Appendix B2 – Biodiversity Management Sub Plan
National Heritage Places			
2)	The approval holder must comply with NSW Approval conditions E21 – E37 and E49 to minimise impacts on the Indigenous, Non-Indigenous, and Natural heritage values of Kurnell Peninsula Headland.	All	CEMP Appendix B1 – Heritage Management Sub Plan
Listed Threatened Species and Ecological Communities			
3)	Within the project area, the approval holder must not clear more than: a) 0.0683 hectares of seagrass meadows b) 0.0683 hectares of White's Seahorse habitat.	All	CEMP Appendix B2 – Biodiversity Management Sub Plan
4)	The approval holder must comply with NSW Approval conditions E6 – E8 and E11 related to preconstruction surveying and protection measures.	All	CEMP Appendix B2 – Biodiversity Management Sub Plan
5)	The approval holder must comply with NSW Approval conditions E62 – E65, E67 – E68, and E70 related to the prevention and management of contamination on protected matters.	All	CEMP Appendix B6 – Soil, Water & Contamination Management Sub Plan
Construction Environmental Management Plan			
6)	The approval holder must comply with NSW Approval conditions C1 – C13 related to the preparation and implementation of a Construction Environmental Management Plan (CEMP) to avoid, mitigate and manage impacts on protected matters during construction.	All	Construction Environmental Management Plan (this plan)

Ref	Description	Owner	Evidence
7)	The CEMP required by the NSW Approval must include environmental management measures to manage impacts to protected matters and be informed by the contamination documentation.	MCD	CEMP Appendix B6 – Soil, Water & Contamination Management Sub Plan
Marine Biodiversity Offset Strategy			
10)	The approval holder must comply with NSW Approval conditions E12 – E20 related to the requirements of the Marine Biodiversity Offset Strategy (MBOS) to compensate for the clearing of 0.0683 hectares of seagrass meadows and White's Seahorse habitat.	TfNSW	TfNSW
11)	To monitor the outcomes of the MBOS for seagrass meadows and White's Seahorse habitat, the approval holder must include a Marine Biodiversity Offset Report as part of the compliance report until at least the 10th anniversary of the commencement of the action, unless otherwise agreed to in writing by the Minister. Each Marine Biodiversity Offset Report must include: a. a progress report on the implementation of the MBOS; b. a list of success metrics; c. details of the monitoring methodology(ies) implemented and the locations of reference sites; d. monitoring results including a comparison against reference sites; e. a summary of any adaptive management steps taken to improve implementation and/or monitoring methodology(ies); and f. a conclusion as to whether the outcomes, as measured against the success metrics, have been achieved, are likely to be met or are unlikely to be met, as determined by a suitably qualified person.	TfNSW	TfNSW

Ref	Description	Owner	Evidence
12)	To assess the ongoing success of the MBOS, the approval holder must submit a Rehabilitation Monitoring Review to the department within 6 years of the date of this approval and every 5 years thereafter, unless otherwise agreed to in writing by the Minister. Each Rehabilitation Monitoring Review must include: a. a review of the monitoring methodology by a suitably qualified person; b. a conclusion based on the success metrics as to whether the environmental offsets for seagrass meadows and White's Seahorse habitat have been achieved, are likely to be met or are unlikely to be met, as determined by a suitably qualified person; and c. if environmental offsets for seagrass meadows and White's Seahorse habitat have not been achieved based on the success metrics: i. a list measurable and time-bound remediation measures which will be undertaken to ensure the success metrics are achieved; and ii. justification for how the remediation measures will provide full compensation for the impacts to seagrass meadows and White's Seahorse habitat.	TfNSW	TfNSW
Submission and Publication of Plans			

Ref	Description	Owner	Evidence
13)	The approval holder must submit all plans required by these conditions electronically to the department.	TfNSW	TfNSW
14)	If the approval holder submits a revised version of a plan for the Planning Secretary's approval, the approval holder must provide the revised plan to the department within 5 business days and an explanation of the differences between the approved plan and the revised plan.	TfNSW	TfNSW
15)	If a revised version of a plan is approved by the Planning Secretary, the approval holder must provide the revised plan to the department within 10 business days of the Planning Secretary's approval.	TfNSW	TfNSW
16)	Unless otherwise agreed to in writing by the Minister, the approval holder must publish each plan on the website within 15 business days of the date: a. the plan is approved by the Planning Secretary; or b. a revised version of the plan is approved by the Planning Secretary.	TfNSW	TfNSW
17)	The approval holder must keep all published plans required by these conditions on the website until the expiry date of this approval.	TfNSW	TfNSW
18)	The approval holder must exclude or redact sensitive ecological data from plans published on the website or otherwise provided to a member of the public.	TfNSW	TfNSW
19)	If sensitive ecological data is excluded or redacted from a plan, the approval holder must notify the department in writing what exclusions and redactions have been made in the version published on the website	TfNSW	TfNSW
Notification of Date of Commencement of the Action			
20)	The approval holder must notify the department electronically of the date of commencement of the action, within 5 business days of the commencement of the action.	TfNSW	TfNSW

Ref	Description	Owner	Evidence
21)	If the commencement of the action does not occur within 5 years from the date of this approval, then the approval holder must not commence the action without the prior written agreement of the Minister.	TfNSW	TfNSW
Compliance Records			
22)	The approval holder must maintain accurate and complete compliance records.	All	CEMP Section 8.4
23)	If the department makes a request in writing, the approval holder must provide electronic copies of compliance records to the department within the timeframe specified in the request.		
24)	Note: Compliance records may be subject to audit by the department, or by an independent auditor in accordance with section 458 of the EPBC Act, and/or be used to verify compliance with the conditions. Summaries of the results of an audit may be published on the department's website or through the general media.	TfNSW	TfNSW
25)	The approval holder must ensure that any monitoring data (including sensitive ecological data), surveys, maps and other spatial and metadata required under the conditions of this approval are prepared in accordance with the Guidelines for biological survey and mapped data (Commonwealth of Australia 2018), or as otherwise specified by the Minister in writing.	All	CEMP Section 8.1.2
26)	The approval holder must ensure that any monitoring data (including sensitive ecological data), surveys, maps and other spatial and metadata required under the conditions of this approval are prepared in accordance with the Guide to providing maps and boundary data for EPBC Act projects (Commonwealth of Australia 2021), or as otherwise specified by the Minister in writing.	All	CEMP Section 8.1.2
Annual Compliance Reporting			
27)	The approval holder must prepare a compliance report for each 12-month period following the date of this approval, or as otherwise agreed to in writing by the Minister.	TfNSW	TfNSW

Ref	Description	Owner	Evidence
28)	Each compliance report must be consistent with the Annual Compliance Report Guidelines (Commonwealth of Australia 2014).	TfNSW	TfNSW
29)	Each compliance report must include: a. Accurate and complete details of compliance and any non-compliance with the conditions and the plans, and any incidents. b. One or more shapefile showing all clearing of any protected matters, and/or their habitat, undertaken within the 12-month period at the end of which that compliance report is prepared. c. A schedule of all plans in existence in relation to these conditions and accurate and complete details of how each plan is being implemented.	TfNSW	TfNSW

Ref	Description	Owner	Evidence
30)	The approval holder must: a) Publish each compliance report on the website within 60 business days following the end of the 12-month period for which that compliance report is required. b) Notify the department electronically, within 5 business days of the date of publication, that a compliance report has been published on the website. c) Provide the weblink for the compliance report in the notification to the department. d) Keep all published compliance reports required by these conditions on the website until the expiry date of this approval. e) Exclude or redact sensitive ecological data from compliance reports published on the website or otherwise provided to a member of the public. f) If sensitive ecological data is excluded or redacted from the published version, submit the full compliance report to the department within 5 business days of its publication on the website and notify the department in writing what exclusions and redactions have been made in the version published on the website. Note: Compliance reports may be published on the department's website	TfNSW	TfNSW
Reporting Non Compliance			
31)	The approval holder must notify the department electronically, within 2 business days of becoming aware of any incident and/or potential non-compliance and/or actual non-compliance with these conditions or commitments made in a plan.	TfNSW	TfNSW

Ref	Description	Owner	Evidence
32)	The approval holder must specify in the notification: a) Any condition or commitment made in a plan which has been or may have been breached. b) A short description of the incident and/or potential non-compliance and/or actual noncompliance. c) The location (including co-ordinates), date, and time of the incident and/or potential noncompliance and/or actual non-compliance. Note: If the exact information cannot be provided, the approval holder must provide the best information available.	TfNSW	TfNSW
33)	The approval holder must provide to the department in writing, within 12 business days of becoming aware of any incident and/or potential non-compliance and/or actual noncompliance, the details of that incident and/or potential non-compliance and/or actual noncompliance with these conditions or commitments made in a plan. The approval holder must specify: a) Any corrective action or investigation which the approval holder has already taken. b) The potential impacts of the incident and/or non-compliance and/or non-compliance. c) The method and timing of any corrective action that will be undertaken by the approval holder.	TfNSW	TfNSW
Independent Audit			
34)	The approval holder must ensure that an independent audit of compliance with these conditions is conducted for every five-year period following the commencement of the action until this approval expires, unless otherwise specified in writing by the Minister.	TfNSW	TfNSW

Ref	Description	Owner	Evidence
35)	For each independent audit, the approval holder must: a) Provide the name and qualifications of the nominated independent auditor, the draft audit criteria, and proposed timeframe for submitting the audit report to the department prior to commencing the independent audit. b) Only commence the independent audit once the nominated independent auditor, audit criteria and timeframe for submitting the audit report have been approved in writing by the department. c) Submit the audit report to the department for approval within the timeframe specified and approved in writing by the department. d) Publish each audit report on the website within 15 business days of the date of the department's approval of the audit report. e) Keep every audit report published on the website until this approval expires.	TfNSW	TfNSW
36)	Each audit report must report for the five-year period preceding that audit report.	TfNSW	TfNSW
37)	Each audit report must be completed to the satisfaction of the Minister and be consistent with the Environment Protection and Biodiversity Conservation Act 1999 Independent Audit and Audit Report Guidelines (Commonwealth of Australia 2019).	TfNSW	TfNSW
Completion of the Action			
38)	The approval holder must notify the department electronically 60 business days prior to the expiry date of this approval, that the approval is due to expire.	TfNSW	TfNSW

Ref	Description	Owner	Evidence
39)	Within 20 business days after the completion of the action, and, in any event, before this approval expires, the approval holder must notify the department electronically of the date of completion of the action and provide completion data.	TfNSW	TfNSW
Changes to State Conditions			
40)	The approval holder must inform the department in writing within 2 business days of requesting any change to the NSW Approval conditions that may relate to protected matters.	TfNSW	TfNSW
41)	The approval holder must inform the department in writing within 5 business days of any approved changes made to the NSW Approval conditions that may relate to protected matters.	TfNSW	TfNSW

Revised Environmental Management Measures

Relevant REMM are listed in Table E-3 below. This includes reference to required outcomes, the timing of when the commitment applies, relevant documents or sections of the SWMP.

Table E-3 Environmental management measures relevant to this SWMP.

Outcome	REMM Ref #	Commitment	Responsibility	Timing	SWMP Reference
Soil and water management during construction	SW3	A Soil and Water Management Plan (SWMP) will be prepared in accordance with QA Specification G38, Soil and Water Management (Transport for NSW, 2020). It will be implemented under the CEMP. The SWMP will: Item 1 Identify all reasonably foreseeable risks relating to soil erosion, soil contamination, asbestos, acid sulfate soils and water pollution associated with undertaking the activity Item 2 Describe how these risks will be managed and minimised including the management of potential acid sulfate soils and potential contamination Item 3 Include the required processes/procedures for excavation, handling, storage, and transport of sediment and arrangements for managing pollution risks associated with spillage or contamination. Item 4 Consultation with NSW EPA, NSW Environment, Energy and Science Group, Sydney Water, Randwick City Council, Sutherland Shire Council and National Parks and Wildlife Service.	Contractor	Pre-construction Construction	1. Chapter 4 and Chapter 5 2. Chapter 6 3. Chapter 6 and Emergency Spill Management Procedure (Construction Waste and Energy Management Sub Plan – Attachment A) 4. Chapter 3

Outcome	REMM Ref #	Commitment	Responsibility	Timing	SWMP Reference
Reduced soil and water quality due to erosion and sediment runoff	SW4	An Erosion and Sediment Control Plan (ESCP) will be prepared in accordance with Managing Urban Stormwater: Soils and Construction – Volume 1 and Volume 2 (Blue Book, Landcom, 2004). It will be implemented under the SWMP. The ESCP will include: **1.** Detailed measures and controls to minimise erosion and manage sediment control risks to prevent pollution of waterways **2.** Arrangements for managing wet weather events, including monitoring of potential high-risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.	Contractor	Pre-construction Construction	Attachment A Progressive Erosion and Sediment Control Plan Table 6-1 Section 8.5
Pollution through fuel leaks	SW5	Equipment, plant and machinery refuelling and maintenance will be carried out in impervious bunded areas. Vessels and associated plant and equipment will be maintained and refuelled at appropriate facilities offsite or adhere to industry standards, Port Authority NSW and pollution prevention regulations during refuelling, transfer, storage and handling of hazardous materials. Refuelling will always be attended. Machinery will be checked daily to ensure that there are no oil, fuel, or other liquid leaks.	Contractor	Construction	Table 6-1
	SW6	Vehicle wash-downs will be carried out offsite or within a designated bunded area with an impervious surface.	Contractor	Construction	Table 6-1
Encountering groundwater	SW7	Shallow groundwater will be managed in accordance with the Technical Guideline for Environmental Management of Construction Site Dewatering (NSW Roads and Traffic Authority, 2011b).	Contractor	Construction	Table 6-1

Outcome	REMM Ref #	Commitment	Responsibility	Timing	SWMP Reference
Dust and air quality management	A1	Air quality management measures will be incorporated into the CEMP. This will include: (a) Dust mitigation and suppression measures such as spraying or covering exposed surfaces, providing vehicle clean down areas, covering of loads, street cleaning, use of dust screens, maintenance of plant in accordance with manufacturer's instructions (b) Methods to manage works during strong winds or other adverse weather conditions (c) A progressive rehabilitation strategy for exposed surfaces.	Contractor	Pre-construction and construction	Table 6-1
Wave climate and the increased risk of erosion and reduced longshore drift west of the temporary causeway at Kurnell.	CP1	If a temporary causeway is constructed at Kurnell, temporary causeway armour (ie sandbags, rock) will be selected to account for and withstand the local wave climate.	Contractor	Construction	Table 6-1
Turbidity impacts for the temporary causeway	CP2	If construction of the temporary causeway at Kurnell is to occur, a turbidity monitoring specification will be developed and implemented to achieve the limits in the Turbidity Water Quality Standards Criteria Summaries; A Compilation of State/Federal Criteria (USEPA, 1988) and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality Volume 1 (ANZECC& ARMCANZ, 2000). Should the monitoring record an exceedance, measures such as stopping work and rectifying the exceedances will be carried out.	Contractor	Pre-construction and construction	Table 6-1

Attachment F - Dewatering Procedure

Dewatering of Site Excavations Purpose

This procedure details the process for dewatering excavations and other water capture points in the Construction areas of the Project.

Any discharge must meet the water quality objectives outlined Attachment F – Dewatering Procedure. Any discharge of water requires a **Dewatering Permit** approved by the McConnell Dowell Environment & Sustainability Lead.

Dewatering will be undertaken and managed in accordance with the Technical Guideline for Environmental Management of Construction Site Dewatering (NSW Roads and Traffic Authority, 2011b) and in a manner that maintains the NSW Water Quality Objectives and contribute towards achievement of the NSW Water Quality Objectives.

No discharge of surface or groundwater is to occur unless the water quality is within project Water Quality limits and the water quality objectives outlined in Attachment F – Dewatering Procedure.

Scope

The dewatering of water capture points and general low points (including excavations on the alignment) is required to maintain capacity.

All McConnell Dowell personnel and contractors are to be inducted on the existence of this procedure during the Project induction, and in more detail as required in site inductions and regular Toolbox Talks.

Procedure Identifying Dewatering Points

This procedure relates to all water capture points not identified as discharge locations.

This includes locations such as below ground excavations where groundwater or stormwater has been captured, or above groundwater capture points (e.g., depressions on the alignment).

The most likely sources will be Total Suspended Solids (TSS), oil and grease, pH, metals (in Acid Sulphate Soil (ASS) areas). Where the main water source is from stormwater, TSS and oil and grease would be considered likely pollutants.

Where groundwater is the main water source, influence from ASS in the form of pH and metals must be considered as potential pollutants.

Discharge Criteria

Before discharging water from a dewatering point, test the water to ensure that it meets the following criteria:

- total suspended solids: 50 mg/L
- pH: 6.5 – 8.5, and
- oil and grease: no visible trace

Turbidity (NTU) and Total Suspended Solids (TSS) Correlation

If required, McConnell Dowell will undertake a statistical correlation between turbidity (NTU) and Total Suspended Solids (TSS) through the construction phase for discharge water, turbidity measurements may be used to allow discharge from sediment basins before laboratory data is available. McConnell Dowell will provide the statistical correlation assessment methodology and results to Transport for NSW before using turbidity in place of TSS for approval.

Following approval from the Transport for NSW, the Dewatering Procedure will be updated to include a method of ongoing verification of the relationship between turbidity measurements and TSS that includes notification to Transport for NSW of any amendments made to the statistical correlation as a result of the ongoing verification before using the revised statistical correlation.

Discharge Criteria

Refer to below example of a Dewatering Permit that is to be issued by the Environment & Sustainability Lead prior to discharging.

6058 KAMAY FERRY WHARVES CONSTRUCTION
DEWATERING PERMIT

Permit Number	Location
Discharge Location and Controls:	
Proposed Start Time and Date	Proposed Completion Time and Date

Water Quality Check

Monitoring Instrument		Acceptance Parameters TBC
GPS Co-ordinates		
Conductivity		
DO		
pH		
NTU		
TDS		
Temperature		

Sign Off Control Measures

MCD Approver Name and Position	Signed	Date
Ensure sampling is undertaken daily during discharge; - Check the discharge regularly to ensure it remains clear of visible sediment and appears clean (both the reading of the real time pH and turbidity meter of the WTP and the actual water discharging Point); - Cease discharge immediately if water quality in the receiving body for water is adversely affected (i.e. sediment plume is visible) - Permit expiry is the proposed date. Re-validation of permit or new permit needs to be issued if discharging event will still be required after the proposed completion. - Once the permit is completed please forward to MCD Environment Representative for records. - Others:		

Site Specific Discharge Instructions

Attachment G – Road Transport Authority, Technical Guide, Environmental Management of Construction Site Dewatering

Attachment H – Transport for NSW Technical Guide: Management of Road construction and maintenance wastes

Technical Guide - Management of road construction and maintenance wastes (nsw.gov.au)

Attachment J – Construction Monitoring Program – Turbidity Monitoring

J-1 Purpose

Activities at Kurnell and La Perouse including piling have the potential to impact water quality, particularly turbidity within the construction boundaries of each site.

Turbidity and sediment deposition have the potential to impact on adjoining seagrass and benthic communities, both through smothering as well as reducing the absorption of light for photosynthesis. Fish may also be impacted including behavioural changes, where species will avoid area of impact, reduced foraging availability and physiological changes.

The project EIS indicates that water quality impacts from piling are low and restricted to within proximity to the piling activities. Sediment generated from piling is predicted to mainly suspend and disperse near the seafloor over 80 metres from piling at Kurnell and 40 metres from piling at La Perouse. On the surface sediment is expected to disperse more rapidly, being fully dispersed more than 20 metres from any piling activities

A turbidity monitoring procedure and associated Trigger Action Response Plan (TARP) are required by the conditions of SSI 10049 (MCoA) and the Revised Environment Management Measures (REMMs) identified by the project EIS (Table J-1).

Table J-1 MCoA and REMM conditions requiring turbidity monitoring

Condition no.	Condition	Section
C15	details of baseline data available;	J-4
	details of baseline data to be obtained and when	J-4
	details of all monitoring of the project to be undertaken;	J-4
	the parameters of the project to be monitored;	J-4
	the frequency of monitoring to be undertaken;	J-4
	the location of monitoring;	J-3
	the reporting of monitoring results and analysis results against relevant criteria	J-6
	details of the methods that will be used to analyse the monitoring data;	J-5
	procedures to identify and implement additional mitigation measures where the results of the monitoring indicate unacceptable project impacts;	J-5
	any consultation to be undertaken in relation to the monitoring programs	Attachment 1
***Note**:*	*Where a relevant **CEMP Sub-plan** exists, the relevant **CMP** may be incorporated into that **CEMP Sub-plan.***	

Condition no.	Condition	Section
E61 (MCoA)	Prior to the commencement of any Work, the Proponent must prepare a Soil and Water Management Plan (SWMP) … and include detailed measures to: - include turbidity monitoring at both Kurnell and La Perouse at a frequency commensurate with the level of risk for each construction phase; and - include a TARP which includes contingencies to identify and manage any unpredicted impacts and their consequences to ensure corrective actions are implemented.	This document
E115	The SSI must be designed, constructed and operated so as to maintain the NSW Water Quality Objectives where they are being achieved as at the date of this approval, and contribute towards achievement of the NSW Water Quality Objectives over time where they are not being achieved as at the date of this approval, unless an EPL in force in respect of the SSI contains different requirements in relation to the NSW Water Quality Objectives, in which case those requirements must be complied with.	This document Section J-2
CP2 (REMM)	A turbidity monitoring specification will be developed and implemented to achieve the limits in the *Turbidity Water Quality Standards Criteria Summaries; A Compilation of State/Federal Criteria* (USEPA, 1998) and the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality Volume 1* (ANZECC, 2000). Should the monitoring record an exceedance, measures such as stopping work and rectifying the exceedances will be carried out.	This document

J-2 Existing environment

Suspended sediment (turbidity) concentrations in Botany Bay vary naturally, both spatially and temporally. Higher sediment loads also enter western Botany Bay from the Georges and Cooks Rivers and as runoff from the land after major storms before dispersing as they move towards LA Perouse and Kurnell.

The Sydney Metropolitan Catchment Management Authority has established water quality objectives for Botany Bay under the Botany Bay & Catchment Water Quality Improvement Plan (2011). These consider Botany Bay's classification as a high conservation value system under ANZECC guidelines, ecological values and community preferences. Thresholds used for levels of protection in Botany Bay include a turbidity threshold of 2.2 NTU. Monitoring throughout Botany Bay has shown this target to be consistently met.

J-3 Monitoring locations

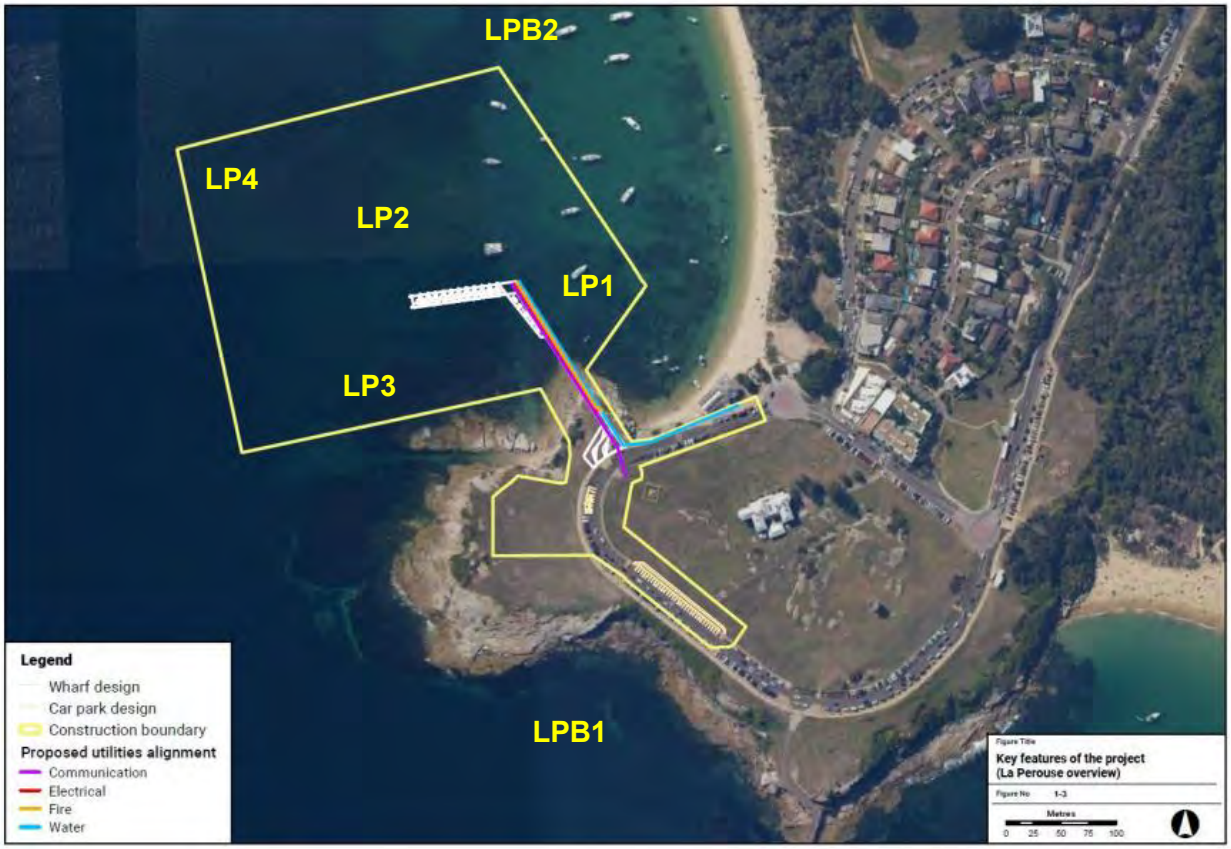


Figure J-1 La Perouse monitoring locations (numbered)

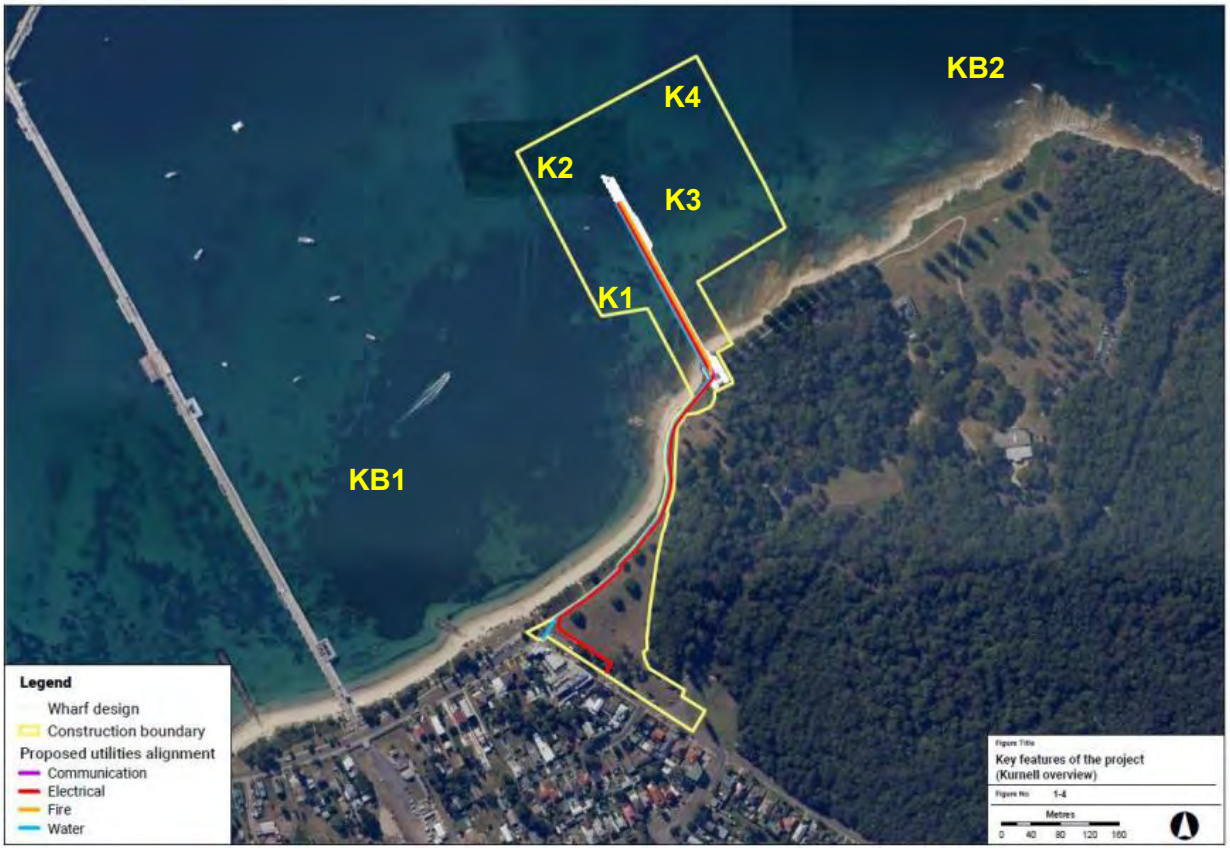


Figure J-2 Kurnell monitoring locations (numbered)

J-4 Monitoring procedure

The monitoring specification will include daily visual monitoring and periodic water quality sampling as outlined in the following steps and activities:

Visual Monitoring

- Visual monitoring for sediment plumes will occur throughout construction and captured daily in site diaries and at least weekly in the Environment & Sustainability Inspection Checklist.

Water Quality Sampling

- Vertical water quality profiling is to be undertaken at four impact sites within the construction boundary and at two background sites at both La Perouse (Figure J-1) and Kurnell (Figure J-2).
- Impact sites have been chosen to be within the construction boundary but outside the modelled sediment dispersion distance (20 metres on the surface, 80 metres maximum on the seafloor).
- Profiling is to include the following parameters:
    - Turbidity (NTU).
    - Conductivity.
    - Temperature.
    - Dissolved oxygen.
    - Depth.
- Sampling events:
    - **Background Sampling** – a sampling event is to be undertaken in the two weeks before marine construction commences at La Perouse and Kurnell to ensure the appropriateness of the impact and background sites
    - **Initial Sampling** – on the commencement of marine construction (including piling and construction of the temporary causeway at Kurnell) sampling events are to occur daily for the first week to ensure controls and construction methodology is adequate in managing turbidity impacts.
    - **Routine Sampling** – following the initial sampling event, routine sampling is to occur fortnightly during any periods of piling and during the construction or demobilisation of the temporary causeway at Kurnell.
    - **Event-Based Sampling** – in the event a visual plume is identified, or an exceedance is recorded during initial or routine sampling, event-based sampling will occur as outlined below in the Trigger Action Response Plan (TARP).
    - **Completion Sampling** – an additional sampling event is to be undertaken in the two weeks after work is complete at La Perouse and Kurnell.

J-5 Trigger Action Response Plan

Visual Monitoring

- If visual monitoring identifies an uncontrolled sediment plume, work is to cease until the cause of the plume is identified and rectified. Event-Based Sampling will be undertaken at the impact and background sites. Any exceedances in turbidity are to be managed as outlined below.

Water Quality Sampling

- Turbidity readings at each impact site (K1-4, LP1-4) will be compared to the average of readings at background sites (KB1-2, LPB1-2) whilst infield.
- An exceedance occurs where impact site turbidity readings are above the recommended limit of 2.2 NTU and there is more than a 5 NTU increase in turbidity between impact and control sites. In this circumstance water quality is at a level that could be harmful to marine ecology if sustained for an extended period and the reduction in water quality can be attributed to project activities.
- Where an exceedance occurs, the Environment and Sustainability Lead should be notified immediately. Two additional profiles will be taken as soon as possible or within 2 hours at the exceeding site and the background sites for comparison to confirm the exceedance.
- Where an exceedance is confirmed any work with the potential to impact water quality will be stopped until a profile confirms reading have dropped below the limit. Increased monitoring frequency is recommended in the period immediately following any exceedance. This will be determined in consultation with the Environmental Representative and NSW DPI Fisheries.

J-6 Reporting

A written report detailing water quality results and any exceedances will be submitted within one week of any field sampling event. Where an exceedance has been confirmed the report must be submitted within two business days.

DPI Fisheries (1800 043 536) and the EPA (131 555) is to be notified immediately if any fish kills occur in the vicinity of the works. In such cases, all works other than emergency response procedures are to cease until the issue is rectified and approval is given by DPI Fisheries and/or the EPA for the works to proceed.

J-7 Monitoring improvement procedure

It is not expected that monitoring and observation outcomes will be unsatisfactory given the controls in place. However, where risks/impacts have been identified that are not controlled to a satisfactory level, the methods will be revisited, and additional mitigation measures implemented to reduce the risks. Additional mitigation may include measures such as:

- Increase monitoring frequency.
- Installation of real-time telemetered water quality monitoring stations
- Improvement of work practices where deficiencies are identified.

Following the identification of an alternative management measure(s) that is considered to improve water quality, relevant procedures and plans will be updated, and submitted to the Environmental Representative for consideration and approval.

J-8 Consultation

The below table provides a summary consultation undertaken on the Construction Monitoring Program – Turbidity in accordance with MCoA C14 and how the comments were addressed.

Table 2 – DPI Fisheries comments and TfNSW responses

Agency	Comment	Response
DPI Fisheries	DPI Fisheries have reviewed the document Attachment J – Turbidity Monitoring Program however the CEMP Soil, Water and Contamination Sub Plan to which the Turbidity Monitoring Program is an appendix was not provided for comment. Without access to the aforementioned Sub Plan it is not possible to determine the adequacy of the monitoring locations. Monitoring should take place outside of silt curtains.	The Construction Monitoring Program for Turbidity is a stand alone program that is an appendix to the Soil, Water and Contamination Management Plan as allowed in the MCoA. All information required for the implementation of this Construction Monitoring Program for Turbidity is included in this document. The Construction Monitoring Program for Turbidity has been updated to incorporate a compliance tracking table to identify where all the MCoA have been meet. Figure 1 and Figure 2 shows the location of impact and baseline monitoring. Updated wording to clarify that monitoring would be undertaken outside of the silt curtains.
DPI Fisheries	It is noted that conditions E61 (MCoA) and CP2 (REMM) did not require referral of this document to DPI Fisheries.	MCoA C14 requires the Construction Monitoring Program for Turbidity to be provided to DPI Fisheries for consultation. The Construction Monitoring Program for Turbidity is a stand alone program that is an appendix to the Soil, Water and Contamination Management Plan as allowed in the MCoA.
DPI Fisheries	NSW Environment Protection Authority (EPA) is the regulatory authority for water quality. It is recommended that advice on this document is sought from the NSW EPA.	The Construction Monitoring Program for Turbidity is an appendix to the Soil, Water and Contamination Management Plan. The Soil, Water and Contamination Management Plan will be reviewed by an NSW EPA-accredited site auditor and a Section B2 Site Audit Statement will certify the Soil, Water and Contamination Management Plan including the Construction Monitoring Program for Turbidity.

Agency	Comment	Response
DPI Fisheries	It is unclear from this document how often visual inspections for turbid plumes will be conducted. DPI Fisheries requests this activity is conducted daily.	Daily visual inspections will occur and be captured in site diaries by Supervisors / Engineers and also at least weekly through the Environment & Sustainability Inspection Checklist. Section has been updated.
DPI Fisheries	The turbidity monitoring program includes no trigger or associated actions for when a visible turbid plume is identified. If a turbid plume is reported during visual inspection, it is recommended that work ceases until the cause of the plume is identified and rectified, and the visible turbidity plume has dropped to background levels.	Additional information has been added to the TARP to outlined the process to be undertaken in the event of a observed sediment plume.
DPI Fisheries	As NSW EPA are the regulatory authority for water quality, advice should be sought by them to determine the adequacy of the trigger values for the turbidity readings.	The Construction Monitoring Program for Turbidity is an appendix to the Soil, Water and Contamination Management Plan. The Soil, Water and Contamination Management Plan will be reviewed by an NSW EPA-accredited site auditor and a Section B2 Site Audit Statement will certify the Soil, Water and Contamination Management Plan including the Construction Monitoring Program for Turbidity
DPI Fisheries	Where additional monitoring profiles are being taken after an exceedance, this should be done as soon as possible and no later than 2 hours after the exceedance occurs.	Amended.
DPI Fisheries	It is recommended that where an exceedance is detected in the monitoring that work ceases immediately, rather than after the additional profiles are taken. Work should remain stopped until the cause of turbidity is identified and rectified. Monitoring of the exceedance should continue and works only allowed to recommence when a profile confirms reading have dropped below the limit.	Additional information has been added to the TARP for work to cease in the event of a visual monitoring exceedance (sediment plume). In the event of water quality sampling exceedance being confirmed, work will cease accordingly.
DPI Fisheries	Where an exceedance is confirmed as per the Trigger Action Response Plan, increased monitoring frequency should also be determined in consultation with the EPA.	Section 7 Monitoring improvement procedure outlines the process for any improvements due to an exceedance including approval from the independent Environmental Representative.

Agency	Comment	Response
DPI Fisheries	Both DPI Fisheries and NSW EPA should be notified in the event of an exceedance.	Amended to include notification to DPI Fisheries and EPA
DPI Fisheries	DPI Fisheries (1800 043 536) and the EPA (131 555) is to be notified immediately if any fish kills occur in the vicinity of the works. In such cases, all works other than emergency response procedures are to cease until the issue is rectified and approval is given by DPI Fisheries and/or the EPA for the works to proceed.	Added to the Reporting Section.

Attachment K – Review of the SWMP by a Suitability Qualified Professional

The SWMP was reviewed and approved, by Mark Challoner from EDP Consultants PTY LTD. Mark Challoner is a Principal Environmental Scientist qualified under the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)), certification number 1154.

Below is the outcome of their review followed by a statement of review.

Mitch Jones
McConnell Dowell
Cammeraygal Land, Level 15,
201 Miller Street,
North Sydney NSW 2060.

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email: enquiries@edp-au.com
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Office: +61 2 8484 5810

08 December 2022

Dear Mitch,

Soil, Water and Contamination Management Sub Plan, Kamay Ferry Wharves, November 2022, CEnvP:SCS Review

EDP Consultants Pty Ltd (EDP) was engaged by McConnell Dowell to provide a Certified Environmental Practitioner: Site Contamination Specialist (CEnvP:SCS) review the Soil, Water and Contamination Management Sub Plan (SWMP) for the Kamay Ferry Wharves project, NSW. The SWMP is a sub plan within the overall Construction Environmental Management Plan (CEMP). The scope of works was to review the SWMP against the requirements of the Transport for NSW Specification G38, Section 2.1.2 (Soil and Water Management Plan) and TfNSW Specification 36, Section 4.2.2 (Contaminated Land Management Sub-Plan.

EDP has provided a set of comments on the Draft SWMP in a review table and as Tracked Changes within a MS Word document and reviewed the final version of the SWMP and note that the comments have been actioned and incorporated within the final version.

A preliminary review of the existing reports relating to soil and water quality at Kurnell and La Perouse has also been conducted. It should be noted that the review of these supporting documents was not designed to assess compliance with the appropriate guidelines for these investigations (i.e., against the requirements of the Contaminated Land Guidelines: *Consultants reporting on contaminated land* (NSW EPA, 2020) since a NSW EPA accredited Site Auditor has been commissioned to undertake this detailed review and endorsement. It is understood that the Site Auditor is currently reviewing these background reports and therefore any resultant changes should be incorporated into the SWMP, where relevant. In addition, it should be noted that there are various sections of the SWMP that are outside of my skills and experience, such as the Erosion and Sediment Control and as such has not been reviewed and should be reviewed by an appropriately qualified and experienced person.

As a result, EDP concludes that the *Soil, Water and Contamination Management Sub Plan , Kamay Ferry Wharves* (McConnell Dowell, Version B, KFW02-MCD-ALL-EN-PLN-000004, November 2022) generally complies with the Transport for NSW requirements and specifications.

It should be noted that EDP has not visited the site and therefore relies on the information provided by McConnell Dowell to verify that the requirements in the procedure have been met.

Should you have any queries please feel free to contact Mark Challoner on 0401 359 644.

EDP Consultants Pty Ltd
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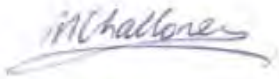
Yours sincerely,



Mark Challoner

Principal Environmental Scientist,

Certified Environmental Practitioner: Site Contamination Specialist (CEnvP:SCS)