

Belmont Desalination Plant

Offshore Construction Works Management Plan

Document Number: CS1135-WT-BEL-EN-PLN-0007 Revision Number: 2 Issue Date: 31/10/2024



Revisions and Distribution

Revisions

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

Rev	Date	Prepared By [Name]	[Signature]	Reviewed By [Name]	[Signature]	Approved By [Name]	[Signature]	Remarks
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В	12/08/2024	S Grunsell A Cohen	SG AC	A Grant J Nisbet	AG JN	S MacNish	SM	Update post modification
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Terms and Abbreviations

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Term/Abbreviation	Definition/Expanded text
ABL	Assessment Background Level – A single-number figure used to characterise the background noise levels from a single day of a noise survey. ABL is derived from the measured noise levels for the day, evening, or night-time period of a single day of background measurements. The ABL is calculated to be the tenth percentile of the background LA90 noise levels, i.e. the measured background noise is above the ABL 90% of the time.
ABN	Airborne noise
Ambient Noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
AMSA	The Australian Maritime Safety Authority
AMS	Activity Method Statements
AQMP	Air Quality Management Sub-Plan
AQIS	Australian Quarantine and Inspection Service
Attenuation	The reduction in the level of sound or vibration.
At-property acoustic treatment	Includes courtyard walls and building treatments. Building treatments may include but are not limited to ventilation, acoustic blinds/curtains, glazing, window and door seals, sealing of vents or underfloor areas, shutters and secondary glazing.
AVTG	Assessing Vibration – A Technical Guideline
CASA	Civil Aviation Safety Authority
CCS	Community Communications Strategy
CEMP	Construction Environmental Management Plan
Cetacean	means a member of the sub-order Mysticeti or Odontoceti of the Order Cetacea, and includes: (a) a part of such a member; and (b) any animal reproductive material of such a member, or any part of such reproductive material; and (c) any product derived from such a member; and (d) the whole or part of the dead body of such a member; and (e) any product derived from the dead body, or part of the dead body, of such a member.
CNVMP	Construction Noise and Vibration Management Plan
СМР	Construction Monitoring Program
СоА	Conditions of Approval
Construction	Includes all activities required to construct the SSI as defined in the Project Description described in the documents listed in Condition A1, including commissioning trials of equipment and temporary use of any part of the SSI but excludes Low Impact Work which is carried out or completed prior to approval of the CEMP and works approved under a Site Establishment Management Plan.
Consultation	To provide information and actively engage with and obtain and consider feedback from stakeholders during development of post approval documents. How the feedback has been considered and whether any changes have been made in response to this feedback is then documented and communicated back to stakeholders. Consultation should not be limited to one-way notification about the project.
Continuously	Includes any period during which there is less than one hour between ceasing and recommencing any of the work.
D&C	Design and Construct
dB(A)	Decibels using the A-weighted scale which is accepted as being representative of the frequency response of the human ear.
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DECCW	Department of Environment and Climate Change and Water
DOI	Direct Ocean Intake



Term/Abbreviation	Definition/Expanded text
DPHI	Former Department of Planning, Industry and Environment, now Department of Planning, Housing and Infrastructure
DPI Fisheries	Department of Primary Industries Fisheries
EIS	Environmental Impact Statement
EMP	Emergency Management Plan
EMS	Environmental Management System
Environmental Assessment Documentation	Hunter Water Corporation Belmont Desalination Plant Environmental Impact Statement, prepared by GHD dated 2019. Hunter Water Corporation Belmont Desalination Plant Amendment Report and Submissions Report prepared by GHD dated 2020.
	Hunter Water Corporation Belmont Desalination Plant Modification Report Environmental Impact Statement prepared by Jacobs dated 2024.
	Hunter Water Corporation Belmont Desalination Plant Modification Report – Submissions Report prepared by Jacobs dated 2024 Hunter Water Corporation Belmont Desalination Plant Modification Report – Response to
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.
Environmental objective	Defined by AS/NZS ISO 14001:2015 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve.
Environmental target	Defined by AS/NZS ISO 14001:2015 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environment Protection Authority
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
EPL	Environment Protection Licence
ER	Environmental Representative
Feasible and reasonable	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Feasible relates to engineering considerations and what is practical to build. Reasonable relates to the application of judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community views and nature and extent of potential improvements.
FM Act	Fauna Management Act 1994
GBN	Ground-borne noise
Highly Noise Affected	As defined in the Interim Construction Noise Guideline (DECC, 2009)
Highly noise intensive works/ particularly annoying	 Work which is defined as annoying under the ICNG including: use of power saws, such as used for cutting timber, rail lines, masonry, road pavement or steel work. (a) grinding metal, concrete or masonry; (b) rock drilling; (c) line drilling; (d) vibratory rolling; (e) bitumen milling or profiling; (f) jackhammering, rock hammering or rock breaking; and (g) impact piling
	Note: when modelled, these activities/plant and equipment will incur a 5dB(A) penalty

Term/Abbreviation	Definition/Expanded text
	Holicoptor Transportation Plan
	International Maritime Organisation
INP	Industrial Noise Policy
ISCA	Infrastructure Sustainability Council of Australia
JUB	Jack-Up Barge
.IH	John Holland
KFH	Key Fish Habitat
	Lake Macquarie City Council
IGA	
MARPOL	International Convention for the Prevention of Pollution from Ships
MFO	Marine Fauna Observer
Micro-TBM	Micro-Tunnel Boring Machine
NCG	Noise Criteria Guideline
NMG	Noise Mitigation Guideline
NML	Noise Management Level as defined in the Interim Construction Noise Guideline (DECC. 2009)
NPfl	Noise Policy for Industry
NVA	Noise and Vibration Assessment
NVIS	Noise and Vibration Impact Statement
NVMP	Noise and Vibration Management Sub-Plan
ONR	Operational Noise Review
OOHW	Out of Hours Works
OSCWMP	Offshore Construction Works Management Plan
POEO Act	Protection of the Environment Operations Act 1997
RCC	Rescue Coordination Centre
REMM	Revised Environmental Management Measures
RO	Reverse Osmosis
SOLAS	Safety of Life at Sea
Sensitive land use(s)	Includes residences, educational institutions (including preschools, schools, universities, TAFE colleges), health care facilities (including nursing homes, hospitals), religious facilities (including churches), childcare centres, passive recreation areas (including outdoor grounds used for teaching). Receivers that may be considered sensitive include commercial premises (including film and television studios, research facilities, entertainment spaces, temporary accommodation such as caravan parks and camping grounds, restaurants, office premises, and retail spaces), and industrial premises as identified by the Planning Secretary.
SEPP	State Environmental Planning Policy
Submissions Report	The Proponent's response to issues raised in the submission received in relation to the application for approval of the SSI under the EP&A Act.
SSI	Stata Significant Infrastructure
ТВМ	Tunnel Boring Machine
Transport	Transport for New South Wales, or TfNSW

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6	Term/Abbreviation	Definition/Expanded text
	TSS	Total Suspended Solids
	WWTW	Waste Water Treatment Works
	Work	Any physical activity for the purposes of the SSI including construction, Low Impact Work, enabling works, utility works and site establishment activities but not including operational maintenance works.
	WRA	Work Risk Assessment



Offshore Construction Works Management Sub-Plan

Plan Profile

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

1. Introduction

1.1. Context

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This Offshore Construction Works Management Plan (OSCWMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the Belmont Permanent Desalination Plant (the Project).

The OSCWMP has been prepared to address the requirements of the Conditions of Approval (CoA) and the measures listed in the Environmental Assessment Documentation.

1.2. Background

1.2.1. The Project

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

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

1.2.2. Statutory Context

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

Under Section 5.25 of the Environmental Planning and Assessment Act 1979 (EP&A Act), a proponent may request the Minister to modify the approval for State Significant Infrastructure. Such approval is required if the infrastructure, as modified, is not consistent with the existing approval issued under section 5.13 of the Act. After consultation with the DPHI, a Modification Report was prepared to support a request by Hunter Water for the Minister to modify the approval to allow further changes to the approved project.

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

1.3. Scope of the Plan

The scope of this Plan is to describe how the potential impacts from offshore construction works will be managed during construction of the Project. This Plan has been prepared under and is consistent with the CEMP, considering relevant sensitive land uses and construction activities.

This Plan is applicable to all sea-based activities during construction of the Project, including all areas where physical works will occur or areas that may otherwise be impacted by the construction works, and under the control of John Holland (JH). All JH staff and sub-contractors involved with marine activities are required to comply with the requirements of this Plan and related construction environmental management plans, over the full duration of the construction program. A copy of this Plan will be kept on the premises for the duration of construction.



1.4. Environmental Management Systems Overview

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

The EMS consists of governance documentation, incorporating environmental management plans, policies, procedures and tools including:

- **CEMP**. Details the processes and procedures to be implemented during the Project to comply with applicable CoA, REMMs, Environment Protection Licence (EPL), legislative obligations and contractual requirements.
- Environmental Management Sub-plans. These documents describe procedures and controls for specific environmental aspects requiring more rigorous management strategies.
- Monitoring Programs. Details the monitoring regime to be implemented during construction to compare the actual performance of construction against the objectives outlined in the relevant Plan, including setting specific triggers and associated responses.
- WHS Management Plan. Details the processes and procedures to be implemented during the Project to comply with applicable work health and safety requirements.
- **Out of Hours Works (OOHW) Protocol.** Outlines a process for the consideration, management and approval of works which are outside the permitted standard construction hours.
- **Procedures, strategies and protocols**. Detailed procedures for inclusion in work packs.

1.4.1. OSCWMP Preparation, Endorsement and Approval

The OSCWMP has been prepared to satisfy the NSW Conditions of Approval (CoA), in relation to the management of offshore works during construction of the Project, particularly NSW CoA C11(c) and C13.

This Plan has been prepared by a Adam Cohen, a principal marine specialist from Australasian Marine Associates in accordance with CoA C13(a). These documents will be reviewed by the Hunter Water Corporation (HWC) Environmental representative (or delegate) and the independent Environmental Representative (ER), to confirm they are consistent with and incorporate all relevant elements of the CEMP, prior to submission to the Planning Secretary for approval.

Construction of the Project will not commence until the OSCWMP is endorsed by the ER and approved by the Planning Secretary.



2. Purpose and Objectives

2.1. Purpose

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The purpose of this OSCWMP is to describe how potential impacts from offshore construction activities will be managed during construction of the Project.

2.2. Objectives

The key objective of this OSCWMP is to ensure that impacts to the local marine environment and surrounding community from offshore construction works are minimised.

To aid in achieving this objective all CoA, revised environmental mitigation measures (REMMs) and licence/permit requirements relevant to offshore construction works are described, scheduled and assigned responsibility as outlined in:

- Environmental Assessment Documentation.
- Infrastructure Approval CoA (SSI 8896).
- All relevant legislation and other requirements described in Section 3.1of this Plan.

John Holland Group (JH) will aim to meet the environmental control measures related to offshore construction works from the EIS. Relevant environmental control measures are detailed in Section 6.1.



3. Environmental Requirements

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3.1. Relevant Legislation and Guidelines

Table 3-1 lists the principal legislation, regulation, plans, policies, guidelines, specifications, and Australian Standards that apply to offshore construction works.

Table 3-1: Principal legislation and regulation relevant to Offshore Construction Works

Legislation	 Protection of the Environment Operations Act 1997 (POEO Act). Protection of the Environment Operations Regulation 2008. Biodiversity Conservation Act 2016. Fisheries Management Act 1994 No 38. Current version for 30 October 2023. Environment Protection and Biodiversity Conservation Act 1999. Navigation Act 2012. Marine Pollution Regulation 2006. Australian (AMSA) and international regulations (MARPOL). Protection of the Sea (Prevention of Pollution from Ships) Act 1983. AMSA Marine Order 21: Safety and Emergency Arrangements. AMSA Marine Order 30: Prevention of Collisions. AMSA Marine Order 27: Safety of Navigation and Radio Equipment: AMSA Marine Order 97: Marine pollution prevention - air pollution.
Guidelines and Specifications	 Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018). National Assessment Guidelines for Dredging (Commonwealth of Australia, 2009). Marine Water Quality Objectives For NSW Ocean Waters - Hunter and Central Coast (DEC 2005). Policy and Guidelines for Fish Habitat Conservation and Management (DPI, 2013). The Australian Guidelines for Whale and Dolphin Watching. NSW Roads and Maritime Night Safety guidelines. National Light Pollution Guidelines DoEE (2020). Significant Impact Guidelines 1.1: great white shark, loggerhead, green and hawksbill turtles, southern right whale and humpback whale, dugong and syngnathids (Commonwealth of Australia, 2013). Environmental Management Plan Guideline: Guideline for Infrastructure Projects (DPIE April 2020). Protocol for Investigating and Reporting Fish Kills (DPI, 2003)

Relevant provisions of the above legislation are explained in the Register of Legal and Other Requirements included in Appendix A of the CEMP.



3.2. Conditions of Approval – SSI-8896

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

Table 3-2: Condition of Approval relevant to the OSCWMP

СоА	Condition Requirements	Document Reference
A22	 Monitoring and Environmental Audits Any condition of this approval that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, Site audit report and independent auditing. Note: For the purposes of this condition, as set out in the EP&A Act, "monitoring" is monitoring of the development to provide data on compliance with the approval or on the environmental impact of the development, and an "environmental audit" is a periodic or particular documented evaluation of the development to provide information on compliance with the approval or the environmental management or impact of the development. 	Section 7 Section 8.4
C10	 Environmental Management Plan Requirements Management plans required under this approval must be prepared having regard to the relevant guidelines, including but not limited to the <i>Environmental Management Plan Guideline: Guideline for Infrastructure Projects</i> (DPIE April 2020). Note: The Environmental Management Plan Guideline is available on the Planning Portal at: <u>https://www.planningportal.nsw.gov.au/major-projects/assessment/post-approval</u> The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans. 	Section 3.1
C11	 Prior to the commencement of construction, the Proponent must submit a Construction Environmental Management Plan (CEMP) to the to the Planning Secretary for approval. The CEMP must include, but not be limited to, the following: c) Offshore Construction Works Management Sub-Plan (see condition C13) 	This Plan
C13	The Proponent must prepare an Offshore Construction Works Management Sub-Plan and the plan must address, but not be limited to the following:	This Plan
	a) be prepared by a suitably qualified expert	Section 1.4.1
	 b) detail measures that will be implemented to ensure that drilling speeds are minimised for the duration of works 	Section 6.1
	 c) describe all measures that will be implemented to minimise any impacts of offshore works, including the ongoing appointment of a fauna observer and vessel maintenance in accordance with legislative requirements 	Section 6.1 Appendix B
	 d) include a program to monitor and report on the impacts and environmental performance of the offshore works and the effectiveness of the implemented management measures in accordance with the requirements 	Section 7 Appendix A
	e) provide a detailed Emergency Management Plan for offshore works that provides specifications for the management and ongoing mitigation of emergency situations to both personnel and the environment in all potential emergency situations	Appendix B



3.3. Revised Environmental Management Measures

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

Table 3-3: Revised Environmental Management Measures relevant to this OSCWMP.

	Ref #	Impact	Measure	Timing	OSCWMP Reference	
	MB1	Seawater	Standard industry obligations such as spill prevention and management measures and the implementation of standard guidelines for the onshore storage and management of waste and hazardous materials.	Construction	Section 6.1	
	MB4	Seabed disturbance	Construction method will consider option with least disturbance to seabed area and break out of drilling fluids.	Detailed Design	Section 5.2.3	-
-	MB5	Seabed disturbance	• Speed of drilling will be reduced prior to breakthrough to surface to minimise the volume of drilling fluids released into the marine environment.	Construction	Section 6.1	
			Visual observations during drilling for signs of increased turbidity and sedimentation.			
			Emergency Management Plan in place to support drilling activities.			
	MB6	Artificial light emissions	• Employ Best Practice Lighting Design for infrastructure such as vessels and barges that require to be lit at night in accordance with DoEE (2020) National Light Pollution Guidelines. Measures could include modification of light wavelengths, prevention of upward light spill and limiting light intensity for seabirds and maintaining a dark zone between any turtle nesting beach and infrastructure, avoiding direct lighting onto nesting beach or screen barriers for marine turtles (DoEE, 2020).	Construction	Section 5.2.6	
			 Light spill from the nearshore vessel operations will be minimised where possible using directional lighting. Light shields could be considered to avoid spill if sensitive receptors (i.e. shorebirds, turtles) are determined during activities to be negatively affected. 			
			 Lighting on vessel decks will be managed to reduce direct light spill onto marine waters, unless such actions do not comply with navigation and vessel safety standards (AMSA Marine Orders Part 30: Prevention of Collisions; AMSA Marine Orders Part 21: Safety and Emergency Arrangements). 			
	MB7	Artificial Noise	Where activities that generate underwater noise cannot be timed to occur outside of peak migration months the following mitigation measures and controls may be implemented. Where this is not possible, the need for Marine Fauna Observers will be determined on the basis of construction timeframes.	Pre- construction, construction	Section 5.2.7 Section 6.1	
			 Acoustic harassment/deterrent devices could be sounded prior to commencement of any underwater activity to provide opportunity for sensitive marine fauna to relocate temporarily. 			
			 Vessel machinery will be maintained in accordance with the manufacturer specifications to reduce noise emissions. 			
			The interaction of all vessels with cetaceans and whale sharks will be compliant with Part 8 of the Environment Protection and Biodiversity Conservation (EPBC) Regulations (2000). The Australian Guidelines for Whale and Dolphin			

Ref #	Impact	Measure	Timing	OSCWMP Reference	
		Watching (Commonwealth of Australia, 2017)) for sea-faring activities will be implemented across the entire Project.			
MB8	Atmospheric emissions	Compliance with MARPOL Annex VI (as implemented in Commonwealth waters by the Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (PSPPS Act); and Marine Order 97: Marine pollution prevention - air pollution).	Construction	Section 5.2.9	
MB9	Pest introduction and proliferation	 Vessels will be sourced locally wherever possible. All vessels working on the Project, whether internationally or locally sourced will adhere to Australian quarantine requirements. The management of ballast water prior to entry to Australian waters must follow AQIS quidelines and 	Pre- construction, construction	Section 5.2.12	
		compliance requirements in relation to marine pest introduction risk management for any internationally sourced vessel.			
MB10	Accidental release of solid wastes	• Appropriate waste containment facilities will be included on the vessel as well as onshore and managed to avoid overflow or accidental release to the environment.	Construction	Section 5.2.13	
		 No waste materials will be disposed of overboard; all non-biodegradable and hazardous wastes will be collected, stored, processed, and disposed of in accordance with Regulation 9 of MARPOL Annex V. 			
		 Hazardous wastes will be separated, labelled, and retained in storage onboard within secondary containment (e.g. bin located in a bund). 			
		• All recyclable and general wastes to be collected in labelled, covered bins (and compacted where possible) for appropriate disposal at regulated waste facility.			
		 Solid non-biodegradable and hazardous wastes will be collected and disposed of onshore at a suitable waste facility or to a carrier licensed to receive the waste if required by legislation. 			
		 Intake pipe design is such that in the unlikely event of contact damage, the pipe does not break apart into segments or fragments, instead remaining intact to support recovery and repair of the affected segment. 			
MB11	Dropped objects	All equipment and gear on the vessels will be securely fastened during mobilisation/demobilisation.	Construction	Section 5.2.14	
		 Lifting is to be carried out by competent personnel using equipment that is suitable, certified and maintained. 			
		 Waste management controls are to remain effective to reduce risk of release of wastes that could be ingested or cause entanglement. 			
		 During the activities, detailed records of equipment lost overboard or dropped will be maintained and reviews will be undertaken to reflect on methods to mitigate repetition of the incident. 			
MB12	Marine fauna collision and entanglement	Operations of vessels will be commensurate with Part 8 of the EPBC Regulations (Interacting with Cetaceans and Whale Watching), DoEE (2016) National Strategy for Mitigating Vessel Strike of Marine Megafauna, NSW (2016) Marine Safety Regulation, and NSW (2017) Biodiversity Conservation Regulation.	Construction	Section 5.2.15	
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Ref #	Impact	Measure	Timing	OSCWMP Reference
		 A member of the vessel crew will act as a marine fauna observer (MFO) at all times during daylight works and will maintain vigilant watch in support of Part 8 of the EPBC Regulations to manage risk of vessel collision with any other vessels or marine fauna. The MFOs will be trained and experienced in whale identification and behaviour, distance estimation, and be capable of making accurate identifications. and observations of whales in Australian waters. The MFO will provide advice on appropriate actions to be taken to mitigate risks should whales be encountered. 		
		 The Australian Guidelines for Whale and Dolphin Watching (Commonwealth of Australia, 2017) for sea-faring activities will be implemented across the entire Project. 		
MB13	Hydrocarbon, chemicals and other liquid waste	Chemicals and hydrocarbons will be packaged, marked, labelled and stowed in accordance with MARPOL Annex I, II and III regulations. These include provisions for all chemicals (environmentally hazardous) and hydrocarbons will be stored in closed, secure, and appropriately bunded areas.	Construction	Section 5.2.16
		 A Safety Data Sheet (SDS) will be available for all chemicals and hydrocarbons in locations nearby to where the chemicals/wastes are stored. 		
		 Vessel operators will have an up-to-date Shipboard Oil Pollution Emergency Plan (SOPEP) and Shipboard Marine Pollution Emergency Plan (SMPEP). All shipboard chemical and hydrocarbon spills will be managed in accordance with these plans by trained and competent crew. On board oily water disposal will be managed in accordance with the Marine Pollution Regulation 2006. The vessel operator will record the quantity, time and onshore location of the oily water disposal in the vessel Oil Record Book 		
		• If vessels are equipped with an oily water filter system, they may discharge oily water after treatment to 15 ppm in an oily water filter system (providing they have a current calibration certificate for the bilge alarm) as required by MARPOL Annex I Regulations (for the prevention of pollution by oil). To discharge, the vessels will require a current IOPP certificate for oily water filtering equipment, and a current calibration certificate for the bilge alarm.		
MB14	Damaged fuel tank associated with vessel collision	 Visual observations will be maintained by watch keepers on all vessels. Regular notification to the following Australian Government agencies before and during operations: The AMSA RCC of proposed activity, location and commencement date to enable an AusCoast warning to be issued. 	Pre- construction, Construction	Section 5.2.16
		 The Australian Hydrographic Office of proposed activity, location and commencement date to enable a 'Notice to Mariners' to be issued. 		
		 In the event of a spill resulting in notification to AMSA, other sea users (e.g. fishing industry) will be informed of the incident via Marine 		

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Ref #	Impact	Measure	Timing	OSCWMP Reference
		 Vessel will operate in compliance with all marine navigation and vessel safety requirements in the International Convention of the Safety of Life at Sea (SOLAS) 1974 and the Navigation Act 2012. This includes the requirement for all equipment and procedures to comply with the following AMSA Marine Orders: Marine Order 30: Prevention of Collisions. Marine Order 21: Safety and Emergency Arrangements. Marine Order 27: Safety of Navigation and Radio Equipment: sets out ship requirements regarding radio installations, equipment, watch keeping arrangements, sources of energy, performance standards, maintenance requirements, personnel and recordkeeping. Vessels will be equipped with appropriate navigational systems which may include an automatic identification system (AIS) and an automatic radar plotting aid (ARPA) system capable of identifying, tracking and projecting the closest approach for any vessel (time and location) within the operational area and radar range (up to approximately 70 km). Marine diesel oil compliant with MARPOL Annex VI. 		
MB21	Fish Kills	DPI Fisheries (1800 043 536) and the Environment Protection Authority (131 555) will be notified immediately if fish kills occur in the vicinity of the works. In such cases, all works other than emergency response procedures are to cease until approval is given by DPI Fisheries or the Environment Protection Authority for the works to proceed.	Construction	Section 5.2.2 Section 6.1
CP4	Exposure of the subsurface transfer pipeline by coastal processes including beach level fluctuation and storm bite	Monitor weather forecasts when working on the intake infrastructure and halt works when extreme coastal warnings are issued by the Bureau of Meteorology. Prepare and implement a Natural Event Response Plan as part of the Construction Environment Management Plan (CEMP).	Construction	Section 6.1
SOC3	Access and connectivity	Intake structure – As a minimum to consider public safety, an Access Management Plan for navigable waters would be prepared to address access to the waterway for construction and recreational use, in consultation with Roads and Maritime.	Pre- construction, construction	Section 6.1
TT7	Maritime traffic	 An Offshore Construction Works Management Plan will be prepared and will include the following: Marine activities will be undertaken in accordance with all marine navigation and vessel safety requirements under the International Convention of the Safety of Life at Sea (SOLAS) 1974 and Navigation Act 2012. For the vessels, this requires equipment and procedures to comply with AMSA Marine Order - Part 30: Prevention of Collisions, and Marine Order - Part 21: Safety of Navigation and Emergency Procedures. Stakeholder consultation plan with relevant stakeholders including: TfNSW Maritime – notifying of the intent to commence 	Pre- construction, Construction	Section 6.1

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6	Ref #	Impact	Measure	Timing	OSCWMP Reference		
			 relevant project information including duration and whether there is a requirement to install an aid to navigation on the desalination plants DOI structure The Port Authority of NSW, Newcastle Commercial Fisherman's Co-operative, local councils and fishing bodies Notification to the following Australian Government agencies prior to marine activities: The Australian Hydrographic Office or equivalent regulator of proposed activity, location (i.e. vessel location) and commencement date to enable a Notice to Mariners' to be issued The Australian Maritime Safety Authority (AMSA) Rescue Coordination Centre (RCC) of proposed activities, location (i.e. vessel location) and commencement date to enable an AusCoast warning to be issued. A Vessels Sub-Plan will be prepared and will include the following: Commercial vessels and crew involved with the project will comply with the Marine Safety (Domestic Commercial Vessels) National Law Act 2012 Any vessel involved in the project must comply with the relevant NSW Marine Legislation (i.e., Speed and wash restrictions, day shapes, lights etc.). Vessels will also be equipped with all navigational and safety requirements for operation in Australian waters. These may include an automatic identification system (AIS) and an automatic radar plotting aid (ARPA) system capable of identifying, tracking and projecting the closest approach for any vessel (time and location) within radar range (up to approximately 70 km) Visual observations will be conducted by trained watch keepers on all vessels while operating to support management of collision risk or entanglement/interference with other users Vessels (including barges) left in the water overnight must be clear of any navigable channel and must be sufficiently illuminated to warn other vessels of their presence 				
	VAJ	into any adjoining landholding or dwelling	intake structure construction methods will be required as per NSW Roads and Maritime Night Safety guidelines. This is required as to mitigate issues out at sea, ensuring that other vessels/water activity are able to clearly identify the equipment's location.	Construction	Section 5.2.6		

Note: Identifying references are for the purpose of identifying the specific mitigation measures and are identification numbers only.



4. Existing Environment

This section summarises the existing conditions within and adjacent to the Project, based on information contained in the Environmental Assessment Documentation.

4.1. General Description

The project site is located near the township of Belmont, NSW, which lies within the Lake Macquarie City Council local government area. The onshore component of the desalination plant is located adjacent to the existing Belmont WWTW. Marine facilities associated with the desalination plant will extend from this location to the Direct Ocean Intake (DOI) structure approximately 850 m off shore.

The site is characterised by an imposing foredune, comprising sparse vegetation, which boarders Nine Mile Beach. The desalination plant is located immediately to the west of this dune formation and approximately 170 meters (m) from the shoreline, on low lying land previously used for ancillary activities for the WWTW. The marine environment within the area is generally used for recreational and commercial fishing activities. A number of marine fauna have been observed in the area during various times of the year.

4.2. Oceanography

4.2.1. Currents and Tides

Water levels fluctuate as they are influenced by tidal variation (semi diurnal), storm surge (from significant reduction in barometric pressure), wind setup (from onshore winds), wave setup (raised water levels as a result of broken waves, approximately 15 per cent of offshore wave height), wave runup (uprush of water from a breaking wave).

Prevailing northerly drift is evident due to the dominant south south-east wave direction on the NSW east coast. The gross annual transport rates for Nine Mile Beach have been estimated up to 600,000 cubic meters (m³) although net littoral drift outside of the embayment is thought to be significantly lower.

4.2.2. Wave Climate

The NSW coast is subject to a moderate wave climate predominantly from the south to southeast with an average offshore significant wave height (Hs) in the order of 1.6 m. Large waves can be generated year round by tropical cyclones, mid latitude cyclones and east coast lows. Given the orientation of the beach at the Project area, waves from the south-east would have the most potential for cross-shore erosion.

4.3. Geology

4.3.1. Substrate and Sediment Quality

The existing ocean outfall to the north of the DOI provides a hard substrate within an otherwise open area of soft sandy substrate. The soft sediment habitat around the Belmont WWTW outfall is predominantly (>90%) comprised of sand fractions, rather than larger gravel/cobbles or smaller silt and clay fractions.

Historical sediment quality testing determined that there is no evidence to suggest that the Belmont WWTW outfall is a point source for contaminants. Differences in total organic carbon and metals observed between sampling sites were largely attributable to the difference in particle size distribution and were deemed unrelated to the presence or operation of the outfall.

4.4. Water Quality

Ambient seawater quality was characterised at four reference sites approximately 2 kilometres (km) from the WWTW outlet during water quality studies undertaken between July 2011 – April 2013 and August 2017 – July 2018. Water temperatures ranged from a minimum of 15-16°C to a maximum of 22-23°C. Salinity ranged from 32.7 to 36.4 practical salinity units (PSU) for the 20th to 80th percentiles, respectively.

The average turbidity (NTU) was above the 80th percentile due to isolated occurrences of very high turbidity values with approximately half of the values exceeding the recommended water quality guideline of 0.5 NTU.

The median of ammonia (NHX) was below 0.005 mg/L and below the recommended guideline value. Concentrations of nitrogen oxides (NOX) however varied quite considerably, with the median being approximately 10-fold lower than the 80th percentile value, showing a relatively small number of samples with a high concentration of NOx. The median NOx value was below the recommended water quality guideline of 0.025 mg/L. Similarly total nitrogen concentrations were relatively high, with the median, average and 80th percentile values all exceeding the recommended water quality guideline of 0.120 mg/L. Median concentrations of total phosphorus were within guideline water quality values.

The medians of faecal coliforms and enterococci were lower than respective limits of reporting (<1 colony forming units/100 ml), although the average values for both are above the 80th percentile due to isolated occurrences of spikes in concentrations.

4.5. Marine Environment

4.5.1. Benthic Ecology

The benthic environment throughout the offshore construction area is comprised of open homogenous sandy substrate, combined with small sand ripples associated with nearshore wave-action. The sand substrate across the area consists primarily of coarse-grained sand, with patches of shells and shell fragments.

A variety of filter feeding organisms have recruited to the Belmont WWTW outfall pipeline north of the DOI, such that there is now a locally dense and diverse community established that supports an array of invertebrate and fish species. The assemblages are typically dominated by marine worms and small crustaceans.

4.5.2. Fish Assemblages

Fish assemblages associated with the WWTW pipeline and those which are likely to utilise the future DOI infrastructure, include those that are using the structure for refuge, those that are actively feeding on the sessile organisms growing on the structure, and higher order predators which are attracted to this prey. Typical species observed include the highly abundant Mado, *Atypichthys strigatus* (Günther 1860), which are abundant across the WWTW pipeline, as well as Australian Salmon.

4.5.3. Conservation Values

Marine biologically important areas for some of the region's protected species (DoEE, 2015) cover the Project locality, comprising Humpback whale migration, Shearwater bird foraging, Indo-Pacific/Spotted Bottlenose dolphin breeding and calving and Grey nurse shark breeding. Further, the Project is located within a broad area that is designated by the Department of Primary Industries as key fish habitat.

A number of threatened species were identified by the Biodiversity Conservation (BC) and Fauna management (FM) BioNet as species having the potential to occur within the project area. Of these species the following were identified as potentially occurring in the project area and assessed under the BC Act 2016 assessment criteria: New Zealand fur seal (*Arctocephalus forsteri*) (vulnerable), Southern right whale (*Eubalaena australis*) (endangered 1), Dugong (*Dugong Dugon*) (endangered 1), Humpback whale (*Megaptera novaeangliae*) (vulnerable), and loggerhead (*Caretta caretta*) (endangered 1) and green turtles (*Chelonia mydas*) (vulnerable).

Schedule 4, 4A and 5 of the Fauna Management Act 1994 (FM Act) provides lists of critically endangered, endangered and vulnerable species, populations and ecological communities occurring in NSW. The great white shark (Carcharodon carcharias) was identified as potentially occurring in the project area and was thus assessed under the FM Act 1994 assessment criteria as Hawks Nest and Stockton Beach are a known primary residency region for juveniles of the species.

The Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) Protected Matters Search Tool was used to identify MNES, and other matters protected under the EPBC Act 1999 that are predicted to occur in or relate to the project area. This search identified a number of matters of national environmental significance (MNES) of relevance to the project and likely to occur within the project area; these have been assessed in accordance with the related Significant Impact Guidelines 1.1 (Commonwealth of Australia, 2013): Great white shark, Loggerhead, Green and Hawksbill turtles, Southern right whale and Humpback whale, Dugong and syngnathids. J<u>O</u>HN HOLL∧ND





5. Environmental Aspects and Impacts

5.1. Marine Aspects

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5.1.1. Offshore Construction Activities

Construction of the intake tunnel and intake structure has the potential to generate adverse impacts on the marine environment through activities that would disturb the seabed (i.e. dredging, tunnelling and installation of the intake structure and supporting infrastructure). Vessels will also be required to support offshore construction activities. Key aspects of the project that have the potential to result in adverse marine impacts include:

- Construction of the Direct Ocean Intake (DOI) structure, within areas classified key fish habitat (KFH).
- Establishment of an offshore jack-up-barge (JUB) associated crane equipment and mooring facilities.
- Use of marine vessels for material delivery.
- Use of helicopters to transfer construction personnel to the offshore JUB.
- Disposal of dredged / excavated material within the marine zone, via a subsurface discharge pipe directing dredge material back onto the seabed.
- Commissioning activities causing potential impacts to the surrounding marine environment.

Key constructability considerations that have been incorporated into the development of the project are as follows:

- Construction method will consider option with least disturbance to seabed area.
- Optimisation of the design aspects of the project.
- Regular inspection and maintenance activities to be undertaken as required including the deployment of marine observers.
- Follow up inspections undertaken as required after incidents to identify need for further application of mitigation measures.

5.2. Potential Marine Impacts

Construction of the intake structure has the potential to harm the marine environment through activities that would disturb the seabed such as dredging and installation of the intake structure and supporting infrastructure. Vessels would be required to support the construction activities. The potential impacts to the environment from these activities include:

- Disturbance within areas classified as Type 3 Key Fish Habitat (KFH).
- Seabed disturbance and associated turbidity and water quality impacts.
- Light and noise pollution from vessel platforms and dredging activities.
- Release of potential wastes, contaminants or pollutants (including hydrocarbon spills) from construction activities.
- Atmospheric emissions.
- Interference with other marine users.

Other unplanned events may also arise during construction activities. The risks to the environment from these include:



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- Pest introduction and proliferation.
- Accidental release of solid waste.
- Impacts to the seabed from dropped objects.
- Marine fauna collisions.
- Hydrocarbon, chemicals and other liquid waste.
- Damaged fuel tanks associated with vessel collisions.

Potential Impacts from offshore construction works defined in the Environmental Assessment Documentation, as well as management measures associated with marine impacts are discussed throughout this section and are detailed further in Section 6.

5.2.1. Key Fish Habitat

The area of direct impact is associated with construction of the marine intake structure and is designated as Type 3 KFH (minimally sensitive key fish habitat). No impacts to Type 1 and Type 2 KFH are expected from offshore construction activities.

The extent of type 3 KFH equates to an area of approximately 5,150 square metres (m²), comprising a caisson structure and JUB (which is expected to result in a direct impact area of approximately of 150 m²) and an area dedicated for spoil from excavation associated with caisson installation.

As the main habitat type in the area of direct influence is bare sandy seabed, which supports a relatively low fish biomass/diversity, these impacts are likely to be low. Furthermore, mortality through physical interaction with vessels is also possible, in the form of propeller injury and direct mortality from the dredge head. These effects are likely to be incidental and of negligible consequence to the fish species and communities endemic to the region.

5.2.2. Fish Kills

Fish kills are defined by the NSW Department of Primary Industries (DPI Fisheries) as 'a sudden and unexpected mass mortality of wild or cultured fish' (DPI, 2024). Fish kills across NSW occur primarily within freshwater and estuarine areas, with oceanic marine areas contributing approximately 10% of reported fish kills annually.

Although the risk of fish kills is considered low based on type and duration of offshore construction works, there is potential for fish kills to occur during construction activities. For the purpose of classifying a fish kill, the Project will commence investigations if more than 15¹ fish are observed to have been impacted within the project area during active offshore construction works (refer to Figure 4-1).

In cases where suspected fish kills are identified by Marine Observers or during scheduled inspections of marine areas, JH will investigate the occurrence in accordance with DPI's '*Protocol for Investigating and Reporting Fish Kills*' (DPI, 2023).

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



¹ Total number exceeding 15 individuals in any one event.

5.2.3. Seabed Disturbance

The design of the intake requires the construction of a caisson to connect the intake tunnel to the seabed and to permanently support the seabed intake screening structure. Construction of the caisson requires excavation of the seabed. The estimated area of seabed disturbance is discussed in Section 5.2.1. The excavated dredge material is expected to be placed in the vicinity of the DOI. Dredging works include dredging of approximately 1,000m3 of sand and 300m3 of clay material from within the DOI area using a submersible pump dredge (Dell 200) for up to nine hours a day and discharge/ side casting of the dredged material back to the seabed directly adjacent to the DOI.

Tunnelling also utilises a water-based drilling fluid comprising a small percentage of polymers and additives. Water-based drilling fluids are considered the most environmentally acceptable due to their low toxicity and dispersive qualities. The localised increase in suspended sediment concentrations from tunnelling as it enters the caisson, during installation works associated with the intake structure would be temporary in nature, with sediment settling and dispersing quickly out of suspension as a result of the predominantly sandy nature of the sediment. The plume generated from dredging works would also be temporary in nature, with works estimated to take days (i.e. approximately one week), rather than weeks or months.

To reduce or eliminate the impact associated with seabed disturbance, a number of design and management controls will be considered when possible. These include:

- Construction method would consider option with least disturbance to seabed area and break out of drilling fluids used in tunnelling.
- Speed of tunnelling would be reduced prior to breakthrough to caisson to minimise the volume of drilling fluids released into the marine environment.
- Visual observations during tunnelling and dredging works for signs of increased turbidity and sedimentation.
- Emergency Management Plan (EMP) to be implemented to support drilling activities (refer to Appendix B.

5.2.4. Disposal of Dredged Material

The dredge material will be discharged back onto the seabed, via a subsurface discharge pipeline, which will reduce surface plumes. The discharge pipeline will also be moved throughout the dredging works to assist in reducing the potential impact at each deposition location on the seabed.

5.2.5. Plume Generation

The current proposed method for caisson installation requires removal of skin friction using jetting. This activity can result in the production of a small plume of suspended sediment, resulting in localised increases in turbidity. There will also be some minor loss of dredge material from the dredge head. The discharge of dredge material via side casting to the adjacent seabed will generate a dredge plume, which will extend an estimated one to two kilometres from the dredge area (refer to Figure 4-1). Plume generation will be only temporary in nature, whilst dredging works are completed.

Investigations of the area as part of the environmental assessments have identified generally coarse sediments (mostly sand) throughout the proposed offshore dredge area. As coarse sediments are heavier, when disturbed, they require a higher level of energy to remain in suspension compared with finer fractions. Consequently, coarse sediments do not tend to migrate far from the point of disturbance and so, are likely to remain within the zone of direct impact. Small amounts of clay layers are expected during dredging, which

may generate a small plume, resulting in localised increases in turbidity as the finer clay particles remain in suspension over a longer period compared to heavier sediment fractions.

JH will undertake visual monitoring of the area during dredging operations, will undertake some in situ turbidity/ total suspended solids (TSS) monitoring to validate the plume modelling and will monitor dredging speeds, adjusting as required, to manage plume production. Monitoring will be undertaken in accordance with the Marine Monitoring Program (Appendix A).

5.2.6. Lighting Emissions

Artificial light emissions are likely to occur during the use of safety lighting on vessels and support barges. Artificial light from vessels may attract fauna such as birds, marine turtles, fish, and other species in the locality, particularly during peak breeding and migratory periods (i.e. between May to June and September to November).

To reduce the impact of artificial lighting, the following management controls can be implemented when possible:

- Employ best practice lighting design for infrastructure such as vessels and barges that require to be lit at night in accordance with DoEE (2020) National Light Pollution Guidelines. Measures could include:
 - modification of light wavelengths
 - prevention of upward light spill and limiting light intensity for seabirds.
- Light spill from the nearshore vessel operations will be minimised where possible using directional lighting. Light shields could be considered to avoid spill if sensitive receptors are determined during activities to be negatively affected.
- Lighting on vessel decks will be managed to reduce direct light spill onto marine waters, unless such actions do not comply with navigation and vessel safety standards (AMSA Marine Orders Part 30: Prevention of Collisions; Australian Maritime Safety Authority (AMSA) Marine Orders Part 21: Safety and Emergency Arrangements).

It is necessary for all vessels in Australian waters to comply with the navigation safety requirements prescribed within the Navigation Act 2012 and the subordinate Marine Orders concerning workplace safety equipment (e.g. lighting) and navigation. Lighting on the barge will be required for construction activities associated with the Jack-up Barge. JH will ensure the minimum practical lighting from a safety perspective to ensure the Work Health and Safety (WHS) and Civil Aviation Safety Authority (CASA) and AS4282 requirements are met for lighting on the barge. While light spill will be reduced wherever possible, all vessels associated with offshore construction works, will comply with the minimum mandatory requirements under the applicable legislation, and will conform to IMO (International Maritime Organization) and AMSA (Australian Maritime Safety Authority) requirements.

5.2.7. Generation of Underwater Noise

The activities associated with the installation of the intake pipe will generate standard shipping noise associated with vessel movements between port environments and additional noise generated from the use of construction machinery. Disturbance to marine fauna (including avifauna) from above ground and underwater noise may occur in response to noise generated by vessel movements.

The following controls will be implemented for the purposes of decreasing or mitigating the impact of noise on marine fauna:

• Wherever reasonable, activities that generate underwater noise will be timed to occur outside of peak migration months to reduce overlap with migratory movements and therefore reduce the

potential threat to both migratory marine mammals and migratory marine birds. A Marine Fauna Observer will be deployed on the JUB at all times. Marine mammals may include:

- Cetaceans (whales, porpoises, and dolphins)
- Pinnipeds (seals, sea lions)
- sirenians (dugongs)
- Acoustic harassment/deterrent devices will be implemented prior to commencement of any underwater activity to provide opportunity for sensitive marine fauna to relocate temporarily. This will be undertaken in accordance with the mitigation measures described in Section 6.1 and the Construction Noise and Vibration Management Plan (CNVMP).
- Vessel machinery will be maintained in accordance with the manufacturer specifications to reduce noise emissions.
- The interaction of all vessels with cetaceans and whale sharks will be compliant with Part 8 of the Environment Protection and Biodiversity Conservation (EPBC) Regulations (2000). The Australian Guidelines for Whale and Dolphin Watching (Commonwealth of Australia, 2017)) for sea-faring activities will be implemented across the entire project. This includes the implementation of the following guidelines:
 - Caution zone (300 m either side of whales and 150 m either side of dolphins) vessels must operate at no wake speed in this zone.
 - Caution zone must not be entered when calf (whale or dolphin) is present.
 - No approach zone (100 m either side of whales and 50 m either side of dolphins) vessels should not enter this zone and should not wait in front of the direction of travel or an animal or pod or follow directly behind.
 - If there is a need to stop, reduce speed gradually.
 - Do not encourage bow riding.
 - If animals are bow riding, do not change course or speed suddenly.

During construction and where activities that generate underwater noise cannot be timed to occur outside of peak migration months (i.e. between May to June and September to November) the mitigation measures in Section 6.1 of this plan and the CNVMP will be implemented.

5.2.8. Planned Discharges

The possible discharges to the surrounding marine environment are brine, cooling water, deck drainage, dredge discharge and potential discharge of drilling fluid into the marine environment during tunnelling breakthrough. It is envisaged that non-hazardous planned vessel discharges will be minimal and continuous. This will also be dependent on the total number of people on board the construction vessel and any rainfall received during the construction period.

Key potential impacts from planned discharges during construction can be categorised into the following:

- Water Turbidity Any discharge of water from deck drainage and vessel discharge could also lead to increases in turbidity. Hazardous substances stored on deck with potential to influence discharge quality will be contained within bunded areas with a capacity of 110 percent of storage volume to prevent unforeseen discharge to waters.
- Water Temperature water used for cooling of vessel engines and other equipment will be discharged at temperatures above surrounding seawater. The cooling water discharge will transmit heat to the surrounding waters while also mixing with the larger body of water. It is anticipated that

the impact of cooling water discharge on the water quality of the surrounding environment will be minimal, given the relatively low quantities of discharge.

 Increase in water discharge via Ocean outfall - During construction, some seepage of water at the face of the Micro-Tunnel Boring Machine (Micro-TBM) is anticipated. This saline water would be contained in the drilling slurry and conveyed to the water separation plant, processed and recirculated. Excess drilling fluid and mud would be managed in accordance with Section 6.1.6 of the Construction Soil and Water Management Plan (CSWMP). Therefore, construction of the ocean intake pipeline would not result in marine discharges in excess of those previously assessed as part of the Environmental Assessment Documentation.

In order to mitigate or lessen planned discharges, the following measure will be considered as part of offshore construction works:

- Sewage, liquid substances and food waste will be collected, stored, processed and disposed of in accordance with NSW (Protection of the Environment Operations Act 1997 and Marine Pollution Regulation 2006), Australian (AMSA) and international regulations / International Convention for the Prevention of Pollution from Ships (MARPOL).
- Vessel masters will ensure that the maximum carrying capacity of the sewage system is not exceeded. All wastes will be disposed on land at an identified licensed waste management facility and transported in accordance with its waste type classification and category.
- Scupper plugs or equivalent will be available on vessel decks where chemicals and hydrocarbons
 are stored and frequently handled (i.e.' high risk' areas). Non-hazardous, biodegradable detergents
 will be used for deck washing. Hazardous substances stored on deck with potential to influence
 discharge quality will be contained within bunded areas with a capacity of 110 percent of storage
 volume to prevent unforeseen discharge to waters.

5.2.9. Atmospheric Emissions

Greenhouse gases (GHG) (including carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O)) and non-GHG (such as sulphur oxides (SOX) and nitrous oxides (NOX)) are emitted as a result of the burning of diesel fuels to power vessel engines, generators and mobile and fixed plant and equipment. Short-term reduction in air quality in the immediate region around the Project area may occur due to the burning of hydrocarbons. For offshore construction works.

Management controls considered as part of offshore construction works include:

- All equipment will be properly maintained in good working order.
- Catalytic converters and exhaust filters will be correctly fitted where appropriate and available to minimise diesel exhaust emissions.
- Idling time of diesel engines should be limited, and engines should not be overloaded.
- Fuel oil will meet regulated sulphur content levels in order to control SOX and particulate matter emissions.
- Engines will be operated in a manner so that regulated NOX emission levels are achieved.
- Compliance with MARPOL Annex VI (as implemented in Commonwealth waters by the Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (PSPPS Act); and Marine Order 97: Marine pollution prevention air pollution.



5.2.10. Use of Helicopters

Helicopters will be utilised for transporting personnel to and from the JUB throughout construction works. Helicopter use has the potential to cause intermittent, localised noise impacts during landing and take-off. Management controls associated with helicopter use will be undertaken in accordance with the Helicopter Transportation Plan (HTP).

5.2.11. Interaction with other Marine Users

Impacts may arise from unrelated shipping traffic crossing the path of the construction vessels. During offshore construction works, this may result in the temporary reduction of accessibility to these areas or require other vessel operators to re-route vessel movements to avoid crossing paths with construction vessels or Project area.

The following measures will be considered throughout the duration of construction works to reduce any potential between the project and other marine users:

- Construction activities will be undertaken in accordance with all marine navigation and vessel safety requirements under the International Convention of the Safety of Life at Sea (SOLAS) 1974 and Navigation Act 2012. For the vessels, this requires equipment and procedures to comply with AMSA Marine Order - Part 30: Prevention of Collisions, and Marine Order - Part 21: Safety of Navigation and Emergency Procedures.
- Stakeholder consultation as well as notification to the following:
 - The Australian Hydrographic Office of proposed activity, location (i.e. vessel location) and commencement date to enable a Notice to Mariners' to be issued.
 - The Australian Maritime Safety Authority (AMSA) Rescue Coordination Centre (RCC) of proposed activities, location (i.e. vessel location) and commencement date to enable an AusCoast warning to be issued.
- Vessels will also be equipped with all navigational and safety requirements for operation in Australian waters.
- Visual observations will be conducted by trained watch keepers on all vessels.

5.2.12. Marine Pest Introduction

Invasive marine pests are identified as marine plants, animals and algae. Introduction of these pests may occur unintentionally and may be carried within the external biological fouling of the vessel hull, within sea water pipes or submersible marine instruments and equipment. Ballast water exchange may also provide potential for introduction of marine pests.

Before vessels can proceed to the site location, quarantine obligations may have to be fulfilled by all vessels, particularly for vessels sourced from overseas, if any. Ballast water exchange record requirements will need to be complied with. Internationally sourced vessels will also be required to maintain possession of Australian Quarantine and Inspection Service (AQIS) Clearance documentation to verify compliance with Mandatory Ballast Water Requirements or verify biofouling management measures.

The following controls and processes will be considered, when possible, to mitigate or eliminate the risk of introducing pests:

- Vessels should be sourced locally wherever possible.
- All vessels working on the Project, whether internationally or locally sources, will adhere to Australian quarantine requirements.



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 The management of ballast water prior to entry to Australian waters must follow AQIS guidelines and compliance requirements in relation to marine pest introduction risk management for any internationally sourced vessel.

Further details relating to the monitoring of introduced pests is described in Section 4.3 of the Marine Monitoring Program (Appendix A).

5.2.13. Accidental Release of Solid Wastes

Hazardous (i.e. petroleum-based products, solvents, batteries, heavy metals) and non-hazardous (i.e. general municipal wastes) solid waste may be released unintentionally into the environment from overfull and/or uncovered bins or if blown off the deck of a vessel. The pollution of the immediate environment with the potential release of hazardous solid waste has the likely consequence of negatively affecting the health of flora and fauna within the area.

Management control principles to mitigate the risk of accidental release of solid wastes include:

- Appropriate waste containment facilities.
- All non-biodegradable and hazardous wastes will be collected, stored, processed and disposed of in accordance with Regulation 9 of MARPOL Annex V.
- Wastes will be segregated and appropriately stored for disposal at a licenced waste facility.

5.2.14. Dropped Objects

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Damage to benthic habitats may occur due to an object being dropped overboard causing disruption of benthic habitats. Physical damage of any sessile or slow-moving fauna and epibenthos may occur within the area of disturbance caused by dropped object however the marine surveys of the Project area indicate that the area is characterised by open sandy substrate.

Management measures to mitigate the potential risk of dropped objects are presented in Section 6.1.

5.2.15. Interaction with Marine Fauna

There is potential for interaction to occur between marine fauna and vessels associated with the Offshore construction works which may influence fauna behaviour patterns or result in injury to marine fauna (i.e. by collision of entanglement).

Works will occur where recreational and commercial fishing vessels currently traverse. The risk that the additional vessel presence in the activity location will have considerable effect on marine fauna within the area is relatively small. This is due to the relatively low vessel speeds during construction activities.

Management measures to mitigate the potential risk of interaction with marine fauna are presented in Section 6.1, including:

- Vessel operation will be undertaken in accordance with Part 8 of the EPBC Regulations (Interacting with Cetaceans and Whale Watching).
- Member(s) of the vessel crew will act as a marine fauna observer (MFO) at all times during daylight work hours.
- The Australian Guidelines for Whale and Dolphin Watching (Commonwealth of Australia, 2017) for sea-faring activities will be implemented across the entire project, including the measures specified in Section 5.2.7).

5.2.16. Hydrocarbon, Chemicals and other Liquid Wastes

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Vessels, plant and other construction equipment require a wide variety of liquids, chemicals and hydrocarbon compounds to operate and to be maintained. Vessel engines and equipment such as cranes and generators operate on diesel fuel while hydraulic and lubricating oils are required for the operation and continual maintenance of mechanical components.

Accidental release of these substances may occur during offshore construction activities caused by various scenarios including pipework or hydraulic hose failure, inadequate bunding or storage and damage to vessel fuel tanks (i.e. from vessel collision). The quantity of hydrocarbons that can be accidentally discharged during operations is relatively small and restricted by the quantity available on the deck of the vessel.

There is a low likelihood that a leak or spill of hydrocarbons or other liquids (including environmentally hazardous chemicals and wastes) may occur at the site following the implementation of identified mitigation measures. Such an occurrence would result in the localised reductions in water quality and contamination of marine fauna at water depths of less than 1 m in the proximity of the source vessel. The potential impacts would be restricted to the immediate vicinity of the spill. However, contamination to intertidal and benthic communities may also occur as any spill would be in close proximity to these environments. In the instance of a hydrocarbon spill, spill clean-up kits will be located where hydrocarbons and other liquid wastes are stored and frequently handled, and areas classified as high risk depending on type of activity.

Furthermore, a bunded fuel cell will be transported to, and used on the JUB for refuelling of the crane and other plant whilst the JUB is in situ. Existing engineering controls (i.e. localised bunding) will be incorporated into the JUB structure Refuelling of the tugs and support boats will be back at port.

Management measures to mitigate the potential risk of spills are presented in Section 6.1.

5.2.17. Damage to Vessel Fuel Tanks

During offshore construction activities, vessel movements within the project area and surrounding the JUB can pose a potential risk of collision. The significance of this risk is associated with the release of marine diesel into the receiving aquatic environment from the damage to or rupture of fuel tanks resulting from the collision.

Release of hydrocarbons caused by fuel tank damage / rupture would result in localised reductions in water quality to depths of less than 1 m in the proximity of the vessel (i.e. depending on volume of material released and prevailing tidal / wave climate at the time of spill). Marine mammals may be affected by potential spills via ingestion or accumulation, skin contact, interference with feeding, vapour inhalation (i.e. sea birds and turtles) and baleen fouling. Marine habitats such as rocky shorelines, reefs, beaches and other benthic habitats would also be affected by potential hydrocarbon release however, it is expected that, in combination with clean-up efforts, tidal and wave action will assist in dilution of any hydrocarbon released.

Management measures to mitigate the potential risk of spills are presented in Section 6.1.

5.2.18. Commissioning Activities

5.2.18.1.Intake Pipe

The intake structure will be operated to test for functionality. This process will involve sea water being drawn through the intake structure and into the desalination plant. There is potential for marine biota to be impacted via impingement or entrainment through this process. The proposed intake structure and pipe for the desalination plant are designed with consideration for low flow velocity and volume and reducing impacts on larvae and fish in the surrounding environment.



6. Environment Mitigation Measures

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6.1. Offshore Construction Works Mitigation and Management Measures

In accordance with the CoA, mitigation measures will be implemented with the aim of achieving specific measures and requirements to address contract specifications, CoA and REMMs in relation to impacts from offshore construction works are outlined in Table 6-1.

Table 6-1: Offshore construction works management and mitigation measures

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
MB1	Standard industry obligations such as spill prevention and management measures and the implementation of standard guidelines for the offshore storage and management of waste and hazardous materials. JH will implement best practice hazardous material storage measures ensuring that hazardous substances stored on deck with potential to influence discharge quality will be contained within bunded areas with a capacity of 110 percent of storage volume.	Construction	Project Environment Manager (or delegate)	REMM
MB4	Construction method will consider option with least disturbance to seabed area and break out of drilling fluids. Dredge discharge pipeline outlet will be subsurface/ positioned 1-2m off the seabed.	Detailed Design	Project Environment Manager (or delegate)	REMM
MB5	 Speed of tunnelling will be reduced prior to breakthrough to caisson to minimise the volume of drilling fluids released into the marine environment. Drilling activities (including drilling speeds) will be monitored throughout operation of the Micro-TBM. Pipe jacking speed and torque will be monitored and managed by a skilled operator who will adopt appropriate drilling speeds along the entire tunnelling alignment, based on position of the cutting face and substrate. Prior to breakthrough to the offshore caisson, drilling speeds and pressure will be reduced as part of the standard operating methodology which will be implemented to prevent damage to the caisson and reduce the risk of drilling fluid release. Dredge discharge will be continuously moved after every shift, to minimises localised sedimentation on the seabed. Visual observations during tunnelling for signs of increased turbidity and sedimentation. Water quality monitoring to validate plume modelling will be undertaken. This will include vertical profiles of turbidity for plume monitoring. 	Construction	Project Environment Manager (or delegate)	REMM
MB6	 JH will implement the following: Best Practice Lighting Design for infrastructure such as vessels and barges that require to be lit at night in accordance with DoEE (2020) National Light Pollution Guidelines. Measures could include modification of light wavelengths, prevention of upward light spill and limiting light intensity for seabirds and maintaining a dark zone between any turtle nesting beach 	Construction	Project Environment Manager (or delegate)	REMM

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
	and infrastructure, avoiding direct lighting onto nesting beach or screen barriers for marine turtles (DoEE, 2020).			
	• Light spill from the nearshore vessel operations will be minimised where possible using directional lighting. Light shields could be considered to avoid spill if sensitive receptors (i.e. shorebirds, turtles) are determined during activities to be negatively affected.			
	 Lighting on vessel decks will be managed to reduce direct light spill onto marine waters, unless such actions do not comply with navigation and vessel safety standards (AMSA Marine Orders Part 30: Prevention of Collisions; AMSA Marine Orders Part 21: Safety and Emergency Arrangements). 			
	Lighting on the barge will be required for construction activities associated with the Jack-up Barge. JH will ensure the minimum practical lighting from a safety perspective to ensure the Work Health and Safety (WHS) and Civil Aviation Safety Authority (CASA) and AS4282 requirements are met for lighting on the barge.			
MB7	Where activities that generate underwater noise cannot be timed to occur outside of peak migration months the following mitigation measures and controls may be implemented. Where this is not possible, the need for Marine Fauna Observers will be determined on the basis of construction timeframes.	Pre- construction, construction	Project Environment Manager (or delegate)	REMM
	Acoustic harassment/deterrent devices could be sounded prior to commencement of any underwater activity to provide opportunity for sensitive marine fauna to relocate temporarily.			
	Vessel machinery will be maintained in accordance with the manufacturer specifications to reduce noise emissions.			
	• The interaction of all vessels with cetaceans and whale sharks will be compliant with Part 8 of the Environment Protection and Biodiversity Conservation (EPBC) Regulations (2000). The Australian Guidelines for Whale and Dolphin Watching (Commonwealth of Australia, 2017)) for sea-faring activities will be implemented across the entire Project. Including ('the exclusion zone'):			
	- within 300 metres of a cetacean avoid making loud or sudden noises.			
	- not playing recorded or amplified sound underwater within 300 metres of a cetacean.			
	JH will implement noise mitigating measures in accordance with the CNVMP.			
MB8	Compliance with MARPOL Annex VI (as implemented in Commonwealth waters by the Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (PSPPS Act); and Marine Order 97: Marine pollution prevention - air pollution).	Construction	Project Environment Manager (or delegate)	REMM
	This will be a standard minimum requirement for all vessels and equipment associated with offshore construction works.			
MB9	JH will ensure:	Pre-	Project Environment	REMM
	vessels will be sourced locally wherever possible	construction,	Manager (or	
	All vessels working on the Project, whether internationally or locally sourced will adhere to Australian quarantine requirements.	CONSTRUCTION	ueieyale)	
	The management of ballast water prior to entry to Australian waters must follow AQIS guidelines and compliance requirements in relation to marine pest introduction risk management for any internationally sourced vessel.			

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
MB10	 JH will ensure: Appropriate waste containment facilities will be included on the vessel as well as onshore and managed to avoid overflow or accidental release to the environment. 	Construction	Project Environment Manager (or delegate)	REMM
	 No waste materials will be disposed of overboard; all non-biodegradable and nazardous wastes will be collected, stored, processed, and disposed of in accordance with Regulation 9 of MARPOL Annex V. 			
	 Hazardous wastes will be separated, labelled, and retained in storage onboard within secondary containment (e.g. bin located in a bund). 			
	 All recyclable and general wastes to be collected in labelled, covered bins (and compacted where possible) for appropriate disposal at regulated waste facility. 			
	 Solid non-biodegradable and hazardous wastes will be collected and disposed of onshore at a suitable waste facility or to a carrier licensed to receive the waste if required by legislation 			
	 Intake pipe design is such that in the unlikely event of contact damage, the pipe does not break apart into segments or fragments, instead remaining intact to support recovery and repair of the affected segment. 			
MB11	JH will ensure:	Construction	Project Environment Manager (or delegate)	REMM
	All equipment and gear on the vessels will be securely fastened during mobilisation/demobilisation.			
	 Lifting is to be carried out by competent personnel using equipment that is suitable, certified and maintained. 			
	 Waste management controls are to remain effective to reduce risk of release of wastes that could be ingested or cause entanglement. 			
	• During the activities, detailed records of equipment lost overboard or dropped will be maintained and reviews will be undertaken to reflect on methods to mitigate repetition of the incident.			
MB12	JH will ensure:	Construction	Project Environment	REMM
	 Operations of vessels will be commensurate with Part 8 of the EPBC Regulations (Interacting with Cetaceans and Whale Watching), DoEE (2016) National Strategy for Mitigating Vessel Strike of Marine Megafauna, NSW (2016) Marine Safety Regulation, and NSW (2017) Biodiversity Conservation Regulation. 		Manager (or delegate)	
	 A member of the vessel crew will act as a marine fauna observer (MFO) at all times during daylight works and will maintain vigilant watch in support of Part 8 of the EPBC Regulations to manage risk of vessel collision with any other vessels or marine fauna. The MFOs will be trained and experienced in whale identification and behaviour, distance estimation, and be capable of making accurate identifications and observations of whales in Australian waters. The MFO will provide advice on appropriate actions to be taken to mitigate risks should whales be encountered. 			
	• The Australian Guidelines for Whale and Dolphin Watching (Commonwealth of Australia, 2017) for sea- faring activities will be implemented across the entire Project.			

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Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
MB13	 JH will ensure: Chemicals and hydrocarbons will be packaged, marked, labelled and stowed in accordance with MARPOL Annex I, II and III regulations. These include provisions for all chemicals (environmentally hazardous) and hydrocarbons will be stored in closed, secure, and appropriately bunded areas. 	Construction	Project Environment Manager (or delegate)	REMM
	 A Material Safety Data Sheet (MSDS) will be available for all chemicals and hydrocarbons in locations nearby to where the chemicals/wastes are stored. Vessel operators will have an up-to-date Shipboard Oil Pollution Emergency Plan (SOPEP) and Shipboard Marine Pollution Emergency Plan (SMPEP). All shipboard chemical and hydrocarbon spills will be managed in accordance with these plans by trained and competent crew. On board oily water disposal will be managed in accordance with the Marine Pollution Regulation 2006. The vessel operator will record the guantity, time and onshore 			
	 location of the oily water disposal in the vessel Oil Record Book If vessels are equipped with an oily water filter system, they may discharge oily water after treatment to 15 ppm in an oily water filter system (providing they have a current calibration certificate for the bilge alarm) as required by MARPOL Annex I Regulations (for the prevention of pollution by oil). To discharge, the vessels will require a current IOPP certificate for oily water filtering equipment, and a current calibration certificate for the bilge alarm. 			
MB14	JH will ensure: Visual observations will be maintained by watch keepers on all vessels	Pre- construction,	Project Environment Manager (or	REMM
	 Visual observations will be maintained by watch keepers on all vessels. Regular notification to the following Australian Government agencies before and during operations: 	Construction	delegate)	
	 The AMSA RCC of proposed activity, location and commencement date to enable an AusCoast warning to be issued. 			
	 The Australian Hydrographic Office of proposed activity, location and commencement date to enable a 'Notice to Mariners' to be issued. 			
	 In the event of a spill resulting in notification to AMSA, other sea users (e.g. fishing industry) will be informed of the incident via Marine Notices to prevent vessels entering an area where hydrocarbons have been released. 			
	 Vessel will operate in compliance with all marine navigation and vessel safety requirements in the International Convention of the Safety of Life at Sea (SOLAS) 1974 and the Navigation Act 2012. This includes the requirement for all equipment and procedures to comply with the following AMSA Marine Orders: 			
	Marine Order 30: Prevention of Collisions.			
	Marine Order 21: Safety and Emergency Arrangements.			
	 Order 27: Safety of Navigation and Radio Equipment: sets out ship requirements regarding radio installations, equipment, watch keeping arrangements, sources of energy, performance standards, maintenance requirements, personnel and recordkeeping. 			

Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
	 Vessels will be equipped with appropriate navigational systems which may include an automatic identification system (AIS) and an automatic radar plotting aid (ARPA) system capable of identifying, tracking and projecting the closest approach for any vessel (time and location) within the operational area and radar range (up to approximately 70 km) 			
	 Marine diesel oil compliant with sulphur content of maximum 0.5% m/m) is the only engine fuel to be used by the vessels, compliant with MARPOL Annex VI. 			
	 Oil spill responses will be executed in accordance with the vessel's SOPEP, as required under MARPOL. 			
MB21	DPI Fisheries (1800 043 536) and the Environment Protection Authority (131 555) will be notified immediately if fish kills occur in the vicinity of the works. In such cases, all works other than emergency response procedures are to cease until approval is given by DPI Fisheries or the Environment Protection Authority for the works to proceed.	Pre- construction, construction	Project Environment Manager (or delegate)	REMM
	JH will monitor for fish kills during daily inspections and observation activities. In the instance that 15 or more fish are observed during active offshore construction works, JH will commence an investigation in accordance with DPI Fisheries' Protocol for Investigating and Reporting Fish Kills (DPI, 2023).			
CP4	Weather forecasts will be monitored when working on the intake infrastructure and halt works when extreme coastal warnings are issued by the Bureau of Meteorology. Prepare and implement a Natural Event Response Plan as part of the Construction Environment Management Plan (CEMP).	Construction	Project Environment Manager (or delegate)	REMM
	Daily weather forecasting will be provided to all relevant personnel			
SOC3	Intake structure – As a minimum to consider public safety, an Access Management Plan has been developed for the Project for navigable waters to address access to the waterway for construction and recreational use, in consultation with Transport.	Pre- construction, construction	Project Environment Manager (or delegate)	REMM
TT7	 JH will ensure: Pipe-laying related activities will be undertaken in accordance with all marine navigation and vessel safety requirements under the International Convention of the Safety of Life at Sea (SOLAS) 1974 and Navigation Act 2012. For the vessels, this requires equipment and procedures to comply with AMSA Marine Order - Part 30: Prevention of Collisions, and Marine Order - Part 21: Safety of Navigation and Emergency Procedures. 	Pre- construction, Construction	Project Environment Manager (or delegate)	REMM
	 Stakeholder consultation (local councils, fishing bodies, etc.) which will be undertaken as required in accordance with the Community Communication Strategy (CCS). 			
	 Notification to the following Australian Government agencies will be made prior to moving the pipe laying vessel on location: The Australian Hydrographic Office of proposed activity, location (i.e. vessel location) and commencement date to enable a Notice to Mariners' to be issued The Australian Maritime Safety Authority (AMSA) Rescue Coordination Centre (RCC) of proposed activities, location (i.e. vessel location) and commencement date to enable a Notice to Safety Authority (AMSA) Rescue Coordination Centre (RCC) of proposed activities, location (i.e. vessel location) and commencement date to enable an AusCoast warning to be issued 			
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Ref	Measure / Requirement	Timing / Frequency	Responsibility	Reference / Source
	 Vessels will also be equipped with all navigational and safety requirements for operation in Australian waters. These may include an automatic identification system (AIS) and an automatic radar plotting aid (ARPA) system capable of identifying, tracking and projecting the closest approach for any vessel (time and location) within radar range (up to approximately 70 km) Visual observations will be conducted by trained watch keepers on all vessels 24 hours per day to support management of collision risk or entanglement/interference with other users. 			
VA3	Lighting of the temporary barge for intake structure construction methods will be required as per NSW Roads and Maritime Night Safety guidelines. This is required as to mitigate issues out at sea, ensuring that other vessels/water activity are able to clearly identify the equipment's location. JH will ensure offshore construction works are undertaken in accordance with the NSW Roads and Maritime Night Safety guidelines.	Construction	Project Environment Manager (or delegate)	REMM
MB22	If a suitably trained MFO observes target marine fauna within the Exclusion zones, then dredging activities must be suspended within 2 minutes of the sightings or as soon as safely possible. Dredging activities that have been suspended must not recommence until the sighted fauna have moved beyond their respective Exclusion zone or not sighted for at least 30 minutes.	Construction	Project Environment Manager (or delegate)	Marine Monitoring Program

Notes: Identifying references in Table 6.1 are for the purpose of identifying the specific mitigation measures and are identification numbers only.

6.2. Community Consultation and Notification

Works associated with offshore construction will be communicated as required in accordance with the CEMP, Out-of-Hours- Work Protocol (OOHWP) and the Community Communication Strategy (CCS). JH will adhere as a minimum to the following principles and procedures relevant to offshore construction works:

- Good engagement with the community will be maintained to facilitate effective delivery of the Project with consideration of community impact, including procedures for notifying residents, business owners and other sensitive land uses, of construction activities that may affect their amenity
- Minimising construction impacts as far as reasonably practical will be viewed as a continuous improvement exercise that is inclusive of stakeholders
- Site personnel and the community will be informed of the effort and methods undertaken to reduce impacts for the Project

Further information on the procedures for managing community consultation and engagement, is provided in the CCS.

6.3. Complaints Management

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HWC will maintain a Complaints Register for the Project in accordance with the requirements of CoA B6. JH will provide any relevant complaints to HWC for inclusion.

HWC has established a Project email (desal@hunterwater.com.au), postal address (36 Honeysuckle Drive Newcastle), and free-call number for Project enquiries and complaints 1800 168 051. Phone calls will be monitored during standard construction hours and while the Project is undertaking Out of Hours Works. All contact will be acknowledged, and responses provided in accordance with the timeframes outlined in the approved Communication Strategy.

The telephone number will be available for the duration of the work and from 12 months following completion of construction. All approaches from the community and stakeholders will be registered in the Project's Consultation Manager Stakeholder database managed by the Project community team.

The telephone number, postal and email address will be published on all the Project collateral (including the website), site signage and hoarding, and social media.

Records of all complaints received will include the following details as minimum (refer to CMP for full requirements):

- Date and time of the complaint.
- Method by which the complaint was made.
- Any personal details of the complainant provided by the complainant or, if no such details were provided, a note to that effect.
- Number of people in the household affected in relation to the complaint
- The nature of the complaint
- Means by which the complaint as addressed and whether resolution was reach, with or without mediation.
- If no action taken, reasons why.

The Project will circulate an updated copy of the complaints register by 5:00pm the day that the complaint has been received. The complaints register will be provided to HWC, and the ER. Personal details will not be included in the complaints register unless otherwise agreed to or requested by the complainant.



This information will be included in a Complaints Register, in accordance with CoA B6. The information contained within the register will be made available to the Planning Secretary upon request.

An initial response to complaints will be provided in accordance with the Project Communication Strategy defined complaint response times, generally as follows:

- Complaint received by call, text, or personal contact:
 - Within 2 hours during standard construction hours and during out-of-work when construction is occurring.
 - Otherwise, within 24 hours.
- Written complaint:

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- Acknowledged within 8 hrs.
- Proposed action within 24 hrs (verbal or written where no phone number has been provided).
- Detailed written response within 10 business days.

All complaints will be closed off in the stakeholder database. At all times the stakeholder will be kept informed of when they will receive a response.

The Project Environment Manager (or delegate) will apply an adaptive approach to ensure that corrective actions are applied in consultation with the appropriate construction staff to allow modifications and improvements in the management of any environmental issues resulting in community complaints.

Where requested by the Planning Secretary, the ER will assist in the resolution of community complaints.



7. Marine Monitoring

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The monitoring requirements presented in Table 7-1 have been identified as necessary throughout the various construction phases of the Project. These requirements are discussed further in Appendix A.

Table 7-1: Offshore Construction Works Monitoring Requirements

Monitoring Aspect	Measure / Requirement	Responsibility
Construction	This monitoring will ensure that:	Project
Activities	All construction activities that may potentially impact benthic habitats occur within the approved/designated areas.	Environmental Manager (or delegate)
	 Anchoring activities are managed appropriately, and no unapproved anchoring takes place. 	,
	 Any incidences of vessel grounding/impacts to the seabed are recorded. 	
	If visual monitoring indicates that any of these events have occurred, the processes described in Section 8 will be implemented as required.	
Plume	This monitoring will ensure that:	Project
Monitoring	Dredge plumes will be visually tracked on a daily basis	Environmental Manager (or
	Turbidity measured within the plume, within 2km from the dredge area using a handheld logger	delegate)
	• Vertical profiles of turbidity will be recorded within the plume.	
Introduced Organisms	Early detection of marine pests through monitoring is imperative for effective management. Monitoring will involve:	Project Environmental
	 All contractors must undertake a vessel risk assessment prior to mobilising the vessel to site. 	Manager (or delegate)
	 Any vessel or equipment mobilising to site from outside of Australia would automatically be considered high risk and an IMP inspection required. 	
	 Vessel hull (and equipment) biofouling inspections to be undertaken for uncertain or high risk vessels before they arrive in the area. 	
	 Rapid assessments for marine pests will be undertake using Marine Pest Identification Cards. 	
Marine	Monitoring will include:	Project
Fauna	 Visual monitoring for marine fauna (including whales, dolphins, pinnipeds and marine turtles) will take place from a designated vessel within a 300 m radius of the offshore construction area. 	Environmental Manager (or delegate)
	 Monitoring will be undertaken by a Marine Fauna Observer who will be a trained crew person, experienced in identifying marine fauna, estimating distances at sea and interpreting fauna behaviour. 	
	 Monitoring for marine fauna will commence prior to the commencement of any marine construction activity (each day) and will continue for the duration of all construction processes. 	



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8. Compliance Management

8.1. Roles and Responsibilities

The Project Team's organisational structure and overall roles and responsibilities are outlined in CEMP. Implementation of this plan is the responsibility of the JH Environmental Manager (or delegate).

8.2. Training

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All project personnel, including contractors working on site will undergo site induction training and pre-start briefings relating to offshore construction works. The induction training and pre-start briefings will address elements related to the management of offshore construction works including:

- Existence and requirements of this sub-plan
- Applicable and relevant legislative requirements
- EPL conditions (as required)
- Roles and responsibilities for management of offshore construction works
- Typical construction activities for offshore works and their associated environmental impacts.
- Procedure to be implemented in the event of an incident or exceedance in monitored exceedance limits.
- Offshore construction works mitigation and management measures
- Out of Hours Work Protocol.

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in the management of offshore construction works.

Marine Fauna Observers will be selected at the discretion of JH and will complete specific training prior to undertaking observation tasks. This training will be delivered by an external party with experience in marine fauna management.

Daily pre-start meetings conducted by the Superintendent / Site Supervisor will inform the site workforce of any environmental issues relevant to offshore construction that could potentially be impacted by, or impact on, the day's activities. Further details regarding staff induction and training are outlined in the CEMP.

8.3. Monitoring and Inspection

Visual inspections of marine areas, mitigation measures, and activities which have the potential for marine impacts will occur for the duration of the Project. Requirements and responsibilities in relation to monitoring and inspections are documented in the CEMP.

Monitoring will include, but not be limited to:

- Monthly visual inspections of active offshore construction areas (refer to Figure 4-1)
- Spot checks of offshore construction activities
- Regular inspections undertaken by dedicated marine observers throughout construction.

The Project will review the work or activity as soon as practicable and, where possible modify the work or activity to prevent any recurrence. Lessons learnt will be communicated to relevant personnel in toolbox talks.

All environmental monitoring equipment (if required) will be maintained and calibrated according to the manufacturer's specifications, and appropriate records will be kept. Non-conformance reporting protocols detailed in the CEMP. The marine monitoring program is provided in Appendix A.

8.4. Auditing

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

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

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

8.5. Reporting

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Reporting requirements relevant to the management of offshore construction works and associated activities are identified in Table 8-1: Reporting requirements . Requirements and responsibilities for reporting are further described in the CEMP.

Accurate records will be maintained substantiating all construction activities associated with the Project or relevant to the conditions of approval, including measures taken to implement this OSCWMP. Records will be made available to DPHI upon request, within the timeframe nominated in the request.

Item	Frequency	Standards	External Reporting	Responsibility
Incident and non-compliance reports	At each occurrence	Reporting of incidents and non-compliances in accordance with CoA, EPL (and associated PIRMP), Environmental Incident Classification and Reporting Procedure.	Appropriate authority dependant on nature of the incident (e.g. EPA, DPHI)	Project Environment Manager (or delegate) / HWC
Complaint register	Daily (ER, EPA) as received. DPHI as requested	Reporting of complaints, in accordance with the CoA, EPL and CCS, through the complaints register, to the ER and EPA for any complaints received (on the day they are received). Communication, notification and complaints handling requirements regarding Noise matters will be managed through the Complaints Management System administered by HWC	ER EPA (in accordance with EPL conditions) DPHI (as requested by the Secretary)	Project Environment Manager (or delegate)
Weekly environmental inspection	Weekly	Inspection of the environmental controls and implementation including the measures outlined in Section 6.1	HWC	Project Environment Manager (or delegate)
Marine Observer Inspections	As required	Completion of marine observer checklist	N/A	Project Environment Manager (or delegate)

Table 8-1: Reporting requirements



9. Review and Improvement

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9.1. Continuous Improvement

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

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Identify environmental risks not already included in the risk register.
- 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.
- Respond quickly to nonconformities.
- Verify the effectiveness of the corrective and preventative actions.
- Document any changes in procedures resulting from process improvement.
- Make comparisons with objectives and targets.

The Project Environment Manager (or delegate) is responsible for ensuring stage-specific environmental risks are identified and included in the Project risk register and appropriate mitigation measures implemented throughout the construction, as part of the continuous improvement process. The process for ongoing risk identification and management during construction is outlined in the CEMP.

9.2. OSCWMP Version Control

The processes described in the CEMP may result in the need to update or revise this Plan. Only the Environment Manager (or delegate) has the authority to approve changes to the requirements of this Plan. Minor amendments to the Plan may be approved by the ER in accordance with the CEMP and are to be implemented for the duration of construction and for any longer period specified by the Planning Secretary, whichever is the greater. Amendments not considered minor by the ER need to be approved by the Planning Secretary.

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



Appendix A – Marine Monitoring Program

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Refer to CS1135-WT-BEL-EN-PLN-0008 - BDP - Marine Monitoring Program



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Belmont Desalination Plant

Marine Monitoring Program

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Revisions and Distribution

Revisions

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

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Terms and Abbreviations

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ABL ABN Ambient Noise AMS AQMP Attenuation At-property acoustic treatment	Assessment Background Level – A single-number figure used to characterise the background noise levels from a single day of a noise survey. ABL is derived from the measured noise levels for the day, evening, or night-time period of a single day of background measurements. The ABL is calculated to be the tenth percentile of the background LA90 noise levels, i.e. the measured background noise is above the ABL 90% of the time. Airborne noise The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far. Activity Method Statements
ABN Ambient Noise AMS AQMP Attenuation At-property acoustic treatment	Airborne noise The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far. Activity Method Statements
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AMS AQMP Attenuation At-property acoustic treatment	Activity Method Statements
AQMP Attenuation At-property acoustic treatment	· · · · · · · · · · · · · · · · · · ·
Attenuation	Air Quality Management Sub-Plan
At-property acoustic treatment	The reduction in the level of sound or vibration.
	Includes courtyard walls and building treatments. Building treatments may include but are not limited to ventilation, acoustic blinds/curtains, glazing, window and door seals, sealing of vents or underfloor areas, shutters and secondary glazing.
AVTG	Assessing Vibration – A Technical Guideline
CCS	Community Communications Strategy
CEMP	Construction Environmental Management Plan
CMP	Construction Monitoring Program
CNVMP	Construction Noise and Vibration Management Plan
CoA	Conditions of Approval
Construction	Includes all activities required to construct the SSI as defined in the Project Description described in the documents listed in Condition A1, including commissioning trials of equipment and temporary use of any part of the SSI but excludes Low Impact Work which is carried out or completed prior to approval of the CEMP and works approved under a Site Establishment Management Plan.
Consultation	To provide information and actively engage with and obtain and consider feedback from stakeholders during development of post approval documents. How the feedback has been considered and whether any changes have been made in response to this feedback is then documented and communicated back to stakeholders. Consultation should not be limited to one-way notification about the project.
Continuously	Includes any period during which there is less than one hour between ceasing and recommencing any of the work.
CSWMP	Construction Soil and Water Management Plan
0&C	Design and Construct
IB(A)	Decibels using the A-weighted scale which is accepted as being representative of the frequency response of the human ear.
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DECCW	Department of Environment and Climate Change and Water
001	Direct Ocean Intake
ОРНІ	Former Department of Planning, Industry and Environment, now Department of Planning, Health and Infrastructure
EIS	Environmental Impact Statement
EMS	Environmental Management System
Environmental Assessment Documentation	Hunter Water Corporation Belmont Desalination Plant Environmental Impact Statement, prepared by GHD dated 2019.

Term/Abbreviation	Definition/Expanded text
	Hunter Water Corporation Belmont Desalination Plant Amendment Report and Submissions Report prepared by GHD dated 2020.
	Hunter Water Corporation Belmont Desalination Plant Modification Report Environmental Impact Statement prepared by Jacobs dated 2024.
	Hunter Water Corporation Belmont Desalination Plant Modification Report – Submissions Report prepared by Jacobs dated 2024
	Hunter Water Corporation Belmont Desalination Plant Modification Report – Response to Submissions and RFI by Jacobs dated 2024
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.
Environmental objective	Defined by AS/NZS ISO 14001:2015 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve.
Environmental target	Defined by AS/NZS ISO 14001:2015 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environment Protection Authority
EPL	Environment Protection Licence
ER	Environmental Representative
Feasible and reasonable	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Feasible relates to engineering considerations and what is practical to build. Reasonable relates to the application of judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community views and nature and extent of potential improvements.
GBN	Ground-borne noise
Highly Noise Affected	As defined in the Interim Construction Noise Guideline (DECC, 2009)
Highly noise intensive works/ particularly annoying	 Work which is defined as annoying under the ICNG including: use of power saws, such as used for cutting timber, rail lines, masonry, road pavement or steel work. (a) grinding metal, concrete or masonry; (b) rock drilling; (c) line drilling; (d) vibratory rolling; (e) bitumen milling or profiling; (f) jackhammering, rock hammering or rock breaking; and (g) impact piling Note: when modelled, these activities/plant and equipment will incur a 5dB(A) penalty.
HTP	Helicopter Transportation Plan
HWC	Hunter Water Corporation
ICNG	Interim Construction Noise Guideline (DECC, 2009)
INP	Industrial Noise Policy
ISCA	Infrastructure Sustainability Council of Australia
JUB	Jack-up Barge
JH	John Holland
KFH	Key Fish Habitat



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	J <u>o</u> hn Holland
Term/Abbreviation	Definition/Expanded text
LMCC	Lake Macquarie City Council
LGA	local government area
MFO	Marine Fauna Observer
NCG	Noise Criteria Guideline
NMG	Noise Mitigation Guideline
NML	Noise Management Level as defined in the Interim Construction Noise Guideline (DECC, 2009)
NPfl	Noise Policy for Industry
NVA	Noise and Vibration Assessment
NVIS	Noise and Vibration Impact Statement
NVMP	Noise and Vibration Management Sub-Plan
ONR	Operational Noise Review
OOHW	Out of Hours Works
POEO Act	Protection of the Environment Operations Act 1997
PPV	Peak Particle Velocity – the highest velocity of a particle (such as part of a building structure) as it vibrates. Most sound level meters measure root mean squared (RMS) values; it is common to approximate the PPV based on an RMS measurement. PPV is commonly used as a vibration criterion and is often interpreted as a PPV based on the Lmax or Lmax,spec index.
RBL	The Rating Background Level for each period is the medium value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period (day, evening and night).
REMM	Revised Environmental Management Measures
RO	Reverse Osmosis
SOLAS	Safety of Life at Sea
Sensitive land use(s)	Includes residences, educational institutions (including preschools, schools, universities, TAFE colleges), health care facilities (including nursing homes, hospitals), religious facilities (including churches), childcare centres, passive recreation areas (including outdoor grounds used for teaching). Receivers that may be considered sensitive include commercial premises (including film and television studios, research facilities, entertainment spaces, temporary accommodation such as caravan parks and camping grounds, restaurants, office premises, and retail spaces), and industrial premises as identified by the Planning Secretary.
SEPP	State Environmental Planning Policy
SSI	State Significant Infrastructure
Submissions Report	The Proponent's response to issues raised in the submission received in relation to the application for approval of the SSI under the EP&A Act.
Transport	Transport for New South Wales, or TfNSW
WWTW	Waste Water Treatment Works
Work	Any physical activity for the purposes of the SSI including construction, Low Impact Work, enabling works, utility works and site establishment activities but not including operational maintenance works.
WRA	Work Risk Assessment



Offshore Construction Works Monitoring Program

Plan Profile

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



1. Introduction

1.1. Context

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This Offshore Construction Works Monitoring Program (monitoring program) is an appendix to the Offshore Construction Works Management Plan (OSCWMP) and forms part of the Construction Environmental Management Plan (CEMP) for the Belmont Permanent Desalination Plant (the Project).

This monitoring program has been prepared to address the requirements of the Conditions of Approval (CoA) and the measures listed in the Environmental Assessment Documentation.

1.2. Scope of the Monitoring Program

The scope of the monitoring program is to describe how the potential environmental impacts from offshore construction works will be monitored during the delivery of the project. This monitoring program has been prepared under and is consistent with the OSCWMP, considering the receiving environment and construction activities.

This monitoring program has been developed to describe how offshore construction works will be monitored in the immediate vicinity of construction works. Operational monitoring measures do not fall within the scope of this monitoring program and therefore are not included. A copy of this monitoring program will be kept on the premises for the duration of construction.

1.3. Purpose and Objectives

The purpose of this monitoring program is to describe how, where and when John Holland (JH) will monitor during offshore construction works. The key objective of this monitoring program is to ensure that impacts to the receiving environment and the local community surrounding the project are minimised.

Section 2 of the OSCWMP further detail objectives and specific targets for the management of offshore construction works during the delivery of the project.

1.4. Environmental Management System Overview

The Environmental Management System (EMS) for the project is described in the CEMP. To achieve the intended environmental performance outcomes, JH have established, implemented, maintained and continually improved an EMS in accordance with the requirements of ISO 14001:2015. The JH EMS will be adopted as the guiding environmental management framework for the project.

1.5. Monitoring Program Preparation, Approval and Update

This Monitoring Program has been prepared to satisfy CoA C13(d) and has been prepared by a specialist marine consultant (Adam Cohen, a principal marine specialist from Australasian Marine Associates) in accordance with CoA C13(a). This monitoring program will be reviewed by Hunter Water Corporation (HWC) and the Department of Planning, Housing and Infrastructure's (DPHI) Environmental Representative (ER) to confirm it is consistent with, and incorporates, all relevant requirements prior to submission to the Planning Secretary.

Construction of the project will not commence until the CEMP (including this monitoring program) are endorsed by the ER and approved by the planning secretary.

This monitoring program will be implemented for the duration of construction and for any longer periods set out in this monitoring program or specified by the planning secretary, whichever is greater. This monitoring program will be regularly reviewed by the Environmental Manager (or Delegate). Minor amendments to this monitoring program will be approved by the ER.

Any amendments to the monitoring program will be documented in subsequent provisions of this monitoring program. A copy of the any updates to the monitoring program will be distributed to all relevant stakeholders in accordance with approved document control procedures, as outlined in the CEMP. Site personnel with responsibilities for monitoring of offshore construction works will be informed of any amendments and training provided, where required.



2. Environmental Requirements

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2.1. Relevant Legislation and Guidelines

Table 2-1 lists the principal legislation, regulation, plans, policies, guidelines, specifications, and Australian Standards that apply to offshore construction works.

Table 2-1: Principal legislation and regulation relevant to Offshore Construction Works

Legislation	 Protection of the Environment Operations Act 1997 (POEO Act). Protection of the Environment Operations Regulation 2008. Biodiversity Conservation Act 2016. Fisheries Management Act 1994 No 38. Current version for 30 October 2023. Environment Protection and Biodiversity Conservation Act 1999. Navigation Act 2012. Marine Pollution Regulation 2006. Australian (AMSA) and international regulations (MARPOL). Protection of the Sea (Prevention of Pollution from Ships) Act 1983. AMSA Marine Order 21: Safety and Emergency Arrangements. AMSA Marine Order 30: Prevention of Collisions. AMSA Marine Order 27: Safety of Navigation and Radio Equipment: AMSA Marine Order 97: Marine pollution prevention - air pollution.
Guidelines and Specifications	 Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018). National Assessment Guidelines for Dredging (Commonwealth of Australia, 2009). Marine Water Quality Objectives For NSW Ocean Waters - Hunter and Central Coast (DEC 2005). Policy and Guidelines for Fish Habitat Conservation and Management (DPI, 2013). The Australian Guidelines for Whale and Dolphin Watching. NSW Roads and Maritime Night Safety guidelines. National Light Pollution Guidelines DoEE (2020). Significant Impact Guidelines 1.1: great white shark, loggerhead, green and hawksbill turtles, southern right whale and humpback whale, dugong and syngnathids (Commonwealth of Australia, 2013).

Relevant provisions of the above legislation are explained in the Register of Legal and Other Requirements included in Appendix A of the CEMP.

2.2. Conditions of Approval – SSI-8896

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

Table 2-2: Condition of Approval relevant to the OSCWMP

СоА	Condition Requirements	Document Reference
C13	The Proponent must prepare an Offshore Construction Works Management Sub-Plan and the plan must address, but not be limited to the following:	
	 a) include a program to monitor and report on the impacts and environmental performance of the offshore works and the effectiveness of the implemented management measures in accordance with the requirements 	This Monitoring Program

2.3. Revised Environmental Management Measures

Relevant REMMs are listed in the OSCWMP.



3. Existing Environment

3.1. General Description

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The project site is located near the township of Belmont, NSW which lies within the Lake Macquarie City Council local government area. The onshore component of the desalination plant is located adjacent to the existing Belmont WWTW. Marine facilities associated with the desalination plant will extend from this location to the Direct Ocean Intake (DOI) structure approximately 850 m off shore.

The site is characterised by an imposing foredune comprising sparse vegetation which boarders Nine Mile Beach. The desalination plant is located immediately to the west of this dune formation and approximately 170 meters (m) from the shoreline on low lying land previously used for ancillary activities for the WWTW. The marine environment within the area is generally used for recreational and commercial fishing activities. A number of marine fauna have been observed in the area during various times of the year.

3.2. Oceanography

3.2.1. Currents and Tides

Water levels fluctuate as they are influenced by tidal variation (semi diurnal), storm surge (from significant reduction in barometric pressure), wind setup (from onshore winds), wave setup (raised water levels as a result of broken waves, approximately 15 per cent of offshore wave height), wave runup (uprush of water from a breaking wave).

Prevailing northerly drift is evident due to the dominant south south-east wave direction on the NSW east coast. The gross transport rates for Nine Mile Beach have been estimated up to 600,000 cubic meters (m³) although net littoral drift outside of the embayment is thought to be significantly lower.

3.2.2. Wave Climate

The NSW coast is subject to a moderate wave climate predominantly from the south to southeast with an average offshore significant wave height (Hs) in the order of 1.6 m. Large waves can be generated year round by tropical cyclones, mid latitude cyclones and east coast lows. Given the orientation of the beach at the Project area, waves from the south-east would have the most potential for cross-shore erosion.

3.3. Geology

3.3.1. Substrate and Sediment Quality

The existing ocean outfall to the north of the DOI provides a hard substrate within an otherwise open area of soft sandy substrate. The soft sediment habitat around the Belmont WWTW outfall is predominantly (>90%) comprised of sand fractions, rather than larger gravel/cobbles or smaller silt and clay fractions.

Historical sediment quality testing determined that there is no evidence to suggest that the Belmont WWTP outfall is a point source for contaminants. Differences in total organic carbon and metals observed between sampling sites were largely attributable to the difference in particle size distribution and were deemed unrelated to the presence or operation of the outfall.

3.4. Water Quality

Ambient seawater quality was characterised at four reference sites approximately 2 kilometres (km) from the WWTW outlet during water quality studies undertaken between July 2011 – April 2013 and August 2017 – July 2018. Water temperatures ranged from a minimum of 15-16°C to a maximum of 22-23°C. Salinity ranged from 32.7 to 36.4 practical salinity units (PSU) for the 20th to 80th percentiles, respectively.

The average turbidity was above the 80th percentile due to isolated occurrences of very high turbidity values with approximately half of the values exceeding the recommended water quality guideline of 0.5 NTU.

The median of ammonia (NHX) was below 0.005 mg/L and below the recommended guideline value. Concentrations of nitrogen oxides (NOX) however varied quite considerably, with the median being approximately 10-fold lower than the 80th percentile value, showing a relatively small number of samples with a high concentration of NOx. The median NOx value was below the recommended water quality guideline of 0.025 mg/L. Similarly total nitrogen concentrations were relatively high, with the median, average and 80th percentile values all exceeding the recommended water quality guideline of 0.120 mg/L. Median concentrations of total phosphorus were within guideline water quality values.

The medians of faecal coliforms and enterococci were lower than respective limits of reporting (<1 colony forming units/100 ml), although the average values for both are above the 80th percentile due to isolated occurrences of spikes in concentrations.

3.5. Marine Environment

3.5.1. Benthic Ecology

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The benthic environment throughout the offshore construction area is comprised of open homogenous sandy substrate, combined with small sand ripples associated with nearshore wave-action. The sand substrate across the area consists primarily of coarse-grained sand, with patches of shells and shell fragments.

A variety of filter feeding organisms have recruited to the Belmont WWTW outfall pipeline north of the DOI, such that there is now a locally dense and diverse community established that supports an array of invertebrate and fish species. The assemblages are typically dominated by marine worms and small crustaceans.

3.5.2. Fish Assemblages

Fish assemblages associated with the WWTW pipeline and those which are likely to utilise the future DOI infrastructure, include those that are using the structure for refuge, those that are actively feeding on the sessile organisms growing on the structure, and higher order predators which are attracted to this prey. Typical species observed include the highly abundant Mado, *Atypichthys strigatus* (Günther 1860), which are abundant across the WWTW pipeline, as well as Australian Salmon.

3.5.3. Conservation Values

Marine biologically important areas for some of the region's protected species (DoEE, 2015) cover the Project locality, comprising Humpback whale migration, Shearwater bird foraging, Indo-Pacific/Spotted Bottlenose dolphin breeding and calving and Grey nurse shark breeding. Further, the Project is located within a broad area that is designated by the Department of Primary Industries as key fish habitat.

A number of threatened species were identified by the BC and FM BioNet as species having the potential to occur within the project area. Of these species the following were identified as potentially occurring in the project area and assessed under the BC Act 2016 assessment criteria: New Zealand fur seal (*Arctocephalus forsteri*) (vulnerable), Southern right whale (*Eubalaena australis*) (endangered 1), Dugong (*Dugong Dugon*) (endangered 1), Humpback whale (*Megaptera novaeangliae*) (vulnerable), and loggerhead (*Caretta caretta*) (endangered 1) and green turtles (*Chelonia mydas*) (vulnerable).

Schedule 4, 4A and 5 of the FM Act 1994 provides lists of critically endangered, endangered and vulnerable species, populations and ecological communities occurring in NSW. The great white shark (Carcharodon carcharias) was identified as potentially occurring in the project area and was thus assessed under the FM Act 1994 assessment criteria as Hawks Nest and Stockton Beach are a known primary residency region for juveniles of the species.

The EPBC Act 1999 Protected Matters Search Tool was used to identify MNES, and other matters protected under the EPBC Act 1999 that are predicted to occur in or relate to the project area. This search identified a number of MNES of relevance to the project and likely to occur within the project area; these have been assessed in accordance with the related Significant Impact Guidelines 1.1 (Commonwealth of Australia, 2013): Great white shark, Loggerhead, Green and Hawksbill turtles, Southern right whale and Humpback whale, Dugong and syngnathids.







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4. Monitoring

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The following monitoring requirements have been identified as necessary throughout the various construction phases of the Project.

4.1. Construction Activities

The JH Environmental Manager (or delegate) will be responsible for overseeing the day-to-day visual monitoring of construction activities in order to ensure compliance with this OSCWMP. This monitoring will ensure that:

- All construction activities that may potentially impact benthic habitats (i.e. installation of Direct Ocean Intake Structure) will occur within the approved/designated areas as shown on Figure 3-1.
- Anchoring activities are managed appropriately, and no unapproved anchoring takes place.
- Any incidences of vessel grounding/impacts to the seabed are recorded.

If visual monitoring indicates that any of these events have occurred, the processes described in the OSCWMP will be implemented as required.

4.2. Plume Monitoring

Dredging required within the DOI, involves the excavation of ~ $1,000 \text{ m}^3$ of sand and 325 m^3 of stiff clay. The dredging is proposed to be undertaken using a Bell 200 dredge pump, which has its own built in cutter head. The dredged sediment will be pumped to a discharge location approximately 750 m from the shoreline, adjacent to the dredge area, where it will be released close to the seabed.

Plumes generated by dredging of sand are highly localised; however the plume from the dredged clay extends much further, with a suspended solids concentration of more than 2 mg/l with a footprint diameter of 2.4 km, while the footprint diameter of the plume above 20 mg/l is only 180 metres.

The visual surface monitoring of the plumes surrounding the dredging activity area will be documented by a spotter on board the construction barge/ vessel, at least twice a day or from the shoreline where a high vantage point is accessible. The approach to monitoring of the plumes is included in Appendix A. The dredging contractor is responsible for completing the daily field log, which includes documenting the extent of the dredge plumes, as well as the prevailing weather conditions. The continuous monitoring of the plumes will dictate the development of the dredging related activities. Where the plume extent is difficult to discern from a vessel, the use of a UAV (drone) may assist in mapping the spatial extent of a plume, the application of drones (i.e. flying zone, flying heights etc.) will be undertaken in consideration of flight paths of other airspace users. Additionally, drones will be operated by appropriately licensed personnel and any necessary notifications of use will be undertaken as required.

The extension of the plumes one to two kilometers from the discharge location is expected on occasion; however, if the plume intensity, duration and location are likely to create a plume which has greater spatial and temporal extents than that predicted from the modelling, then this will prompt dredging and disposal activities to be modified using the mitigation measures described in Section 6.1 of the CNVMP. These management measures will consist of a variety of actions which can take place to minimise the plume intensity and extent caused by the dredging works, considering the dredging activities, equipment location and timing of the proposed actions. i.e. Altering the dredge material discharge position; and/ or depth of the discharge in the water column.

Turbidity will be measured within 2km from the disposal location using a handheld logger to assist in validating the hydrodynamic modelling results. Water based monitoring will require the collection of vertical profiles (at 1 m increments) of turbidity will be recorded within the plume. Geographic coordinates and associated turbidity measurements of such profiles will be recorded in accordance with the Monitoring Program. If visual observations identify plumes greater than 2km, the logging distance will be modified to the visible extent of the plume. Prevailing swell/current conditions will affect the direction of the plume therefore logging location will be varied depending upon these factors. Daily weather checks will be undertaken to confirm appropriate logging location. Logging will be undertaken daily during the identification of a plume event.



4.3. Monitoring of Introduced Organisms

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The goals of the NSW Invasive Species Plan 2023-2028 (NSW DPI 2023) must be adopted for construction, which relate to exclusion, eradication or containment and management to reduce the impacts of widespread invasive species.

All Contractor(s) must undertake a Vessel Risk Assessment (VRA) for each vessel prior to mobilisation of the vessel to site. The VRA may be undertaken by the vessel owner/operator. All vessels, floating plant and dredge equipment mobilised to site from any place inside or outside of Australia shall be subject to a VRA. The VRA will determine if an Invasive Marine Species inspection (IMS) is required.

The Contractor(s) must undertake an Invasive Marine Species (IMS) inspection of all vessels assessed in the VRA as uncertain or high risk for introduction of invasive marine species. Any construction vessels mobilised from outside of Australia shall 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.

If any marine vessel does not comply with the requirements of the IMS inspection, the vessel owner will be requested to clean the vessel of any identified introduced organisms prior to an additional IMS inspection, showing compliance with requirements. This will enable the vessel to enter site.

Rapid assessments for marine pests will be undertake using Marine Pest Identification Cards. The relevant cards are available from https://www.marinepests.gov.au/commercial/offshore-infrastructure and should be used to identify any invasive marine species (see Appendix B).

4.4. Monitoring of Marine Fauna

Visual monitoring for marine fauna (including whales, dolphins, pinnipeds and marine turtles) will take place from a designated vessel within a 2 km radius of the offshore construction area. The monitoring will be undertaken by suitably trained Marine Fauna Observers (MFOs) who will be a person qualified in identifying marine fauna, estimating distances at sea and interpreting fauna behaviour. MFO training will be undertaken by a Registered Third Party training provider The monitoring protocols and procedures have been informed by Australian National Guidelines for Whale and Dolphin Watching 2017 (Commonwealth of Australia, 2017), and the management zones have been informed using EPBC Policy Statement 2.1.

Trained MFOs are crew members trained in marine fauna species observations and mitigation measures, consistent with the Project environmental management plans. Trained MFOs will be on duty on Project vessel during marine construction activities. There will be always at least one Trained MFO on duty during dredging operations. Crew will be scheduled so that they are able to conduct MFO duties while not undertaking other tasks. All vessel crews engaged in by the Client for dredging operations of the Project will attend a minimum of one marine fauna induction to become familiar with the range of conservation significant marine fauna that could be present in the operational area and the risks the dredging works may present to this fauna.

Monitoring for marine fauna will commence at least 30 minutes before the commencement of any marine construction activity (each day) and will continue for the duration of all construction processes.

If any of the marine fauna listed in Appendix C are observed within a 2 km radius of the construction area their movements shall be closely monitored by the observer. If any of the marine fauna listed in Appendix C are identified within 300 m of the work site ('the exclusion zone'), the relevant mitigation measures outlined in the OSCWMP will be undertaken. Marine observers will complete the cetacean log form and include any marine fauna observed in the cetacean observation register. These forms, along with a marine mammal information guide are provided in Appendix C.

If a suitably trained MFO observes target marine fauna within the Exclusion zones, then dredging activities must be suspended within 2 minutes of the sightings or as soon as safely possible. Dredging activities that have been suspended must not recommence until the sighted fauna have moved beyond their respective Exclusion zone or not sighted for at least 30 minutes. Observations made by non-MFO's will be reported to MFOs and actions taken per this monitoring program.

Trained MFOs will use datasheets to record observer effort, fauna observations and mitigation measures. Datasheets to be completed for observations are provided in Appendix C, and will include:

• Location, date and start time of survey.

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- Name, qualifications and experience of MFOs involved in the survey.
- Location, times and reasons when observations were hampered by poor sighting conditions.
- Location and time of start-up delays, power downs, or stop work procedures as a result of marine fauna sightings.
- Location, time and distance of any fauna sightings including species where possible.

The JH Environmental Manager (or delegate) has overall responsibility for the management of the Marine Fauna Observation requirements.



5. Compliance Management

5.1. Roles and Responsibilities

The Project Team's organisational structure and overall roles and responsibilities are outlined in CEMP. Implementation of this plan is the responsibility of the JH Environmental Manager (or delegate).

5.2. Training

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All project personnel, including contractors working on site will undergo site induction training and pre-start briefings relating to offshore construction works. The induction training and pre-start briefings will address elements related to the management of offshore construction works including:

- Existence and requirements of this sub-plan
- Applicable and relevant legislative requirements
- EPL conditions (as required)
- · Roles and responsibilities for management of offshore construction works
- Typical construction activities for offshore works and their associated environmental impacts.
- Procedure to be implemented in the event of an incident or exceedance in monitored exceedance limits.
- Offshore construction works mitigation and management measures
- Out of Hours Work Protocol.

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in the management of offshore construction works. Daily pre-start meetings conducted by the Superintendent / Site Supervisor will inform the site workforce of any environmental issues relevant to offshore construction that could potentially be impacted by, or impact on, the day's activities. Further details regarding staff induction and training are outlined in the CEMP.

MFO training will be conducted by Registered Third Party training organisation.

5.3. Monitoring and Inspection

Inspections of marine areas, mitigation measures, and activities which have the potential for marine impacts will occur for the duration of the Project. Requirements and responsibilities in relation to monitoring and inspections are documented in the CEMP.

Monitoring will include, but not be limited to:

- Monthly visual inspections
- Spot checks of offshore construction activities
- Regular inspections undertaken by dedicated marine observers (as required)

The Project will review the work or activity as soon as practicable and, where possible modify the work or activity to prevent any recurrence. Lessons learnt will be communicated to relevant personnel in toolbox talks.

All environmental monitoring equipment (if required) will be maintained and calibrated according to the manufacturer's specifications, and appropriate records will be kept. Non-conformance reporting protocols detailed in the CEMP. The marine monitoring program is provided in Appendix A.

5.4. Auditing

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

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

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



5.5. Reporting

Reporting requirements relevant to the management of offshore construction works and associated activities are identified in Table 5-1. Requirements and responsibilities for reporting are further described in the CEMP.

Accurate records will be maintained substantiating all construction activities associated with the Project or relevant to the conditions of approval, including measures taken to implement this OSCWMP. Records will be made available to DPHI upon request, within the timeframe nominated in the request.

5.6. Community Consultation and Notification

Works associated with offshore construction will be communicated as required in accordance with the CEMP, Out-of-Hours- Work Protocol (OOHWP) and the Community Communication Strategy (CCS). JH will adhere as a minimum to the following principles and procedures relevant to offshore construction works:

- Good engagement with the community will be maintained to facilitate effective delivery of the Project with consideration of community impact, including procedures for notifying residents, business owners and other sensitive land uses, of construction activities that may affect their amenity
- Minimising construction impacts as far as reasonably practical will be viewed as a continuous improvement exercise that is inclusive of stakeholders
- Site personnel and the community will be informed of the effort and methods undertaken to reduce impacts for the Project

Further information on the procedures for managing community consultation and engagement, is provided in the CCS.

Table 5-1: Reporting requirements

ltem	Frequency	Standards	External Reporting	Responsibility
Incident and non-compliance reports	At each occurrence	Reporting of incidents and non-compliances in accordance with CoA, EPL (and associated PIRMP), Environmental Incident Classification and Reporting Procedure.	Appropriate authority dependant on nature of the incident (e.g. EPA, DPHI)	Project Environment Manager (or delegate) / HWC
Complaint register	Daily (ER, EPA) as received. DPHI as requested	Reporting of complaints, in accordance with the CoA, EPL and CCS, through the complaints register, to the ER and EPA for any complaints received (on the day they are received). Communication, notification and complaints handling requirements regarding Noise matters will be managed through the Complaints Management System administered by HWC	ER EPA (in accordance with EPL conditions) DPHI (as requested by the Secretary)	Project Environment Manager (or delegate)
Weekly environmental inspection	Weekly	Inspection of the environmental controls and implementation including the measures	HWC ER	Project Environment Manager (or delegate)

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ltem	Frequency	Standards	External Reporting	Responsibility
		outlined in the OSCWMP.		
Marine Observer Inspections	As required	Completion of marine observer checklist	N/A	Project Environment Manager (or delegate)

5.7. Complaints Management

HWC will maintain a Complaints Register for the Project in accordance with the requirements of CoA B6. JH will provide any relevant complaints to HWC for inclusion.

HWC has established a Project email (desal@hunterwater.com.au), postal address (36 Honeysuckle Drive Newcastle), and free-call number for Project enquiries and complaints (XXXXXXX). Phone calls will be monitored during standard construction hours and while the Project is undertaking Out of Hours Works. All contact will be acknowledged, and responses provided in accordance with the timeframes outlined in the approved Communication Strategy.

The telephone number will be available for the duration of the work and from 12 months following completion of construction. All approaches from the community and stakeholders will be registered in the Project's Consultation Manager Stakeholder database managed by the Project community team.

The telephone number, postal and email address will be published on all the Project collateral (including the website), site signage and hoarding, and social media.

Records of all complaints received will include the following details as minimum (refer to CMP for full requirements):

- Date and time of the complaint.
- Method by which the complaint was made.
- Any personal details of the complainant provided by the complainant or, if no such details were provided, a note to that effect.
- Number of people in the household affected in relation to the complaint
- The nature of the complaint
- Means by which the complaint as addressed and whether resolution was reach, with or without mediation.
- If no action taken, reasons why.

The Project will circulate an updated copy of the complaints register by 5:00pm the day that the complaint has been received. The complaints register will be provided to HWC, and the ER. Personal details will not be included in the complaints register unless otherwise agreed to or requested by the complainant.

This information will be included in a Complaints Register, in accordance with CoA B6. The information contained within the register will be made available to the Planning Secretary upon request.

An initial response to complaints will be provided in accordance with the Project Communication Strategy defined complaint response times, generally as follows:

- Complaint received by call, text, or personal contact:
 - Within 2 hours during standard construction hours and during out-of-work when construction is occurrina.
 - Otherwise, within 24 hours.

Written complaint:

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- Acknowledged within 8 hrs.
- Proposed action within 24 hrs (verbal or written where no phone number has been provided).
- Detailed written response within 10 business days.

All complaints will be closed off in the stakeholder database. At all times the stakeholder will be kept informed of when they will receive a response.

The Project Environment Manager (or delegate) will apply an adaptive approach to ensure that corrective actions are applied in consultation with the appropriate construction staff to allow modifications and improvements in the management of any environmental issues resulting in community complaints.

Where requested by the Planning Secretary, the ER will assist in the resolution of community complaints.



6. Review and Improvement

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6.1. Continuous Improvement

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

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Identify environmental risks not already included in the risk register.
- 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.
- Respond quickly to nonconformities.
- Verify the effectiveness of the corrective and preventative actions.
- Document any changes in procedures resulting from process improvement.
- Make comparisons with objectives and targets.

The Environment Manager (or delegate) is responsible for ensuring stage-specific environmental risks are identified and included in the Project risk register and appropriate mitigation measures implemented throughout the construction, as part of the continuous improvement process. The process for ongoing risk identification and management during construction is outlined in the CEMP.

6.2. Monitoring Program Version Control

The processes described in the CEMP may result in the need to update or revise this Plan. Only the Environment Manager (or delegate) has the authority to approve changes to the requirements of this Plan. Minor amendments to the Plan may be approved by the ER in accordance with the CEMP and are to be implemented for the duration of construction and for any longer period specified by the Planning Secretary, whichever is the greater. Amendments not considered minor by the ER need to be approved by the Planning Secretary.

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



Appendix A – Dredge Plume Field Reporting Sheet

Date:	Plume extent estimate: m	Dredge activity:
Author:	Project Manager Notification: Y / N	Additional Management Actions:

Turbidity Monitoring*

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Turbidity measurements are to be taken at the prescribed distances through the water column, north, south, east and west of the dredging activity. Record position using hand held GPS. Additional measurements are to be taken inside the plume (nominally five additional profiles 50-100m apart), when the plume is detected for documenting plume intensity and extent.

Date:	Turbidity Measurements North of	Turbidity Measurements
	Dredging Works	South of Dredging Works
Time:		
	100m –	100m —
	200m –	200m –
	500m –	500m –
	1km –	1 <i>km</i> –
	2km –	2km –
Author:	Turbidity Measurements East of	Turbidity Measurements
	Dredging Works	West of Dredging Works
	100m –	100m –
	200m –	200m –
	500m –	500m –
	1 <i>km</i> –	1km –
	2km –	2km –

*Take additional measurements inside plume, when observed to assist with documenting plume extent.





Mark location of plume



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Appendix B – Invasive Pest Species

(referenced from https://www.marinepests.gov.au/pests/identify)

Exotic

These pests are not known to be established in Australia.



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Rapa or veined whelk >



New Zealand green-lipped mussel >

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Established

These pests are already established in some parts of Australia.





Appendix C – Marine Observation Forms



Species ID:		ACTIONS TAKEN	COMMENTS ON ACTIONS
		□ None	
How sure are you?: (circle)	very sure / sure / not sure	□ Maintained constant speed not exceeding 5 knots	
Total number sighted:		□ Manoeuvre the vessel to a distance of at least 200m	
Length (biggest):	m	Avoided sudden changes in direction	
Length (smallest):	m	□ If at DMG, no material placement (300m – whales)	

Figure A1 – Cetacean Log Sheet

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Vessel:

Week Ending:

					Cetace	an Obser Register	vations		J <u>o</u> hn Holland		
Date	Time	Observer Name	Location	Current Activity (e.g. Drilling etc.)	Fauna Sighted (Y/N)	Distance from Vessel (m)	Species (if known*)	No. of Anim als	Comments - Mitigation Measures (e.g. ceased dredging, observed animal, left exclusion zone, etc.)	Sea State (Bft.)	Visibility

Figure A2 – Cetacean Observation Register

Force (Beaufort scale)	Knots	km/h	Wave Height	Description	Specifications for use at sea
0	0 - 1	0 - 1	0	Calm	20 C
1	1-3	1-5	0.1	Light air	Ripples with the appearance of scales are formed, but without foam crests.
2	4 - 6	6 - 11	0.2 - 0.3	Light breeze	Small wavelets, still short, but more pronounced. Crests have a glassy appearance.
3	7 - 10	12 - 19	0.6 - 1	Gentle breeze	Large wavelets. Crests begin to break. Foam of glassy appearance. Perhaps scattered.
4	11 - 16	20 - 28	1 - 1.5	Moderate breeze	Small waves, becoming larger; fairly frequent white horses.
5	17 - 21	29 - 38	2 - 2.25	Fresh breeze	Moderate waves, taking a more pronounced, longer form; many white horses are formed. Chance of some spray
6	22 - 27	39 - 49	3-4	Strong breeze	Large waves begin to form, the white foam crests are more extensive everywhere. Probably some spray.
7	28 - 33	50 - 61	4 - 5.5	Near gale	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind
8	34 - 40	62 - 74	5.5 - 7.5	Gale	Moderately high waves of greater length; edges of crests begin to break into spindrift. The foam is blown in well-marked streaks.



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Figure A3 – Marine Mammal Observation Guide

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Appendix B – Emergency Management Plan

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Refer to CS1135-WT-BEL-EN-PLN-0009 - BDP - Offshore Construction Works Environmental Emergency Plan



OFFSHORE CONSTRUCTION WORKS MANAGEMENT PLAN | CS1135-WT-BEL-EN-PLN-0007 | REV: 2 | 31/10/2024 WHEN PRINTED THIS DOCUMENT IS AN UNCONTROLLED VERSION | COMMERCIAL-IN-CONFIDENCE



Belmont Desalination Plant

Offshore Construction Works Environmental Emergency Plan

Document Number: CS1135-WT-BEL-EN-PLN-0009 Revision Number: 0 Issue Date: 23/09/2024



Revisions and Distribution

Revisions

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

Rev	Date	Prepared By [Name]	[Signature]	Reviewed By [Name]	[Signature]	Approved By [Name]	[Signature]	Remarks
А	22/04/2024	SG	SG	AG	AG	AG	AG	Issue to HWC as draft
В	12/08/2024	S Grunsell	SG	A Grant J Nisbet	AG JN	S MacNish	SM	Update post modification
0	23/09/2024	S Grunsell	SG	A Grant J Nisbet	AG JN	S MacNish	SM	Update following ER and client review

Distribution List

Client's Representative	S Farrar
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Project Construction Manager	J Nisbet
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The controlled master version of this document is available for distribution as appropriate and maintained on the document management system being used on the Project, available to all Project workers. All circulated hard copies of this document are deemed to be uncontrolled.



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Terms and Abbreviations

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Term/Abbreviation	Definition/Expanded text
ABL	Assessment Background Level – A single-number figure used to characterise the background noise levels from a single day of a noise survey. ABL is derived from the measured noise levels for the day, evening, or night-time period of a single day of background measurements. The ABL is calculated to be the tenth percentile of the background LA90 noise levels, i.e. the measured background noise is above the ABL 90% of the time.
ABN	Airborne noise
Ambient Noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
AMSA	The Australian Maritime Safety Authority
AMS	Activity Method Statements
AQMP	Air Quality Management Sub-Plan
AQIS	Australian Quarantine and Inspection Service
Attenuation	The reduction in the level of sound or vibration.
At-property acoustic treatment	Includes courtyard walls and building treatments. Building treatments may include but are not limited to ventilation, acoustic blinds/curtains, glazing, window and door seals, sealing of vents or underfloor areas, shutters and secondary glazing.
AVTG	Assessing Vibration – A Technical Guideline
CS	Communications Strategy
CEMP	Construction Environmental Management Plan
СМР	Construction Monitoring Program
СоА	Conditions of Approval
Construction	Includes all activities required to construct the SSI as defined in the Project Description described in the documents listed in Condition A1, including commissioning trials of equipment and temporary use of any part of the SSI but excludes Low Impact Work which is carried out or completed prior to approval of the CEMP and works approved under a Site Establishment Management Plan.
CEMP	Construction Environmental Management Plan
Consultation	To provide information and actively engage with and obtain and consider feedback from stakeholders during development of post approval documents. How the feedback has been considered and whether any changes have been made in response to this feedback is then documented and communicated back to stakeholders. Consultation should not be limited to one-way notification about the project.
Continuously	Includes any period during which there is less than one hour between ceasing and recommencing any of the work.
D&C	Design and Construct
dB(A)	Decibels using the A-weighted scale which is accepted as being representative of the frequency response of the human ear.
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DECCW	Department of Environment and Climate Change and Water
DOI	Direct Ocea Intake
DPHI	Former Department of Planning, Industry and Environment, now Department of Planning, Housing and Infrastructure
EIS	Environmental Impact Statement
EMP	Emergency Management Plan
EMS	Environmental Management System



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Term/Abbreviation	Definition/Expanded text
Environmental Assessment	Hunter Water Corporation Belmont Desalination Plant Environmental Impact Statement, prepared by GHD dated 2019.
Documentation	Hunter Water Corporation Belmont Desalination Plant Amendment Report and Submissions Report prepared by GHD dated 2020.
	Hunter Water Corporation Belmont Desalination Plant Modification Report Environmental Impact Statement prepared by Jacobs dated 2024.
	Hunter Water Corporation Belmont Desalination Plant Modification Report – Submissions Report prepared by Jacobs dated 2024
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.
Environmental objective	Defined by AS/NZS ISO 14001:2015 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve.
Environmental target	Defined by AS/NZS ISO 14001:2015 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environment Protection Authority
EPL	Environment Protection Licence
ER	Environmental Representative
Feasible and reasonable	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Feasible relates to engineering considerations and what is practical to build. Reasonable relates to the application of judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community views and nature and extent of potential improvements.
GBN	Ground-borne noise
HTP	Helicopter Transportation Plan
HWC	Hunter Water Corporation
ICNG	Interim Construction Noise Guideline (DECC, 2009)
INP	Industrial Noise Policy
ISCA	Infrastructure Sustainability Council of Australia
JUB	Jack-Up Barge
JH	John Holland
KFH	Key Fish Habitat
LMCC	Lake Macquarie City Council
LGA	local government area
NCG	Noise Criteria Guideline
NMG	Noise Mitigation Guideline
NML	Noise Management Level as defined in the Interim Construction Noise Guideline (DECC, 2009)

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NPfl

NVA

NVIS

Noise Policy for Industry

Noise and Vibration Assessment

Noise and Vibration Impact Statement



Term/Abbreviation	Definition/Expanded text
NVMP	Noise and Vibration Management Sub-Plan
ONR	Operational Noise Review
OOHW	Out of Hours Works
OSCWMP	Offshore Construction Works Management Plan
OCWEEP	Offshore Construction Works Environmental Emergency Plan
POEO Act	Protection of the Environment Operations Act 1997
PPV	Peak Particle Velocity – the highest velocity of a particle (such as part of a building structure) as it vibrates. Most sound level meters measure root mean squared (RMS) values; it is common to approximate the PPV based on an RMS measurement. PPV is commonly used as a vibration criterion and is often interpreted as a PPV based on the Lmax or Lmax, spec index.
RCC	Rescue Coordination Centre
REMM	Revised Environmental Management Measures
RO	Reverse Osmosis
SOLAS	Safety of Life at Sea
Sensitive land use(s)	Includes residences, educational institutions (including preschools, schools, universities, TAFE colleges), health care facilities (including nursing homes, hospitals), religious facilities (including churches), childcare centres, passive recreation areas (including outdoor grounds used for teaching). Receivers that may be considered sensitive include commercial premises (including film and television studios, research facilities, entertainment spaces, temporary accommodation such as caravan parks and camping grounds, restaurants, office premises, and retail spaces), and industrial premises as identified by the Planning Secretary.
SEPP	State Environmental Planning Policy
SSI	State Significant Infrastructure
Submissions Report	The Proponent's response to issues raised in the submission received in relation to the application for approval of the SSI under the EP&A Act.
Transport	Transport for New South Wales, or TfNSW
WWTW	Waste Water Treatment Works
Work	Any physical activity for the purposes of the SSI including construction, Low Impact Work, enabling works, utility works and site establishment activities but not including operational maintenance works.
WRA	Work Risk Assessment

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Offshore Construction Works Environmental Emergency Plan

Plan Profile

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



1. Introduction

1.1. Context

This Offshore Works Emergency Management Plan (OCWEEP or Plan) is an appendix to the Offshore Construction Works Management Plan (OSCWMP), which forms part of the Construction Environmental Management Plan (CEMP) for the Belmont Desalination Plant (the Project).

The OCWEEP has been prepared to address the requirements of the Conditions of Approval (CoA) and the measures listed in the Environmental Assessment Documentation.

1.2. Background

1.2.1. The Project

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

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

1.2.2. Statutory Context

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

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

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

1.3. Scope of the Plan

The scope of this Plan is to describe the measures to be implemented in the instance of an environmental emergency associated with offshore construction works. Emergencies associated with work health and safety (WHS) will be undertaken in accordance with the WHS Management Plan. This Plan been prepared under and is consistent with the CEMP, considering relevant sensitive land uses and construction activities.

This Plan is applicable to all activities during construction of the Project, including all areas where physical works will occur or areas that may otherwise be impacted by the construction works, and under the control of John Holland (JH). All JH staff and sub-contractors are required to comply with the requirements of this Plan and related construction environmental management plans, over the full duration of the construction program. A copy of this Plan will be kept on the premises for the duration of construction.



1.4. Environmental Management Systems Overview

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

The EMS consists of governance documentation, incorporating environmental management plans, policies, procedures and tools including:

- **CEMP**. Details the processes and procedures to be implemented during the Project to comply with applicable CoA, REMMs, Environment Protection Licence (EPL), legislative obligations and contractual requirements.
- Environmental Management Sub-plans. These documents describe procedures and controls for specific environmental aspects requiring more rigorous management strategies.
- **Monitoring Programs**. Details the monitoring regime to be implemented during construction to compare the actual performance of construction against the objectives outlined in the relevant Plan, including setting specific triggers and associated responses.
- WHS Management Plan. Details the processes and procedures to be implemented during the Project to comply with applicable work health and safety requirements.
- **Out of Hours Works (OOHW) Protocol.** Outlines a process for the consideration, management and approval of works which are outside the permitted standard construction hours.
- Procedures, strategies and protocols. Detailed procedures for inclusion in work packs.

1.4.1. OCWEEP preparation, endorsement and approval

The OCWEEP has been prepared to satisfy the NSW CoA in relation to the management of offshore works during construction of the Project, particularly NSW CoA C13 (d).

This Plan has been prepared by Adam Cohen, a principal marine specialist from Australasian Marine Associates in accordance with CoA C13(a). These documents will be reviewed by the Hunter Water Corporation (HWC) Environmental representative (or delegate) and the independent Environmental Representative (ER) to confirm they are consistent with, and incorporate, all relevant elements of the CEMP, prior to submission to the Planning Secretary for approval.

Construction of the Project will not commence until the OCWEEP is endorsed by the ER and approved by the Planning Secretary.



2. Purpose and Objectives

2.1. Purpose

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The purpose of this Offshore Construction Works Environmental Emergency Plan (OCWEEP) is to describe how potential emergencies during offshore construction activities will be managed during construction of the Project.

2.2. Objectives

The key objective of this Offshore Construction Works Environmental Emergency Plan (OCWEEP) is to ensure that all emergencies relating to offshore construction works are managed so that impacts to construction personnel, the local marine environment and surrounding local community are minimised.

To aid in achieving this objective all CoA, revised environmental mitigation measures (REMMs) and licence/permit requirements relevant to offshore construction works are described, scheduled and assigned responsibility as outlined in:

- Environmental Assessment Documentation
- Infrastructure Approval CoA (SSI 8896)
- All relevant legislation and other requirements described in Section 3.1 of this Plan.

JH will aim to meet the environmental control measures relating to offshore construction works from the EIS. Relevant environmental control measures are detailed in Section 6.1 of the OSCWMP.



3. Environmental Requirements

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3.1. Relevant Legislation and Guidelines

Table 3-1 lists the principal legislation, regulation, plans, policies, guidelines, specifications, and Australian Standards that apply to offshore construction works.

Table 3-1: Principal legislation and regulation relevant to Offshore Construction Works

Legislation	 Protection of the Environment Operations Act 1997 (POEO Act) Protection of the Environment Operations Regulation 2008. Biodiversity Conservation Act 2016 Fisheries Management Act 1994 Environment Protection and Biodiversity Conservation Act 1999 Navigation Act 2012 Marine Pollution Regulation 2006 Australian (AMSA) and international regulations (MARPOL). Protection of the Sea (Prevention of Pollution from Ships) Act 1983 AMSA Marine Order 21: Safety and Emergency Arrangements. AMSA Marine Order 30: Prevention of Collisions. AMSA Marine Order 27: Safety of Navigation and Radio Equipment: AMSA Marine Order 97: Marine pollution prevention - air pollution WHS Act 2011
Guidelines and Specifications	 Policy and Guidelines for Fish Habitat Conservation and Management (DPI, 2013) The Australian Guidelines for Whale and Dolphin Watching NSW Roads and Maritime Night Safety guidelines National Light Pollution Guidelines DoEE (2020) Significant Impact Guidelines 1.1: great white shark, loggerhead, green and hawksbill turtles, southern right whale and humpback whale, dugong and syngnathids (Commonwealth of Australia, 2013)

Relevant provisions of the above legislation are explained in the Register of Legal and Other Requirements included in Appendix A of the CEMP.

3.2. Conditions of Approval – SSI-8896

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

Table 3-2: Condition of Approval relevant to the OSCWMP

СоА	Condition Requirements	Document Reference
C13	The Proponent must prepare an Offshore Construction Works Management Sub-Plan and the plan must address, but not be limited to the following:	
	 e) provide a detailed Emergency Management Plan for offshore works that provides specifications for the management and ongoing mitigation of emergency situations to both personnel and the environment in all potential emergency situations 	This Plan

3.3. Revised Environmental Management Measures

Relevant REMMs are provided in Section 3.3 of the OSCWMP.

4. Existing Environment

Details of the existing environment are provided in Section 4 of the OSCWMP.



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Figure 4-1: Project Locality and Location of Offshore Construction Works

5. Emergency Management

5.1. Emergency Type

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5.1.1. Work Health and Safety Emergencies

All Work Health and Safety (WHS) related emergencies involving personnel and equipment associated with construction of the Project will be managed in accordance with the Project's WHS Management Plan.

The Project's WHS Management Plan sets out emergency response and modes of transport for the evacuation of personnel from site in the event of a WHS emergency. The procedures and policies held within the WHS Management Plan will be implemented and overseen by the Project WHS Manager in accordance with Work Health and Safety Regulations and SafeWork Australia requirements.

Enactment of the WHS Management Plan will be undertaken as required in consultation with the Project Leadership Team. For the purpose of the sections below, reference to emergencies will focus on environmental emergencies only.

5.1.2. Environmental Emergencies

In the event of an environmental incident or emergency, the Project will implement classification, notification, and reporting requirements in accordance with the CEMP.

The Project Environment Manager (or delegate) will be responsible for investigating, tracking, communicating, and closing out non-conformances, and implementing corrective and preventative actions. Higher level incidents will require the Project Director to review and close out. The HWC Environmental Manager, and JHG Environmental Team, and the ER, will provide supporting functions as required under the CEMP.

In the event of an incident or emergency, the Project will undertake notification requirements as detailed the CEMP. The procedure for responding to environmental emergencies is provided in Figure 5-1.

5.2. Incidents and Emergency Classification, Notification and Reporting

In the event of an environmental incident or emergency, the Project will implement classification, notification, and reporting requirements in accordance with JHs Project Environmental Incident Procedure and the CEMP. The Project will undertake notification requirements as detailed in Table 5-1.

Table 5-1: Incident Notification

Report only		Notifiable		
 Verbally no followed by within 24 h 	otify HWC of incidents immediately, / written notification to HWC and the ER ours of the incident	•	Verbally notify HWC of incidents immediately, followed by written notification to HWC and the ER within 24 hours of the incident.	
 If required, authorities 	If required, HWC will notify the EPA and relevant authorities immediately	٠	HWC to notify the EPA and relevant authorities immediately. Follow Belmont WWTW PIRMP	
		•	Prepare an incident notification / non-compliance report and submit to HWC and the ER within 48 hours.	
		•	Prepare an investigation report and submit to HWC and the ER within 7 days.	

Environmental incident reports will include lessons learnt and proposed measures to prevent the occurrence of a similar incident. All efforts will be undertaken immediately to avoid and reduce impacts of incidents and suitable controls put in place. Incidents will be closed out as quickly as possible, taking all required action to resolve each environmental incident.



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5.2.1. Notification and Reporting to the Planning Secretary

In accordance with CoA A26, the Planning Secretary will be notified via the Major Projects Website immediately or within 24 hours after the Proponent becomes aware of an incident. The notification must identify the SSI and set out the location and nature of the incident.

Subsequent written notification will be provided to the Planning Secretary in accordance with CoA A27 as follows:

- A written incident notification addressing the requirements set out below must be submitted to the Department via the Major Projects website within seven days after the Proponent becomes aware of an incident. Notification is required to be given under this condition even if the Proponent fails to give the notification required under Condition A26 or, having given such notification, subsequently forms the view that an incident has not occurred.
- Written notification of an incident must:
 - Identify the development and application number.
 - Provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident).
 - Identify how the incident was detected.
 - Identify when the Proponent became aware of the incident.
 - Identify any actual or potential non-compliance with conditions of approval.
 - Describe what immediate steps were taken in relation to the incident.
 - Identify further action that will be taken in relation to the incident.
 - Identify a Project contact for further communication regarding the incident.
- Within 30 days of the date on which the incident occurred, the Proponent must provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.
- The Incident Report must include:
 - A summary of the incident.
 - Outcomes of an incident investigation, including identification of the cause of the incident.
 - Details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence.
 - Details of any communication with other stakeholders regarding the incident.

For clarity, the State Infrastructure Approval instrument provides the following definitions for incident and material harm:

An 'Incident', as defined in the State Infrastructure Approval instrument, is:

An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance.

"Material Harm" as defined in the State Infrastructure Approval instrument:

is harm that:

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(a) involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial; or

(b) results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).

The Project will maintain and provide all records of the environmental incidents and regulatory action to the HWC Project team.



5.2.2. Notification and Reporting to the EPA

HWC will notify the EPA of any pollution incidents on or around the site via the EPA Environment Line (telephone 131 555) in accordance with Part 5.7 of the POEO Act. The circumstances where this will take place include:

- Where the incident involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial; or
- Where the incident results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations).

5.2.3. Incident Investigation

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Where required, due to the severity or ongoing nature of the incident, investigations will be conducted, and action plans established to ensure that the event does not occur again. Environmental investigations will include:

- Identification of the cause, extent, and responsibility of the incident.
- Identification and implementation of the necessary corrective action.
- Identification of the personnel responsible for carrying out the corrective action.
- Implementation or modification of controls necessary to avoid a repeat occurrence of the incident.
- Recording of any changes in written procedures required.
- Advising the relevant government agencies if any substantial pollution has occurred.

Information will be captured in site databases. Where there are lessons learnt from the investigation or current procedures are identified as being ineffective, the CEMP will be revised by the Project Environment Manager to include the improved procedures or requirement.

5.3. Emergency Response

In the event of an environmental emergency on site, the Project team will follow the steps presented in Figure 5-1. This includes:

- Preparing to respond by planning actions to prevent or mitigate adverse environmental impacts from emergency situations.
- Responding to actual emergency situations.
- Taking action to prevent or mitigate the consequences of emergency situations, appropriate to the magnitude of the emergency and the potential environmental impact.
- Periodically testing the planned response actions, where practicable.
- Periodically reviewing and revising the process and planned response actions, after the occurrence of emergency situations or tests.
- Providing relevant information and training related to emergency preparedness and response, as appropriate, to relevant interested parties, including persons working under its control.

The Project team shall maintain documented information to the extent necessary to have confidence that the process is carried out as planned. The Project will provide all records of the environmental emergencies and regulatory action to HWC. All necessary contact numbers will be identified in advance and stored for immediate access should a pollution incident need to be notified. These contact numbers will also be identified in the PIRMP.

Emergency planning and awareness training will be undertaken for the Project and will include but not be limited to development of a communication protocol, both internal and external, during emergencies, identified potential environmental emergencies that may occur on the Project, and the response procedures for these emergencies and tests of the emergency response procedures.



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Figure 5-1: Environmental Emergency Response Procedure

5.3.1. Evacuation and Muster Locations

During emergencies and emergency training exercises, personnel will be required to evacuate to a place of safety. Designated areas are established across the site where personnel will report to in the event of an emergency.

In the event of an evacuation, all personnel will cease work immediately; leave all equipment in a safe condition, before reporting to the nearest muster point. These locations will be communicated to all person during the site induction.

5.4. Emergency Contacts

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In the event of an emergency on site, JH will follow the procedures set out in the WHS Management Plan. For environmental incidents where material harm has been identified, JH will report to HWC who will contact the relevant stakeholders and agencies identified in Table 5-2: These agencies will be contacted as required based on the severity of the event.

Contact	Name	Phone number
Emergency services – triple zero	Fire / police /ambulance / RFS	000
EPA	Environment Protection Agency Pollution Incident Line	131 555
NSW Health	Newcastle Public Health Unit (Hunter New England LHD)	1300 066 055 After Hours 02) 4924 6477 (John Hunter Hospital) - ask for Public Health Officer on call Further Information www.health.nsw.gov.au/Infectious/Pa ges/phus.aspx for local contact details.
Nearest Hospital	Belmont Hospital - 16 Croudace Bay Rd, Belmont, 2280.	02 4923 2000
SafeWork NSW	SafeWork NSW emergency hotline	131 050
Lake Macquarie City Council (LMCC)	Report via LMCC Customer Service Centre	4921 0333
State Emergency Services (SES)	NSW SES emergency line	132 500
NSW Poisons Information Centre	Poisons Information Hotline	131 126
Utilities	Electrical faults and powerline emergencies	Ausgrid – 131 388
	Emergencies and Faults	Hunter Water Corporation – 1300 657 000

Table 5-2: External Emergency Contacts for Environmental Emergencies

6. Compliance Management

6.1. Roles and Responsibilities

The Project Team's organisational structure and overall roles and responsibilities are outlined in CEMP. Implementation of this plan is the responsibility of the Project Environment Manager (or delegate).

6.2. Training

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All project personnel, including contractors working on site will undergo site induction training and pre-start briefings relating to offshore construction works. The induction training and pre-start briefings will address elements related to the management of offshore construction works including:

- Existence and requirements of this emergency plan
- Applicable and relevant legislative requirements
- EPL conditions (as required)
- Roles and responsibilities for management of offshore construction works
- Typical construction activities for offshore works and their associated environmental impacts.
- Procedure to be implemented in the event of an incident or exceedance in monitored exceedance limits.
- Offshore construction works mitigation and management measures
- Out of Hours Work Protocol.

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in the management of offshore construction works. Daily pre-start meetings conducted by the Superintendent / Site Supervisor will inform the site workforce of any environmental issues relevant to offshore construction that could potentially be impacted by, or impact on, the day's activities. Further details regarding staff induction and training are outlined in the CEMP.

6.3. Monitoring and Inspection

Inspections of marine areas, mitigation measures, and activities which have the potential for marine impacts will occur for the duration of the Project. Requirements and responsibilities in relation to monitoring and inspections are documented in the CEMP.

Monitoring will include, but not be limited to:

- Monthly visual inspections
- Spot checks of offshore construction activities
- Regular inspections undertaken by dedicated marine observers (as required)

The Project will review the work or activity as soon as practicable and, where possible modify the work or activity to prevent any recurrence. Lessons learnt will be communicated to relevant personnel in toolbox talks.

All environmental monitoring equipment (if required) will be maintained and calibrated according to the manufacturer's specifications, and appropriate records will be kept. Non-conformance reporting protocols detailed in the CEMP. The marine monitoring program is provided in Appendix A.

6.4. Auditing

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

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



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

6.5. Reporting

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Reporting requirements relevant to the management of offshore construction works and associated activities are identified in Table 6-1: Reporting requirements . Requirements and responsibilities for reporting are further described in the CEMP.

Accurate records will be maintained substantiating all construction activities associated with the Project or relevant to the conditions of approval, including measures taken to implement this OSCWMP. Records will be made available to DPHI upon request, within the timeframe nominated in the request.

6.6. Community Consultation and Notification

Works associated with offshore construction will be communicated as required in accordance with the CEMP, Out-of-Hours-Work Protocol (OOHWP) and the Community Communication Strategy (CCS). JH will adhere as a minimum to the following principles and procedures relevant to offshore construction works:

- Good engagement with the community will be maintained to facilitate effective delivery of the Project with consideration of community impact, including procedures for notifying residents, business owners and other sensitive land uses, of construction activities that may affect their amenity
- Minimising construction impacts as far as reasonably practical will be viewed as a continuous improvement exercise that is inclusive of stakeholders
- Site personnel and the community will be informed of the effort and methods undertaken to reduce impacts for the Project

Further information on the procedures for managing community consultation and engagement, is provided in the CCS.

6.7. Complaints Management

The management of complaints will be undertaken in accordance with the CEMP

Table 6-1: Reporting requirements

ltem	Frequency	Standards	External Reporting	Responsibility
Incident and non-compliance reports	At each occurrence	Reporting of incidents and non-compliances in accordance with CoA, EPL (and associated PIRMP), Environmental Incident Classification and Reporting Procedure.	Appropriate authority dependant on nature of the incident (e.g. EPA, DPHI)	Project Environment Manager (or delegate) / HWC
Complaint register	Daily (ER, EPA) as received. DPHI as requested	Reporting of complaints, in accordance with the CoA, EPL and CCS, through the complaints register, to the ER and EPA for any complaints	ER EPA (in accordance with EPL conditions) DPHI (as requested by the Secretary)	Project Environment Manager (or delegate)

	Item	Frequency	Standards	External Reporting	HOLLAND Responsibility
•			received (on the day they are received).		
			Communication, notification and complaints handling requirements regarding Noise matters will be managed through the Complaints Management System administered by HWC		
	Weekly environmental inspection	Weekly	Inspection of the environmental controls and implementation including the measures outlined in Section 6.3	HWC ER	Project Environment Manager (or delegate)
	Marine Observer Inspections	As required	Completion of marine observer checklist	N/A	Project Environment Manager (or delegate)



7. Review and Improvement

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7.1. Continuous Improvement

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

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Identify environmental risks not already included in the risk register.
- 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.
- Respond quickly to nonconformities.
- Verify the effectiveness of the corrective and preventative actions.
- Document any changes in procedures resulting from process improvement.
- Make comparisons with objectives and targets.

The Environment Manager (or delegate) is responsible for ensuring stage-specific environmental risks are identified and included in the Project risk register and appropriate mitigation measures implemented throughout the construction, as part of the continuous improvement process. The process for ongoing risk identification and management during construction is outlined in the CEMP.

7.2. OCWEEP Version Control

The processes described in the CEMP may result in the need to update or revise this Plan. Only the Environment Manager (or delegate) has the authority to approve changes to the requirements of this Plan. Minor amendments to the Plan may be approved by the ER in accordance with the CEMP and are to be implemented for the duration of construction and for any longer period specified by the Planning Secretary, whichever is the greater. Amendments not considered minor by the ER need to be approved by the Planning Secretary.

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

