Port Kembla Gas Terminal

Construction Water Quality Monitoring Plan
Early Enabling Works

Australian Industrial Energy

27 May 2021

→ **The Power of Commitment**

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Acronyms

Acronym / Definition	Description
ACM	asbestos containing material
AIE	Australian Industrial Energy
AMB	Automated Monitoring Buoys
ANZECC 2000	Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000
ANZG 2018	Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2018
AS	Australian Standards
ASS	Acid Sulfate Soils
ASSMAC	Acid Sulfate Soils Management Advisory Committee
ASSMP	Acid Sulfate Soil Management Plan
AMB	Automated Monitoring Buoys
COC	Contaminants of concern
CSSI	Critical State Significant Infrastructure
CWQMP	Construction Water Quality Monitoring Plan
DGV	Default Guideline Values
Demolition Plan	Demolition Plan for Berth 101
DEMP	Dredge and Excavation Management Plan
DICL	ductile iron cement lined
DO	Dissolved Oxygen
DPIE	Department of Planning, Industry and Environment
EC	Electrical Conductivity
EIS	Environmental Impact Statement
EMS	Environmental Management Strategy
EPA	NSW Environment Protection Authority
EPL	Environmental Protection Licence
EP&A Act	*Environmental Planning and Assessment Act 1979*
ESCP	Erosion and Sediment Control Plan
FFMP	Flora and Fauna Management Plan
FSRU	Floating storage and re-gasification unit
GHD	GHD Pty Ltd
KPIs	Key Performance Indicators
LNG	Liquefied natural gas
MBD	Marine berth construction and dredging
NATA	National Association of Testing Authorities
NGP	Pipeline installation including tie-ins
NTU	Nephelometric Turbidity Units
ORF	Onshore receiving facilities
PANSW	Port Authority of NSW

Acronym / Definition	Description
PASS	Potential Acid Sulfate Soils
POEO Act	*Protection of the Environment Operations Act 1997*
PKGT	Port Kembla Gas Terminal
PKHD	Port Kembla Height Datum
QA	Quality Assurance
QC	Quality Control
SMP	Spoil Management Plan
SRD SEPP	State Environmental Planning Policy State and Regional Development
TATs	Turn Around Times
Three Ports SEPP	State Environmental Planning Policy (Three Ports) 2013
TSS	Total Suspended Solids
TTE	Tertiary Treated Effluent
WM Act	*Water Management Act 2000*
WQM	Water quality monitoring

Contents

Table index

Figure index

Appendices

1. Introduction

1.1 Overview

This Construction Water Quality Monitoring Plan (CWQMP) for the Early Enabling Works phase of the Marine Berth Construction and Dredging (MBD) package of work has been developed as a sub-plan to the Port Kembla Gas Terminal Project (the Project) Spoil Management Plan (SMP). The SMP is sub-plan to the Project's overarching Environmental Management Strategy (EMS).

This CWQMP was prepared by the SCSB JV on behalf of Australian Industrial Energy (AIE) to apply to construction activities associated with the Project. GHD Pty Ltd (GHD) has updated this CWQMP on behalf of AIE for application to the monitoring of water quality during the Early Enabling Works of the MBD. This CWQMP does not cover the monitoring of water quality associated with Marine Berth Construction and Dredging or the construction of Onshore Receiving Facilities, or Pipeline Installation.

This CWQMP interfaces with the other associated sub-plans, which together describe the proposed overall management system for the Project. The associated sub-plans are:

– Demolition Plan for Berth 101 (Demolition Plan) (Liberty Industrial, 2021) included as Appendix A.
– Emergency Spill Plan included as Appendix B.

This CWQMP addresses the requirements of the Infrastructure Approval (SSI 9471) and has been prepared in consultation with the NSW Environment Protection Authority (EPA).

1.2 Background

Australian Industrial Energy (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% 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% 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 the 29th of 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.

The development has progressed to the early works stage at Berth 101 (the site or MBD Site Compound), which includes the demolition and removal of all existing surface infrastructure, and disconnection and removal of all underground services. The Early Enabling Works phase is required to facilitate all future stages of development and to meet an obligation in the lease of the site to demolish existing wharf infrastructure by 29 September 2021.

1.3 Purpose

This CWQMP has been prepared in accordance with the Port Kembla Gas Terminal Environmental Impact Statement (PKGT EIS) and associated Infrastructure Approval (SSI 9471) and describes how Liberty Industrial propose to manage water quality during Early Enabling Works for the MBD. Specifically, this plan includes requirements to:

– Ensure no waters are polluted as a result of the Early Enabling Works.
– Ensure compliance with water quality related requirements of the Environmental Protection Licence (EPL) issued for the construction phase of the Project.
– In the event of an incident (e.g., a spill), implement the Emergency Spill Plan, included as Appendix B.

This plan addresses the above requirements and includes, but is not limited to:

– Performance criteria for water quality mitigation.
– Mitigation strategies to minimise impacts on water quality.
– A Water Quality Monitoring Plan and reporting demonstrating the performance during Early Enabling Works and overall harbour monitoring.

AIE and its contractors acknowledge that maintaining water quality in the vicinity of the Early Enabling Works is paramount to the successful delivery of the construction phase of the Project. AIE is committed to ensuring this CWQMP is reviewed and updated regularly to ensure its objectives are met and that the approval conditions outlined in Infrastructure Approval (SSI 9471) are achieved.

This CWQMP is applicable to all staff, employees, subcontractors, and any statutory service authorities undertaking works including, but not limited to, excavation works, disturbance, transportation, or handling of fill throughout the duration of the Early Enabling Works for the MBD. The CWQMP implementation and on-going development will be managed by the Project team.

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 the 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 include 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 and 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. A site overview is provided as Figure 2-1.

2.2 Existing marine environment

Port Kembla is a disturbed environment from historical industrial use such as coal and steel works. Marine sediments within both the Inner and Outer Harbour are known to be contaminated as a result of the historical industrial land use in surrounding areas. The existing berth was constructed in 1964 for the loading of coal, coke and slag. Several contamination assessments have been undertaken for Berth 101, including as part of the PKGT EIS (GHD, 2018) and a baseline assessment (GHD, 2012a) and targeted assessment in 2021 (GHD, 2021b). Contamination within the fill material to be excavated within Berth 101 has been found to be relatively minor and consistent between the assessments undertaken. Groundwater at each monitoring well has reported minor exceedances of arsenic, and at two locations for mercury. One monitoring location exceeded criteria for copper concentrations (GHD, 2021).

Figure 2-1 Site overview

2.3 Project construction scope of works

The Project construction scope of works has been divided into the three main packages (with associated activities) as outlined in Table 2.1. This CWQMP only applies to the Early Enabling Works associated with the MBD.

Table 2.1 Construction work packages and applicability to this CWQMP

Stage	Package	Proposed commencement	Activities	Applicability to this CWQMP
1	Early Enabling Works	May 2021	Early Enabling Works. 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.	Applicable.
2	Marine Berth Construction and Dredging (MBD)	November 2021	Quay wall construction.	Not applicable.
			Excavation/dredging.	Not applicable.
			Wharf facilities construction including mooring system, navigational aids, and associated works.	Not applicable.
	Onshore Receiving Facilities (ORF)		Construction of the ORF, which comprises of three areas: Wharf Topside Area; Utility Area; and Common Area. Installation of a small section of pipeline within the Berth 101 site boundary.	Not applicable.
3	Pipeline Installation including tie-ins (NGP)	March 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.	Not appliable.

2.4 Early Enabling Works for MBD

The site of the Early Enabling Works is the former Port Kembla Coal Terminal (PKCT) Bulk Products Berth. The removal of existing structures and services is required to facilitate subsequent development stages of the Project. The scope of the Early Enabling Works will involve the following tasks:

– Excavation down to level of RL +2.5 metres Port Kembla Height Datum (PKHD) to allow removal of existing structures and services and facilitate construction of the quay wall
– Demolition/removal of Berth 101 and aboveground structures.
– Demolition/removal of aboveground and underground services.
– Removal of existing stockpiles from site.
– Transport of spoil via road from the MBD Site Compound to the Emplacement Cell Construction Site.
– Platform excavation and stockpiling.
– Processing demolished materials (for re-use or recycling) by others.
– CPT in the Outer Harbour.

An outline of the tasks associated with the Early Enabling Works is provided in Section 2.4.1 through Section 2.4.5. The Early Enabling Works site includes the MBD Site Compound and the Emplacement Cell Construction Site, as shown in Figure 2-2.

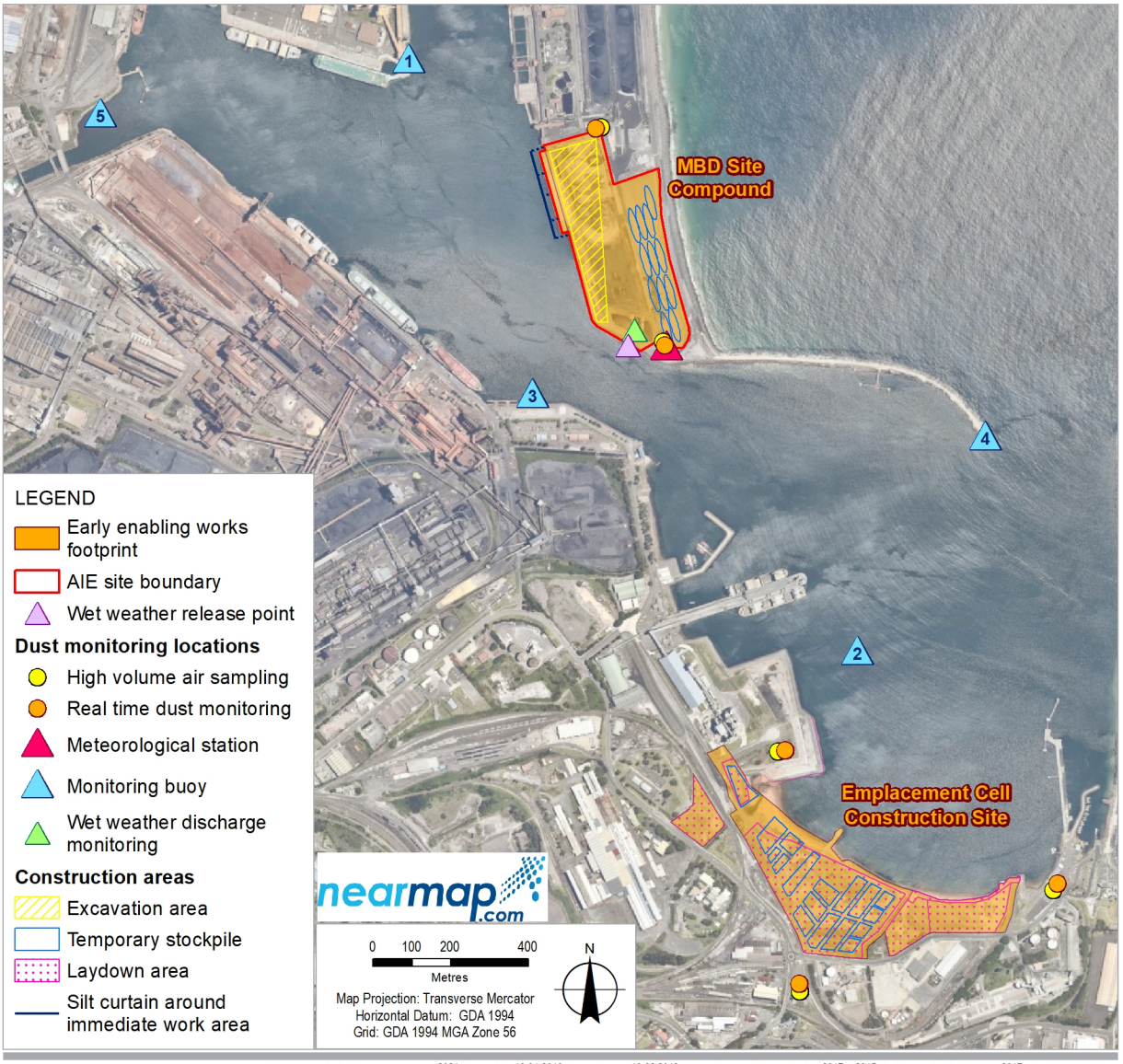


Figure 2-2 Early Enabling Works for MBD

2.4.1 Excavation

Excavation is required to facilitate the removal of existing aboveground and underground structures and services within the MBD Site Compound to a level of RL +2.5 metres on PKHD.

The proposed excavation zone generally extends from Road No. 7 at the northern end of the West Stockyard to the South Ponds and across to Road No. 9 as shown by the yellow shaded area in Figure 2-3.

Figure 2-3 Proposed excavation zone within MBD Site Compound

It is proposed to segregate, manage, stockpile and transport excavated materials into the following categories:

- Fill materials and concrete suitable for re-use for wharf construction will be crushed on-site and stockpiled at the southern end of the East Stockyard (refer to Figure 2-3).
- Excess materials suitable for placement in the Outer Harbour will be transported to the Emplacement Cell Construction Site (refer to Figure 2-2 and Figure 2.4).
- Revetment rock armour will be stockpiled for reuse, if removed.
- Recyclable material such as steel, cables, etc. will be transported off site for recycling.
- Waste materials that are unsuitable as fill or for recycling will be disposed off-site at an approved landfill facility.

Figure 2.4 Emplacement Cell Construction Site

2.4.1.1 Demolition/removal of structures

All structures, foundations, piling, paving, site services, etc. within the excavation zone require demolition and removal. The proposed structures for demolition are summarised in Table 2.2.

Table 2.2 Structures to be demolished/removed during Early Enabling Works for MBD

Structure	Works required
Tower T1	Remove any remaining miscellaneous steel work as necessary (e.g. handrails and guardrails)
Tower T2 and T3	Demolish headstock and cut-off any piles at RL+1.5 m PKHD.
Tower T1, T3, T4 and T6 Clean Out Pits/ Drains	Demolish any remaining miscellaneous steel work, the Clean Out Pit and associated drains.
Conveyor C3	Demolish any pavement/gutter and cut-off any piling in the excavation zone
T3 Pond	Demolish any remaining miscellaneous steel work, the pit and associated drain.
Tower T5 gantries	Demolish the remaining footings and headstock and cut-off piles at RL +1.5m PKHD. The two southern gantries require complete removal of the headstock and piles.
Conveyor C5 Gantry Walls	Demolish the remaining West Stockyard walls (inverted precast concrete T sections).
Reclaim conveyors C6 and C7	Demolish all remaining parts including the reclaim hopper, paving and any foundations/piling/footings.
West shore clean out pit	Demolish any remaining miscellaneous steel work, the pit and associated drain.
West Stockyard Hardstand Area	Demolish and excavate the hardstand to RL + 2.5 m PKHD. The excavation of the hardstand shall extend to 3 m beyond the tie rod anchors (the hardstand area is constructed of 300 mm heavily bound base course (road building material), 340 mm lightly bound base course (80% blast furnace slag and 20% granulated blast furnace slag) and 200 mm of engineered fill.
Light Towers	Demolish the foundations and remove associated cabling. Demolish and remove all other light towers from the site.
Berth 101	Berth 101 comprises a concrete deck supported by 568 concrete and timber piles, tie rods and dead man blocks. There is also a fendering system comprising timber piling, timber waling and rubber fenders, various utilities and a sheet pile cut-off wall (approximately 175 m long) along the landside of the berth. Works required include cut and remove the concrete deck, remove tie rods and anchor blocks. Removal of piles will be via a crane positioned on a barge immediately adjacent to the wharf structure. Silt curtains will be positioned surrounding the work area during the removal of piles. AIE has an obligation under its lease agreement to demolish the Wharf at Berth 101 by 29 September 2021
Substation	Undertake asbestos containing material (ACM) inspections and testing of materials prior to demolition (as required). Where ACM is confirmed, remove and dispose off-site by licensed contractor with clearance certificate. Demolish building and transformer bays including underground foundations and conduits. Remove and dispose of any remaining cables from Substation within the site.
Mooring lines	Remove lines and blocks.
Sewer tanks	Two underground concrete sewer tanks are located on the south side of Tower TS8. Demolish the tanks following pump out and flushing.

2.4.1.3 Demolition/removal of services

Numerous services are currently located in the excavation zone and will be demolished and removed generally down to RL +1.5 metres PKHD as part of the excavation process. The services that will be demolished/removed are summarised in Table 2.3.

Table 2.3 Services to be demolished/removed during Early Enabling Works for MBD

Structure	Works required
Bunker oil pipeline	The existing bunker oil pipeline extends from storage facilities on the southern shore of Port Kembla, under The Cut to the oil berth at the northern breakwater. A 300 mm carbon steel pipeline extends underground (approximately 600 mm clear cover) along the western shore of the site to Berth 101. An above ground section then passes under Berth 101 and on to Berth 102 to the north. The pipeline sections, both underground and running under Berth 101 require removal with management and disposal of any residual hydrocarbons. It is proposed to cut the pipeline into transportable lengths and removed from site to an appropriate and approved location. Beyond the excavation zone, the pipeline will remain in-situ and will be capped at both ends with suitable identification.
Domestic water pipeline	An underground potable water supply pipeline currently runs underground on the eastern side of Tower TS8 to supply Berth 101 and a ductile iron cement lined (DICL) pipeline continues along the western shore of Berth 101 supplying the Port Authority of NSW (PANSW) meter compound at the south of the site. An abandoned pipeline formed from ACM runs parallel to the DICL pipeline. A licenced removal company shall be engaged to remove and transport the asbestos material in a safe manner to an approved disposal site. An asbestos clearance certificate shall be provided following removal. All abandoned domestic water piping is to be removed within the excavation zone. Beyond the excavation zone, the pipeline shall remain in the ground and be capped at both ends.
Electricity supply	Electricity is supplied from the PKCT 11 kV South Substation and distributed in Substation B (south of Berth 101). These supplies include: An underground 11 kV electricity cable (approximately 900 mm cover) from Substation B to the PANSW pad-mounted transformer at the southern end of the site. Several 415 V cables from Substation B to Pumps 01 at the South Ponds, to Pumps 09 and 17 at drain pit sumps and to light poles across the site Control cabling for pumps, lights and water spray nozzles. The substation building will be demolished with all cables in the excavation zone removed.
Telecommunications	The telecommunications cable extends from a pit near PKCT South Substation to a pit near the PANSW meter compound. The route of the cable is uncertain, however, it is understood to follow the western shore. During demolition works, the cable is required to be removed and disposed of. Any cable beyond the excavation zone, is to remain in-situ.
Tertiary treated effluent	Tertiary Treated Effluent (TTE) is supplied to PKCT for firefighting and dust suppression sprays. An interconnected ring main circles around both the East and West Stockyards supplying dust suppression sprays and fire hydrants. The pipelines and sprays serving the West Stockyard will be demolished and removed. The western incoming supply shall be capped near Tower TS7 and at the branch from West Stockyard to the PKCT truck wash. The spray system for the East Stockyard is not required and will be demolished. The TTE pipeline along the eastern side (Seawall Road) is to remain in-service. The TTE pipeline along Road No. 9 shall be capped on the western side of PANSW meter compound.

During demolition, stormwater from the site will be directed to settling ponds or gross pollutant traps or oil separators before being discharged to the harbour. The overflow pipes at the Southern Pond is proposed to be AIE's licensed discharge point into Port Kembla Harbour.

As the demolition work proceeds, the contractor will ensure stormwater runoff always flows to the Southern Pond in accordance with AIE's EPL conditions.

2.4.2 Removal of stockpiles

Two large stockpiles, approximately 700 metres^3 to 800 metres^3 of mixed sandy gravel material are present in the south-western section of the site. The stockpiles also contain inclusions of slag gravel, cobbles, concrete and boulders. Both stockpiles will be removed as part of the Early Enabling Works and will be characterised (visual and through sampling, as required) for re-use as part of the Project.

2.4.3 Transport of spoil from MBD Site Compound to Emplacement Cell Construction Site

Approximately 50,000 metres^3 of spoil will need to be transported via road from the MBD Site Compound and stockpiled at the Emplacement Cell Construction Site.

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

Spoil will be characterised prior to transport based on the source location, the availability of any existing data and additional sampling and analysis, as required.

2.4.4 Processing of demolished materials (reuse and recycling)

Demolished materials which are sound, suitable and approved by AIE and the auditor may be re-used in the works, subject to approval. Materials for re-use may include:

– Uncontaminated excavated material as fill.
– Crushed concrete as fill.

Excavation of a platform to stockpile up to 70,000 metres^3 of material will be undertaken in the East Stockyard.

Materials for re-use are to be stockpiled and stored in the southern end of the East Stockyard until further stages of the works proceed.

Materials suitable for recycling will be preserved during the demolition works and removed and stored on-site in the eastern stockyard as directed by AIE until collected or removed from site by appropriate contractors.

2.4.5 Cone Penetration Testing

CPT will be undertaken at 50 to 60 locations within the Outer Harbour to inform the design and alignment of the Emplacement Cell. CPT locations will target alignment of Emplacement Cell and proposed fill area. Works comprise of surveying the seabed level and geotechnical testing (including CPT) via a purpose-built CPT rig attached to a small jack barge, portable 15t CPT rig and jack up barge.

2.5 Program for Early Enabling Works

Early Enabling Works for the MBD is anticipated to commence in May 2021. It is estimated to be completed in six months.

3. Roles and responsibilities

The roles and responsibilities of the various parties involved in water quality monitoring during the Early Enabling Works are outlined in Table 3.1 below.

Table 3.1 Roles and responsibilities

Project Role	Responsibility
AIE Project Director	– Responsible for the overall funding and direction of the Early Enabling Works. – 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 the Early Enabling works in accordance with requirements of the Infrastructure Approval (SSI9471), Environmental Strategy and all related sub-plans – Demonstrate proactive support for environmental requirements
AIE HS&E Manager	– Implementation and updates of all Health, Safety and Environmental 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 – Environmental Reporting
AIE Environmental Representative	– Develop strong working relationships with the Demolition 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 the WQMP. – Conduct audit review as required. – Reports on the performance of the WQMP 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 HS&E Manager. – Conducts investigation and response to environmental complaints and inquiries, where required
Liberty Industrial 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, CWQMP and improved procedures.

Project Role	Responsibility
	– Ensure this CWQMP is implemented for the duration of the Early Enabling Works.
Liberty Industrial 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 CWQMP is implemented for the duration of the Early Enabling Works.
Liberty Industrial Environmental Representative	– Delivers environmentally focussed toolbox talks. – Provides environmental advice, assistance, and direction to Project Manager to ensure construction activities are conducted in accordance with regulatory legislation and this CWQMP. – Reports on the performance of the CWQMP and recommends changes or improvements to Project Manager. – Co-ordinates internal audits of the CWQMP. – Develop strong working relationships with the AIE team and Consultants. – Ensure environmental risks are appropriately identified, communicated, and effectively managed. – The Environmental Rep can order Stop Work for any unacceptable environmental risk or breach of conditions. – Coordinate investigation and response to environmental complaints and inquiries, where required. – Ensure communication of relevant environmental information to Project personnel. – Instruct and advise management team on compliance issues. – 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 reports incidents to Liberty Industrial Project Manager.
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.

Environmental management is a responsibility of the Project team, and the Project Manager shall report to AIE on any environmental issues as they occur and on a weekly and monthly basis. Further details on reporting commitments as required from the Infrastructure Approval conditions are discussed in Section 8.5.

Amongst other obligations, Liberty Industrial will be responsible for:

1. Development of systems, procedures and reporting mechanisms which will ensure, and demonstrate in a tangible way, compliance with the approved CWQMP.
2. Development and implementation of appropriate training to all staff and contractors on the requirements of the approved CWQMP. This shall range from detailed training for supervisors, through to inclusion of environmental matters in Project induction for other workers.
3. Providing a suitably qualified and experienced Environmental Representative.
4. Participating in audits and reviews and undertaking corrective actions and system improvements as required.

AIE will take an active role in ensuring that all aspects of the approved CWQMP for the Early Enabling Works are implemented and managed. All Project roles will be filled with suitably qualified and experienced personnel as outlined in Table 3.1.

4. Legislative requirements

The following standards and codes of practice are relevant to the Early Enabling Works for the MBD regarding water quality monitoring:

– Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC, 2000)
– *Australian Standards* (AS) *2601-2001: The Demolition of Structures*
– Managing Urban Stormwater: Soils and Construction. Landcom, (4th Edition) March 2004 (the "Blue Book"). Volume 1 and Volume 2. - Volume 2A.

Legislation applicable to the Early Enabling Works are outlined below in Table 4.1.

Table 4.1 Legislative requirements for Early Enabling Works for MBD

Legislation/regulation/policy	Description	Applicability
State Legislation		
Protection of the Environment Operations Act 1997	The objectives of the POEO Act are to protect and enhance the environment of NSW with regard to the need of ecologically sustainable development. The Act provides mechanisms to reduce risks to human health and the degradation of the environment. The POEO Act also outlines the Scheduled Activities that require an EPL in order to be carried out.	Section 120 of the Act states that 'any person who pollutes any waters is guilty of an offence'. AIE is committed to ensuring that the Early Enabling Works will not pollute any waters through the implementation of water quality controls and management. Water quality monitoring/management measures will be implemented with reference to this plan throughout the Early Enabling Works to mitigate the impact of demolition and excavation activities and to maintain water quality and prevent pollution of Port Kembla Harbour waters. All works will be undertaken in accordance with an EPL obtained for the Project.
*Water Management Act 2000 (*WM Act)	The objectives of the WM Act are to provide for the sustainable and integrated management of NSW water sources for the benefit of both present and future generations.	The Early Enabling Works will involve demolition and excavation within 40 metres of the shoreline and has the potential to intercept water within an aquifer during excavation. The Early Enabling Works are not anticipated to require major dewatering from a water source and is are not expected to trigger the need for a water use approval, water management works approval or controlled activity approval in accordance with Sections 89, 90 or 91. Accordingly, these approvals are not required for CSSI in accordance with Section 5.23 of the EP&A Act.
Environmental Planning Instruments		
State Environmental Planning Policy (Three Ports) 2013 (Three Ports SEPP)	The Three Ports SEPP provides a consistent planning regime for the development and delivery of infrastructure of land within Port Botany, Port Kembla and the Port of Newcastle for port purposes. Certain developments are identified as State Significant Development or SSI under the Three Ports SEPP.	The Early Enabling Works of the MBD have been assessed and approved as part of the overall Infrastructure Approval. Additional development consent under the Three Ports SEPP is not required.

5. Planning requirements

The water quality monitoring program contained in this CWQMP plan focuses on the key water quality parameters that are important to the overall health of Port Kembla Harbour during the Early Enabling Works for the MBD.

Data collection will commence six weeks prior to the removal of the wharf piles to establish baseline levels at five monitoring points (refer to Section 7.1).

The inclusion of an additional trend water quality monitoring location will increase data acquisition for monitoring of harbor wide trend conditions prior to and during the dredging program.

The program has been specifically designed to ensure close alignment of parameter selection with similar recent dredging and spoil emplacement campaigns. This will ensure that the acquired data contributes to understanding the long-term water quality trends for the harbour.

Monthly drone fly-overs will also be carried out and provide an additional assessment measure of the harbour.

Measures taken to comprehensively monitor, and manage water quality are discussed in more detail in Sections 6 and 0 of this CWQMP.

Implementation of water quality monitoring measures as required to comply with the Infrastructure Approval conditions are outlined below in Table 5.1.

Table 5.1 Approval conditions

Requirement	Reference	Responsibility	Evidence	Applicability to this CWQMP
EIS management measure				
The location of the proposed terminal berth has been refined through navigation simulations to be located as close possible to the existing turning basin. This approach minimises hydrodynamic impacts and reduces dredging and disposal volumes as far as possible.	EIS W1 – water quality and hydrodynamics	-	-	Not applicable for Stage 1
The footprint of the Outer Harbour placement area has been minimised by raising the proposed fill height to include emergent reclamation. This approach minimises the quantity of material to be bottom dumped and thereby reduces the potential for generation of turbid plumes and mobilisation of sediments.	EIS W4 – water quality and hydrodynamics	-	-	Not applicable for Stage 1
Preparation of a EMS including specific dredge management plan to provide a framework for the environmental management of construction activities to minimise the environmental risks to a level that is as low as practically possible for this Project.	EIS W5 – water quality	- AIE HS&E Manager	EMS	Applicable (excluding dredge management plan)
Design and implementation of a Water Quality Monitoring Program to ensure construction works do not cause exceedance of the marine water quality criterion of background plus 50 mg/L of suspended sediment, in accordance with recent EPLs for similar activities within Port Kembla such as the Berth 103 Stage 2 Dredging & Spoil Disposal EPL20563).	EIS W6 – water quality	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 7 and Section 8	Applicable (excluding dredging operations)
Continuous turbidity monitoring would be undertaken using a series of monitoring buoys to provide impact and background data (turbidity (Nephelometric Turbidity Units (NTU)), pH, temperature). Prior to commencement of the dredging works, buoys would be deployed for an agreed period of time to confirm background conditions in the vicinity of the monitoring points. Data would be logged and transmitted to an onshore recording station where it would be processed to allow automated comparison of median turbidity levels to a series of green, amber and red trigger levels. When exceeded, an alarm would be triggered, automated email and SMS alerts sent and agreed the procedures implemented. Such procedures may include hand held monitoring to verify readings, reduction in the rate of dredging, relocation of dredging	EIS W6 – water quality	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 7	Applicable (excluding dredging operations)

Requirement	Reference	Responsibility	Evidence	Applicability to this CWQMP
activities or cessation of turbidity generating works until turbidity readings reach acceptable levels.				
Daily visual observations would be undertaken during dredging operations to monitor the potential release of oil or grease.	EIS W6 – water quality	– AIE HS&E Manager – Liberty Industrial Environmental Rep	Section 7.2 and Section 8.1(Table 8.2.)	Applicable (excluding dredging operations)
Collection of water samples and laboratory analysis for an agreed set of contaminants would be undertaken on a weekly basis during dredging operations	EIS W6 – water quality	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 8 (Section 8.1 and Section 8.4)	Applicable (excluding dredging operations)
Silt curtains would be installed prior to commencement of the works in order to minimise the spread of any sediments entrained within the water column during dredging and disposal operations. Silt curtains are available in a range of designs and would be provided by the successful Contractor. It is envisaged that the silt curtain would comprise a geocomposite material consisting of a non-woven geotextile sewn to a woven geotextile, which would provide the required filtering capacity and rigidity respectively. Vessel access would be via gated or overlapped curtains or through installation of a bubble curtain. The top of the curtain would be supported by a floating boom, whilst the lower portion of the curtain would be weighted with appropriate ballasting (e.g. bars or chains) to ensure that the full length if the curtain is maintained at all times. The curtain would be anchored or fixed to existing structures as necessary.	EIS W7 – water quality	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 3	Applicable (excluding dredging operations)
Subaqueous sediment removal would be undertaken using a backhoe dredge. The use of mechanical dredging (rather than hydraulic dredging) ensures that sediments are removed, transported and placed as close to their insitu density as possible. Thereby minimising the suspension and mobilisation of sediments at the dredge and disposal sites. Method statements would be prepared by the contractor to ensure that loading of dredged materials into the hopper barges is undertaken in a manner that reduces spillage and avoids overfilling barges	EIS W8 – water quality	-	-	Not applicable for Stage 1

Requirement	Reference	Responsibility	Evidence	Applicability to this CWQMP
A perimeter bund would be constructed within the Outer Harbour placement area to ensure long term stability of dredged materials and to minimise sediment migration during placement.	EIS W9 – water quality	-	-	Not applicable for Stage 1
A site specific Erosion and Sediment Control Plan (ESCP) will be prepared as part of the EMS to provide control of all land based excavation and stockpiling requirements. All erosion and sediment control measures shall be designed, implemented and maintained in accordance with 'Managing Urban Stormwater: Soil and Construction Volume 1' (Landcom 2004) ('the Blue Book").	EIS W10 – water quality	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Refer to EMS and Spoil Management Plan (SMP)	Applicable
A site specific emergency spill plan will be developed and will include spill management measures in accordance relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Roads and Maritime and EPA officers)	EIS W11 – water quality, chemical and fuel impacts on flora and fauna	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Appendix B	Applicable
An emergency spill kit will be kept on site at all times. All staff will be made aware of the location of the spill kit and trained in its use.	EIS W12– water quality, chemical and fuel impacts on flora and fauna	– AIE HS&E Manager – Liberty Industrial Construction Foreman – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 6.2.1 and Appendix B	Applicable
Machinery will be checked daily to ensure there is no oil, fuel or other liquids leaking from the machinery. All staff will be appropriately trained through toolbox talks for the minimisation and management of accidental spills	EIS W13 – water quality, chemical and fuel impacts on flora and fauna	– AIE HS&E Manager – Liberty Industrial Construction Foreman – Liberty Industrial Environmental Rep	Section 6.2.1	Applicable.
Prior to re-releasing the seawater back into the surrounding area, the operators of the vessel will aim to match the profile of the discharged water, as close as possible, to the pre-discharge profile and well below agreed thresholds for residual concentrations of sodium hypochlorite. Changing the profile of the discharge water will be done by modifying the frequency of production and the concentration of sodium hypochlorite produced on-board from the intake of sea water	EIS W14 – water quality	-	-	Not applicable for Stage 1

Requirement	Reference	Responsibility	Evidence	Applicability to this CWQMP
A stormwater management system would be designed and constructed to control discharges from the import terminal site, including traps and filters where required. Design would be undertaken in accordance with emergency spill plans and the objectives and development criteria outlined in the Port Kembla Development Code (NSW Ports 2016).	EIS W15 – water quality	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 6.1 and Appendix B	Applicable
A site specific emergency spill plan will be developed and will include spill management measures in accordance relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Roads and Maritime and EPA officers). An emergency spill kit will be kept on site at all times. All staff will be made aware of the location of the spill kit and trained in its use	EIS W16 – water quality	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep – Construction Foreman	Section 6.2.1 and Appendix B	Applicable
Works to remove the current quay wall and piles will commence after a visual inspection for protected mobile fauna (e.g., Syngnathids). If present, these will be relocated to adjacent habitats, outside the zone of influence by the proposed works, where feasible.	EIS ME1- Biofouling and benthic community disturbance	– AIE HS&E Manager – Liberty Industrial Construction Foreman – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 6.1	Applicable
Dredging will be carried out using mechanical backhoe dredge, split barges and supporting tug vessels, as opposed to suction-style dredging, to minimise the potential mobilisation of sediments within the Inner Harbour. Disposal of the dredged material will be limited to the Outer Harbour disposal area within the perimeter bund.	EIS ME1- Biofouling and benthic community disturbance	-	-	Not applicable for Stage 1
Implementation of a water temperature monitoring program to document natural variations in water temperature and the extent of temperature differences and dispersion pathways of the cold water discharge plume.	EIS ME3- Biofouling and benthic community disturbance	– -	-	Not applicable for Stage 1.
Conditions of approval				
Demolition 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.	IA Mod 1 Schedule 2, Condition 11	– AIE Construction Manager – Liberty Industrial Project Manager	Section 6.1 Appendix A	Applicable

Requirement	Reference	Responsibility	Evidence	Applicability to this CWQMP
Operation of plant and equipment The Proponent must ensure that all plant and equipment used on site, or to monitor the performance of the development is (a) maintained in a proper and efficient condition; and (b) operated in a proper and efficient manner.	IA Mod 1 Schedule 2, Condition 13	– AIE HS&E Manager – Construction Foreman – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 6.2.1	Applicable
Water Pollution Unless an environment protection licence authorises otherwise, the Proponent must comply with Section 120 of the POEO Act. *Notes: Section 120 of the POEO Act makes it an offence to pollute any waters. The EPA has recommended the following limits for water pollutants should apply for the development: an equivalent suspended sediment of no more than 50 mg/L above background turbidity levels during the construction stage; No more than 20 ug/L of Total Residual Chlorine and a temperature of no less than 7° C below ambient water temperature for water discharges from the FSRU*	IA Mod 1 Schedule 3, Condition 1	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 6, Section 7, Section 8 and Appendix B	Applicable
Aquatic Habitat The Proponent must design and construct the water intake on the FSRU to minimise entrainment of aquatic organisms and plankton.	IA Mod 1 Schedule 3, Condition 2	-	-	Not applicable for Stage 1
Discharge Limits 2A. The water discharge rate from the FSRU from the regasification process must not exceed 13,000 cubic metres per hour. 2B. The average annual water discharge rate from the FSRU from the regasification process must not exceed 8,125 cubic metres per hour.	IA Mod 1 Schedule 3, Condition 2A and 2B	-	-	Not applicable for Stage 1
Water Quality Verification and Monitoring Program Prior to the commencement of operations, the Proponent must prepare a Water Quality Verification and Monitoring Program, in consultation with the EPA and DPI Fisheries and to the satisfaction of the Planning Secretary. The verification program must: (a) describe the water quality monitoring that would be undertaken to:	IA Mod 1 Schedule 3, Condition 3(a)	-	-	Not applicable for Stage 1

Requirement	Reference	Responsibility	Evidence	Applicability to this CWQMP
verify the assumptions and parameters used to model water discharges, including intake and ambient water quality variables				
confirm whether discharges comply with a total residual chlorine concentration of no more than 20 ug/L and temperature limit of no less than 7 degrees Celsius below ambient water temperature, under the full range of operating conditions and during all seasons	3(a)	-	-	Not applicable for Stage 1.
determine acute toxicity risks in the immediate area around the discharge point from sodium hypochlorite by-products generated by the antifouling system	3(a)	-	-	Not applicable for Stage 1
verify the total residual chlorine concentrations and temperature differential at the edge of the near field mixing zone comply with the guideline trigger values assessed in the EIS and that the impacts from water discharges from the FSRU are no greater than predicted in the EIS	3(a)	-	-	Not applicable for Stage 1
determine the impacts on marine biota from the water intake	3(a)	-	-	Not applicable for Stage 1
(b) assess the suitability of in-situ TRC monitoring to achieve a detection level below 20 ug/L;	3(b)	-	-	Not applicable for Stage 1
(c) assess toxicity risks associated with the full range of sodium hypochlorite by-products	3(c)	-	-	Not applicable for Stage 1
(d) model the potential cumulative temperature impacts on Port Kembla Harbour, using a calibrated thermal plume model and validated model predictions based on the results of the monitoring program	3(d)	-	-	Not applicable for Stage 1
(e) verify that impacts from water discharges from the FSRU are no greater than predicted in the EIS	3(e)	-	-	Not applicable for Stage 1
(f) if required, recommend any modification to the proposed discharge limit(s) in the EPL for TRC and temperature based on the results of the verification program	3(f)	-	-	Not applicable for Stage 1
(g) if required, identify contingency measures that will be implemented to address any exceedances of predicted cold water impacts or TRC concentrations, residual risk of acute toxicity or chemical by-products or measures to reduce the entrainment of marine biota in the water intakes, including the timing for implementation of these measures	3(g)	-	-	Not applicable for Stage 1

Requirement	Reference	Responsibility	Evidence	Applicability to this CWQMP
(h) evaluate the effectiveness of the monitoring program and make recommendations for ongoing discharge and ambient water quality monitoring and management, including trigger levels for investigating and responding to any potential or actual adverse impacts associated with discharges on water quality and the ecology of Port Kembla Harbour; and	3(h)	-	-	Not applicable for Stage 1
(i) include routine and milestone reporting procedures for the results of the verification program, including a final report to be prepared in consultation with EPA and DPI Fisheries within 18 months of the commencement of operations, unless otherwise agreed by the Secretary	3(i)	-	-	Not applicable for Stage 1
The Proponent must implement the approved Water Quality Verification and Monitoring Program	IA Mod 1 Schedule 3, Condition 4	-	-	Not applicable for Stage 1
Soil Erosion The Proponent must minimise any soil erosion associated with the construction of the development in accordance with the relevant requirements in the Managing Urban Stormwater: Soils and Construction (Landcom, 2004) manual, or its latest version.	IA Mod 1 Schedule 3, Condition 5	– AIE Environment Rep – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 6	Applicable Also refer to ESCP
Acid Sulfate Soils (ASS) The Proponent must ensure that any construction activities in identified areas of ASS risk are undertaken in accordance with ASS Manual (Acid Sulfate Soil Management Advisory Committee (ASSMAC), 1998).	IA Mod 1 Schedule 3, Condition 6	-	-	Not applicable for Stage 1. ASS material not predicted to be encountered for Early Enabling Works.
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, PANSW and, an EPA accredited contaminated site auditor. The plan must be consistent with the Emplacement Cell Report and include: (a) a Contaminated Spoil Protocol	IA Mod 1 Schedule 3, Condition 11 (a)	-	-	Refer to SMP
(b) a Dredge and Excavation Management Plan	IA Mod 1 Schedule 3, Condition 11 (b)	-	-	Not applicable for Stage 1

Requirement	Reference	Responsibility	Evidence	Applicability to this CWQMP
(c) a Water Quality Monitoring Plan that includes: a 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	IA Mod 1 Schedule 3, Condition 11 (c)	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	This CWQMP and Section 7 and Section 8	Applicable
a broader program to monitor harbour-wide water quality trends and the ecological health of Port Kembla Harbour	11 (c)	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 7.2.3	Applicable
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	11 (c)	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 8.6	Applicable
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	11 (c)	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 8.7	Applicable
reporting procedures for the results of the monitoring program	11 (c)	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 8.5	Applicable
At the completion of any dredging, excavation and disposal works, the Proponent must engage a site auditor accredited by the EPA to issue a Section A Site Audit Statement confirming the suitability of the site for its intended use.	IA Mod 1 Schedule 3, Condition 13	-	-	Not applicable for Stage 1. Also refer to DEMP
Revision of Strategies Plans and Programs Within 3 months, unless otherwise agreed with the Planning Secretary, of: (a) the submission of an incident report under condition 5 below	IA Mod 1 Schedule 4, Condition 4	– AIE HS&E Manager	Section 8.8	Applicable

Requirement	Reference	Responsibility	Evidence	Applicability to this CWQMP
(b) the submission of an audit report under condition 9 below; and (c) the approval of any modification to the conditions of this approval; or (d) a direction of the Planning Secretary under condition 4 of schedule 2; the Proponent must review, and if necessary, revise, the strategies, plans, and programs required under this approval to the satisfaction of the Planning Secretary. Where this review leads to revisions in any such document, 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. *Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.*				
Incident Notification The Department must be notified in writing to compliance@planning.nsw.gov.au immediately after the Proponent becomes aware of an incident on site. The notification must identify the development, including the application number, and set out the location and nature of the incident.	IA Mod 1 Schedule 4, Condition 5	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep – Construction Foreman	Section 8.7	Applicable
Non-compliance Notification The Department must be notified in writing to compliance@planning.nsw.gov.au within 7 days after the Proponent becomes aware of any non-compliance. 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.	IA Mod 1 Schedule 4, Condition 6	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep – Construction Foreman	Section 8.7	Applicable
Compliance reporting The Proponent must provide regular compliance reporting 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.	IA Mod 2 Schedule 4, Condition 7	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep	Section 8.5	Applicable

Requirement	Reference	Responsibility	Evidence	Applicability to this CWQMP
		– Construction Foreman		
Regular Reporting The Proponent must provide regular reporting on the environmental performance of the development on its website in accordance with the reporting requirements in any strategies, plans or programs approved under the conditions of this approval.	IA Mod Schedule 4, Condition 8	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environmental Rep – Construction Foreman	Section 8.5	Applicable
Independent Environmental Audit Twelve months after the commencement of operations and every 3 years thereafter, unless the Planning Secretary directs otherwise, the Proponent must commission and pay the full cost of an Independent Environmental Audit of the development. This audit must: (a) be conducted by a suitably qualified lead auditor and suitably qualified, experienced and independent team of experts in any field specified by the Planning Secretary, whose appointment has been endorsed by the Planning Secretary (b) include consultation with the relevant agencies (c) assess the environmental performance of the development and assess whether it is complying with the requirements in this approval, and any relevant EPL (including any assessment, plan or program required under these approvals) (d) include a comprehensive Hazard Audit of the development in accordance with the Department's publication Hazardous Industry Planning Advisory paper No. 5, 'Hazard Audit Guidelines'. This audit must also: verify that an inspection, testing and preventative maintenance program has been developed, implemented and maintained to ensure the reliability and availability of key safety critical equipment include checking of the Management of Change (MOC) records and verification that the MOC process has been implemented appropriately confirm that the operation is consistent with the information provided in the Final Hazard Analysis; and verify that certificates issued by DNV-GL for the FSRU and all equipment and systems on board are up to date	IA Mod Schedule 4, Condition 9	-	-	Not applicable for Stage 1.

Requirement	Reference	Responsibility	Evidence	Applicability to this CWQMP
(e) review the adequacy of any strategies, plans or programs required under the abovementioned approvals; and (f) recommend appropriate measures or actions to improve the environmental performance of the development, and/or any strategy, plan or program required under the abovementioned approvals; and (g) be conducted and reported to the satisfaction of the Planning Secretary.				

6. Water quality controls

6.1 Demolition and excavation works

Liberty Industrial will manage the impacts of the Early Enabling Works at the MBD Site Compound and Emplacement Cell Construction Site on the marine environment of Port Kembla's Harbour in order to maintain compliance with monitoring limits and water quality monitoring obligations stipulated in the PKGT EIS and associated Infrastructure Approval (SSI 9471), and with Section 120 of the POEO Act. The footprint of the Early Enabling Works is shown in Figure 2-2 and Figure 2-3. The scope of works for the Early Enabling Works is outlined in Section 2.4. The Demolition Plan is included as Appendix A.

Excavated materials will be temporarily stockpiled at the southern end of the East Stockyard of the MBD Site Compound and within the Emplacement Cell Construction Site, , as shown in Figure 2-2 and described in Section 2.4.1.

Liberty Industrial will implement a number of control procedures during the Early Enabling Works. These will include:

– Installing a stormwater management system in accordance with the objectives and criteria of Section 11 (Water Quality and Stormwater) of the Port Kembla Development Code (NSW Ports, 2016).
– Ensuring stormwater runoff flows to the Southern Pond in accordance with the EPL conditions.
– Installing surface runoff control measures, such as diversion drains, silt fences, sumps and pumping systems to prevent runoff entering or leaving excavation areas, and to prevent runoff/suspended solids entering the Inner Harbour.
– Placing stockpiles away from drainage lines, the water's edge, gutters or stormwater pits and inlets. Covering stockpiles likely to generate dust or odours and ensuring stockpiles of contaminated soil are stored in a secure area.
– Installing silt curtains prior to the removal of piles at Berth 101.
– Ensuring demolition works are consistent with the requirements set out in the *AS 2601-2001: The Demolition of Structures* and the Demolition Plan provided as Appendix A.

6.2 Equipment

6.2.1 Demolition and excavation equipment

Liberty Industrial is responsible for supplying the necessary equipment for the Early Enabling Works. It is anticipated that the following equipment would be used during the Early Enabling Works:

– Barge with crane for removal of Berth 101 piles.
– Backhoe or tracked excavator for excavation and soil sampling.
– Equipment necessary for above and underground demolition activities, including demolition and removal of foundations and piles, equipment, conduits, cabling and pipes.
– Water storage of about 200,000 litres capacity, including metering and pumping equipment.

An emergency spill kit will be kept on site at all times at both the MBD Site Compound and Emplacement Cell Construction Site. All staff will be made aware of the location of the spill kit and trained in its use. In the event of a spill, staff will follow the procedures outlined in the Emergency Spill Plan (refer to Appendix B).

Machinery and plant equipment will be checked daily for visible leaks and excessive exhaust fumes by Liberty Industrial Environmental Representative to ensure no oil, fuel or other liquids are leaking from machinery that could potentially pollute Port Kembla Harbour. All plant and equipment used during the Early Enabling Works, including monitoring equipment, will be maintained in efficient condition and operated by suitably qualified and trained construction personnel.

6.2.2 Silt curtain

Silt curtains will be installed prior to the removal of piles at Berth 101. The silt curtain will be installed around the immediate work area and will be moved progressively as works proceed along the wharf, as shown on Figure 2-2.

The top of the curtain will be supported by a floating boom, while the lower portion of the curtain will be anchored or weighted with appropriate ballasting (e.g., bars or chains) to ensure that the full length (six-metre drop) of the curtain is always maintained. The curtain will be anchored or fixed to existing structures, as necessary. An example of a silt curtain is provided in Figure 6-1.

Installation of the silt curtain will involve:

– Setting anchors along the curtain run, focussing on the corners, using two 300 kilogram dump weights stacked up on the corners to mitigate movement, and additional weight, if required.
– Silt curtain to comprise of a geocomposite material consisting of non-woven and woven geotextile sewn together. This material preference provides the required filtering capacity.
– Use land point anchors by either using a mass of weight or a structure that's available. If nothing is available then either cement a post, place a dump weight to fix silt curtain to
– Vessel access would be via gated or overlapped curtains or through installation of a bubble curtain.

The contractor will carry out visual inspections of the silt curtains during daylight hours to ensure that they are operating correctly. The inspections will be undertaken from the surface or via use of a drop-camera if required – at no time will divers be used to inspect the silt curtains due to the risks associated with diving during a demolition operation. The visual inspection will monitor for silt breaching the confines of the silt curtain. The visual inspection will also monitor any visual indications of contaminants or pollution, such as oil and grease present on the surface of the water. The daily visual inspection report is included as Appendix C. In the event of the presence of potential contaminants or pollution present, the individual undertaking the inspection will record it on the checklist, as required, and immediately notify the AIE Environmental Representative/HS&E Manager and Construction Manager. Roles and responsibilties of all personnel is provided in Section 3. In the event of a notifiable incident occuring, the reporting procedure outlined in Section 8.7.2 will be followed.

The use of silt curtains during the Early Enabling Works will comply with the monitoring values in accordance with the assessment criterion described in Chapter 8 of this CWQMP.

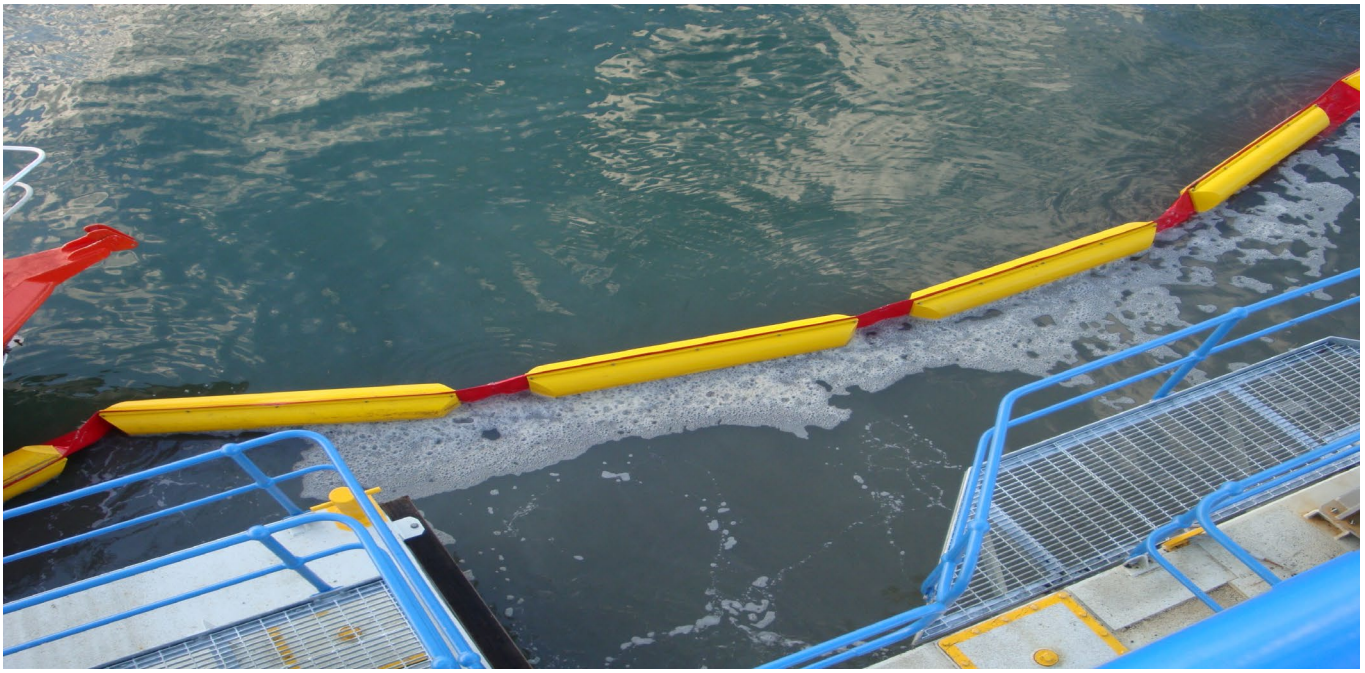


Figure 6-1 Silt curtain example

6.2.3 CPT works

A jack up barge will be used during the CPT works, as described in Section 2.4.5. The jack up barge will be installed using a track-mounted CPT rig from the barge deck whilst operating within the Outer Harbour area. Temporary casing will be installed to the seabed to provide protection to CPT rods during testing. Upon completion of the works the casing will be removed from the seabed and holes created during CPTs allowed to naturally seal.

The CPT works will be completed by SMEC/ABH who have submitted the following documentation to the Harbour Master:

– Marine Traffic Management Plan for all barge movements within the Outer Harbour and shipping lanes.
– Details of plant and equipment required.
– Work methods, investigation locations.
– Communication plan outlining plans for marine rescue, communication methods etc.

CPT works are not being carried out by Liberty Industrial. SMEC will be responsible for ensuring the CPT works adhere to the approval conditional contained within Infrastructure Approval (SSI 9471) and for providing environmental controls on the barge deck. SMEC will be working under the AIE Safety Management Plan and EMS. The final equipment to be used is yet to be confirmed, but an example CPT rig and jack up barge is provided below in Figure 6-2 and Figure 6-3.

Figure 6-2 Example CPT rig

Figure 6-3 Example jack up barge

7. Water quality monitoring

7.1 Monitoring locations

Water quality monitoring (WQM) within the Port Kembla harbour is to be undertaken at a total of five locations prior to, and during the Early Enabling Works.

Each WQM point will be securely anchored/moored in its location. Location of each WQM point is outlined in Table 7.1 below and Figure 2-2.

Three locations have been selected to monitor at the zone of impact (WQM 2) and at nearby management zones upstream and downstream of the MBD site (WQM 1 and WQM 3) for the Early Enabling Works.

Another single (1) location has been selected to monitor background conditions (WQM 4). The fifth WQM location is within the Outer Harbour area for ongoing monitoring of the overall harbour area.

The sampling point will be at a depth of 1.6 metres. The choice of locations and depth was adopted from recommendations and management measures outlined in Section 12.4 of the PKGT EIS (GHD, 2018).

The water quality parameters will be consistent with previous similar campaigns within the Port Kembla Harbour such as Berth 103 in 2015 (SSD-7264). This will ensure consistency in the parameters that have been collected, which can be used to build a more comprehensive data set for the port that is based on both historic and contemporary information, and be available for use in future projects.

Table 7.1 *Monitoring point descriptions*

ID Number	Location description	Type of monitoring	
WQM 1	North-west of MBD Site Compound, Inner Harbour, within 'knuckle' of Berth 105	– Primary/Impact Works Area – Receiver Turbidity – Temperature – pH	– Salinity – Dissolved Oxygen (DO) – Weekly grab sample for contaminants.
WQM 3	South-west of MBD Site Compound, Inner Harbour	– Primary/Impact Works Area – Receiver Turbidity – Temperature – pH	– Salinity – Dissolved Oxygen (DO) – Weekly grab sample for contaminants.
WQM 2	North of the laydown area, Outer Harbour	– Primary/Impact Works Area – Receiver Turbidity – Temperature – pH	– Salinity – Dissolved Oxygen (DO) – Weekly grab sample for contaminants.
WQM 4	East of MBD Site Compound, north of the Outer Harbour	– Background Monitoring Receiver – Turbidity – pH – Temperature	– Salinity – Dissolved Oxygen (DO) – Weekly grab sample for contaminants.
WQM 5	West of MBD Site Compound, Inner Harbour (within shoreline of Bluescope Steel)	– Trend Receiver – Turbidity – pH – Temperature	– Salinity – Dissolved Oxygen (DO) – Weekly grab sample for contaminants.

7.2 Automated WQM buoys

The effectiveness of controls will continually be assessed at the WQM locations through the sampling conducted by Automated Monitoring Buoys (AMB).

AMBs will be deployed at the monitoring locations outlined in Section 7.1. The purpose of the AMBs is to gather baseline data prior to commencement of the Early Enabling Works and then to monitor the effectiveness of the water quality controls during the Early Enabling Works. The AMBs will monitor:

– Temperature (Celsius)
– Electrical Conductivity (EC) (salinity for harbour wide monitoring purposes)
– pH
– Turbidity
– DO (for harbour wide monitoring purposes)

Daily visual observations will also be undertaken for duration of Early Enabling Works of the MBD to monitor for potential release of pollutants such as oil or grease. Indicative images of the AMBs are presented in Figure 7-1.

7.2.1 Calibration and maintenance of AMBs

Once deployed, an initial calibration of the AMBs will be undertaken in accordance with manufacturer's specification and a maintenance program will be established. The Liberty Industrial Environmental Representative will inspect each AMB twice weekly, or in response to any observed 'drift' in results. Inspection will also be undertaken as part of an investigation into a triggered alarm level, or anomalous reading (refer to Section 8.6).

Additional maintenance measures for the AMB to prevent pollution and deter formation of biofouling organisms include:

– Anti-fouling wipes: wipes to clean top surface of sensor to prevent biofouling organisms from colonising on probe edge and migrating towards the sensor.
– Sensor port plugs: plastic or copper alloy port plugs to prevent biofouling forming. Copper ports will deter organism settlement.
– Copper tape: anti-fouling protection for probe housing (if housing is plastic or metal).
– Protective plastic sleeves: biofouling will collect on sleeves covering probes and body of equipment and can be then easily removed.
– Sensor guards: metal (copper alloy) sensor guard fitted on the end of the sonde to deter bio-fouling formation.
– Copper alloy screens: placed over conductivity and temperature probes to deter bio-fouling formation. Screens allow water flow to ensure accurate measurements.
– C-spray solution: an environmentally safe, nanopolymer spray to keep surfaces slick and deter bio-fouling settlement.
– Plastic wrap: plastic wrap such as glad wrap or duct tape wrapped around the body of sonde have some anti-fouling properties when used in conjunction with C-spray solution.

7.2.2 Real-time monitoring of AMBs

Data will be logged at 15-minute intervals, based on a moving 15-minute median and transmitted to an onshore recording station where it will be processed to allow automated comparison of median turbidity/Total Suspended Solids (TSS) levels to a series of green, amber and red trigger levels (refer to Section 8.6). When exceeded, an alarm will be triggered and an automated email and SMS alerts will be sent to the Liberty Industrial Environmental Representative and AIE HS&E Manager with appropriate procedures to be implemented, as outlined in Table 8.4.

The average value of WQM 1, WQM 2, WQM 3 will be compared against background levels at WQM 4. If there is an exceedance, a comparison of each individual value will provide direction on where the exceedance is coming from.

Real time data will be displayed in the Liberty Industrial Project Manager's site office.

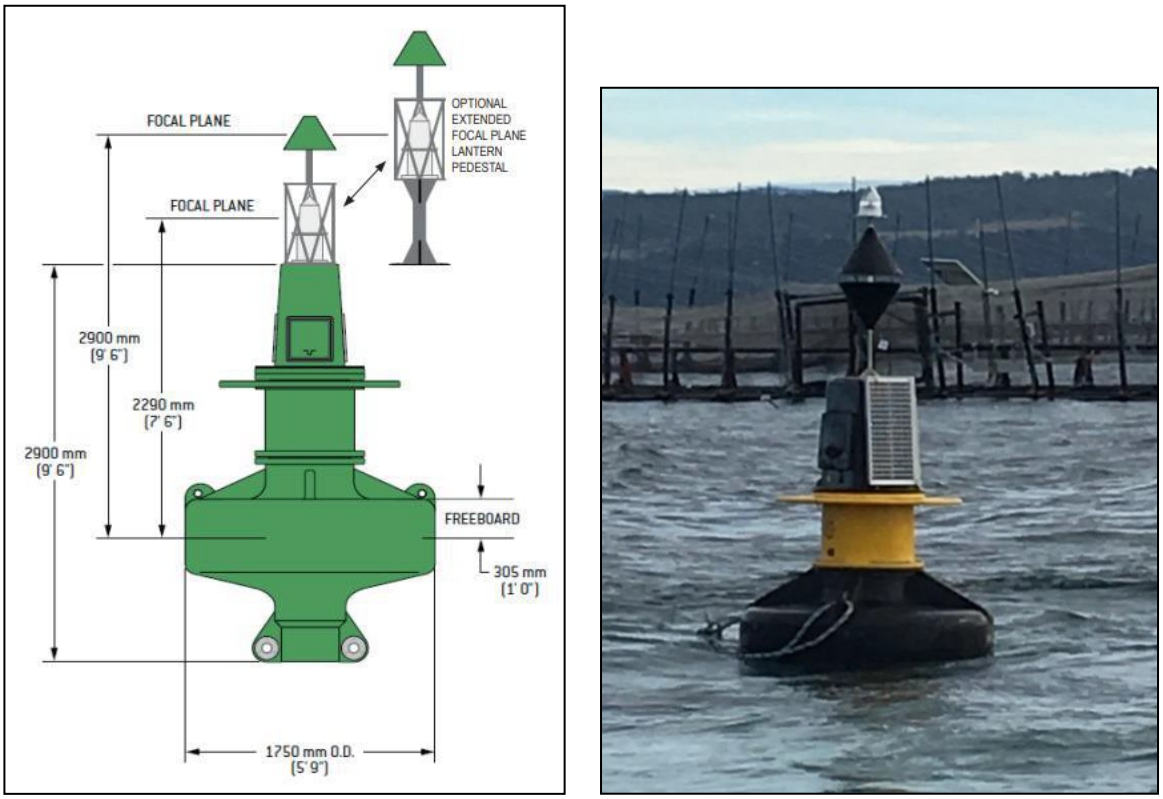


Figure 7-1 Automated Water Quality Monitoring Buoy dimensions

7.2.3 Harbour wide water quality monitoring

WQM 5 will be included in the monitoring program for the purpose of monitoring harbour-wide water quality trends and the ecological health of Port Kembla Harbour. The information obtained for WQM 5 will be used to track water quality indicators in the Inner Harbour, remote of the Project. The trends will be reported monthly for information purposes only.

WQM 5 may also at times be used as an alternative background data point. In the event of tidal changes, ship movement or weather impacts the quality of the data from the primary background monitoring buoy (WQM 4), the Liberty Industrial Environmental Rep may adopt the use of WQM 5 based on observation of the event and data. Both data sets will be recorded throughout the Project.

AIE has presented a conceptual methodology to monitor the ecological health within Port Kembla Harbour to the EPA. The EPA accepted AIE's conceptual methodology, and it was agreed with EPA that a detailed methodology be prepared by a suitably qualified organisation for EPA's review.

A drone flyover will occur monthly to obtain visual photographs of the Early Enabling Works footprint and wider harbour area. The drone footage will provide a visual representation of the ecological health of Port Kembla Harbour. The drone footage will indicate if there are any visual issues requiring investigation, such as sediment plumes.

7.2.4 Construction site run-off

A stormwater management system has been developed for the site to ensure stormwater runoff flows to the Southern Pond in accordance with the EPL conditions.

The quality of water held in sediment ponds shall be tested prior to any release from the worksite to ensure that discharged water complies with EPA Licence criteria for TSS, pH, oil and turbidity. The frequency monitoring will be agreed with the EPA.

Erosion control devices will be inspected within 24hrs after major rainfall events (>15mm in 24 hours). Where controls are deemed inadequate, additional controls will be installed e.g., sandbags additional sed-

fences, channels. Sediment removed from devices will be assessed for suitability and combined with stockpiled project spoil for reuse or disposal.

8. Monitoring assessment criteria

Water quality monitoring assessment criteria have been established to measure the effectiveness of the water quality control measures outlined in the CWQMP against the conditions of the Infrastructure Approval (SSI 9471) (refer to Table 8.1). The monitoring limits proposed in Table 8.1 may be revised to include those required by the pending EPL. Monitoring limits are also used for the basis of staged responses as outlined in Section 8.6.

The reference for monitoring limits considered in the EIS were the ANZECC 2000 guidelines. We note that this CWQMP refers to the ANZG 2018 Default Guideline Values (DGVs). The limits are generally unchanged, with the exception of pH. The adopted DGV's correspond to the marine water 95% toxicant DGVs or unknown reliability DGVs.

Turbidity will be assessed against background levels taken from the background monitoring location, to account for harbourwide variations to turbidity.

It is noted that the monitoring limits outlined in Table 8.1 are initial estimates. These will be revised following a review of background water quality data, when available.

Table 8.1 Water quality monitoring assessment criteria

Pollutant	Monitoring Limit	Reference
Contaminants of Concern		
Aluminium	Baseline	-
Arsenic	Baseline	-
Cadmium	5.5 µg/L	ANZG 2018 – 95% DGVs
Chromium (total)	4.4 µg/L	ANZG 2018 – 95% DGVs
Cobalt	1 µg/L	ANZG 2018 – 95% DGVs
Copper	1.3 µg/L + baseline	ANZG 2018 – 95% DGVs
Lead	4.4 µg/L + baseline	ANZG 2018 – 95% DGVs
Mercury	0.4 µg/L	ANZG 2018 – 95% DGVs
Nickel	70 µg/L	ANZG 2018 – 95% DGVs
Silver	1.4 µg/L	ANZG 2018 – 95% DGVs
Zinc	15 µg/L + baseline	ANZG 2018 – 95% DGVs
Tributyltin	0.006 µg/L	ANZG 2018 – 95% DGVs
Anthracene	0.1 µg/L	ANZG 2018 – unknown reliability DGVs
Naphthalene	70 µg/L	ANZG 2018 – 95% DGVs
Benzo(a)pyrene	Baseline	ANZG 2018 – unknown reliability DGVs
TSS	Background + 50mg/L	-
pH	Background -0.5 pH units	-
Temperature	-	-
EC	Background +/- 20% (+ baseline)	-
DO	Background - 20% (+ baseline)	-

Note: If the baseline of any contaminant listed above exceed the indicated thresholds, thresholds will be adjusted prior to the start of dredging.

8.1 Contaminants of concern (COC)

Indicative environmental protection parameters have been adopted as outlined in Table 8.2. Monitoring locations include a reference to a 'background' value measured at the same time (real time data) or same day (water samples) and referred to as WQM 4 on top of comparison to the baseline readings.

Table 8.2 Monitoring summary

Pollutant	Frequency	Sampling method	Location
Contaminants of Concern			
Aluminium	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Anthracene	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Arsenic	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Benzo(a)pyrene	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Cadmium	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Chromium (total)	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Cobalt	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Copper	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Fluoranthene	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Lead	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Mercury	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Naphthalene	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Nickel	Once weekly	Water sample	Points WQMs 1,2,3 and 4
pH	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Total PAHs	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Tributyltin	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Zinc	Once weekly	Water sample	Points WQMs 1,2,3 and 4
TSS	Once weekly	Water sample	Points WQMs 1,2,3 and 4
Visual indicators			
Oil and grease	Daily	Inspection	From tugs, dredge daily or from the shoreline during Stage 1
Sediment plume	Daily	Inspection	
Marine mammals, Dinoflagellate Cyst Bloom	Daily	Inspection	
Physical parameters			
Temperature	Continuous (15-minute recording intervals)	AMB	Points WQMs 1,2,3 and 4
pH	Continuous (15-minute recording intervals)	AMB	Points WQMs 1,2,3 and 4
EC	Continuous (15-minute recording intervals)	AMB	Points WQMs 1,2,3 and 4
DO	Continuous (15-minute recording intervals)	AMB	Points WQMs 1,2,3 and 4
Turbidity	Continuous (15-minute recording intervals)	AMB	Points WQMs 1,2,3 and 4

Note: Data for DO and EC are provided for Wider Harbour trend purposes only.

8.1.1 Correlation from TSS to turbidity

TSS is the primary parameter for the measurement of turbidity at WQM points until the EPL has been provided, and subsequently approves, onsite statistical correlation and assessment methodology and results.

Previous EPL's issued at Port Kembla indicate that 50 mg/l of suspended sediment is equal to 25 NTU. An example of turbidity and TSS correlation graph is shown in Figure 8-1. Following establishment of NTU values, weekly testing of TSS will be undertaken concurrently with COC grab sampling. The results of sampling will be compared and correlated monthly to enable refinement and accuracy of the real-time NTU data relayed by the AMBs.

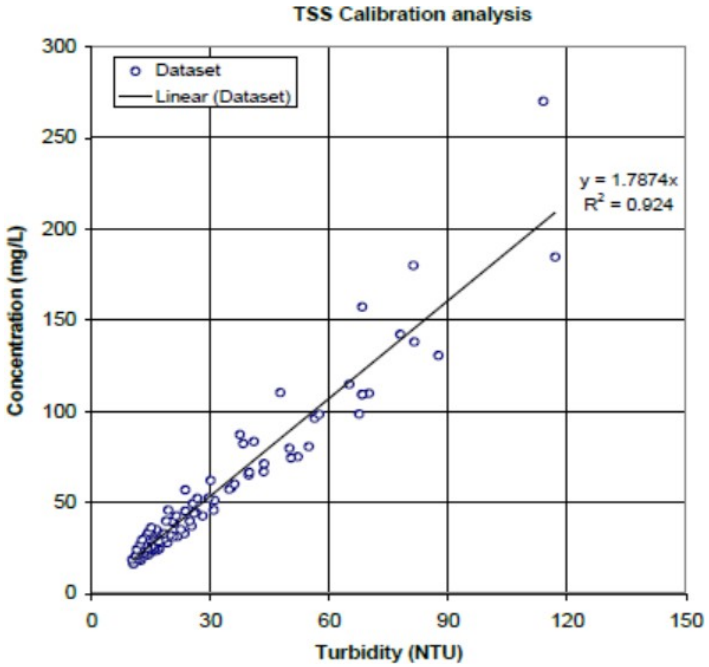


Figure 8-1 Example of a TSS (mg/L) and Turbidity (NTU) Correlation analysis

TSS and turbidity samples for correlation purposes will be taken at three depths 1.5 metres below surface, half depth and two metres above the seabed. Samples will be taken at the same location as the AMBs for the sake of comparison. If the reading two metres above the seabed is high, the contractor will redo one to confirm that the seabed was not disturbed by the sampling, causing the high value. The average value between the three depth readings will be compared to the automatic monitoring in order to validate the manual sampling values.

8.1.2 Onsite contaminant guideline establishment process

Baseline levels for each contaminant/pollutant will be recorded at each of the monitoring points weekly, over a six-week period prior to the beginning of the Early Enabling Works for the MBD. Results will be tabulated with mean baseline levels produced. The mean baseline is calculated by:

(six-week background average figure) x 1.2 (to allow for seasonal fluctuations) values for each contaminant listed in Table 8.2.

This will establish the monitoring assessment criterion baseline value and will form the Marine Water Contaminant Management Criteria for the Project. In the event that a baseline value is higher than the ANZG 2018 – 95% DGVs, the baseline value will be adopted.

8.2 Monitoring of turbidity and physical parameters

8.2.1 Daily inspections

Environmental inspections will be completed daily at the MBD Site Compound and the Emplacement Cell Construction Site during the Early Enabling Works. The environmental inspections will be undertaken by the Liberty Industrial Environmental Representative who will be required to complete the Marine Works Daily Inspection Checklist provided in Appendix C.

With respect to water quality, the following observations will be recorded on the Marine Works Daily Inspection Checklist:

– Presence of sediment plumes.
– Presence of oil and grease.
– Potential toxic Dinoflagellate blooms within the Inner Harbour.

Daily inspections will be supplemented with real time sampling that will include:

– Measurement of turbidity at multiple locations.
– Collection of water samples for analysis for any COCs.

8.2.2 Monthly aerial inspection

A monthly flyover, by drone, will be undertaken of the MBD Site Compound and Emplacement Cell Construction Site. A high-resolution image will be produced, including a qualitative assessment of visible impacts of:

– Sediment plumes.
– Silt curtain condition and position.

The monthly image will be included in the monthly report described in Section 8.5 with actions and may be used to assist in investigation of incidents.

8.2.3 Investigation of exceedance in COC's

A case-by-case investigation process will be implemented for exceedance in COC trigger levels throughout the Early Enabling Works. Further to this, an Environmental Incident Report will be completed by the Liberty Industrial Environmental Representative if the values of the COCs or TSS/turbidity exceed those listed in the monitoring limits table (refer to Table 8.1). Information recorded in the investigation will include, but is not limited to:

– Weather (tides, rainfall, winds etc.).
– Port activities on the day.
– Excavation, disposal or demolition being undertaken works on the day.
– Shipping movements in and out of the port not related to the early enabling works.

The initial goal of the investigation will be to identify the source of the exceedance, then determine the responsible party(s) for the exceedance and report on how the problem can be solved. A process flow diagram for exceedance of trigger level is shown in Section 8.6. An example investigation report template is included in Appendix D.

8.3 ASS monitoring

Material classified as high risk of containing Potential ASS (PASS) and ASS has been identified during geotechnical investigations carried out as part of the EIS and additional baseline and targeted assessments (GHD, 2021). The Early Enabling Works will not encounter any identified high risk PASS which occurs at a depth below the proposed level of excavation during this stage of the works.

The AMBs have capacity to identify any decreasing trends in pH. These readings will be monitored by the Liberty Industrial Environmental Representative. If a drop >0.5 over two consecutive readings (15 minute intervals) is detected an investigation will ensue as outlined in Section 8.6..

8.4 Sampling methodology

Grab sampling for COC and TSS will be undertaken weekly at all WQM locations during the Early Enabling Works.

Sampling will be undertaken by appropriately qualified and trained personnel and with reference to relevant statutory requirements, standards and quality assurance (QA) and quality control (QC) protocols. This includes sampling personnel wearing powderless nitrile gloves during sampling and the sampling equipment being decontaminated between samples.

Samples will be submitted to a National Association of Testing Authorities (NATA) accredited laboratory on 48 hour Turn Around Times (TATs) to facilitate a timely response to elevated concentrations. The water sampling procedure is provided in Appendix E.

8.5 Reporting commitments

Liberty Industrial will provide regular reports to AIE during the Early Enabling Works for the MBD. AIE is responsible for reporting to DPIE in accordance with Schedule 4, Condition 7 and Condition 8 of the Infrastructure Approval (SSI 9471), and similarly to the EPA for the requirements set out under the EPL (EPL No. 21529). The requirements for these reports are as follows:

8.5.1 Requirements under the Infrastructure Approval

AIE will provide regular compliance reporting to DPIE in accordance with the guideline *Compliance Reporting Post Approval Requirements* (DPIE, 2020). Reporting will consist of:

– Water quality monitoring results, compared to trigger levels and monitoring limits.
– Requirements of the EPL (when issued).
– Construction works progress and appraisal of water quality controls.
– Environmental Incident Report(s), as required (refer to Section 8.7.2 for further details regarding incident management and reporting).

A summary of monthly data will be published on the PKGT AIE website in the form of a report. The report will note details for:

– Any exceedance of COC trigger values, the subsequent investigation and response/resolution
– Complaint summary (if applicable)
– Statistics related to productivity of work (actual workflow vs planned) including details on any delays encountered
– Forecasting for future works
– Activities completed for the month
– Activities planner for the next month
– Current risks and issues, including impact level and mitigation measures.

In addition to the above reporting requirements, AIE will also provide the following current information on the Project website, as per Schedule 4, Condition 12 of the Infrastructure Approval (SSI 9471):

– PKGT EIS.
– Current statutory approvals for the Project (including Infrastructure Approval (SSI 9471)).
– Approved strategies, programs or plans required by Infrastructure Approval (SSI 9471), including this CWQMP.
– Any other matter required by the Planning Secretary.

The published content of the AIE website will be regularly updated to ensure the provided information and documents are the most recent and current.

Lastly, as required under Schedule 2 Condition 8 of Infrastructure Approval (SSI 9471), AIE will notify DPIE in writing of the date of commencement of the Early Enabling Works for the MBD.

For reporting and notification requirements associated with incidents and or non-conformances under the Infrastructure Approval, refer to Section 8.7.

8.5.2 EPL reporting

AIE will ensure that monitoring data obtained as a result of EPL monitoring requirements are reported on the AIE website as required under the EPA Guidelines: *Requirements for publishing pollution monitoring data* (2013). Specifically, in accordance with Section 66(6) of the Protection of the POEO Act, AIE will publish on their website pollution monitoring data within 14 working days of obtaining the data.

Furthermore, an Annual Return comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), will be submitted to the EPA within 60 days after the end of each reporting period. The Annual Return will be prepared in accordance with the requirements as set out under the EPL.

8.6 Triggered event response

Strategically placed AMBs will compare immediate impact of TSS/turbidity Levels, if any, at the Early Enabling Works to background levels recorded within the surrounding harbour ocean area. Data recording at these monitoring points is continuous and three Trigger Levels have been chosen to represent and identify exceedances relative to background levels. Trigger Levels are seen below in Table 8.3 and scaled according to severity.

It is noted these Trigger Levels are an initial estimate and will be revised following review of background water quality data becoming available.

Table 8.3 Trigger Levels and Concentration Limits for Monitoring locations

Parameter	Monitoring Location	Level Trigger 1	Level Trigger 2	Level Trigger 3	Concentration Limit
TSS (mg/l)	1, 2, 3	Background 25 + mg/l	Background 35 +mg/l	Background 45 +mg/l	Background + 50 mg/l
pH	1, 2, 3	Background 0.2 - pH units	Background - 0.3 pH units	Background 0.4 - pH units-	Background pH -0.5 units
COC	1, 2, 3		Lesser value of either 2x Baseline	Lesser value of either 4x Baseline	Table 7-2

8.6.1 Turbidity Action Response Plan

Any exceedance is to be analysed in order to confirm if it has been caused by the Early Enabling Works for the MBD.

The Project will adhere to the Turbidity Action Response Plan seen below in Table 8.4 which provides a framework for environmental management and response at respective trigger levels, if confirmed to be attributed to the Early Enabling Works.

Table 8.4 Turbidity Action Response Plan

Normal Situation	Level 1 Trigger (Background + 25mg/l)	Level 2 Trigger (Background + 35mg/l)	Level 3 Trigger (Background + 45mg/l)
Controls effective	**Check controls and Work Practices**	**Respond, check work practices and controls, reduce suspended sediment**	**Respond, intervene, reduce and investigate**
	– Alert Construction Foreman. – Employ adaptive work management practices to minimise suspended sediment, examples include: • Work speed and timing – Brief suspension of operations depending on tide and/or optimisation/alteration of pier demolition and removal • Location – Change location of equipment • Magnitude – adjust demolition works intensity, including brief suspension of in water works.	– Alert CWQMP Project Manager. – Reduce suspended sediment attributable to Early Enabling Works by implementing one or more adaptive management practices. – A check of Water Quality Controls must be undertaken to ensure they are functional. Return to normal operations can only take place if sediment generating activities are reduced by employing adaptive work management practices to minimise suspended sediment, examples include: • Work speed and timing – Brief suspension of operations depending on tide and/or optimisation/alteration of pier demolition and removal • Location – Change location of equipment • Magnitude – adjust demolition works intensity, including brief suspension of in water works.	– Alert CWQMP Project Manager. – CWQMP Project Manager to immediately instruct all plant to go to established operational modes known to reduce sediment generating activities or – temporarily suspend operations until such time contractor can demonstrate that the operation is “environmentally secure” and all controls are functioning and in place – Liberty Industrial to investigate and identify the source of the exceedance (this can be in conjunction with the Environmental Representative) – Return to normal operations can only take place if sediment generating activities are reduced by employing adaptive work management practices to minimise suspended sediment, examples include • Work speed and timing – Brief suspension of operations depending on tide and/or optimisation/alteration of pier demolition and removal • Location – Change location of equipment • Magnitude – adjust demolition works intensity, including brief suspension of in water works.

Additionally, possible mitigating measures that can be considered in the event of an exceedance that has been attributed to the Early Enabling Works include:

1. Inspection of silt curtains, replace any part that is worn out/broken.
2. Replace underperforming compressors/hoses if needed.

8.6.2 Other sampling and mitigation measures in the event of a triggered response

Port Kembla has an average annual rainfall of 1,320.9 millimetres. Therefore, it is possible other factors are affecting the level of TSS in the water column. When excessive rainfall has occurred (>50 millimetres in 48 hours) then extra background readings can be taken by using a handheld turbidity probe. The recording of such data from points both in the Inner and Outer Harbour adjacent to known waterways and drainage line can indicate if extra external sources of sediment are being discharged into the harbour. Shipping around the construction area is also known as an external source having impact on the readings.

8.7 Exceedance event management process

In the event where physical parameters, turbidity/TSS or COC's exceed the recommended trigger values, the Liberty Industrial Environmental Representative (or delegate) will assess the situation with the Liberty Industrial Project Manager (or delegate) and the AIE Environmental Representative with the primary aim to identify the likely cause(s) of any trigger event.

If the elevated turbidity or contaminant levels of concern are determined to be a direct result of the Early Enabling Works activities, the Liberty Industrial Environmental Representative (or delegate) will determine the appropriate mitigation measures to be implemented in consultation with the AIE Environmental Representative. These measures may include undertaking further sampling and/or installation of additional silt curtains, absorbent booms and/or further modifications of the activities.

The proposed measures will consider the significance of the exceedance and the impacts that the increased turbidity/contaminants may be having on the physical and ecological parameters of Port Kembla Harbour (Inner and Outer).

Any exceedance that is found to be caused solely by contractor activities will be recorded by the Liberty Environmental Representative (or delegate) and lodged as an official Environmental Incident Report to AIE. These details will include, but not be limited to:

– Location, time and date
– Tidal movements
– Location of dredging operations
– Details of construction processes and
– Level of contaminants of concern (from grab samples taken prior to the event and following the event).

Where there has been an exceedance of monitoring limits, the Liberty Industrial Environmental Representative in Consultation with the AIE Environmental Representative will:

– Establish that all plant, equipment and environmental controls, (i.e., silt curtains) are operating in a proper and efficient manner
– Identify the likely source of contamination
– Implement any required corrective measures
– Apply rules and controls established in Table 8.3 of this CWQMP if an exceedance is suspected or confirmed to be related to the Early Enabling Works
– Stop work activities if required as per Table 8.4 of this CWQMP when an exceedance is demonstrated to be caused by the Early Enabling Works and is above the background +50 mg/l trigger level.

8.7.1 Non-compliance notification

In the event of a notifiable non-compliance incident arising, Liberty Industrial's Environmental Representative will notify the AIE HS&E Manager immediately to allow AIE to notify DPIE in writing (to compliance@planning.nsw.gov.au) within 7 days of AIE becoming aware of the non-compliance, as per Schedule 4 Condition 6 of Infrastructure Approval (SSI 9471). Liberty Industrial is also responsible for the initial reporting of significant non-compliances with the EMS or relevant legislation to the AIE Project Manager.

The non-compliance information will be reported to DPIE in writing by the AIE HS&E Manager to compliance@planning.nsw.gov.au within seven days of AIE becoming aware of any non-compliance incident from the Early Enabling Works. The notification must include:

– The development (PKGT Early Enabling Works for the MBD).
– Application number.
– Condition of Infrastructure Approval that works are non-compliant with.
– The way it which it does not comply.
– Reasons for non-compliance (if known).
– What actions have/will be taken to address the non-compliance.

In accordance with EPA Guidelines a specific Pollution Incident Response Management Plan will be developed and implemented prior to construction recommencing.

8.7.2 Incident notification

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.

All incidents including those involving AIE, Liberty Industrial (and subcontractors (if any)) and visitors that occur during Early Enabling Works for the MBD will be managed in accordance with the Incident Notification and Response Flow Chart (Appendix F). The incident will be recorded and managed according to Liberty Industrial's Safety Management Plan. All environmental incidents will be reported to DPIE in writing (to compliance@planning.nsw.gov.au) immediately after AIE becomes aware of the incident, as per Schedule 4 Condition 5 of Infrastructure Approval (SSI 9471).

Furthermore, as specified in Schedule 4 Condition 4, within 3 months of any incident report, audit, modification to the condition of approval, or direction from the Planning Secretary, this CWQMP must be reviewed for adequacy, and if necessary, revised. Within four weeks of any revision to the plan occurring, or indeed any other related document, the plan or plans will be submitted to the Planning Secretary for approval, unless otherwise agreed with the Planning Secretary. Any measures identified in the revised plan to improve the environmental performance of the Early Enabling Works will be implemented as soon as practicable following the Secretary's approval.

A flow diagram illustrating the water quality assessment and monitoring incident processes is provided in Appendix F.

8.7.2.1 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.

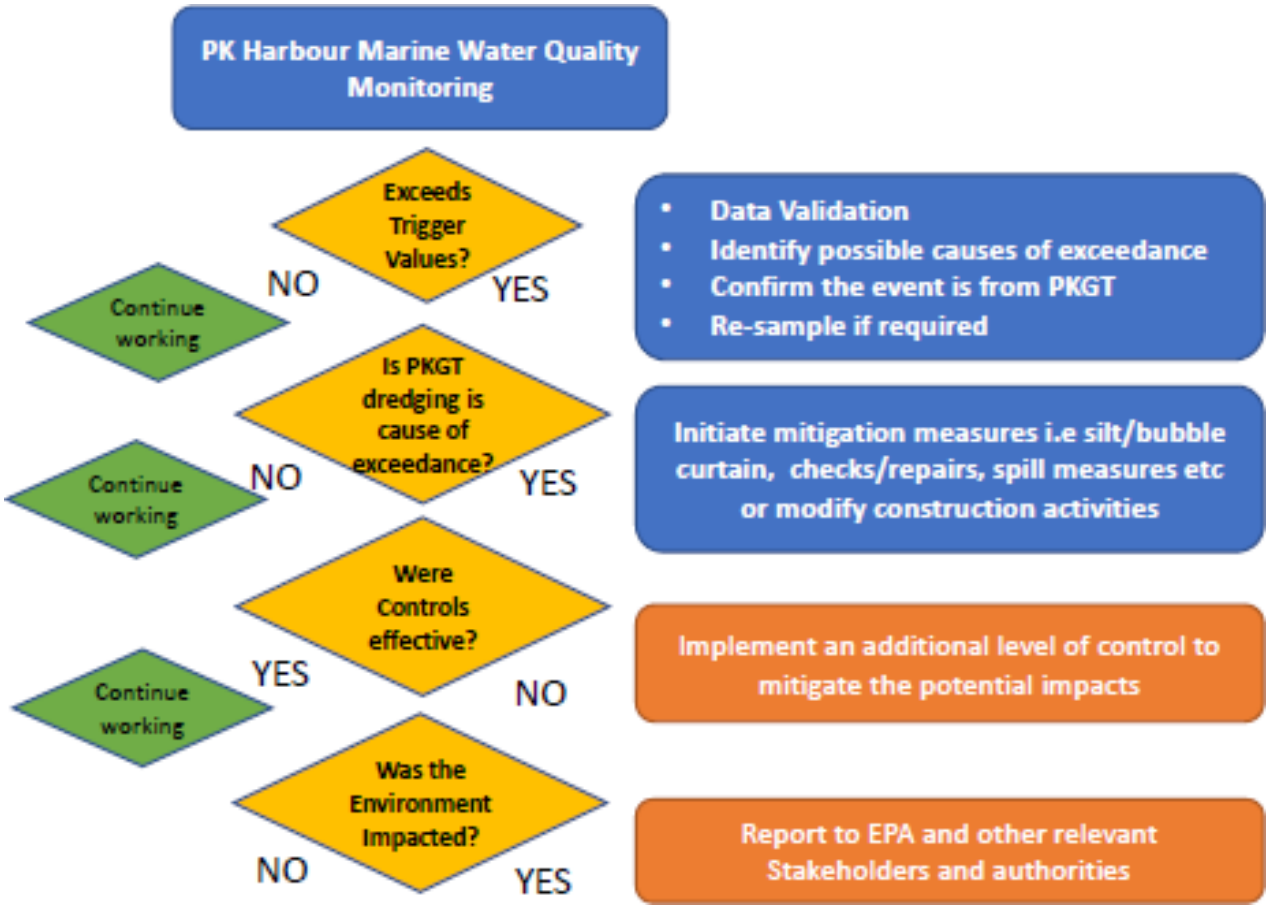


Figure 8-2 Triggered event process flow chart

8.8 Review and revision of CWQMP

This CWQMP will be reviewed and updated, as required, to ensure the objectives of water quality monitoring and the applicable approval conditions contained within Infrastructure Approval (SSI 9471) are being met throughout the Early Enabling Works.

In accordance with Schedule 4, Condition 4, AIE will review, and if necessary revise this CWQMP within 3 months, unless agreed with the Planning Secretary, of the following where applicable:

– Following an environmental audit taking place and recommendations being implemented (refer to Section 8.5).
– The approval of any modification to the conditions of this approval.
– Exceedances of COCs, turbidity etc., requiring reporting and potential additional mitigation (refer to Section 8.6).
– Following results from data collated and reported that may require additional management strategies or mitigation not previously discussed in this CWQMP.
– Incidents or non-compliance occurring, such as those described in Section 8.7.
– At the direction of the Planning Secretary.

Following any approved revision of this CWQMP, the document will be made available on the AIE website as detailed further in Section 8.5.1.

References

ANZECC 2000, Australian and New Zealand Guidelines for Fresh and Marine Water Quality.

ANZG 2018, Australian and New Zealand Guidelines for Fresh and Marine Water Quality.

Australian Standards *2601-2001: The Demolition of Structures*

DPIE 2020, *Compliance Reporting Post Approval Requirements*.

DPIE 2020, *Independent Audit Post-Approval Requirements*

DPIE 2019, Infrastructure Approval SSI 9471.

GHD 2018, Port Kembla Gas Terminal Environmental Impact Statement.

Landcom 2004, Managing Urban Stormwater: Soils and Construction Volume 1 and Volume 2. - Volume 2A (the “Blue Book”).

NSW Ports 2014, Berth 103 Stage 2 Extension - Dredging and Spoil Disposal Works.

NSW Ports 2016, Port Kembla Development Code.

Appendices

Appendix A

Demolition Plan for Berth 101

Australian Industrial Energy

Port Kembla Gas Terminal

Demolition Plan for Berth 101

Document Number: PKGT-AIE-DEM-PLN-0001

B	Comments from NSW Ports incorporated	03-Mar-2021	CJH	MC	ML
A	Issued for external review	22-Feb-2021	CJH	MC	ML
Rev	**Description**	**Date**	**Prepared**	**Checked**	**Approved**

DEFINITIONS AND ACRONYMS

Term	Meaning
AIE	Australian Industrial Energy
EGP	Eastern Gas Pipeline
FSRU	Floating Storage & Regassification Unit
LNG	Liquified Natural Gas
PKCT	Port Kembla Coal Terminal
PKGT	Port Kembla Gas Terminal
TfNSW	Transport for NSW

CONTENTS

1 INTRODUCTION

Australian Industrial Energy (AIE) will proceed with building and operating the Port Kembla Gas Terminal (PKGT) project at Port Kembla, New South Wales. The project involves the development of a liquified natural gas (LNG) import terminal, which would be the first such import terminal in NSW and provide a simple, flexible solution to the State's gas supply challenges.

AIE's PKGT project has been granted Critical State Significant Infrastructure (CSSI) status and has been granted approval SSI 9471 from the Department of Planning, Industry and Environment in April 2019 (Approval).

AIE's project consists of:

- Floating Storage and Regasification Unit (FSRU) — a cape-class ocean-going vessel which will be moored at Berth 101 in Port Kembla. The FSRU receives LNG from LNG carriers and will gasify the LNG from transfer into the gas pipeline;
- Berth and wharf facilities – including landside offloading facilities to transfer natural gas from the FSRU into a natural gas pipeline located on shore; and
- Gas pipeline – a 13.5 kilometre, 450 millimetre diameter underground carbon steel high-pressure pipeline connection from the berth at Port Kembla to the existing gas transmission network at Kembla Grange.

The land for the project is currently leased by Port Kembla Coal Terminal (PKCT) from NSW Ports who in turn lease from Transport for NSW (TfNSW). PKCT will surrender part of their lease and new leases will be created.

The lease includes Berth 101 which will be demolished by AIE to make way for the project development. Berth 101 is the southern part of Lot 8 of DP 1154760, and the northern part of this Lot is Berth 102 which will be retained by PKCT.

This Demolition Plan provides details of the demolition of Berth 101. Under the lease agreements the berth must be demolished by 29 September 2021. AIE's contractor, Liberty Industrial Pty Ltd (Liberty) will perform the demolition work.

1.1 Berth 101

The existing Berth 101 was built in the 1960's and is a simple concrete deck on steel pile structure complete with a timber fendering system supported by concrete piles. Neither the deck or the piles were constructed using pre- or post stressed concrete. The location of AIE's project is shown in Figure 1 below and the location of Berth 101 is shown in Figure 2, with the most recent condition report of the Berth prepared by GHD in September 2017. At that time the Berth was used for discharging major equipment (coal stackers and reclaimers) for Port Kembla Coal Terminal and the Berth is currently in service.

The nearest structure to Berth 101 is PKCT's Transfer Station 8 (TS8) which services berth 102. TS8 is approximately 20 metres to the North of Berth 101. To ensure demolition methods, including vibro removal of piles, do not impact TS8, a pre works survey of TS8 will be undertaken with regular check surveys conducted as demolition works progress to confirm TS8 is not impacted.

Drawings of existing Berth 101 are in Appendix 1.

Figure 1 Location of AIE Project at Port Kembla Inner Harbour

Figure 2 Location of Berth 101to be Demolished

2 DEMOLITION OVERVIEW

2.1 General

The demolition of Berth 101 includes:

- bunker oil line running underneath Berth 101;
- timber fenders and fender piles;
- dead man anchors;
- deck of the wharf;
- approximately 457 concrete filled steel piles; and
- surveys after completion of the demolition

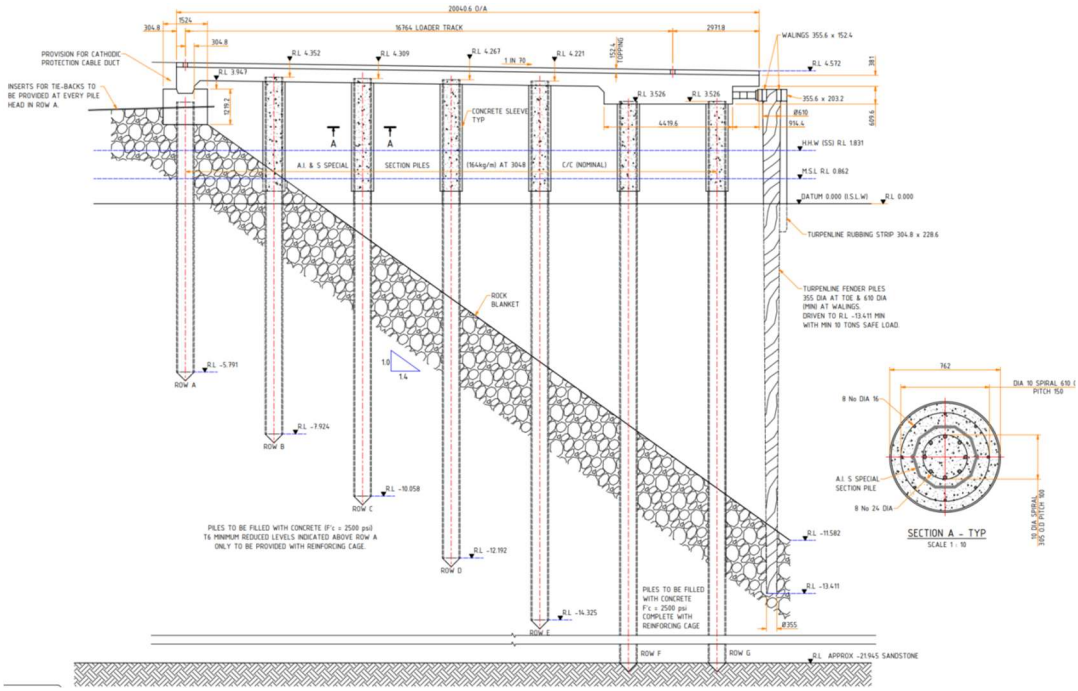


Figure 3 Cross Sectional View of Berth 101

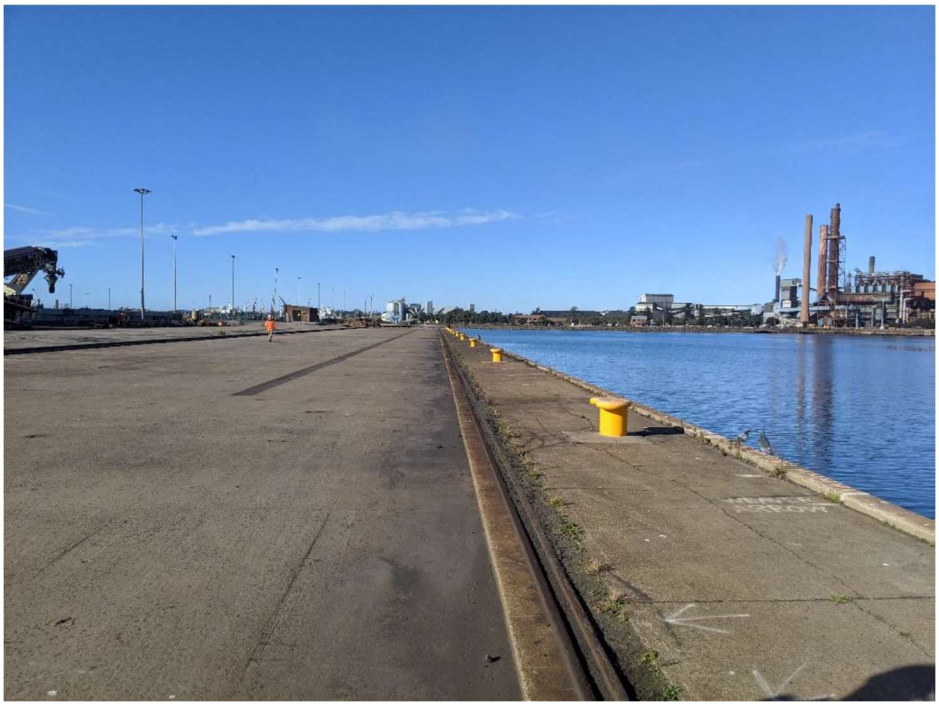


Figure 4 Berth 101 Looking South

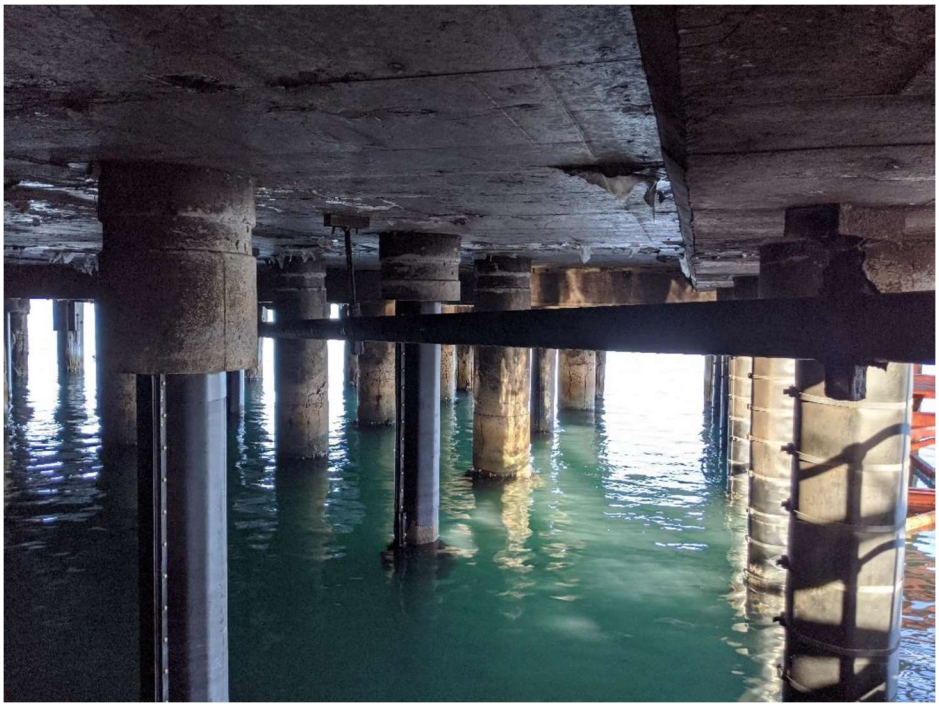


Figure 5 Piles and Bunker Oil Line Under Berth 101

2.2 Environmental Protection

Environmental protection and monitoring will be conducted by RARE Environmental for Liberty with oversight provided by GHD for AIE. RARE has been involved with AIE's project for over 18 months and have authored many of the management plans required under AIE's Development Consent.

For the berth demolition, specific environmental protection activities include:

- installation of a silt curtain prior to commencement of any work over water;
- installation of turbidity monitoring buoys as required by project Approval;
- placement of localised floating booms and provision of spill kits around work areas
- Dust control for concrete saw cutting includes vacuum collection of slurry subsequent drying prior to disposal of the slurry waste.
- atomised dust suppression will be employed to control dust generated by the concrete crushing plant;
- implementation of Water Quality Management Plan as required by project Approval;
- implementation of Air Quality Management Plan as required by project Approval,;
- implementation of Spoil and Waste Management Plan as required by project Approval;
- implementation of Construction Traffic Management Plan as required by project Approval;
- implementation of Unexpected Finds Protocol as required by project Approval;

2.3 Codes, Standards and References

In order to meet the specific requirements of AS 2601-2001 (The Demolition of Structures), job specific Work Method Statements will be created by Liberty, through detailed inspection and consultation with Liberty staff undertaking the works.

The codes, regulations, guidelines and Standards applicable to the Berth demolition are listed below.

- SafeWork NSW Demolition Licensing;
- SafeWork NSW Friable Asbestos Licensing;
- Work, Health and Safety Act 2011;
- Work, Health and Safety Regulation 2017;
- Protection of the Environment Operations Act 1997 (NSW);
- Protection of the Environment Operations (Waste) Regulation 2005 (NSW);
- Protection of the Environment Operations (Noise Control) Regulation 2008 (NSW);
- Demolition Work Code of Practice;
- AS 2601 The Demolition of Structures;
- AS 4361.2 Guide to Lead Paint Management;
- AS 3000 SAA Wiring Rules;
- AS ISO 14004 - 2004: Environmental management systems - General guidelines on principles, systems and support techniques;

- AS/NZS ISO 14001: 2004: Environmental management systems - Requirements with guidance for use;
- AS/NZS ISO 19011: 2003 Australian/New Zealand Standard Guidelines for quality and/or environmental management systems auditing;
- Environmental Protection Authority Publication Environmental Guidelines for Major Construction Sites (1996);
- AS 1885.1 – 1990: Workplace injury and disease recording standard;
- AS/NZS 4801 - 2001: Occupational Health and Safety Management Systems - Specification with Guidance for use;
- How to Safely Remove Asbestos Code of Practice;
- AS/NZS ISO 9001:2015 Quality management systems - Requirements;
- AS/NZS 4581 - 1999: Management System Integration – Guidance to Business,
- Government and Community Organisations;
- AS/NZS 4804 - 2001: Occupational Health and Safety Management Systems – General guidelines on principles, systems and supporting techniques;
- National Code of Practice for Excavation Work;
- Asbestos Blueprint for NSW;
- Fire Brigades Act 1989;
- Local Government Act 1993;
- AS 2865 – 2009 Confined Spaces;
- AS 1319 Safety Signs for the Occupational Environment
- AS/NZS ISO 45001 – 2018: Requirements with guidance for use Occupational health and safety management systems - Requirements with guidance for use

2.3.1 Relevant State Acts and Regulations

- Environmental Planning and Assessment Act 1979
- Environmental Planning and Assessment Regulation 2000;
- Biodiversity Conservation Act 2016;
- Coastal Management Act 2016;
- Contaminated Land Management Act 1997;
- Heritage Act 1977;
- Marine Safety Act 1998;
- Marine Safety Regulation 2016;
- National Parks and Wildlife Act 1974;
- Ports and Maritime Administration Act (1995)
- Ports and Maritime Administration Regulation 2012;
- Protection of the Environment Operations Act 1997;
- Protection of the Environment Operations (Clean Air) Regulation 2010;

- Roads Act 1993;
- Heavy Vehicle National Law (NSW);
- Water Management Act 2000;
- Explosives Act (2003);
- Explosives Regulations 2013;
- Marine Pollution Act 2012;
- Marine Pollution Regulation 2014;
- Waste Avoidance and Resource Recovery Act 2001;
- Fisheries Management Act 1994;
- NSW Ports' Standard Terms and Conditions for Channel Access
- NSW Ports' Standard Terms and Conditions for Berthing at Common User Wharves or Dedicated Facilities
- Port Authority of New South Wales' Harbour Master Directions Port Kembla;
- Port of Port Kembla Port Instructions;
- Australian Marine Safety Authority Navigation Act 2012; and
- Biosecurity Act 2015.

3 METHODOLOGY

3.1 Site Access

Prior to commencement of work, AIE will review Liberty's Work Health and Safety Management Plan, Emergency Response Plan and various support documents including work method statements and job hazard analyses. Method statements for high-risk activities including work over water, working at heights, lifting and working in confined spaces form part of the safety management system.

Key scenarios considered in the Emergency Response Plan include partial collapse of the Berth, personnel and equipment falling into water, hydrocarbon spills and response to medical emergencies. The safety management system will comply with Australian Standard AS45001.

Access to site and within the site will be controlled with traffic management plans which shall comply with the Project Approval. These plans shall ensure vehicles move safely and in a controlled manner using delineated transport routes.

The perimeter of the defined demolition zone will be barricaded and signposted to prevent unauthorised access. Access points will be established and only worker(s) who have been site inducted with the authority of Liberty's Project Manager may enter these zones.

The site will be secured with existing as well as temporary fencing. All entrance and exit gates will be locked or manned when truck movements are underway.

As the work progress, different work areas will be barricaded and signposted to define the area and prevent access. Any hazardous material identified will also be barricaded and signposted.

The perimeter of the defined demolition zone will be barricaded and signposted to prevent unauthorised access. Access points will be established and only worker(s) who have been site inducted with the authority of Liberty's Project Manager may enter these zones.

3.1.1 Asbestos Materials

Site will be inspected prior to demolition works and all hazmat removal works will be conducted following establishment on site. All residual ACMs and any other contaminants discovered during the demolition processes will be removed in accordance with statutory requirements and specific Work Method Statements will be developed for their removal. Disposal of these materials will occur at a licensed facility and will be tracked under the current EPA waste tracking requirements for asbestos.

3.2 Demolition Risk Assessment Workshop

A Demolition Risk Assessment Workshop (DRAW) will be undertaken prior to work commencing to identify the high-level Safety and Environmental risks that are likely to be encountered during the works. The outcome of the DRAW will be supplied to NSWPorts 7 days prior to demolition works commencing.

The DRAW will then be used by the site team as the foundation for the development of a Job Hazard Analysis (JHA) for each specific task identified within the Work Method Statement. As circumstances change, the DRAW will undergo a review.

3.3 Berth 101 Demolition

The working area for demolition of Berth 101 is represented in Figure 6 below.

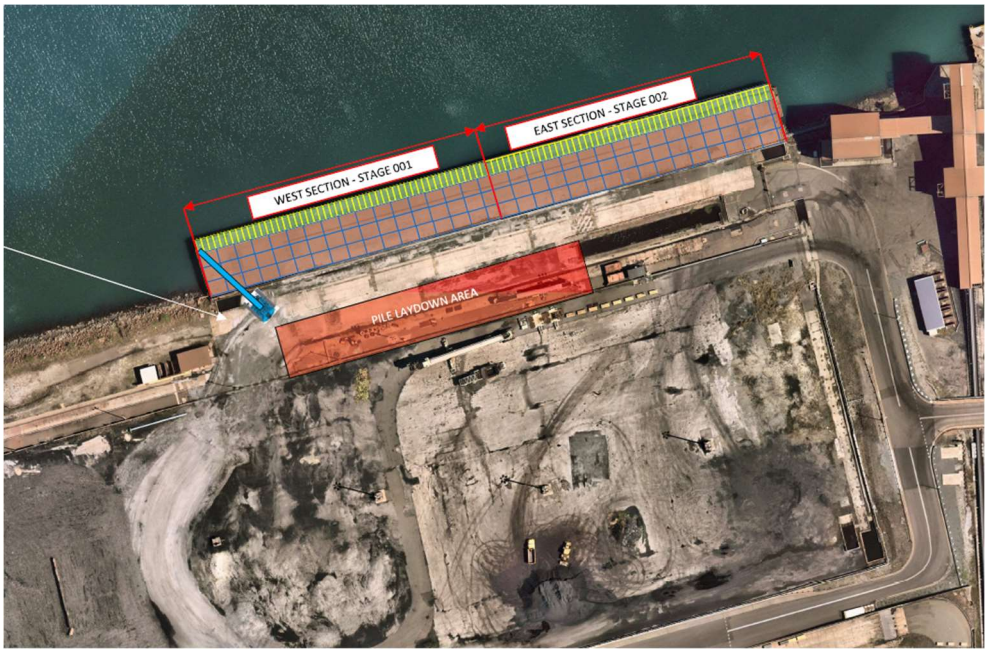


Figure 6 Working Area for Berth 101 Demolition

The following steps will be followed for demolition of Berth 101:

- Port Kembla Coal Terminal (PKCT) are responsible for disconnection and termination of all services connected to Berth 101 prior to surrendering their current Berth 101 lease. PKCT will provide objective evidence that all services have been disconnected and terminated. Liberty will be provided with the objective evidence and implement a due diligence process prior to commencing demolition works to satisfy themselves that services have been disconnected.
- install silt curtain to a depth of 6 meters with boom around Berth 101 as shown in Figure 7
- the bunker oil pipeline located underneath Berth 101 will be water washed, pigged, vented and isolated by Park Fuels prior to demolition works commencing. Isolation will be by removing a pipe spool near the northern breakwater transformer compound and cutting the pipeline (by others) near structure TS8 in PKCT;
- the bunker oil pipeline will be dismantled by unbolting flanges and cold cutting with the dismantled sections moved to the shore and then taken off site for disposal. Oil booms will be locally deployed and spill kits will be available should any fluids remain in the pipeline.
- engineering studies will be conducted by a 3rd party qualified structural engineer to plan and certify the sequence of lifting of the deck considering the stability of the Berth as it is gradually demolished. Critical crane lift studies will be conducted considering the load to be lifted, the load imposed on the Berth, the position of the crane and the reach of the crane;

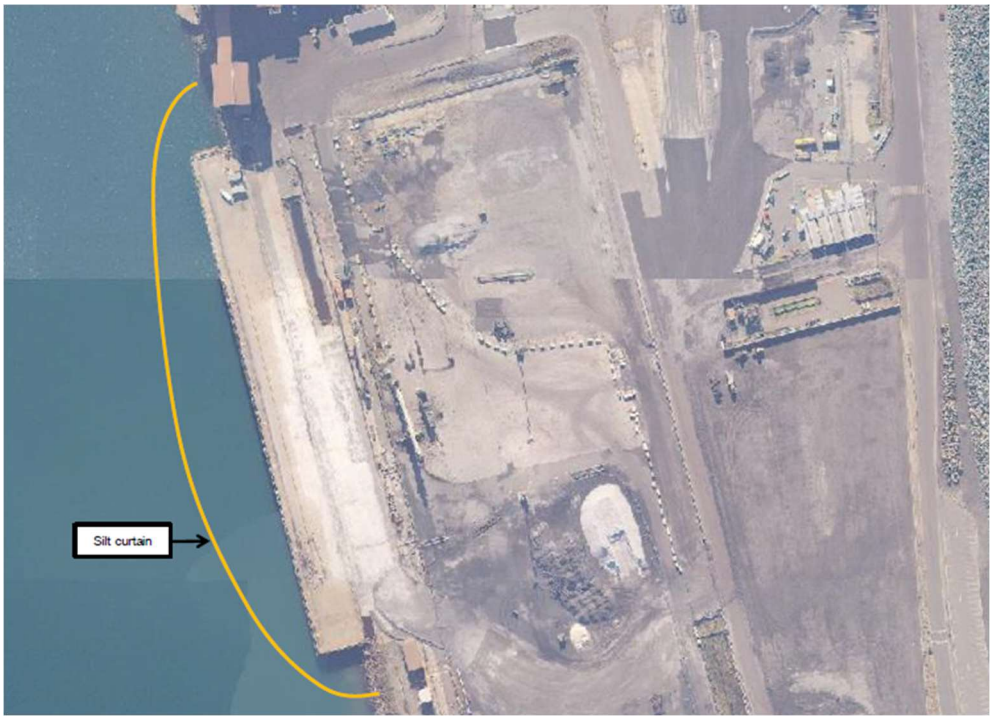


Figure 7 Silt Curtain Installation

- marking out the berth deck for saw cutting and install anchor points for lifting;
- saw cutting of the berth deck;
- wire sawing of piles below the deck
- lifting sawn deck sections onto the adjacent hard stand area, see example in Figure 8;

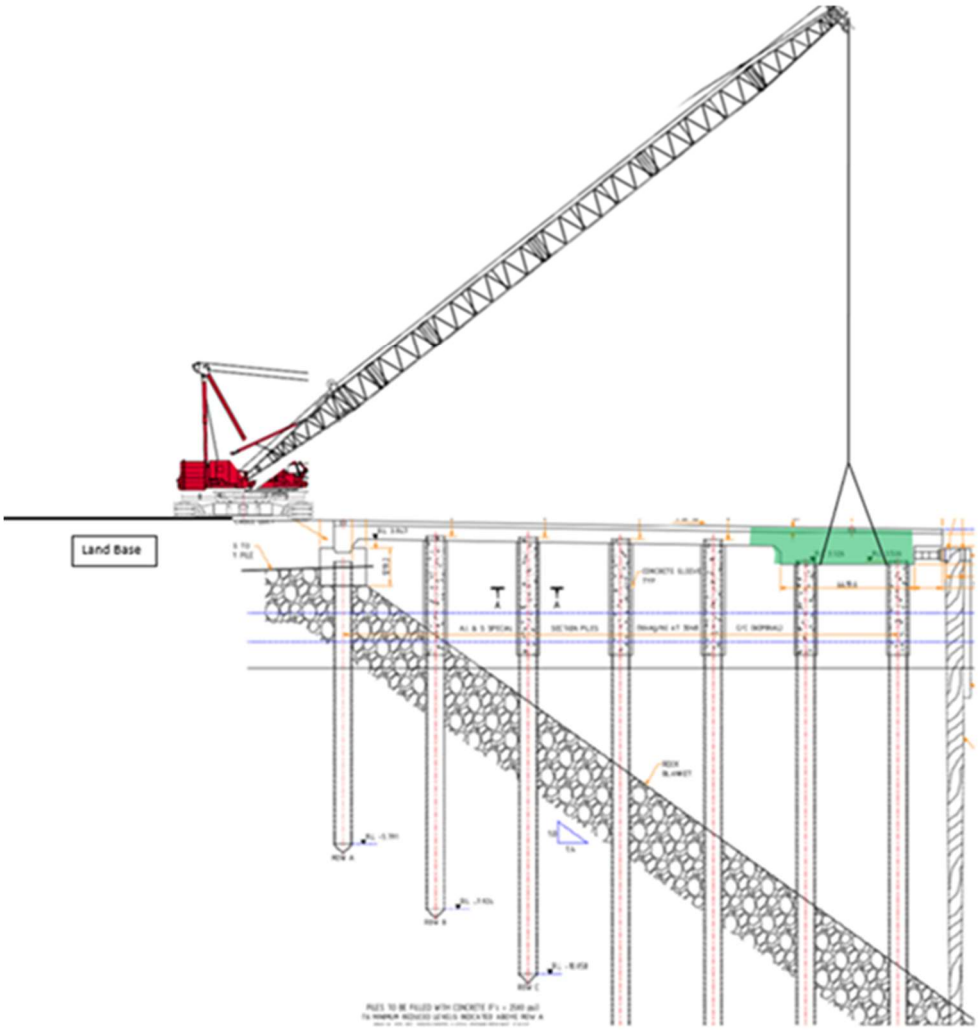


Figure 8 Example of Lifting Sawn Deck Sections

- Partial demolition of deck sections and separation of concrete from steel piles and reinforcement
- transporting partially demolished deck sections for final separation of any residual steel and crushing of concrete (for re-use) and disposal of reinforcing steel;
- fender piles are timber and will be extracted by direct pulling. There is an expectation that some piles will break and leave stumps. As AIE is dredging a new berthing box after completion of demolition, timber stumps will be removed during the dredging operation.

- extraction of steel piles by vibration and subsequent placement of piles on hard stand adjacent to the Berth using crane barge shown in Figure 9. The vibration method is low impact and does not impose any material load on adjacent structures.
- steel piles have reinforced concrete infills which will be separated using shears attached to an excavator for subsequent crushing of concrete (for re-use) on site and offsite disposal of recovered pile steel and reinforcing steel.

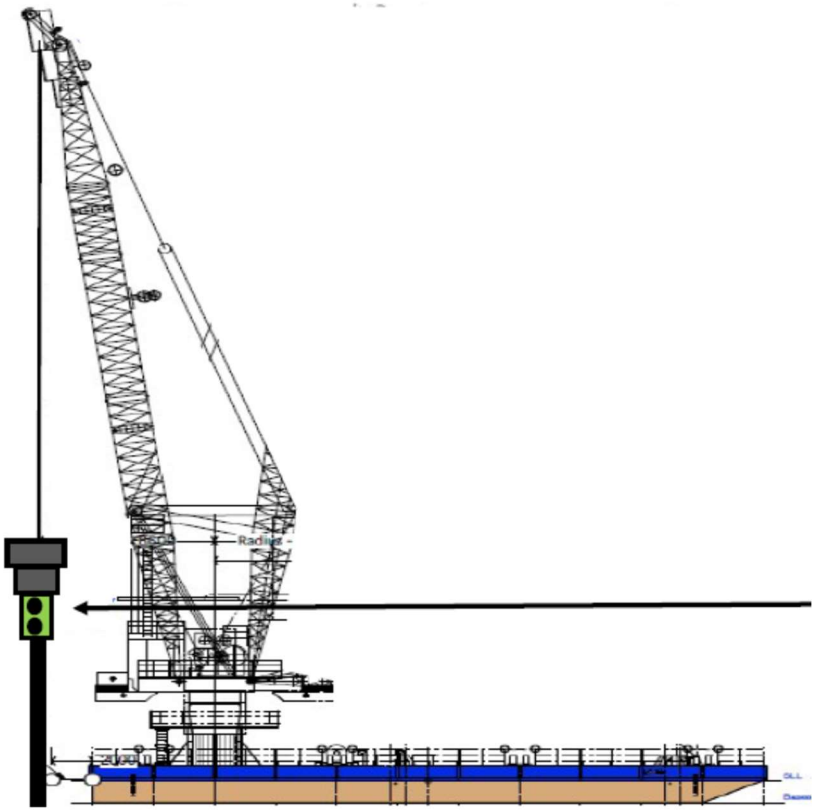


Figure 9 Crane Barge Removing Piles

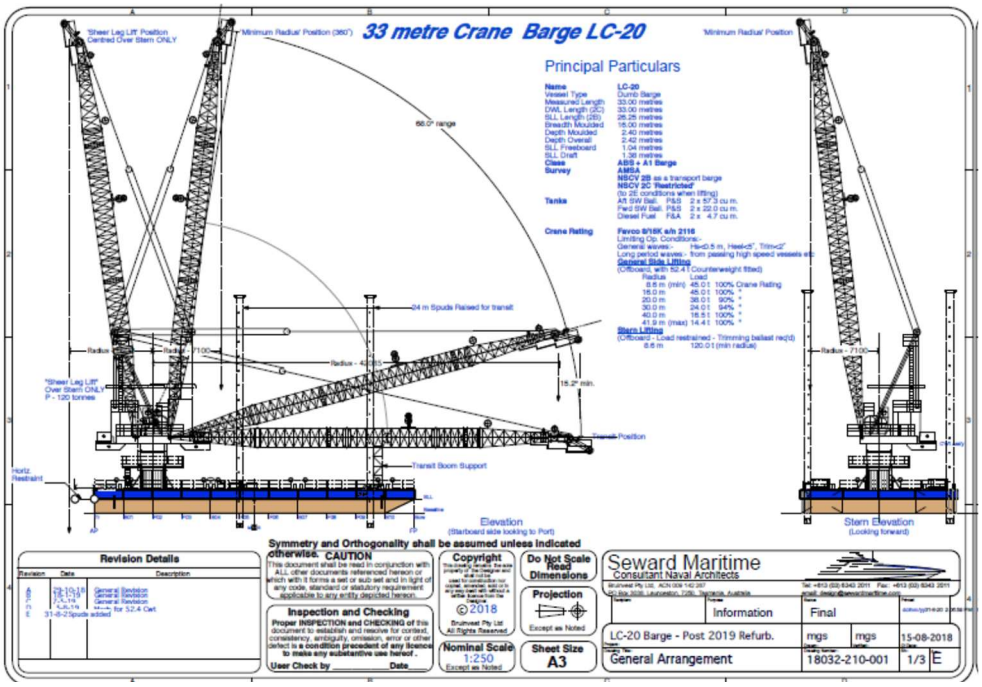


Figure 10 Crane Barge for Demolition

3.3.1 Demolished Materials

Steel (including reinforcing materials for the wharf and piles), ferrous and non-ferrous materials and green waste will be separated for offsite recycling. These materials will be transported by quad dog truck and dogs or semi-tipper trucks.

All hazardous waste including special waste (asbestos) will be transported off-site to a licensed disposal and/or recycling facility, by licensed contractors and tracked using the EPA's online tracking system.

General demolition waste will be loaded into hook bins, semi-tippers or truck & trailers, and transported to a licenced offsite disposal facility. All material types will be quantified and tracked with relevant information captured in the site Waste Register.

All concrete onsite (separated from piles, wharf structures, hardstand and retaining walls) is expected to be removed, relocated on site, crushed and then reused for the piling platform for the next stage of the project.

3.4 As Built Surveys

Upon completion of the demolition work the following surveys shall be conducted:

Certificate of Completion (Wharf);

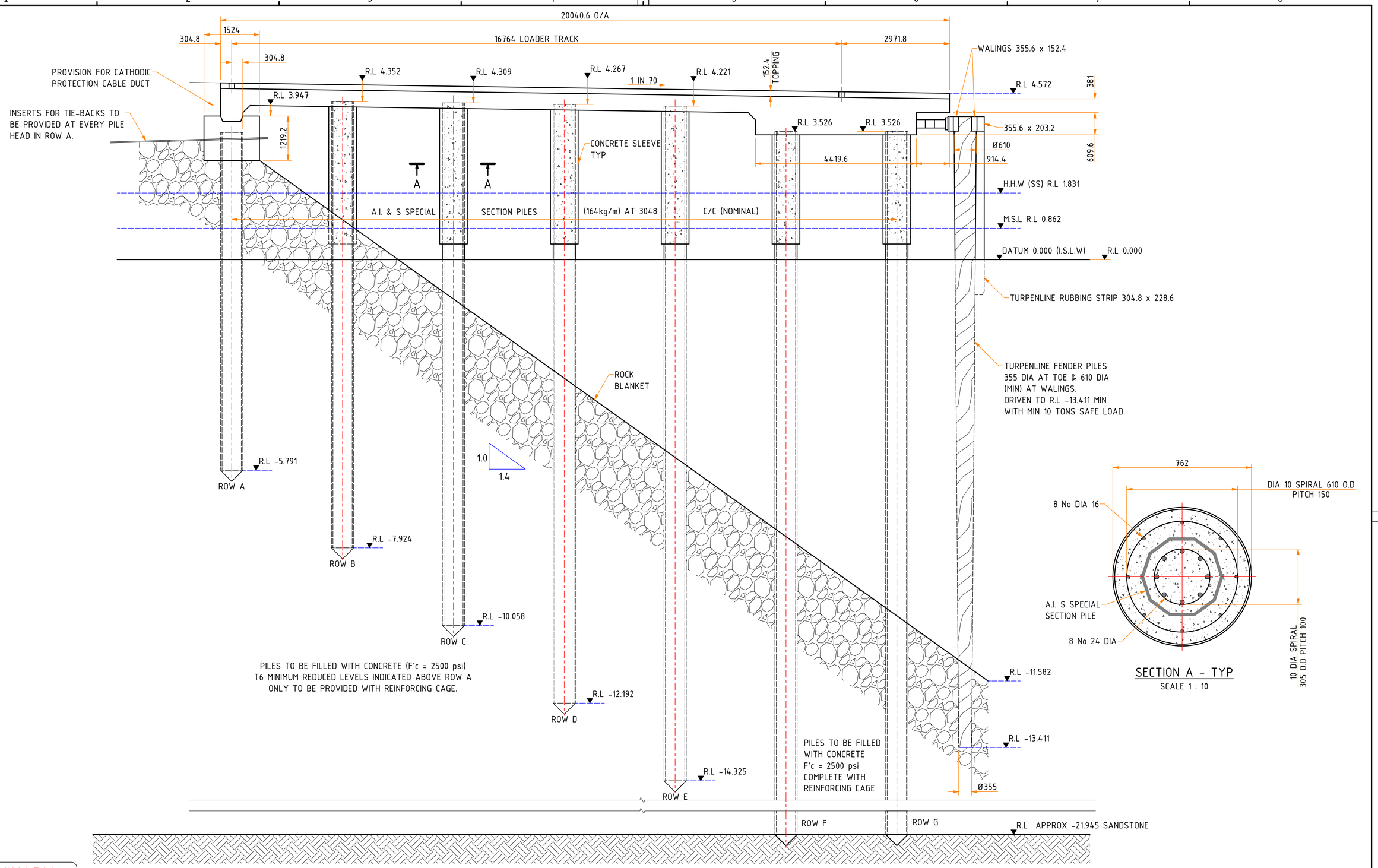
- Work-as-Executed Survey;
- Hydrographic Survey conducted by a Level 1 certified hydrographic surveyor; and
- Port Bed Clearance Report with reference to the Existing Wharf Area, which extends 10m beyond the existing wharf. The Port Bed Clearance Report is to confirm that all

structures and debris which may be considered Hazardous Substance or a hazard to navigation have been satisfactorily removed, that there is no waste material or submerged items remaining on the port bed and any other relevant matters usually included in a port bed clearance report.

Upon completion of the surveys, AIE will issue a Certificate of Completion (Wharf) to NSW Ports.

APPENDIX 1 – Berth 101 Drawings

Document Number	Revision	Title	Document Date	Document Author
CDD-PKCL-MC-C2-0001	A	Port Kembla Coal Terminal Drawing - Berth101 marine civils cross sectional view	28/08/2015	PKCT
CS-1108-SA PAGE 1	6	Construction Surveys Drawing - Port Kembla bunker oil pipeline survey		Construction Surveys
DPW-5-93	B	Dept of Public Works Drawing - Port Kembla Inner Harbour coal loading wharf no1 services details	29/10/1962	NSW Dept. of Public Works
PKCL-MC-C2-0001 and 0003 to 0007		Port Kembla Coal Terminal Drawing - coal berth		PKCT
PKNCL1-MC-C2-0018	A	Port Kembla Coal Terminal Drawing - shiploader wharves - no.1 and no.2 berths - pipe layouts including old MP berth	1/09/1992	PKCT
PKNCL1-MC-C2-0020		Port Kembla Coal Terminal Drawing - no.1 and no.2 berths - mooring layout	1/12/1993	PKCT



SECTION A – TYP

SCALE 1 : 10

MARINE CIVILS BERTH 101 – CROSS SECTIONAL VIEW

SCALE 1 : 50

PRELIMINARY
DRAWING NOT FINAL
NOT FOR CONSTRUCTION

A	DATE 28-08-15	
DRAWING STATUS: PRELIMINARY – NOT FOR CONSTRUCTION		
DRAWN: JOHNNY MANTIS (CDD)		
CHECKED: GRAHAM MASCORD (CDD)		
ENGINEER:		
CONT. NAME: COMBINED DESIGN & DRAFTING P/L		
CLIENT No.: 1667-15069		

DRAWING REVISIONS

DRAWING PRODUCED BY:

Combined Design & Drafting
PO Box 1028 WOLLONGONG, NSW 2500
Ph. 02 4229 5766 Fax. 02 4229 5733
Email: cdd@comb-design.com
A.B.N. 89 099 878 565

REFERENCE DRAWINGS

A1	DATE ORN: 21-08-2015	SCALE: AS NOTED	
DRAWN: JOHNNY MANTIS (CDD)			
CHECKED: GRAHAM MASCORD (CDD)			
ENGINEER:			
REGISTRATION APPROVAL:			
CLIENT No.: 1667-15069	FUNCTION LOCATION:		
INVENTOR FOLDER:			

PORT KEMBLA COAL TERMINAL

MARINE CIVILS
BERTH 101
CROSS SECTIONAL VIEW

INVENTOR FILE NAME: CDD-PKCL-MC-C2-0001.idw	INVENTOR PRINT:	
DRAWING No: CDD-PKCL-MC-C2-0001		REV No A
DRAWING STATUS: PRELIMINARY – NOT FOR CONSTRUCTION		

FULL SIZE 0 50 100 150 200 250 300

CB15-3

15" water run off gap in concrete topping.

15" Water run-off gap in concrete topping

"L" "M"

PLAN

(SHOWING THE ELEVATED CONCRETE TOPPING AT THE BOLLARDS).

CONCRETE EXIST

12"x 3" H.W. Packer 12'long (in midspan)

12"x 3" H.W. Packer 3'0"long (at the ends)

12"x 3" H.W. Packer 1'6"long (over Piers)

12"x 3" H.W. Packer 6'3"long (at hydrants).

4"x ½" M.S. (see detail "J" Drg 4.93 61/62)

4-1½" dia. (nom) G.W.I. Pipes 9 S.W.G., 10'long.

Position of kerb bolt between Piers 2 & 3.

1 in 6

1"dia cored holes 6" deep.

Special anchors Steel tube 8"O.D. ¼" thick } for fendering unit.

Provision to be made in concrete for anchorage of ⅝ dia. eye-bolt.

5 Steel tubes 2⅜"O.D. ¼"thick, galv. to take 2"dia. bollard bolts.

2 - 1½"dia (nom.) G.W.I. Pipes 9 S.W.G.—16½"long.
2 - 1½"dia (nom.) G.W.I. Pipes 9 S.W.G. 10½"long.

DETAIL AT "L"

(SHOWN IN ELEVATION).

BOLLARDS ✓

6"x 6"x 1" Washers

DETAIL AT "M"

1½"dia (nom.) G.W.I. Pipes 9 S.W.G. 15"long.

4 - 1½"dia.(nom) G.W.I. Pipes, 10½"long to take ⅝"dia. bolts

12"x 9" H.W. Kerb over oil outlet.

? DOES THIS EXIST ?

SECTION A-A

✓

Gantry

1"dia. bolts sq. hd. & nut 3"x 3"x ½" washer, 2'10½"long.

1½"dia. nom G.W.I. pipe 9 S.W.G. 15"long

12"x 6" H.W. Kerb.

Steel tubes 2⅜"O.D. ¼"thick galvanized

Steel tube 8"O.D. ¼"thick galvanized

SECTION B-B

⅜"x 8½"x ½" M.S. plate welded to tube

Special anchors to take 1"dia. set screws.

Recess in concrete topping

SECTION C-C

Recess in concrete 4½"x 4½" at top, 4"x 4" at bottom 2½" deep.

1½"dia.(nom.) G.W.I. pipes 9 S.W.G. 2'10½" & 2'10½"long.

Special welded profile. See detail.

SECTION D-D

DETAIL OF SPECIAL ANCHOR

Note: Set screws: 1"dia. hexagon head 3"long with heavy type spring washers.

1"fillet weld.

1½"dia (nom) steel pipe 7 S.W.G.

Special nut 2½"x 2½"x 1½" with threading for 1"dia. set screws.

DETAIL AT MANHOLE (TOWER No 4)

¼"Checker Plate.

⅝"dia bolts sq. hd. hex. nut, 6"long for ladder brackets.

¾"dia. bolts sq. hd. hex. nut 6"long

⅜"fillet weld.

Lifting hole

1"dia hinge rod

5'0" to Line B.

5'0" to ℄ Pier 3

DETAIL OF OIL OUTLET COVER

¼"Checker Plates

Lifting holes

M.S. Angle 1½"x 1½"x ⅜" 2'3" long flange cut at supports ½"fillet welded to checker plate.

H.W. Kerb 12"x 9"

1"dia bolt sq hd. & nut 3"x 3"x ½" washer 2'10½"long.

1½"dia (nom) G.W.I. Pipe 9 S.W.G. 15"long.

DETAIL OF FENDERING STOP

1½"dia. bolts sq hd hex. nuts & locknuts.

3½"x 3½"x ¼" Washers

Recess filled with grout.

1½"dia (nom) G.W.I. Pipes 10½"long welded to profile.

Concrete surfaces

Drill hole 1⅛"dia.

⅜"fillet weld

M.S. welded profile as shown

⅝"M.S. fins ½"fillet weld both sides

10 ft 50 100 ft.
12 in. 5 ft.
12 in. 2 ft.
6 in. 6 in.

5 - 93 61/62

DEPARTMENT OF PUBLIC WORKS N.S.W.

PORT KEMBLA INNER HARBOUR

COAL LOADING WHARF No 1

WHARF SERVICES DETAILS

B

SCALE: AS SHOWN

DRAWN
TRACED
CHECKED

PRINCIPAL DESIGNING ENGINEER 29/10/62

A. R. Ford 1.11.62
PRINCIPAL ENGINEER HARBOUR & RIVERS

R. A. JOHNSON
DIRECTOR OF PUBLIC WORKS
DEPUTY CHIEF ENGINEER

No.	Date	Description	Checked

AMENDMENTS

65'-9" overall

1'-0"

55'-0" Loader Track

9'-9"

Provision for Cathodic protection cable duct

Inserts for Tie-backs to be provided at every pile head in Row A

R.L 12.95

4'-0"

5'-0"

1 in 70

6" Topping (Future)

14.28 | 14.14 | 14.00 | 13.65 | 11.57 | 11.57

Walings 14'-6"

R.L 15.00

1'-3"

14"x8" 2'-0"

2'-6" dia

Concrete Sleeves

14'-6"

3'-0"

H.H.W.(S.S.) R.L 6.01

M.S.L. R.L 2.83

Datum 0.00 (L.S.L.W.)

Turpentine rubbing strip 12"x3"

A.I.& S. Special Section piles (110.6 lb/ft.) at 16'-0" c/c (Nominal)

Turpentine fender Piles 14" dia at toe + 24" dia (min) at walings

Driven to RL -44.00 min with min 10 tons Safe Load

140'-0"

2'-6" dia

3/8 dia spiral 2'-0" O.D pitch 6"

8 No 5/8 dia

3/8 dia spiral @ 2'-0" pitch

A.I.& S. Special section Pile

8 No 1" dia

SECTION THROUGH SLEEVE

Rock Blanket

1.0 : 1.4

Row A -19.0 | Row B -26.0 | Row C -33.0 | Row D -40.0 | Row E -47.0

Piles to be filled with concrete [F_c = 2500 psi]
To minimum reduced levels indicated above Row A only to be provided with reinforcing cage.

Row F | Row G

Piles to be filled with concrete F_c = 2,500 p.s.i complete with reinforcing cage

RL -38.00

RL -72.0 approx Sandstone

CORAL BERTH
PILES
PKCB 128

Q9/5193

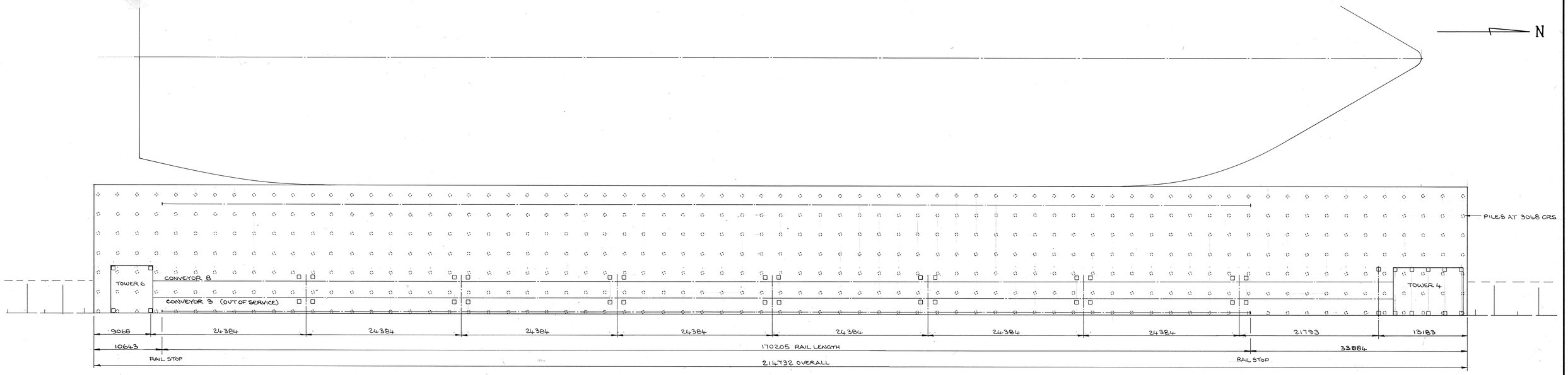
PKCL-MC-C2-0001


FRONT ELEVATION
Note: All bolts, if not otherwise stated, to be 1" dia. sq. hd. & nut with 3½" x 3½" x ¼" washers
All steel surfaces if not galvanized to have an approved paint coating.
Bolt holes in timber for all splices A, & B to be drilled 1⅛" dia.
PLAN - CONCRETE SHOWN IN SECTION A-A
Rubber Block Compression Unit.
Seasoned H.W. packers 14" x 9" x 2½"
Splice "A"
Splice "B"
Provision to be made for ⅞" anchor chain with 1½" dia. eye bolt in concrete and timber waling.
H.W. Waling 2/14" x 6"
3" clear for wear
Turpentine Rubbing strip 12" x 9".
5.91 H.H.W. (S.S.)
2.73 M.S.L.
-0.10 I.S.L.W.
Note :- Turpentine fender piles to be min. 14" dia. at toe and min. 24" dia. at waling.
Rock Blanket
R.L. -38.00 Dredged Level.
Min. depth R.L. -44.00. Piles to be driven with min. 10 tons safe load.
SECTION B-B
SECTION C-C
LONGITUDINAL SECTION
RUBBER BLOCK COMPRESSION UNIT DETAIL
SECTION D-
Rubber Blocks 12" dia. with 3⅜" hole 9⅜" long (nom.)
Steel Tube 8" O.D. ¼" thick galvanized
M.S. Casting (see detail)
Seasoned H.W. Packers 14" x 9" x 2½"
STEEL CASTING
M.S. BRACKET
SECTION E-E
BACK ELEVATION (LOOKING FROM F-F)
ARRANGEMENT OF FENDERING STOPS OVER BACK WALING
PKCL-MC-C2-0003
6-93 61/62
DEPARTMENT OF PUBLIC WORKS N.S.W.
PORT KEMBLA INNER HARBOUR
COAL LOADING WHARF No 1
FENDERING AND DETAILS
PRINCIPAL DESIGNING ENGINEER
PRINCIPAL ENGINEER HARBOURS & RIVERS
R.A. JOHNSON
DIRECTOR OF PUBLIC WORKS
CHIEF ENGINEER
AMENDMENTS
SCALE: AS SHOWN

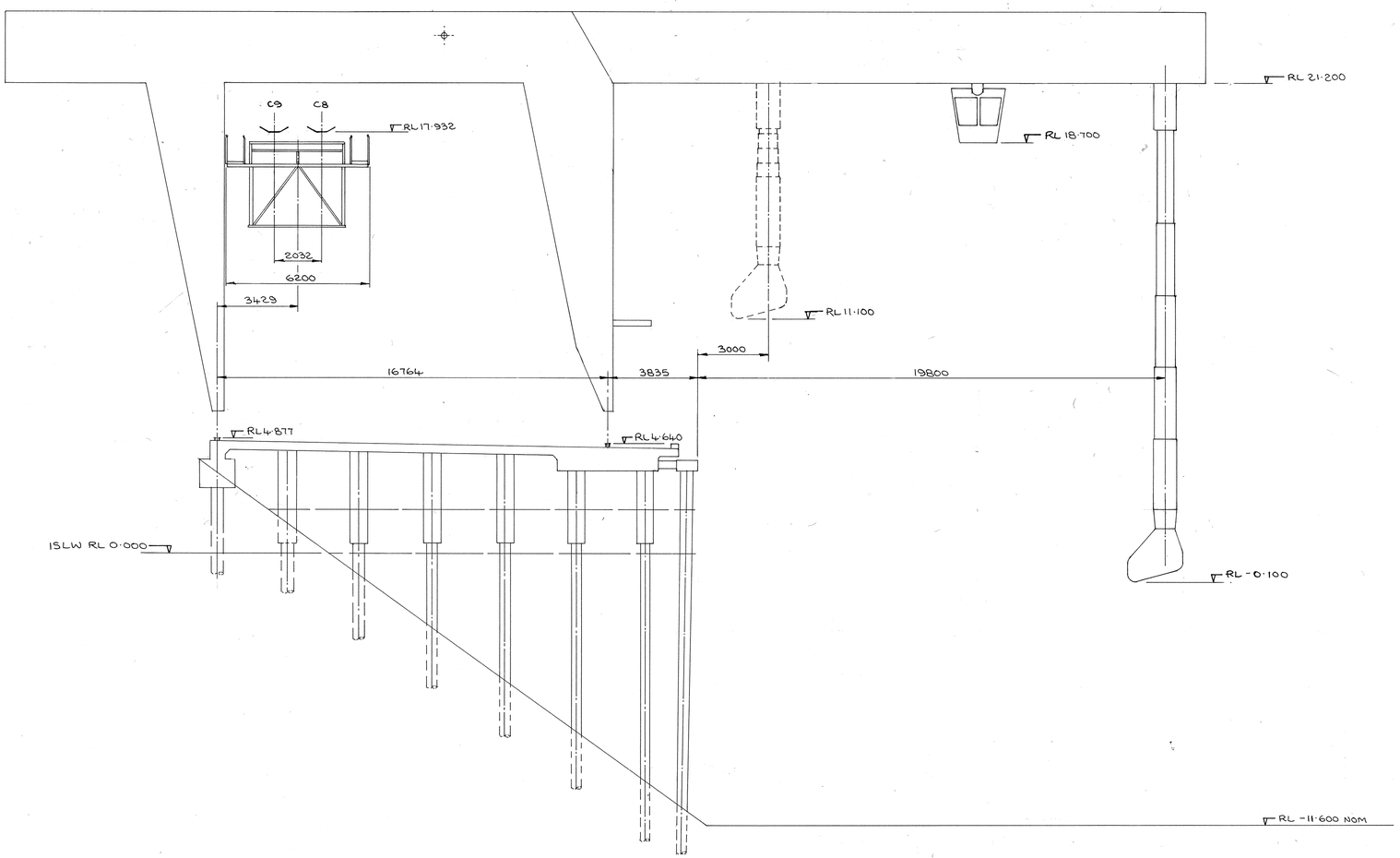
FOR MICROFILMING PURPOSES LETTERING MUST BE AT LEAST THE SIZE OF THIS NOTE

DO NOT SCALE – IF IN DOUBT ASK

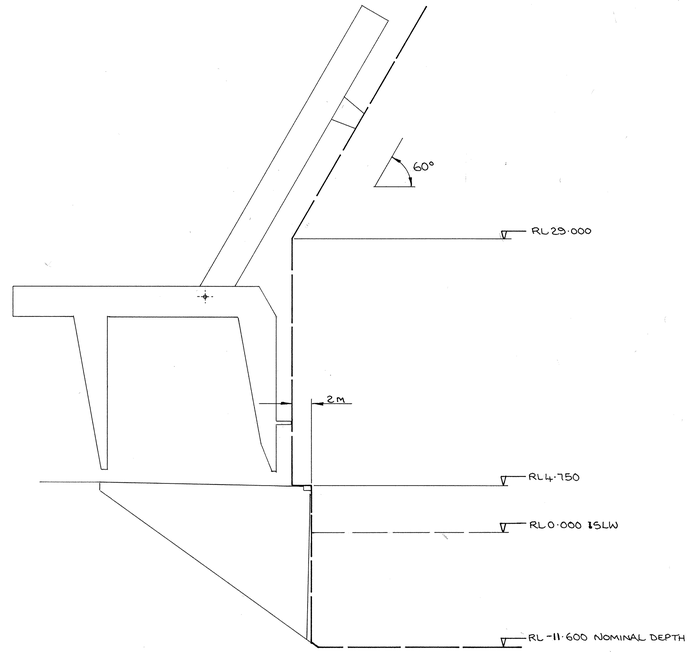
N



PLAN OF WHARF 1:250



SECTION THROUGH WHARF & SHIPLOADER 1:10



SHIPLOADER CLEARANCE BOOM RAISED

REFERENCE DRGS

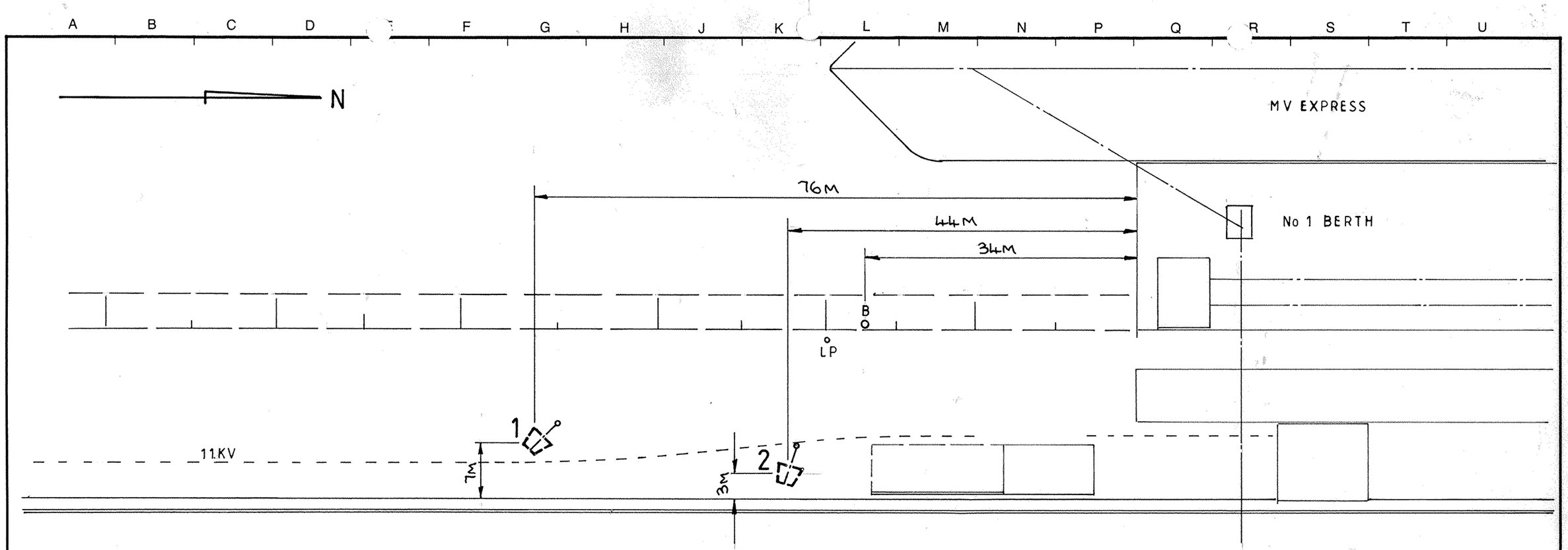
DRG No.	TITLE
PKNCL1-MC-C2-0018	No.1 & 2 BERTHS PILE LAYOUT
PKCL-MC-C2-0001	No.1 BERTH PILE DETAILS
PKCL-MC-C2-0002	No.1 BERTH CLEARANCE & LOADING DIAGRAM
PKCL-MC-C2-0003	No.1 BERTH FENDERING DETAILS

PORT KEMBLA COAL TERMINAL LIMITED
Port Kembla Road, Inner Harbour
PO Box 823
WOLLONGONG EAST NSW 2520
AUSTRALIA
Tel (042) 280288
Fax (042) 287605
A.C.N. 003 942 774

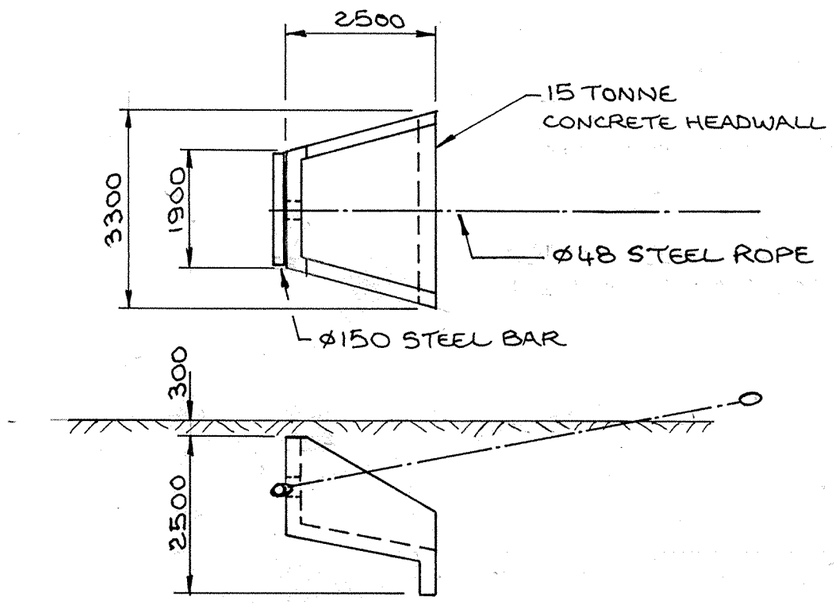
SCALE 1:250 1:10	DRAWN	R.GEORGE	SEPT. 93
	CHECKED		
	ENG		

OLD LOADER
No. 1 BERTH
WHARF LAYOUT & SHIPLOADER CLEARANCES

DRG No. PKCL-MC-C2-0004 REV.



PLAN



MOORING BLOCK

SAFE WORKING LOAD 20 TONNE EACH

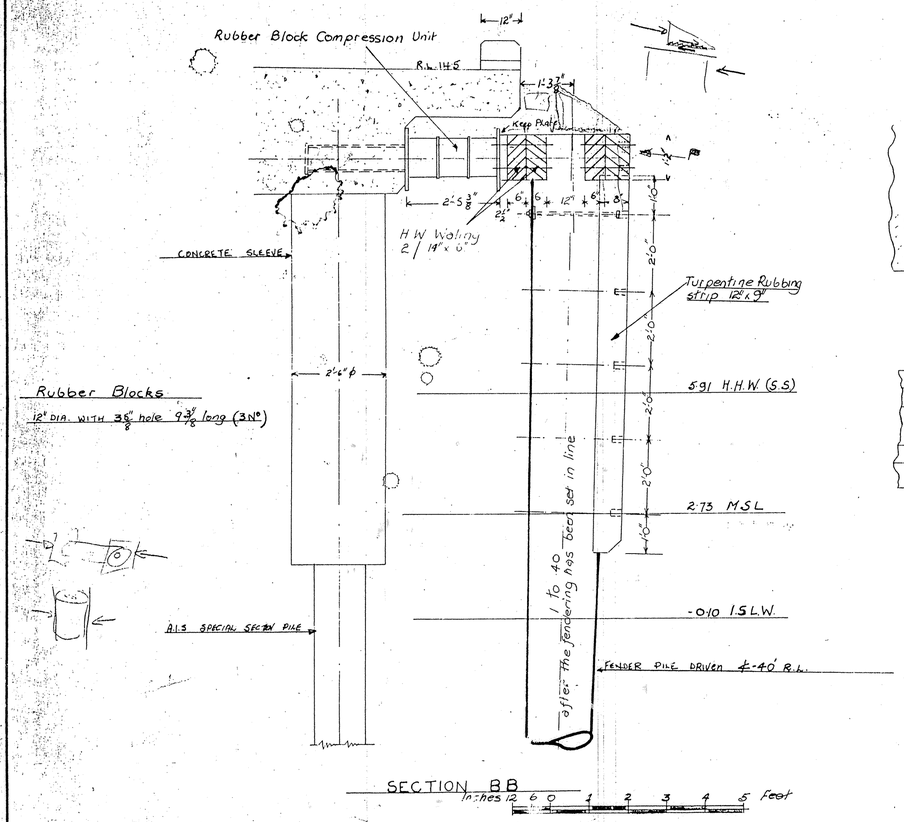
PORT KEMBLA COAL TERMINAL LTD
Port Kembla Road Inner Harbour
P.O. Box 823
WOLLONGONG EAST NSW 2520
AUSTRALIA
Tel (042) 280288
Fax (042) 287605
A.C.N. 003 942 774

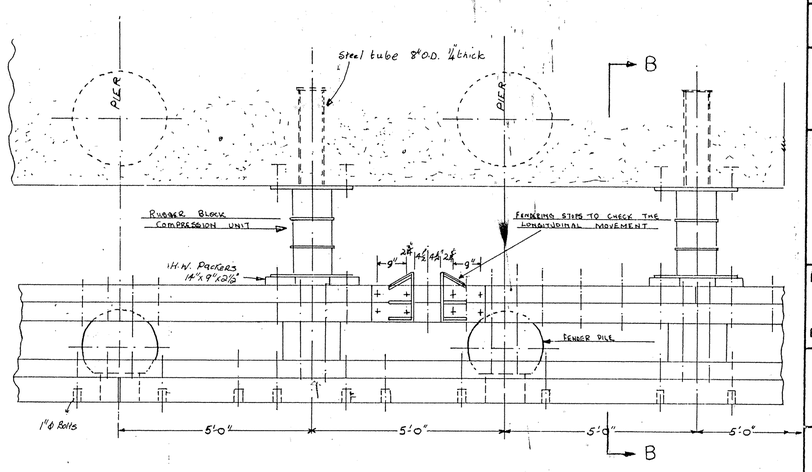
SCALE	1:500 1:100
DRAWN	R.GEORGE 3-93
CHECK'D	
ENG	G.MARSH

No.1 BERTH
AUXILIARY MOORING POINTS

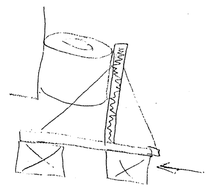
DRG No. PKCL-MC-C2-0005

SHEET
OF
REV.

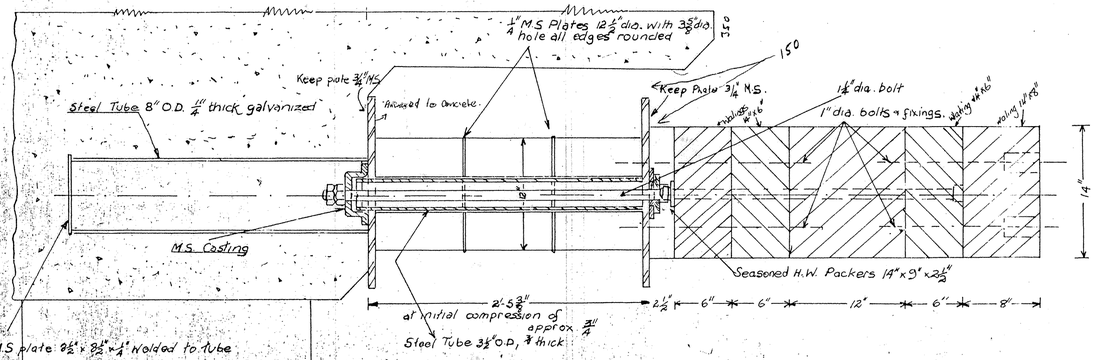




PLAN OF FENDERING SYSTEM



Rubber Blocks 12" dia. with 3⅜" hole 9⅞" long (nom)



RUBBER BLOCK COMPRESSION UNIT DETAIL

Inches 12 9 6 3 0 1 2 Feet

PORT KEMBLA INNER HARBOUR
COAL LOADING WHARF
FENDERING AND DETAILS
EXISTING SYSTEM

PKCL-MC-C2-0006

P74 185CB

B3 23.9.71

NOTES

PRINCIPAL ENGINEER

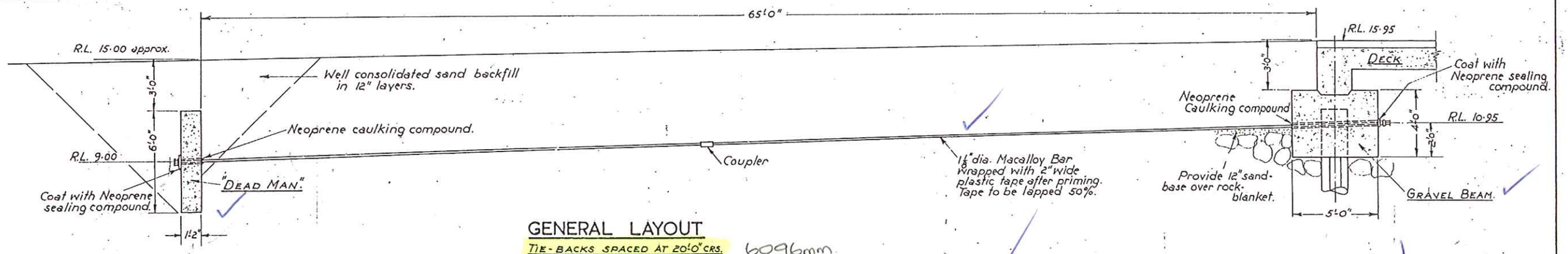
E.H. FARMER GOVERNMENT ARCHITECT

J.C. HUMPHREY, DIRECTOR
NEW SOUTH WALES
DEPARTMENT OF PUBLIC WORKS

SCALE:

SHEET NUMBER	IN SET NUMBER

PLAN No.

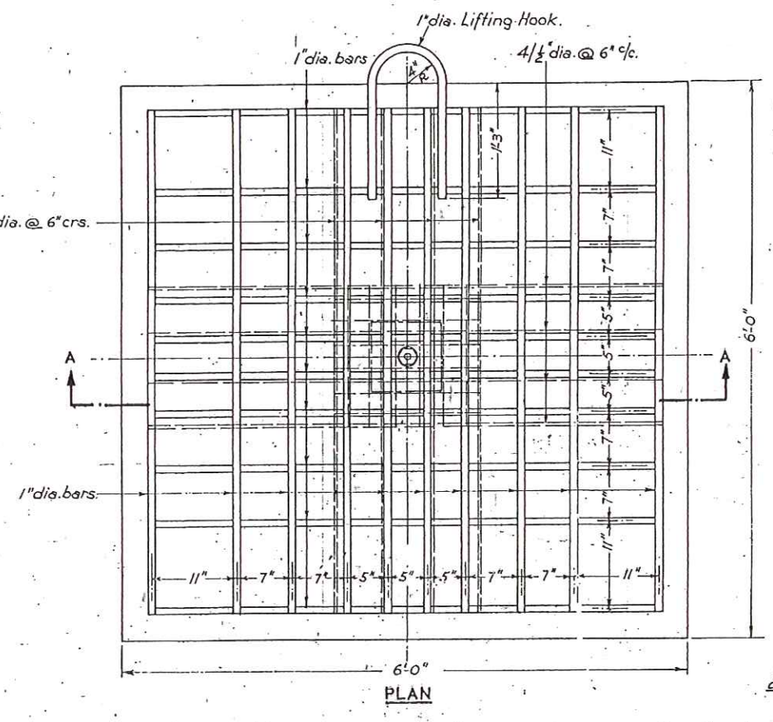


GENERAL LAYOUT

TIE-BACKS SPACED AT 20'-0" CRS.
36 No. REQUIRED

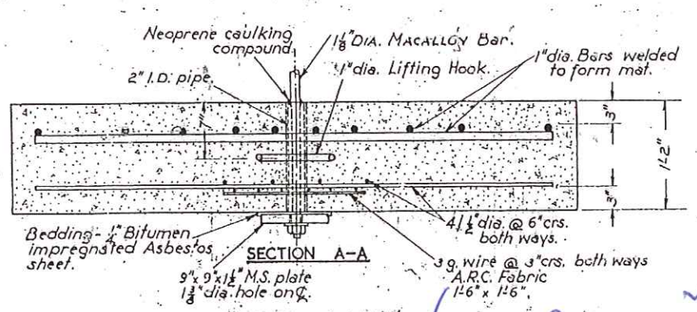
Feet: 0 1 2 3 4 5 6 7 8 9 10

6096mm (Every second pile) ✓



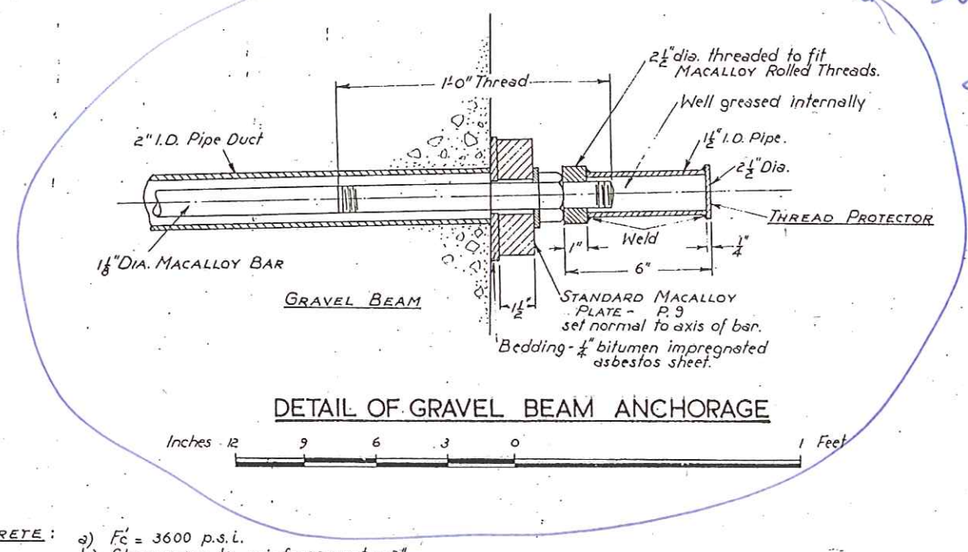
PLAN

WEIGHT - 2·8 TONS (APPROX.)



"DEAD-MAN" ✓ Block without Reo.

Inches 12 9 6 3 0 1 2 Feet



DETAIL OF GRAVEL BEAM ANCHORAGE

Inches 12 9 6 3 0 1 Feet

max. Do you need this in full detail?

NOTES

1. CONCRETE:
   a) F'c = 3600 p.s.i.
   b) Clear cover to reinforcement = 3".
   c) "Dead-Man" to be cast with 1"dia. bars near bottom face of form.
2. MACALLOY BARS:
   a) All bars 1⅛"dia. with rolled threads.
   b) Length of complete bar over plates:- 69'-11½".
   c) When ordering specify the following thread lengths :-
      At "Dead-man" - 4".
      At Gravel beam - 12".
   d) End plates, washers & nuts to be coated with Neoprene sealing compound.
   e) STRESSING PROCEDURE
      Initial Tension = 5 Tons (approx.).
      Screw nut up finger tight. Stress bar with spanner to give an extension of ¾". After 24 hours relax the tension and measure the recovery. Restress the bar ⅜" from the new initial position. Keep repeating the procedure until the relaxation is eliminated. Check the stress in the bar by the procedure outlined above 4 weeks later.

PKCL-MC-C2-0007 9-93 61/62

DEPARTMENT OF PUBLIC WORKS, N. S. W.

PORT KEMBLA INNER HARBOUR
COAL WHARF No 1
DETAILS OF TIE-BACKS

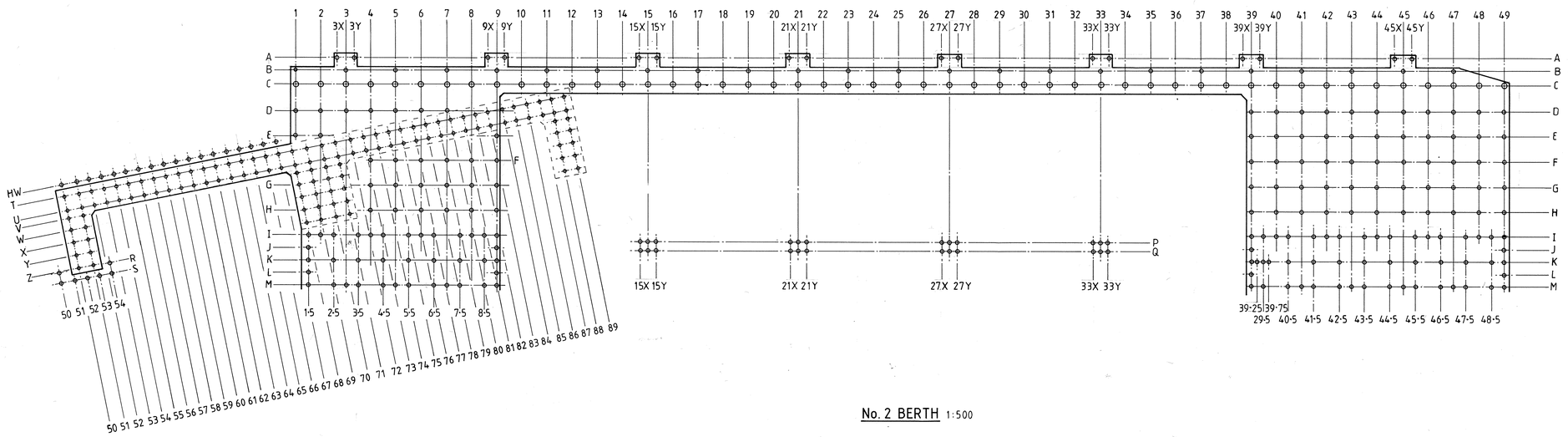
C | SCALE :- AS SHOWN

DRAWN N.F.B.
TRACED
CHECKED

J.E. Dyden 16.7.62
PRINCIPAL DESIGNING ENGINEER

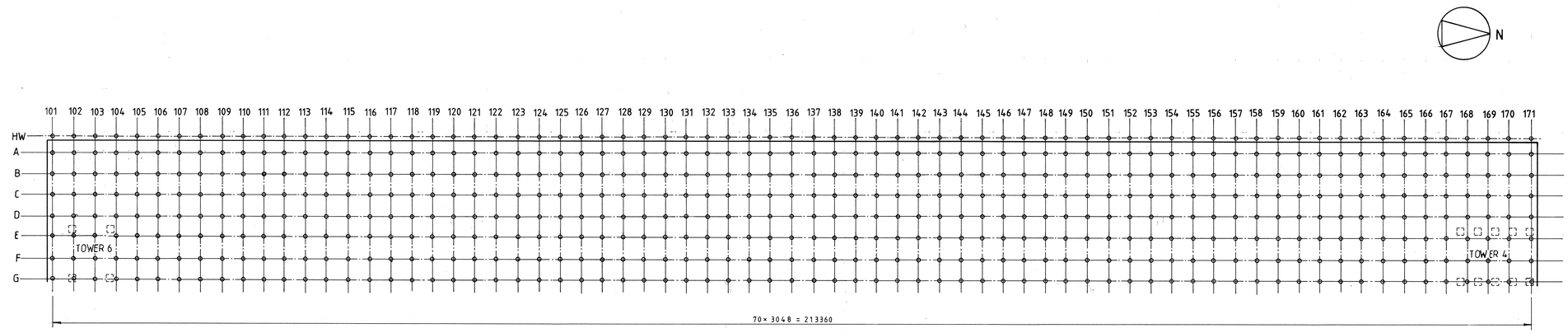
A.R. Ford 20.7.62
PRINCIPAL ENGINEER HARBOURS & RIVERS

R. A. JOHNSON
DIRECTOR OF PUBLIC WORKS
per ..... CHIEF ENGINEER



No. 2 BERTH 1:500

ROW	NUMBER	TYPE
A	16	BHP 2 PART HOLLOW STEEL 16MM WALL
B	24	
C	49	1200 OD x 20 WALL STEEL TUBE
D	18	BHP 2 PART HOLLOW STEEL 16MM WALL
E	14	
F	17	
G	17	
H	17	
I	30	
J	4	
K	20	
K	3	450 OD x 10 WALL STEEL TUBE
L	4	BHP 2 PART HOLLOW STEEL 16MM WALL
M	28	
N	6	
P	12	
Q	12	850 OD x 16 WALL STEEL TUBE
R	2	
S	5	
T	40	BHP 2 PART HOLLOW STEEL 16MM WALL
U	40	
V	8	
W	8	
X	8	
Y	8	
Z	8	
HW	18	355 TO 700 DIA. TURPENTINE TIMBER



No. 1 BERTH 1:300

ROW	NUMBER	TYPE
A	72	BHP 2 PART HOLLOW STEEL 16MM WALL
B	72	
C	72	
D	72	
E	72	
F	72	
G	72	
HW	72	355 TO 700 DIA. TURPENTINE TIMBER

REFERENCE DRGS

DRG No.	TITLE
PKNCL1-MC-C2-0012	SHIPLOADER WHARF (No.2) PILING PLAN

A	RG	26-10-92
TIMBER PILES ADDED		

PORT KEMBLA COAL TERMINAL LIMITED
Port Kembla Road, Inner Harbour
PO Box 823
WOLLONGONG EAST NSW 2520
AUSTRALIA
Tel (042) 280288
Fax (042) 287605
A.C.N. 003 942 774

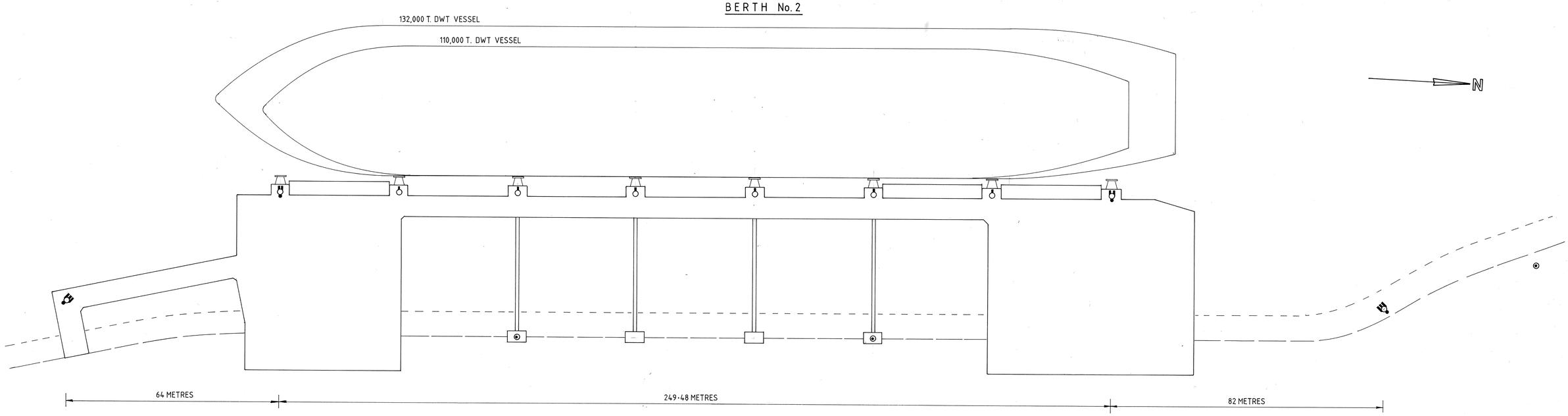
SCALE 1:500 1:300	DRAWN	R. George.	Sept. 92
	CHECKED		
	ENG		

SHIPLOADER WHARVES
No. 1 & No. 2 BERTHS
PILE LAYOUTS (INCLUDING OLD M P BERTH)

DRG No. PKNCL1-MC-C2-0018

REV. A

BERTH No. 2



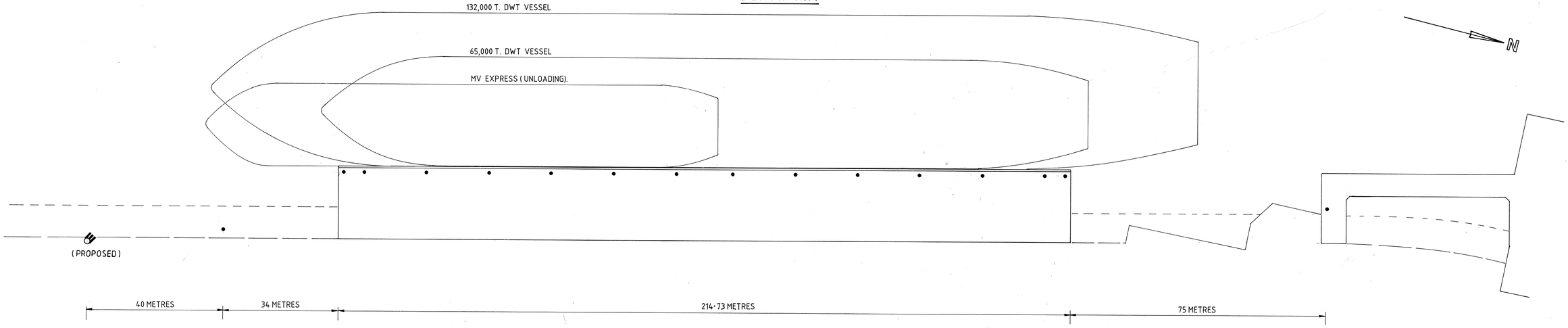
FENDERS

BERTHING ANGLE	0 °	15 °
DEFLECTION	55 %	55 %
ENERGY ABSORBTION (T – M)	201·6	116
REACTION (TONNES)	233·68	210·31

MOORINGS

- 1 x 100 TONNE QUICK-RELEASE HOOK
- 2 x 100 TONNE QUICK-RELEASE HOOKS & 10 T CAPSTAN
- 3 x 100 TONNE QUICK-RELEASE HOOKS & 10 T CAPSTAN
- 100 TONNE BOLLARD

BERTH No. 1



MOORINGS

- 3 x 60 TONNE QUICK-RELEASE HOOKS
- 60 TONNE BOLLARD

REFERENCE DRGS

DRG No.	TITLE

PORT KEMBLA COAL TERMINAL LIMITED
Port Kembla Road, Inner Harbour
PO Box 823
WOLLONGONG EAST NSW 2520
AUSTRALIA
Tel (042) 280288
Fax (042) 287605
A.C.N. 003 942 774

SCALE 1: 500	DRAWN	R.George	Dec. 93
	CHECKED		
	ENG		

No. 1 & No. 2 BERTHS MOORINGS LAYOUT

DRG No. PKNCL1-MC-C2-0020

REV.

Appendix B

Emergency Spill Plan

Port Kembla Gas Terminal

Emergency Spill Plan
Early Enabling Works

Australian Industrial Energy

27 May 2021

→ **The Power of Commitment**

GHD Pty Ltd | ABN 39 008 488 373
133 Castlereagh Street, Level 15
Sydney, New South Wales 2000
T 61-2-9239 7100 | **F** 61-2-9239 7199 | **E** sydmail@ghd.com | **ghd.com**

Printed date	27/05/2021 10:46:00 AM
Last saved date	27 May 2021
File name	G:\21\27477\Tech\MP update\Stage 1\Emergency Spill Plan\PKGT-AIE-Emergency Spill Plan V2.docx
Client name	Australian Industrial Energy
Project name	East Coast Gas Project
Document title	Port Kembla Gas Terminal | Emergency Spill Plan Early Enabling Works
Revision version	Rev 00
Project number	2127477

Document status

Revision	Author	Reviewer		Approved for issue		
		Name	Signature	Name	Signature	Date
00	Emily Kate Marsh	Karl Rosen		Karl Rosen		30.4.2021
01	Emily Kate Marsh	Karl Rosen		Karl Rosen		27.5.2021

Acronyms

Term	Definition
ACM	Asbestos containing material
AIE	Australian Industrial Energy
CPT	Cone Penetration Testing
CSSI	Critical State Significant Infrastructure
DICL	ductile iron cement lined
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EMS	Environmental Management Strategy
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPL	Environmental Protection Licence
FSRU	Floating storage and re-gasification unit
KPIs	Key Performance Indicators
LNG	liquefied natural gas
NGP	Pipeline Installation including tie-ins
ORF	Onshore Receiving Facilities
PANSW	Port Authority of NSW
PKCT	Port Kembla Coal Terminal
PKGT EIS	Port Kembla Gas Terminal Environmental Impact Statement
PKGT	Port Kembla Gas Terminal
PKHD	Port Kembla Height Datum
POEO Act	*Protection of the Environment Operations Act 1997*
SRD SEPP	State Environmental Planning Policy State and Regional Development
TTE	Tertiary Treated Effluent

Contents

Table index

Figure index

1. Introduction

1.1 Overview

This Emergency Spill Plan for the Early Enabling Works phase of the Marine Berth Construction and Dredging (MBD) package of work has been developed as a sub-plan to the Port Kembla Gas Terminal Project (the Project) Environmental Management Strategy (EMS).

This Emergency Spill Plan was prepared by the SCSB JV on behalf of Australian Industrial Energy (AIE) to apply to construction activities associated with the Project. GHD Pty Ltd (GHD) has updated this Emergency Spill Plan on behalf of AIE for application to the Early Enabling Works of the MBD. This Emergency Spill Plan does not cover works associated with Marine Berth Construction and Dredging or the construction of Onshore Receiving Facilities, or Pipeline Installation.

This Emergency Spill Plan interfaces with the other associated sub-plans, which together describe the proposed overall management system for the Project. This Emergency Spill Plan addresses the requirements of the Project Infrastructure Approval (SSI 9471) and has been prepared in consultation with the NSW Environment Protection Authority (EPA).

1.2 Background

Australian Industrial Energy (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% 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% 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 the 29th of 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.

The development has progressed to the early works stage at Berth 101 (the site or MBD Site Compound), which includes the demolition and removal of all existing surface infrastructure, and disconnection and removal of all underground services. The Early Enabling Works phase is required to facilitate all future stages of development and to meet an obligation in the lease of the site to demolish existing wharf infrastructure by 29 September 2021.

1.3 Purpose

This Emergency Spill Plan has been prepared in accordance with the Port Kembla Gas Terminal Environmental Impact Statement (PKGT EIS) and associated Infrastructure Approval (SSI 9471) and describes how Liberty Industrial propose to manage their response to incidents during Early Enabling Works for the MBD that may result in contamination of soils, groundwater and/or surface waters. Specifically, this plan includes requirements to:

– Ensure Liberty Industrial implement industry best practice for the Early Enabling Works.
– Comply with the requirements of the EIS; Environmental Protection Licence (pending) and Infrastructure Approval (SSI 947).

AIE and Liberty Industrial acknowledge that effective spill management in the vicinity of the Early Enabling Works is paramount to the successful delivery of the construction phase of the Project.

This Emergency Spill Plan is applicable to all staff, employees, subcontractors, and any statutory service authorities undertaking works including, but not limited to, excavation works, transportation, or handling of fill throughout the duration of the Early Enabling Works for the MBD. The Emergency Spill Plan implementation and on-going development will be managed by the Project team, as outlined in 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 the 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 in 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. The 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 such as 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 use. Berth and wharf facilities and 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.

A site overview is provided as Figure 2.1.

Figure 2.1 Site overview

2.2 Project construction scope of work

The Project construction scope of work has been divided into the three main packages (with associated activities), as outlined in Table 2.1. This Emergency Spill Plan applies only to the Early Enabling Works associated with the MBD.

Table 2.1 Project construction scope of work

Stage	Package	Proposed commencement	Activities	Applicability to Emergency Spill Plan
1	Early Enabling Works	May 2021	Early Enabling Works. 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.	Applicable.
2	Marine Berth Construction and Dredging (MBD)	November 2021	Quay wall construction.	Not applicable.
			Excavation/dredging.	Not applicable.
			Wharf facilities construction including mooring system, navigational aids, and associated works.	Not applicable.
	Onshore Receiving Facilities (ORF)		Construction of the ORF, which comprises of three areas: Wharf Topside Area; Utility Area; and Common Area. Installation of a small section of pipeline within the Berth 101 site boundary.*	Not applicable.
3	Pipeline Installation including tie-ins (NGP)	March 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.	Not appliable.

2.3 Early enabling works for MBD

The site of the early enabling works is the former Port Kembla Coal Terminal (PKCT) Bulk Products Berth. The removal of existing structures and services is required to facilitate subsequent development stages of the Project. The scope of the Early Enabling Works will involve the following tasks:

– Excavation down to level of RL +2.5 metres Port Kembla Height Datum (PKHD) to allow removal of existing structures and services and facilitate construction of the quay wall.
– Demolition/removal of Berth 101 and aboveground structures.
– Demolition/removal of aboveground and underground services.
– Removal of existing stockpiles from site.
– Transport of spoil via road from the MBD Site Compound to the Emplacement Cell Construction Site.
– Platform excavation and stockpiling.
– Processing demolished materials (for re-use or recycling) by others.
– CPT in the Outer Harbour.

An outline of the tasks associated with the Early Enabling Works is provided in Section 2.3.1 through Section 2.3.5. The Early Enabling Works are shown graphically in Figure 2.2.

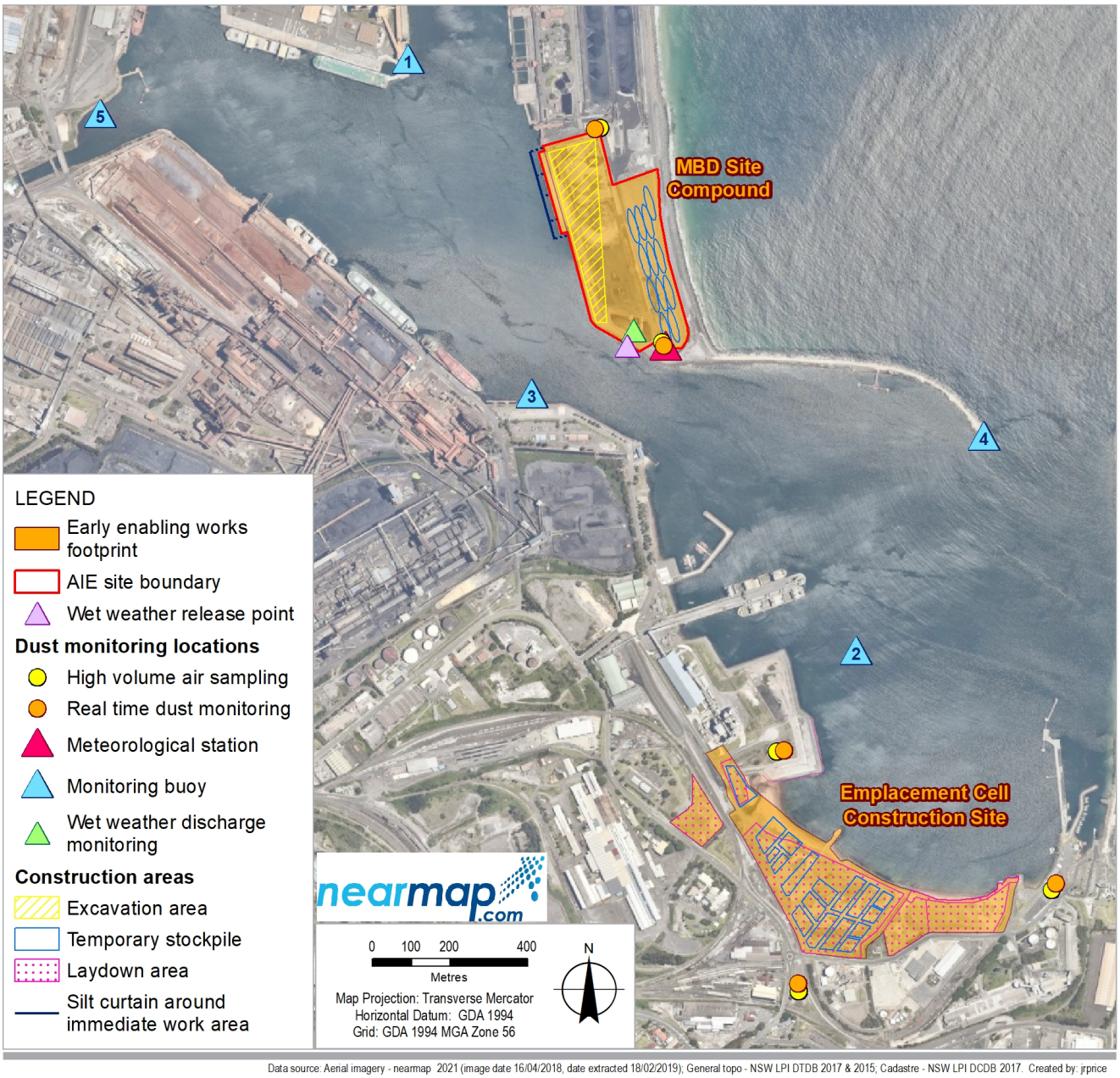


Figure 2.2 Early Enabling Works for MBD

2.3.1 Excavation

Excavation is required to facilitate the removal of existing aboveground and underground structures and services within the MBD Site Compound to a level of RL +2.5 metres on PKHD.

The proposed excavation zone generally extends from Road No. 7 at the northern end of the West Stockyard to the South Ponds and across to Road No. 9 as shown by the yellow shaded area in Figure 2.3.

Figure 2.3 Proposed excavation zone within MBD Site Compound

It is proposed to segregate, manage, stockpile and transport excavated materials into the following categories:

- Fill materials and concrete suitable for re-use for wharf construction will be crushed on-site and stockpiled in the East Stockyard (refer to Figure 2.3).
- Excess materials suitable for placement in the Outer Harbour will be transported to the Emplacement Cell Construction Site (refer to Figure 2.2 and Figure 2.4).
- Revetment rock armour will be stockpiled for reuse, if removed.
- Recyclable material such as steel, cables, etc. will be transported off site for recycling.
- Waste materials that are unsuitable as fill or for recycling will be disposed off-site at an approved landfill facility.

Figure 2.4 Emplacement Cell Construction Site

2.3.1.1 Demolition/removal of structures

All structures, foundations, piling, paving, site services, etc. within the excavation zone require demolition and removal. The proposed structures for demolition are summarised in Table 2.2.

Table 2.2 Structures to be demolished/removed during Early Enabling Works for MBD

Structure	Works required
Tower T1	Remove any remaining miscellaneous steel work as necessary (e.g., handrails and guardrails)
Tower T2 and T3	Demolish headstock and cut-off any piles at RL+1.5 m PKHD.
Tower T1, T3, T4 and T6 Clean Out Pits/ Drains	Demolish any remaining miscellaneous steel work, the Clean Out Pit, and associated drains.
Conveyor C3	Demolish any pavement/gutter and cut-off any piling in the excavation zone
T3 Pond	Demolish any remaining miscellaneous steel work, the pit and associated drain.
Tower T5 gantries	Demolish the remaining footings and headstock and cut-off piles at RL +1.5m PKHD. The two southern gantries require complete removal of the headstock and piles.
Conveyor C5 Gantry Walls	Demolish the remaining West Stockyard walls (inverted precast concrete T sections).
Reclaim conveyors C6 and C7	Demolish all remaining parts including the reclaim hopper, paving and any foundations/piling/footings.
West shore clean out pit	Demolish any remaining miscellaneous steel work, the pit and associated drain.
West Stockyard Hardstand Area	Demolish and excavate the hardstand to RL + 2.5 m PKHD. The excavation of the hardstand shall extend to 3 m beyond the tie rod anchors (the hardstand area is constructed of 300 mm heavily bound base course (road building material), 340 mm lightly bound base course (80% blast furnace slag and 20% granulated blast furnace slag) and 200 mm of engineered fill.
Light Towers	Demolish the foundations and remove associated cabling. Demolish and remove all other light towers from the site.
Berth 101	Berth 101 comprises a concrete deck supported by 568 concrete and timber piles, tie rods and dead man blocks. There is also a fendering system comprising timber piling, timber waling and rubber fenders, various utilities, and a sheet pile cut-off wall (approximately 175 m long) along the landside of the berth. Works required include cut and remove the concrete deck, remove tie rods, and anchor blocks. Removal of piles will be via a crane positioned on a barge immediately adjacent to the wharf structure. Silt curtains will be positioned surrounding the work area during the removal of piles. AIE has an obligation under its lease agreement to demolish the Wharf at Berth 101 by 29 September 2021.
Substation	Undertake asbestos containing material (ACM) inspections and testing of materials prior to demolition (as required). Where ACM is confirmed, remove and dispose off-site by licensed contractor with clearance certificate. Demolish building and transformer bays including underground foundations and conduits. Remove and dispose of any remaining cables from Substation within the site.
Mooring lines	Remove lines and blocks.
Sewer tanks	Two underground concrete sewer tanks are located on the south side of Tower TS8. Demolish the tanks following pump out and flushing.

2.3.1.2 Demolition/removal of services

Numerous services are currently located in the excavation zone and will be demolished and removed generally down to RL +1.5 metres PKHD as part of the excavation process. The services that will be demolished/removed are summarised in Table 2.3.

Table 2.3 Services to be demolished/removed during Early Enabling Works for MBD

Structure	Works required
Bunker oil pipeline	The existing bunker oil pipeline extends from storage facilities on the southern shore of Port Kembla, under The Cut to the oil berth at the northern breakwater. A 300 mm carbon steel pipeline extends underground (approximately 600 mm clear cover) along the western shore of the site to Berth 101. An above ground section then passes under Berth 101 and on to Berth 102 to the north. The pipeline sections, both underground and running under Berth 101 require removal with management and disposal of any residual hydrocarbons. It is proposed to cut the pipeline into transportable lengths and removed from site to an appropriate and approved location. Beyond the excavation zone, the pipeline will remain in-situ and will be capped at both ends with suitable identification.
Domestic water pipeline	An underground potable water supply pipeline currently runs underground on the eastern side of Tower TS8 to supply Berth 101 and a ductile iron cement lined (DICL) pipeline continues along the western shore of Berth 101 supplying the Port Authority of NSW (PANSW) meter compound at the south of the site. An abandoned pipeline formed from ACM runs parallel to the DICL pipeline. A licenced removal company shall be engaged to remove and transport the asbestos material in a safe manner to an approved disposal site. An asbestos clearance certificate shall be provided following removal. All abandoned domestic water piping is to be removed within the excavation zone. Beyond the excavation zone, the pipeline shall remain in the ground and be capped at both ends.
Electricity supply	Electricity is supplied from the PKCT 11 kV South Substation and distributed in Substation B (south of Berth 101). These supplies include: An underground 11 kV electricity cable (approximately 900 mm cover) from Substation B to the PANSW pad-mounted transformer at the southern end of the site. Several 415 V cables from Substation B to Pumps 01 at the South Ponds, to Pumps 09 and 17 at drain pit sumps and to light poles across the site Control cabling for pumps, lights, and water spray nozzles. The substation building will be demolished with all cables in the excavation zone removed.
Telecommunications	The telecommunications cable extends from a pit near PKCT South Substation to a pit near the PANSW meter compound. The route of the cable is uncertain, however, it is understood to follow the western shore. During demolition works, the cable is required to be removed and disposed of. Any cable beyond the excavation zone, is to remain in-situ.
Tertiary treated effluent	Tertiary Treated Effluent (TTE) is supplied to PKCT for firefighting and dust suppression sprays. An interconnected ring main circles around both the East and West Stockyards supplying dust suppression sprays and fire hydrants. The pipelines and sprays serving the West Stockyard will be demolished and removed. The western incoming supply shall be capped near Tower TS7 and at the branch from West Stockyard to the PKCT truck wash. The spray system for the East Stockyard is not required and will be demolished. The TTE pipeline along the eastern side (Seawall Road) is to remain in-service. The TTE pipeline along Road No. 9 shall be capped on the western side of PANSW meter compound.

During demolition, stormwater from the site will be directed to Southern Pond. The overflow pipes at the Southern Pond are AIE's licensed discharge point into Port Kembla Harbour.

As the demolition work proceeds, the contractor will ensure stormwater runoff always flows to the Southern Pond in accordance with AIE's EPL conditions.

2.3.2 Removal of stockpiles

Two large stockpiles, approximately 700 metres^3 to 800 metres^3 of mixed sandy gravel material are present in the south-western section of the MBD Site Compound. The stockpiles also contain inclusions of slag gravel, cobbles, concrete, and boulders. Both stockpiles will be removed as part of the Early Enabling Works and will be characterised (visual and sampling, as required) for re-use.

2.3.3 Transport of spoil from MBD Site Compound to Emplacement Cell Construction Site

Approximately 50,000 metres^3 of spoil will need to be transported via road from the MBD Site Compound and stockpiled at the Emplacement Cell Construction Site.

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

Spoil will be characterised prior to transport based on the source location, the availability of any existing data and additional sampling and analysis, as required.

2.3.4 Processing of demolished materials (reuse and recycling)

Demolished materials which are suitable may be re-used in the works, subject to approval by AIE and the Auditor. Materials for re-use may include:

– Uncontaminated excavated material as fill.
– Crushed concrete as fill.

Excavation of a platform to stockpile up to 70,000 metres^3 of material will be undertaken in the East Stockyard.

Materials for re-use will be stockpiled and stored in the East Stockyard until further stages of the works proceed.

Materials suitable for recycling will be preserved during the demolition works and removed and stored on-site in the eastern stockyard as directed by AIE until collected or removed from site by appropriate contractors.

2.3.5 Cone Penetration Testing

Cone Penetration Testing (CPT) will be undertaken at 50 to 60 locations within the Outer Harbour to inform the design and alignment of the Emplacement Cell. CPT locations will target alignment of Emplacement Cell and proposed fill area. Works comprise of surveying the seabed level and geotechnical testing (including CPT) via a purpose-built CPT rig attached to a small jack barge, portable 15t CPT rig and jack up barge.

2.4 Program for Early Enabling Works of MBD

Early Enabling Works for the MBD is anticipated to commence in May 2021. It is estimated to be completed in six months.

3. Roles and responsibilities

The Project team is responsible for all activities associated with the Early Enabling Works, including the implementation and maintenance of the various spill mitigation/management measures. The Project team is outlined in the Organisational Chart in the Covering EMS. Relevant roles and responsibilities for the Emergency Spill Plan are outlined in Table 3.1.

Table 3.1 Roles and responsibilities

Project Role	Responsibility
AIE Project Director	– Responsible for the overall funding and direction of the Early Enabling Works. – 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 the Early Enabling works in accordance with requirements of the Infrastructure Approval (SSI9471), Environmental Strategy and all related sub-plans – Demonstrate proactive support for environmental requirements
AIE HS&E Manager	– Implementation and updates of all Health, Safety and Environmental 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 – Environmental Reporting
Liberty Industrial 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, Emergency Spill Plan and improved procedures. – Ensure this Emergency Spill Plan is implemented for the duration of the Early Enabling Works.
Liberty Industrial 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 Emergency Spill Plan is implemented for the duration of the Early Enabling Works.

Project Role	Responsibility
Liberty Industrial Environmental Representative	– Delivers environmentally focussed toolbox talks. – Provides environmental advice, assistance, and direction to Project Manager to ensure construction activities are conducted in accordance with regulatory legislation and this Emergency Spill Plan. – Develop strong working relationships with the AIE team and Consultants. – Ensure environmental risks are appropriately identified, communicated, and effectively managed. – The Environmental Rep can order Stop Work for any unacceptable environmental risk or breach of conditions. – 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 Liberty Industrial Project Manager and AIE HSE Manager.
AIE Environmental Representative	– Develop strong working relationships with the Demolition 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 the Emergency Spill Plan. – Conduct audit review as required. – Reports on the performance of the Emergency Spill Plan 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

The legislative and regulation requirements applicable to the Early Enabling Works for the MBD are listed in Table 4.1.

Table 4.1 Applicable Legislation and Regulations

Legislation and Regulation	Description	Applicability
State		
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 mechanisms to reduce risks to human health and the degradation of the environment, including pollution prevention and cleaner production. Environment protection notices are outlined in Chapter 4, including details regarding clean-up notices for suspected pollution incidents occurring. Part 5.1 outlines classification of offences, including water pollution, leak and spills, and land pollution. The POEO also outlines the Scheduled Activities that require an EPL in order to be carried out.	Where an EPL applies, spill and pollution requirements (including criteria) may be specified by the licence. Activities undertaken onsite must not contribute to environmental degradation and must not exceed the standards. If an incident does occur it must be notified to the regulatory authority, the NSW EPA under Part 5.7. In the event a clean-up notice is issued it must be complied with.
Protection of the Environment Operations (Waste) Regulation 2014 (POEO Waste Regulation)	The POEO Waste Regulation provides regulations for the storage, management and transport of waste. The POEO Waste Regulation repealed the 2005 Waste Regulation, amending the thresholds for EPLs and waste levy system.	The Waste Levy Guidelines outline the requirements for waste management for various activities. Guideline 3 is applicable to demolition and excavation waste streams.
Contaminated Land Management Act 1997 (CLM Act)	Tthe CLM Act establishes the process for investigating and remediating land the NSW EPA considers to the significantly contaminated. The Act also manages contaminated land with regard to ecologically sustainable development	Part 4 outlines the requirements for site audits made as a requirement of development consent for a project. Section 5 outlines the requirements of the Infrastructure Approvals related to the Projects site audit conditions. There is a duty for landowners to, and persons who have responsibility for contamination to, notify the EPA under Section 60 of the CLM Act. Notification must be undertaken as soon as practicable after the owner becomes aware of contamination.

5. Planning requirements

The planning requirements and the corresponding emergency spill management measures applicable to the Early Enabling Works for the MBD are listed in Table 5.1. Management measures and spill protocol are detailed in Section 7 .

The planning requirements include the conditions set out in Infrastructure Approval SSI 9471 dated 24th April 2019 and the mitigation/management measures outlined in the PKGT EIS.

Table 5.1 Approval conditions

Requirement	Reference	Responsibility	Evidence	Applicability to this Emergency Spill Plan
Infrastructure Approval conditions				
Environmental Management Strategy Prior to the commencement of construction, the Proponent must prepare an Environmental Management Strategy for the development to the satisfaction of the Planning Secretary. This strategy must: (a) provide the strategic framework for environmental management of the development (b) identify the statutory approvals that apply to the development (c) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development (d) describe the procedures that would be implemented to: • keep the local community and relevant agencies informed about the development being carried out • receive, handle, respond to, and record complaints • resolve any disputes that may arise during the course of the development;	Schedule 4, Condition 1	AIE HS&E Manager	– Refer to EMS	Applicable
• respond to any non-compliance • respond to emergencies; and			– Section 8.2 – Section 7	Applicable
(e) include: • copies of any strategies, plans and programs approved under the conditions of this approval; and • a clear plan depicting all the monitoring to be carried out in relation to the development.			– Refer to EMS	Applicable
Incident Notification The Department must be notified in writing to compliance@planning.nsw.gov.au immediately after the Proponent becomes aware of an incident on site. The notification must identify the development, including the application number, and set out the location and nature of the incident.	Schedule 4, Condition 5	– AIE HS&E Manager – Liberty Industrial Project Management – Liberty Industrial Environment Rep	– Section 8.1	Applicable

Requirement	Reference	Responsibility	Evidence	Applicability to this Emergency Spill Plan
		– Construction Foreman		
Non-compliance Notification The Department must be notified in writing to compliance@planning.nsw.gov.au within 7 days after the Proponent becomes aware of any non-compliance. 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.	Schedule 4, Condition 6	– AIE HS&E Manager – Liberty Industrial Project Management – Liberty Industrial Environment Rep – Construction Foreman	– Section 8.2	Applicable
EIS Management Measures				
A site specific emergency spill plan will be developed, and will include spill management measures in accordance relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Roads and Maritime and EPA officers)	Condition W11 - Water quality, chemical and fuel impacts on flora and fauna	– AIE HS&E Manager	– This plan	Applicable
An emergency spill kit will be kept on site at all times. All staff will be made aware of the location of the spill kit and trained in its use.	Condition W12 - Water quality, chemical and fuel impacts on flora and fauna	– AIE HS&E Manager – Liberty Industrial Project Manager – Liberty Industrial Environment Rep – Construction Foreman – Construction Personnel	– Section 3 – Section 6 – Section 7	Applicable
Machinery will be checked daily to ensure there is no oil, fuel or other liquids leaking from the machinery. All staff will be appropriately trained through toolbox talks for the minimisation and management of accidental spills.	Condition W13 - Water quality, chemical and fuel impacts on flora and fauna	– Liberty Industrial Environment Rep – Construction Foreman – Construction Personnel	– Section 3 – Section 6 – Section 7	Applicable

6. Environmental aspects and impacts

Environmental aspects and possible environmental impacts associated with the Early Enabling Works of the MBD are listed in Table 6.1.

Table 6.1 Environmental aspects and possible impacts

Activity	Aspects	Possible environmental impacts
Storage, handling and use of hazardous substances and dangerous goods	Spillage of hazardous chemicals (i.e., fuel line break, refuelling spills)	– Spillage of hazardous chemicals may result in: • Soil and water pollution • Affect flora/ fauna or human health • Affect visual amenity • Compliance issues, resulting in prosecution • Increased costs for remediation • Community concerns

7. Land based spill response plan

The correct sequence of response actions that will be implemented in the event of a spill are detailed in Table 7.1.

Table 7.1 Spill response action sequences

	Step	Action
1	Safety and detection	Assess safety of situation for yourself and others If you cannot identify the substance, evacuate immediately and follow Step 4 If there is a risk of fire or explosion, evacuate immediately and follow Step 4 Shut off ignition sources(s) if safe to do so
2	Trace source	Put on appropriate PPE Trace the source of the spill Determine if spill is continuing
3	Stop or control	Stop or control the leakage by shutting the valves, plugging holes, moving mobile equipment – only if it is safe to do so
4	Emergency notification	Refer to Incident and Emergency Response Management Plan for contact details – these will be prominently displayed around the site compound and office
5	Secure area	Divert traffic and people away from the immediate area Evacuate if necessary
6	Contain	Contain the leakage using temporary bunds, booms, spill material etc.
7	Recover protocol	Recover any free liquid into purpose-built tankers if possible Recover absorbent materials i.e., Booms
8	Clean Up	Clean up the spill by pumping, absorbing, chemically treating Never spread or dilute spills with degreases, detergents or water
9	Dispose	Dispose of all spill product in accordance with the EMS Contaminated soil should be removed to an appropriate facility following consultation with the environmental representative
10	Report	Report the incident to your supervisor who will then notify the environmental representative The AIE HS&E Manager will notify the appropriate agencies and groups
11	Replace used equipment	Any equipment or materials consumed in the clean-up operation should be replaced as soon as possible
12	Monitor	Monitor the spill site to validate clean up and impact on the environment

8. Reporting and notification

8.1 Incident notification

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 noncompliance. The consequences of such incidents may result in material environmental harm, damage or asset loss.

All incidents including those involving Liberty Industrial, its subcontractors, and visitors that occur during the Early Enabling Works will be managed in accordance with AIE's Incident Reporting and Investigation Procedure. All environmental incidents and near misses must be immediately reported to the AIE Project Manager and AIE HS&E Manager, particularly:

– Loss of containment incidents or releases of liquids, solids, or gas.
– Any Dangerous goods or hazardous substance spills to waters and over 20 litres in volume to ground (less than 20 litres to be recorded and managed as a corrective action).
– Complaints received from regulatory authorities.
– Regulatory breaches – fines, prosecutions, improvement notices, breaches of licence conditions.
– All incidents of third-party property damage or loss.
– Any loss or damage to native vegetation outside approved work areas or flora and fauna of significance.
– Incidents involving impact or potential damage to Aboriginal or Historic Heritage significant areas.
– Loss of sediment downstream in a watercourse or other sensitive areas.

The Liberty Industrial Environmental Representative will notify AIE as soon as possible and in a timeframe that allows them to meet their regulatory reporting deadlines for notifiable incidents (refer to Section 8.2).

The Liberty Industrial Project Manager is responsible for the initial reporting of non-compliances with the EMS or relevant legislation to the AIE Project Manager and AIE HS&E Manager.

8.2 Non-compliance and notifiable incidents

In the event of a notifiable non-compliance incident arising, Liberty Industrial will notify AIE immediately to allow AIE to notify DPIE in writing (to compliance@planning.nsw.gov.au) within 7 days of AIE becoming aware of the non-compliance, as per Schedule 4 Condition 6 of Infrastructure Approval (SSI 9471).

All environmental incidents will be reported immediately to DPIE in writing (to compliance@planning.nsw.gov.au) immediately after AIE becomes aware of the incident, as per Schedule 4 Condition 5 of Infrastructure Approval (SSI 9471).

The written notification will 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.

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Appendix C

Marine daily inspection checklist

PORT KEMBLA GAS TERMINAL

Marine Works Daily Inspection Checklist

Date:	Time:	Overnight Rainfall (mm):
Inspection Conducted by:	**Weather and other meteorological conditions:**	
Current Activities: (eg. Dredging, Piling)		

Observations and Review of Site Activities		
Review of Current Site Activities and Environmental Aspects	**Y/N/NA/NC**	**Comments**
Access and Egress to all work areas is clear and unimpeded?		
Erosion and Sediment Controls are in place and functional?		
Are all siltation control measures working effectively (Silt Fences and Silt Curtains)?		
Are exclusion zones / no-go areas being adhered to?		
Are minor maintenance and cleaning of plant and vehicles conducted in appropriately designated area only?		
Is there appropriate storage of all Fuel products on site?		

Is there any oil and grease present on the surface of the water inside the Port		
Are on land dust control measures in place?		
Is material stockpiled in designated temporary stockpile areas only?		
Is the site clean and free of waste, weeds and debris?		
Are marine environmental controls (eg. Silt Curtains, Bubble Curtains and AMB's)in place and functional?		
If contaminated material is present is it properly located, segregated with functioning enviro controls?		
Is there any new contamination (or potential for contamination) on site caused by site activities		
Is Standard Procedure for Piling works being adhered to (i.e Soft Start etc.)?		
Are Fenders, Bollards and Safety equipment functional and in proper place?		
Is the site free of physical, liquid and chemical pollution?		
Have any Marine Species (such as Syngathids) been observed?		
Have any Marine fauna been observed inside the Port?		
Have any signs of Toxic Dinoflaggelate Cysts been observed within the Port (Red colouring in water)?		

Is all bunding, fencing lighting and signage in place?		
Barge loads during transit from dredge / OHDSCA area do NOT overflow/spill/leak sediments [if Yes, state name of barge, time and location. Inform Dredge Project Manager immediately]		
Is there evidence or potential for the introduction of Invasive Marine Pests in Daily Operations?		
Does all waste appear to be contained to the vessels and controlled under their respective		
Have Trigger levels been exceeded in at any of the monitoring points overnight or since last inspection?		

Y-Yes N- No NA- Not Applicable NC- Not Checked

Follow Up Items

Appendix D

Example investigation report template

PORT KEMBLA GAS TERMINAL
Marine Works Investigation Report

Date:	Time:	Overnight Rainfall (mm):
Inspection Conducted by:	**Weather and other meteorological conditions:**	
Location:	**Type: Contamination limit Exceedance**	
Current Activities: (eg. Dredging, Piling)		

1 Description of Event

- Weekly water quality samples were collected on 19 August 2009. The laboratory results were reported on 25 August 2009. The results of the sample analysis recorded an exceedence of trigger values at EPL 06C.
- The Naphthalene trigger value is 2µg/l. The naphthalene concentration at EPL 06C was 3.1 µg/l at 11.21 on 19 August 2009.
- The event occurred during an outgoing tide.

Table 1: Turbidity Results

Location	Approx. Time	Turbidity (ntu)	Naphthalene (µg/l)
EPL07C (0.5m from surface up current)	10.41 am	7.6	<1.0
EPL08C (0.5m from bottom up current)	10.47 am	8.0	<1.0
EPL 11	10.55 am	7.9	<1.0
EPL 10	11.13 am	8.7	<1.0
EPL05C (0.5m from surface Down current)	11.15 am	8.9	<1.0
EPL06C (0.5m from bottom Down current)	11.21 am	6.1	3.1

Works actively being undertaken in close proximity to EPL06C at the time of the exceedence include:

- The Loadstar rig was actively piling
- Boskalis dredge was actively dredging the CSC;
- NCIG's survey boat was adjacent to the Boskalis dredge
- OSSPW preparation works were being undertaken;
- Silt curtain installation works were not being undertaken at the time of the event.
- The Bouganville dredge was observed to be operating adjacent to the Kopper's berth.

Figure 1 (attached) illustrates the general layout of the area when the samples were obtained. The locations of all vessels in the River was obtained from observation records taken on 19th August.

2 Data Validation

Laboratory results were collected using standard sample collection procedures. Laboratory QA for the samples were within acceptable quality limits. The data is considered representative.

3 Immediate Corrective Actions

Immediately following the laboratory reporting on the 25th August, the following investigation actions were undertaken:

- A review of the observational data and activities in the river at the time of the sample collection was undertaken
- Turbidity data collected during the sampling event was reviewed. The turbidity readings at the four locations adjacent to the Loadstar piling rig, EPL 5C, 6C, 7C and 8C ranged from 6.1 and 8.9 ntu. The turbidity data did not indicate that sediments had been disturbed adjacent to EPL6C at the Loadstar piling rig.
- Additional data collected at the NCIG dredging works were reviewed. Samples were collected at four locations adjacent to the NCIG dredging works on the 19th August 2009, in accordance with EPL 12740. Concentrations of naphthalene were below laboratory detection limits and trigger values in the four samples analysed. The NCIG data did not indicate the dredging works were contributing to the Naphthalene exceedence at EPL 6C;
- A slight plume was observed emanating from the Bouganville dredging rig adjacent to the Koppers berth. An additional turbidity reading was taken from the observed plume. Turbidity in the plume was 11.6 ntu. The Bouganville drege was operating down current of EPL6C, and is not considered to be a contributing factor to the Naphthalene exceedence at EPL 6C.
- The laboratory results were reported on the 25th August 2009. DECC, was notified by CB, [the client/EPL holder] of the event via e-mail at 6.58pm on 25th August 2009 after [the client/EPL holder] was notified by [the contractor];
- Environmental controls were observed to be in place and in good condition on the 19 August during the hourly inspections of the piling works.

4 Cause of Event

The cause of the event was not determined by the review of observation data, turbidity readings and laboratory results at adjacent locations from the 19th August. The investigation did not indicate that HRRP activities were the cause of the Naphthalene exceedence.

5 Outcomes of the Investigation and Corrective Actions

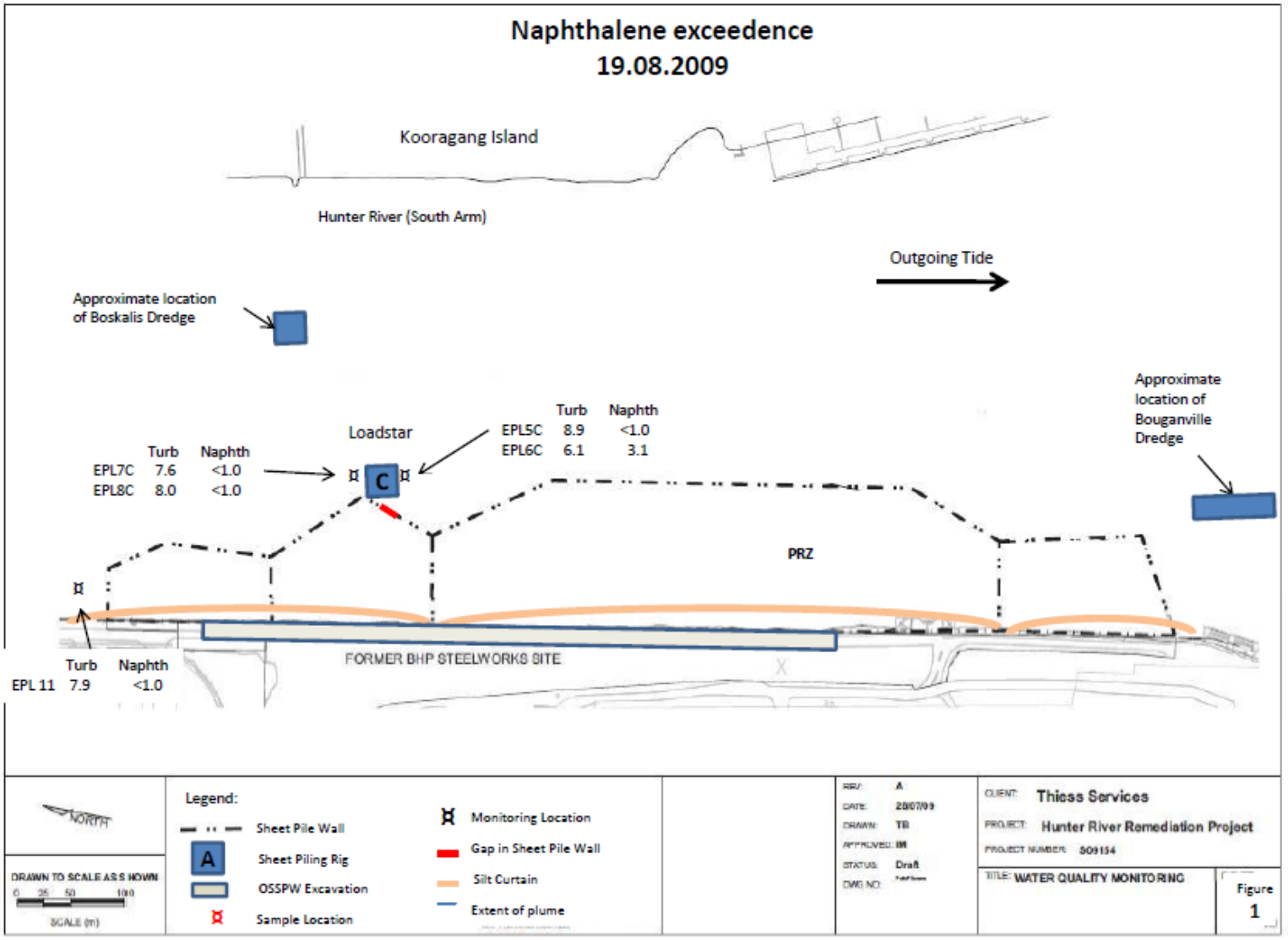
- The exceedence of the turbidity trigger value was not found to have been caused as a result of the INRSPW installation works.
- Environmental controls and work practices were checked on the Loadstar sheet piling rig.

6 Observed Environmental Impact

- The Napthalene concentration observed was 3.1 µg/l, marginally above the trigger value of 2 µg/l. Naphthalene was not detected at other nearby sampling locations taken on the 19 August indicating the trigger value exceedence to be minor and not wide spread across the river.

7 Notification and Investigations

- E-mail notification
    - 25 August 2009 - DECC
- Written notification
    - 27 August 2009 - DECC


Naphthalene exceedence
19.08.2009
Kooragang Island
Hunter River (South Arm)
Outgoing Tide
Approximate location of Boskalis Dredge
Approximate location of Bouganville Dredge
Loadstar
Turb Naphth
EPL7C 7.6 <1.0
EPL8C 8.0 <1.0
Turb Naphth
EPL5C 8.9 <1.0
EPL6C 6.1 3.1
C
PRZ
FORMER BHP STEELWORKS SITE
Turb Naphth
EPL 11 7.9 <1.0
NORTH
DRAWN TO SCALE AS SHOWN
0 25 50 100
SCALE (m)
Legend:
Sheet Pile Wall
A
Sheet Piling Rig
OSSPW Excavation
Sample Location
Monitoring Location
Gap in Sheet Pile Wall
Silt Curtain
Extent of plume
REV: A
DATE: 28/07/09
DRAWN: TB
APPROVED: IM
STATUS: Draft
DWG NO:
CLIENT: Thiess Services
PROJECT: Hunter River Remediation Project
PROJECT NUMBER: 509154
TITLE: WATER QUALITY MONITORING
Figure 1

Appendix E

Water sampling procedure

Marine Water Sampling Procedure

Marine Water Sampling	Document ID	A.020 – Water Sampling Procedure
	Prepared by	Rhys Blackburn
	Reviewed by	Rhys Blackburn
Purpose: This procedure describes how to collect water quality readings and water samples from water from a boat.	Authorised by	Rhys Blackburn
	Date of Issue	01/04/2020

Key Definitions:

Grab Sample – *means a sample of water collected in the field, and transferred to a laboratory supplied sample container.*

Physical Parameters – *Turbidity, temperature, pH,, electrical Conductivity and dissolved oxygen measure*

Quality Reading – *a field measurement taken by a Water Quality Meter, or other device, in the field.*

Sample collection boat – *The sample collection boat is where the samples are collected from. It will be crewed by a driver and environmental professional to collect samples or collect water quality data*

Sample Location:

Fixed sample locations may as outlined in the project documentation. Locations may include lateral and vertical requirements. The Sample Collection boat should be positioned using either hand held GPS, or on board GPS. An onboard sounder may be used to determine depth at each location if required.

Non-fixed samples locations should be recorded using the same equipment. sample locations include samples or data collected in response to an incident, investigation or other reason

Photo 1 Sample vessel

Grab Samples:

Samples are to be collected using a dedicated (Project) submersible pump attached to a Teflon hose. The pump should be a waters typhoon, or similar purpose built water sampling pump. The pump and line should be a suitable length to achieve the required depth. A weighted line may be required to overcome current and reinforce the setup.

Once lowered to the sample location the pump should be activated and the pump and line purged for a minimum of 10 seconds, to ensure representative sample. The flow should be directed into a receptacle, where the Water quality meter's probes can be accommodated, and Physical parameters can be observed to stabilise. Physical parameters may be recorded at this time.

Once stable readings have been recorded, the sample hose should be directed to the laboratory supplied bottles for the required laboratory analysis

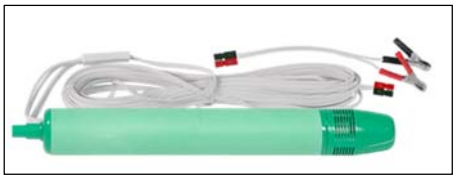


Photo 2 Submersible pump

Sample container and preservation:

Analysis	Bottle Type	PQL	Preservation	Holding Time
TSS or TDS	Plastic or glass, unpreserved 200ml	5mg/L	Cool to <6°C	2 days
Turbidity	Plastic or glass, unpreserved 50ml	0.1 NTU	Store in dark	2 days
BTEX+C6-C9 (or C6-C10)	2 x 40ml vials	1 µg / L	pH <2 (H2SO4 or HCl) or Sodium Bisulphate (NaHSO4)** + Cool to <6°C	14 days
Dioxins	2L Glass		Cool to <6°C + 0.008% Na2S2O3	30 days
PAHs and C10-C40	500ml Glass	1-2 µg / L	Cool to <6°C	7 days
Tributyltin	500ml Glass	0.002µg Sn/L	Cool to <6°C and dark	7 days

Metals (un-filtered)	**Plastic or glass 50ml**		pH <2 (HNO3)	6 months
Aluminium		0.01 mg/l		
Antimony		0.001 mg/l		
Arsenic		0.001 mg/l		
Cadmium		0.0001 mg/l		
Chromium		0.001 mg/l		
Cobalt		0.001 mg/l		
Copper		0.001 mg/l		
Lead		0.001 mg/l		
Mercury		0.0001 mg/l		
Nickel		0.001 mg/l		
Selenium		0.001 mg/l		
Silver		0.001 mg/l		
Vanadium		0.001 mg/l		
Zinc		0.001 mg/l		

Physical Parameters:

Physical parameters may be measured using a hand held water quality meter. The water quality meter can be used by either holding the measuring probes directly in the water being measured. Alternatively, a flow cell may be used (as outlined above).

The manufacturers guidance should be followed regarding calibration and calibration testing.

Photo 3 Water Quality Meter

Sample Quality Assurance and Quality Control:

- All samples should be collected by an Environmental professional
- Appropriate sample labelling should be used including, Sample Point ID_Depth. Date and sample time should also be recorded on each sample container and COC.
- Physical parameter readings will be recorded on a field sheet, including date, time and location.
- Calibration records will be maintained in line with the manufacturers specification
- Sample preservation to include placing immediately into an insulated box, cooled with an ice brick.
- Transport under Chain of Custody (COC) procedures, and within the holding times for the relevant analytes.
- Laboratory analyses conducted within appropriate holding times
- An Intra-laboratory blind field duplicate analysis should be undertaken for each sampling event. A Relative Percent Differences (RPDs) will be calculated and assessed against an RPD criteria set for each project.
- A disposable pair of gloves should be worn for each sample collection to minimise the potential for cross contamination
- Samples shall be submitted to a laboratory that hold NATA accreditation for the sample analysis

Training & Certification:

- Coxswain grade 2 license
- Construction General Induction
- Site Specific induction

Equipment Required:	**PPE Required:**

▪ Positioning system and sounder ▪ Two way radio ▪ Insulated sample container ▪ Ice bricks ▪ Submersible pump, Teflon hose ▪ Calibrated hand-held water quality meter ▪ Sample location figure or way-points ▪ Digital camera ▪ Sample bottles and marker pens	▪ Personal flotation devices (PFD) ▪ Disposable nitrile gloves

Appendix F

Incident Notification flow chart

Port Kembla Gas Terminal (PKGT) Project
Incident Notification & Response Flow Chart

Stakeholder, Community or Landowner(s) identify an issue

Incident occurs on site

Call Placed to Toll Free Project Contact Number : 1800 810 860

Notification made to Forman or Construction Manager

Call Emergency Services immediately if the incident requires their response

Undertake any immediate actions to control or manage the incident if safe to do so

Notify Liberty Industrial Project Manager

Environmental Representative notified and generates an incident notification report. If required, they will mobilise to the location to conduct an inspection and direct further rectification

AIE are notified of the incident type, location and any measures taken to control or manage it

The Department and EPA to be notified in writing to compliance@planning.nsw.gov.au immediately after the Proponent becomes aware of an incident on site. The notification must identify the development, including the application number, and set out the location and nature of the incident.

Incident investigation completed and report compiled with corrective or preventive actions identified

Incident Investigation report prepared and submitted to AIE

Incident Investigation report is provided to relevant Authority

Corrective & preventive actions implemented on site, completed actions logged in monthly reporting

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