McCONNELL DOWELL
CREATIVE CONSTRUCTION™

CEMP Appendix B4

Marine Works Management Plan

Kamay Ferry Wharves

April 2023

NSW GOVERNMENT

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Contents

Document control

Approval and authorisation

Title	Marine Works Management Plan
Endorsed by Environment Representative	**Richard Peterson** Environmental Representative Director – Trigalana Environmental PTY LTD [redacted]
Signed	
Dated	
Approved on behalf of Transport for NSW by	**Tony Matthews** Authorised Delegate – Kamay Ferry Wharves Project Maritime, Greater Sydney Transport for NSW [redacted]
Signed	
Dated	
Approved on behalf of McConnell Dowell by	**Adam Adamczewski** Project Manager – Kamay Ferry Wharves Project McConnell Dowell [redacted]
Signed	
Dated	

Document status

Revision	Date	Description	Approval
A	July 2021	Draft for tender documentation	
B	December 2022	Draft for Review	
C	February 2023	Updated with TfNSW Comments	
D	March 2023	Updated with TfNSW Comments	
E	March 2023	Updated with TfNSW Comments	
F	April 2024	Updated to Address Harbour Master Comments	
00	April 2024	Issued for Construction	

Distribution of controlled copies

This sub-plan is available to all personnel and sub-contractors via the Project document control management system. An electronic copy can be found on the Project website.

Glossary / Abbreviations

Table 1-1: Table of common abbreviations used within this document

Abbreviation	Expanded text
AIS	Automatic Identification System (AIS)
CEMP	Construction Environmental Management Plan
CEMS	Contractor's Environmental Management System
CEP	Construction Execution Procedure
CCS	Community Communication Plan
CMO	HSEQ compliance database software
CoA	Condition of Approval
Contractor	McConnell Dowell Contractors (Aust) Pty Ltd (MCD)
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DPI Fisheries	NSW Department of Primary Industries, Fisheries
DPE	NSW Department of Planning and Environment
DPE Water	Water Group of the Department of Planning and Environment
EIS	Environmental Impact Statement
EMS	Environmental Management System
Environmental aspect	Defined by AS/NZS ISO 14001:2015 as an element of an organisation's activities, products or services that can interact with the environment.
Environmental impact	Defined by AS/NZS ISO 14001:2015 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.
Environmental incident	An unexpected event that has, or has the potential to, cause harm to the environment and requires some action to minimise the impact or restore the environment.
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
EPBC – CoA	*Environmental Protection and Biodiversity Conservation Act 1999* Conditions of Approval
EPI	Environment Protection Instruction

Abbreviation	Expanded text
Environmental Representative	A suitably qualified and experienced person independent of project design and construction personnel employed for the duration of construction. The principal point of advice in relation to all questions and complaints concerning environmental performance.
EWMS	Environmental Work Method Statements
Hold point	Is a verification point that prevents work from commencing prior to approval from Transport for NSW
HSEQ	Health, Safety, Environment and Quality
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
JUB	Jack Up Barge
Minister, the	NSW Minister for Planning
MCoA	NSW Minister for Planning Conditions of Approval
MMS	McConnell Dowell Management System
MWMP	Marine Works Management Plan
OEH	Office of Environment and Heritage
PANSW	Port Authority NSW
PMC	Polaris Marine Constructions
PMP	Project Management Plan
Principal, the	Transport for NSW
POEO Act	Protection of the Environment Operations Act 1997 (NSW)
Project, the	Kamay Ferry Wharves
REMMs	Revised Environmental Management Measures
RMS - Roads and Maritime	Now Transport for NSW (TfNSW)
SEAR's	Secretary's Environmental Assessment Requirements
Site	Area defined by the construction boundary at La Perouse and Kurnell
SSI	State Significant Infrastructure
TfNSW	Transport for NSW
VMP	Vessel Movement Plan
VMS	Variable message sign
VTS	Vessel Traffic Service

1 Introduction

1.1 Context

This Marine Works Management Plan (MWMP) forms part of the Construction Environmental Management Plan (CEMP) for the Kamay Ferry Wharves Project (the Project).

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

This MWMP has been updated by McConnel Dowell in preparation for mobilisation.

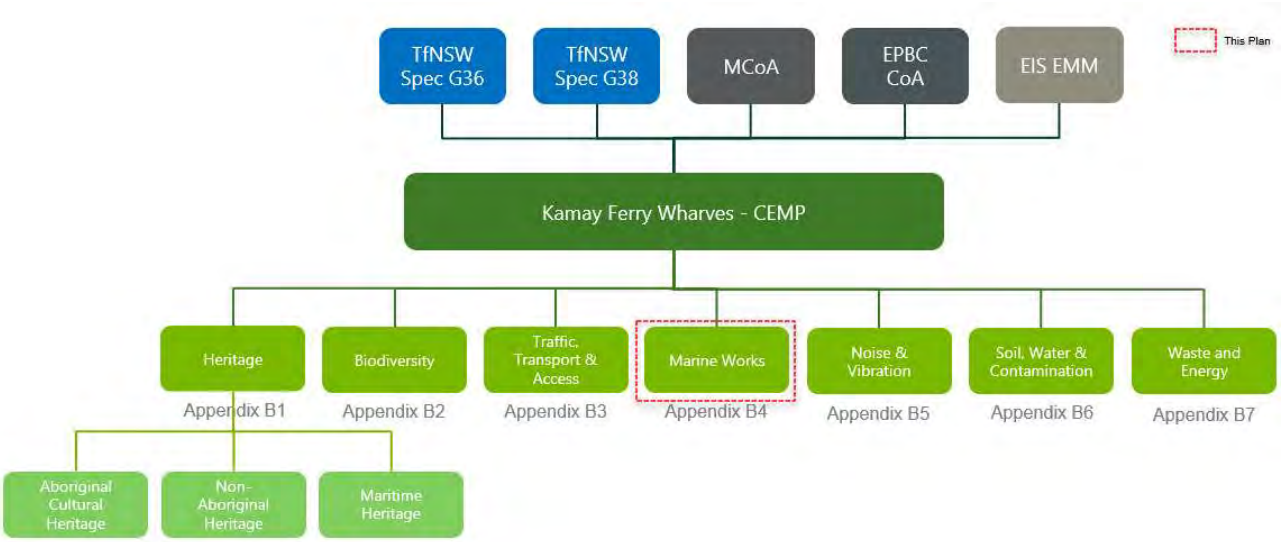


Figure 1-1 CEMP and Sub Plans

1.2 Background and project description

Transport for New South Wales (Transport for NSW) is constructing new ferry wharves at La Perouse and Kurnell in Botany Bay. Refer to site location map in Section 2.2 of the CEMP. This would allow for an alternative connection between La Perouse and Kurnell other than by road. The primary purpose of this infrastructure would be to operate a public ferry service. It would also provide supplementary temporary mooring for non-ferry commercial vessels (such as whale watching vessels) and recreational boating.

A detailed description of the Project is provided Chapter 5 of the EIS.

The EIS considered the potential marine traffic impacts during the construction of the Project in Chapter 12 Traffic and Transport and Appendix L Navigational Safety Assessment.

2 Purpose and objectives

2.1 Purpose

The purpose of this MWMP is to describe how McConnell Dowell proposes to manage marine works during construction of the project.

2.2 Objectives

The objective of the MWMP is to ensure that navigational impacts during construction are avoided, minimised and managed in accordance with that permitted in:

- The EIS prepared for the Project
- Ministers Conditions of Approval (MCoA SSI 10049) granted to the project on 21st July 2022.
- EPBC-CoA granted to the project on 16th March 2023.
- Transport for NSW specifications G1, G22, G36 and G71.

2.3 Goals

The following goals have been established for the management of marine work impacts during construction:

- Minimising delays
- Ensuring consideration is given to the needs of all marine users
- Maintaining safety for both workers and the general public
- Ensure full compliance with the relevant legislative requirements, CoA and REMM.

2.4 Compliance of the MWMP

Requirement	Relevant Sections
TfNSW Specification G1 Section 5.12.2	
A description of the marine works, including associated program, methodology, logistics and risks	Sections 4.1, 4.2, 4.3, 4.6 and 4.7, and Figure 4-3
Roles and responsibilities of the Contractor's personnel	Sections 4.4, 4.5 and 6.2
Vessel, plant and equipment specifications	Section 4.14
Crew qualifications and training	Section
Communications and engagement protocols	Section 6.8
Marine works operations and procedures	Sections 4.1, 4.6, 4.7, 4.12, 4.13, 4.14 and 6
Pollution incident response procedure	Attachment B & Section 7.5
Emergency response procedure	Attachment C
Vessel interaction procedure	Sections 6.4, 6.7 and 6.8, and Attachment D
TfNSW Specification G1 Section 5.12.12	
The Contractor must avoid anchoring on key fish habitats	Section 4.1
TfNSW Specification G22 Annexure A3	

Requirement	Relevant Sections
Training and Competency	Sections 4.4, 4.5 and 6.2
Diver Competency	Section 6.9.2.
STWC 95	Not required due to not operating in International Waters
Vessel Inductions	Section 6.4
AMSA Marine Orders	Section 6.2
Certificates of Survey	Section 6.4
Communications	Attachment I
Incident Reporting and Investigations	Section **Error! Reference source not found.**
Safety Meetings	Refer to the WH&S Management Plan
Safety Officer	Not required due to not operating in International Waters
Safety Data Sheets	Refer to the WH&S Management Plan and Environmental Management Plan
Personal Protective Equipment (PPE)	As per respective vessel Safety Management Systems and the SWMSs
Vessel Safety Equipment	As per respective vessel Safety Management Systems
Vessel Safety Plans (Safety Management System)	Section 6.4.1
Safety and Emergency Exercises and Drills	As per respective vessel Safety Management Systems
Medical Evacuations	Refer to the WH&S Management Plan and respective vessel Safety Management Systems
Working under Marine Structures	Discussed in general in 4.7.5 and 4.7.9 and in detail in WH&S Management Plan and assessed within Construction Execution procedures on relevant scopes.
Working on Water	Discussed in general within Sections 4 and 6, and in detail within the WH&S Management Plan, respective vessel Safety Management Systems and SWMSs
Working Alone	Refer to the WH&S Management Plan, respective vessel Safety Management Systems and SWMSs
Vessels, Barges and other Floating Structures	Discussed in general within Sections 4 and 6, and in detail within the WH&S Management Plan, respective vessel Safety Management Systems and SWMSs
Marine Transport	Discussed in general within Sections 4 and 6, and in detail within the WH&S Management Plan, respective vessel Safety Management Systems and SWMSs
Transfer of personnel by small craft	Section 4.12.1
High Pressure Water Blasters	Refer to the WH&S Management Plan and SWMSs
Asbestos	Refer to the WH&S Management Plan and SWMSs
Mooring Safety	Section 6.6
Diving Operations	Section 6.9
Cargo Handling	Discussed Refer to the WH&S Management Plan and SWMSs
Crane Operations	Section 6.10 and SWMSs
Regional Harbour Master Requirements	
Roles and Responsibilities	Sections 4.4, 4.5 and 6.2

Requirement	Relevant Sections
Timing and estimated program of works	Figure 4-3
Works Methodology	Sections 4.1, 4.2, 4.3, 4.6 and 4.7
Location of Works (associated works/exclusion zone on a nautical chart and/or provided separately in GDA 2020)	Figure 4- and Figure 4-
Communication plan (with VTS and other stakeholders)	Attachment I
Transit plan (for regular and also sensitive movements)	Figure 6-1 and Attachment E
Security plan (monitoring and response capability – also overnight)	Section 4.18
Environmental protection	Sections 5, Attachment A and Attachment B
Consultation with stakeholders	Section 3
Ministers Conditions of Approval – E85	
Prior to the commencement of Construction, a Construction Marine Works Management Plan (CMWMP) must be prepared by a suitably qualified person, in consultation with the Harbour Master.	This Plan, Section 3
The CMWMP should, at a minimum, include • the management and mitigation measures and recommendations outlined in the Navigation Safety Assessment prepared by Thompson Clarke Shipping, dated September 2021 .	Section 5.8
Note: Prior to the commencement of any Works that will disturb the bed of a port, the Proponent must seek written approval from the Harbour Master in accordance with clause 67ZN of the Ports and Maritime Administration Regulation 2012.	Section 3.2
Ministers Conditions of Approval – E87	
The Proponent must prepare a Vessel Traffic Management Plan (VT MP) in consultation with Port Authority of NSW that identifies priority to sea going ships and protocols for interactions between different vessel types to aid with the safe operation of ferry vessels associated with the SSI.	This is an operational requirement.
The VTMP must include operation of recreational vessels around the wharves and the use of the wharves for berthing/drop off/pick up (signage). The VT MP must include emergency	This is a post construction requirement to be addressed within the permanent works design and operational plans by others.

Requirement	Relevant Sections
management arrangements for incidents and accidents.	
Revised Environmental Mitigation Measures – REMM T7	
A Marine Works Management Plan (MWMP) will be prepared in consultation with the Port Authority NSW (including Harbour Master), Transport for NSW, and other relevant stakeholders.	This plan, Section 3
The plan will: • define exclusion zones, methods of marking the zones,	Section **Error! Reference source not found.**.
• clearance distances, mooring plans,	Attachment F
• communication protocol,	Section 6.8
• emergency and incident response procedures,	Section 7.5, Attachment B, Attachment C
• vessel movements,	Attachment E
• contact details of all parties and responsible persons, and	Section 4.4
• transit routes.	Attachment E
The MWMP will be consistent with the Biodiversity Management Plan.	Section 2.1

3 Consultation & Approvals

3.1 Consultation

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

Table 3-1 MWMP Consultation

Stakeholder	Date	Status
Port Authority NSW	Initial January 2023	Ongoing
Harbour Master	Initial 7 December 2022	MWMP accepted 26/04/23 ref Appendix J
Transport for NSW Maritime	Initial 13 February	Ongoing
Ausgrid	Initial 9 December 2022	Ongoing
La Perouse Local Aboriginal Land Council	Initial 1st November 2022	Ongoing
Gamay Rangers	Pending	

Engagement with stakeholders will continue after submission of the initial MWMP.

3.2 Approvals required prior to construction

Approvals, licenses and/or notification requirements for marine work under NSW legislation that are required prior to construction include the below.

3.2.1 Ports and Maritime Administration Regulation 2012 (NSW)

As the project would disturb sediment, written permission from the Harbour Master would be required before the project commences in accordance with section 67ZN of the Ports and Maritime Administration Regulation 2012.

3.2.2 Marine Safety Regulation 2016 (NSW)

The project would be subject to licencing under the terms of section 97 of the Marine Safety Regulation 2016 as it is located within navigable water in the harbour as defined in the Marine Safety Act 1998 (NSW). The Harbour Master and Ports Authority will need to be informed of navigational exclusions zones for the project and nautical charts would be updated where necessary once works are complete.

3.2.3 Approvals by the Principal

- Assessment and approval of the Project as State Significant Infrastructure (SSI) under Division 5.2 of the Environment Planning and Assessment Act 1979 (NSW)
- Assessment and approval of the Project as a Controlled Action under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth);
- Harbour Masters Approval under clause 67ZN of the Ports and Maritime Administration Regulation 2012 (NSW);

- A licence to harm a threatened species under section 220ZW of the Fisheries Management Act 1994 (NSW);
- Works lease or licence between the Principal and NSW Crown land, or landowner consent from NSW Crown land, in respect of a part of the Site;
- Works lease or construction licence between the Principal and Randwick City Council, or landowner consent from Randwick City Council, in respect of a part of the Site;
- Works lease or construction licence between the Principal and NSW National Parks and Wildlife Service, or landowner consent from NSW National Parks and Wildlife Service, in respect of a part of the Site; and
- Works lease or construction licence between the Principal and Sutherland Shire Council, or landowner consent from Sutherland Shire Council, in respect of a part of the Site

4 Marine Operations

4.1 Overview of the Marine Construction

Based on the proposed construction methodology described in the EIS, the preferred method for constructing the project will include a combination of construction from land and construction from marine vessels. The car parking, footpaths, approach to the wharves and part of the wharf near the foreshore would be built from landside. The section of the wharves over the marine areas would be constructed from marine vessels with consideration given to always avoid anchoring on Key fish habitats.

At La Perouse, a crane and landside platform would be used to construct part of the wharf in the intertidal and shallow water areas. The remainder of the wharf in deeper water would be constructed from a marine barge plant. At Kurnell, a temporary causeway will be used to construct part of the wharf. The remainder of the wharf would be constructed from a marine barge.

The temporary causeway at Kurnell would provide access and a working platform for piling plant and equipment to enable the installation of the bents of piles, plus the placement of headstocks, deck planks, etc. This causeway would need to extend out to a point where the marine based equipment would be able to access to continue the works. The temporary causeway measures approximately 10-15m wide at its base and 85m in overall length (refer to Figure 4-1).

The total construction period is anticipated to take approximately 13 months, starting in April 2022 with the construction of the two wharves occurring at the same time. This construction timeframe is estimated based on physical construction on site and allows contingency for expected delays such as due to poor weather. Unexpected finds, contractor requirements or unforeseen delays could extend this timeframe.

The overview of the construction of the wharves is shown in Figure 4-1and Figure 4-2.

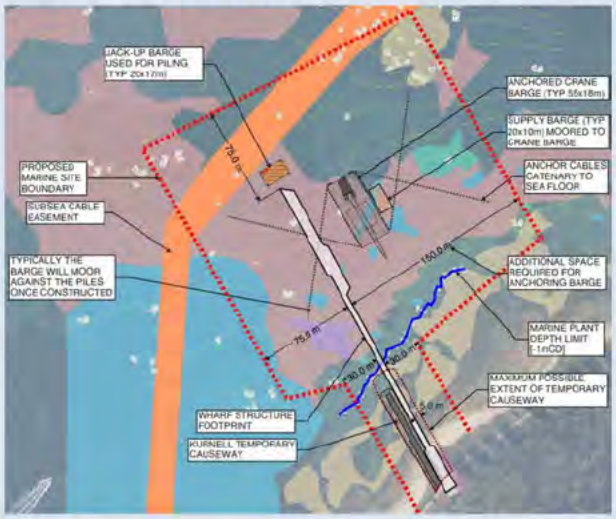


Figure 4-1 Overview of marine construction – Kurnell

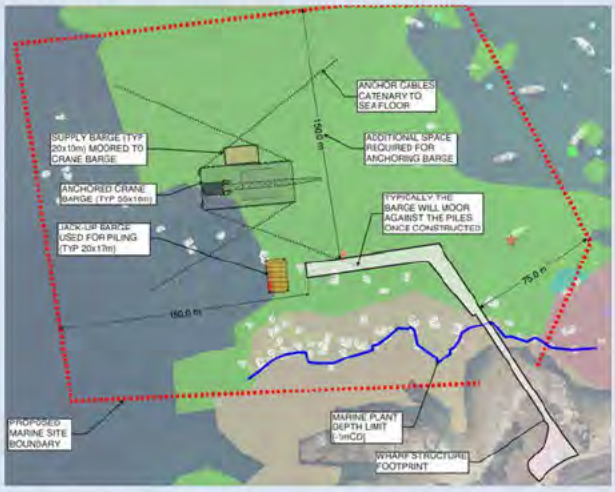


Figure 4-2 Overview of marine construction - La Perouse

The construction methodologies, sequencing and program have been developed since Contract Award. The following is a summary on the overall process, with greater detail provided at sections 4.6 and 4.7.

Construction of the works will be supported from both shore and from a marine spread. Shore based works will be used where the bathymetry makes marine construction impractical:

- Bents 1-4 at La Perouse
- Bents 1-8 at Kurnell

Access for this works will be via a rock platform on the south-west side of the La Perouse ferry jetty, and via a combination of the rock platform and temporary jetty on the eastern side of the Kurnell ferry jetty. The rock platforms will be constructed using Kyowa rock bags – enclosed nylon netted bags filled with rock – and a core of loose clean ballast rock. These platforms will also support the supply of materials to the workfaces and barges, including the piles, precast and a line pump for concrete supply to the socketing works.

Marine works will be undertaken by a marine spread including:

- Spudded and moored construction barge (55 x 18m) fitted with a 250t crane for installation of driven piles, precast and steel frames (referred to as the *crane barge* for the remainder of this document)
- Jack Up Barge (18 x 9m) fitted with a 35t drill rig for drilling operations. This includes both the socketing of the berthing structure piles, and any drilling operations as part of a drill drive drill operation (referred to as the *JUB* for the remainder of this document)
- Supply barge (21 x 7.3m) principally bringing materials to the construction barge (referred to as the *supply barge* for the remainder of this document)
- Support tug vessel.

Marine based works will move from site to site to support the critical path. The marine spread will generally move from site to site in concert.

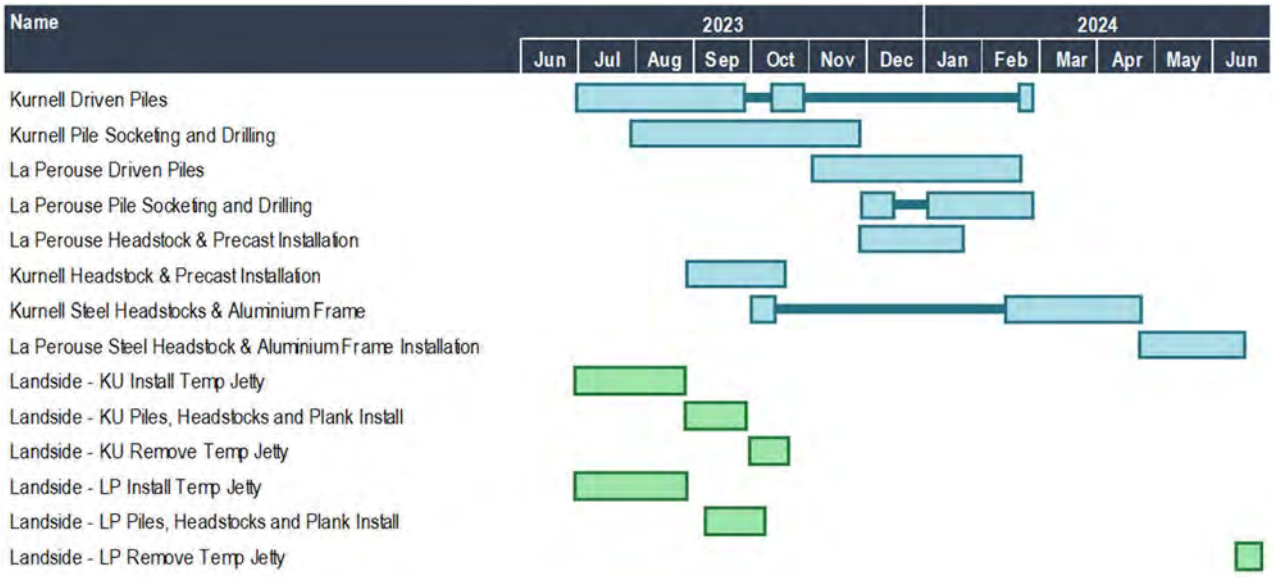


Figure 4-3 Summary Program

4.2 Scope of Works

The Scope of Works include:

- General:
  - Set up site delineation.
  - Install temporary project moorings.

- La Perouse:
  - Installation of 4 piles from land.
  - Installation of 41 piles from marine plant.
  - Installation of cathodic protection to piles.
  - Preparation of piles and installation of spigots.
  - Installation of concrete headstocks (14 locations) and concrete planks (6 locations).
  - Installation of steel headstocks (12 locations) and aluminium frames (12 locations).

- Kurnell:
  - Installation of 8 piles from land.
  - Installation of 40 piles from marine plant.
  - Installation of cathodic protection to piles.
  - Preparation of piles and installation of spigots.
  - Installation of concrete headstocks (9 locations) and concrete planks (6 locations).
  - Installation of steel headstocks (12 locations) and aluminium frames (12 locations).

4.3 Project Organisational Chart

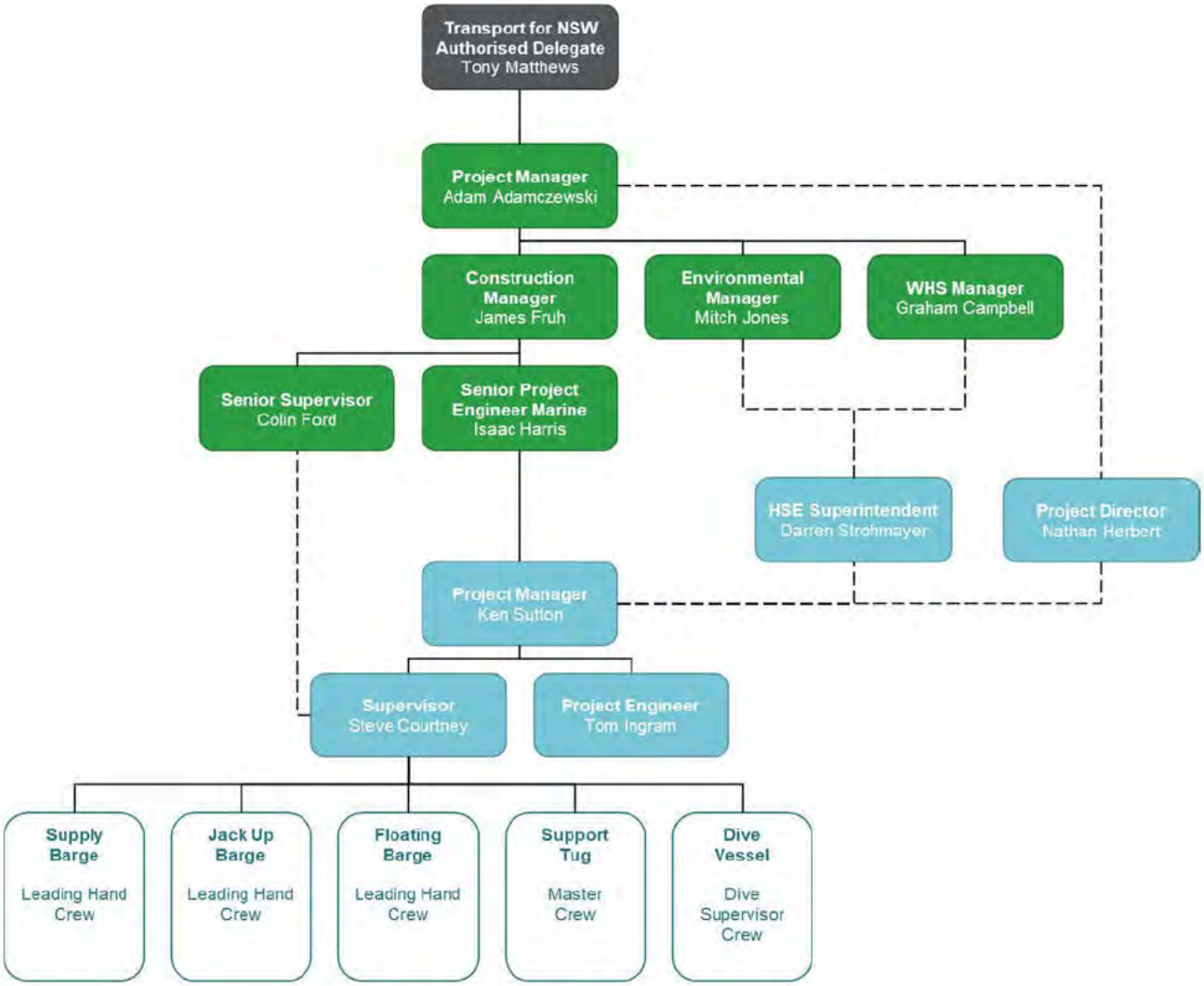


Figure 4-4 Project Organisation Chart

4.4 Marine Construction Personnel

The following table lists the key personnel who will be involved with the delivery of the marine works for the Project.

NAME	PHONE FAX	EMAIL
Client – Transport for NSW		

NAME	PHONE FAX	EMAIL
Tony Matthews – Authorised Delegate	[redacted]	[redacted]
McConnell Dowell		
Adam Adamczewski – Project Manager	[redacted]	[redacted]
James Fruh – Construction Manager	[redacted]	[redacted]
Isaac Harris – Senior Project Engineer	[redacted]	[redacted]
Colin Ford – Senior Supervisor	[redacted]	[redacted]
Mitch Jones – Senior Environment & Sustainability Advisor	[redacted]	[redacted]
Graham Campbell – WH&S Advisor	[redacted]	[redacted]
Marine Plant Operator (Polaris)	T: 02 9563 8333 F: 02 9563 8300	
On-Site		
Nathan Herbert – Polaris Project Director	[redacted]	[redacted]
Kenneth Sutton – Polaris Project Manager	[redacted]	[redacted]
Steve Courtenay – Polaris Site Supervisor	[redacted]	[redacted]
Tom Ingram – Polaris Site Engineer	[redacted]	[redacted]
Darren Strohmayer – Polaris HSE Superintendent (Visiting)	[redacted]	[redacted]
Off-Site		
Brad Hosemans – Polaris Chief Operational manager	[redacted]	[redacted]
Stephen Richmond – Polaris General Manager	[redacted]	[redacted]
Jeff Cobbin – Polaris HSEQ Advisor	[redacted]	[redacted]

4.5 Responsibilities & Qualifications

The following table summarises the qualifications and key responsibilities for Project staff.

Role	Qualifications	Responsibilities
Adam Adamczewski Project Manager	• Bachelor of Engineering (Civil) • Member, Engineers Australia • Provide First Aid	• Overall responsibility for Project delivery. • Ensuring the teams have sufficient resources to achieve the tasks and requirements. • Lead engagement with client and stakeholders • Manage the Project's functional teams to deliver the Project works on time, to the specified quality, and in a safe and environmentally sustainable manner • Establish the Project Team values and lead by example in their implementation • Establish and ensure the maintenance of leading-edge safety and environmental standards

		• Agree the project organisation chart, and oversee the preparation of corresponding specific role descriptions • Embed safety and environmental sustainability as a Project Team focus • Oversee the preparation and updating of the Project Plans
James Fruh Construction Manager	• Diploma in Construction Management • Advanced Trade Certificate • Provide First Aid	• Lead the construction works on site, ensuring that they are delivered safely, in an environmentally sustainable manner, with minimal impact on base operations, and efficiently to meet program • Promote total job safety and environmental awareness by employees, subcontractors and all persons in the job vicinity and stress to all employees and subcontractors the importance top management attaches to safety and the environment. • Develop and circulate the overall project construction scheme, including the staging that minimises impact on base and wharf operations • Organise and coordinate construction activities in accordance with construction schedules so as to complete the works on time whilst constantly monitoring the status of planning, safety, environmental and quality activities. • Continual interaction and on-site contact with subordinate staff and, where necessary, weekly employees, to ensure efficient and productive field activities.
Isaac Harris Senior Project Engineer	• Bachelor of Engineering (Mechanical) • Provide First Aid	• Promote total job safety and environmental awareness by employees, subcontractors and all persons in the job vicinity and stress to all employees and subcontractors the importance senior management attaches to safe work practices and environmental protection • Manage the Project and Site Engineers to support the conduct of the construction works • Responsible for the long- and short-term construction planning of all works associated with their procurement, management and timely completion • Oversee the development (by the engineers and supervisors) safe and cost-effective construction methods, obtain necessary approvals and ensure that agreed methods are understood by those undertaking the work • Implementation of Project Plans • Oversee the management of subcontractors • Assist in the verification of conformance for works under control including, as applicable, preparation and control of ITP's, samples / prototypes, lot registers, inspections and tests, non-conformances, conformance certification • Implement corrective action and reporting if any of the construction targets (programme, budget, productivity, quality, safety, environmental management) are at risk of not being achieved

		• Ensure that the works progress without delay and resolve any day-to-day construction issues and raise any RFI's with the Design/Project Team as required • Ensure all works are adequately planned and communicated to eliminate base disruptions. • In conjunction with the Quality Manager, ensure that the engineers prepare for and then execute effective commissioning and handovers of the works • Oversee the project construction works forecasting
Colin Ford Site Supervisor	• Bridge and Wharf Carpenter • Commercial diver • Provide First Aid	• Efficiently and effectively coordinate the marine and civil works with Subcontractor's Supervisors • Promote total job safety and environmental awareness by employees, subcontractors and all persons in the job vicinity and stress to all employees and subcontractors the importance senior management attaches to safe work practices and environmental protection. • Coordinate the works in the different areas to support the Project critical path • Ensure that safe and environmentally acceptable working methods and practices are implemented, and that plant and equipment is made available, properly operated and maintained, to enable operations to be carried out safely and without environmental harm. • Ensure that hazards are identified, risks assessed, and control measures planned and implemented in consultation with relevant employees. • Monitor and review the performance of plant, labour and subcontractors to ensure production targets are met or bettered and take appropriate action as necessary.
Mitch Jones Senior Environment & Sustainability Advisor	• Experience in marine, rail, road, bridge and building construction • BSc Environmental Science • Greenstar Accredited Professional (GSAP) • Infrastructure Sustainability Accredited Professional (ISAP) • Provide First Aid	• Be the focal point for environmental management supporting the construction team to plan their works in an environmentally sustainable manner • Work with the Construction Manager, Superintendent and Senior Project Engineer to establish an environmental strategy and plan to support construction • Prepare and maintain the Environmental Management Plan • Provide effective, practical advice to Management Team & Project staff on Environmental requirements including compliance with relevant legislation, standards and codes of conduct • Implement and monitor required control measures detailed in the Environmental Management Plan to minimise the impact of our construction works on the environment. • Plan and implement regular internal audits, reporting to Project Management Team on outcomes • Responsible for coordinating the implementation and maintenance of the project's environmental management program

Graham Campbell WH&S Advisor	• Graduate Diploma, Psychology of Business and Management (undertaking) • Cert IV OHS • Tap Root Lead Investigator • Graduate Cert in Human Factors and Safety Management Systems (Masters level) • ICAM Lead Investigator - WHS and Rail Safety Incidents • Advanced Diploma in Occupation Health and Safety • RABQSA International - Management Systems Auditing & OHS Management System Auditing • Certificate IV in Work Place Safety • Certificate IV in Assessment & Workplace Training • Return-To-Work Coordinator	• Be the focal point for Workplace Health and Safety for the Project, ensuring the implementation of an effective system of hazard identification and controls • Work with the reminder of the Project team to ensure that health and safety is paramount in all decisions. • All employees and subcontractors at every level across the Project, consistently demonstrate behaviour that delivers a strong health and safety culture. • Health and safety objectives and targets are included in the Monthly Report and performance is monitored and reported. • Relevant health and safety accountabilities and competency requirements are defined and documented. • Health and safety hazards are identified, and associated risks are assessed, communicated and managed. • Health and safety events are reported and investigated as required, and learnings are communicated and applied. • Review and approve work method statements
Kenneth Sutton Polaris Project Manager	• BSc Construction Management & Engineering • MSc Construction Project Management • General Boat License • HRWL – LF	• Overall responsibility for project development, implementation, and maintenance of WHS, environmental and quality systems, compliance, and performance. • Manage WHS Plan records and revisions, including Project Registers, training and Emergency Response (including 1st Aid provisions) , and ensure currency of WHS Plan, with assistance from HSE Manager • Responsible for the allocation of personnel and equipment resources to the project. • Review and approve construction programmes and manage project activities to achieve programme. • Ensure all WHS, environmental and quality requirements are achieved. • Let subcontracts to approved subcontractors and order materials. • Ensure subcontractors comply with legislative and Polaris Marine's requirements. • Ensure overall Project consultation of workers and management including Subcontractors and PMC employees, with assistance from Supervisor and HSR. • Report incidents to General Manager, HSE Manager and Client. • Coordinate Return to Work and injury management in consultation with the HSE Manager • Ensure the requirement of this marine Works management Plan are adhered to. • Liaise with relevant Authorities i.e., Port Authority.

Tom Ingram Polaris Site Engineer	• Bachelor of Engineering • General Boat License	• Monitor Quality and Environmental Compliance. • Monitor HSE compliance. • Monitor plant compliance for project and regulatory compliance. • Implement project document control. • Procure and order materials. • Plan individual work packages.
Steve Courtenay Polaris Site Supervisor	• Bridge and Wharf Carpenter • Cert IV in Civil Construction Supervision • ADAS Dive Supervisor • HRWL – CO, DG, LF, RB, RI, RA • Certificate in Demolition Supervision • General Boat License • Provide First Aid	• Supervisor will carry out role of Site First Aider and Emergency Coordinator and coordinate the response to any onsite emergency, with assistance from the Project Manager. • Carry out Site-Specific Inductions for all personnel working on site and ensure visitor's complete visitor's induction and are always escorted on site. • Ensure personnel have correct High Risk Work Licence • Manage fitness for work for the project in conjunction with the Project Manager. • Ensure staff working under his control are complying with the Project Plans • Ensure on-going WHS, Quality and Environmental compliance by the project. • Safeguard the public and other unauthorised personnel by such means as the erection of barricades, fences, warning signs or lighting as necessary, to forbid entry to the area of the project under control. • Ensure that SWMS are available for all high-risk work, implemented and followed by relevant personnel. Ensure Subcontractors SWMS are reviewed. • Ensure monitoring of subcontractor's SWMSs is undertaken. • Manage the implementation and maintenance of environmental controls on site. • Project Supervisor will nominate Leading Hand to supervise works in their absence.
Darren Strohmayer Polaris HSE Superintendent (Visiting)	• Diploma Work Health & Safety • Cert IV Training & Assessment	• Liaise with regulatory bodies such as SafeWork NSW, Emergency Services etc. as first point of contact. • Review Subcontractor SWMS before implementation and during use on the project. • Monitor compliance with project WHS and environmental requirements. • Undertake audits of the implementation of quality, WHS and environmental requirements of the WHS Plan and monitor the performance of Polaris and all subcontractors. • Monitor compliance with project WHS and environmental requirements. • Review project activities for compliance and advise and ensure training of personnel as necessary. • Monitor that the requirements of this Marine management Plan are adhered to.
Nick Watt Leading Hand	• Bridge & Wharf Carpenter • HRWL – C6, DG, LF,RB	• Carry out role of Site First Aider and assist in coordinating response to any onsite emergency.

	• ADAS Dive Supervisor • Coxswain Grade 2 • Provide First Aid	• Carry out daily / weekly site inspections and rectify any identified WHS hazards or barricade off until rectified. • Display and make available Site Safety Rules to personnel and visitors to the work site. • Ensure all site personnel wear and use appropriate PPE. • Inspect the work site daily for hazards and rectify. • Maintain project WHS & environmental records. • Keep the work site clean, tidy and all access and egress ways free from litter and off-cuts and remove rubbish as required. Maintain good housekeeping. • Carry out the daily site management and control duties of the Project Supervisor in the absence of the Project Supervisor from site.
Gary Penman Leading Hand	• Bridge and Wharf Carpenter • HRWL – CO, DG, LF, RB, RI, RA • General Boat License	
Dylan Short Leading Hand	• Bridge & Wharf Carpenter • HRWL – CO, DG, LF, RB • General Boat License	

4.6 Sequence

The following is a list of general sequencing of works.

4.6.1 Landside Works

1. Mobilise to La Perouse and establish the support facilities and temporary rock platform.
2. Mobilise to Kurnell and establish the support facilities
3. Deconstruct existing Kurnell Viewing Platform.
4. Install temporary access causeway and jetty.
5. Install Piles KU1 to KU8 piles.
6. Install La Perouse and install LP1 to LP4 piles

And post construction activities:

7. Deconstruct the La Perouse and Kurnell temporary structures.

4.6.2 Marine Side Works

1. Set Up Site – Install demarcation, stormwater anchors etc.
2. Mobilise crane barge to La Perouse, Drive piles LP5 to LP23.
3. Mobilise crane barge to Kurnell, Drive piles KU8 to 23W.
4. Mobilise JUB and Piling Rig to La Perouse auger piles LP5 to LP8.
5. Mobilise JUB and Piling Rig to Kurnell auger piles KU9 to KU23W.
6. Mobilise crane barge to La Perouse to drive remaining piles.
7. Mobilise crane barge to Kurnell to drive remaining piles.
8. Mobilise JUB and Piling Rig to La Perouse and socket remaining piles.
9. Mobilise JUB and Piling Rig to La Kurnell and socket remaining piles.
10. Mobilise crane barge to La Perouse to install precast.
11. Mobilise crane barge to Kurnell to install precast.
12. Mobilise crane barge to La Perouse to install steelwork.
13. Mobilise crane barge to Kurnell to install steelwork

14. Demobilize from both sites.

4.7 Methodology

Section 2.3 of the CEMP provides a detailed overview of the project's construction phases and associated activities. These phases include:

- Phase 1: Low Impact Works and Site Establishment
- Phase 2: Main construction
- Phase 3: Site demobilisation

Marine associated activities will be conducted during Phase 2: Main Construction and consist of:

4.7.1 Deconstruction of Kurnell Wharf

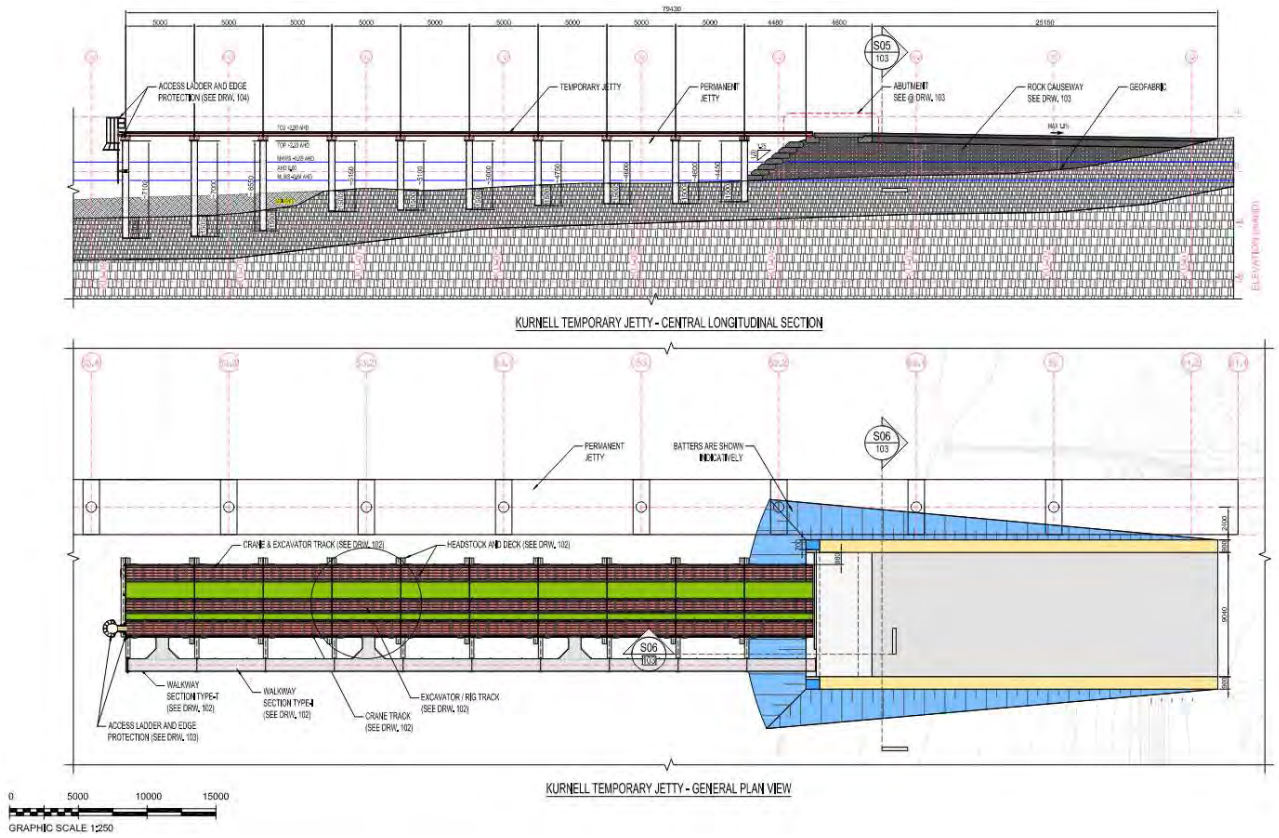
The existing jetty at Kurnell needs to be deconstructed before works on the temporary causeway can be constructed. The jetty shall be deconstructed in the following sequence:

- Removal of Jetty Furniture
- Removal of Handrail.
- Removal of Deck boards
- Removal of Girders
- Removal of Headstocks
- Removal of Braces
- Removal of Piles

All deconstructions shall be performed by a land based excavator and crane. materials retained for recycling where applicable.

4.7.2 Temporary Jetty Construction (Kurnell)

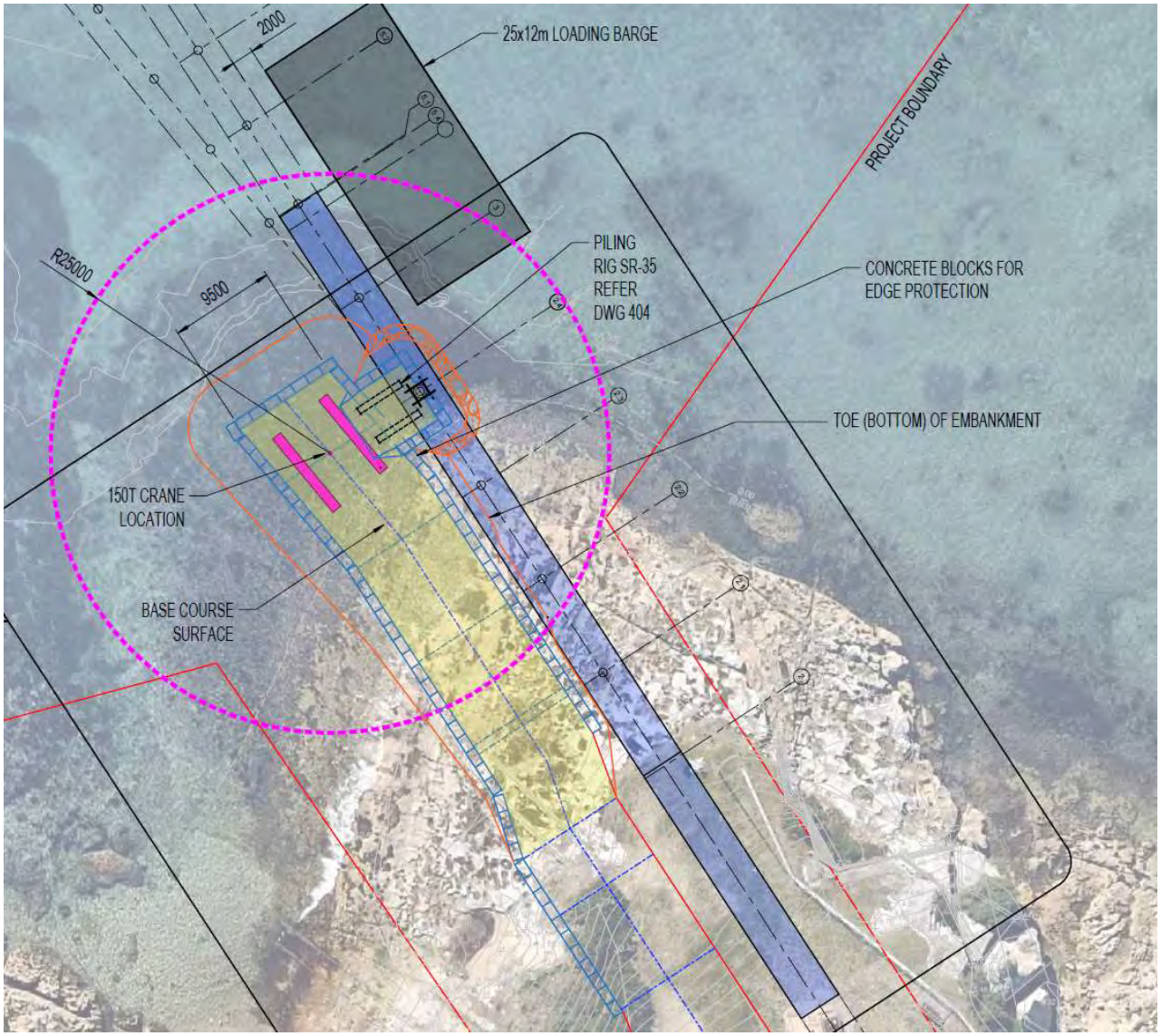
The temporary jetty at Kurnell will be constructed by use of an excavator and crane. The excavator will install piles for the jetty structure in a sequence that allows the excavator to be supported by the structure while it installs the piles. Two piling methods are being considered: primarily, the temporary piles will be fitted with teeth and the pile will be screwed into the rock; if there are problems experienced with this technique, an alternative method where the excavator will first auger an oversized socket into which the crane will then lift the pile and the pile will be set with a low strength grout. The crane will then assist in construction of the girders and deck.



4.7.3 Temporary Crane Platform (La Perouse)

A temporary rock platform will be constructed adjacent to the permanent structure as shown below. This will be constructed using a combination of Kyowa rock backs, precast concrete blocks and ballast stone.

The structure will be founded on the existing shore and seabed. A geofabric material will be used under the main platform structure to act as a barrier between the existing surface and the imported material.



4.7.4 Relocation of public moorings at La-Perouse site

If required, any remnant existing moorings at La-Perouse will be permanently removed and relocated to facilitate the works. PMC will lift the moorings using the onsite crane barge and reinstate within 50m of the current location.

4.7.5 Marine Piling Works

The following primary plant and equipment will be used for marine pile installation works:

1. PM East Crane Barge with 250T crawler crane, fixed piling leader, vibratory hammer and impact hammer

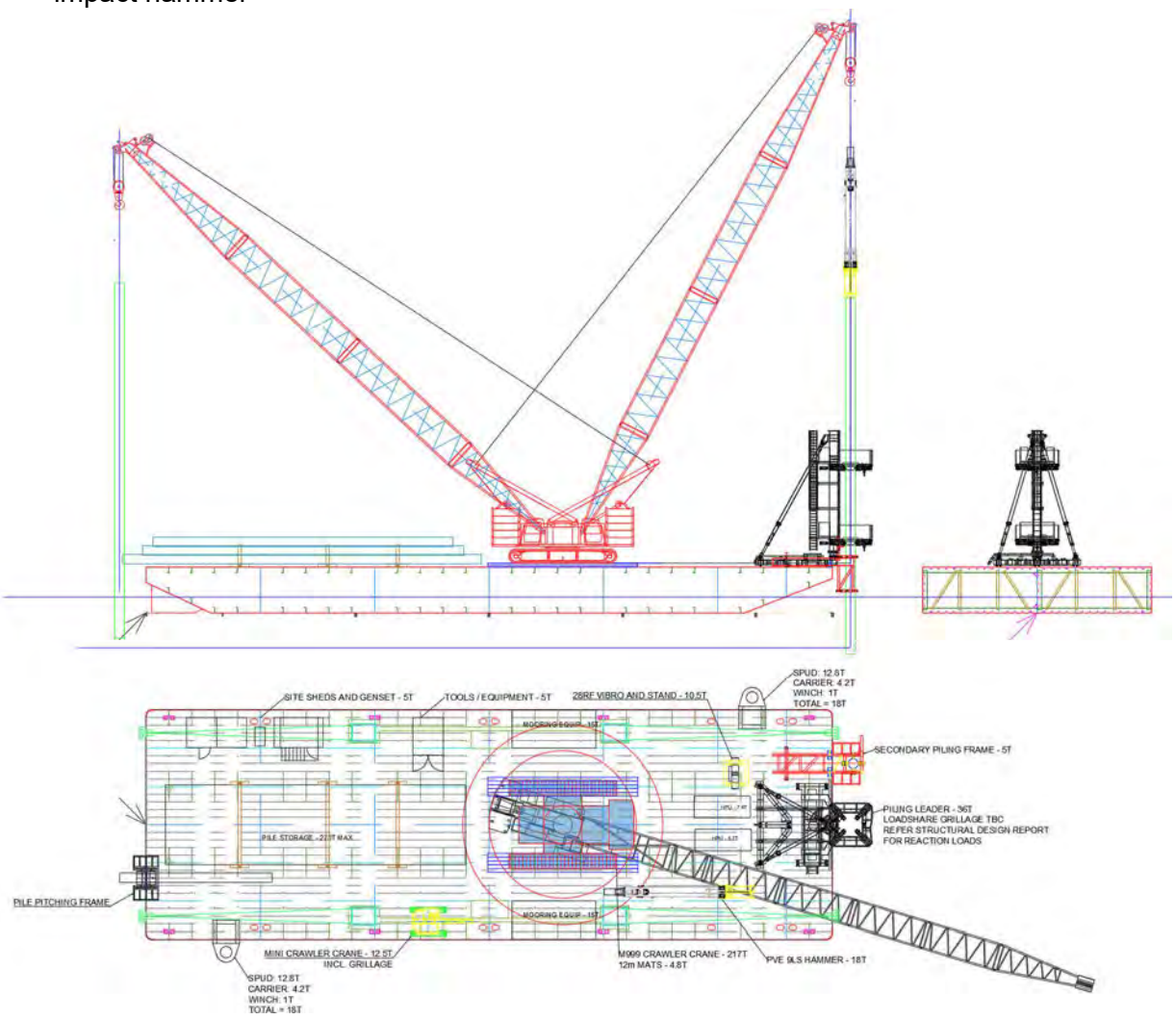


Figure 4-7: PM East Crane Barge GA

2. Jack-up Barge with SR-35 piling rig and adjustable piling frame / personnel access platform

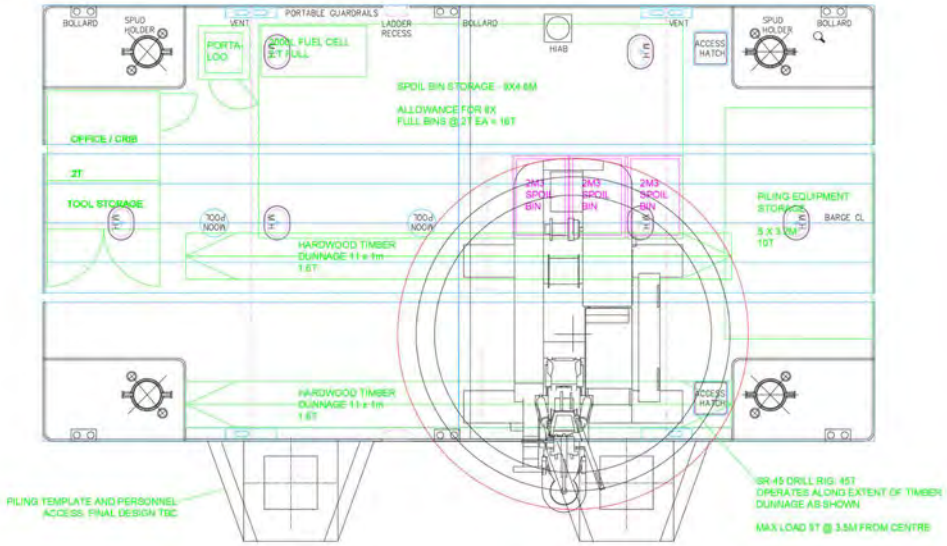


Figure 4-8: SL1 Jack-up Barge GA

There are 3 types of marine piles to be installed on the Project:

- Type A – Fixed berth structure piles.
- Type B – Berthing piles structure (requiring rock sockets)
- Type C - Cantilevered mooring piles

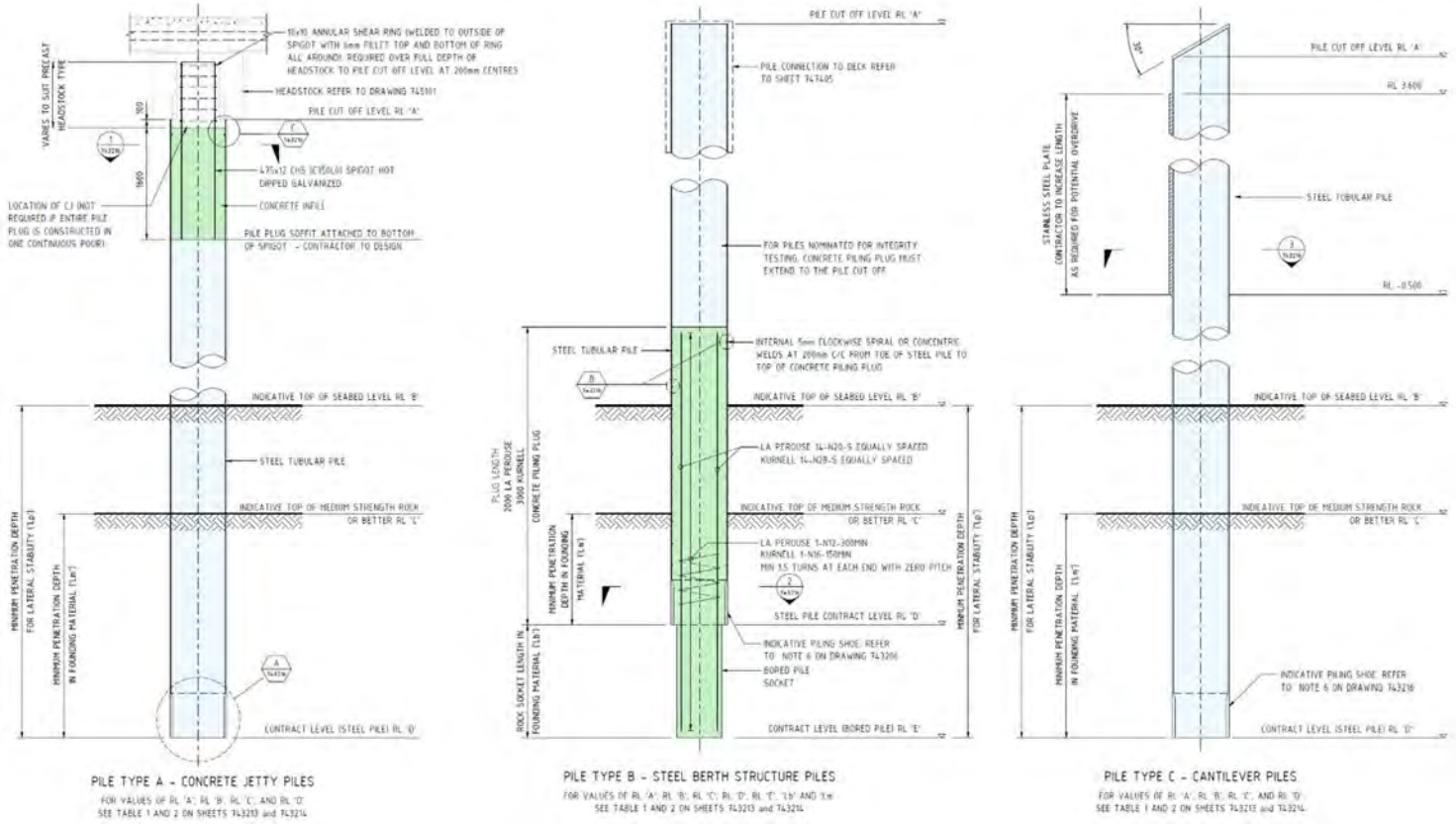


Figure 4-9: Kamay Pile Types

Three installation methods will be utilised depending on ground conditions at the specific location:

1. Pre-bore and drive: To be utilised where piles will not have sufficient lateral capacity to stand up following initial drive. This is required where overburden depth is less than 4.5m, as determined by lateral stability assessment completed by *FSG Geotechnics & Foundations.*

   Pre-boring will be completed by a piling rig on a jack-up barge (JUB), whereby an oversized temporary casing will be screwed through the overburden and keyed into rock, then and internal, undersized socket augered down to final toe elevation (all spoil shall be up drilled inside the temporary casing and disposed in bins on board the JUB unless agreed otherwise with TfNSW.

   The temp casing will then be extracted using the drill rig and the permanent casing installed through a guide frame on the JUB, by driving into the pre-bored socket using a hydraulic impact hammer. Lifting ops will be completed by a crane barge (either PM East w/ 250T crawler or the “35 Tonner” crane barge)

2. Drive Only: Where piles are determined to have sufficient lateral capacity following initial drive, PMC will attempt to directly drive to the minimum penetration depth without pre-boring. Based on driveability analysis, with the allowable driving energy for the supplied piles, we can expect to achieve 200-600mm penetration is class II sandstone and up to 2m in Class III. Therefore drive-only is likely to be possible for the piles at La Perouse where only 500mm penetration in founding material is required for most piles (as opposed to 1,500mm at Kurnell).

Initial drive without pre-boring will be solely undertaken by the PM East crane barge using a barge mounted piling leader, vibratory hammer and hydraulic impact hammer.

3. Drive-Drill-Drive: For any piles where drive-only method is attempted but piles do not achieve the minimum penetration depth, under-boring and re-drive will be required.

   Under-boring will be completed by the JUB and drill rig, then re-drive by either of the crane barges with a hydraulic impact hammer.

Specific details of the pile driving process are included below:

The barge mounted crane shall lift the piles from the deck of the crane barge or a service barge tied alongside, and into a pile pitching frame, enabling the crane to pitch the pile vertically in a safe manner. The pile will then be lifted into the piling leader either on board the floating barge, or the Jack-up Barge, which will have been previously surveyed into the correct construction position. Once the pile is in the leader and locked off further survey alignment will be carried out. Once pile position is acceptable and the piling leader is supporting the pile the crane will drive the pile to refusal. In some locations, such as at La Perouse where there is considerable overburden, a vibratory hammer may be used for the initial installation prior to completing a pile set with the impact hammer.

For all B type piles and where Type A & C piles require additional penetration, once refusal is achieved, sockets or internal auguring will be completed using the jack-up barge (JUB) with SR-35 piling rig:

1. Hammered piles will be sealed from water ingress, allowing standing water to be pumped from inside the pile. Water will be discharged within 1m above seabed with a monitoring regime put in place to monitor the disturbance with stop work criteria put in place in line with the relevant CEMP Sub Plans.
2. The JUB will be set up in such a way that two (2) piles can be accessed from each location. The piling rig will auger overburden and sandstone down to the nominated toe elevation using a 700 dia auger.
3. Augured spoil will be discharged into water-tight skip bins on the JUB. These will be periodically removed by the crane barge and transferred to shore for disposal. A sediment curtain will be installed locally around the area to catch any spoil that falls during the transfer from the pile to skip bins and a local bunded area on deck of the barge will be in place with wet vacs and shovels used to collect any spoil that falls on the barge deck and placed into the skip bins.

For Rock Sockets:

1. The pile socket depth and size will be confirmed to meet the design. Once confirmed, the internal of the pile will be cleaned using a cleaning attachment, and the socket base will be cleaned use a cleaning bucket.
2. Reinforcing cages will be installed using the piling rig.
3. Concrete will be pumped from shore via line pump. A walkway will be installed to run concrete lines from land between berthing piles to the pour location. Two piles will be completed per pour due to B58 requirement to pour within 24 hours of clean-out. The temporary walkway will have environmental provisions installed to prevent concrete spillage into the water in the case of a leakage ie by a bunded containment area and geofabric which will be detailed in the task specific EWMS.
4. Piles nominated for CSL testing will have logging tubes installed and will be filled to pile cut-off level as specified on the drawings.

For additional penetration:

1. The augured hole will be drilled to the design toe depth.

2. PMC crane barge will return and hammer these piles to depth.

4.7.6 Land Piles at La Perouse and Kurnell

Kurnell Piles KU1-8 & La Perouse piles LP1-3 will be installed by and excavator from the temporary jetty and/crane platform. To negate any environmental impact a caisson will first be screwed in 500mm to the pile location to catch any bloom while auguring. A template will then be installed on top of the caisson to ensure correct position and verticality. Once the pile has been set, the annulus of the pile will be grouted. Once the grout has set, the caisson will be removed.

La Perouse pile LP4 will be installed by a SR35 piling rig due to its depth. It will follow the same methodology as above.

4.7.7 Precast Concrete Installation

The approach/waiting structure is comprised of precast headstocks, planks and an in-situ topping slab installed on Type A steel piles. There is a combination of mono-pile and dual pile arrangements depending on location. An uplift restraint system will be installed between headstocks and planks once in-situ topping and all deck furniture has been installed.

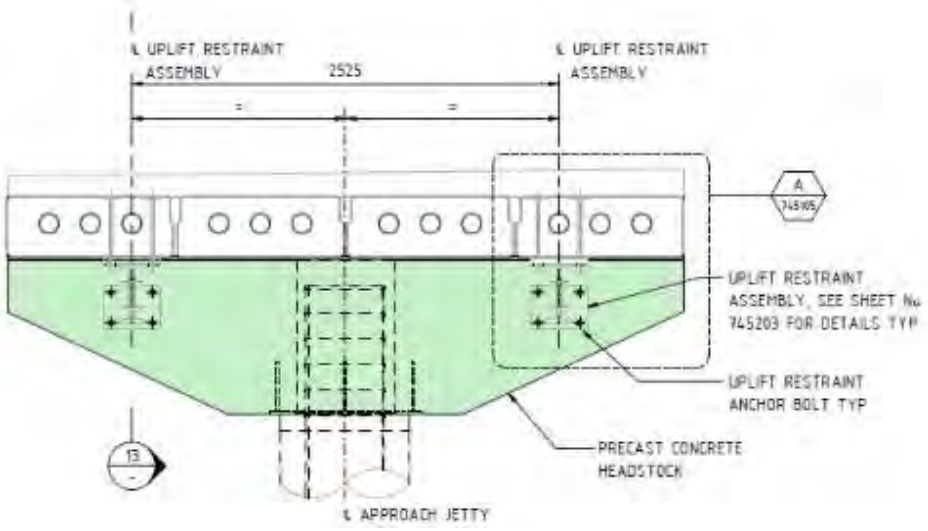


Figure 4-10 Typical Precast Arrangement

Precast concrete elements will be moved to the installation location with all fixings, brackets, cast-ins and all associated installation hardware. Elements will be loaded onto the supply barge at La Perouse and moved to either the La Perouse or Kurnell workfaces via the supply barge.

Installation sequence and allowances as follows:

3. Type A Pile Preparation:

- Piles cut to nominated cut-off height.
- Install headstock access system
- Install the pile plug spigot and soffit. The system will double as temporary restraint for headstocks whilst the concrete plugs cure.

4. Headstock Installation:

- Headstocks lifted into position by PMC crane barge and accurately located with assistance of surveyor.
- Temporary restraint installed to prevent movement of headstock.
- Complete plug pour 1/2 to lock headstock in position using hand-batched 50MPa bag mix on the barge or pumped material from land.
- Install mortar pads and elastomeric bearings

5. Plank Installation:

- Precast planks installed by PMC crane barge.

4.7.8 Berth Structure Steelwork Installation

The Berth Structure is comprised of a painted steel substructure with pre-fitted fendering and mooring hardware (red), and aluminium super-structure (yellow) with FRP grating.

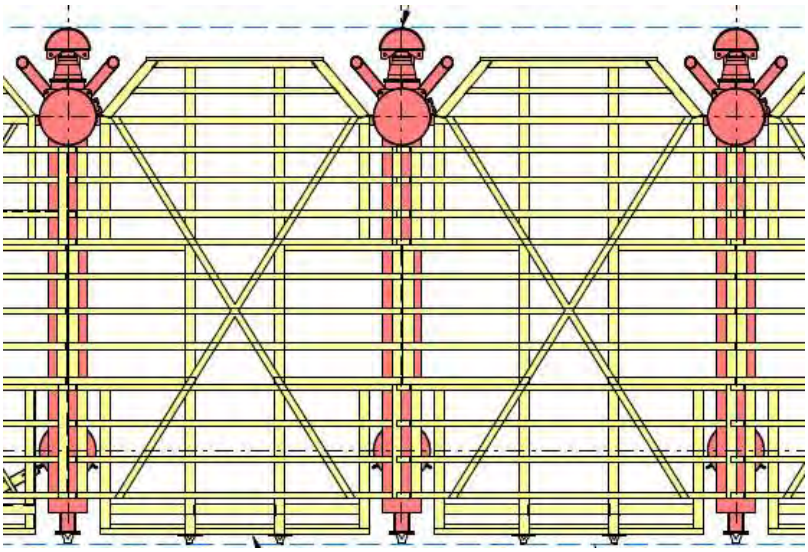


Figure 4-11 Berth Structure Arrangement (Typical)

Sleeves will be lifted into position over Type B piles by PMC crane barge, divers plug the base of the annulus using temporary brackets and grout tremie poured into the annulus to lock the sleeves in position. Methodology as follows:

- Locating notches marked with assistance of surveyor and cut into pile-tops during trimming.
- Steel headstock lifted into position and secured.
- Divers install temporary brackets to plug the base of the sleeves. Initial hand-batched grout pours of 200-300mm completed to ensure the annulus is sealed.
- Main grout poured completed by transferring grout in kibbles from shore to install location.
- Grout to be injected to the base of the annulus. Grouting operation will be undertaken from the deck of the berthing frames once divers are clear of the area below.
- It is assumed that grout slurry will overflow into the cut pile.
- All grout supply and testing in accordance with QA Spec B80 by MCD. Grout must be free of aggregate.
- It is assumed that cut off level for piles on both the Commercial and Recreational berths will be approx. 100mm below top of sleeve.

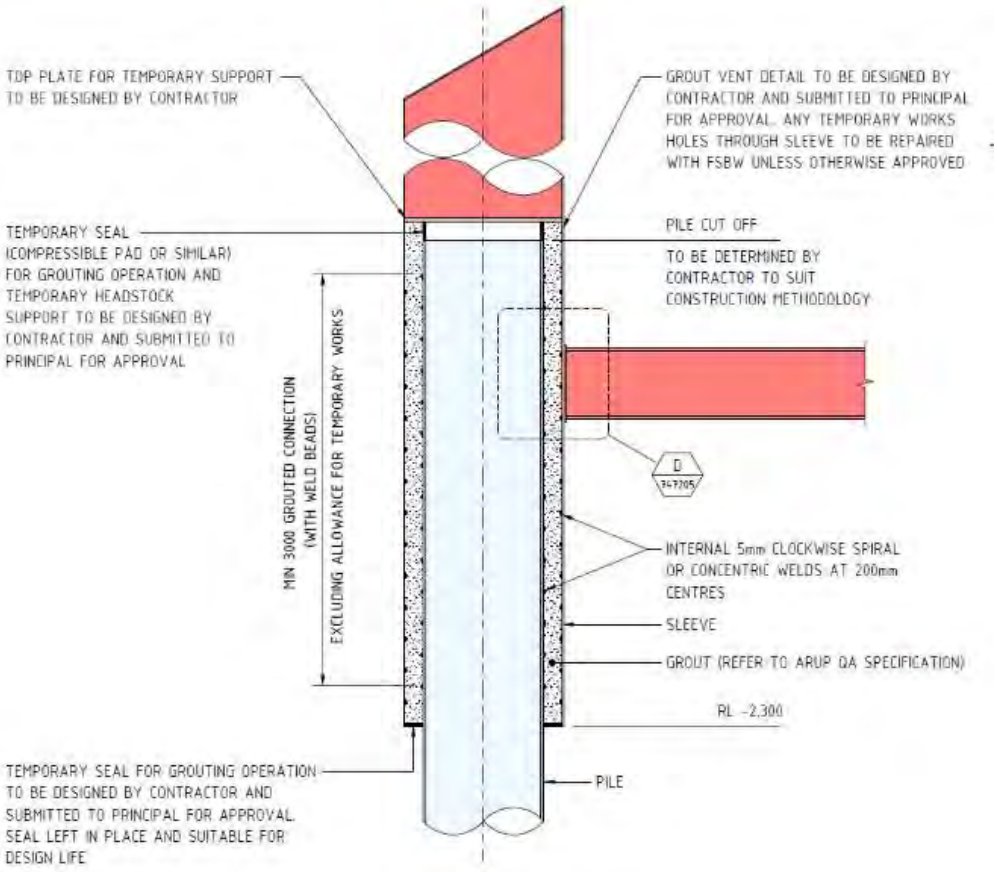


Figure 4-12 Typical Grouted Sleeve Connection

4.7.9 Cathodic Protection

All marine piles will be fitted with sacrificial aluminium anodes in accordance with the approved *Cathodic Protection Design Report.* Anodes come pre fitted with 12 thk mild steel tabs, to be directly welded to the steel piles at approximately 1m below LAT as per general detail below

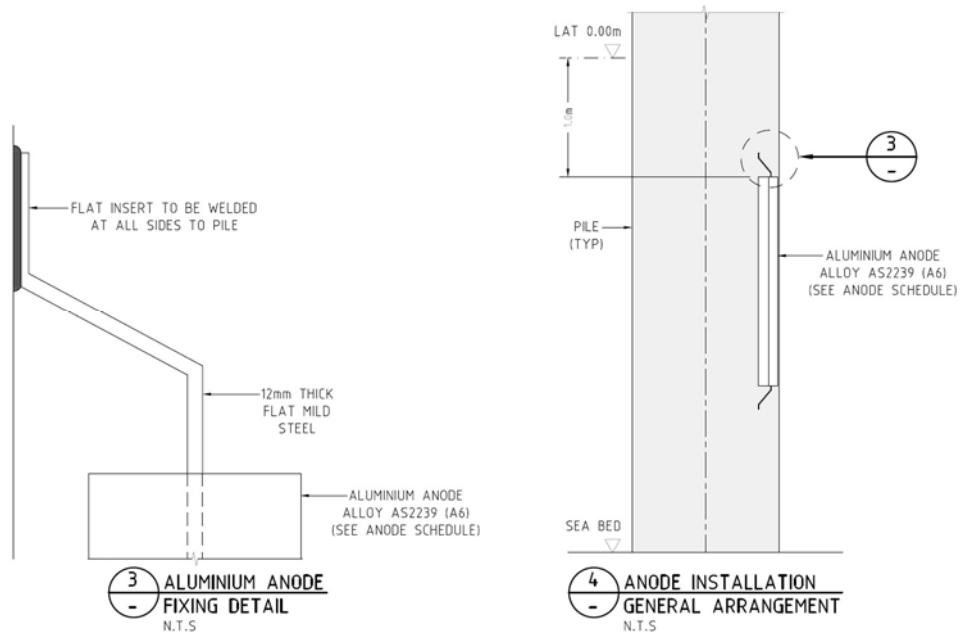


Figure 4-13 Anode Fixing Detail

All installation works will be completed by divers (3-man team) using underwater welding equipment; where the initial piles at Kurnell and La Perouse will be installed via land access by walking out from shore to the required pile. No paint repairs will be required as the small area where coating is lost around the weld will be protected by the anode.

Anodes range in weight from 15 to 80kg; where they cannot be safely man-handled and lowered to the diver from a boat, a small work barge will be utilised, or anodes may be lowered from the concrete deck or pre-slung from the headstock depending on the stage of works when they are installed. Refer to the Cathodic Protection Installation CEP (currently in production) for further detail.

Works will be completed below the completed structure and are only to be undertaken once precast units have been installed and "set". During the installation works on the pile no overhead works are to be conducted or heavy equipment moved across the deck to prevent any potential fallen object from striking the working undertaking the works.

4.7.10 Piling Operation

Piling activities that involve impact piling or other highly noise or vibration insensitive works are to be undertaken:

a. between the hours of 8:00 am to 6:00 pm Monday to Friday;

b. between the hours of 8:00 am to 1:00 pm Saturday; and

c. if continuously, then not exceeding three hours, with a minimum cessation of highly noise intensive work of not less than one hour.

d. In accordance with CEMP Appendix 2 – Biodiversity Management Plan (Attachment G – Marine Mammal Monitoring Procedure) as outlined in Section 5.7.

4.8 Construction method statements

CEP	Description
Demolition	Outlines the Demolition of the existing Kurnell Jetty
Land Based Piling	Installation of Type A piles at Kurnell and La Perouse From land
Marine Piling	Marine Installation of type A,B and C piles
Marine Piling – Socket Install	Socket installation in Type B and C piles
Finishing works	All works associated with the finishing of type A, B and C piles such as spigots, pile plugs, headstocks and precast planks.
Fenders and decking install	Installation of Fenders and decking
Cathodic Protection install	Installation of sacrificial Cathodic protection

4.9 Hold Points

Hold Point	Specification
Submission of preliminary investigation report, and demolition Designer's Safety Report	B341 CL3.1.7

Submission of Demolition Plan	B341 CL3.5.1
Setting up driving frame and driving of all piles, including Test piles	B54 CL5.3
Driving of each test piles	B54 CL7.1
Making up the pile lengths and driving of all piles represented by the test piles. Driving of all piles, other than Test Piles	B54 CL7.2
Driving of any further piles (for piles founded in rock and Minimum Penetration Depth is not achieved)	B54 CL9.3
Backfilling (if applicable) and cutting off of a pile after completion of driving	B54 CL11.1
Submission of details of proposed piling plant method	B58 CL3.3
Submission of certification that pile hole set out and methods of casing installation and placing concrete	B58 CL 4.1.1
Submission of notification that pile hole excavation is complete, and pile conformity documentation	B58 CL4.2.3
Submission of certification that pile hole and reinforcement cage are clean	B58 CL 5.2
Certification of erection method	B153 CL 4.2
Notification of joint survey of permanent and temporary	B153 CL 4.4.1 TfNSW G71
Submission of survey report for permanent and temporary supports for girder bridges	B153 CL 4.4.1 TfNSW G71
Submission of profile diagram	B153 CL 8
Commencement of any work at the site	G71 CL2.3.3
Pre and Post Construction Hydrographic Clearance Survey	G71 CL F2 and F3
Certificates of Survey	G22 A3.3
Vessel Safety Plan (Safety Management System)	G22 A3.11
Stability Books	G22 A3.13.4

4.10 Identified Records

Identified Records	Specification
Licences, notifications, approvals and permits	B341 CL 2.2
Preliminary investigation report	B341 CL 3.1.1
Demolition Designer's Safety report	B341 CL 3.1.6
Demolition Plan	B341 CL 3.5

Final Survey report	B341 CL 8.1
Driving records for each test piles	B84 CL 7.2
Driving records and survey report for each pile	B54 CL9.3
Dynamic Testing Report for each tested pile	B54 CL 13.5
Piling records, signed by piling supervisor, verifying conformity of the pile hole upon completion of its excavation	B58 CL4.2.3
Results of pile hole examination	B58 CL4.3
Records of depth of tremie pipe outlet, concrete level in pile hole and volume of concrete placed during concreting	B58 CL 6.7
Pile integrity testing results	B58 CL 8.1-.2
Certification verifying that the location and levels of all supports are in accordance with the drawings	B153 CL 4.4.1
Diagram setting out profile of completed members in relation to profile specified on the drawings	B153 CL 8

4.11 Signposting and Delineation

Appropriate visual markers will be required to sufficiently delineate the Marine Construction Zone and other key areas on site.

The following will be delineated:

- **Marine Construction Zone:** Yellow marker buoys with flashing lights at the corners to be placed at max 50m intervals around the perimeter
- **Mooring anchors / blocks:** Yellow marker buoys at the anchor location and lit yellow buoys at approx. mid-point of the winch wire
- **Submerged cables:** Yellow marker buoys to be placed at regular intervals along each side of the Ausgrid Easement at Kurnell to identify the no-anchoring zone. The cables will also be positively identified by diver inspection

No markers or marine construction equipment shall be placed outside the approved Marine Construction Zone.

Refer attachment F for indicative mooring plans showing the Marine Construction Zone and buoy locations.

4.11.1 Marine Construction Zone

Two marine construction zones are planned. These are shown in the figures below in purple. They will be marked with lit yellow buoys at each corner, and at max 100m intervals along its long faces. Delineation of these areas provides a visual indicator for non-project related watercraft and gives sufficient warning to our crews of unauthorised entry to the work zone.

Refer to attachment F for indicative mooring plans showing the Marine Construction Zone and buoy locations.

Figure 4-14 Proposed Marine Construction Zone at Kurnell

An additional line of markers (proposed to be a different colour, but shown as a blue line on the image) will be included at Kurnell to demarcate the easement of the Ausgrid power line.

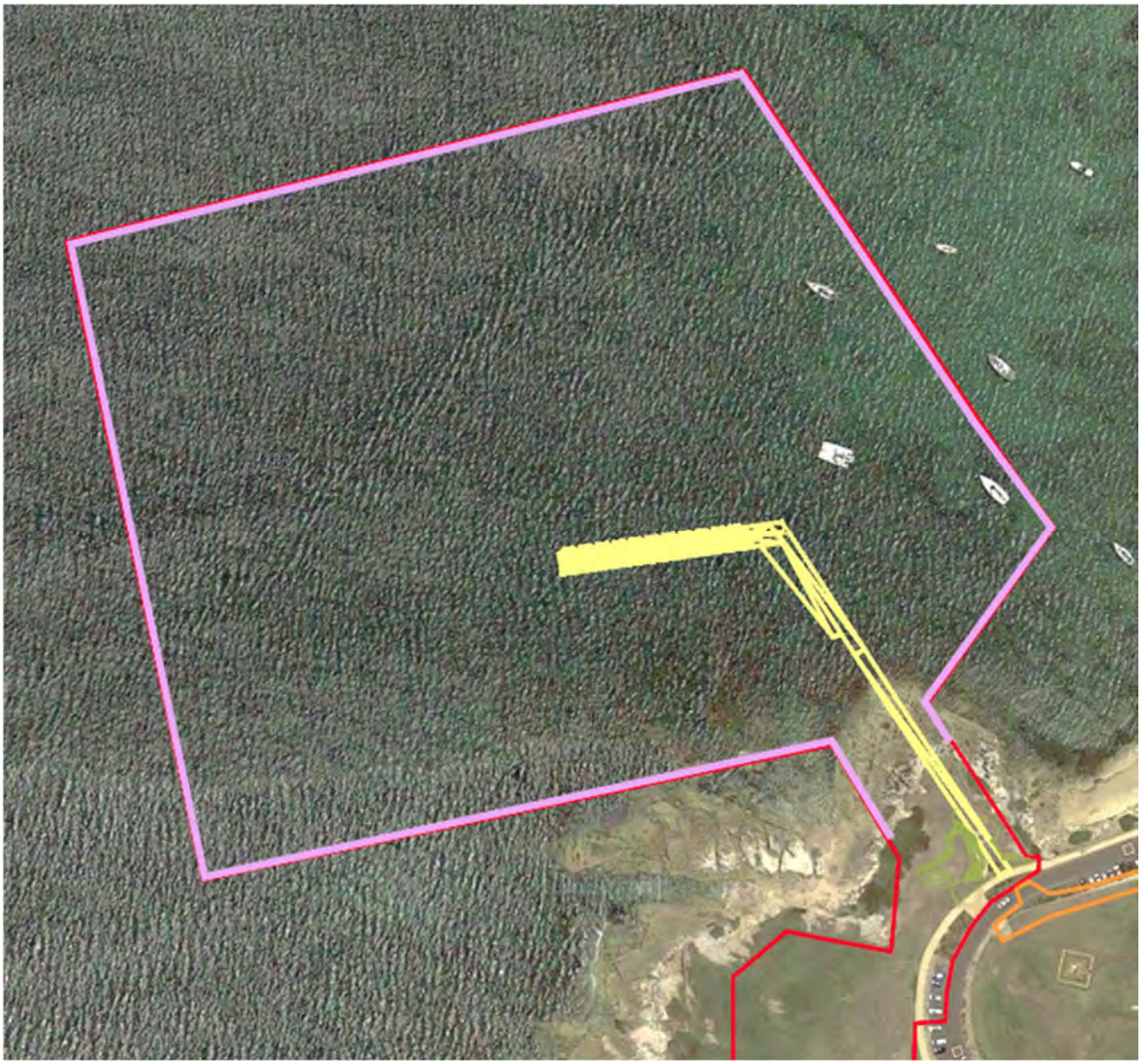


Figure 4-15: Proposed Marine Construction Zone at La Perouse

4.12 Logistics

The majority of construction materials (including piles, pre-cast concrete headstocks and planks and access trusses) will be delivered by water. This will reduce the impact to communities around the site through the reduced quantity of heavy transport that will need to transit through the local streets. However, marine transportation introduces risks that will be managed through the implementation of processes and mitigations.

There will be three general types of vessel movements:

- Personnel movements
- Logistics movements
- Construction vessel movements

These will be further divided into movements within the marine construction zone, and movements that are either between the two marine construction zones, or between the marine construction zones and another location.

4.12.1 Personnel Movements

Crewing for the marine craft will generally travel from land via a crewboat or vessel tenders. It is unlikely that there will be practical opportunities to establish a temporary walkway link between the works and the vessels, but they will be sought if possible.

For the initial stages of the construction phase until the temporary structures are built, marine personnel will launch a vessel from Foreshore Rd boat ramp for La Perouse site access and Kurnell Beach boat pontoon for Kurnell site access.

After the temporary structures have been prepared, crew vessels will moor at and travel to and from these access facilities.

It is expected that there will be an average of 8 movements daily.

4.12.2 Logistics Movements

Apart from the first 4 bents at La Perouse (of 26) and 8 bents at Kurnell (of 32), all materials will be installed from floating plant, including the piles, precast concrete and steel frames. This material will be transferred to the installation point by supply barge, loaded out from either:

- The Project's loadout point at La Perouse for the concrete headstocks and planks, as well as other minor materials. The supply barge will be brought into a temporary berthing location and loaded using a land-based crane on the temporary rock platform at La Perouse. Approximately 30% of the materials will be utilised locally within the La Perouse Marine Construction Zone, with the other 70% being transferred to Kurnell via a controlled movement across Botany Bay.

- A wharf at White Bay where the piles and steel frames will be delivered from their fabrication point. The supply barge will be towed from site using a suitably sized tug, and loaded using one of the White Bay wharf cranes. It expected that approximately 12 re-supply trips will be required.

Figure 4- shows the proposed general route to and from the site from White Bay (the nominated logistics facility) and the PMC harbour side yard.

4.12.3 Construction Vessel Movements

The third movement type will be construction vessel movement of the spudded barge, jack up barge and when on site, the dive support boat. This will include:

- Mobilisation and demobilisation to and from the Project site. For the spudded barge and jack up barge this will occur once each. These will have suitable documentation including a likely tow plan and certificate if, as expected, they are mobilised from a location outside of Botany Bay.
- Relocating within the marine construction zones. This will occur numerous times, but as movements are within the Marine Construction Zone these will be undertaken using the marine subcontractor's movement processes, which will be documented via their SWMSs and procedures.
- Relocating between the two Project sites. As this will require the vessels to leave the Marine Construction Zones, these moves will be planned and coordinated with VTS.
- The number of movements will fluctuate throughout the course of the Project with a minimum weekly movement between the respective sites however will occur up to a daily basis during portions of the project ie for spoil removal from the socketing activities at Kurnell needing to be offloaded at the La Perouse site.

Figure 4-16 Supply Barge Routes to Site from White Bay (Teal) and PMC Yard (Green)

4.12.4 Movement and Mooring Considerations

Seagoing ships will have priority when moving through Botany Bay in accordance to ensure vessels do not impede the passage of seagoing ships, vessels under the conduct of a pilot or exempt master or naval vessels inside the shipping channel or fairway.

All vessels are required to remain at least 30m clear of a seagoing ship and not pass between the ship and the escort vessel.

All vessels are prohibited from anchoring or obstructing the channel between La Perouse and Kurnell (refer to Figure 6-1).

As identified in consultation with PANSW, all vessels must have Automatic Identification System (AIS) installed.

A vessel traffic management plan will be developed (to be included at Annex F) and implemented.

4.13 Weather Planning and Operational Constraints

During normal daily operations the JUB will be operating in the wharf location and supported by either the supply or crane barge. The PM East crane barge will be fitted with positioning spuds that will enable it to hold location without anchoring, however still remail portable.

In some instances where overburden is limited, the crane barge may need to run a temporary anchor spread to maintain position.

The service barge and the crane barge will relocate between the laydown area and the wharf sites.

4.13.1 Proposed Day Works and Calm to Medium Condition Mooring

During construction of the wharves temporary mooring piles will be installed at both Kurnell and La Perouse to enable a location for the barges & tug to hold when not attending the active construction areas. The mooring will be GPS positioned to not interfere with any seagrass. Additional to this temporary mooring, PMC will utilise the completed piles for securing barges during calm to medium conditions.

The size and embedment of the temporary piles have yet to be confirmed by marine engineers but a least 2 temporary mooring piles will be required at each site. Approximate locations can be seen in Attachment F.

4.13.2 Condition Estimate for Mooring / Berthing or Relocation.

There are a few factors to consider that will trigger the relocation of floating plant to either the temporary mooring or secure berthing. The decision will be made in consultation between the barge supervisor(s), Polaris Project Manager, and MCD Management, with safety as the key tenet underpinning any decision.

The contributing factors that can either apply individually or in a combination are swell conditions that are entering the port and also wind conditions. The wind conditions that historically occur in the greater Botany Bay area can also develop significant wind chop on the surface of the water.

These are predominantly driven from the southerly or South westerly winds that cross the bay with an average water depth of 4 m.

The swell or ground swell condition that enters the Botany Bay Heads can either directly impact or provide reflecting swell conditions returning from Molineux Point Breakwater.

In assessing the equipment for use on site to reach a trigger point of relocation a few items need to be assessed:

- Wind speed that prevents the crane from being used
- Tug’s ability to relocate the barge(s)
- Wind driven wave and swell height
- Wind direction and speed

Existing calibrations for cranes and barges already exist, where cranes are predominantly 20 knots (36 km/hr) and spudded barges are around 25 Knots.

Further to this, tug movements with barges of 30-50 m in size need to be considered prior to 20-25 knots occurring.

Table 4-1 An estimate conditions guide for relocation from either wharf site (Wind)

Wind Vs Plant	0-10 Knots	10-20 Knots	20-30 knots	30-40Knots	40-50 Knots
JUB					
Spud Barge					
Crane use					
Tugs					

	Normal and planed works proceed. (use of day mooring)
	Monitor / plan for relocation. (barges to day mooring)
	Monitor for increase wind, reduced works and plan for relocation to safe haven.
	No Works, must be moored at safe haven

For wave / swell impacts on works a similar estimate table can be used

Table 4-2 An estimate conditions guide for relocation from either wharf site (Swell)

Wave Vs Plant	0-0.3m Hsig	0.3m- 0.6 Hsig	0.6-1.0m Hsig	1.0-1.5m Hsig	1.5-2+ Hsig
JUB					
Spud Barge					
Crane use					
Tugs					

	Normal and planed works proceed. (use of day mooring)
	Monitor / plan for relocation. (barges to day mooring)
	Monitor for increase wave, reduced works and plan for relocation to safe haven.
	No Works, must be moored at safe haven

Example. The below table describes shows a 1.3 m southerly swell, the example in this condition shows that the Kurnell site will be in the leeward of Kurnell and not effected, however the La Perouse would be exposed to this sea condition.

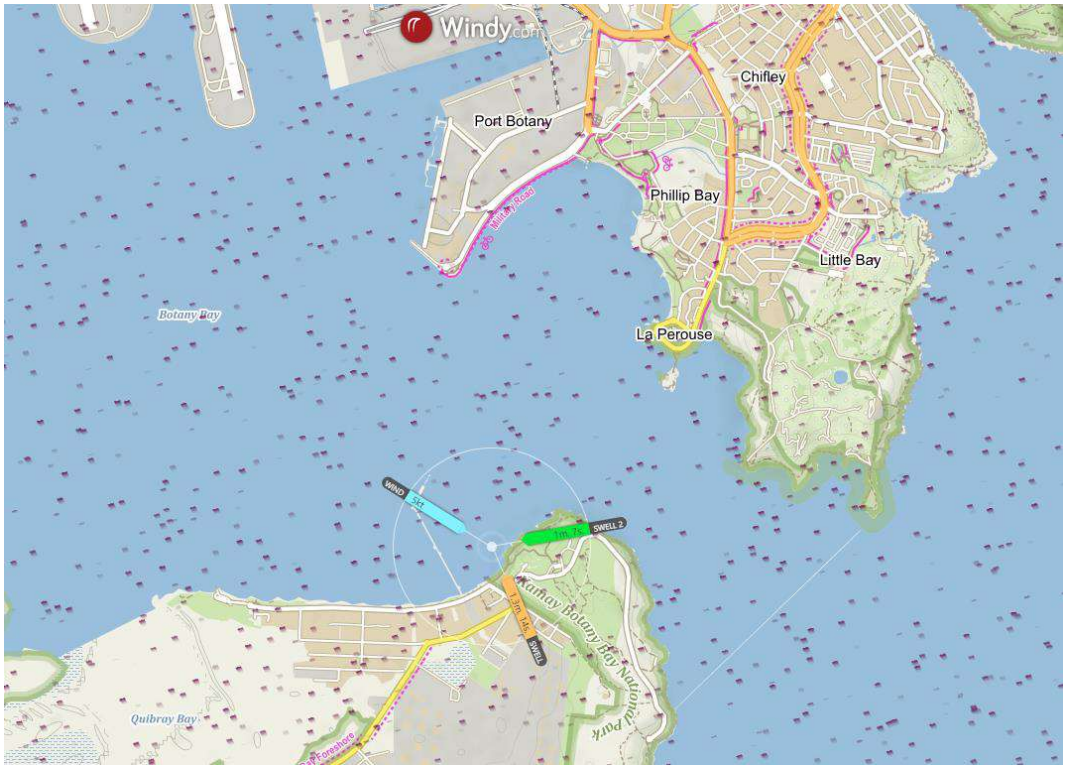


Figure 4-5 Example of 1.3m Southerly Swell

Example. The below table describes shows a 1.0m Easterly swell, the example in this condition shows that the Kurnell site will be exposed, however the La Perouse would be leeward to the swell and experience calmer or operational conditions.

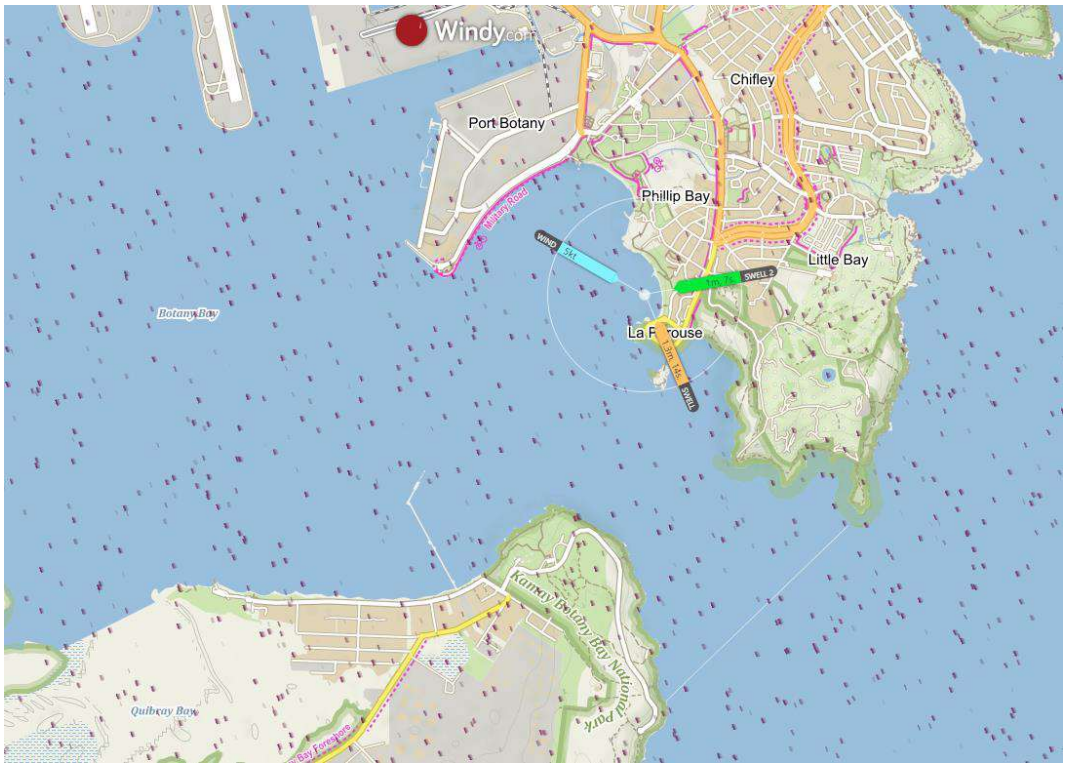


Figure 4-6 Example of 1m Easterly Swell

The location of work also needs to be considered as swell and wind direction affecting one site may not affect the other. In some instances, it will be possible to demobilise from Kurnell to continue works at La Perouse, and vice versa.

4.13.3 Secure Berthing

Where conditions will not allow the safe mooring of marine vessels at either project sites a secure mooring site has been identified at Woolooware Bay (4-10). Woolooware Bay is a 4-hour tow from the project sites. Sea conditions will be constantly monitored by the Project Supervisor and demobilisation from project sites to Woolooware Bay will be planned and completed before sea conditions deteriorate. The proposal to use Woolooware Bay as secure berthing will need Transport for NSW approval and is still being finalised with their representatives. The current proposal is that the vessels will be moved into an agreed location, and lay anchors. The design of this arrangement will be prepared as an item of temporary works.

Figure 4-7 Proposed Secure Berthing Area

4.14 Plant and Equipment

Polaris Marine Constructions will utilize the following plant on the project. Relevant specifications can be viewed in Appendix H.

Type of Equipment	Vessel Name	Size / Capacity	Description
Jack-up Barge	Sea Lift 1	80 t	Used to house the drill rig for the boring out of piles.
Drill Rig	n/a	35 t	Boring of Piles

Type of Equipment	Vessel Name	Size / Capacity	Description
Dumb Barge	PM East	11,880 t	Housing of 250-ton crawler crane and Piling leader
Piling Leader	n/a	n/a	Piling leader housed on PM East. Used to vibrate and drive Piles.
Piling Hammer	n/a	9 t	Housed on PM East. Used to drive piles.
Crawler Crane	n/a	250 t	Housed on the PM East. Used for pitching piles.
Dumb Barge	BP1	20 – 22 m LOA	Used to store and deliver materials also used as a small crane barge
Work Punts x 3	n/a	6 m	Used to tender personnel.
Utility Tug	Leaders Creek	n/a	Used to Tow and position barges

4.15 Hydrographic survey

Hydrographic surveys will be required to be undertaken:

- Pre-construction to confirm the condition of the existing seabed, and identify any obstructions. This should occur before the mobilisation of the marine spread, but within two months to minimise the risk of post survey obstructions occurring.
- Post construction to confirm the resulting seabed profile, and confirm that no obstructions have been created or left in position. This should occur after the marine construction spread and major works have concluded.
- During construction as directed to ensure no construction equipment or materials are left on the seabed which compromise the declared depth as a consequence of the Contractor's construction related activities. Prevention will be critical in minimising this requirement. Records of large objects will be prepared before the movement of any vessels. Most critical will be the supply barge movements which will be the most prevalent and carry the largest quantity of materials. Each movement outside of the marine construction zones will be accompanied with a manifest listing the major items (items greater than 0.5 m in three directions).

Surveys will be conducted in accordance with the requirements of specification G71, specifically Annexure G71/F, and must be to the satisfaction of the Harbour Master.

4.16 Lighting

The wharves and construction plant and equipment will need to be fitted with appropriate navigation lights, in accordance with International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) standards, to warn mariners of their extent and location. Any lighting used will need to be such that it does not impact on the night vision of pilots manoeuvring seagoing ships within the bay.

4.17 Special events

Generally, other aquatic licenced events within Botany Bay, such as swimming races and triathlons, take place on the west side of the bay and are unlikely to interact with the Kamay wharves.

The Project communications team will liaise with any events that are being undertaken within the area to understand the impact the works may have on the event and consultation will be held to mitigate impacts where possible.

4.18 Security plan (monitoring and response capability)

All barges and vessels with the exception of work punts shall only be accessible via watercraft for the duration of the works.

The barges and tug will always display the appropriate day shapes and lights under the International Rules for Prevention of Collision at Sea.

The site supervisor shall ensure that the indoor quarters of vessels and barges are secured from entry from non-project personnel outside of project hours.

The site supervisor or his nominated delegate shall ensure that all barge and vessels when not attended are secured adequately to their moorings. The site supervisor shall account for all weather and swell forecasts.

All barges and vessels over 20m in length shall be fitted with an Automatic Identification System and a Vesper Watchmate (Anchor Watch) or similar anchor watching system installed.

The anchor watch system shall be monitored during out of project hours by a rotation of the personnel listed below..

1. Steve Courtenay (Site Supervisor **Primary Contact**) 0419 552 216
2. Nick Watt (Leading Hand) 0408 552 215
3. Dylan Short (Leading Hand) 0488 024 389
4. Kenneth Sutton (Project Manager) 0468 554 043

In the event of an alert from the anchor watch system indicating that a vessel has freed from its mooring the above respondent will then mobilise a response team including tug operators from project personnel.

In the event project tug personnel are not available, the above respondent shall contact the **Polaris Marine emergency number 0418 231 91**6 and request assistance.

In the event Polaris Marine Constructions cannot retrieve the barge or vessel the respondent shall **Call Emergency 000 and request Port Authority Assistance.**

5 Environmental Management

5.1 Aspects

Key aspects of the project that could result in impacts to the environment include:

- Removal of localised flora
- Construction of the temporary causeway at Kurnell, and temporary crane platform at La Perouse
- Driving piles in the tidal and marine zone leading to sediment disturbance
- Drilling out of piles on land and over water
- PASS or ASS
- Anchoring of vessels
- Concreting over water
- Operating hydraulically driven plant over water
- Painting over water
- Noise and vibration, to both marine animals and local stakeholders

5.2 Impacts

Likely and/or potential impacts associated with project are discussed in Chapter 12 of the EIS. The below summarises the potential impacts at both La Perouse and Kurnell.

Table 5-1 Aspects and related environmental management sub plan

Aspect	Relevant environmental management subplan
Unapproved damage to local flora	Biodiversity Management Plan
Introduction of marine pests	Biodiversity Management Plan Marine Works Management Plan (Section 5.5)
Impacts to marine environment (spills, underwater noise, lighting)	Construction Noise and Vibration Management Plan Marine Works Management Plan (Attachment B)
Impacts to local animals, include marine mammal strikes	Biodiversity Management Plan Marine Works Management Plan (Section 5.4)
Impacts to local residents or visitors	Community Consultation Strategy Marine Works Management Plan (Section 4.17)

Notwithstanding, mitigation and management measures provided in Section 5.7 aim to minimise the above likely and potential impacts.

5.3 Marine Spill Prevention and Response

The Marine Spill Prevention and Response Procedure is outlined in attachment B. Attachment B also address's refuelling plant & equipment onsite. Incident Reporting is to be conducted in accordance with Section 7.2 of the CEMP.

5.4 Marine mammal strike

The following is identified in Section 6.7 of the Biodiversity Management Plan but has also been included here due to relevancy.

Collisions with vessels are one of the primary threats to marine mammals, particularly large whales in Australia and around the world. To reduce the risk of Project vessels impacting marine mammals low speed operations (>4 knots) will be observed within the construction boundary at La Perouse and Kurnell.

Safe distances and caution zones for vessels identified in Section 2.3 and 2.5 of the *Biodiversity Conservation Regulation 2017* will also be followed as outlined below in Table 6-1.

Caution Zone

A caution zone for a whale, dolphin or dugong means an area around the whale, dolphin or dugong of a radius outlined below in Table 6-1.

Within the caution zone vessel operators must:

- operate the vessel at a constant slow speed and in a manner that consistently minimises noise,
- make sure that the vessel does not drift closer the caution zones outlined in Table 6-1,
- if the whale, dolphin or dugong shows signs of being disturbed—must immediately withdraw the vessel from the caution zone at a constant slow speed,
- make sure the vessel does not restrict the path of the whale, dolphin or dugong,
- report all interactions with marine mammals to the Environment & Sustainability Lead

Safe Approach Distance

Vessel operators must not approach a marine mammal any closer than the safe approach distances outlined in Table 6-1.

Table 5-2 Caution Zones and Safe Approach Distances for Marine Mammals

Marine Mammal	Caution Zone	Safe Approach Distance	Applicable Vessel	Reference
Whale	300m	100mn	if the person is approaching a whale and is on, or using, a vessel other than a prohibited vessel,	Section 2.3 and Section 2.5 *Biodiversity Conservation Regulation 2017*
Dolphin or Dugong	150m	50m	if the person is approaching a dolphin or dugong and is on, or using, a vessel other than a prohibited vessel	Section 2.3 and Section 2.5 *Biodiversity Conservation Regulation 2017*

Vessel operators and crew will be trained and made aware of this risk through a project induction. Crews are required to observe for marine mammals during operation of construction related vessels. Operations are to largely occur during day-time hours. Any night-time vessel operations are to be briefed of the additional risk of marine mammal strike due to limited visibility.

5.5 Marine pests

The following is identified in Section 6.11 of the Biodiversity Management Plan but has also been included here due to relevancy.

Maritime construction projects and maintenance works have the potential to introduce and promote the spread of marine pests, particularly *Caulerpa taxifolia* which occurs throughout Botany Bay.

Mitigation actions to reduce the risk of marine pests include:

- The Marine vessel owner will undertake a Vessel Risk Assessment (VRA), which includes using the online Vessel-Check application and complete a Biofouling Record Book Form for

each vessel prior to mobilisation of the vessel to Site. The history of the vessel is also to be provided including location of last port and previous antifouling applications.

- All vessels assessed in the VRA as uncertain or high risk for introduction of invasive marine species must undertake an Invasive Marine Species Inspection (IMS) Any construction vessels mobilised from outside of Australia shall also be considered high risk and an IMS inspection must be carried out.
- The IMS inspection must be undertaken by an appropriately qualified practitioner with experience in biosecurity of marine vessels. The Contractor(s) is responsible for arranging the IMS inspection and attendance of DPI-Fisheries.
- The Marine vessel owner must provide the completed IMS report to the Principal at least seven days prior to the vessel leaving the departure port.
- Where IMS inspections identify significant amounts of sediment and/or the presence of an invasive marine species (as deemed by the IMS inspector) the vessel must be dry docked and cleaned prior to entering the site. The Contractor(s) must then resubmit the VRA and if the vessel is classified as low risk, it shall be permitted to sail to site and begin operations.
- All work vessels must be cleaned before and after leaving site.
- Anchoring locations should be established with consideration for Caulerpa. Currently no Caulerpa has been identified onsite however it is known to occur in the locality.
- Ballast water management procedures would also apply to vessels operating on site in accordance with the Australian Ballast Water Management Requirements (Department of Agriculture, Water and the Environment 2020) as outlined in section 5.6 of this plan.
- Ensure moveable structures (semi-permanent or temporary infrastructure) are inspected to assess the level of biofouling present before being moved between locations, and clean if necessary:
    - if there is a high level of fouling/macrofouling (more than just an algal film/microfouling), the structure should be cleaned before it is moved, as this can present similar biofouling risks to vessel movements
    - cleaning should be done on land or in a location with suitable facilities to prevent waste from returning to the water
    - infrastructure that can be removed from the water, such as mooring buoys, should be pressure cleaned or scraped, scrubbed and air-dried for at least 48 hours, ideally exposed to sunshine, before being redeployed
    - if the infrastructure cannot be cleaned on land, it should be cleaned according to the *Anti-fouling and in-water cleaning guidelines*.

5.6 Ballast Water Management

The following is identified in Section 6.14 (BMP_32) of the Biodiversity Management Plan but has also been included here due to relevancy

Ballast water for marine vessels will be managed in accordance with the below:

- Potable water will be used for marine barges during piling activities as ballast water. If the ballast water needs to be discharged, the activity will be controlled by a MCD Discharge Permit issued from the Environment & Sustainability Lead (refer to Attachment F – Dewatering Procedure of the Soil, Water and Contamination Management Plan).
- Domestic vessels should manage ballast water in accordance with the Australian Ballast Water Management Requirements (Department of Agriculture, Water and the Environment 2020).

- Any ballast water exchange from international vessels must be undertaken in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM) (IMO 2016) – i.e. “whenever possible, conduct ballast water exchange at least 200 nautical miles from the nearest land and in water at least 200 m in depth, taking into account Guidelines developed by IMO” and “in cases where the ship is unable to conduct ballast water exchange as above, this should be as far from the nearest land as possible, and in all cases at least 50 nautical miles from the nearest land and in water at least 200 m in depth”.

5.7 Marine Mammal Monitoring Procedure

To avoid potential vessel strike and to avoid impacts from underwater noise on marine mammals, a suitably qualified person will observe for marine mammals during piling activities. A Marine Mammal Monitoring Procedure is included as part of the Biodiversity Management Plan.

The piling operations will follow the procedure outlined in Attachment G of the Biodiversity Management Plan to mitigate impacts from underwater noise generated by piling activities.

5.8 Environmental control measures

Specific measures and requirements to meet the objectives of this MWMP and to address impacts on marine navigational safety are outlined in Table 5-1. These measures apply to both La Perouse and Kurnell, unless otherwise stated.

Table 5-1 Marine works management and mitigation measures

ID	Measure/Requirement	Responsibility	When to implement	Timing / Frequency	Reference	Evidence
General						
MWMP_01	A Marine Works Management Plan (MWMP) will be prepared in consultation with the Port Authority NSW (including Harbour Master), Transport for NSW, and other relevant stakeholders. The plan will define exclusion zones, methods of marking the zones, clearance distances, mooring plans, communication protocol, emergency and incident response procedures, vessel movements, contact details of all parties and responsible persons, and transit routes. The MWMP will be consistent with the Biodiversity Management Plan.	McConnell Dowell Mitch Jones – Environment & Sustainability Lead	Construction	Prior to construction	REMM T7	This MWMP Section 7.2 CEMP (Incident Response)

ID	Measure/Requirement	Responsibility	When to implement	Timing / Frequency	Reference	Evidence
MWMP_02	Maritime exclusion zones will be established to prevent unauthorised vessels entering the area. These zones will be clearly defined to communicate access for other water users and will be lit to account for the measures in National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds, and Migratory Shorebirds (Australian Government Department of the Environment and Energy, 2020).	Contractor Ken Sutton – Subcontractor Project Manager	Construction	Prior to construction	REMM T8	Site inspection report
MWMP_03	Moorings that conflict with construction or the operational ferry swept path will be relocated outside of the construction boundary in accordance with Transport for NSW standard mooring relocation processes. Mooring relocation will be undertaken in consultation with Port Authority NSW and notify any affected stakeholders.	Transport for NSW	Construction	Prior to construction	REMM T9	Pre-start inspection
MWMP_04	The continued operation of the Port takes priority over the construction work for the Project.	McConnell Dowell James Fruh – Construction Manager	Construction	During construction	TfNSW QA Spec G1	This MWMP

ID	Measure/Requirement	Responsibility	When to implement	Timing / Frequency	Reference	Evidence
MWMP_05	The construction works must remain within the Site and must not interfere with the movement of seagoing vessels unless otherwise agreed in advance with the Harbour Master.	McConnell Dowell James Fruh – Construction Manager	Construction	During construction	TfNSW QA Spec G1	This MWMP
MWMP_06	When requested by the Harbour Master, the Contractor must remove floating plant, anchors, wires and cables or any other items of equipment out of the way of shipping to a location agreed with the Harbour Master.	McConnell Dowell James Fruh – Construction Manager	Construction	During construction	TfNSW QA Spec G1	This MWMP
MWMP_07	The positioning and mooring of all marine plant in or adjacent to any shipping area or berth pocket shall be subject to the approval of the Harbour Master. Specifically, the arrangements and placement of all moorings and anchors shall be to the Harbour Master's approval, to allow timely and safe clearance from the path of any vessel.	Contractor Ken Sutton – Subcontractor Project Manager	Construction	During construction	TfNSW QA Spec G1	This MWMP
MWMP_08	The Contractor must provide and maintain at all times such buoys, moorings and fastenings as may be necessary to secure floating plant.	Contractor Ken Sutton – Subcontractor Project Manager	Construction	During construction	TfNSW QA Spec G1	This MWMP

ID	Measure/Requirement	Responsibility	When to implement	Timing / Frequency	Reference	Evidence
MWMP_09	The Contractor will further provide and maintain markers and lights in accordance with the *International Regulations for Preventing Collisions at Sea 1972* or as otherwise may be considered necessary by the Harbour Master to warn vessels of the position of floating plant, anchors, wires, cables other equipment or Temporary Work.	Contractor Ken Sutton – Subcontractor Project Manager	Construction	During construction	TfNSW QA Spec G1	This MWMP
MWMP_10	At the end of each working day, the Contractor must ensure that the construction plant are secured and will not interfere with the Port operations.	Contractor Ken Sutton – Subcontractor Project Manager	Construction	During construction	TfNSW QA Spec G1	Site inspection reports
MWMP_11	Prior to any vessel or floating equipment associated with construction entering the Port, the Contractor must prepare in consultation with the Harbour Master, a local marine notice for implementation during water-based works and publication on the Port Authority of New South Wales's website.	Contractor Ken Sutton – Subcontractor Project Manager	Construction	During construction	TfNSW QA Spec G1	Local marine notice

ID	Measure/Requirement	Responsibility	When to implement	Timing / Frequency	Reference	Evidence
MWMP_12	Trained marine mammal observers, with demonstrated experience in the identification and management of marine mammals are to undertake the observation of marine mammals during piling and re-strike testing.	McConnell Dowell Mitch Jones – Environment & Sustainability Lead	Prior to and during underwater noise generating activities	Prior to construction	REMM UN3	Flora and Fauna Management Plan
MWMP_13	Avoid vessel strike by maintaining safe distances and approaches as identified in Section 2.3 and 2.5 of the *Biodiversity Conservation Regulation 2017* and limiting speeds.	Contractor Ken Sutton – Subcontractor Project Manager	Construction	During construction	REMM MB2	This MWMP
MWMP_14	All vessels associated with construction must travel at a speed of 10 knots or less within the port limits	Contractor Ken Sutton – Subcontractor Project Manager	Construction	During construction	REMM MB2	This MWMP
MWMP_15	No anchoring zones identified in the Project Boundary Drawings are to be implemented to minimise impacts from anchor points within seagrass meadows of *Posidonia Australis*.	McConnell Dowell Mitch Jones – Environment & Sustainability Lead	Construction	Prior to construction	TfNSW QA Spec G36 REMM MB2 REMM MB3	This MWMP
MWMP_16	Avoid fixed location of barges at locations of seagrass meadows of *Posidonia australis* outside of the marine habitat impact area within the construction boundary to minimise shading impacts.	Contractor Ken Sutton – Subcontractor Project Manager	Construction	During construction	REMM MB4	This MWMP

ID	Measure/Requirement	Responsibility	When to implement	Timing / Frequency	Reference	Evidence
MWMP_17	Establish suitable navigation channels to avoid areas of listed species habitat, including: Kurnell • Watts reef (likely Black Rockcod habitat) • Large TEC seagrass meadow of Posidonia Australis La Perouse • Avoid accessing near reef habitat No access over patch of Posidonia Australis to the east of the wharf.	Contractor Ken Sutton – Subcontractor Project Manager	Construction	During construction	REMM MB6	This MWMP
MWMP_18	Establish areas of no wash zones in consultation with Port Authority NSW, NSW DPI Fisheries and Transport for NSW at: • La Perouse to minimise wash effects on the coastal subtidal and intertidal reef areas • Watts Reef near Kurnell to minimise wash effects on the subtidal habitat on the reef Near both wharves to minimise excess wash from the ferry and recreational vessel access.	Contractor Ken Sutton – Subcontractor Project Manager	Prior to marine construction	Prior to and during construction	REMM MB9	This MWMP

6 Safety Management

6.1 General

This Marine Works Management Plan will form part of a broader suite of documents that will identify hazards, risks and implement control measures. The following section will focus on the maritime issues, whereas construction specific risks will be covered by the Construction Execution Plans (CEPs) and Safe Work Method Statements (SWMSs)

6.1.1 Aspects

Key aspects of the project that could result in impacts to marine navigational safety include:

- Construction of the temporary causeway at Kurnell, and temporary crane platform at La Perouse
- Deliveries made by marine vessels
- Construction in marine environment (including piling)
- Vessel movements
- Use of construction equipment including pling and vessel movements in recreationally used water

6.1.2 Impacts

Likely and/or potential impacts associated with project are discussed in Chapter 12 of the EIS. The following summarises the potential impacts at both La Perouse and Kurnell.

- Conflict between construction vessels and shipping vessels
- Conflict between construction vessels and other recreational vessels and Botany Bay users
- Conflict between marine works and marine mammals
- Impacts to marine environment (spills, underwater noise, lighting)

Notwithstanding, mitigation and management measures provided in Table 5-1, aim to minimise the above likely and potential impacts.

6.2 Marine Regulations

Vessels and crew will operate under relevant Australian Maritime Safety Authority (AMSA) Marine Orders[1] and Regional Harbour Master (RHM) Standing Orders, approvals and instructions.

6.3 Crew Qualifications

Table 6-1 contains the proposed minimum crew qualifications.

Table 6-1 Crew Minimum Qualifications

Type of Equipment	Vessel Name	Size / Capacity	Operator Qualifications
Jack-up Barge	Sea Lift 1	80t	Bargemaster, VOC
Dumb Barge	PM East	11,880 ton	Bargemaster, VOC
Dumb Barge Self Propelled	BP1	20 – 22m LOA	Master 5, VOC
Work Punts x 3	n/a	6 metres	Recreational Boat License, VOC
Utility Tug	Leaders Creek	n/a	Master 5, VOC

[1] Index of marine orders (amsa.gov.au)

Crew qualification documentation will be provided to TfNSW no less than 2 weeks prior to mobilisation for review.

6.4 Vessel Requirements

6.4.1 Vessel Safety Management Systems

Each operating vessel will have a Vessel Safety Management System (SMS) in accordance with the requirements of AMSA. SMS's will follow the format of the operating entity, but the following table lists some key elements that are typically found within an SMS.

Introduction • Purpose & Application • Plan Limitations • Plan Distribution • Updating Of This Plan • Revision & Distribution • The Vessel Details **Legislation and References** • Legislation (State, Federal and International) • Relevant Other Documents (Vessel Certificates and Other Documents, Management Plans) • Procedures **Risk Management** • Safety, Quality and Environmental Risk Management (SQERM) System • Lift Studies and Work Permits • Record of Hazardous Occurrences, Safety Monitoring And Recording **Vessel Responsibilities** • Staff Structure • On Shore Personnel • Works Supervisor • The Vessel Barge Crew • The Vessel Crewing • Crew Qualifications • The Vessel Inductions **Emergency Response** • Emergency Procedure • Emergency Equipment • Emergency Plans ◦ General Emergency / Assemble at Muster Point ◦ Evacuation / Abandon Ship ◦ Overboard ◦ Fire or Explosion ◦ Medical Emergency ◦ Severe Weather (non-cyclonic) ◦ Collision / Grounding • Emergency Drills • Reporting of Emergency Events	**General Occupational Health And Safety** • Deck Maintenance Record Books • Hazardous Occurrences / Incident Reporting • First Aid Injuries • Personal Protective Equipment • Vessel Rules • First Aid Kits • Diving Operations • Master's Overriding Authority **General Operations Manual** • Limits of Operation • Anchoring • Operating Barge Equipment • Maintenance of Winches and Other Machinery • Maintenance of the Barge Hull and Barge Facilities • Operation of Workboat / Tender Vessel • Transfer of People To or From the Vessel • Waste Management • Minimising Noise Pollution • Confined Space Entry Procedures • Dangerous Goods and Hazardous Material • Towing • Transferring Fuel to and from the Vessel • Refuelling Machinery On-Board the Vessel • Procedure In The Event Of Fuel or Oil Spillage • Barge Movements **Appendixes** • Appendix A – Emergency Contact Details • Appendix B – Fire Fighting and Life Saving Appliance Plan • Appendix C – Refuelling Over of Near Water Procedure • Appendix D – Vessel Barge Stability Report • Appendix E – Vessel Induction Records • Appendix F – Emergency Practice Drill Record • Appendix G – Drug and Alcohol Policy

6.4.2 Registration

Vessel registration requirements are managed under the AMSA system. There are two general classes of vessel registration: a Domestic Commercial Vessel (DCV) and Registered Australian Vessel (RAV). The requirements for both are listed below.

DCV	RAV
• Safety Management System • Unique Identifier • Certificate of Survey supported by a vessel survey • Certificate of Operation • Load Line Certificate	• Safety Management System • Unique Identifier • Certificate of Survey supported by a vessel survey, Builders Certificate and International Tonnage Certificate • Certificate of Operation • Load Line Certificate

Vessel documentation will be provided to TfNSW no less than 2 weeks prior to mobilisation for review.

6.4.3 Vessel Inductions

Each Vessel should have a specific vessel induction which will cover the topics below:

Safety Equipment (Location and Use)

- EPIRB
- PFD
- Life ring
- Flares
- Fire Extinguisher (specific types and use
- Life raft (if applicable)
- First Aid Kit
- Emergency Torch
- Seasickness (precautions/ remedies)
- Marine radio and other communication devise

Emergency Procedures

- Fire
- Person Overboard
- Personal Injury/ Medical Emergency
- Vessel Collision
- Vessel Grounding
- Vessel Flooding
- Adverse weather or water conditions

Vessel Policy – Design to suit your vessel

- Drugs, Alcohol and Smoking Policy

All personnel working on or visiting a vessel are to be inducted. A record of the induction is to be recorded and maintained. If a person does not attend a vessel for a period of 6 months, another induction should be undertaken. Inductions are to be delivered by the Vessel Master (i.e. the Barge Supervisor) or a suitable delegate.

6.5 Vessel Movements

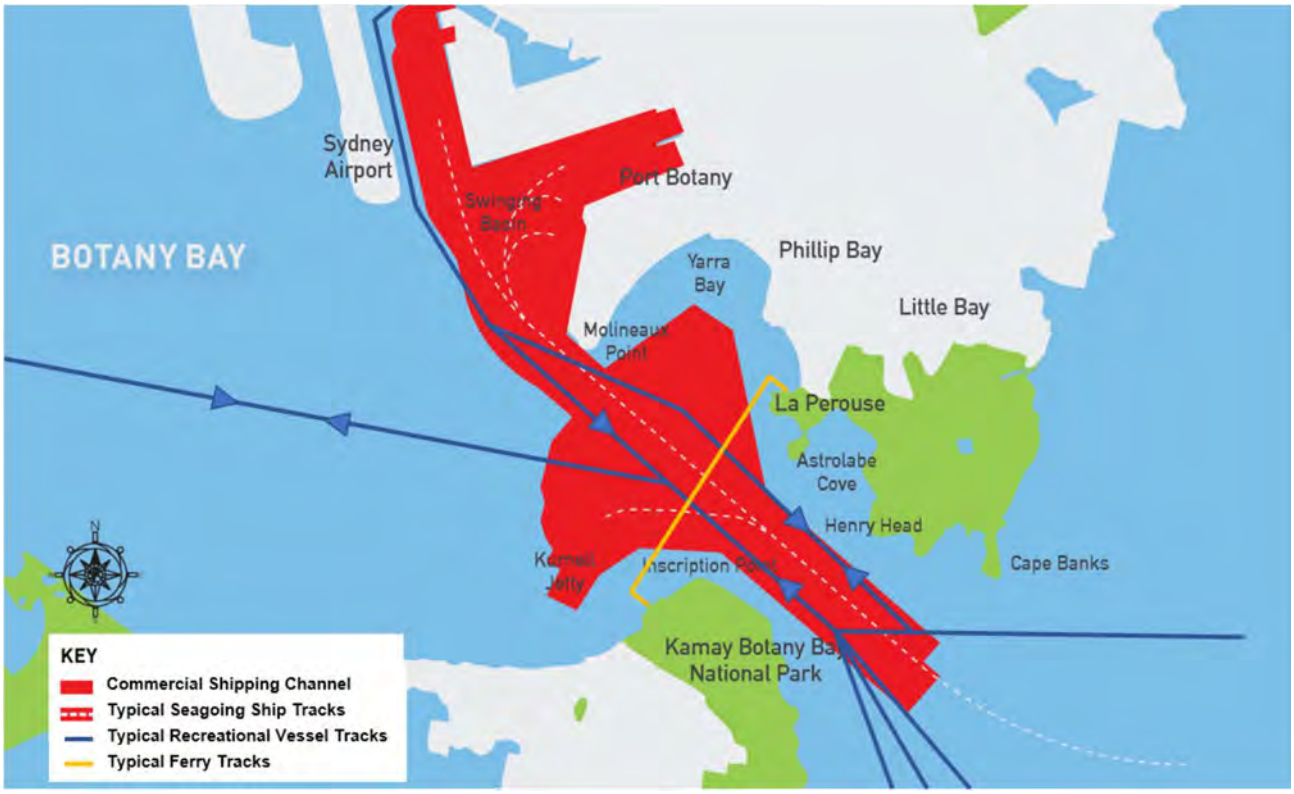


Figure 6-1 Typical passage of vessels in Botany Bay

6.6 Mooring and anchoring

There are numerous recreational vessels swing moorings located in Frenchman's Bay, some of which are in close proximity to the proposed wharf construction zone; these will considered when developing mooring arrangements and vessel approach paths.

Initial mooring arrangements for piling can be see for Kurnell & La Perouse in attachment F. The PM East barge which will drive the piles will work out broadside from land installing piles in a linear sequence outward from land.

The location of the proposed Kurnell Wharf is near a submerged cable and no anchoring area. The submerged cable and no anchoring area shall be identified by buoys as indicated in attachment F. The installation of piles in the vicinity of the no anchoring area shall not pose an issue for anchoring of the PM East To Install the last number of bents at Kurnell the PM East will lay mooring blocks beyond the submerged easement, lines may rest on top of the easement at seabed but will impeded or damage the easement in any way. The jack up barge will also not need to ingress into the no anchor area as it can lay her legs clear of the no anchor area. A typical project mooring arrangement can be seen in attachment F for both Kurnell and La Perouse. Mooring Blocks and anchoring will not be permitted in seagrass zones identified in the Environmental Impact Statement. Any laying of barge spuds, mooring blocks or anchors will be surveyed in place with GPS to ensure no potential damage to seagrass and will be conducted in accordance with the Environmental Work Method Statement - Anchor handling and placement.

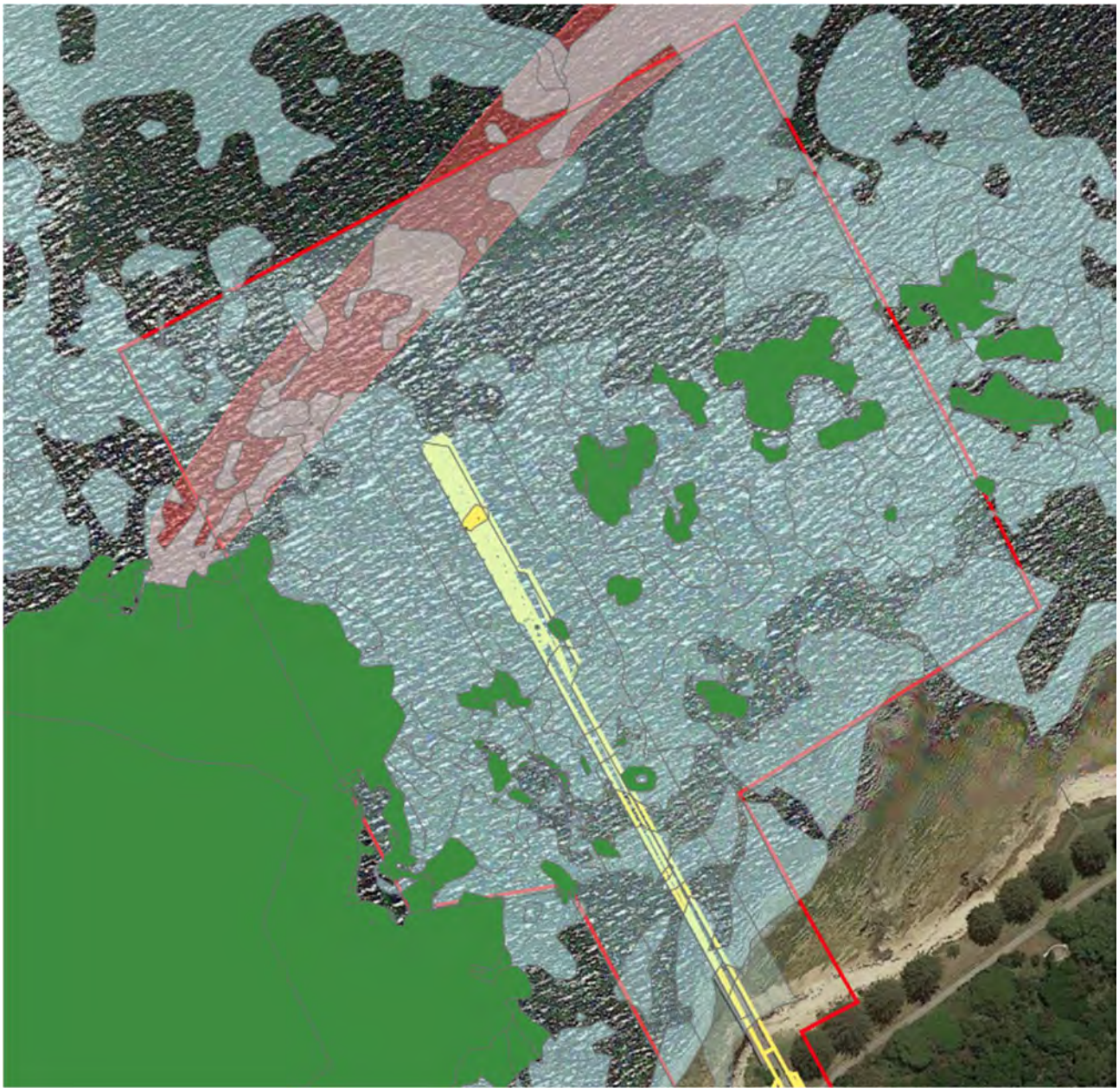


Figure 6-2 Anchoring limitations at Kurnell – HV Cable Exclusion Zone (in pink) and the Protect Seagrass (in green)

6.7 Access and Wash Controls

6.7.1 Maritime exclusion zones

A maritime exclusion zone matching the Marine Construction Zones (refer to Figure 4- and Figure 4-) will be requested through the Regional Harbour Master would be marked by lit buoys to restrict access to make sure that no recreational or other vessels enter the construction area and risk interfering with construction work vessels. This would cause an inconvenience for vessels closer to the shore but would not restrict access to areas beyond the construction boundary within Botany Bay.

The maritime exclusion zone would be located outside of the shipping channel. Any vessel movements would not restrict access for shipping and would have to give way to any shipping operations.

Polaris and McConnell Dowell will liaise with the Regional Harbour Master to finalise planning around this requirement, and to instigate an exclusive use marine notice and navigation warning.

6.7.2 Compliance with TfNSW G1 Specification

5.12.12: Anchor Handling – The contractor must avoid anchoring on key fish habitats. Anchor placement locations must be recorded and provided to the principal on a weekly basis in the form of a drawing showing the plotted location and coordinates of each anchor location.

6.7.3 No Wash Zone

The establishment of the Marine Exclusion Zone should minimise the impact of vessel wash on the site, and at present, it is not anticipated that additional no wash zones will be required.

This will be monitored during the early stages of construction, and any issues will be discussed with the Regional Harbour Master with a view to potential establishment during certain activities.

If a particular activity necessitated a no wash zone, then this request will be made through VTS with suitable warning.

6.8 Communications

PANSW's Vessel Traffic Service (VTS) provides a continuous service to monitor the movement of participating vessels within the VTS areas of Botany Bay. This includes broadcasted information on navigational warnings, weather forecasts, shipping movements, tidal conditions and special events. All commercial and recreational vessels operating in the La Perouse and Kurnell area should monitor VHF Channel 12, at all times. In addition, commercial vessels are required to immediately advise Sydney Ports VTS on VHF Channel 12 of any matters affecting safe navigation of a vessel operating in the La Perouse and Kurnell area.

The Harbour Master, under section 88 of the *Marine Safety Act 1998*, directs that all vessels of length overall (LOA) 30 m or over are required to participate in the VTS. On the Port Authority's website it states, all participating vessels, except ferries and commercial vessels on passenger carrying services running to scheduled time, shall seek clearance to enter or move within the VTS area from Sydney VTS 15 minutes before being removed from a berth, buoy or anchorage within the VTS areas.

It is to be expected that any traffic crossing the shipping channel in Botany Bay would be subject to a requirement to participate in VTS.

It is envisaged that the following regular calls will be made to VTS, including:

- At the commencement of a shift a crewed barge providing the vessel's name, number of crew on board and operations to be undertaken. Another call will be made at the end of the shift.
- When vessels are about to commence or complete a journey outside of the marine construction zone.

6.9 Diving Operations

6.9.1 Plan

Diving operations shall be subject to the operating procedures of the diving entity(ies) but specific Dive Plans should be prepared for each diving serial.

The Dive plan will be prepared by a suitably qualified person, typically the Dive Supervisor responsible for the works. The Dive Plans will include:

- the method of carrying out the diving work

- the tasks and duties of each person involved
- the diving equipment, breathing gases and procedures to be used
- as applicable, dive times, bottom times and decompression profiles
- hazards relating to the dive and measures to be implemented to control the risks
- emergency procedures.

The Dive Plan will be briefed to the workers by the Diver Supervisor before works commence.

The Dive Plan may add additional elements to the broader Project incident response plans.

6.9.2 Competencies

Divers and Dive Supervisors should be deemed competent in accordance with requirements within AS 2299:2015. Divers should hold suitable qualifications, and be accredited with the Australian Dive Accreditation Scheme. Divers should hold a qualification to AS2815 Part 2 or 3, and supervisors to AS2815 Part 5.

6.9.3 Record Keeping

A Dive Log must be maintained and kept up to date for all diving works. the following records must be kept for the following amounts of time:

- certificate of medical fitness – for one year after the diving work finishes
- evidence of competencies – for one year after the diving work finishes
- risk assessment – for 28 days after work finishes or for 2 years if a notifiable incident occurs
- dive plan– until the diving work is completed or for 2 years if a notifiable incident occurs
- dive safety log – for one year after the last entry.

6.9.4 Compliance with TfNSW G22 Specification

Diving operations shall be planned and executed strictly in accordance with *TfNSW Specification G22 – Work Health and Safety, Section 3.15 – Diving Operations.* Specifically:

A3.15.1: Risk assessment - To be undertaken before all diving operations and regularly throughout the duration of diving work.

A3.15.2: Emergency Planning – An Emergency Response Plan (ERP) and procedures must be in place prior to commencement of any diving operations

A3.15.3: Management of Change – Any changes or additions to the Works scope must be subject to a formal risk assessment

A3.15.5: Dive Safety Management System (DSMS) – to be prepared in accordance with G22 and submitted for review and approval prior to commencing dive operations

A3.15.6: Dive Project Plan (DPP) – To be prepared for every dive project and submitted for review and approval prior to commencing dive operations

A3.15.7: Emergency Drills – Must be carried out at commencement of dive works at each site and at a maximum of one month intervals

A3.15.8: Safety Equipment – Masks / helmets to comply with G22 Specification

A3.15.9: Diving Depths – Dive operations must be carried out strictly in accordance with G22 Specification

A3.15.10: Diving Accident/Decompression Illness – The process for dealing with diving related emergencies and decompression shall be outlined in the DSMS and DPP

A3.15.11: Decompression Chambers – Need not be based on site unless called for in AS/NZ 2299.1:2007

6.10 Lifting and Crane Operations

Lifting operations will be undertaken in accordance with McConnell Dowell Management System – Safe Operating Procedure *Crane and Lifting Operations* (HSEQ-HS-SOP001-GEN-ALL).

Within this procedure, Sections 5.5 and 5.10 make specific reference to crane lifting to or from a floating platform (i.e. a barge), and Section 5.9 covers cranes on suspended structures such as the temporary jetty and jack up barge.

7 Compliance Management

7.1 Roles and responsibilities

The McConnell Dowell organisational structure and overall roles and responsibilities are outlined in Section 4.5 of the CEMP.

7.2 Inspections

Requirements and responsibilities in relation to inspections are documented in Section 8.1.1 of the CEMP.

Prior to mobilizing of marine barges a pre inspection will be undertaken by MCD to include as a minimum the responsible engineer, environmental advisor and responsible supervisor.

7.3 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of marine traffic management measures, compliance with this MWMP, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 8.3 of the CEMP.

7.4 Reporting

Reporting requirements relevant to this sub plan, as outlined by the MCoA, are referenced in Section 8.2 of the CEMP

7.5 Incident Management, Reporting and Investigation

Incident Management, Reporting and Investigation relevant to this sub plan, as outlined by the MCoA, are referenced in Section 7.2 of the CEMP.

All vessels associated with the construction works will have response plans for emergencies and spills in place in accordance with Section 7.2 of the CEMP which will be included within their Vessel Safety Management Systems. WHS or environmental incidents are to be notified through the Construction Manager or Project Manager to the Client within 30 minutes.

Any marine spill (whether the spill occurs on water or occurs on land and subsequently enters the water) is to be immediately reported to Sydney Ports VTS on VHF channel 12.

In addition, notification under the *Occupational Health and Safety (Maritime Industry) Act 1993* is also required for incidents and dangerous occurrences to the Australian Maritime Safety Authority.

8 Review and improvement

8.1 Continuous improvement

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

The continuous improvement process will be designed to:

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

8.2 MWMP update and amendment

The processes described in Section 3.1 of the CEMP may result in the need to update or revise this MWMP. This will occur as needed.

The contractor will review and update the MWMP where required prior to significant changes in construction methodology that alter the risk rating identified in the Aspect and Impacts Register or after significant environmental incidents.

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

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

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

Attachment A – Environmental requirements

Relevant legislation and guidelines

Legislation and regulatory requirements

Current legislation that applies to both commercial and recreational vessels includes:

- *Marine Safety Act 1998*
- *Marine Safety Regulation 2016*
- *Ports and Maritime Administration Regulation 2012*
- *Ports and Maritime Administration Act 1995*
- *Protection of the Environment Operations Act 1997*
- *Protection of the Environment Operations (General) Regulation 2009*
- *Protection of the Environment Operations (Noise Control) Regulation 2008*
- *Marine Pollution Act 2012*
- *Marine Pollution Regulation 2014*
- *Marine Safety (Domestic Commercial Vessel) National Law Act 2012.*
- *Ministers Conditions of Approval SSI 10049*

Construction of the wharves will involve disturbance of the seabed. Any disturbance of the seabed requires a s67ZN (of Ports and Maritime Administration Regulations 2012) application to be submitted for the consideration of and approval by the Harbour Master. Any proposal will also have to be considered and approved by Transport for NSW's Maritime Property department, who are the land holders and will make the ultimate approval decision.

Ministers Conditions of Approval

The MCoA relevant to this Plan are listed in Table B1 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table B1: Ministers Conditions of Approval relevant to the MWMP

MCoA No.	Condition Requirements	Document reference
E85	Prior to the commencement of Construction, a Construction Marine Works Management Plan (CMWMP) must be prepared by a suitably qualified person, in consultation with the Harbour Master. The CMWMP should, at a minimum, include the management and mitigation measures and recommendations outlined in the Navigation Safety Assessment prepared by Thompson Clarke Shipping, dated September 2021 . Note: Prior to the commencement of any Works that will disturb the bed of a port, the Proponent must seek written approval from the Harbour Master in accordance with clause 67ZN of the Ports and Maritime Administration Regulation 2012.	This Document

EPBC Conditions of Approval

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

Table D-2 EPBC Compliance table

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

Ref	Description	Owner	Evidence
Construction Environmental Management Plan			
6)	The approval holder must comply with NSW Approval conditions C1 – C13 related to the preparation and implementation of a Construction Environmental Management Plan (CEMP) to avoid, mitigate and manage impacts on protected matters during construction.	All	Construction Environmental Management Plan (this plan)
7)	The CEMP required by the NSW Approval must include environmental management measures to manage impacts to protected matters and be informed by the contamination documentation.	MCD	CEMP Appendix B6 – Soil, Water & Contamination Management Sub Plan
Marine Biodiversity Offset Strategy			
10)	The approval holder must comply with NSW Approval conditions E12 – E20 related to the requirements of the Marine Biodiversity Offset Strategy (MBOS) to compensate for the clearing of 0.0683 hectares of seagrass meadows and White's Seahorse habitat.	TfNSW	TfNSW

Ref	Description	Owner	Evidence
11)	To monitor the outcomes of the MBOS for seagrass meadows and White's Seahorse habitat, the approval holder must include a Marine Biodiversity Offset Report as part of the compliance report until at least the 10th anniversary of the commencement of the action, unless otherwise agreed to in writing by the Minister. Each Marine Biodiversity Offset Report must include: a. a progress report on the implementation of the MBOS; b. a list of success metrics; c. details of the monitoring methodology(ies) implemented and the locations of reference sites; d. monitoring results including a comparison against reference sites; e. a summary of any adaptive management steps taken to improve implementation and/or monitoring methodology(ies); and f. a conclusion as to whether the outcomes, as measured against the success metrics, have been achieved, are likely to be met or are unlikely to be met, as determined by a suitably qualified person.	TfNSW	TfNSW

Ref	Description	Owner	Evidence
12)	To assess the ongoing success of the MBOS, the approval holder must submit a Rehabilitation Monitoring Review to the department within 6 years of the date of this approval and every 5 years thereafter, unless otherwise agreed to in writing by the Minister. Each Rehabilitation Monitoring Review must include: a. a review of the monitoring methodology by a suitably qualified person; b. a conclusion based on the success metrics as to whether the environmental offsets for seagrass meadows and White's Seahorse habitat have been achieved, are likely to be met or are unlikely to be met, as determined by a suitably qualified person; and c. if environmental offsets for seagrass meadows and White's Seahorse habitat have not been achieved based on the success metrics: i. a list measurable and time-bound remediation measures which will be undertaken to ensure the success metrics are achieved; and ii. justification for how the remediation measures will provide full compensation for the impacts to seagrass meadows and White's Seahorse habitat.	TfNSW	TfNSW
Submission and Publication of Plans			
13)	The approval holder must submit all plans required by these conditions electronically to the department.	TfNSW	TfNSW
14)	If the approval holder submits a revised version of a plan for the Planning Secretary's approval, the approval holder must provide the revised plan to the department within 5 business days and an explanation of the differences between the approved plan and the revised plan.	TfNSW	TfNSW
15)	If a revised version of a plan is approved by the Planning Secretary, the approval holder must provide the revised plan to the department within 10 business days of the Planning Secretary's approval.	TfNSW	TfNSW

Ref	Description	Owner	Evidence
16)	Unless otherwise agreed to in writing by the Minister, the approval holder must publish each plan on the website within 15 business days of the date: a. the plan is approved by the Planning Secretary; or b. a revised version of the plan is approved by the Planning Secretary.	TfNSW	TfNSW
17)	The approval holder must keep all published plans required by these conditions on the website until the expiry date of this approval.	TfNSW	TfNSW
18)	The approval holder must exclude or redact sensitive ecological data from plans published on the website or otherwise provided to a member of the public.	TfNSW	TfNSW
19)	If sensitive ecological data is excluded or redacted from a plan, the approval holder must notify the department in writing what exclusions and redactions have been made in the version published on the website	TfNSW	TfNSW
Notification of Date of Commencement of the Action			
20)	The approval holder must notify the department electronically of the date of commencement of the action, within 5 business days of the commencement of the action.	TfNSW	TfNSW
21)	If the commencement of the action does not occur within 5 years from the date of this approval, then the approval holder must not commence the action without the prior written agreement of the Minister.	TfNSW	TfNSW
Compliance Records			
22)	The approval holder must maintain accurate and complete compliance records.	All	CEMP Section 8.4
23)	If the department makes a request in writing, the approval holder must provide electronic copies of compliance records to the department within the timeframe specified in the request.		

Ref	Description	Owner	Evidence
24)	Note: Compliance records may be subject to audit by the department, or by an independent auditor in accordance with section 458 of the EPBC Act, and/or be used to verify compliance with the conditions. Summaries of the results of an audit may be published on the department's website or through the general media.	TfNSW	TfNSW
25)	The approval holder must ensure that any monitoring data (including sensitive ecological data), surveys, maps and other spatial and metadata required under the conditions of this approval are prepared in accordance with the Guidelines for biological survey and mapped data (Commonwealth of Australia 2018), or as otherwise specified by the Minister in writing.	All	CEMP Section 8.1.2
26)	The approval holder must ensure that any monitoring data (including sensitive ecological data), surveys, maps and other spatial and metadata required under the conditions of this approval are prepared in accordance with the Guide to providing maps and boundary data for EPBC Act projects (Commonwealth of Australia 2021), or as otherwise specified by the Minister in writing.	All	CEMP Section 8.1.2
Annual Compliance Reporting			
27)	The approval holder must prepare a compliance report for each 12-month period following the date of this approval, or as otherwise agreed to in writing by the Minister.	TfNSW	TfNSW
28)	Each compliance report must be consistent with the Annual Compliance Report Guidelines (Commonwealth of Australia 2014).	TfNSW	TfNSW
29)	Each compliance report must include: a. Accurate and complete details of compliance and any non-compliance with the conditions and the plans, and any incidents. b. One or more shapefile showing all clearing of any protected matters, and/or their habitat, undertaken within the 12-month period at the end of which that compliance report is prepared. c. A schedule of all plans in existence in relation to these conditions and accurate and complete details of how each plan is being implemented.	TfNSW	TfNSW

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

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

Ref	Description	Owner	Evidence
35)	For each independent audit, the approval holder must: a) Provide the name and qualifications of the nominated independent auditor, the draft audit criteria, and proposed timeframe for submitting the audit report to the department prior to commencing the independent audit. b) Only commence the independent audit once the nominated independent auditor, audit criteria and timeframe for submitting the audit report have been approved in writing by the department. c) Submit the audit report to the department for approval within the timeframe specified and approved in writing by the department. d) Publish each audit report on the website within 15 business days of the date of the department's approval of the audit report. e) Keep every audit report published on the website until this approval expires.	TfNSW	TfNSW
36)	Each audit report must report for the five-year period preceding that audit report.	TfNSW	TfNSW
37)	Each audit report must be completed to the satisfaction of the Minister and be consistent with the Environment Protection and Biodiversity Conservation Act 1999 Independent Audit and Audit Report Guidelines (Commonwealth of Australia 2019).	TfNSW	TfNSW
Completion of the Action			
38)	The approval holder must notify the department electronically 60 business days prior to the expiry date of this approval, that the approval is due to expire.	TfNSW	TfNSW
39)	Within 20 business days after the completion of the action, and, in any event, before this approval expires, the approval holder must notify the department electronically of the date of completion of the action and provide completion data.	TfNSW	TfNSW
Changes to State Conditions			

Ref	Description	Owner	Evidence
40)	The approval holder must inform the department in writing within 2 business days of requesting any change to the NSW Approval conditions that may relate to protected matters.	TfNSW	TfNSW
41)	The approval holder must inform the department in writing within 5 business days of any approved changes made to the NSW Approval conditions that may relate to protected matters.	TfNSW	TfNSW

Revised Environmental Management Measures

Relevant REMMs are listed in Table B2 below. This includes reference to required outcomes, the timing of when the commitment applies, relevant documents or sections of the environmental assessment influencing the outcome and implementation.

Table B2: Revised Environmental Management Measures relevant to this MWMP

Outcome	REMM Ref #	Commitment	Responsibility		Timing	MWMP reference
Conflict between marine construction works and other marine users (general)		T7	A Marine Works Management Plan (MWMP) will be prepared in consultation with the Port Authority NSW (including Harbour Master), Transport for NSW, and other relevant stakeholders. The plan will define exclusion zones, methods of marking the zones, clearance distances, mooring plans, communication protocol, emergency and incident response procedures, vessel movements, contact details of all parties and responsible persons, and transit routes. The MWMP will be consistent with the Biodiversity Management Plan.	McConnell Dowell	Pre-construction Construction	This MWMP
Conflict of water users and construction vessels (general)		T8	Maritime exclusion zones will be established to prevent unauthorised vessels entering the area. These zones will be clearly defined to communicate access for other water users and will be lit to account for the measures in National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds, and Migratory Shorebirds (Australian Government Department of the Environment and Energy, 2020).	McConnell Dowell	Pre-construction Construction	This MWMP
Swing moorings conflicting with construction boundary and operational swept ferry path		T9	Moorings that conflict with construction or the operational ferry swept path will be relocated outside of the construction boundary in accordance with Transport for NSW standard mooring relocation processes. Mooring relocation will be undertaken in consultation with Port Authority NSW and notify any affected stakeholders.	Transport for NSW	Pre-construction	This MWMP

Attachment B – Marine Spill Prevention and Response

Marine Spill Prevention and Response

PMC will employ the following mitigation measures and response protocol in order to manage spill prevention and response during all marine works:

- Weather forecasts will be checked regularly during construction. If flooding is forecast construction area will be appropriately secured.
- Fully stocked spill kits, Absorbent pads, granular absorbents and Booms will be available on site and on the barges.
- Install floating buoys and floating silt booms around construction zone. Visual observations of the silt curtain are required to be made at least twice each day. Results of observations are to be noted in a site notebook maintained specifically for the purpose.
- PMC site personnel have been trained in the use of the spill kits and will be called upon to contain any spill.
- Spill kits will be kept on each barge and in the temporary compound.
- Al personnel will be made aware of the location of the spill kits.
- Fuels, oils and chemicals will be stored in an appropriate cabinet or container with impervious flooring and sufficient capacity to contain 110% of the largest container stored within the bund. These containers will only be removed for a specific activity and then returned.
- Small work boats / barges carrying plant or machinery would be fitted with bunding around equipment to prevent accidental spills or leaks from entering the water.
- All equipment, materials and wastes transported between an off-site facility, and the work site will be secured to avoid spills during transportation
- The quantity held on the barge or deck will be the minimum required for efficient operations.
- Containers will not be left open and any required decanting and mixing of outboard fuel will occur over a suitably sized spill tray.
- Plant will be properly maintained and regularly inspected for fuel leaks.
- No vehicle or vessel wash down will occur on site.
- All material used to contain or clean up spills will be disposed of at the appropriate licenced disposal facility.
- If the environmental incident is beyond the scope of the emergency spill kit, Supervisor/Leading Hand is to contact Port of Authority of NSW Spill Response on 92964000 (24 hours).
- In an event of a spill during operation, the incident emergency plan will be implemented in accordance with Sydney Ports Corporation's response to shipping incidents and emergencies outlined in the 'NSW State Waters Marine Oil and Chemical Spill Contingency Plan' (Maritime, 2008).
- If a spill occurs, the client's representative will be notified as soon as practicable.

Fuelling

All refuelling onsite is to be conducted in accordance with the Refuelling Environmental Work Method Statement (EWMS), refer to Section 4.4.5 of the CEMP for a full list of required EWMS.

Attachment C – Emergency response procedure

The Emergency Response Plan is the pre-eminent plan for the response to emergencies. To support understanding of the MWMP, the following summary is included to cover the key points. Changes to the Emergency Response Plan will not necessitate a change to this Attachment, and operators will be required to use and consult the Emergency Response Plan.

In the event of a project emergency, the following steps need to be taken:

Injured Person (reference specific Emergency Procedure):

- Remove immediate danger and administer first aid by qualified person.
- Where medical treatment is required, contact a PMC Contact below who will arrange pick-up, transport and attended with the injured person.

In the event of a health emergency, or for emergency medical assistance during night works, call 000 or go straight to the Emergency Department at:

- *The Sutherland Hospital, Kingsway, Caringbah* (02) 9540 7111 for Emergencies at Kurnell Project Site
  or
- *St Georges Hospital, Gray St, Kogarah* (02) 9113 1111 for Emergencies at La Perouse Project Site

If following initial first aid, the injury is deemed by the onsite first aider to require further medical treatment and the injured person is to be transferred, then a contact below will arrange for transport to nearest emergency dept.

- For all serious injuries, call '**000**' and give clear location details and nature of injury.

Environmental Incident (reference Emergency Procedure – Environmental Spills on Land):

- Minor fuel spillages into the harbour are to be contained with the oil absorbent boom and pads in the oil spill kit.
- For **ALL** spills to water into the harbour, immediately contact:

  Port of Authority of NSW Spill Response on 02 9296 4000 (24 hours)

- Specify pollutant type and rage of discharge, time and location of spill, size of area impacted, names and contact numbers of involved personnel and nature of response actions underway.
- If the spill cannot be contained with the emergency spill kits available, advise PANSW of the situation and request that a Corporation Spill Response vessel attend and assist.
- Contact PMC contact below.
- If the environmental incident is significant, contact the HSE Manager, who will notify the EPA.
- Per G36 CL 4.14 The principal will be notified immediately of an environmental incident.

Fire (reference Emergency Procedure – Fire Emergency):

- Ensure personnel safety by evacuating work site to a safe distance.
- Assess if fire can be safely fought with onsite extinguishers.
- Select appropriate fire extinguisher for use.
- If necessary, contact **Emergency Services** on '**000**' and give clear location details and nature of fire.
- Contact PMC contact below.

Site Evacuation:

- Sound the alarm as one continual blast of the air horn, and verbal instructions as needed to initiate an evacuation of site.
- Project Supervisor, or designated person, are to ensure there is no one who has not yet evacuated, taking notice of persons who may have been working on floating plant.
- Project Supervisor, or designated person are to take the Visitors and Induction registers to meeting point, conduct head count, to ensure all persons are accounted for.
- Only return in teams of 2 to search for missing persons if safe to do so, else wait for emergency services.
- Ensure personnel evacuate to the specific assembly point at the **Foreshore Road Boat Ramp for Emergencies at La Perouse Project Site** & **Bonna Point (Kurnell Beach) Boat Ramp for Emergencies at Kurnell Project Site.**

Site Location:

Location: Botany Bay

Marine Access and Emergency Muster location: Foreshore Road Boat ramp for La Perouse Project Site & Bonna Point (Kurnell Beach) Boat Ramp for Kurnell Project Site

NOTE: If emergency develops within the Port, and the boat ramp cannot be reached safely, initiate Workboat Emergency Procedures to safest landing and evacuation point

Main PMC Contacts:

- Project Manager: Kenneth Sutton 0468 554 043
- Project Supervisor / Emergency Co-ordinator : Steve Courtenay 0419 552 216
- 1st Aid and Deputy Emergency Co-ordinator: *Nick Watt 0408 552 215*
- HSE Manager – Darren Strohmayer 0419 552 215

Notify MCD responsible person immediately and provide initial details. Carry out the Incident Report and Investigation as per with Incident Investigation & Reporting procedure and complete the Incident Report and submit within 24 hours.

In the case of any emergency the MCD representative is to contact the Principal immediately upon being notified of the incident.

Site Map & Muster Points

La Perouse Muster Point

La Perouse Muster Point

Attachment D – Vessel interaction procedure

Vessel interaction is when is when a ship or floating vessel comes too close to another ship or too close to the shore or riverbank. The risks from this phenomena are:

- If two ships are on a passing or overtaking situation in a river the squats of both vessels could be doubled when both amidships are directly in line.
- When they are directly in line each ship will develop an angle of heel and the smaller ship will be drawn bodily towards the larger vessel.
- Both ships could lose steerage efficiency and alter course without change in rudder helm.
- The smaller ship may suddenly veer off course and head into the adjacent river bank.
- The smaller ship could veer into the side of the larger ship or worse still be drawn across the bows of the larger vessel, bowled over and capsized.

Many of the procedures will be detailed within each individual vessel Safety Management System. The following is a summary of what will be considered and the general procedures that will be followed.

All tug and barge operations will comply with all relevant controls in the International Regulations for the Prevention of Collisions at Sea and the practice of good seamanship.

The following sections detail the approach to avoiding collissions, but there is strong crossover between this section and Attachment F.

Planning

All movements will be planned. There will be generally two approaches:

- Movements within the marine construction zones.
- Movements that involvement sailing outside of the marine construction zones. This may include transits between the La Perouse and Kurnell areas, between one of the sites and logistic supply points, the emergency anchorage point, or another location.

Movements within the Construction Zones

Movements within the construction zones will be controlled by the project team – principally the marine subcontractor's Project Manager and Supervisors. These movements will be over short distances and will remain solely within the constraints of the areas identified within Figure 4- and Figure 4-. Interactions within this zone can be controlled as only construction vessels should be within area – this will be checked prior to movements commence. Furthermore, it is unlikely that anymore than one vessel group (i.e. a tug moving a barge) will be moving at any time so the chance for vessel-vessel interactions are reduced. Nonetheless, there is still a chance for mobile to static vessel interactions, as well as vessel to shore/seabed interactions and so movements will be planned with a set identification of the start, finish and transit route, and taking into account factors such as the movement duration, mooring, weather conditions, bathymetry, tidal conditions, vessel sizes and vessel draughts.

Movements that Involve Transiting Outside the Construction Zones

Movements outside of the marine construction zones will be controlled under guidance from VTS.

These movements have an increased chance for moving vessel-to-vessel interactions, as well as the interactions discussed above. Similar approaches will be undertaken: movements will be planned with a set identification of the start, finish and transit route, and taking into account factors such as the movement duration, mooring, weather conditions, bathymetry, tidal conditions, vessel sizes and vessel draughts.

A vessel movement plan will be developed by the tug master, which will be communicated to VTS prior to departure.

For movements between Botany Bay and the logistic supply points in Sydney Harbour, and tow plan and inspection will be prepared in accordance with TfNSW and insurance requirements.

Movement will be planned around known major shipping movements in vicinity of the route.

Attachment E – Vessel Traffic Management Plan

Introduction

The following plan details how the movement of vessels will be managed to ensure public and workforce safety, and to comply with the local requirements.

This Attachment should be read in conjunction with the broader MWMP.

Vessel Particulars

The following vessels are proposed for the Kamay Project:

PM East (Flat Deck Cargo Barge)	
LOA: 21.4m	
Breadth: 7.32m	
Depth: 3.65m	
Survey: AMSA 2A	
MMSI number: TBC	
Deck capacity: 12 t/m²	
Equipment on Board: • Manitowoc 999 250ton Crawler Crane • Piling Leader • 5 ton Maeda Crawler • Pile Racks • Crew Ablution	
Mooring System: • 4 x 5t Winches • 2 Spud System	
Bollard Pull: N/A	
4 crew	

Sea Lift 1 (Self Elevating Platform)	
LOA: 18m	
Breadth: 9.3m	
Depth: 1.6m	
Survey: AMSA 2D/2C	
MMSI number: TBC	
Deck capacity: 80t	
Equipment on Board: • SR 35 Drill Rig • Crew Ablution • 5 ton Maeda Crawler	
Mooring System: • 4 leg system	
Bollard Pull: N/A	
2 x barge crew 3 x drill rig operator	

BP1 (Self Propelled Dumb Barge)	
LOA: 21.3m	
Breadth: 7.3m	
Depth: 1.83m	
Survey: AMSA 2D/2E	
MMSI number: TBC	
Deck capacity: 148	
Equipment on Board: • Palfinger Hiab PK41002 EH E • Pile Racks • Materials	
Mooring System: • Bollards 6x double and 2x single	
Bollard Pull: N/A	
3 x barge crew	

Leaders Creek (Tug)	
LOA: 21.4m	
Breadth: 7.32m	
Depth: 3.8m	
Survey: AMSA 2A	
MMSI number: 503420000	
Deck capacity: 148	
Equipment on Board: N/A	
Mooring System: • Bollards 6x double and 2x single	
Bollard Pull: 16.6t	
2 x crew sheltered waters 3 x crew sheltered waters	

Tow Arrangements

Tugs will be used to move the unpowered barges.

The utilised tow arrangements will be at the discretion of the Tug Master's discretion, informed by authority requirements and if applicable, tow certificate requirements. Considerations in developing the tow arrangement include:

- Weather conditions including tidal flow and wind
- The barge being moved and its manoeuvring characteristics
- The distance of the move
- The barge's start and finish mooring arrangements
- Sight lines
- Path and approach angle for collection and release at the mooring site.

Generally, three arrangements will be utilised as shown in Figure 8-1, Figure 8-2 and Figure 8-3.

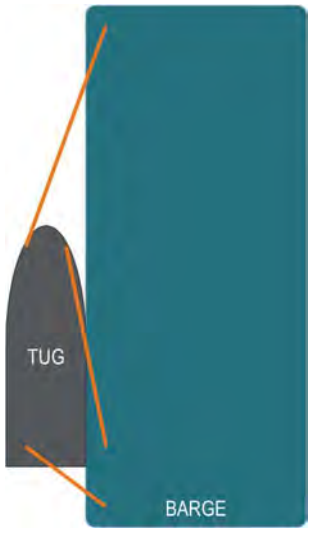


Figure 8-1, Hipped Arrangement

Figure 8-2, Stern Arrangement

Figure 8-3, Towed Arrangement

The supply barge BP1 will also be moved within the marine construction zones using a propulsion module.

Mooring Arrangements

Mooring arrangements of the crewed barges will be according to the individual vessel Safety management Systems. The crane barge will use a combination of a four-point anchored mooring system, and two spuds. The Jack Up Barge will utilise its powered legs. Where the proposed

mooring arrangement deviates from the standard mooring arrangements, a mooring analysis and design will be prepared.

Prepositioned anchors may be utilised by working vessels to reduce impact on the seabed where appropriate.

Supply vessels will moor against a working vessel, and use a combination of springer and bow/stern lines in accordance with standard marine processes and the judgement of the Master of the working vessel.

In the event of inclement weather or other unsafe working conditions, the PMC Site Supervisor may direct that works shall cease and construction vessels be secured on dedicated moorings.

Any vessel connected with the project shall follow the directions of the Harbour Master at all times.

Bathymetry

A detailed bathymetry will be developed through the hydrographic survey that is noted within the MWMP. Each vessel will have a required under-keel clearance – typically 0.5m but dependent on the nature of the seabed. The bathymetry and under-keel clearance will combine to inform where the barges are able to access, at varying tide levels.

Communication

As per Section 6.8 of the MWMP.

Transit Routes

The path of travel for construction barges, vessels, and the like from the marine contractor's shipyard in Rozelle Bay to the MWA is shown in Figure 4-.

In the event of inclement weather or other unsafe working conditions, the PMC Site Supervisor may direct that works shall cease and construction vessels be secured on dedicated moorings.

Any vessel connected with the project shall follow the directions of the Harbour Master at all times.

Initial Mobilisation

All barges will be initially mobilised from the Polaris Marine Constructions yard at Rozelle. If required, the barges will load on materials at Glebe Island before continuing onto the project site. Initial mobilisation towage plan can be seen in Figure 4-.

Transiting Botany Bay

As they are 2 constructions site La Perouse & Kurnell there will be times during construction where marine plant will need to transverse Botany Bay. All crossings will comply with Section 6.1 of this plan. It is envisaged that Jack Up barge, PM East barge, BP1 barge will need to transverse Botany Bay 6 times each. Under tow the barges will transverse Botany Bay as per route in Figure 4-. Work Punts will transverse Botany Bay daily transferring personnel to work activities as required.

Initial Access to Floating Plant

Until such a time when the temporary jetties are installed at both La Perouse and Kurnell marine personnel will access floating plant via work punt each day. As shown in Figure 4- work punts will be launched from Foreshore Rd boat ramp for access to La Perouse and Kurnell Beach for the Kurnell worksite. The punt trailer will be stored at the relevant landside construction site when not in use.

Operating Parameters

The area to the West of Bare Island and Inscription Point where transfer between Kurnell and La Perouse Wharves will occur is classified as Class D - Partially Smooth Waters. The sea tow plans and lashing arrangements for the barges and tugs on site have been developed for Open Water

conditions in excess of the maximum conditions expected in this area, therefore there is no restriction on transit between the wharves provided sufficient lashing is utilised for securing the cargo. The Master will assess the specific conditions on the day of the tow whilst developing the tow plan and consult with VTS prior to commencing the move.

Contingency Plan for loss of propulsion while crossing the shipping channel

In the event of loss of propulsion or some other emergency preventing the vessel from continuing while crossing the channel during a single tug and barge towage operation, the following procedure will be followed:

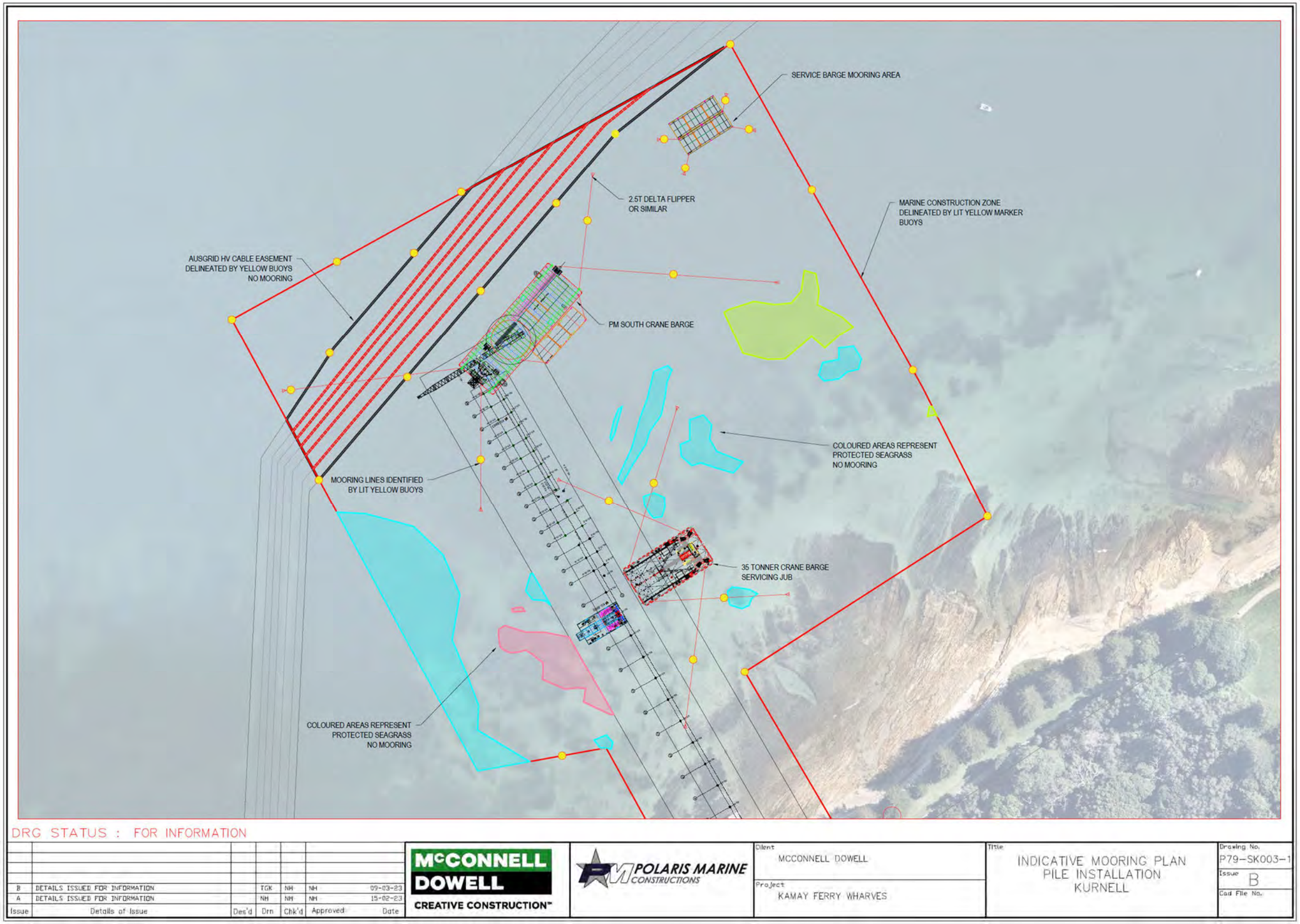
- Emergency procedure to be executed in accordance with the vessel Safety Management System, copied below for loss of steering (procedure for loss of propulsion will be similar):

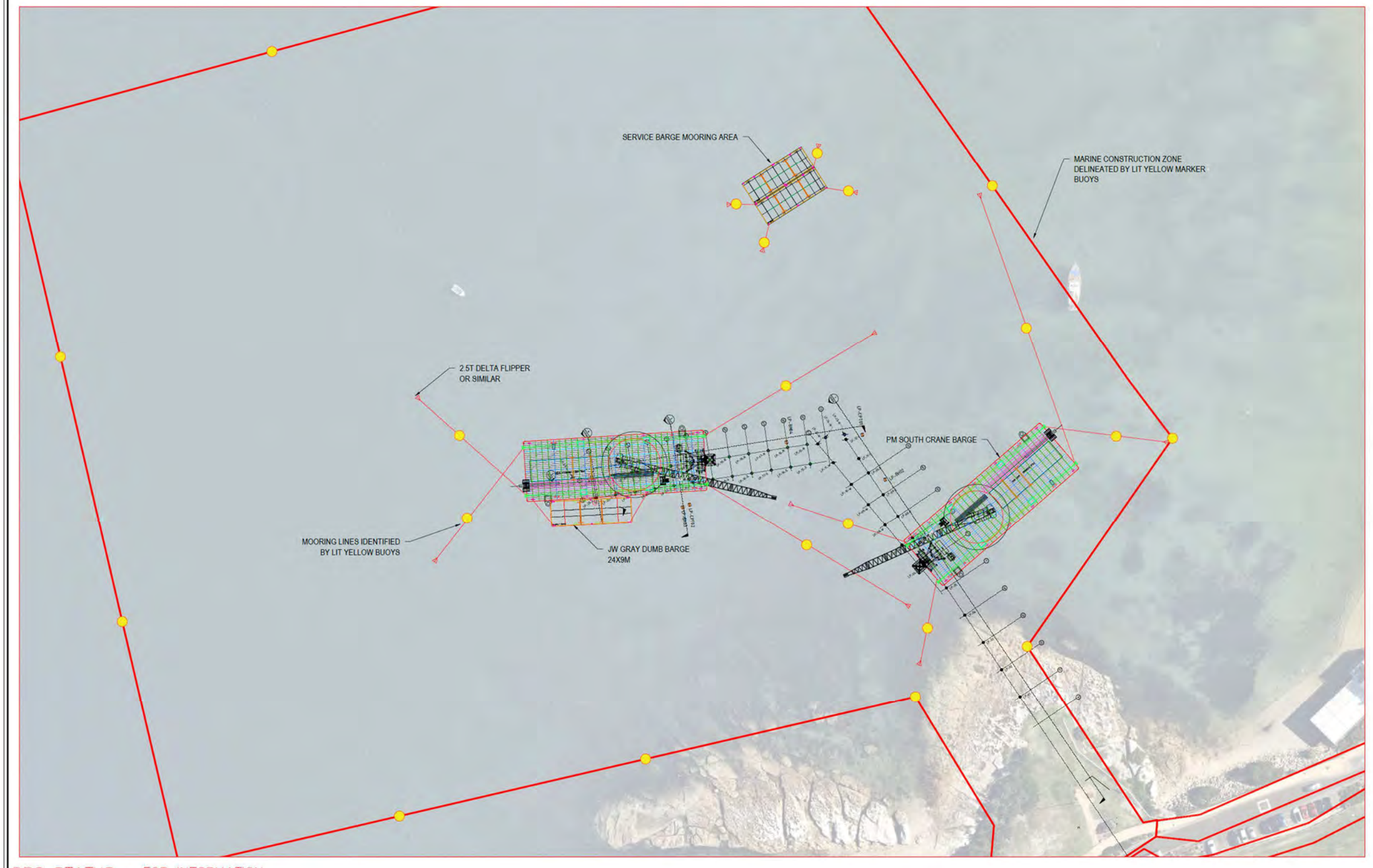
LOSS OF STEERING		
MASTER	**ENGINEER**	**CREW**
▪ Put the vessel into neutral. ▪ Assess the situation. ▪ Where required order the anchor to be dropped. ▪ Work with the engineer to correct the problem. ▪ Where emergency steering system fails give the order to raise the "Require assistance" flag (Victor). ▪ Where the fault cannot be fixed call head office and ask for assistance. ▪ If out at sea call VHF 16 for assistance. ▪ Record incident. **Immediate Assistance** **Sydney local VTS (VHF 13)** **Offshore VTS (VHF 16)** **Emergency services (000)**	▪ Check to find the fault. ▪ Inform the Master of the situation. ▪ Implement emergency steering system procedures. ▪ Repair steering where possible.	▪ Upon command from the Master drop the anchor. ▪ Assist the Engineer to implement emergency steering system procedures. ▪ Upon command from the Master raise the "Require assistance" flag. ▪ Keep a watch for other vessels.

- In addition to contacting VTS, the master shall contact the site supervisor at the Kurnell and La Perouse project sites to request immediate assistance. If safe to do-so, PMC's BP1 self-propelled work barge and work boats will be used to move the vessel and barge to a safe location clear of the shipping channel.

- Assistance may also be requested from local contractor Ausbarge who operate out of Kurnell should additional assistance be required.

Attachment F – Indicative mooring and anchoring plans





DRG STATUS : FOR INFORMATION

Issue	Details of Issue	Des'd	Drn	Chk'd	Approved	Date
B	DETAILS ISSUED FOR INFORMATION		TGK	NH	NH	09-03-23
A	DETAILS ISSUED FOR INFORMATION		NH	NH	NH	15-02-23

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

POLARIS MARINE CONSTRUCTIONS

Client: MCCONNELL DOWELL

Project: KAMAY FERRY WHARVES

Title: INDICATIVE MOORING PLAN
PILE INSTALLATION
LA PEROUSE

Drawing No.: P79-SK003-2

Issue: B

Cad File No.:

Attachment G – Plant specifications

PM EAST

Flat Deck
Cargo Barge

MAIN PARTICULARS

Design	Flat Deck Cargo Barge
Year Built	2010
Flag	Australia
Survey	AMSA 2A
Class	ABS A1
GRT	914t
Max DWT	2322t
Length	54.86m
Moulded Breadth	18.28m
Moulded Depth	3.65m
Draft	0.7m
Deck Capacity	12t / m2

PERFORMANCE

Max Speed	N/A
Bollard Pull	N/A
Fuel Consumption	N/A

CAPACITIES

Fuel	N/A
Portable Water	N/A

DECK EQUIPMENT

Mooring System	4 x 5t Winches
Anchors	4 x 2.5t
Drum Capacity	N/A
Tugger Winch	N/A
Capstan	N/A
Stern Roller	N/A

AUXILIARY

Generator	N/A
Supply System	N/A

PROPULSION & MACHINERY

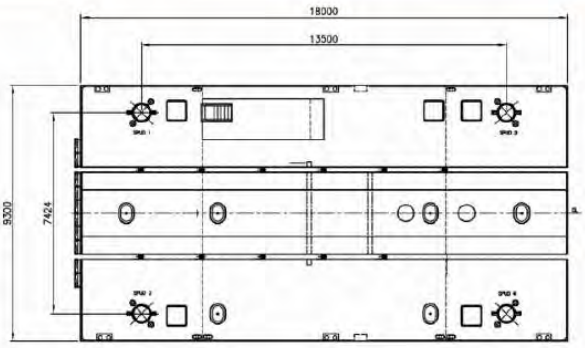
Main Engines	N/A
Power Rating	N/A
Gear Boxes	N/A
Propellers	N/A
Steering Gear	N/A

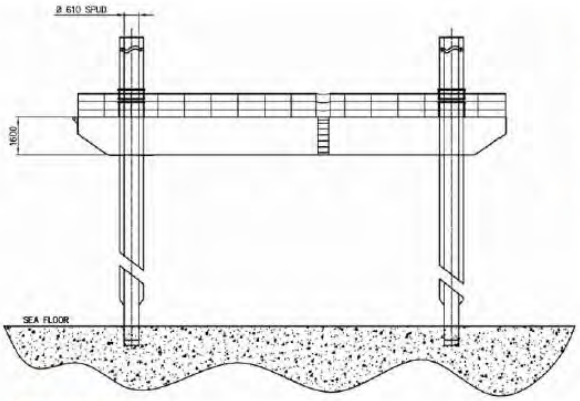
ACCOMMODATION

Berths	N/A
Air-conditioning	N/A

JACK-UP BARGE SELF ELEVATING PLATFORM

SEA LIFT 1





General

Type	Jack Up Barge
Operator	Australian Barge Hire Pty Ltd
Survey	Australian Maritime Safety Authority
Classification	AMSA 2D and 2C
Built	Singapore
Construction	Steel
Road Transport	7 Extendable Semi Trailers
Working Depth	Up to 22 metres

Main Dimensions

Length Overall	18.00	metres
Beam	9.30	metres
Depth	1.60	metres
Draft	0.80	metres
Displacement	100	tonnes (unladen)

Jacking System

Jacking system	Electronic over hydraulic	
Jacking Rate	13	metres per hour
Load Lift Capacity	80	tonnes
Spud Length	12, 18, 30	metres
Power Unit	100	kW

Features

- 600mm Diameter Moon Pool
- 600 mm Diameter Rod Rack
- Onboard Site Office
- Remote control gangway access
- Remote controlled jacking operation
- Certified man riding crane
- Environmental spill containment equipment
- Night lights

Operation

"Sea Lift 1" employs electric over hydraulic controls for all barge operations. "Sea Lift 1" in standard configuration has four 12,18 or 30 m spuds, one in each corner. A central generator provides power to two electric hydraulic pumps which provide hydraulic pressure for barge operations. A mobile control panel, enables the operator to easily sight all operations.

Electronic interlocks and sensors provide the operator with status indications at the control panel and prevent inadvertent operation at the spud control. All of the hydraulic mechanisms and control systems to operate "Sea Lift 1" are located below deck to minimise the risk of both environmental and mechanical damage.

POLARIS MARINE CONSTRUCTIONS

BP1 & 2

21m Flat Top Dumb Barge's

www.polarismarine.com.au

MAIN PARTICULARS

Design	Dumb Barge
Year Built	1997
Flag	Australia
Survey	AMSA 2E
Class	N/A
GRT	48t
Max DWT	148t
Length	21.3m
Moulded Breadth	7.3m
Moulded Depth	1.83
Draft (Lightship)	0.3m
Deck Capacity	148t Cargo
Keel Length	17.45m
Free Deck Area	155m²
Draft (Max Capacity)	1.25m

AUXILIARY

Generator	N/A
Supply System	N/A

DECK EQUIPMENT

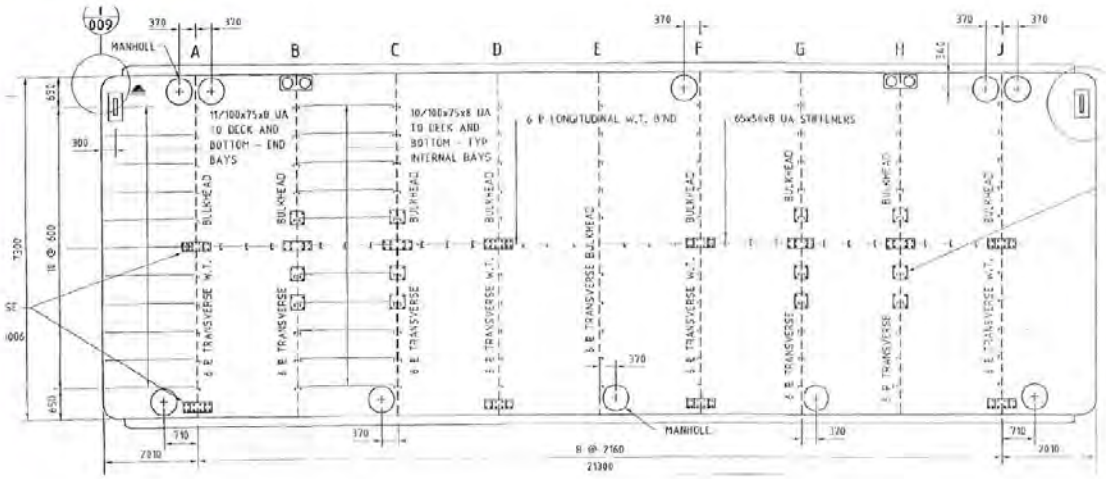
Bollards	6x double and 2x single
Winches	N/A
Blocks	N/A
Site Shed	N/A
Access Ladders	1x diver recovery

AVAILABLE MODIFICATIONS

A-Frame

Piling Rig

Drill Rig



Leaders Creek

Utility Tug

www.polarismarine.com.au

MAIN PARTICULARS

Design	Utility Tug
Year Built	1982
Flag	Australia
Survey	AMSA 2A
Class	ABS 1A
GRT	134t
Max DWT	N/A
Length	21.4m
Moulded Breadth	7.32m
Moulded Depth	3.8m
Draft	3.0m
Deck Capacity	5T / m3

PERFORMANCE

Max Speed	10kt
Bollard Pull	16.6t
Fuel Consumption	150L p/h

CAPACITIES

Fuel	78t
Portable Water	9t / Desalinator

DECK EQUIPMENT

Towing Hook	25t
Towing Winch	10t
Drum Capacity	450m x 32mm
Tugger Winch	20t
Capstan	Yes
Stern Roller	Yes
A Frame	Yes

AUXILIARY

Generator	2 x 80 KVA
Supply System	415/240/24V

PROPULSION & MACHINERY

Main Engines	CAT 2 x 3412
Power Rating	2 x 520Hp
Gear Boxes	Twin Disc 520 6.11:1
Propellers	Twin Screw
Steering Gear	Kort Nozzles with Rudders

ACCOMMODATION

Berths	10 Persons
Air-conditioning	Yes

Attachment I – Communication plan (with VTS and other stakeholders)

Requirements of the Port Operating Protocol

Liaison with the Key Agencies and the Harbour Master

Role	Role and Contact	
Regional Harbour Master	Harbour Master Mr Myron Fernandes Phone: 02 9296 4999 Mobile: 0427 424 917	The Harbour Master's Representative is to review and approve or reject the Marine Works Management Plan (MWMP). Communication with the Harbour Master is critical to the ongoing safety and efficient movement of vessels within the Marine Works Areas (MWA).
NSW Maritime	Manager Marine Operations at Port Botany/Port Hacking Mr Andy Robertson Phone: 0417 243 456	Allocation of temporary and weather event mooring. General deconfliction and coordination.

Polaris Marine Constructions operates regularly across Sydney Harbour and Botany Bay and our construction staff shall make regular contact with VTS and the Harbour Master regarding vessel movements and communicating construction activities. Working in Botany Bay, PMC will extend these practices and direct communication to Botany Bay VTS for the construction works. Prior to all major movements from PMC Rozelle base to Botany Bay, contact will be made to confirm tow path and timings.

24hr Emergency Contact

The 24hr contact for the project for Polaris Marine Constructions shall be:

1. Steve Courtenay (Site Supervisor **Primary Contact**) [redacted]
2. Nick Watt (Leading Hand) [redacted]
3. Dylan Short (Leading Hand) [redacted]
4. Kenneth Sutton (Project Manager) [redacted]

Requirements of the Harbour Master's Direction

Vessel Traffic Service

The Harbour Master directs that all vessels of LOA 30m or over are required to participate in the Vessel Traffic Service (VTS). Also applicable are vessels towing or pushing a tow, where the combined length of the tug and tow are over 30m therefore including the construction barges and the proposed tugs. All participating construction barges and tugs for this project shall seek clearance to move from Port Botany/Sydney harbour VTS 15minutes before moving from berths and project sites within the VTS area.

VTS Contact Information

- Call Sign: Sydney VTS
- Phone: 02 9296 4999
- VHF: Sydney Harbour VHF Channel 13
  Botany Bay VHF Channel 12

Lights to be exhibited on lighters or barges

All construction barges when moored overnight will exhibit all round white lights at the outer edge of both fore and after ends of the barge, to be visible at a distance of at least one kilometre.

The tug, crane barge and jack up barge will be fitted with AIS.

Mishaps to lighters or barges

The Project shall report to Port Authority NSW all circumstances where construction vessels have sunk, capsized or been-wholly or partially submerged, or been involved in any collision or incident. Notification to the Harbour Mater as soon as is practicable.

Recommended tug usage

Exempt Masters and Pilots may vary the combination or number of tugs used for any barge movements, depending on experience, prevailing conditions or special circumstances that may apply in consultation with the Duty Harbour Master.

Monitoring of VTS

Barge and vessels masters shall always monitor VTS vessel movements are outside of the marine works area.

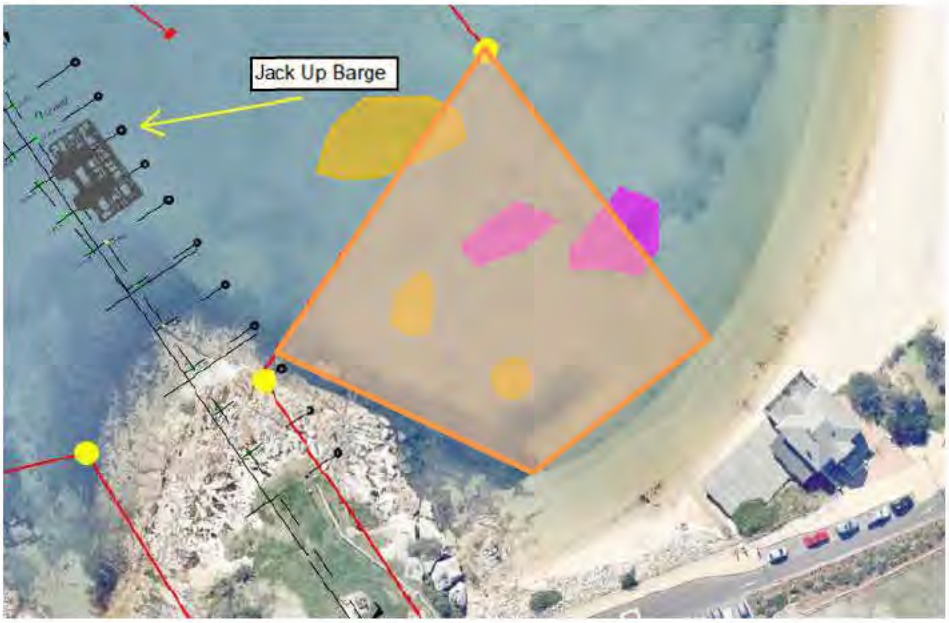
Interaction with recreational Users

Project personnel shall navigate with due diligence when traversing Botany Bay from one project site to another in relation to communication with recreational users of Botany Bay.

Where a recreational vessel has entered the marine works area the Site Supervisor will attempt to make radio contact with the recreational vessel on VHS channel 09 and/or 16 and instruct the vessel to leave the marine works zone.

Where no radio contact is made the Site Supervisor shall dispatch a work punt and instruct the vessel verbally to leave the marine works area.

Particular focus will be applied to the La Perouse Beach where there is the close proximity of the heavy recreational vessel usage area. The area will be clearly demarcated with a line of buoys, and the Project will request the ability to erect signs on the beach highlighting the risks and also will discuss the enaction of a temporary no anchoring zone in the area between the construction area and the beach (see below in orange).



Attachment J – Harbour Master Acceptance

[redacted]

Hi Isaac,

Thanks for providing the revisions below. Based on their inclusion, Port Authority accept the Marine Works Management Plan and we look forward to a successful project.

Regards,

[redacted]

Hi Chris please note responses below that have been incorporated into the revised MWMP attached for reference. If I can please request your review and acceptance of the Marine Works Management Plan for the Project

- 4.12.3 - How many tug and barge movements are expected between the two project sites? Daily or weekly?

The number of movements will fluctuate throughout the course of the Project with a minimum weekly movement between the respective sites however will occur up to a daily basis during portions of the project ie for spoil removal from the socketing activities at Kurnell needing to be offloaded at the La Perouse site.

- Attachment E - Please include operating parameters (wind/swell) for tug and barge movements between project sites similar to section 4.13.2. Importantly, what wave height and direction will cause a tow operation to be abandoned? Our bombora wave buoy will be able to provide real time information for this.
- Attachment E – Please include a contingency plan for loss of propulsion from a single tug and barge operation while crossing the channel.

Operating Parameters

The area to the West of Bare Island and Inscription Point where transfer between Kurnell and La Perouse Wharves will occur is classified as Class D - Partially Smooth Waters. The sea tow plans and lashing arrangements for the barges and tugs on site have been developed for Open Water conditions in excess of

the maximum conditions expected in this area, therefore there is no restriction on transit between the wharves provided sufficient lashing is utilised for securing the cargo. The Master will assess the specific conditions on the day of the tow whilst developing the tow plan, and consult with VTS prior to commencing the move.

Contingency Plan for loss of propulsion while crossing the shipping channel

In the event of loss of propulsion or some other emergency preventing the vessel from continuing while crossing the channel during a single tug and barge towage operation, the following procedure will be followed:

- Emergency procedure to be executed in accordance with the vessel Safety Management System, copied below for loss of steering (procedure for loss of propulsion will be similar):

LOSS OF STEERING		
MASTER	**ENGINEER**	**CREW**
• Put the vessel into neutral. • Assess the situation. • Where required order the anchor to be dropped. • Work with the engineer to correct the problem. • Where emergency steering system fails give the order to raise the "Require assistance" flag (Victor). • Where the fault cannot be fixed call head office and ask for assistance. • If out at sea call VHF 16 for assistance. • Record incident. **Immediate Assistance** **Sydney local VTS (VHF 13)** **Offshore VTS (VHF 16)** **Emergency services (000)**	• Check to find the fault. • Inform the Master of the situation. • Implement emergency steering system procedures. • Repair steering where possible.	• Upon command from the Master drop the anchor. • Assist the Engineer to implement emergency steering system procedures. • Upon command from the Master raise the "Require assistance" flag. • Keep a watch for other vessels.

- In addition to contacting VTS, the master shall contact the site supervisor at the Kurnell and La Perouse project sites to request immediate assistance. If safe to do-so, PMC's BP1 self-propelled work barge and work boats will be used to move the vessel and barge to a safe location clear of the shipping channel.

- Assistance may also be requested from local contractor Ausbarge who operate out of Kurnell.

- Attachment I – Please replace Joakim Trygg Mansson with Myron Fernandes: Harbour Master 0427 424 917 Updated
- Attachment I – **Mishaps to lighters or barges**, replace " within 24 hours of the occurrence" with "as soon as practicable" Updated

Thanks,

Isaac Harris

Senior Project Engineer

[redacted]

[redacted]

Hi Isaac,

Thanks for providing the MWMP. A couple of things that we would like clarified and included please:

- 4.12.3 - How many tug and barge movements are expected between the two project sites? Daily or weekly?
- Attachment E - Please include operating parameters (wind/swell) for tug and barge movements between project sites similar to section 4.13.2. Importantly, what wave height and direction will cause a tow operation to be abandoned? Our bombora wave buoy will be able to provide real time information for this.
- Attachment E – Please include a contingency plan for loss of propulsion from a single tug and barge operation while crossing the channel.
- Attachment I – Please replace Joakim Trygg Mansson with Myron Fernandes: Harbour Master 0427 424 917
- Attachment I – **Mishaps to lighters or barges**, replace " within 24 hours of the occurrence" with "as soon as practicable"

Please let me know if you would like me to clarify anything.

Regards,

[redacted]

We acknowledge and pay our respect to the traditional custodians of the lands and waters of NSW and all Aboriginal Elders, past, present and emerging.

[redacted]

Hi Chris

Just touching base on this one if you had had a chance to review and if you had any queries relating to the methodology or details provided as yet.

Thanks,

Isaac Harris

Senior Project Engineer

[redacted]

[redacted]

[redacted]

Subject: RE: Kamay Ferry Wharves Introductory

Hi Chris

Apologies for the delay in responding to the below I was of the understanding it would follow a different mechanism for the consultation and close out of the Marine Works Management Plan

From the session we had last year the below comments for what you wish to see within the plan have been extracted and added to the compliance table on Pg 2-3 of the Plan (extracted below) for ease of reference on where to find the relevant information.

Can I please request that you take a look at the respective sections requested or the plan as a whole and provide either comments or acceptance of the plan in order to finalise for issuing AFC. Note the attached PDF is a tracked changes version once approved by TfNSW will be issued AFC.

Regional Harbour Master Requirements	
Roles and Responsibilities	Sections 4.4, 4.5 and 6.2
Timing and estimated program of works	Figure 4-3
Works Methodology	Sections 4.1, 4.2, 4.3, 4.6 and 4.7
Location of Works (associated works/exclusion zone on a nautical chart and/or provided separately in GDA 2020)	Section 4.7 and Figure 4.14 and 4.15
Communication plan (with VTS and other stakeholders)	Attachment I
Transit plan (for regular and also sensitive movements)	Figure 6-1 and Attachment E
Security plan (monitoring and response capability – also overnight)	Section 4.16
Environmental protection	Sections 5, Attachment A and Attachment B
Consultation with stakeholders	Section 3

Thanks,

Isaac Harris

Senior Project Engineer

[redacted]

[redacted]

Hi All,

Please see below list of items we are typically interested to see in a MWMP.

- Roles and Responsibilities
- Timing and estimated program of works
- Works Methodology
- Location of Works (associated works/exclusion zone on a nautical chart and/or provided separately in GDA 2020)
- Communication plan (with VTS and other stakeholders)
- Transit plan (for regular and also sensitive movements)
- Security plan (monitoring and response capability – also overnight)
- Environmental protection
- Consultation with stakeholders

Please let me know if you have any questions.

Thanks,

[redacted]

[redacted]

Hi Isaac,

Thanks for your email.

Joakim and I would be happy to attend a Teams meeting tomorrow around 1100 if that suits? Tony has also reached out to discuss the project so it might be worth doing it together in one session.

Regards,

Chris Imrie | Shipping Support Officer

5

[redacted]

[redacted]

Hi Joakim

I'm reaching out on behalf of McConnell Dowell regarding the Kamay Ferry Wharves Project. I Have been provided your contact by Tony Matthews at Transport for NSW as a point of contact in order to kickoff a dialogue between ourselves and you relating to the project.

I'm hoping to set an initial teams session on Wednesday 7th any time that suits yourself as an introductory session to introduce our team and yourself and run though some of our initial staging plans at a high level and to run though a draft of our Marine works Management Plan that we are currently working on to receive some feedback. Post the meeting I would look to incorporate any initial comments relating to the Marine Management plan and look to send across to yourself for a detailed review to receive any comments such that we may progress the plan to a point that we can submit to Transport for NSW for final approval.

Feel free to give me a call to discuss.

Thanks,

Isaac Harris

Senior Project Engineer

[redacted]

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McConnell Dowell acknowledges the Traditional Aboriginal Custodians of the land and waterways on Country throughout Australia and pays respect to Elders past and present and to the ongoing living culture of Aboriginal & Torres Strait Islander peoples.

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