Port Kembla Gas Terminal

Spoil Management Plan
Stage 2A Marine Berth Construction and Onshore Receiving Facilities

Australian Industrial Energy

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Acronyms

Acronym	Definition
ACM	asbestos containing material
AHD	Australian Height Datum
AIE	Australian Industrial Energy
AQMP	Air Quality Management Plan
AS	Australian Standards
ASS	Acid Sulfate Soils
ASSMP	Acid Sulfate Soils Management Plan
BaP	Benzo(a)Pyrene
BaP (TEQ)	Benzo(a)Pyrene (Toxicity Equivalence Quotient)
Berth 101	MBD Site Compound
BoM	Bureau of Meteorology
CD	Chart Datums
CLM Act	*Contaminated Land Management Act 1997*
CSP	Contaminated Spoil Protocol
CSSI	Critical State Significant Infrastructure
CTMP	Construction Traffic Management Plan
DGV	Default Guideline Values
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EMS	Environmental Management Strategy
ENM	Excavated Natural Material
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 197*
EPL	Environment Protection Licence
ESCP	Erosion and Sediment Control Plan
FSRU	Floating Storage and Re-gasification Unit
GHD	GHD Pty Ltd
GSW	General Solid Waste
HAT	Highest Astronomical Tide
HDD	horizontal directional drilling
HIL	Health Investigation Level
HSE	Health, Safety and Environment
HSL	Health Screening Levels
LAT	Lowest Astronomical Tide
LNG	liquefied natural gas
KPI	Key Performance Indicators
MBD	Marine Berth Construction and Dredging
Mbgl	Metres below ground level

Acronym	Definition
MHW	Mean High Water
MLA	Marine Loading Arms
MLW	Mean Low Water
NAPL	non-aqueous phase liquid
NEPC	National Environmental Protection Council
NEPM	*National Environment Protection (Assessment of Site Contamination) Measure 1999*
ORF	Onshore Receiving Facilities
PIRMP	Pollution Incident Response Management Plan
PKCT	Port Kembla Coal Terminal
PKGT	Port Kembla Gas Terminal
PKGT EIS	Port Kembla Gas Terminal Environmental Impact Statement
PKHD	Port Kembla Height Datum
POEO Act	*Protection of the Environment Operations Act 1997*
POEO Regulation	*Protection of the Environment Operations (General) Regulation 2009*
POEO (Waste) Regulation	*Protection of the Environment Operations (Waste) Regulation 2014*
PPE	Personal Protective Equipment
RSW	Restricted Solid Waste
SMP	Spoil Management Plan
SRD SEPP	State Environmental Planning Policy State and Regional Development
TEQ	Toxicity Equivalence Quotient
The Project	Port Kembla Gas Terminal Project
Three Ports SEPP	State Environmental Planning Policy (Three Ports) 2013
TRH	Total recoverable hydrocarbons
UFP	Unexpected finds protocol
VENM	Virgin Excavated Natural Material
WQMP	Water Quality Management Plan

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1. Introduction

1.1 Overview

This Spoil Management Plan (SMP) has been developed as a sub-plan to the Port Kembla Gas Terminal Project (the Project) Environmental Management Strategy (EMS). This SMP has been prepared by GHD Pty Ltd (GHD) on behalf of Australian Industrial Energy (AIE) to apply to construction activities associated with Stage 2A of the Project and has been prepared in consultation with the NSW Environment Protection Authority (EPA), Department of Planning, Industry and Environment (DPIE) Water, NSW Ports, Port Authority of NSW and an EPA accredited contaminated site auditor.

This SMP interfaces with the other associated sub-plans, which together describe the proposed structure for environmental management and monitoring requirements for the Project. This SMP addresses the requirements of the Port Kembla Gas Terminal Environmental Impact Statement (PKGT EIS) and associated Infrastructure Approval (SSI 9471) and Environmental Protection Licence (EPL) No. 21529. Sub-plans to the SMP are included as the following appendices:

– Acid Sulfate Soils Management Plan (ASSMP) as Appendix A.
– Water Quality Management Plan (WQMP) as Appendix B.
– Contaminated Spoil Protocol (CSP) as Appendix C.
– Erosion and Sediment Control Plan (ESCP) as Appendix D.

1.2 Background

AIE is developing the Project which involves the development of a liquefied natural gas (LNG) import terminal at Port Kembla, south of Wollongong, NSW. The Project will be the first of its kind in NSW and will provide a simple and flexible solution to the state's gas supply challenges.

NSW currently imports more than 95 percent of the natural gas it uses from other eastern states. In recent years, gas supplies to the Australian east coast market have tightened, resulting in increased natural gas prices for both industrial and domestic users.

The Project provides an immediate solution to address the predicted shortages and will result in significant economic benefits for both the Illawarra region and NSW. The Project will have a capacity to deliver more than 100 petajoules of natural gas, equivalent to more than 70 percent of NSW gas needs and will provide between 10 to 12 days of natural gas storage in case of interstate supply interruption. LNG will be sourced from worldwide suppliers and transported by LNG carriers to the gas terminal at Port Kembla where it will be re-gasified for input into the NSW gas transmission network.

The Project has been declared Critical State Significant Infrastructure (CSSI) in accordance with Section 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) (NSW) and Schedule 5 of the *State Environmental Planning Policy State and Regional Development* (SRD SEPP). The Project received Infrastructure Approval from the Minister for Planning and Public Spaces on 29 April 2019.

The construction of the Project is primarily associated with the establishment of a new berth facility at Port Kembla to enable an LNG carrier to berth alongside the Floating Storage and Re-gasification Unit (FSRU) and new infrastructure to connect the terminal to the existing gas network. Excavation and dredging would be required to establish the new berth facility, with spoil deposited in a cell (referred to as the 'Emplacement Cell') in the Outer Harbour.

The development has progressed to Stage 2A works located at Berth 101 (referred to as 'the site' or 'MBD Site Compound'). The Stage 2A works include land-based construction works associated with the Marine Berth Construction and Dredging (MBD) and Onshore Receiving Facilities (ORF). The Stage 2A works include:

– Completion of excavation works undertaken during Stage 1 Early Enabling Works (including transport of spoil materials to Emplacement Cell Construction Site).
– Construction of the quay wall at MBD Site Compound.

– Construction of ORF at MBD Site Compound (including construction of Wharf Topside Area, Utility Area, and Common Area).
– Installation of and commissioning of power, communications, and potable water line.
– Installation of gas pipeline within the MBD Site Compound as part of ORF.

1.3 Purpose

This SMP has been prepared in accordance with the PKGT EIS and associated Infrastructure Approval (SSI 9471) and EPL No. 21529. It describes how the management measures and commitments in the PKGT EIS, Infrastructure Approval (SSI 9471) and EPL No. 21529, relating to spoil are to be implemented by the Principal Contractor during Stage 2A construction of the Project. Specifically, this plan addresses the following requirements:

– Performance criteria for spoil management and mitigation.
– Mitigation strategies to minimise impacts related to spoil and contamination.

AIE and its contractors acknowledge that maintaining spoil in the vicinity of the MBD Site Compound is paramount to the successful delivery of the construction phase of the Project. AIE is committed to ensuring this SMP is implemented, reviewed and updated regularly to ensure its objectives are met and that the conditions outlined in the Infrastructure Approval (SSI 9471) and EPL No. 21529 are achieved. Staging of the SMP has been approved in accordance with Condition 3 of Schedule 4 of Infrastructure Approval SSI-9471

This SMP is applicable to all staff, employees, subcontractors, and any statutory service authorities undertaking the Stage 2A works described in Section 2 of this SMP. The SMP implementation and on-going development will be managed by the Project Team (refer to Section 3).

2. Project overview

2.1 Site description

The site of the Project is situated at Port Kembla within the Illawarra region of NSW, about 80 kilometres south of Sydney. Port Kembla is mainly characterised by an existing import and export terminal and multiple other business, cargo, logistics, bulk goods, and heavy industrial facilities in the vicinity.

Port Kembla is situated about two kilometres south of the centre of Wollongong. Other localities surrounding Port Kembla and the Project site include Mangerton, Mount St. Thomas and Figtree to the north-west; Unanderra to the west; Berkeley to the south-west; and Cringila, Lake Heights, Warrawong and the residential region of Port Kembla to the south.

The zoned land use in the region includes special use and industrial use at Port Kembla and a mix of primarily residential and commercial uses at the surrounding localities. Major infrastructure in the region of Port Kembla includes the Princes Highway, which is a major state and regional highway connecting Sydney and Wollongong and regional areas further south. Princes Highway provides access to Port Kembla through turnoffs at Masters Road, Five Islands Road and Northcliffe Drive and is broadly utilised including by heavy vehicles from the port.

The South Coast railway line runs along the periphery of Port Kembla including the stations Port Kembla, Port Kembla North, Cringila and Lysaghts. The rail line services commuters and is also used to transport bulk solid goods like coal, grain, copper and steel from Port Kembla. The environmental features of Port Kembla and the surrounding region are limited given the extensive industrial, commercial and residential development. Waterways in the region include the Gurungaty Waterway, Allans Creek, American Creek and Byarong Creek. Green space includes JJ Kelly Park and Wollongong Golf Club to the north and a larger open area to the south-west.

The Project will be predominantly located within land zoned for dedicated port and industrial uses. Berth and wharf facilities, as well as the FSRU, would be situated at Berth 101 at the Inner Harbour, while the gas pipeline would extend around the periphery of port operations from Berth 101 to a tie-in point at Cringila. The Emplacement Cell will be located in the Outer Harbour. A site overview is provided as Figure 2.1.

Figure 2.1 Site overview

2.2 Project construction scope of works

The Project construction scope of work has been divided into the three main packages (with associated activities), as outlined in Table 2.1. This SMP applies only to the works associated with Stage 2A.

Table 2.1 Construction stages/work packages

Stage	Package	Proposed commencement	Activities
1	Early Enabling Works	May 2021	Demolition of Berth 101, removal of structures and land based excavation works, and Cone Penetration Testing (CPT) in the Outer Harbour to inform Emplacement Cell design and relocation of bunker oil pipeline.
2A	Marine Berth Construction – Land Based	January 2022	Completion of excavation works undertaken during Stage 1.
			Transport of spoil materials to Emplacement Cell Construction Site.
			Quay wall construction.
		February 2022	Installation of communications conduit, potable water line, 11kV power cable, and 315 kVA Padmount Substation within the MBD Site Compound.
		April 2022	Construction of the ORF, which comprises three areas: Wharf Topside Area; Utility Area; and Common Area.
		June 2022	Pipeline construction and associated ancillary infrastructure within MBD Site Compound
2B	Marine Berth Construction and Dredging – Land and Marine Based	March 2022	Continuation of Stage 2A with addition of the following activities:
			Excavation/dredging and construction of the Emplacement Cell in the Outer Harbour
			Marine based construction activities including installation of navigational aids and revetment shore protection.
3	Pipeline Installation including tie-ins (NGP)	June 2022	Construction of an 18” onshore natural gas pipeline approximately 6.3km in length from the Berth 101 site boundary to Tie-in Facility at Cringila or connection to the Eastern Gas Pipeline Pipeline construction to occur concurrently with Jemena, subject to separate set of management plans.

The construction of Stage 2A works is located within the former Port Kembla Coal Terminal (PKCT) Bulk Products Berth (Berth 101). As part of the Early Enabling Works the removal of existing structures and services and excavation was undertaken to facilitate subsequent development stages of the Project.

The following will be undertaken as part of the Stage 2A works:

– Construction of the quay wall at MBD Site Compound incorporating finalisation of excavation works undertaken during Stage 1 (including transport of spoil materials to Emplacement Cell Construction Site).
– Installation of and commissioning of power, communications, and potable water line.
– Construction of ORF at MBD Site Compound (including construction of Wharf Topside Area, Utility Area, and Common Area).
– Installation of gas pipeline within MBD Compound site.

Further details of the key tasks associated with Stage 2A is provided in Section 2.3 through Section 2.5. The site of the works includes the MBD Site Compound with materials being transported to the Emplacement Cell Construction Site. The location of the Stage 2A works, MBD Site Compound, and the Emplacement Cell Construction Site is shown in Figure 2.2.

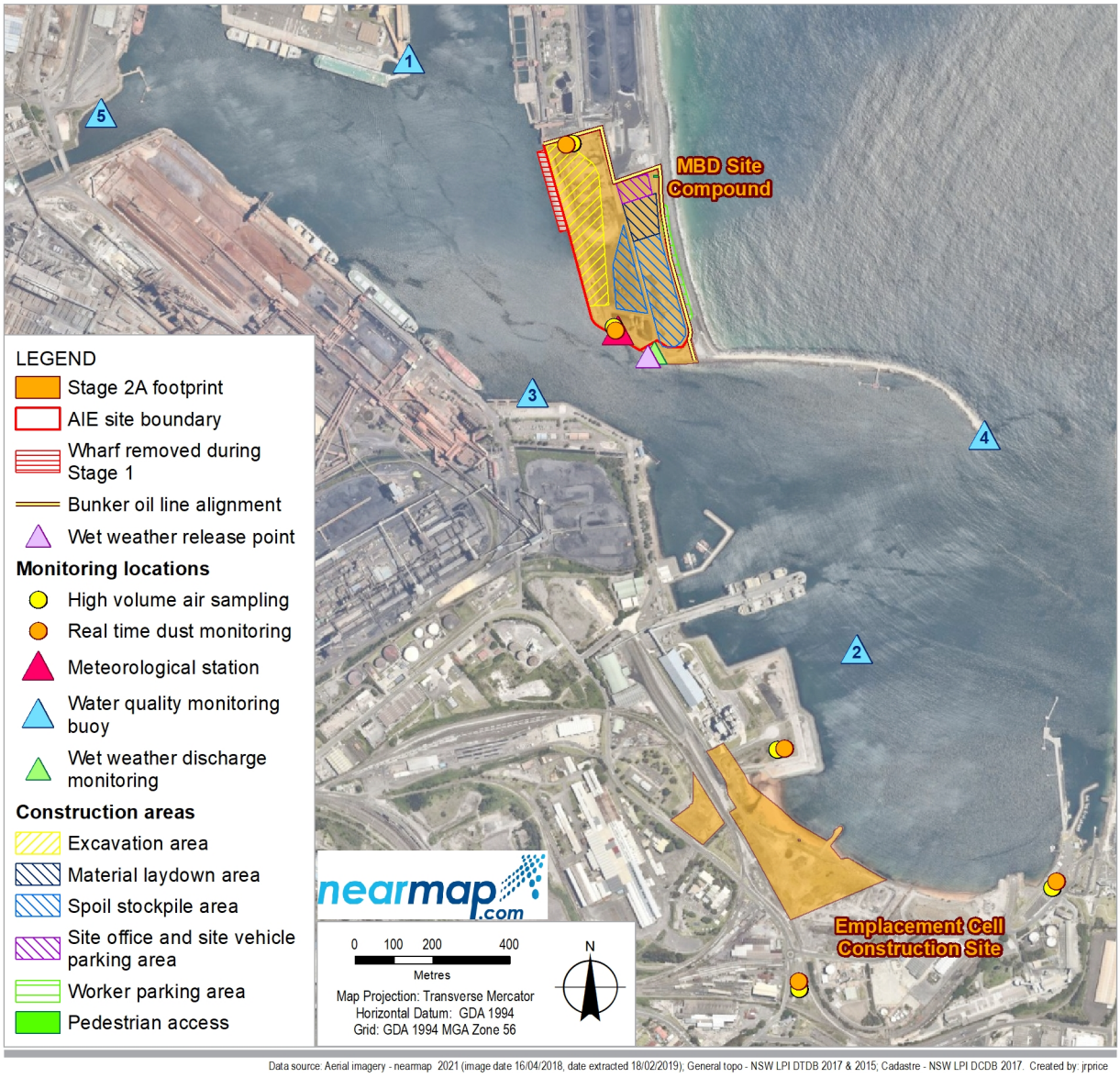

Figure 2.2 Stage 2A works and location of MBD Site Compound and Emplacement Cell Construction Site

2.2.1 Traffic

Traffic generated by Stage 2A will be controlled through the gate on Sea Wall Road. Heavy vehicle movements will be generated by the delivery of materials, equipment, and plant to the MBD Site Compound and transport of stockpiled material to the Emplacement Cell Construction Site.

There may be a requirement to transport and tip up to 8000m³ of crushed concrete and up to 2000m³ of crushed heavily bound base course to the Emplacement Cell Construction Site via road to increase the storage footprint area within the East Stockyard and to facilitate for later use during the construction of the Emplacement Cell.

The activities associated with this task will involve loading, road transportation via truck and trailer (approximately 30-tonne capacity), unloading, stockpiling, and management of the stockpiles.

Light vehicle movements will be generated from construction workers accessing the MBD Site Compound. Parking will be provided for up to 76 workers on the MBD Site Compound (refer to Figure 2.3).

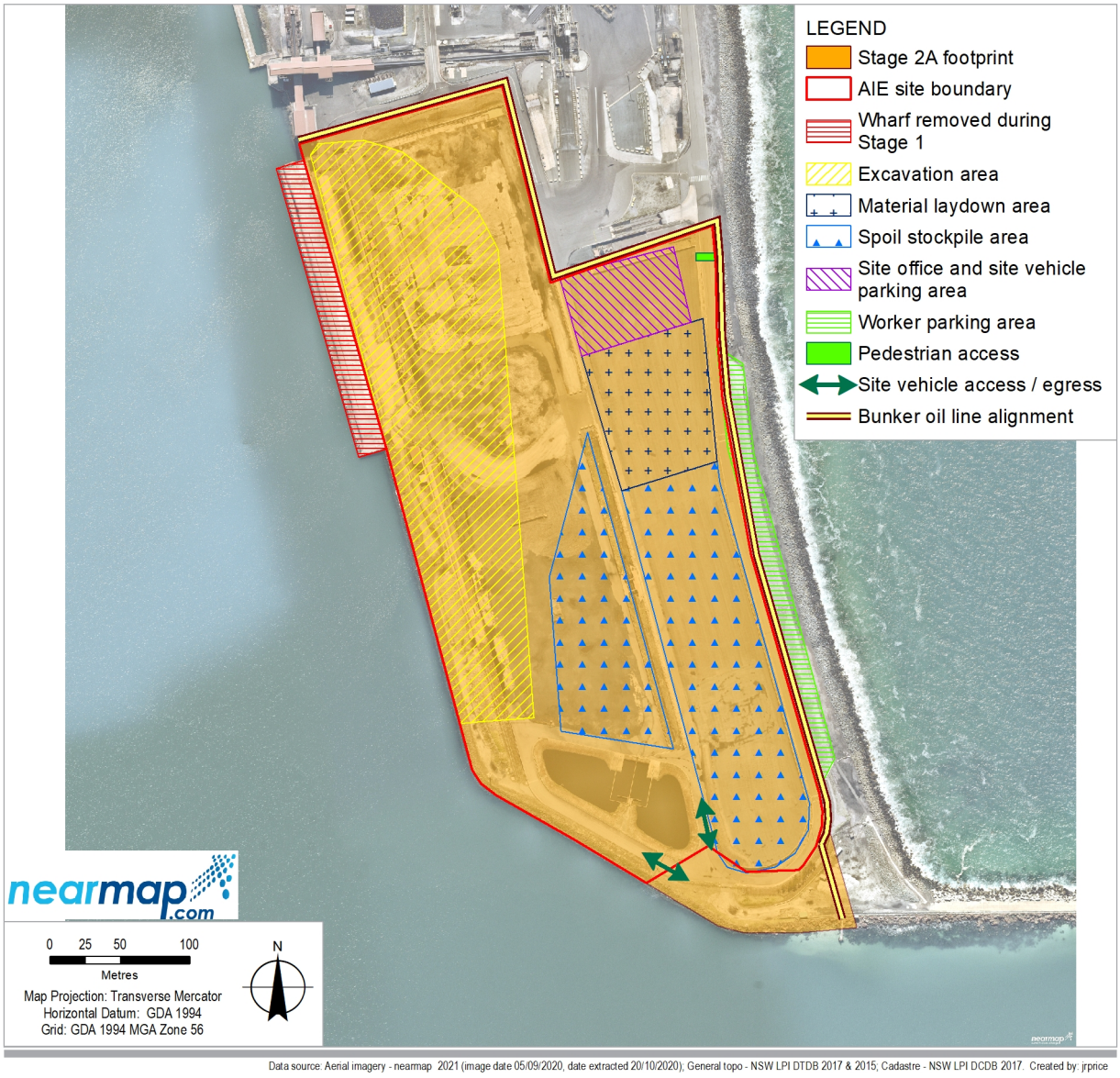

Figure 2.3 Layout of MBD Site Compound

2.2.2 Program

The Stage 2A works are anticipated to commence in January 2022. Stage 2B which includes the continuation of land-based construction and water-based works) are then anticipated to commence in March 2022 (refer to Table 2.1).

2.3 Construction of quay wall (MBD – Land Based)

A number of structures will be constructed within the MBD Site Compound to accommodate the FSRU and LNG carrier for the Project. Excavation and stockpiling activities from the Stage 1 Early Enabling Works will continue on-site during Stage 2A to lay the platform for ongoing construction activities at the MBD Site Compound.

The new structures that will commence construction during Stage 2A are summarised in Table 2.2. The location of the quay wall and layout of the marine berth and wharf facilities is shown in Figure 2.4.

Table 2.2 Marine berth and wharf structures to be constructed during Stage 2A

Component	Works required
Earthworks and stockpiles	– Completion of excavation and backfilling works from Stage 1 Early Enabling Works. – A nominal 15-metre-wide section on the northern end and a circa 60-metre 'wedge' at the south- west corner of the excavation zone was left to facilitate contractor access and will required completion at commencement of Stage 2A. – Excavated materials from the Early Enabling Works have been stockpiled within the Eastern and Western Stockyards of the MBD Site Compound and the Emplacement Cell Construction Site. – The excavated materials stockpiled include: • Approximately 15,000m³ of demolished concrete crushed to nominal 70mm minus. • Approximately 30,000m³ of heavily bound base course crushed to nominal -150mm minus. • Approximately 25,000³ of mixed slag, general fill, and coal nominally < 150mm in size. • Approximately 10,000m³ of predominantly sand with some slag and coal. – The excavated materials will be used/reused for quay wall construction and to backfill the landside area of the quay wall or transported to the Emplacement Cell Construction Site for storage and use in construction of the Emplacement Cell.
Quay wall	– Construction of a new piled quay wall keyed into bedrock complete with sheet pile anchor wall, capping beam and tie rods to the south of the existing coal terminal. – Excavated and processed materials from the Stage 1 Early Enabling Works are stockpiled within the MBD Site Compound and will be used during construction of the quay wall and to backfill on landside area of the wall. – Installation of a marine fender system attached to the capping beam along the quay wall to protect the quay wall from berthing and mooring loads. – Installation of a cathodic protection system to the quay wall and associated elements, including assessment of the potential impacts the FSRU and pipeline cathodic protection will have on quay wall. – Backfilling and compaction on landside area of wall utilising the site stockpiled materials.
Mooring dolphins	– Installation of landside mooring dolphin structures on reinforced concrete platforms supported by steel piles. – Mooring equipment will be installed and comprise the following: • 20 load sensing quick release hooks. • Up to four land-based mooring winches on mooring dolphins may be required. • Up to four swivel fairleads may be required to enable each mooring line to land-based winches to be fed in a horizontal alignment.
Equipment MLA station foundation	Construction of a new reinforced concrete foundation supported on steel piles, located behind the new quay wall.
Gangway tower foundation	Construction of foundation for Gangway tower.
Fire monitor foundation	Fire monitor foundations, subject to risk studies.

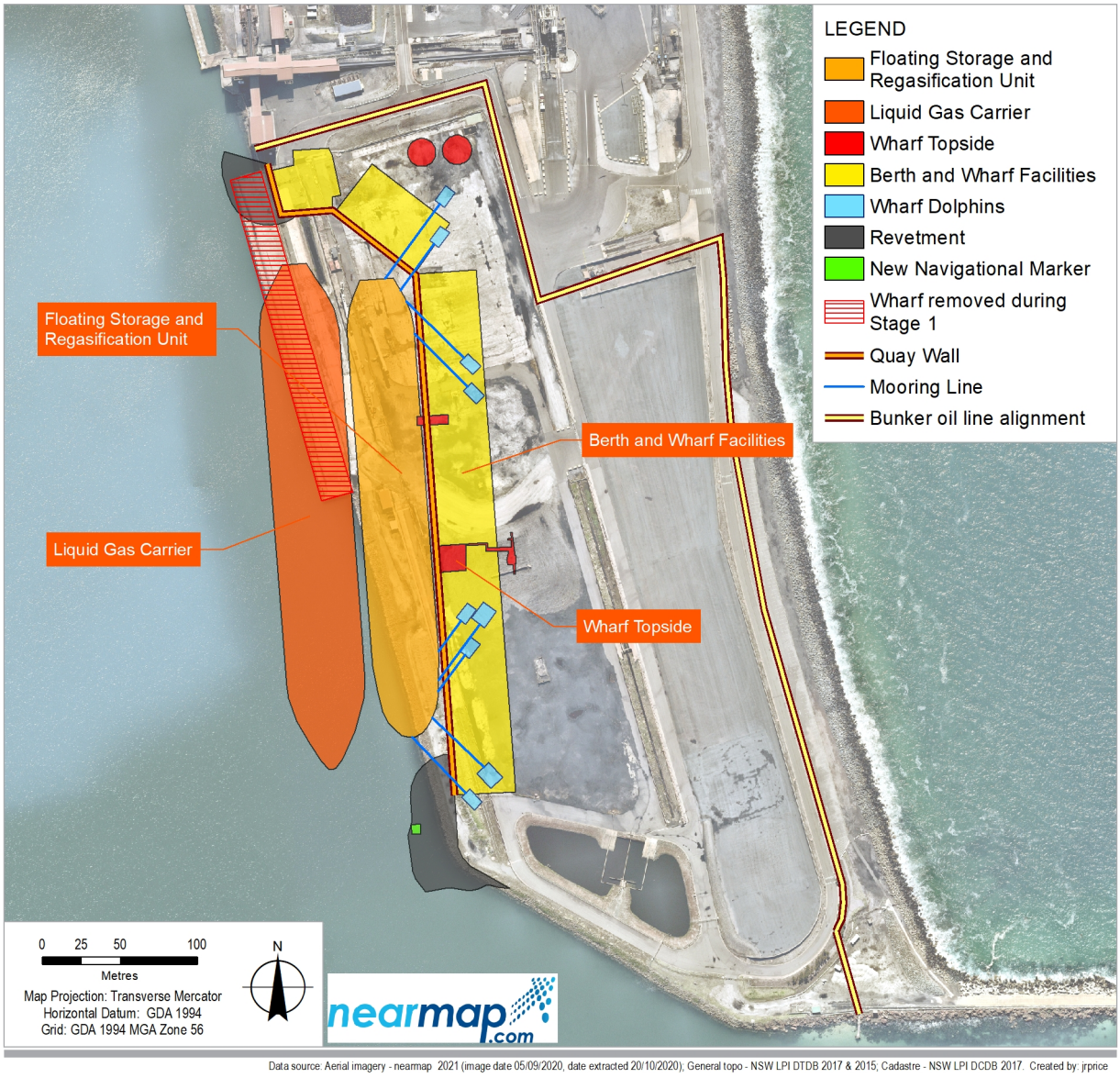

Figure 2.4 Location of quay wall and layout of MBD and ORF

2.4 Power, communications, and water connections

Works required for power, communications, and water connections are summarised in Table 2.3.

Table 2.3 Construction of power connections for Stage 2A

Component	Works required
Power and communications	– Construction and installation of a new 11kV power cable in a buried conduit and Substation. – Energisation of the Padmount Substation and 415kV Temporary Building Supply. – Installation of communication conduit and pits.
Potable water	– Extension of existing potable waterline within MBD Site Compound.

2.5 Construction of ORF

The general layout of the ORF areas is shown in Figure 2.4. Works required for the three ORF areas are summarised in Table 2.4.

Table 2.4 Structures to be constructed for ORF during Stage 2A

Component	Works required
Wharf Topside Area	
Marine Loading Arms (MLAs)	Installation of MLAs, including: – Civils and structures. – Associated works such as piping, hydraulics, electrical, instrumentation, and auxiliary systems.
Piping and valving	– All necessary piping and valving. – Odorant injection facilities. – Pig launcher, downstream of the MLAs to tie-in to the Natural Gas Pipeline.
Gangway	– Gangway access tower to provide connection between the wharf and FSRU.
Utility connections	FSRU utilities connections for: – Communications. – Marine Diesel Oil. – Freshwater. – Sewage, bilge, and grey water.
Utility Area	
Site Utilities	Site utilities including: – Potable water and sewerage. – Instrument air and bottled nitrogen. – Diesel storage. – Electrical distribution (including UPS and emergency diesel generators). – Control and instrumentation. – Telecommunications.
Common Areas	
Firefighting systems and equipment	Firefighting equipment including: – Firewater storage. – Pumps. – Firewater monitors.
Security systems and equipment	– CCTV. – Fencing and gates. – Security access and monitoring systems.
Equipment housing	Equipment shelters and buildings to house:

Component	Works required
	– Electrical, control, and operating equipment, critical spares, emergency response and site monitoring facilities. – Buildings will include appropriate building services e.g., HVAC, potable water, amenities, sewerage etc.
Site roadways, lighting and drainage	– Roads and car parking areas. – General lighting, earthing, lightning system. – Drainage system to tie into the existing Port Kembla drainage system.
Gas Pipeline	A section of gas pipeline will be installed within the MBD Compound site as part of the Stage 2A works. Final safety studies will be prepared prior to the construction of the gas pipeline and prior to commencement of operation as per Schedule 3, Condition 21 of Infrastructure Approval (SSI 9471).

3. Roles and responsibilities

The Project Team is responsible for all activities associated with Stage 2A, including the implementation and maintenance of the various mitigation/management measures outlined in this SMP. Relevant roles and responsibilities of the Project Team are outlined in Table 3.1.

Table 3.1 Roles and responsibilities of Project Team

Project Role	Responsibility
AIE Project Director	– Responsible for the overall funding and direction of civil and environmental works associated with Stage 2A. – Ensuring provision of adequate resources to achieve the environmental objectives for the project including ensuring sufficient resourcing for the Environmental Team, Engineering and Construction Teams.
AIE Construction Manager	– Proactively stewards the effective implementation of Stage 2A in accordance with requirements of the Infrastructure Approval (SSI9471), this SMP, EMS, and all related Sub-Plans. – Demonstrate proactive support for environmental requirements.
AIE HSE Manager	– Develops and update all Health, Safety and Environmental (HSE) Management Strategies and Sub-Plans. – Ongoing liaison and engagement with government agencies and point of escalation for any environmental incidents. – Identifying environmental issues as they arise and proposing solutions. – Coordinate and facilitate weekly environmental inspections with the key contractors. – Environmental Reporting.
Principal Contractor Project Manager	– On-site Project management and control. – Decision-making authority relating to environmental performance of the construction program. – Authority over Project construction and site activities in accordance with the EMS. – Ensure relevant training is provided to all Project staff prior to commencing individual activities. – Reports to AIE Construction Manager on environmental matters. – Ensures appropriate Contractor resources are allocated to implement the environmental requirements. – Responsible for planning and scheduling of construction, and to ensure operations are conducted in accordance with statutory requirements and the EMS. – Monitors performance against environmental Key Performance Indicators (KPI's). – Ensures that all environmental objectives associated with the Project are achieved. – Day-to-day decision-making authority relating to environmental performance of construction activities and direct site activities and construction. – To provide resources to ensure environmental compliance and continuous improvement. – Ensure all personnel are aware of any changes to EMS, this SMP and improved procedures. – Ensure this SMP is implemented for the duration of Stage 2A.
Principal Contractor Construction Foreman	– Implement requirements contained in the EMS and Sub-Plans, work procedures and standard drawings. – Maintaining open and transparent communication with other Project discipline managers and other areas of the Project. – Reporting of hazards and incidents and implementing any rectification measures. – Ensures appropriate contractor resources are allocated. – Orders STOP WORK for any environmental breaches and reports incidents to the Project Manager. – Ensure this SMP is implemented for the duration of Stage 2A.

Project Role	Responsibility
Principal Contractor Environmental Representative	– Delivers environmentally focussed toolbox talks and provides applicable site inductions. – Provides environmental advice, assistance, and direction to Project Manager to ensure construction activities are conducted in accordance with regulatory legislation and this EMS. – Participate and cooperate with AIE HSE Manager with regards to undertaking of joint weekly environmental site inspections. – Coordinate / undertake wet-weather inspections as per EPL No. 21529 and report accordingly to the AIE HSE Manager. – Develop strong working relationships with the AIE team and Consultants. – Ensure environmental risks are appropriately identified, communicated, and effectively managed. – Ensure communication of relevant environmental information to Project personnel. – Provide specialist advice and input as required. – Ensure construction manager, superintendents and field supervisors fully understand the environmental constraints and how construction practices must ensure any such constraints are considered and mitigated against during construction. – Orders STOP WORK for any environmental breaches and immediately reports incidents to Principal Contractor Project Manager and AIE HSE Manager.
AIE Environmental Representative	– Develop strong working relationships with the Principal Contractor Team and Consultants. – Ensure environmental risks are appropriately identified, communicated, and effectively managed. – Instruct and advise management team on compliance issues. – Provide specialist advice and input as required. – Co-ordinate internal audits of this SMP. – Conduct audit review as required. – Reports on the performance of this SMP and recommends changes or improvements to Project Manager. – Orders STOP WORK for any environmental breaches and immediately reports incidents to the AIE Construction Manager and AIE HSE Manager. – Conducts investigation and response to environmental complaints and inquiries, where required.
Subcontractors and construction personnel	– Undertake an environmental induction prior to accessing to site. – Comply with legislative requirements. – Participate in weekly inspections and audits. – Follow environmental procedures. – Report all environmental incidents and hazards. – Introduce environmental topics to prestart meetings. – Ensure that all relevant permits and clearances are in place prior to commencing work.

4. Legislative requirements

4.1 Legislation

The legislative requirements applicable to Stage 2A are listed in Table 4.1.

Table 4.1 Legislation and relevant policy applicable to this SMP

Legislation and Regulation	Description	Applicability
State		
Contaminated Land Management Act 1997 (CLM Act)	The CLM Act outlines accountabilities of the NSW Environment Protection Authority (EPA) in managing and regulating contamination, provides for the accreditation of site auditors and ensures contaminated land is managed with regard to principles of ecologically sustainable development.	A number of contamination and waste guidelines are administered by the NSW EPA (refer to Section 4.2). A site auditor has also been appointed for the Project (refer to Section 3).
EP&A Act	The EP&A Act describes the processes for development assessment in NSW, managing land use and implementing environmental planning instruments. The Act outlines certain permitting, licensing and exclusion provisions that will apply to the work.	The Project has been approved under Section 5.19 of the EP&A Act as CSSI. Relevant consent conditions applicable to Stage 2A are outlined in Section 5.
Protection of the Environment Operations Act 1997 (POEO Act)	The objectives of the POEO Act are to protect and enhance the environment of NSW with regard to the need for ecologically sustainable development. The Act provides the statutory framework for managing pollution in NSW, including the procedures for issuing licences for environmental protection on aspects such as waste, air, water, and noise pollution control. Companies and property owners are legally bound to control emissions (including particulates and deposited dust) from construction sites under the POEO Act.	EPL No. 21529 has been issued by the NSW EPA for the Project. Applicable conditions from the EPL are considered in Section 5.2.
Protection of the Environment Operations (General) Regulation 2009 (POEO Regulation)	The POEO Regulation contains penalty notice provisions for infringements under the POEO Act.	Applicable in the case of infringement of the POEO Act.
*Protection of the Environment Operations (Waste) Regulation 2014 (*POEO (Waste) Regulation)	The POEO (Waste) Regulation provides requirements for the transport of waste, reporting and record-keeping requirements, and provides special requirements related to asbestos waste, re-use and recycling.	Transport of waste materials and management of asbestos materials will be undertaken in accordance with the POEO (Waste) Regulation (refer to Section 8.1).

4.2 Guidelines

The framework for the management of spoil for the Project was developed with reference to guidelines listed below, with detailed assessment criteria included in Section 6 of the CSP (Appendix C).

4.2.1 National Environmental Protection (Assessment of site Contamination) Measure 1999 (as amended 2013) (NEPC, 2013)

The *National Environment Protection (Assessment of Site Contamination) Measure 1999* (referred to here as the NEPM) was produced by the federal National Environmental Protection Council (NEPC) in 1999 and was revised and updated in 2013 by way of the National Environmental Protection (Assessment of site Contamination) Amendment Measure 2013 (NEPC, 2013). The amended NEPM is still referred to as the NEPM 1999. The NEPM provides a national framework for conducting assessments of contaminated sites in Australia.

4.2.2 State guidelines

NSW has a comprehensive suite of guidelines relating to assessment and management of contamination, administered by the EPA under the CLM Act and the POEO Act. These include the following:

– NSW EPA (1995), *Contaminated Sites: Sampling Design Guidelines* (NSW EPA, 1995).
– NSW EPA (2020), *Consultants reporting on contaminated land – Contaminated land guidelines* (NSW EPA, 2020).
– NSW EPA (2017), *Contaminated Sites: Guidelines for NSW Site Auditor Scheme (3rd ed.)* (NSW EPA, 2017).
– NSW EPA (2014a). *Waste Classification Guidelines Part 1: Classification of Waste* (NSW EPA, 2014a).
– NSW EPA (2014b). *Waste Classification Guidelines Part 4: Acid Sulfate soils* (NSW EPA, 2014b).

Guidelines approved under the CLM Act also include:

– Nat*ional Environment Protection (Assessment of Site Contamination) Measure 1999* as amended 2013 (NEPC, 2013).
– Australian and New Zealand - *Toxicant Default Guideline Values for Sediment Quality* (ANZG, 2018a).
– Australian and New Zealand *Guidelines for Fresh and Marine Water Quality*. Canberra ACT, Australia and New Zealand Governments and Australian state and territory governments (ANZG, 2018b).
– Friebel, E and Nadebaum, P (2011). He*alth screening levels for petroleum hydrocarbons in soil and Groundwater*. CRC CARE Technical Report no. 10. CRC for *Contamination Assessment and Remediation of the Environment,* Adelaide, Australia, 2011. (Friebel & Nadebaum, 2011).

As there is a potential for asbestos to be encountered within fill or as subsurface structures at the site, the primary legislative requirements detailing AIE's obligations regarding the presence of asbestos (if it is encountered) on the site are listed as follows:

– *Work Health and Safety (National Uniform Legislation) Act 2011* (NSW).
– *Work Health and Safety Regulations 2017* (NSW).
– *How to Manage and Control Asbestos in the Workplace,* 2019 SafeWork NSW (SafeWork NSW, 2019a).
– *How to Safely Remove Asbestos,* 2019 SafeWork NSW (SafeWork NSW, 2019b).

5. Planning requirements

5.1 Conditions of approval

The planning requirements and the corresponding spoil management measures applicable to Stage 2A are listed in Table 5.1 and Table 5.2. Management measures are detailed in Section 7 through Section 8.

The planning requirements include the conditions set out in the Infrastructure Approval (SSI 9471) dated 24 April 2019, the EPL No. 21529 conditions and the mitigation/management measures outlined in the PKGT EIS.

Table 5.1 Approval conditions

Requirement	Reference	Responsibility	Evidence	Applicability to this SMP
Infrastructure Approval Requirements (SSI 9471)				
The Proponent must ensure that all demolition work is carried out in accordance with *AS 2601-2001: The Demolition of Structures*, or its latest version	Schedule 2, Condition 11			Not applicable (Completed Stage 1)
Soil and Water Management **Water Pollution** Unless an environment protection licence authorises otherwise, the Proponent must comply with Section 120 of the POEO Act.	Schedule 3, Condition 1	– AIE HSE Manager – AIE Environmental Representative – Principal Contractor Project Manager – Principal Contractor Environmental Representative	Appendix B	Applicable
Acid Sulphate Soils The Proponent must ensure that any construction activities in identified areas of acid sulphate soil risk are undertaken in accordance with Acid Sulfate Soil Manual (Acid Sulfate Soil Management Advisory Committee, 1998).	Schedule 3, Condition 6	– AIE HSE Manager – Principal Contractor Project Manager	Appendix A	Applicable
SPOIL MANAGEMENT The Proponent must not transport more than 360,000 cubic metres of spoil to the disposal area by road and must maintain records of the volume of spoil transported by road to track compliance against this condition.	Schedule 3, Condition 7	– AIE Construction Manager – Principal Contractor Project Manager	Section 7 Also refer to Construction Traffic Management Plan (CTMP)	Applicable
Spoil Management Plan Prior to the commencement of construction, the proponent must prepare a Spoil Management Plan to the satisfaction of the Planning Secretary and in consultation with the EPA, DPIE -Water, NSW Ports, Port Authority of NSW and an EPA accredited contaminated site auditor. The plan must be consistent with the Emplacement Cell Report and include:	Schedule 3, Condition 11	– AIE HSE Manager	This Plan	Applicable
(a) Contaminated Spoil Protocol that includes: – procedures for identifying and managing unexpected finds of contaminated or asbestos containing materials along the pipeline route and at Berth 101 – a strategy for addressing any contamination that has been encountered, if required (including the remediation and/or removal of contaminated soil or groundwater); and – details on how environmental and health risks will be mitigated and managed;		– AIE HSE Manager – Principal Contractor Environmental Representative	Appendix C	Applicable

Requirement	Reference	Responsibility	Evidence	Applicability to this SMP
		– Principal Contractor Construction Foreman		
(b) Dredge and Excavation Management Plan that: – includes an investigation of all reasonable and feasible measures to reduce the road haulage of spoil – describes all activities to be undertaken during dredging, excavation and disposal works – describes in detail the location and depth of disposal areas during all stages of construction, including the final form of the emplaced material;				Not applicable (Stage 2B)
– includes procedures for handling, transporting, storing, and disposing of dredge and excavated material, including: • potentially acid forming material • contaminated material; and • asbestos containing materials.				Not applicable (Stage 2B)
– includes a description of measures that would be implemented to: • minimise the generation and dispersion of sediments during dredging and disposal • minimise soil erosion and discharge of sediment and other pollutants to lands and/or Port Kembla harbour • monitor and manage odours and air emissions during handling of sediments or from stored material prior to emplacement within the disposal area; and includes contingency measures in the event of a failure of the silt curtains.		– AIE HSE Manager – Principal Contractor Environmental Representative – Principal Contractor Construction Foreman	Appendix D Also refer to Air Quality Management Plan (AQMP)	Applicable (except for dredging)
– a Water Quality Monitoring Plan that includes: • description of the water quality monitoring that would be undertaken to monitor turbidity and pollutant concentrations surrounding dredging and disposal works, including real-time • turbidity monitoring • a broader program to monitor harbour- wide water quality trends and the ecological health of Port Kembla Harbour • objectives and performance criteria, including trigger levels for investigating any potential – or actual adverse impacts associated with construction activities on water quality and the – ecology of Port Kembla Harbour		– AIE HSE Manager – Principal Contractor Environmental Representative	Appendix B	Applicable (except for dredging)

Requirement	Reference	Responsibility	Evidence	Applicability to this SMP
– a plan to respond to any exceedances of the trigger levels and/or performance criteria, and minimise any adverse water quality impacts of the development; and reporting procedures for the results of the monitoring program.				
The Proponent must implement the approved SMP for the development.	Schedule 3, Condition 12	– AIE HSE Manager – Principal Contractor Project Manager	This Plan	Applicable
WASTE The Proponent must: a. minimise the waste generated by the development b. classify all waste generated on site in accordance with the Waste Classification Guidelines (NSW EPA 2014), or its latest version c. store and handle all waste generated on site in accordance with its classification; and d. ensure all waste is disposed of off-site at appropriately licenced facilities.	Schedule 3, Condition 36	– AIE HSE Manager – Principal Contractor Project Manager	Section 8	Applicable
PKGT EIS Management Measures				
One or more of the following is proposed for assessing the potential risk to human health the two Benzo(a)Pyrene (BaP) Toxicity Equivalence Quotient (TEQ) hotspots identified at GHB09 and GBH26: Development of a human health risk assessment for BaP (TEQ), to further refine the potential risk posed by these contaminants to future construction workers. Given the short duration of the works relative to the standard exposure assumptions in a commercial/industrial scenario, it is likely that derived site specific target levels for BaP (TEQ) would be higher than adopted for this assessment. Additional investigation to delineate the vertical and lateral extent of BaP (TEQ). The investigation would involve step out borehole locations which will target materials at depths between 4 m and 5 m, to assess if the contamination is isolated or widespread. The source of BaP (TEQ) at GHB09 and GBH26 was not identified nor was there apparent evidence of this contamination present at the time of sampling. The contamination may be a characteristic of the fill material, meaning it could be randomly distributed throughout the fill matrix. Therefore, in addition to further investigation, bioavailability testing is also recommended so that the risk to human health is better understood and appropriate safety control measures can be adopted during construction. The laboratory is presently maintaining these samples pending further analysis.	EIS Measure C01			Not applicable (Completed Stage 1)
Removal of any remnant ACM fragments from the ground surface. The removal should be undertaken by a licenced removalist in accordance with relevant SafeWork NSW codes of practice. Following removal, a licenced asbestos assessor should inspect the site and provide a clearance certificate confirming removal of asbestos.	EIS Measure C02	– AIE HSE Manager – Principal Contractor Project Manager	Section 8.6	Applicable

Requirement	Reference	Responsibility	Evidence	Applicability to this SMP
		– Principal Contractor Environmental Representative – Licenced asbestos assessor		
Inclusion of an unexpected finds protocol for contamination in the EMS for the work associated with construction activities.	EIS Measure C03	– AIE HSE Manager – Principal Contractor Project Manager	Section 7.4 Appendix C	Applicable
Preparation of an ASSMP by a consultant experienced in the identification and management of Acid Sulfate Soils (ASS). This will also include appropriate management and/or treatment of ASS. The ASSMP will be developed in line with the requirements of the Acid Sulfate Soils Management Advisory Committee Guidelines (ASSMAC, August 1998 and as updated). The ASSMP will be prepared to identify, manage and treat the ASS encountered during excavation and dredging to minimise the production of acid leachate.	EIS Measure C04	– AIE HSE Manager	Appendix A	Applicable (except for dredging)
Preparation and implementation of an EMS to include an Unexpected Finds Protocol (UFP) to effectively manage the potential contamination issues identified from both a human health and environmental perspective. This would include the assessment of materials to be disturbed across the site to inform appropriate management strategies.	EIS Measure C05	– AIE HSE Manager – Principal Contractor Project Manager	Appendix C	Applicable
Assessment and classification of all material to be disposed of offsite as per NSW EPA (2014) *Waste Classification Guidelines, Part 1: Classifying Waste* and *Part 4: Acid Sulfate Soils* prior to off-site disposal.	EIS Measure C06	– AIE HSE Manager – Principal Contractor Project Manager	Section 8.3	Applicable

5.2 Environmental Protection Licence

NSW EPA has issued an EPL (EPL No. 21529) for the Project, with the relevant monitoring and reporting conditions incorporated in this plan. Conditions applicable to spoil management are outlined in Table 5.2.

Table 5.2 EPL No 21529 conditions

Condition	Reference	Evidence
P1 Location of monitoring/discharge points and areas The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.	P1.2	Appendix B
L1 Pollution of waters Except as may be expressly provided in any other condition of this licence, the licensee must comply with Section 120 of POEO Act.	L1.1	Appendix B
Concentration limits For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.	L3.1	Appendix B
Other operating conditions Any material that is proposed to be crushed or grinded or screened at the premises must not contain any asbestos.	O6.1	Section 7.3
Excavated material will need an asbestos clearance certificate from a third party licensed asbestos assessor prior to being crushed or grinded or screened. For the purposes of the condition above, 'excavated material' excludes raw slag, concrete or basecourse.	O6.2	Not applicable. Refer to Section 7.3
M1 Monitoring records The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition. All records required to be kept by this licence must be: a. in a legible form, or in a form that can readily be reduced to a legible form b. kept for at least 4 years after the monitoring or event to which they relate took place; and c. produced in a legible form to any authorised officer of the EPA who asks to see them. The following records must be kept in respect of any samples required to be collected for the purposes of this licence: a. the date(s) on which the sample was taken b. the time(s) at which the sample was collected c. the point at which the sample was taken; and d. the name of the person who collected the sample.	M1.1-1.3	Appendix B Section 10.2
M2 Requirement to monitor concentration of pollutants discharged For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns (refer to EPL M2.3)	M2.1 M2.3	Appendix B
M6 Recording of pollution complaints The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies. The record must include details of the following: a. the date and time of the complaint b. the method by which the complaint was made c. any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect	M6.1-6.4	Section 9 Section 11.1.2

Condition	Reference	Evidence
d. the nature of the complaint e. the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and f. if no action was taken by the licensee, the reasons why no action was taken. The record of a complaint must be kept for at least 4 years after the complaint was made The record must be produced to any authorised officer of the EPA who asks to see them.		
M8 Requirement to monitor volume or mass The licensee must record the volume of material that is crushed or grinded at the premises	M8.1	Section 2.2
M9 Other monitoring and recording conditions The licensee must carry out, as a minimum, daily inspections of all water pollution control measures required by this licence. A record of each inspection must be made and produced to an EPA authorised officer if requested. The record must include: a. Date and time of inspection b. Details of the location of dredging operations c. Condition of silt curtains and other water pollution controls. Note: No movement of dredge spoil is permitted when a silt curtain required by this licence has not been maintained or is not achieving the requirements of this licence.	M9.1	Section 10
R2 Notification of environmental harm Notifications must be made by telephoning the Environment Line service on 131 555. Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act. The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.	R2.1 R2.2	Section 10.4 Section 11
Port Kembla Harbour Water Quality and Ecological Monitoring Program The licensee must implement the Port Kembla Harbour Ecological Health Monitoring Program and associated reporting as per the GHD / AIE proposal dated September 2021, Rev G (EPA reference DOC21/864104-1). Note: the initial monitoring frequency is specified in the above proposal, from a baseline event to the first year of operation. Following the first operational report, the ongoing monitoring frequency will then redetermined by the EPA in consultation with the licensee.	M5.1	Appendix B

6. Summary of site conditions

The following summary is based on information from previous GHD investigations (GHD, 2018a), (GHD, 2021a) and (GHD, 2021b). Reference should be made to these reports for more detailed information including aerial photographs and site photographs.

6.1 Site identification

Construction works for Stage 2A will be undertaken within the MBD Site Compound and the Emplacement Cell Construction site located in the Outer Harbour.

The MBD Site Compound is bounded by the PKCT to the north and the shoreline and breakwater to the south. Seawall Road along the eastern shore currently allows public access.

The Emplacement Cell Construction Site is located within the Outer Harbour to the south of the MBD Site Compound. Old Port Road provides access to the Emplacement Cell Construction Site.

Site identification details and surrounding land uses are summarised in Table 6.1 and Table 6.2.

Table 6.1 Site identification details (MBD Site Compound)

Address:	Berth 101 and Bulk Product Area, Port Kembla, NSW
Site co-ordinates:	307013 m E; 6184616 m N (southern point of excavation area)
Title identification:	Part Lot 22 DP 1128396
Approximate area:	Approx. 10ha
Current owner	NSW Ports
Zoning:	SP1 – Special Activities State Environmental Planning Policy (Three Ports) 2013 (Three Ports SEPP)
Local government area:	Wollongong
County / Parish :	Camden / Wollongong
Current land use:	Industrial – Ports
Adjoining land uses:	Industrial including coal terminal

Table 6.2 Site identification details (Emplacement Cell Construction Site)

Address:	Emplacement Cell Construction Site, Port Kembla, NSW
Site co-ordinates:	307687 m E, 6183129 m N (middle point of Emplacement Cell)
Title identification:	Lot 6 DP 1236743
Approximate area:	Approx. 17 ha
Current owner	NSW Ports
Zoning:	IN3 – Heavy Industrial Three Ports SEPP
Local government area:	Wollongong
County / Parish:	Camden / Wollongong
Current land use:	Industrial
Adjoining land uses:	Industrial

6.2 Port Kembla Chart Datum and tidal fluctuations

The Australian Tides Manual Special Publication No 9 Version 5 (ICSM, 2018) summarises the various datums used around Australia to predict tidal behaviour. An understanding of the tidal terminology is required when comparing chart datums (CD), tidal effects on ASS and the potential for acid production. Table 6.3 provides a definition of the relevant terminology and gives the average limits observed at Port Kembla, and Figure 6.1 shows the tidal variation at Port Kembla from 1957 to 2020 (Fox Environmental Consulting, 2020).

Table 6.3 Explanation of terms and datums used in Australian ports

Term	Purpose	Definition[1]	Port Kembla
Highest Astronomical Tide (HAT)	Landward limit of the tidal interface.	The highest level of water which can be predicted to occur under any combination of astronomical conditions.	2.33m CD (+1.458m AHD)[2]
Lowest Astronomical Tide (LAT)	Baseline for the purposes of defining Australia's maritime boundaries.	The lowest tide level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions.	-0.0217m CD (-0.655 m AHD)
Mean High Water (MHW)	Common datum for cadastral mapping and common limit for topographic mapping.	The average of all high waters observed.	~1.80m CD (+1.458m AHD)[2]
Mean Sea Level	Average limit of tides	Arithmetic mean of hourly heights of sea over a sufficient period of time.	~0.910m CD (0.0m AHD)[3,4]
Mean Low Water (MLW)	Used as the limit of Australian States As definition of 'low water'	Arithmetic mean of all low water heights of sea over a sufficient period of time.	~0.20m CD (-0.655m AHD)[2]
Australian Height Datum (AHD)	National vertical Datum of Australia and refers to Australian Height Datum 71 for Australian Mainland	AHD71 is a surface that passes through approximate MSL measured between 1966 and 1968 at 30 tide gauges around the Australian mainland.	0.0mAHD (0.872m CD)[3,4]
CD	Local Port Kembla Sea Level Datum	In use since at least 1957.	0.0m CD (-0.872m AHD)[3,4]

Table notes:

[1] Definitions taken from Australian Tides manual v5 (ICSM, 2018)

[2] Mean High Water and Mean Low Water taken from monthly recorded sea levels for Port Kembla - 1957 to 2020 http://www.bom.gov.au/ntc/IDO70000/IDO70000_60420_SLD.shtml

[3] Chart Datum from http://www.bom.gov.au/oceanography/projects/ntc/NTC_glossary.pdf

[4] MSL at Port Kembla also given as 0.910m CD on http://www.bom.gov.au/ntc/IDO70000/IDO70000_60420_SLD.shtml

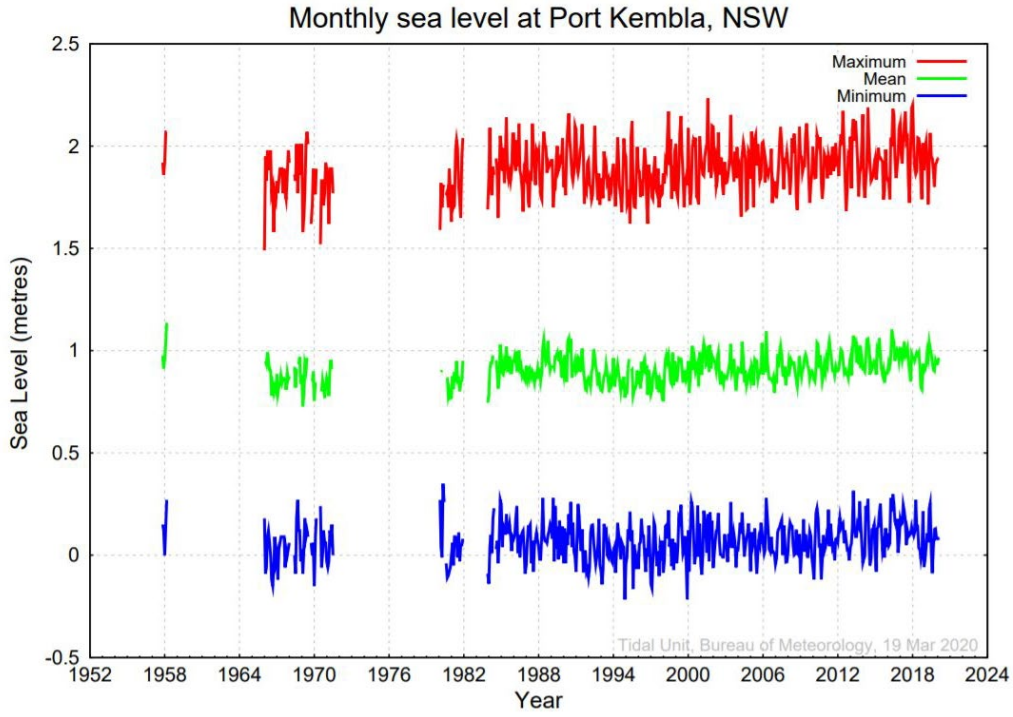

Figure 6.1 Monthly Tidal Range in LAT Port Kembla Harbour (source: Bureau of Meteorology (BoM) website)

6.3 Sensitive environments

The Inner and Outer Harbours are highly modified, industrial settings, receiving stormwater runoff and waste discharge from neighbouring industries. Prior to 1955, the Inner Harbour was previously Tom Thumbs Lagoon, a remnant saline coastal lagoon, which has been progressively reclaimed by the Port Kembla Steelworks. Originally 500 hectares in area, the lagoon is now 50 hectares (GHD, 2018a).

The Tasman Sea is located east of the MBD Site Compound.

6.4 Topography and drainage

Google Earth Pro indicates the site lies at an elevation between 3 metres and 5 metres AHD. The elevation of previous investigation locations was surveyed by a registered survey and was recorded between 4.073 metres and 6.708 metres AHD (GHD, 2018a).

Information obtained from Google Earth Pro indicates that the MBD Site Compound gently slopes down towards the south and west.

Surface water runoff is managed through the use of the existing stormwater system, including drainage which drain towards a stormwater retention pond located at the southern end of the MBD site. The water captured in the retention pond is managed in accordance with the WQMP (Appendix B) to ensure compliance with relevant project approvals and EPL No. 21529 conditions.

6.5 Soil landscape

The Wollongong-Port Hacking 1:100 000 Soil Landscape Series Sheet 9029-9129 (Soil Conservation Service of NSW, 1990) indicates the MBD Site Compound is situated within a disturbed terrain soil landscape, which is described as:

– Disturbed terrain:
  - The topography varies from level plains to undulating terrain and has been disturbed by human activity to a depth of at least 100 centimetres. The original soil has been removed, greatly disturbed, or buried. Most of these areas have been levelled to slopes of <5 per cent. Landfill includes soil, rock, building and waste material. The original vegetation has been completely cleared.

- Limitations are dependent on the nature of fill material and include subsidence resulting in a mass movement hazard, soil impermeability leading to poor drainage, and low fertility. Care must be taken when these sites are developed. A survey at a suitable scale as well as geotechnical analysis should be undertaken because of variability of materials throughout the sites. Seek advice from local councils concerning localised areas of disturbed terrain.

The ASS Risk Map (DLWC, 1997) indicates that the MBD Site Compound Berth (identified as a red polygon in Figure 6.2) is situated in an area mapped as disturbed terrain at an elevation of >4 metres AHD (shown in grey shading) in Figure 6.2. Estuarine sediments exist within the harbour and are mapped as high probability of ASS.

Low risk ASS was identified in probable reclaimed sands and alluvial / tidal sands encountered at depths between 0 and 25 metres below ground surface (mbgl). The probable reclaimed sands had pockets and lenses of high-risk ASS. Estuarine material encountered at depths between 0.4 metres and 25 mbgl, typically below the alluvium, was assessed as high-risk ASS.

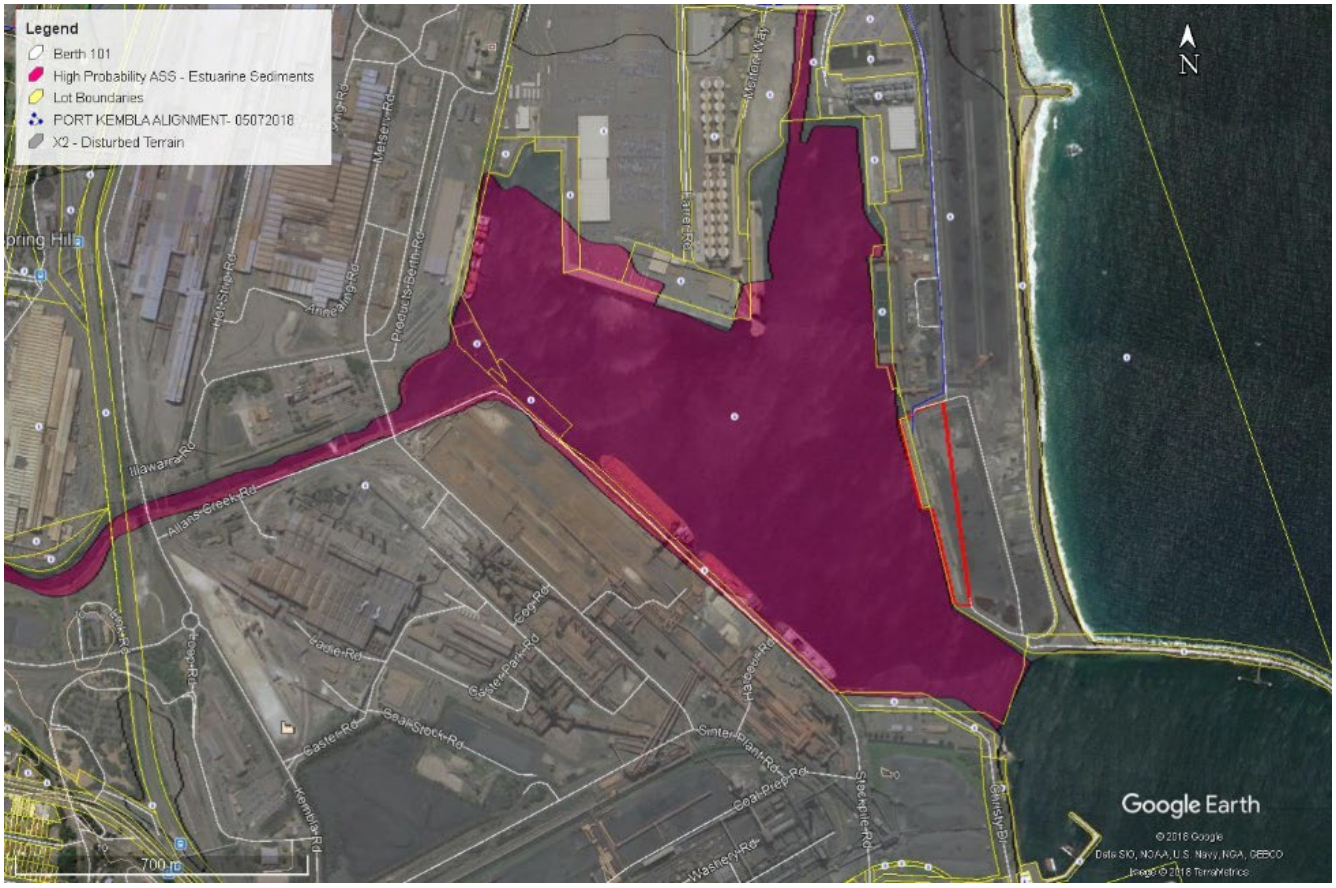

Figure 6.2 ASS risk map (DLWC, 1997)

6.6 Geology

6.6.1 Regional geology

The 1:100,000 Geological Series Sheet of Wollongong-Port Hacking (Geological Survey of NSW, 1985) indicates that the regional underlying geology is Quaternary sediments described as quartz and lithic fluvial sand, silt, and clay. The Quaternary sediments are likely to be underlain by the Budgong Sandstone which is described as red, brown, and grey lithic sandstone.

6.6.2 Site specific geology

Fill was encountered at all previous investigation locations up to 5.5 metres depth, typically comprising gravelly sand and sandy gravel (Fill) overlying sand (probable reclaimed sandUnits 1A, 1B and/or 1C) (refer to Table 6.4). Natural sands, assumed to be likely alluvium, were encountered graduating to finer alluvial deposits (silts and clays) to the maximum depth of investigation (GHD, 2018a).

The Worley Parsons (2012) geotechnical investigation extended below GHD's target investigation depths and encountered residual deposits of sandy clay and clay which were logged from 12 metres to 29.7 mbgl. Bedrock is understood to have been encountered at the geotechnical boreholes from a depth of 17.6 to 29.5 mbgl.

The Fill and Units 1A,1B and 1C materials encountered during the GHD 2018a investigation are summarised in Table 6.4. Some variability was observed in the fill unit, however, the material encountered in Unit 1 was reasonably consistent across the site.

Table 6.4 Generalised material descriptions for Fill and Unit 1

Stratigraphic Unit	Generalised description	Corresponding Stratigraphic Unit
Fill	Gravelly sand, sand, silt, black, dark brown, grey, some to trace, silts and cobbles. Foreign materials, coal wash, coal, slag, steel, wood, concrete.	Fill
Probable Reclaimed Sands	SAND, brown, pale brown, yellow, orange, fine to coarse grained, trace amounts of shell fragments, fine to coarse gravel, silt bands and layers, clayey sand layers, trace iron-stained sand, fine black sand layers (probable heavy mineral sands), rounded to sub-rounded gravel, clay lenses and layers. Foreign materials: charcoal, wood, and coal.	1A / 1B This was categorised as 'Fill Unit 2' in the GHD 2018a investigation but has since been reassigned as Unit 1
	Clayey SAND, black, dark grey, grey, fine to coarse grained sand, medium to high plasticity clay, trace silt, shell fragments, gravel.	1C
	Gravelly CLAY, black, dark grey, grey, low to medium plasticity, fine to coarse grained angular to sub-angular gravel, trace of fine to coarse grained sand.	1C
Possible Alluvium / Tidal Sands	SAND, brown, pale brown, yellow, orange, fine to coarse grained, trace amounts of shell fragments, fine to coarse gravel, silt bands and layers, clayey sand layers, trace iron-stained sand, fine black sand layers (probable heavy mineral sands), rounded to sub-rounded gravel, clay lenses and layers.	1A

6.7 Hydrogeology

6.7.1 WaterNSW database

A Lotsearch report (Lotsearch, 2020) indicates there are six registered groundwater bores east of the site, five of which are in Part Lot 22 as shown in Figure 6.3 in relation to the MBD Site Compound boundary. The bores were registered for monitoring purposes and installed in 2011 and 2012 to depths between 6 and 7.5 mbgl. No information on salinity, standing water level, or yield was recorded. The locations of these monitoring bores are generally consistent with those installed by Douglas Partners, except for GW112710 and Douglas Partners monitoring well 205 (Douglas Partners, 2014) Monitoring well 205 is located south-west of GW1127709 but does not appear to be registered.

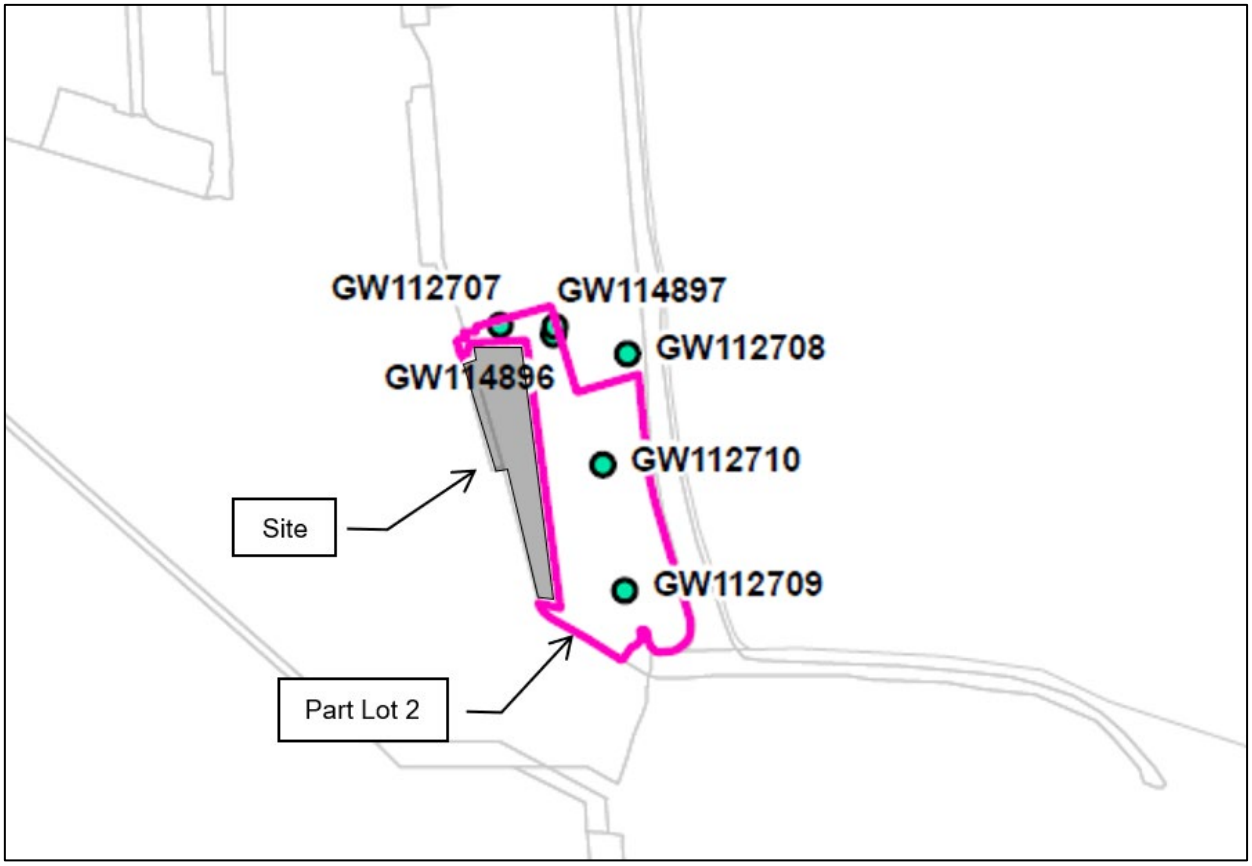

Figure 6.3 Registered groundwater bores (Lotsearch, 2020)

6.7.2 Site-specific groundwater

Groundwater inflows were encountered in all boreholes, except GBH34 and GBH36, at depths between about 3.7 metres and 5.0 mbgl. GBH36 refused at 0.15 mbgl. Six groundwater monitoring wells (MW2, MW3, MW6, 201, 204, 205) were installed on-site as part of previous investigations undertaken by Douglas Partners in 2011 and more recently by GHD in 2018. Groundwater was measured at depths between 4.01 metres and 4.90 mbgl on 18 October 2018.

No hydrocarbon odours were noted in groundwater during drilling or sampling at any of the wells. No evidence of non-aqueous phase liquid (NAPL) was observed during groundwater sampling. No odours or sheens were noted on the surface of the groundwater from monitoring wells during purging and sampling for the remaining locations.

Douglas Partners (2014) stated that groundwater flow direction was towards the south-west, that is, towards the Inner Harbour. However, it was further stated that groundwater flow direction was unlikely to be homogeneous across the site due to water bodies along three sides, various filling material and tidal influences. These factors were considered to form localised flow patterns.

6.8 Site contamination status

Investigation into the contamination status of the site have been undertaken on behalf of AIE for the purpose of the EIS and subsequent targeted site assessments and baseline condition reports. The results of the assessment are reported in GHD (2018a), (2021a) and (2021b) with further details included in the CSP (refer to Appendix C).

The following areas were identified as potentially posing a risk to human health and/or the environment for redevelopment of the site, and have been remediated and/or managed during Stage 1 Early Enabling Works, to allow for continued commercial/industrial land use:

– Identified hotspots:
  - GBH09 – BaP and Total Recoverable Hydrocarbons (TRH) above Health Investigation Level (HIL)/Health Screening Levels (HSL)D. Following additional investigations, delineated vertically and in all directions and deemed to be localised.

    - GBH26 - BaP and TRH above HIL/HSL D. Following additional investigations, the lateral extent for GBH26 is unknown in the eastern and western directions.
- Substation:
    - PCB concentrations above Default Guideline Values (DGV) in surface soils. Depth of investigations limited, not delineated vertically.
- Fill across the site:
    - One location within the MBD Site Compound area (GBH13A) was identified with elevated BaP TEQ above the HIL-D and not vertically delineated and some odorous and discoloured soils were identified with a potential for unidentified hotspots of contamination to exist. Further, on the western side of conveyor No. 7. fill was noted to contain coal, concrete timber and slag.
- Subsurface structures / services:
    - Existing subsurface oil pipeline and asbestos containing material (ACM) water pipe identified on site and ACM building materials on site (substation).
- Stockpiles
    - Two large stockpiles with a potential to contain contaminated materials.

All areas identified for additional investigation in the Remediation Works Plan of Stage 1 Early Enabling Works are being addressed during Stage 1 of the Project and will be validated prior to Stage 2A commencing.

The CSP (Appendix C) will continue to be implemented for any unexpected contamination finds. Materials displaying distinct odours, unusual colour changes or containing suspected contaminated fill materials (ACM, extensive slag, or coke, etc.) should be segregated and analysed, as required, prior to a decision made for re-use or disposal off site. Any ACM will be managed in accordance with the Contaminated Spoil Protocol and the unexpected find procedure contained therein. Each find of ACM will be managed on a case by case basis depending on the nature of the ACM encountered. A licenced asbestos removal contractor and a remediation specialist will be utilised to assist with the management and/or disposal of any ACM

6.9 Site conditions

Following the completion of the Stage 1 Early Enabling Works (proposed completion date of December 2021) the existing above and underground structures within the MBD Site Compound will have been demolished. Excavation down to level of RL +2.5 metres Port Kembla Height Datum (PKHD) has been undertaken and the following materials stockpiled for Stage 2A works:

- Approximately 15,000m³ of demolished concrete crushed to nominal 70mm minus.
- Approximately 30,000m³ of heavily bound base course crushed to nominal -150mm minus.
- Approximately 25,000³ of mixed slag, general fill, and coal nominally < 150mm in size.
- Approximately 10,000m³ of predominantly sand with some slag and coal.

7. Spoil management

This section provides a description of the steps and procedures required to protect health, safety, and the environment during Stage 2A. The procedures have been developed as part of the detailed CSP (refer to Appendix C).

7.1 Site mobilisation for Stage 2A

Management of the site mobilisation process is to be included in Principal Contractor's work plans including the following:

- **Site access and security** – Principal Contractor will be responsible for ensuring the security of all work areas and all plant and equipment maintained on-site during the works. This includes signage, control of site access (authorised personnel and vehicles only) and safety inductions and documentation.
- **Plant re-fuelling/maintenance/cleaning** – Principal Contractor will be responsible for designating locations/areas for equipment refuelling, maintenance, and cleaning activities undertaken during the site works (as required) and to ensure all vehicles leaving the site are free of any contaminated material. Some equipment, such as static generators, drill rigs and cranes, may require re-fuelling in situ and not within designated areas. The refuelling procedure will be followed with spill controls outlined in the Emergency Spill Plan.
- **Traffic control** – Principal Contractor will be responsible for ensuring adequate traffic control measures are in place to ensure site safety and take into consideration the entry and egress of vehicles from the main site entrance in accordance with the CTMP.
- **Environmental controls** – Principal Contractor will be responsible for installing and maintaining environmental controls consistent with relevant management plans.

7.2 MBD Site Compound

GHD has prepared a CSP (Appendix C) to manage known contamination issues during Stage 2A works, to support subsequent excavation of material and transfer to the Emplacement Cell Construction Site. The CSP provides a description of the remediation program (completed as part of the Stage 1 Early Enabling Works), and the procedures and standards to be followed during the course of the Project, to ensure the successful management of known contamination at the site and consequently the protection of the environment and human health (GHD, 2021).

7.3 Additional investigation/validation

Soils beneath the above and below ground infrastructure at the MBD Site Compound were being investigated following their progressive removal as a part of Stage 1 Early Enabling Works. Any additional investigation and/or validation of material as a part of Stage 2A work is to occur if there are any unexpected finds, and as such is to be managed per the unexpected finds procedure.

There may be a requirement to reprocess materials from the existing stockpiles resulting from the Stage 1 Early Enabling Works to ensure suitability for backfill and reuse during Stage 2A. This may include crushing, screening and stockpiling. All such materials have already been validated and cleared with regards to contamination and asbestos and therefore will not require any additional validation. In the event of any unexpected contamination finds, the contingency plan outline in Section 8.6 will be applied.

7.4 Excavation

Completion of excavation and backfilling from Stage 1 Early Enabling Works will be required prior to construction of structures within the MBD Site Compound. A nominal 15-metre-wide section on the northern end and a circa 60-metre 'wedge' at the southwest corner of the excavation zone was not excavated during Stage 1 and will therefore require excavation during Stage 2A to facilitate contractor access.

A small section of gas pipeline will be installed within the MBD Compound site as part of the Stage 2A works through a combination of trenching and horizontal directional drilling (HDD). Trenches would be progressively excavated to a depth of between about 1 and 1.5 metres and be progressively backfilled and restored to the existing landform. The EIS notes that groundwater inflows at Berth 101 were typically encountered at depths between about 3.7mbgl and 5mbgl, thus the pipeline installation is unlikely to intercept groundwater.

HDD would be utilised to enable the gas pipeline to pass beneath existing PKCT adjoining the site and involve the excavation of launch and receival pits at either end of the horizontal directional drill. A horizontal directional drilling rig would then be employed to drill a conduit between the launch and receive pits. The conduit would be drilled by progressively adding drilling head lengths at the drilling rig for the length of the horizontal directional drill. All spoil material would be brought back to the launch pit location where it would be managed with the remainder of the excavated materials at the MBD Compound. Excavated materials from the Early Enabling Works have been stockpiled within the MBD Site Compound as per Figure 2.3 and within the Emplacement Cell Construction Site.

The excavated materials stockpiled include:

– Approximately 15,000m³ of demolished concrete crushed to nominal 70mm minus.
– Approximately 30,000m³ of heavily bound base course crushed to nominal -150mm minus.
– Approximately 25,000m³ of mixed slag, general fill, and coal nominally < 150mm in size.
– Approximately 10,000m³ of predominantly sand with some slag and coal.

7.4.1 Validation sampling

The resultant excavation shall be validated to confirm the removal of any contaminated material (unexpected finds) to allow subsequent excavations to proceed without restriction, with sample results compared against nominated assessment criteria. The assessment criteria are outlined in detail in the CSP, which also includes the validation sampling protocol for the remediation works completed as part of the Stage 1 Early Enabling Works (refer to Appendix C).

7.4.2 Backfill or reinstatement requirements

On completion of excavation and subsequent validation approval, backfilling of excavations will be required (i.e., for site levelling or safety reasons). Significant backfilling at the MBD Site Compound is not anticipated during the Stage 2A works. If required, backfilling procedures will be as follows:

– Excavations are to be backfilled with either:
    - Materials excavated during Stage 1 Early Enabling Works which includes crushed concrete, heavily bound base course, mixed slag, general fill, and coal (refer to Table 2.2).
    - If required, Virgin Excavated Natural Material (VENM) or Excavated Natural Material (ENM) is to be sourced externally. Material considered to be VENM or ENM will be assessed by an appropriately qualified environmental consultant to confirm that the material meets the relevant regulatory requirements, and notification given to the EPA. Importation of VENM or ENM materials and use in backfilling will occur in accordance with the relevant guidelines and legislation.
    - Material sourced from a commercial / licensed premises and must be deemed uncontaminated and suitable for purpose. Such materials may include but not necessarily limited to:
        – Quarry aggregates
        – Sand materials
        – Landscaping materials as required
– Backfill material must be of suitable composition and must meet geotechnical and other material property requirements for the area of use and not present hazards to future development. VENM or ENM materials are not to be stockpiled in areas still undergoing remediation or come in contact with contaminated soils either through storage or from equipment/plant handling contaminated materials.
– Validation samples will be collected from on-site or imported material (if required) to confirm its suitability for use. Further details regarding the validation schedule are presented in the CSP (Appendix C).

– It is understood that it is also intended to use fill material and concrete suitable for reuse for the wharf construction. Materials have been crushed on site during Stage 1 Early Enabling Works and stockpiled at the MBD Site Compound. This material has been segregated and validated for use as per Section 8.2.

Reinstatement, compaction, and further redevelopment works will be undertaken in accordance with the requirements of AIE.

7.4.3 Material tracking control

A critical aspect of Stage 2A is the manner by which materials are controlled throughout all stages of the works. The following tracking control requirements for each stage shall be implemented by the Principal Contractor to ensure all materials are accounted for:

– Excavation:
  - The area to be excavated shall be clearly delineated.
  - Qualified supervision shall be used during excavation to ensure that all contaminated materials are removed but disturbance of uncontaminated soils is minimised.
  - Materials shall be segregated to the extent practical during excavation to minimise mixing of materials with different degrees or types of contamination.
  - The final extent of excavation and location of validation sampling points shall be measured and recorded by GPS or survey, as required by AIE.
– Stockpiling/backfilling:
  - Stockpiles shall be kept separate, to minimise mixing of materials (as above).
  - All stockpiling and backfilling operations will only move material from one location to another when approved by the Principal Contractor Environmental Representative. All such movements shall be clearly documented by the Principal Contractor in a material tracking register equivalent. The materials tracking register shall document (at a minimum) the following information:
    – Stockpile identification.
    – Source of material.
    – Volume of material.
    – Destination (including on-site locations for intermediate movement).
    – Date of movement.
    – Authorisation.
    – Material description.

8. Waste management

8.1 Transport of material

Materials will be transported to the stockpile areas both within the MBD Site Compound and the Emplacement Cell Construction Site as depicted in Figure 2.2 and Figure 2.3. Materials to be transported will include:

– Green waste.
– Spoil.
– Tie rods excavation.
– Revetment rock.

Movements to the stockpile areas are considered ‘on-site’. Transportation documentation will include:

– Daily load counts, noting source location and load volume estimates.
– Individual Stockpile or EIS soil unit identifier (i.e., SP01 or Unit 1#A).
– Date, total number of loads, description of material.

Information will be recorded on an on-site material register and stockpile register. Stockpiles will be maintained separately, surveyed for location and volume, and maintained in accordance with the relevant air, water, and asbestos controls. Movements from the MBD Site Compound to the Emplacement Cell Construction Site are considered ‘onsite’ movements, however these will be tracked as outlined in Section 7.4.3. These movements will comply with all aspects of the CTMP, including specific requirements in the consent.

Once a stockpile is removed, a visual inspection will be undertaken to confirm that all stockpiled materials have been removed and the previous surface is clear of stockpiled materials.

Stockpiled material will be relocated to either:

– The Emplacement Cell Construction Site (on-site); or
– On-site reuse (MBD Site Compound); or
– Off-site recycling; or
– Off-site disposal.

Transportation of material will be undertaken in accordance with relevant management plans including:

– All material movements, including on-site movements, will be recorded on a material tracking plan documenting material source, type, description, volume, destination, reference to testing results, approval for movement and date(s) of movement. A register setting out this information shall be established as part of relevant management plans.
– Wastes will only be removed off-site after the material has been classified (in accordance with the EPA *Waste Classification Guidelines*, 2014) and written approval has been received for the disposal of the contaminated soil at the nominated licensed waste management facility, or evidence of appropriate recycling (in accordance with regulatory requirements and relevant codes of practice) has been provided.
– All asbestos debris and contaminated Personal Protective Equipment (PPE) should be doubled bagged prior to transportation to an appropriately licensed landfill that can accept asbestos waste. Management of asbestos waste is to be undertaken in accordance with the POEO (Waste) Regulation.
– Waste tracking will be undertaken in accordance with NSW EPA requirements (specifically the POEO (Waste) Regulation) and include evidence of instructions, load registers/records (source, classification, volume, date and time, vehicle details etc), weigh bridge dockets. Tracking and recording will be used to ensure no more than 360,000 cubic metres is transported, per Schedule 3, Condition 7 of the EIS.
– Any vehicles used to transport contaminated materials from the site will meet NSW EPA licensing requirements for the waste transported.
– All trucks carrying contaminated materials off-site will have the load covered, the exterior of the vehicle, including wheels, thoroughly cleaned down by the Principal Contractor after it has received its load and prior

to the vehicle leaving the site. Only vehicles which have clean exterior bodywork, and which will not pollute the off-site transportation corridors will be permitted to leave the site.

8.2 Segregation of materials for re-use on-site

The discussion presented below is based on the proposed re-use of uncontaminated materials generated during excavation of materials across the nominated area as bunding and/or fill within the Emplacement Cell. Early identification and classification of the different material streams on-site will lower the costs associated with on-site treatment, transportation and/or landfill disposal during excavation works.

The selected segregation methodology will be described in detail by the Principal Contractor and will depend on the frequency of occurrence and the nature of any contaminated materials (odorous, discoloured or ACM and other foreign materials) in excavated Fill and Unit 1 soils materials, as well as the physical characteristics of the materials themselves. The methodology may need to be varied depending on the effectiveness during the works, however will consist of the following elements:

– Acid Sulphate Soils (ASS) during piling works

1. If ASS are encountered during the piling works, the soils will be placed to one side and as soon as practical returned to the previous pile back fill.
2. If ASS cannot not be utilised for backfill it will be taken to the designated ASS stockpile area for onsite treatment or removal offsite to an approved waste facility that can accept acid sulphate soils.
3. The ASS stockpile will be signposted and segregated with exclusion fencing.
4. ASS will be treated with lime or similar base until acidification ceases.
5. ASS encountered during other non-piling earthworks will be taken to the designated ASS stockpile area for onsite treatment or removal offsite to an approved waste facility licenced to accept ASS.

– Other contaminated spoil encountered during piling and earth works

   a. Other contaminates encountered during piling works/earth works. The works will cease, and the Principal Contractor Environmental Representative contacted. The Principal Contractor Environmental Representative, in consultation with AIE, will devise the appropriate disposal/treatment method.
   b. If appropriate and practicable, hydrocarbon contaminated soils may be treated using bacteria to reduce the hydrocarbon level to acceptable levels (i.e. general solid waste less than 650 ppm). and tested prior to onsite use or offsite disposal.
   c. Other contaminants will be treated on a case-by-case basis.

One of the major components to allow re-use of excavated uncontaminated materials, will be the separation of the materials from contaminated materials and validation (visual or sampling and analysis) prior to re-use. Procedures and responsibilities will be as outlined in Table 8.1.

Table 8.1 Segregation, stockpiling and re-use responsibilities

Activity	Responsibility
Identify the area for excavation and the uncontaminated areas of the site containing materials suitable for re-use, based on previous analytical results and site observations.	– Principal Contractor Construction Foreman – AIE Environmental Representative
Removal of hard stand as appropriate	– Principal Contractor Construction Foreman
Excavation with segregation of different material streams if appropriate, based on previous results, visual assessment, mechanical screening or sampling and analysis i.e., materials suitable for re-use, materials for recycling, materials for disposal and materials for further management.	– Principal Contractor Construction Foreman – AIE Environmental Representative
Validation of segregated materials by Environmental Consultant in accordance with the validation protocol detailed in the CSP (Appendix C) for re-use on site or within the Emplacement Cell bund.	– Principal Contractor Construction Foreman – AIE Environmental Representative
Characterisation of unsuitable segregated materials (sampling and analysis) by Environmental Consultant, equipment by Contractor) if disposal off site is required (Waste Classification sampling as per CSP (Appendix C)).	– Principal Contractor Construction Foreman – AIE Environmental Representative

Activity	Responsibility
Transport of suitable materials to an appropriate portion of the site for stockpiling for future use, as directed by AIE/Environmental Consultant.	– Principal Contractor Construction Foreman
Transport of excess materials to the Emplacement Cell Construction site for future re-use or placement within the Emplacement Cell.	– Principal Contractor Construction Foreman
If required, transport contaminated material by licensed waste transporter, to an appropriately licensed site for disposal.	– Principal Contractor Construction Foreman – AIE Environmental Representative
Reinstatement as required of excavated area.	– Principal Contractor Construction Foreman

A decision tree outlining the process for segregation and characterisation of the excavated materials for either re-use on-site, as the bund or cap in the Emplacement Cell Construction Site, for placement in the Emplacement Cell or for disposal off- site is presented in Figure 8.1.

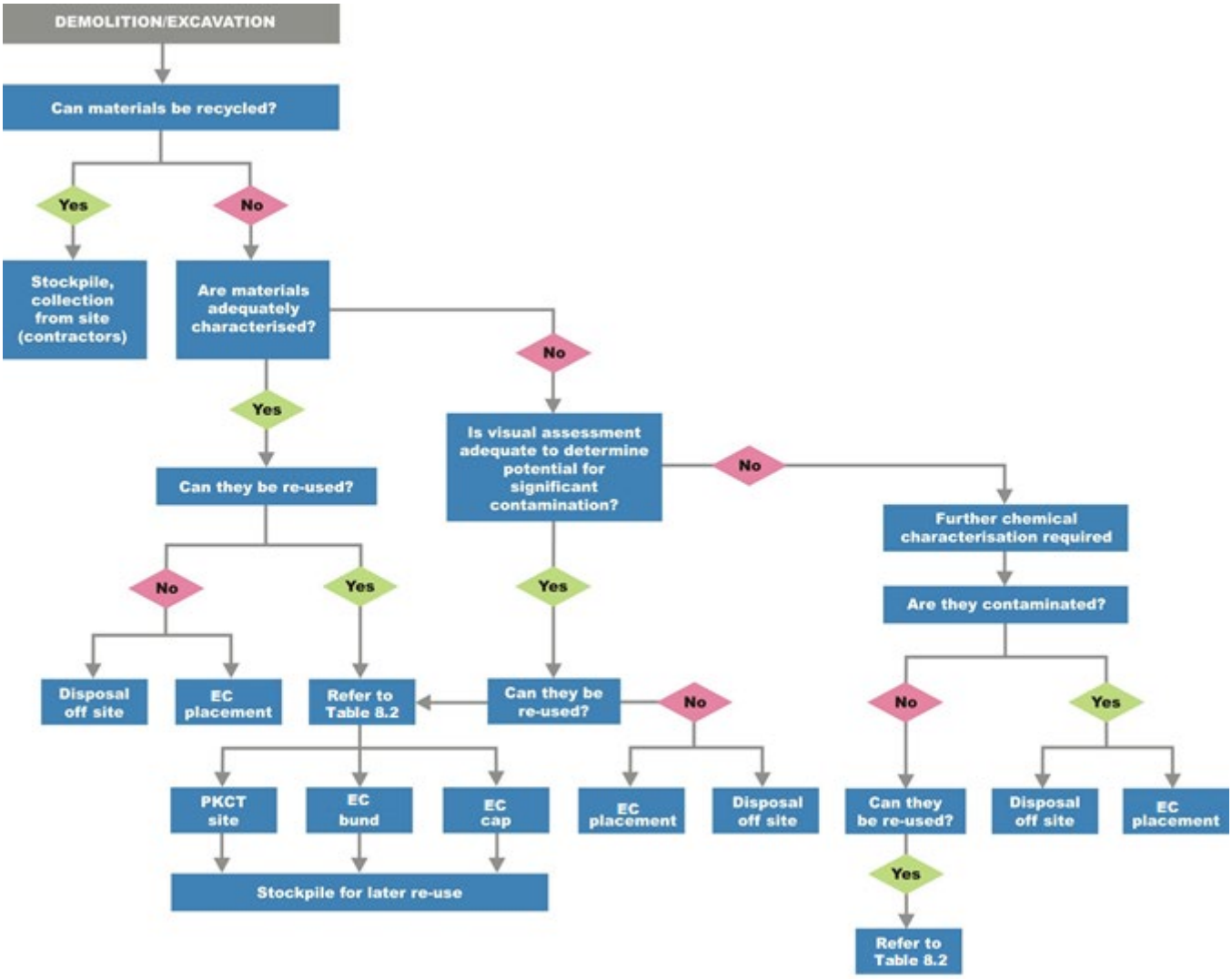

Figure 8.1 Decision tree for material segregation and characterisation

Table 8.2 details the criteria that will apply to the decision-making process with regard to the options for re-use on site.

Table 8.2 Criteria for re-use on site

Re-use on site options[1]	Decision criteria
MBD Site Compound	Less than HIL D or can be managed by capping.

Re-use on site options[1]	Decision criteria
Emplacement Cell bund wall construction	Less than sediment DGV's. Where relevant, consideration of contaminant leachability will be applied, as per Section 7.5 of the CSP (Appendix C).
Emplacement Cell cap construction	Less than HIL D.
Emplacement Cell placement materials	Unsuitable for all of the above.
Disposal off site	As directed by Principal Contractor Project Manager or AIE Project Director

1. All materials for re-use must also be deemed suitable for the geotechnical requirements
2. Consideration regarding use of materials which may be ASS/PASS must also be considered

8.3 Disposal off-site

Any material that is required to be transported for off-site disposal by truck will be done so in accordance with the conditions of the Infrastructure Approval (SSI 9471) and the CTMP. The following will occur as the material is loaded from site:

– Trucks will be covered prior to exiting the MBD Site Compound and will remain covered until authorised to unload at the destination.
– Trucks carrying excavated material are to use a facility such as a wheel wash, if required, to ensure they are decontaminated at the before exiting site.
– Trucks will be fitted with seals to ensure that the movement of potentially saturated materials is undertaken appropriately. The integrity of the seals will be inspected prior to commencement of each day's haulage works.
– Trucks carrying construction general waste, including those listed below, will be by specialist contactors carrying appropriate licenses, spill kits, bunding and covering for each waste stream:
    - Paper, glass, plastics, silt fences, survey pegs, aluminium, cans, hessian bags etc.
    - Tyres, batteries, waste fuels, oils, radiator fluids, sewage, hydraulic oils and drummed chemicals.
– Trucks will not wait in the streets surrounding the site.

All off-site movements will be tracked on the waste tracking summary. Additionally, Waste Locate, a NSW EPA system, will be used track all loads of asbestos waste, restricted or hazardous waste.

Waste Locate is not required for General Solid Waste (GSW) and cell placement. Waste Locate will be used for asbestos, Restricted Solid Waste (RSW) and hazardous waste only.

The following procedure will be undertaken for excavated materials that are required to be disposed of off-site:

– Soil to be disposed off-site must be classified for waste disposal purposes and disposed in accordance with the requirements of the POEO (Waste) Regulation made under the POEO Act and NSW EPA *Waste Classification Guidelines* (NSW EPA, 2014a). The Environmental Consultant shall be responsible to oversee the classification of the waste. Contractor will ensure its transport and disposal to an appropriately licensed landfill.
– Documentation of waste classification, transport and disposal will be provided in accordance with the POEO (Waste) Regulation and NSW EPA *Waste Classification Guidelines* (NSW EPA, 2014a) and/or *Waste Classification Guidelines Part 4: Acid Sulfate soils* (NSW EPA, 2014b) and provided for inclusion in the validation report. Documents required will include:
    - Materials tracking register.
    - Independent waste classification report in accordance with the requirements of NSW EPA.
    - NSW EPA online waste tracking documentation (Waste Tracker).
    - Receiving waste facility EPL (to show it can lawfully receive the waste), limit conditions and/or consent from appropriate regulatory authority.
    - Consignment authorisation/disposal receipts/tip dockets.
    - Reconciliation documents matching materials register and disposal receipts.

8.4 Stockpiling

All stockpiles will be maintained in an orderly and safe condition for a maximum period of up to 18 months. Batters will be formed with sloped angles that are appropriate to prevent collapse or sliding of the stockpiled material. The integrity of neighbouring stockpiles of differing materials will be maintained and all measures necessary to prevent mixing of material types will be undertaken.

Stockpile controls are outlined in the Stage 2A AQMP and ESCP (Appendix D), and include:

- Polymer application:
  - When applied to a completed stockpile, polymer will reduce dust generation and sediment run off for up to six months. Polymer will be reapplied if the stockpile life is longer than six months. The polymer used will be suitable for use adjacent to marine environments.
  - Additional polymer may be applied to stockpiles prior to completion in response to elevated dust measurements where dust plumes are observed to be coming from stockpiles, or if visual inspections reveal deterioration of surface sealing.
- Bucket sealing of stockpiles, as they are formed.
- Minimising active stockpiling surface area. Stockpiling will be minimised, where possible. Land based excavations will be directly loaded to trucks and transported to the Emplacement Cell Site or for offsite disposal, without stockpiling, to reduce handling and potential dust generation. Stockpiling will be required when storage of material is required prior to the Emplacement Cell being ready to receive material.
- Control of runoff from stockpiles, to prevent sedimentation of marine environments.
- Management of surface water for onsite reuse for dust suppression.
- Maximum height will vary depending on space availability, ensuring safety is not compromised and dust generation during windy condition is minimised (e.g., polymer application, bucket sealing, stockpiled to be covered)
- Different types of material will be separated to minimise the mixing of materials (refer to Section 7.4.3). .
- Potentially contaminated material will be delineated, not mixed with clean material and be clearly signposted
- Stockpiles are to have erosion and sediment controls where required to ensure runoff is contained within site. The application of the Stage 2A ESCP and spoil tracking process (refer to Section 7.4.3) will ensure stockpiled materials are controlled. Additionally, stockpile surfaces will be stabilised to further reduce the risk of sediment runoff.

The above controls are considered appropriate for materials identified to date; but any stockpiles of unexpected contamination with a higher potential for leaching or contaminated dust (e.g., by asbestos fibres) would be securely covered with an appropriate material (e.g., tarp or geofabric specific to the contaminant risk) prior to disposal.

Stockpiles will have a maximum volume of 10,000 m^3 at the Emplacement Cell Construction Site and up to 50,000 m^3 at the MBD Site Compound for backfill purposes. However, smaller stockpiles will be used to segregate unexpected finds. Any stockpiles of contaminated spoil requiring offsite disposal will only be located at the MBD Site Compound. Stockpiles will have proposed maximum height of 10 metres for temporary materials stockpile, and 2 metres for topsoil and mulch, if required. It is not anticipated that topsoil and mulch will be generated during Stage 2A works. This is consistent with the findings of the PKGT EIS (GHD, 2018).

The stockpile location fate of waste will be monitored by the Principal Contractor Environmental Representative and the Construction Foreman.

8.5 Disposal locations

When results confirming classification of the waste have been received, these will be provided to the appropriately licensed waste management facility in order to obtain disposal approval. The destination waste management facility will be licensed to receive the relevant waste classification. Some identified potential disposal locations in proximity to the site are listed below in Table 8.3.

Table 8.3 Potential licensed waste disposal locations

Material Classification	Name and Location	EPL No.
Recyclable Concrete	Benedict's Recycling Wollongong	20870
General Solid Waste,Asbestos Waste	Whyte's Gully Waste Disposal Facility	5862
Liquid Waste	Cleanaway Unanderra	10771
MBD and NGP Spoil	PKGT Emplacement Cell	(TBC)
Restricted Waste	Suez Kemps Creek	4068

8.6 Contingency Plan

Site remediation and excavation of identified / known contamination hot spots has been undertaken as part of the Stage 1 Early Enabling Works. However, as with all excavations within areas of unknown fill and foreign materials, there is always a degree of inherent uncertainty with regards subsurface soils and contamination.

Table 8.4 outlines some of the unexpected situations that may arise with procedures noted for the Principal Contractor to follow if unexpected situations are encountered.

Table 8.4 Contingency procedures

Issue	Response
Encountering unexpected potential contamination (including ACM)	The presence of previously unidentified types of contaminants may be identified during the works. If previously unidentified types of contaminants are detected, then the validation criteria may have to be revised to incorporate those contaminants. Any potential contaminated material in addition to the type already identified will be treated in a method considered suitable for the type of contaminant. Additional testing would be undertaken to determine requirements in this respect. Any identified ACM fragments will be managed in accordance with the AIE Unexpected Finds Protocol, including the removal of any visible fragments by a licenced removalist in accordance with relevant SafeWork NSW codes of practice. Following removal, a licenced asbestos assessor should inspect the site and provide a clearance certificate confirming removal of asbestos.
Wastes, previously unidentified, buried in the work area may be encountered	In the event that buried wastes are encountered during the works, the extent of the impact from the buried wastes will be assessed. Following assessment, if required, the waste will be removed, stored, classified and disposed of in accordance with NSW EPA *Waste Classification Guidelines* (NSW EPA, 2014a) and/or *Waste Classification Guidelines Part 4: Acid Sulfate soils* (NSW EPA, 2014b).
Dewatering of excavations may be required.	If dewatering of excavations is required, the water will be pumped into suitable storage and either used for dust suppression or compaction (following appropriate testing), tested prior to discharge or disposed of at a licenced facility approved to accept potentially contaminated groundwater. In the event that excavations are unstable, excavation works will be reassessed in consultation with the AIE Project Manager.
Unacceptable Environmental Impacts as a result of Stage 2A works	The CSP (Appendix C) has considered the potential environmental impacts of side effects of the works such as noise, odour, dust and surface runoff. These will be further considered in relevant management plans prepared by the Principal Contractor. However, in the event that unacceptable levels of such side effects are detected at the site boundaries during the works, the Principal Contractor shall cease work and the Principal Contractor's Site Environmental Representative will assess the situation and direct corrective action in accordance with the following: – Existing management plans. – Current NSW EPA regulations and requirements. – In consultation with the AIE HSE Manager.

9. Communication and complaints

Effective communication between the Principal Contractor and construction personnel, AIE Project team, sub-contractors and external stakeholders will be undertaken throughout the Project to ensure effective implementation of this SMP.

Project communication can be categorised into internal and external communications, as well as communications specifically dealing with complaints. The specific communication methods for each category are discussed below.

9.1 Internal communications

Communication on environmental issues related to spoil management within the Project team will be maintained, as a minimum, through the following forums (organiser as noted):

– Weekly project construction team meetings (AIE Construction Manager or delegate).
– Weekly Environmental management team meetings with relevant contractors (AIE HSE Manager or Delegate).
– Toolbox talks and daily pre-start briefings (Principal Contractor Project Manager or delegate).
– Minutes of formal meetings will be taken and distributed to record issues raised and actions required, with action status established at subsequent meetings.
– Monthly review of the internal AIE Environmental Compliance Tracking register (AIE HSE Manager or delegate).

All internal meetings include appropriate documentation in the form of agenda and formal distribution via the Project's document system.

In addition to the above, the AIE Environment Team will also undertake informal planning sessions and resource review meetings to plan and forecast for upcoming key construction dates, critical issues and other relevant matters associated with environmental planning and approvals.

9.2 External communications

AIE is committed to keeping the local community and relevant agencies informed about the development of the Project. The principal external communication objectives are, therefore, to:

– Continue to maintain open communication with relevant stakeholders.
– Minimise environmental impacts.
– Be proactive in addressing any concerns that the community / external stakeholder may express.

AIE will build upon the stakeholder and community engagement phase undertaken during project development including multiple group or one on one briefings. A project website (www.ausindenergy.com) has been developed and provides comprehensive, clear, and accessible information that is updated on a regular basis.

As well as the local Port Kembla and broader community of the Wollongong region, extensive engagement was also undertaken with a range of other interested key stakeholders, such as local commerce organisations, the Port Authority of NSW and local and state government.

Consultation with key stakeholders and the wider community on the Project will continue throughout Stage 2A and subsequent construction phases. These measures will ensure the stakeholders, including the wider community, remain informed of the project's progress.

Key methods of engagement are provided in the Stage 2A EMS.

9.3 Complaints management

All complaints where a third party has identified a construction activity as being unsatisfactory or unacceptable will be dealt with promptly and efficiently in accordance with the complaint and dispute response outlined in the Project's Stage 2A EMS.

AIE will operate a free 24-hour Community Information Line (1800 789 177) where members of the community can leave details about an inquiry, they may have regarding construction activities related to spoil and waste management. This message will be passed on to site personnel and/or the Stakeholder Engagement Team, as appropriate. The phone number is listed on the AIE website (https://ausindenergy.com/contact-us/) and will be provided on all community newsletters. The AIE HSE Manager has notified the Port Kembla Harbour Environment Group of the Community Information Line.

Initial responses to complaints will be provided within 24 hours of the complaint being received. As part of the response, a review of the activity will be undertaken. If required and possible, immediate changes will be made to reduce any impact on the community. In some cases, the issues cannot be resolved immediately, and ongoing actions might be required to resolve the issue.

All complaints related to spoil and waste management will be recorded in a Complaints and Disputes Register. The following information will be recorded for each complaint:

1. The date and time of the complaint.
2. The method by which the complaint was made.
3. Any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect.
4. The nature of the complaint.
5. The action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant.
6. If no action was taken by the licensee, the reasons why no action was taken.

The Complaints and Disputes Register will be maintained by the Project's HSE Manager or delegate, and will detail what the issue was, initial response provided, how and when the issue was resolved, and by whom. Records will be kept for at least four years after the complaint was made and will be produced on request by any authorised officer of the EPA.

Where resolving a complaint with a third party is protracted or develops into a dispute, the AIE HSE Manager shall escalate proactively to Senior Project Leadership (e.g., AIE Project Manager and/or Project Director) to assist with resolution. AIE will work proactively with the complainant to resolve the dispute including having face to face meetings, site familiarisation sessions and agreeing on actions to resolve the dispute. All communications and agreed actions shall be documented.

For the management and reporting of corrective actions (which may be required in response to a complaint), refer to the Project's Stage 2A EMS.

10. Inspections, monitoring and audits

Monitoring and auditing will be undertaken to determine the impact on the environment and identify opportunities for improvement. Monitoring to be implemented for specific actions or environmental issues (e.g., water quality monitoring, air quality monitoring) will be detailed in their relevant sub-plan and will specifically address the monitoring requirements for those issues.

10.1 Environmental inspections

10.1.1 AIE and Principal Contractor joint environmental weekly inspection

As a minimum, the AIE HSE Manager (or nominated delegate) will undertake weekly inspection of the work sites with the relevant Principal Contractor's environmental personnel (Environmental Representative or similar) to evaluate the effectiveness of environmental controls (inclusive of erosion and sediment control measures) and general compliance with the implementation of the SMP for site-based activities.

If any maintenance and/or deficiencies in environmental controls or in the standard of environmental performance are observed, they will be recorded on the checklist form. Records will also include details of any maintenance required, the nature of the deficiency, any actions required and an implementation priority.

Actions raised during inspections will be documented on the *Weekly Environmental Site Checklist* and will be issued formally through the Project's document management system to the relevant Contractor for action. If they represent an actual or potential significant environmental risk, these issues shall be reviewed at the Project Planning meetings and will have non-conformances raised if not closed out in the nominated timeframe (Nonconformance Report).

10.1.2 Contractor environmental inspections

In addition to the joint weekly environmental site inspection with AIE, the Principal Contractor will be required to undertake daily site environmental inspections, targeting key environmental risks commensurate with the activity being undertaken. The daily environmental site inspection will be documented on a checklist, or similar, to be prepared and completed by the Principal Contractor.

Copies of the daily environmental site inspection records are to be provide to AIE on request.

The HSE Manager is responsible for the initial reporting of significant non-compliances with the SMP or relevant legislation to the AIE Project Director and government authorities (refer to Section 10.4).

10.2 Monitoring

Monitoring will be undertaken to validate the impacts predicted for the work, to measure the effectiveness of management plans, environmental controls, and implementation of this SMP, and to address approval requirements.

Monitoring requirements applicable to the SMP include:

– Water quality (refer to Appendix B).
– Odour and air emissions (refer to AQMP).
– Contamination management (refer to Appendix C).

10.3 Auditing

AIE will conduct internal audits at frequencies as determined in the risk-based auditing schedule. The purpose of auditing is to verify compliance with:

– The EMS and this SMP.
– Compliance with the requirements of relevant components outlined within the EMS and SMP, including but not limited to, site inspection compliance, document control / management, non-compliance, and incident management etc.
– Monitoring and reporting requirements as set out under EPL No. 21529.

Additional details regarding the auditing process are detailed in the Project's Stage 2A EMS.

10.4 Environmental reporting

10.4.1 DPIE reporting

Regular reports on compliance and other matters will be provided during the construction phase of the Project. This will include reporting to the DPIE in accordance with Schedule 4, Conditions 7 and 8 of the Infrastructure Approval (SSI 9471), with specific reference to the *Compliance Reporting Post Approval Requirements* (2020).

In addition, DPIE will be notified in writing of the date of commencement of each of the relevant phases of the Project in accordance with Schedule 2, Condition 8 of the Infrastructure Approval (SSI 9471).

Reporting applicable to this SMP will consist of:

– Water and air quality monitoring results.
– Requirements of EPL No. 21529.
– Construction works progress and appraisal of water, air and spoil management quality controls.
– Environmental Incident Report(s), as required.
– Annual returns, as required by EPL No. 21529.

10.4.2 Other reporting requirements

A monthly environmental monitoring report will be developed for each calendar month which will include details of the monitoring results and frequencies and inclusion of any exceedance of EPL (No. 21529) monitoring limits / criteria. A copy of the monthly environmental monitoring report will be made available on the AIE Project website. It should be noted that no specific monitoring results related to spoil management are required to be included in this report,

Further reporting requirements are provided in Section 10.6 and Section 11.1.

10.5 Compliance tracking register

A Compliance Tracking Register has been developed as a monitoring tool to assist with the compliance reporting requirement as set out under Condition 7, Schedule 4 of the Infrastructure Approval (SSI 9471) as follows:

Compliance Reporting

The proponent must provide regular compliance reports to the Department on the development in accordance with the relevant requirements of the Department's guideline Compliance Reporting Post Approval Requirements (2020), or its most recent edition.

The compliance tracking register includes a breakdown of the requirements from the following key approval and project documents:

– Infrastructure Approval (SSI 9471).
– EPL No. 21529.
– Requirements of this SMP.

The Compliance Tracking Register includes tabulation of reference conditions, the requirements, responsibility, status (i.e., ongoing, close-out, not triggered, etc.) and supporting evidence where required.

A routine review of the Compliance Tracking Register is undertaken by the AIE HSE Manager (or delegate) with input sought from the relevant contractors as required. The Compliance Tracking is a live document which is kept up to date for each stage of the construction works.

10.6 Non-conformance, corrective, and preventative actions

Non-conformances or potential non-conformances are situations or events that do not comply with the safeguards and procedures stipulated in the EMS or this SMP:

– As part of site inspections, supervision or monitoring of construction activities.
– During internal audits.
– Following justified / supported verbal or written third party complaints.

All non-conformances related to water and air quality will be managed and reported using the non-conformance function of the Project's document management system. Each non-conformance event and follow-up action will be documented and traceable, including identification of key dates and responsible personnel.

Additional details regarding corrective and preventative actions are outlined in the Project's Stage 2A EMS.

The Department must be notified in writing to compliance@planning.nsw.gov.au within 7 days after the identification of any non-compliance issue. The notification must identify the development, including the application number, set out the condition of approval that the development is non-compliant with, the way in which it does not comply, the reasons for the non-compliance (if known) and what actions have been taken, or will be taken, to address the non - compliance.

11. Incident management and emergency response

11.1 Incident management

11.1.1 Overview

Incidents are defined as an occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance. The consequences of such incidents may result in material environmental harm, damage, or asset loss. 'Near misses' are extraordinary events that could have reasonably resulted in an incident.

All incidents related to spoil and waste, including those of the Principal Contractor, its subcontractors, and visitors that occur during the undertaking of the construction works for the Project will be managed to satisfy the requirements of AIE's Incident Reporting and Investigation System Requirements. Whilst it is noted that key Contractors will be implementing their own environmental management system procedures and processes, AIE will be responsible for ensuring that these systems and processes satisfy the requirements of the AIE EMS, including the incident management components. The Contractor will be responsible for providing all necessary documentation with regards to the incident investigation and close-out actions where required. The timing of the provision of this documentation is to align with the AIE requirements.

The AIE HSE Manager must be notified immediately of any environmental incident or near miss related to spoil and waste. These may include, but are not limited to the following:

– Exceedance of water and air monitoring criteria as required under the Project EPL (EPL No. 21529).
– Spill of any dangerous goods or hazardous substance to ground or water.
– Substantiated complaints received from members of the community or regulatory authorities.
– Regulatory breaches such as fines, prosecutions, improvement notices, breaches of licence conditions.
– All incidents of third-party property damage or loss.
– Incidents involving impact or potential damage to items or places of cultural heritage significance.
– Land-based off-site sediment loss to the environment, including sediment tracking onto the roadway.

The AIE HSE Manager will be responsible for regulatory notification of all notifiable environmental incidents (refer to Section 11.1.2 for notifiable incidents). All environmental incidents will be reported immediately to DPIE in writing via the Planning Portal after AIE becomes aware of the incident, as per Schedule 4 Condition 5 of the Infrastructure Approval (SSI 9471). The notification must identify the development, including the application number, and set out the location and nature of the incident.

In the event of a notifiable non-compliance incident arising, the Principal Contractor will notify the AIE HSE Manager immediately to allow the AIE HSE Manager to notify DPIE in writing (via the Planning Portal) within 7 days of AIE becoming aware of the non-compliance, as per Schedule 4 Condition 6 of the Infrastructure Approval (SSI 9471).The notification must identify the development, including the application number, set out the condition of approval that the development is non-compliant with, the way in which it does not comply, the reasons for the non- compliance (if known) and what actions have been taken, or will be taken, to address the non- compliance.

11.1.2 Notifiable incident under the POEO Act

In the event of a Notifiable Incident as defined under the POEO Act, AIE is responsible for immediately notifying the EPA, and any other relevant authority, of pollution incidents on or around the site via the EPA Environment Line (telephone 131 555) in accordance with Part 5.7 of the POEO Act. The circumstances where this will take place include:

– *If the actual or potential harm to the health or safety of human beings or ecosystems is not trivial.*

– *If actual or potential loss or property damage (including clean-up costs) associated with an environmental incident exceeds $10,000.*

Follow-up written notification to the EPA and any other relevant authorities will be required in accordance with the POEO Act and requirements of the EPA. This includes the provision of written details of the notification to the EPA within 7 days of the date on which the incident occurred.

All notifiable incidents will also be managed, documented, and reported in accordance with the AIE *Incident Reporting and Investigation System Requirement*.

In addition, an authorised officer of the EPA has the right to request a written report (in accordance with Condition R3 of the EPL No. 21529) if they suspect on reasonable grounds that an event has occurred at the licensed premises which has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies). The written report is to address all the requirements under Condition R3 of the EPL.

11.1.3 Notifiable incident under the Infrastructure Approval (SSI-9471)

In accordance with Condition 5 of Schedule 4, DPIE must be notified in writing to compliance@planning.nsw.gov.au immediately after AIE becomes aware of an incident on site.

Additional details regarding notifiable incidents and procedures are outlined in the Project's Stage 2A EMS.

11.2 Emergency response

Actual or potential emergency situations will vary in type and severity. The required level of response and notification will be at the discretion of the AIE Construction Manager in consultation with the AIE HSE Manager.

Any emergency situation may require only isolated containment and control or may require the complete evacuation of the site and notification of relevant emergency services. Consideration should be made of the response requirements for different situations. If at any time there is uncertainty on how to proceed, response should be for the worst possible scenario. Ultimately, the AIE Construction Manager or representative has authority and responsibility to instigate an evacuation if he/she feels it is warranted.

In the event of an emergency, the following plans shall be consulted and implemented, as relevant:

– The Principal Contractor's site-specific Emergency Response Plan.
– AIE Port Kembla Gas Terminal Emergency Spill Plan.
– Pollution Incident Response Management Plan (PIRMP).
– AIE Emergency Management Procedures.

12. Document management and review

12.1 Record management

Records and registers specified in this SMP for Stage 2A shall be maintained. Records to be kept may include but will not be limited to the following:

- Environmental Inspection Checklist.
- Environment Reporting.
- Environmental Monitoring Reports / Records.
- Fauna and Weed Register.
- Internal Audit Reports.
- Incident Reports and Register.
- Toolbox Talk Records.
- Induction Presentation and Register.
- Environmental Activities Safe Work Method Statement (SWMS).
- Corrective Actions Register.
- Waste and Resource Register.
- Material Tracking Register.
- Training Register / Matrix.
- Complaints Register.

12.2 Review and revision of SMP

This SMP will be reviewed and updated, as required under Condition 3 of Schedule 4 of Infrastructure Approval (SSI 9471) to ensure the objectives of the applicable approval conditions contained within are being met throughout Stage 2A.

In addition, as required under Condition 4 of Schedule 4 of Infrastructure Approval (SSI 9471), the SMP must be reviewed, and if necessary, revised within 3 months (unless otherwise agreed with DPIE) for any of the following:

- Following the submission of an incident report as per Condition 5, Schedule 4 4 of Infrastructure Approval (SSI 9471) (refer to Section 11).
- Following approval of any modification to the conditions of approval outlined in Infrastructure Approval (SSI 9471).
- At the direction of the Planning Secretary as per Condition 4, Schedule 2 4 of Infrastructure Approval (SSI 9471).

Where a review leads to revisions, then within 4 weeks of the review the revised document must be submitted to the Planning Secretary for approval, unless otherwise agreed with the Planning Secretary

12.3 Access to information

AIE will make the following information publicly available on the PKGT website, as per Schedule 4, Condition 12 of the Infrastructure Approval (SSI 9471) and the requirements as set-out under the Project EPL No. 21529:

- The PKGT EIS.
- Current statutory approvals for the Project.
- Approved strategies, plans or programs required under the conditions of Infrastructure Approval (SSI 9471).
- A comprehensive summary of the monitoring results of the development, reported in accordance with the specification of any conditions, or any approved plans and programs relating to Infrastructure Approval (SSI 9471).

– A summary of complaints (updated monthly).
– Any independent environmental audit, and responses to the recommendations in any audit.
– The approved premises map (EPL No. 21259, Condition A2.4).
– PIRMP (EPL No. 21529, Condition E2).
– Any other matter required by the Planning Secretary.

This information will be kept up to date by AIE when required.

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Appendices

Appendix A

Acid Sulfate Soils Management Plan

Appendix B

Water Quality Monitoring Plan

Appendix C

Contaminated Spoil Protocol

Appendix D

Erosion and Sediment Control Plan