Montara Operations Environment Plan

MV-90-PLN-I-00001

Rev 10

Facility:	**MV - Montara Venture**
Review Interval:	**60 Months**
Safety Critical:	**No**

Approval				
Rev	**Date**	**Owner**	**Reviewer**	**Approver**
		OIM - Montara	**HSE Manager - Perth**	**Operations Manager**
0	20-Nov-18	H. Astill	B. White	R. Mills
1	28-Feb-19	H. Astill	M. Craig	D. Lamb
2	02-Apr-19	H. Astill	M. Craig	T. Hoang
3	21-Feb-20	J. Parry	H. Astill	T. Coolican
4	16-Mar-20	J. Parry	H. Astill	T. Coolican
5	10-Aug-20	J. Burger	H. Astill	T. Coolican
6	15-Sep-20	J. Parry	H. Astill	T. Coolican
7	17-Dec-20	S. Brown	H. Astill	T. Coolican
8	30-Mar-21	J. Burger	H. Astill	T. Coolican
9	21-Oct-21	S. Brown	H. Astill	R. Smith
10	23-May-23	S. Webster	R. Brazier	S. Brown

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REVISION HISTORY

Revision	Date	Author / Editor	Amendment
0	20-Nov-18	GS/LM	Rev 0 ready for submission to NOPSEMA
1	28-Feb-19	MP/KY	Rev 1 in response to NOPSEMA Rev 0 comments ready for submission
2	02-Apr-19	MP/HA	Rev 2 in response to NOPSEMA Rev 1 assessment findings
3	21-Feb-20	MP/HA	Minor update for continuous improvement opportunity under the document control procedure. Clarification on inline measurement, supporting lab activities and relationship to EP commitments in PW. No MOC required.
4	16-Mar-20	MP/HA	Minor update for continuous improvement opportunity under the document control procedure. Clarification on inline measurement, supporting lab activities and relationship to EP commitments in PW. No MOC required.
5	10-Aug-20	MP	Minor editorial update in response to NOPSEMA Inspection recommendation 2110-4, Section 7.6.3
6	15-Sep-20	MP	Updates in accordance with Montara EP Annual Review and MOC 152 and NOPSEMA inspection recommendations 2110-7, 2110-8 and 2110-9
7	17-Dec-20	MP	Updates in accordance with MOC 2020-179A (EPS 25 and EPS 26 added)
8	30-Mar-21	MP	Updates in accordance with MOC 2021-064 (EPS 20 added)
9	21-Oct-21	LM	Updates in accordance with 2021 Montara EP Annual Review, MOC-835
10	28-Feb-23 31-Jul-23 30-Nov-23 10- Apr-24 23-May-24	LM/JVR	Updates in response to NOPSEMA inspection recommendations 2380-C1-R1 and R2 regarding the impact of birds on the facility and proposed management and monitoring measures and produced water monitoring results updates. Updates in response to NOPSEMA inspection conclusions 3591-C01 and 3591-C02 regarding Jadestone's plans for decommissioning obligations and management of GHG emissions. Inclusion of Montara-1,2,3 wellhead monitoring following withdrawal of Montara-1,2,3 Wellhead Abandonment Environment Plan (TM-70-PLN-I-00003) from NOPSEMA assessment. Resubmitted 31 July 2023 to address NOPSEMA Assessment Findings. No change in Revision. Resubmitted 30 November 2023 to address NOPSEMA Assessment Findings. No change in Revision Resubmitted 10 04 2024 to address NOPSEMA Assessment Findings and outcomes of the annual legislation review (including change in the OPGGS(E)R). No change in Revision. Resubmitted 23 May 2024 to address NOPSEMA Assessment Findings. No change in Revision.

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TABLES

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ABBREVIATIONS AND DEFINITIONS

Abbreviation	Description
AFFF	Aqueous Film Forming Foam
AFZ	Australian Fishing Zone
AHV	Anchor handling vehicle
ALARP	as low as reasonably practicable
AMP	Australian Marine Parks
AMSA	Australian Maritime Safety Authority
AQIS	Australian Quarantine and Inspection Service
API	American Petroleum Institute
APPEA	Australian Petroleum Production and Exploration Association
AUV	Autonomous underwater vehicle
BCF	Bioconcentration factor
BIA	Biologically important areas
BOD	Biological oxygen demand
BOP	Blowout preventer
Bq/g	Becquerel per gram
CAA	Civil aviation authority
CCR	Central control room
CCTV	Closed circuit television
CGFU	Compact gas floatation unit
CHARM	Chemical Hazard and Risk Management
CMMS	Computerised Maintenance Management System
COW	Crude oil washing
CP	Cathodic prevention
CPI	Corrugated plate interceptor
DA	Designated Authority
DAH	Dissolved aromatic hydrocarbons
DAWE	Department for Agriculture, Water and Environment (previously DoEE)
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water (previously DAWE)
DEC	Department of Environment and Conservation (now DBCA)
DEWHA	Department of the Environment, Water, Heritage and the Arts (now DCCEEW)
DIIS	Department of Industry, Innovation and Science
DMIRS	Department of Mines, Industry Regulation and Safety (previously Department of Mines and Petroleum, DMP)
DoF	Department of Fisheries (now DPIRD)

Abbreviation	Description
DoEE	Department of the Environment and Energy (now DAWE)
DP	Dynamically Positioned
DPaW	Department of Parks and Wildlife (now DBCA)
DPIRD	Department of Primary Industries and Regional Development (previously Department of Fisheries)
DSD	Department of Sustainable Development
DSMS	Diving safety management system
DSV	Diving support vessel
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DAWE)
dwt	Dry weight tonnes
EEZ	Economic Exclusion Zone
EH&S	Environmental Health and Safety
EMBA	Environment that may be affected
ENVID	Environmental hazard identification (process)
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EP	Environment Plan
EPA	Environmental Protection Authority
EP Act	Environmental Protection Act 1986
EPO	Environmental performance outcome
EPS	Environmental performance standard
ESD	Emergency Shut-Down system
ESP	Electric Submersible Pump
FPSO	Floating production storage and offtake (facility)
FRC	Fast response craft
GFU	Gas floatation unit
HLO	Helicopter landing officer
HP	High pressure
HPU	Hydraulic power unit
H2S	Hydrogen sulphide
HSE	Health safety and environment
HWU	Hydraulic Workover Unit
HVAC	Heating ventilation air conditioning (system)
ICAO	International civil aviation organisation
ICCS	Interface central control system
ICD	Inflow control devices
IMCRA	Integrated marine and coastal regionalisation of Australia

Abbreviation	Description
IMO	International Maritime Organisation
IMPS	Introduced marine pest species
IMS	Invasive Marine Species
IMR	Integrity, maintenance and repair
ITF	Indonesian Throughflow (current)
IWC	International Whaling Commission
JEE	Jadestone (Eagle) Energy Pty Ltd
KEFs	Key Ecological Features
Kl	Kilolitre
KO	Knock out (drum)
Ksm3	Thousand Standard Cubic Metres
LC50	Lethal concentration of a compound at which 50% of test species dies within a specified time frame
LAT	Lowest astronomical tide
LMS	Listed migratory species
LP	Low pressure
LSA	Low specific activity
LWI	Light well intervention
MAOP	Maximum Allowable Operating Pressure
MARPOL	Marine pollution (legislation)
MCR	Marine Conservation Reserve
MEG	Methylene glycol
mg/L	Milligrams per litre
MGPS	Marine growth protection system
MMA	Marine Management Area
mmscfd	Million Standard Cubic Feet per Day
MOPU	Mobile offshore production unit
MPRA	Marine Parks Reserves Authority
MSDS	Material safety data sheet
NCB	North Coast Bioregion
NDT	Non-Destructive Testing
NEBA	Net Environmental Benefit Assessment
NES	National Environmental Significance
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NORMs	Naturally Occurring Radioactive Materials
NSF	Northern Shark Fishery

Abbreviation	Description
NWS	North-West Shelf
NWSTF	North-West Slope Trawl Fishery
OCIMF	Oil Companies International Marine Forum
OCNS	Offshore Chemical Notification Scheme
ODS	Ozone Depleting Substances
OGP	Oil and gas producers (association)
OIM	Offshore Installation Manager
OIW	Oil-in-water
OPEP	Oil pollution emergency plan
OPGGS Act	Offshore Petroleum and Greenhouse Gas Storage Act 2006
OPGGS (E) Regs	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023
OPMF	Onslow Prawn Managed Fishery
OSCP	Oil Spill Contingency Plan
OSMP	Operational and scientific monitoring plan
PAH	Polycyclic aromatic hydrocarbons
PLET	Pipeline end terminal
PLONOR	Pose little or no risk
POB	Persons on board
PPD	Personal protection device
ppm	parts per million
PRS	Production Reporting System
PSZ	Petroleum safety zone
PTS	Permanent Threshold Shift
PW	Produced water
RLWI	Riserless light well intervention
ROV	Remote Operated Vehicle
SBFTF	Southern Bluefin Tuna Fishery
SCM	Subsea control module
SCSSV	Surface controlled subsurface safety valve
SDS	Safety data sheet
SDU	Subsea distribution unit
SIL	Safety integrity level
SIMPOPs	Simultaneous operations
SMP	Scientific monitoring program
SO2	Sulphur dioxide
SRB	Sulphur Reducing Bacteria

Abbreviation	Description
SSS	Side-Scan sonar
SSWI	Ship Specific Work Instructions
STP	Sewage Treatment Plant
STP	Submerged turret production system
SWL	Safe Working Load
TEMPSC	Totally enclosed motor propelled survival craft
TPH	Total petroleum hydrocarbons
TRSV	Tubing retrievable safety valve
TTS	Temporary Threshold Shift
UPS	Universal power supply
UV	Ultraviolet
UWILD	In water survey in lieu of docking
VBSA	Vessel based support activity
VDU	Vacuum distillation unit
VOC	Volatile organic compounds
WA	Western Australia
WAF	Water accommodated fraction
WHCP	Wellhead hydraulic control panel
WHP	Wellhead platform
WSTF	Western Skipjack Tuna Fishery
WTBF	Western Tuna and Billfish Fishery
WOMP	Well Operations Management Plan

ENVIRONMENT PLAN SUMMARY

This Montara Operations Environment Plan Summary has been prepared from material provided in this Environment Plan (EP) and associated Oil Pollution Emergency Plan (OPEP). The summary consists of the following as required by Regulation 35(7):

EP Summary material requirement	Relevant section of EP containing EP Summary material
The location of the activity	Section 1.1
A description of the receiving environment	Section 5 and Appendix C
A description of the activity	Section 3
Details of the environmental impacts and risks	Sections7 and 8
The control measures for the activity	Sections 7 and 8
The arrangements for ongoing monitoring of the titleholders' environmental performance	Section 9.4
Response arrangements in the oil pollution emergency plan	Section 7.10 and the Oil Pollution Emergency Plan
Consultation already undertaken and plans for ongoing consultation	Sections 6 and Appendix E, Appendix F, Appendix G
Details of the titleholders nominated liaison person for the activity	Section 1.4

1. OVERVIEW OF THE ACTIVITY

1.1 Location

The Montara operations activity is in the production licenses AC/L7 (Montara field) and AC/L8 (Skua, Swift and Swallow fields) in the Timor Sea.

The activity is approximately 690 km east of Darwin in a water depth of approximately 80 m and produces oil from the Montara, Skua, Swift and Swallow fields (Figure 1-1).

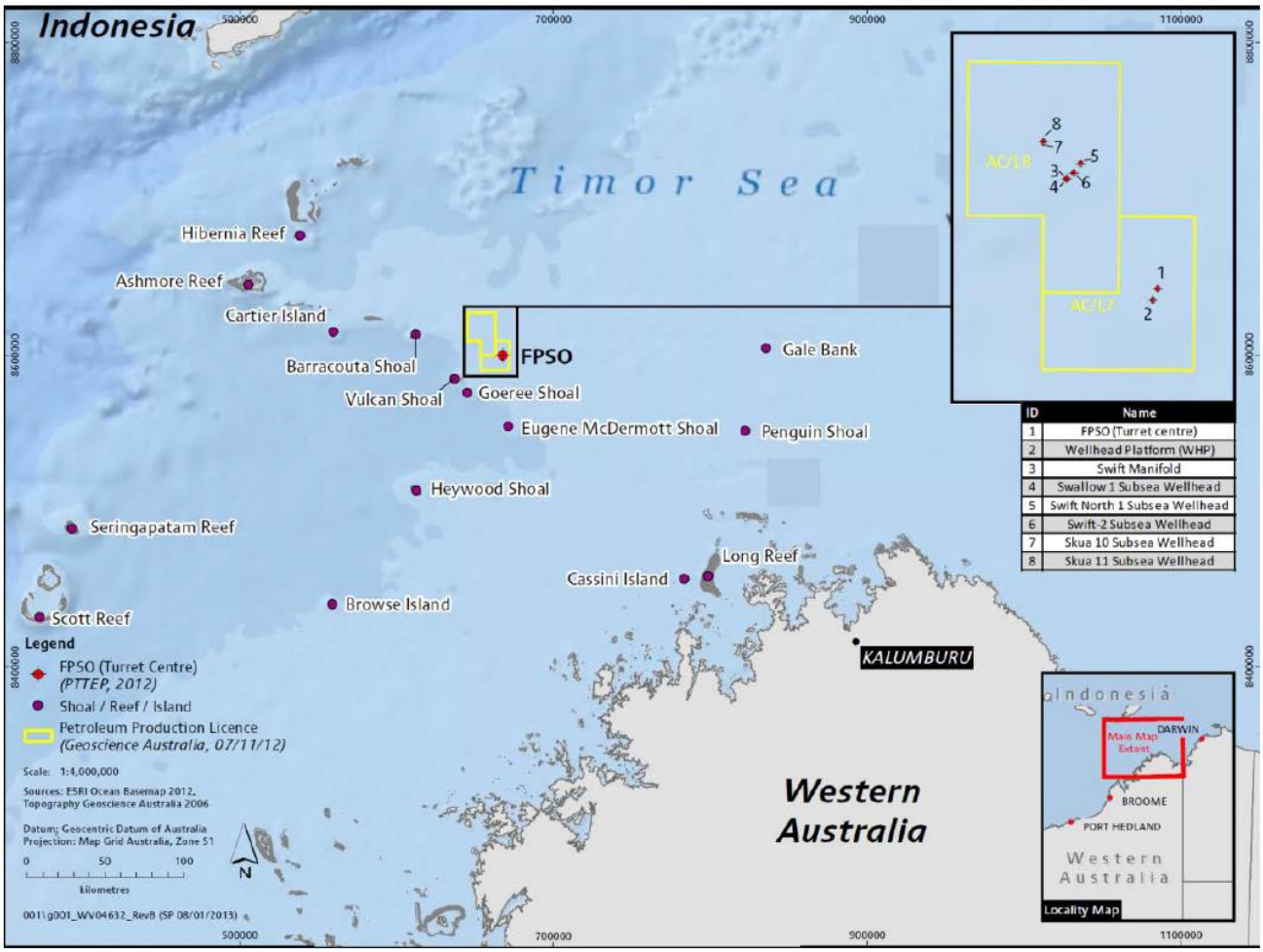

Figure 1-1: Location of the Montara operations activity

The locations of key environmental sensitive receptors in closest proximity to the *Montara Venture* floating production storage and offtake (FPSO) facility are provided in Table 1-1.

Table 1-1: Locations of key sensitive receptors in relation to the Montara Venture FPSO

Sensitive receptor	Approx. distance from FPSO (km)
Goeree Shoal	33
Vulcan Shoal	34
Eugene McDermott Shoal	46
Barracouta Shoal	57
Cartier Island	109

Sensitive receptor	Approx. distance from FPSO (km)
Hibernia Reef	150
Ashmore Reef	168
Cassini Island	185
Browse Island	193
Long Reef	193
Mainland Australia	208
Rote Island (Indonesia)	251
West Timor	265
Seringapatam Reef	296
Sandy Islet	337
Scott Reef	340
East Timor	356
Savu Island (Indonesia)	365
Flores Island (Indonesia)	486
Sumba Island (Indonesia)	495

1.2 Structure and Layout

The Montara operations infrastructure includes the following (unused infrastructure in field is listed in Section 3.2.9):

- An unmanned well head platform (WHP) at the Montara field with five 'dry' wells, three 14-inch production risers, two 6-inch gas lift risers and one 12-inch J-tube
- Five subsea wells for development of the Skua, Swift and Swallow fields
- Production flowline system consisting of two 6 inch, one 10 inch and three 14-inch flowlines and associated tie-in spools
- Gas lift flowline system consisting of one 6 inch and three 4-inch flowlines and associated tie-in spools
- Three infield control umbilicals and associated flying leads
- A subsea manifold in the Swift field for comingling the production fluids and distributing the compressed gas and electro-hydraulic services to the subsea wells
- A floating production, storage and offtake (FPSO) facility and its associated mooring system located approximately 1.5 km northeast of the WHP. Two 10-inch flexible production risers and associated riser bases. One 6-inch flexible gas lift riser and associated riser base. Two control umbilicals and associated riser bases. One gas compressor for the gas lift system
- Support/ supply vessels, work vessels and tug boats supporting third-party offtake tanker movement, facility logistics, maintenance and provisioning
- Helicopter support.

The locations of the field infrastructure as listed are provided in Table 1-2 below and illustrated in Figure 1-2.

Table 1-2: Montara operations activity infrastructure coordinates (GDA 94, Zone 51)

Wells and infrastructure	Latitude (south)	Longitude (east)
Montara Venture FPSO (turret centre)	12° 39′ 35.3″	124° 32′ 41.1″
Wellhead platform	12° 40′ 20.5″	124° 32′ 22.2″
Swallow 1 subsea well	12° 32′ 29.5″	124° 26′ 36.8″
Swift north 1 subsea well	12° 31′ 29.9″	124° 27′ 33.7″
Swift 2 subsea well	12° 32′ 3.6″	124° 27′ 6.0″
Skua 10 subsea well	12° 30′ 4.6″	124° 25′ 5.4″
Skua 11 subsea well	12° 30′ 4.6″	124° 25′ 5.6″
Montara H5 well	12° 40′ 20.5″	124° 32′ 23.3″
Montara H6	12° 40′ 20.5″	124° 32′ 22.2″
Montara H4 well	12° 40′ 20.5″	124° 32′ 22.3″
Montara H3 ST-1 well	12° 40′ 20.5″	124° 32′ 22.2″
Montara H2 well	12° 40′ 20.5″	124° 32′ 22.2″
Montara G2 well	12° 40′ 20.5″	124° 32′ 22.3″

1.3 Cautionary and Safety Zones

Petroleum Safety Zones (PSZ) extend 500 m around the following Montara infrastructure:

- FPSO submerged turret production
- Well head platform
- Swallow 1 subsea wellhead and Swift manifold (combined)
- Swift North 1 subsea wellhead
- Swift 2 subsea wellheads
- Skua 10 and Skua 11 subsea wellhead (combined).

Pursuant to Section 616 of the OPGGSA all vessels, other than those under the control of Jadestone or authorised by Jadestone, are prohibited from entering or being present in the area of the PSZ.

A cautionary zone of 2.5 NM radius is maintained around the WHP, FPSO and subsea structures including the pipelines. This information has been notated on Admiralty Charts covering the region (#314), and although vessels are requested to avoid navigating, anchoring and fishing, it is not an exclusion zone.

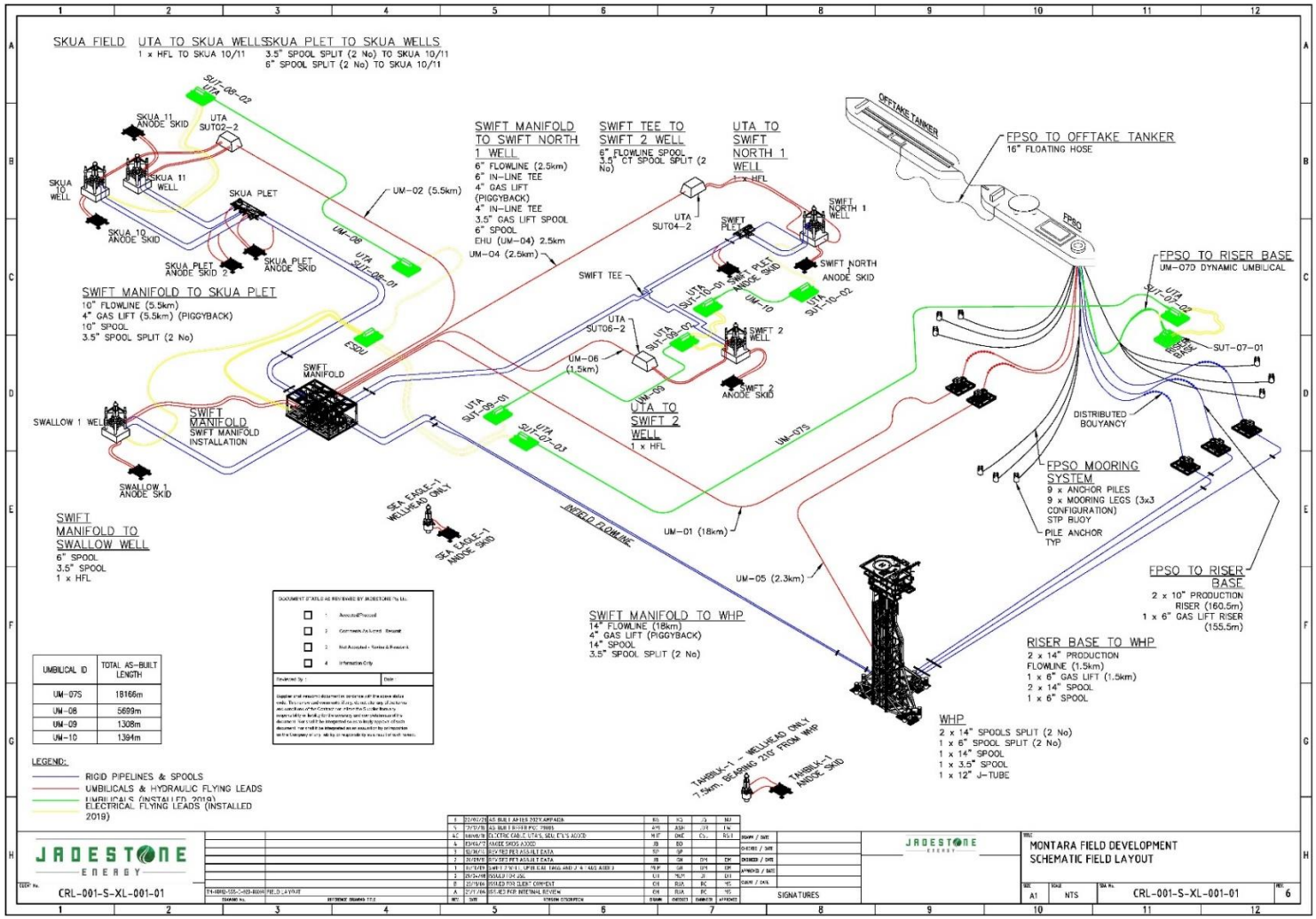

Figure 1-2: Schematic of the Montara operations field layout

1.4 Operator and Titleholder Details

Jadestone Energy (Eagle) Pty Ltd (Jadestone) is the titleholder and operator of the Montara Operations in Production Licenses AC/L7 (Montara Field) and AC/L8 (Skua, Swift and Swallow Fields) in the Timor Sea.

The title and operatorship of the Montara Operations was transferred to Jadestone from the previous operator on 6 August 2019. Prior to 6 August 2019, PTTEP Australasia (Ashmore Cartier) Pty Ltd was the titleholder and operator of the Montara Operations.

Jadestone Energy is engaged in exploration, appraisal and pre-development activities in South East Asia, with a portfolio of 10 exploration and pre-development assets. Jadestone Energy is an active operator within the region and the company's principal focus is on assets in Australia, Indonesia, Vietnam and the Philippines.

Jadestone Energy has an experienced management team that prides itself on technical excellence. This robust technical core to the business underpins Jadestone's ability to:

- Operate safely
- Optimise production from existing assets
- Identify, capture and maximise the value of its portfolio of assets.

The company recognises that local presence is essential to create, build and maintain partnerships in the region. To this end, Jadestone Energy established its corporate headquarters in Singapore and principal technical teams in Kuala Lumpur and Perth, with country operational offices in Jakarta and Ho Chi Minh City.

Jadestone Energy is firmly committed to being a responsible corporate citizen. The company places safety, environmental and social responsibility considerations at the core of its business and operational decision-making.

Jadestone's Australian office is located at:

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Jadestone's contact for the Montara facility is:

Operations Manager
Phone: +61 8 9486 6600
Email: aucompliance@jadestone-energy.com

In the event contact details for Jadestone or the liaison contact change within the timeframe of this EP, NOPSEMA will be advised of the updated details.

2. OVERVIEW OF THE ENVIRONMENT PLAN

2.1 Objective

This Environment Plan (EP) has been prepared in accordance with the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Environment Regulations) under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGS Act) and as administered by NOPSEMA. Table 2-1 provides EP section references against the requirements of the OPGGS (E) Regulations.

The objectives of this EP are to ensure that:

- All activities associated with the Montara operations activity are planned and conducted in accordance with Jadestone's Health, Safety and Environmental (HSE) Management Policy (Appendix B)
- Potential adverse environmental impacts and risks associated with the proposed activities, during both routine and non-routine operations, are continuously reduced to as low as reasonably practicable (ALARP) and of acceptable levels
- That the environmental performance outcomes (EPO) and environmental performance standards (EPS) outlined in this EP are met.

This EP contains the environmental impact assessment for operation of the Montara operations activity. The assessment aims to systematically identify and assess the potential environmental impacts associated with the operational activity and to stipulate mitigation measures to avoid and/ or reduce any adverse impacts to the marine environment to ALARP and acceptable levels. The implementation of the EPOs specified within this document will provide Jadestone with the required level of assurance that the activities are being managed in an environmentally responsible manner.

This EP meets the requirement to submit a revision of the Montara Operations Environment Plan (MV-HSE-D30-811607) when a new or increased environmental impact or risk is identified (as required by regulation 39(2) of the OPGGS(E) Regulations). The significant change is in relation to an increase in the presence of roosting and nesting birds on the facility. Other minor changes have also been included in this revision relating to decommissioning obligations, greenhouse gas emissions and produced water monitoring results.

This EP is written to allow for the continuation of production at the Montara Facility from the date of its acceptance by NOPSEMA until the five year anniversary of its initial acceptance (unless otherwise agreed with NOPSEMA). NOPSEMA's Guidance Note for Environment Plan Content Requirements (GN1344; January 2024) was referred to in the preparation of this EP.

Table 2-1: Requirements of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023

Reg	Requirement	Section
	Environmental assessment	
21(1)	*Description of the activity* The environment plan must contain a comprehensive description of the activity including the following: a) the location or locations of the activity; b) general details of the construction and layout of any facility; c) an outline of the operational details of the activity (for example, seismic surveys, exploration drilling or production) and proposed timetables; d) any additional information relevant to consideration of environmental impacts and risks of the activity.	3

Reg	Requirement	Section
21(2)	*Description of the environment* The environment plan must: a) describe the existing environment that may be affected by the activity; and b) include details of the relevant values and sensitivities (if any) of that environment.	5 Appendix C
21(3)	Without limiting paragraph (2)(b), relevant values and sensitivities may include any of the following: a) the world heritage values of a declared World Heritage property; b) the national heritage values of a National Heritage place; c) the ecological character of a declared Ramsar wetland; d) the presence of a listed threatened species or listed threatened ecological community; e) the presence of a listed migratory species; f) any values and sensitivities that exist in, or in relation to, part or all of: (i) a Commonwealth marine area; or (ii) Commonwealth land.	5 Appendix C
21(4)	*Requirements* The environment plan must: a) describe the requirements, including legislative requirements, that apply to the activity and are relevant to the environmental management of the activity; and b) demonstrate how those requirements will be met.	7, 8
21(5)	*Evaluation of environmental impacts and risks* The environment plan must include: a) details of the environmental impacts and risks for the activity; and b) an evaluation of all impacts and risks, appropriate to the nature and scale of each impact or risk; and c) details of the control measures that will be used to reduce the impacts and risks of the activity to as low as reasonably practicable and an acceptable level.	4, 7, 8
21(6)	To avoid doubt, the evaluation mentioned in paragraph (5)(b) must evaluate all the environmental impacts and risks arising directly and indirectly from: a) all operations of the activity; and b) potential emergency conditions, whether resulting from accident or any other reason.	4, 7, 8
21(7)	*Environmental performance outcomes and standards* The environment plan must: a) set environmental performance standards for the control measures identified under paragraph (5)(c); and b) set out the environmental performance outcomes against which the performance of the titleholder in protecting the environment is to be measured; and c) include measurement criteria that the titleholder will use to determine whether each environmental performance outcome and environmental performance standard is being met.	7, 8
	Implementation strategy for the environment plan	
22(1)	The environment plan must contain an implementation strategy for the activity in accordance with this regulation.	9
	a)	

Reg	Requirement	Section
22(2)	The implementation strategy must contain a description of the environmental management system for the activity, including specific measures to be used to ensure that, for the duration of the activity: a) the environmental impacts and risks of the activity continue to be identified and reduced to a level that is as low as reasonably practicable; and b) control measures detailed in the environment plan are effective in reducing the environmental impacts and risks of the activity to as low as reasonably practicable and an acceptable level; and c) environmental performance outcomes and standards set out in the environment plan are being met.	9
22(3)	The implementation strategy must establish a clear chain of command, setting out the roles and responsibilities of personnel in relation to the implementation, management and review of the environment plan, including during emergencies or potential emergencies.	9.2
22(4)	The implementation strategy must include measures to ensure that each employee or contractor working on, or in connection with, the activity is aware of his or her responsibilities in relation to the environment plan, including during emergencies or potential emergencies, and has the appropriate competencies and training.	9.2, 9.3
22(5)	The implementation strategy must provide for sufficient monitoring, recording, audit, management of non-conformance and review of the titleholder's environmental performance and the implementation strategy to ensure that the environmental performance outcomes and standards in the environment plan are being met.	9.3
22(6)	The implementation strategy must provide sufficient monitoring of, and maintaining a quantitative record of, emissions and discharges (whether occurring during normal operations or otherwise), such that the record can be used to assess whether the environmental performance outcomes and standards in the environment plan are being met.	9.3.4, 10
22(7)	The implementation strategy must state when the titleholder will report to NOPSEMA in relation to the titleholder's environmental performance for the activity. The interval between reports will not be more than 1 year.	9.4.1, 10
22(8)	The implementation strategy must contain an oil pollution emergency plan and provide for the updating of the plan.	OPEP
22(9)	The oil pollution emergency plan must include adequate arrangements for responding to and monitoring oil pollution, including the following: a) the control measures necessary for timely response to an emergency that results or may result in oil pollution; b) the arrangements and capability that will be in place, for the duration of the activity, to ensure timely implementation of the control measures, including arrangements for ongoing maintenance of response capability; c) the arrangements and capability that will be in place for monitoring the effectiveness of the control measures and ensuring that the environmental performance standards for the control measures are met; d) the arrangements and capability in place for monitoring oil pollution to inform response activities.	OPEP
22(10)	The implementation strategy must provide for monitoring of impacts to the environment from oil pollution and response activities that: a) is appropriate to the nature and scale of the risk of environmental impacts for the activity; and is sufficient to inform any remediation activities.	OPEP

Reg	Requirement	Section
22(11)	The implementation strategy must include information demonstrating that the response arrangements in the oil pollution emergency plan are consistent with the national system for oil pollution preparedness and response.	OPEP
22(12)	The implementation strategy must include arrangements for testing the response arrangements in the oil pollution emergency plan that are appropriate to the response arrangements and to the nature and scale of the risk of oil pollution for the activity.	OPEP
22(13)	The arrangements for testing the response arrangements must include: a) a statement of the objectives of testing; and b) a proposed schedule of tests; and c) mechanisms to examine the effectiveness of response arrangements against the objectives of testing; and d) mechanisms to address recommendations arising from tests.	OPEP
22(14)	The proposed schedule of tests must provide for the following: a) testing the response arrangements when they are introduced; b) testing the response arrangements when they are significantly amended; c) testing the response arrangements not later than 12 months after the most recent test; d) if a new location for the activity is added to the environment plan after the response arrangements have been tested, and before the next test is conducted – testing the response arrangements in relation to the new location as soon as practicable after it is added to the plan; e) if a facility becomes operational after the response arrangements have been tested and before the next test is conducted – testing the response arrangements in relation to the facility when it becomes operational.	OPEP
22(15)	The implementation strategy must provide for appropriate consultation with: a) relevant authorities of the Commonwealth, a State or Territory; and b) other relevant interested persons or organisations.	6
22(16)	The implementation strategy must comply with the Act, the regulations and any other environmental legislation applying to the activity.	2.6
	Details of titleholder and liaison person	
23(1)	The environment plan must include the following details for the titleholder: a) name; b) business address; c) telephone number (if any); d) fax number (if any); e) email address (if any); f) if the titleholder is a body corporate that has an ACN (within the meaning of the Corporations Act – 2001) – ACN.	1.4
23(2)	The environment plan must also include the following details for the titleholder's nominated liaison person: a) name; b) business address; c) telephone number (if any); d) fax number (if any); e) email address (if any).	1.4

Reg	Requirement	Section
23(3)	The environment plan must include arrangements for notifying the Regulator of a change in the titleholder, a change in the titleholder's nominated liaison person or a change in the contact details for either the titleholder or the liaison person.	1.4
	Other information in the environment plan	
24	The environment plan must contain the following: a) a statement of the titleholder's corporate environmental policy;	2.4
	b) a report on all consultations between the titleholder and any relevant person, for regulation 25, that contains: (i) a summary of each response made by a relevant person; and (ii) an assessment of the merits of any objection or claim about the adverse impact of each activity to which the environment plan relates; and (iii) a statement of the titleholder's response, or proposed response, if any, to each objection or claim; and (iv) a copy of the full text of any response by a relevant person;	6
	c) details of all reportable incidents in relation to the proposed activity.	10

2.2 Scope

The scope of this EP covers the following activities associated with the Montara operations activity:

- Routine production
- Routine inspection, maintenance and repair (IMR) of the FSPO and WHP, wells and associated subsea infrastructure (including use of remotely operated vehicle (ROV) and diving activities)
- Support services including vessel and helicopter support
- Non-routine and unplanned activities and incidents associated with the above.

The infrastructure covered by this EP includes the following as located within the defined Operational Area:

- Montara Venture FPSO and associated mooring system
- Unmanned wellhead platform
- Subsea infrastructure (including wells, manifold, gas compressor, spools, risers, flowlines, umbilicals and associated flying leads etc.)
- Support/ supply vessels assisting with activities defined above within the defined Operational Area
- Helicopter activity within the Operational Area.

This EP applies to activities undertaken within the Operational Area only as defined in the description of the activity (Section 2.3).

Activities that are not covered in this EP include nearby shipping activity, third-party offtake tankers, drilling or intervention activities undertaken by a mobile offshore drilling unit (MODU), or decommissioning. Vessels associated with the Montara operations activity when outside the Operational Area adhere to all applicable maritime regulations, and Commonwealth and State environmental management obligations.

Activities proposed within the Operational Area outside the scope of this EP will be the subject of a separate EP or a revision of this EP.

2.3 Operational Area

The Operational Area is defined as a 2 km boundary around all topsides and subsea infrastructure within production licenses AC/L7 and AC/L8 (refer Figure 2-1).

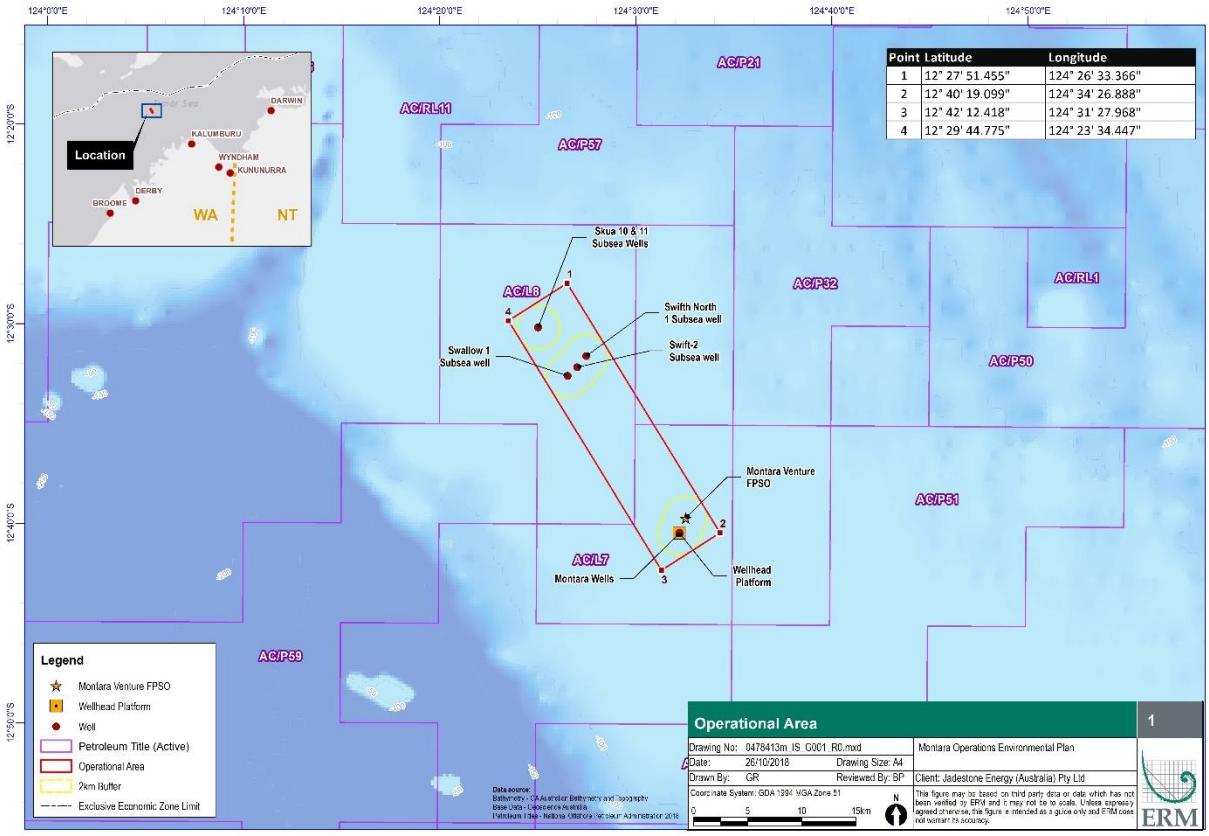

Figure 2-1: Operational area for the Montara operations activity

2.4 HSE Policy

Protecting the environment, valuing cultural heritage and maintaining open stakeholder communication are an integral part of Jadestone's business approach. This is reflected in Jadestone's HSE Policy (Appendix B) and this EP.

2.5 Climate Policy

Jadestone recognises the need for action to arrest the impact of rising temperatures caused by human activities, and specifically Greenhouse Gas ("GHG") emissions derived from the production and use of fossil fuels. As a result, the world's energy mix must diversify towards a low-carbon future. In order to facilitate an orderly and just transition, we recognise that oil and gas will continue to play a role in providing essential energy during the transition to a low-carbon energy system. In the meantime, we will undertake immediate steps to reduce our direct emissions and plan for the transition.

As an upstream oil and gas operator, Jadestone will play its part in promoting a just and orderly energy transition, contributing to economic growth in the Asia-Pacific region, while reducing the carbon footprint of its oil and gas production in support of the aims of the Paris agreement. We are committed to achieving Net Zero for our Scope 1 and our Scope 2 GHG emissions no later than by 2040. This commitment covers Scope 1 direct emissions from our operated assets as well as Scope 2 indirect emissions from electricity purchased for our facilities. At the same time, we pledge to work with our business partners to reduce the Scope 1 and 2 GHG emissions on our current and future non-operated assets. This policy (Document

Number: JSE021/2022) applies to all our operations. It will be subject to regular review in response to the requirements of the business as well as new developments in the evolving climate change agenda.

The ultimate responsibility for ensuring implementation of this policy rests with the Jadestone Board and Executive Directors. Jadestone expects its employees and contractors to comply with the policy. We will use our influence with contractors, suppliers and business partners to encourage them to follow similar principles in the assets where we do not have full operational control.

The Climate Change Steering Committee (CCSC) has been established for the purpose of assisting the Board and Executive Directors in fulfilling its oversight responsibilities with respect to the implementation of Jadestone's Climate Policy. The committee consists of the Management team representing key regions and functions, including the CEO and CFO.

2.5.1 Climate Change Steering Committee

The CCSC acts as a decision-making management forum reporting into the Board's HSEC Committee. The CCSC chair will formally report to the Board three times a year, or more often as required, during the Board's HSEC committee meeting. This will include making any relevant recommendations on all matters relating to Jadestone's climate strategy.

Country-level Climate Change Working Groups (CCWG) will support the CCSC in progressing country-specific elements of its remit. The outputs of the Country CCWG will be reported to the CCSC.

The immediate priorities for the Australia CCWG are:

- To determine the Safeguard Mechanism reforms' implications on Australia operations and determine the management options in the context of the Group's Net Zero roadmap.
- To monitor progress of the GHG reduction feasibility studies (e.g. Montara - reinjection capacity increase options).
- To finalise and provide a recommendation on the shortlisted GHG initiatives, including capex and estimated GHG reduction (including Workplan and budget (WPB) submission.
- GHG data availability – ensure that monthly inputs are complete and available for actual performance estimation and forecasting.
- Agree on an LDAR approach, as per the EP submission.

The Australia CCWG meets at least quarterly to progress the above priorities. At a corporate level, the asset GHG forecasts are being incorporated in to the 2024 WPB/3YP to further develop a baseline set of GHG forecasts with detailed underlying assumptions for both business as usual (BAU) and mitigated cases, ensuring overall consistency with the business planning process.

2.6 Legislative Framework

2.6.1 International and Commonwealth Legislation

Australia is signatory to numerous international conventions and agreements that obligate the Commonwealth government to prevent pollution and protect specified habitats, flora and fauna. All activities conducted during the operation of the Montara operations activity will comply with legislative requirements established under international, Commonwealth and state legislation, and in line with applicable best practice guidelines and management procedures. Those which are relevant to the Montara operations activity are detailed in Table 2-2 and Table 2-3.

2.6.2 EPBC Act Montara Approvals Conditions

The Montara operations activity was granted EPBC Act approval in 2003 by the Commonwealth Environment Minister through the then Department of Environment and Heritage (DEH) subject to certain conditions

(EPBC 2002/755) which were varied in December 2012 by the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities (DSEWPaC), now Department of Climate Change, Energy, the Environment and Water (DCCEEW).

More recently, a number of the approval conditions were redacted resulting in a consolidated approval notice that contains a number of conditions relating to the Montara operations activities. A list of the conditions relevant to the operations activities is provided in ***Table*** 2-4 while a copy of the consolidated approval notice is provided in Appendix A.

The EPBC approval is due to expire in 2028, which is before the current expected end of field life date. Therefore, Jadestone have prepared and submitted to DCCEEW an extension of the EPBC Act approval (refer Appendix G) to 2040 to allow for flexibility in the end of field life and for decommissioning activities to be completed. No amendment to any other conditions of approval has been requested.

Table 2-2: Summary of applicable legislation

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
Aboriginal Heritage Legislation Amendment and Repeal Act 2023	An act to repeal the Aboriginal Cultural Heritage Act 2021 and regulations made under that Act; and to amend the Aboriginal Heritage Act 1972 and to make consequential and related amendments to other written laws.	N/a	N/a
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	This Act came into force in July 2000 replacing five existing Commonwealth Acts (*Environmental Protection (Impact of Proposals) Act 1974*, *World Heritage Properties Conservation Act 1983*, *National Parks and Wildlife Conservation Act 1975*, *Whale Protection Act 1980*; and *Endangered Species Protection Act 1992*). The *Environment Protection and Biodiversity Conservation Act* (EPBC) provides for the protection of the environment, especially those aspects of the environment that are matters of National Environmental Significance (NES); and promotes ecologically sustainable development through the conservation and ecologically sustainable use of natural resources. Under this legislation all activities that will, or have the	Since February 2014, NOPSEMA's environmental management authorisation process has been endorsed by the Federal Minister for the Environment as a Program (the Program) that meets the requirements of Part 10, Section 146, of the EPBC Act. Under the Program, the Minister for the Environment has approved a class of actions which, if undertaken in accordance with the endorsed Program, will not require referral, assessment and approval under the EPBC Act. Petroleum and greenhouse gas activities undertaken in Commonwealth waters in accordance with the Program are considered to be "approved classes of action". The Program has objectives, which include ensuring activities undertaken in the offshore area are conducted in a manner consistent with the principles of ecologically sustainable development and will not result in unacceptable impacts to matters of national environmental significance (protected matters) recognised under Part 3 of the EPBC Act. Part 8 of the EPBC Regulations 2000 outlines requirements for vessel when interacting with cetaceans. Part 9, 10 and 13 outlines requirements for bird management. Consultation with the department has confirmed that there is no requirement for a Part 13 permit under the EPBC Act for bird management, if an accepted EP is in place.	This EP considers the impacts to protected matters (summarised in Section 5.5). This has included making specific reference in Section 5 to the values of matters protected under Part 3 of the EPBC Act (including protected matters) using references and relevant guidance documents, such as EPBC Act significance guidance documents, relevant policy statements, plans of management established by government, recovery plans and on-line databases (Appendix C). Section 4 of the EP describes the risk assessment undertaken and requires the consideration of the principles of ESD, conservation and management advice and the environmental context (amongst other elements) in determining

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
	potential to, affect matters of NES are prohibited except; when undertaken in accordance with approval by the Minister for Environment, or when approved through a Bilateral Agreement with a State or Territory, or when approved through a process accredited by the Minister. Matters of "National Environmental Significance" are: • World Heritage Properties • National Heritage Places • Wetlands of International Importance • Listed Threatened Species and Communities • Listed Migratory Species • Nuclear Actions • Commonwealth Marine Areas • Great Barrier Reef Marine Park.		whether the proposed activities are acceptable. Control measures reflecting the requirements of Part 8 of the EPBC Regulations have been implemented to manage potential interactions with cetaceans. These are provided in: • Section 7.2 Noise Emissions. • Section 7.8 Physical Presence of the EP describes bird management measures. • Section 7.10 Spill response Activities. • Section 8.3 Interaction with Fauna.
North and North West Marine Networks Management Plan for Australian Marine Park (AMP)	In recognition of the importance of the marine environment, it is listed as a matter of national environmental significance under the EPBC Act. Under the Act, the Director is responsible for managing marine parks (supported by Parks Australia), and is required	In recognition of the importance of the marine environment, it is listed as a matter of national environmental significance under the EPBC Act. Under the Act, the Director is responsible for managing marine parks (supported by Parks Australia), and is required to make management plans for marine parks. Other parts of the Australian Government must not perform functions or exercise powers in relation to these parks that are inconsistent with management plans. A number of zones (IUCN zones) are implemented in each AMP to ensure appropriate use and conservation of each AMP's relevant values and protected matters.	The Rules and requirements for the IUCN Zones are described in Appendix C. The values of each AMP are described in Appendix C of the EP. The Operational area is outside any AMP. However, impacts on habitat in marine parks can occur directly or indirectly during a

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
	to make management plans for marine parks. The objectives of the North and North-west Marine Parks Management Plans 2018 for the AMPs are to provide for: • the protection and conservation of biodiversity and other natural, cultural and heritage values of marine parks in the North-west Network • ecologically sustainable use and enjoyment of the natural resources within marine parks in the Northwest Network, where this is consistent with objective (a). The values are broadly defined as: • Natural values — habitats, species and ecological communities within marine parks, and the processes that support their connectivity, productivity and function • Cultural values — living and cultural heritage recognising Indigenous beliefs, practices and obligations for country, places of cultural significance and cultural heritage sites • Heritage values — non-Indigenous heritage that has	Noting 'Emergency response' is permitted in all AMPs and state marine parks, Section 4.2.9 of the management plan states: *Actions required to respond to oil pollution incidents, including environmental monitoring and remediation, in connection with activities authorised under the OPGGS Act may be conducted in all zones without an authorisation issued by the Director, provided that the actions are taken in accordance with an environment plan that has been accepted* *by NOPSEMA, and the Director is notified in the event of oil pollution within a marine park, or where an oil spill response action must be taken within a marine park, so far as reasonably practicable, prior to response action being taken*. In the event of a spill, appropriate ongoing consultation arrangements are in place with the Director of National Parks in the event of a spill and prior to activities being conducted in an AMP.	hydrocarbon spill and response (including monitoring). This is assessed in Sections 7.10, 8.7 and 8.8. The Acceptability assessment also describes consultation with DG of AMPs and references the following text: Jadestone will have regard to the representative values of the reserves and other conservation advice published and endeavour to ensure that priority is given to the social and ecological objectives and values, of any AMPs, or state marine parks impacted by unplanned crude release to ensure that the objectives of the management plans are not contravened (Section 5 and Appendix C) The Director will be notified in the event of an oil pollution incident that occurs within, or may impact upon, an Australian Marine Park and, so far as reasonably practicable, prior to a response action being taken within a marine park. Table 6-10 Triggered Consultation includes the following commitment in the event of a loss of hydrocarbon spill event.

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
	aesthetic, historic, scientific or social significance • Socio-economic values — the benefit of marine parks for people, businesses and the economy.		Notify AMP Director General of spill response activities within AMP (so far as reasonably practicable prior to response activities within a MP).
Commonwealth marine area	The Commonwealth marine area is any part of the sea, including the waters, seabed, and airspace, within Australia's exclusive economic zone and/or over the continental shelf of Australia, that is not State or Northern Territory waters. Commonwealth marine areas are matters of national environmental significance under the EPBC Act. An action is likely to have a significant impact on the environment in a Commonwealth marine area if there is a real chance or possibility that the action will: • Result in a known or potential pest species becoming established in the Commonwealth marine area • Modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in a	Refer EPBC Act above.	Control measures implemented to protect the commonwealth marine area are described throughout the EP in Sections 7 and 8, and through the implementation of the EP as described in Section 9.

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
	Commonwealth marine area results • Have a substantial adverse effect on a population of a marine species or cetacean including its life cycle (for example, breeding, feeding, migration behaviour, life expectancy) and spatial distribution • Result in a substantial change in air quality or water quality (including temperature) which may adversely impact on biodiversity, ecological integrity; social amenity or human health • Result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment such that biodiversity, ecological integrity, social amenity or human health may be adversely affected, or • Have a substantial adverse impact on heritage values of the Commonwealth marine area, including damage or destruction of an historic shipwreck.		

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
Climate Change Act 2022	The Act sets out Australia's greenhouse gas emissions reduction targets. It outlines Australia's greenhouse gas emissions reduction targets of a 43% reduction from 2005 levels by 2030 and net zero by 2050; requires the minister to prepare and table an annual climate change statement; requires the Climate Change Authority to give the minister advice in relation to the annual statement and future greenhouse gas emissions reduction targets; and provides for periodic reviews of the operation of the Act. The Act operates as 'umbrella' legislation to implement Australia's net-zero commitments and codifies Australia's net 2030 and 2050 GHG emissions reductions targets under the Paris Agreement.	The Act itself does not impose obligations directly on companies, but its passage into law sets the scene for sector-based reforms to implement the 2030 target and emissions budget, which will impact businesses. The Safeguard Mechanism reforms, which will apply principally to the industrial and resources sectors, is one such measure.	Control measures implemented are provided in: • Section 7.3 Atmospheric Emissions.
OPGGS Act (2006) and OPGGS (E) Regulations 2023	The OPGGSA 2006 (OPGGSA) came into effect in 2008, superseding and repealing the previous offshore petroleum legislation – the *Offshore Petroleum Act 2006* (OPA) and the *Petroleum (Submerged Lands) Act 1967* (PSLA). Facilities located entirely in Commonwealth offshore waters are controlled by the	The OPGGS (E) Regulations 2023 require that the petroleum activity is undertaken in an ecologically sustainable manner, and in accordance with an accepted EP.	Throughout this EP and through implementation of the HSE-MS. The principles of ESD are also considered in the acceptability of the potential impacts described in the EP. The EP has been prepared in accordance with these Regulations for acceptance by the designated authority (NOPSEMA).

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
	Commonwealth OPGGSA and its regulations, including but not limited to the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (OPGGS (E) Regulations). The Act, and its regulations, is currently administered by the Joint Authority, which consists of the Commonwealth Minister for Resources and Energy and the State Minister for Mines and Petroleum. The WA Minister for Mines and Petroleum acts as a Designated Authority and is advised by the DMIRS whilst the Commonwealth Minister for Climate change and Energy is advised by the Commonwealth DCCEEW). Under the OPGGS (E) Regulations an EP is required for proposals under Commonwealth jurisdiction, comprising a description of the environmental effects and risks of the project, and proposed mitigation measures to reduce these risks. The EP must be submitted to and accepted by the Designated Authority (DA). The DA for Commonwealth waters adjacent to Western Australian state waters and out to the Australian Exclusive Economic Zone (EEZ) at 200 nm is		Section 3 Description of the Activity. Section 4 Evaluation of Environmental Impacts and Risks. Sections 7 and 8 Assessment of Planned and Unplanned Events. Section 9 Implementation Strategy.

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
	NOPSEMA, who administers the regulations.		
Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Section 571)	Under section 571(2) of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006*, titleholders are required to have sufficient financial assurance to meet the costs, expenses and liabilities that may arise in connection with carrying out petroleum activities, particularly in the event of a major oil spill.	Requirement for titleholders to maintain sufficient financial assurance to meet the costs, expenses and liabilities that may arise in connection with carrying out petroleum activities among other things.	Confirmation of financial assurance is a requirement for acceptance of the EP and is submitted to NOPSEMA with the EP.
Navigation Act 2012	The primary legislation that regulates ship and seafarer safety, shipboard aspects of protection of the marine environment, and employment conditions for Australian seafarers.	The *Navigation Act 2012* includes specific requirements for safe navigation, including systems, equipment and practices consistent with the International Convention for the Safety of Life at Sea (SOLAS) and the International Regulations for Preventing Collisions at Sea (COLREGS), as implemented as maritime law in Australia through a series of Marine Orders, including Marine Orders – Part 21 – Safety of navigation and emergency procedures and Marine Orders – Part 30 – Prevention of collisions. The *Navigation Act 2012*, in conjunction with the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* and through legislative Marine Orders, also requires vessels to have pollution prevention certificates (see below).	Control measures implemented to meet the requirements of this act are provided in: • Section 7.1 Light Emissions. • Section 7.7 Physical presence. • Sections 8.6 to 8.8 Hydrocarbon Spills.
Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (POPS Act)	The POPS Act provides for the prevention of pollution from vessels, including pollution by oil, noxious liquid substances, packaged harmful substances, sewage, garbage, and air pollution. In conjunction with Chapter 4 of the *Navigation Act 2012*, the POPS Act gives effect to relevant requirements of the International	The requirements of the POPS Act and the *Navigation Act 2012* are implemented as maritime law in Australia through a series of Marine Orders and legislative instruments, made and administered by the Australian Maritime Safety Authority (AMSA). The requirements of each Marine Order made under the POPS Act and the *Navigation Act 2012* and their relevance to the activity are outlined separately below.	Control measures implemented to prevent pollution from vessels are provided in: • Section 7.3 Atmospheric emissions • Section 7.4 Liquid discharges • Section 7.5 Chemical discharge

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
	Convention for the Prevention of Pollution from Ships, 1973/1978 (MARPOL 73/78) in Australia.		• Section 7.6 Produced water discharges • Sections 8.4 and 8.5 Unplanned releases • Sections 8.6 to 8.8 Hydrocarbon Spills.
Radiation Protection Act 2004	The Act ensures the health and safety of people by protecting them from harmful effects of radiation; and protecting the environment from harmful effects of radiation. This Act addresses protective measures for transportation and storage of radioactive material including NORMS.	This Act regulates the transportation and storage of NORMs which may be present in produced water stored and discharged at the facility.	• Section 7.6 Produced water discharges
Environment Protection and Biodiversity Conservation Act (EPBC Act) 1999	This Act came into force in July 2000 replacing five existing Commonwealth Acts (*Environmental Protection (Impact of Proposals) Act 1974*, *World Heritage Properties Conservation Act 1983*, *National Parks and Wildlife Conservation Act 1975*, *Whale Protection Act 1980*; and *Endangered Species Protection Act 1992*). The EPBC Act provides for the protection of the environment, especially those aspects of the environment that are matters of National Environmental Significance (NES); and promotes	The EPBC Act regulates assessment and approval of proposed actions that are likely to have a significant impact on a matter of National Environmental Significance (NES). Actions that are likely to have a significant impact on a matter of NES require approval by the Commonwealth Environment Minister; the assessment process is administered by the Department of the Environment and Energy. The EPBC Act does not replace the need for an Environment Plan to be approved under the OPGGS (Environment) Regulations before an action can proceed.	Matters of National Environmental Significance (NES) that may be affected by the activity are described in Section 5. Control measures are implemented with specific intent to remove or reduce impacts on the environment. Section 7 Section 8

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
	ecologically sustainable development through the conservation and ecologically sustainable use of natural resources. Under this legislation all activities that will, or have the potential to, affect matters of NES are prohibited except; when undertaken in accordance with approval by the Minister for Environment, or when approved through a Bilateral Agreement with a State or Territory, or when approved through a process accredited by the Minister.		
Ozone Protection and Synthetic Greenhouse Gas Management Act 1989	Regulates the manufacture, importation and use of ozone depleting substances (typically used in fire-fighting equipment and refrigerants). Applicable to the handling of any ODS.	The activity does not include import, export or manufacture activities of ODS. This Act applies where ODS is found vessel refrigeration systems; however, this is a rare occurrence.	Control measures implemented are provided in: Section 7.3 Atmospheric Emissions.
Ozone Protection and Synthetic Greenhouse Gas Management Reform (closing the Hole in the Ozone Layer) Act 2022	This act amends the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 in relation to the Ozone Protection and Synthetic Greenhouse Gas Program by: imposing controls that are currently imposed through licence conditions, such as the ban on import of bulk gas in non-refillable containers; clarifying licence and	The activity does not include import, export or manufacture activities of ODS. This Act applies where ODS is found on MODU or vessel refrigeration systems; however, this is a rare occurrence.	Control measures implemented are provided in: Section 7.3 Atmospheric Emissions.

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
	exemptions requirements; increasing the time allowed for submitting reports and payment levies; adopting the standard provisions of the Regulatory Powers (Standard Provisions) Act 2014, including certain minor modifications; updating the offence and civil penalty provisions; introducing information gathering powers including the ability to issue a notice to produce; providing the option of licence suspension as an alternative to immediate cancellation of financial penalties; providing for an internal review mechanism for reviewable decisions; and allowing the use or disclosure of certain information.		
Marine Orders Part 91 – Marine Pollution Prevention — Oil	Marine Orders Part 91 implements Part II of the POPS Act, Chapter 4 of the *Navigation Act 2012,* and Annex I of MARPOL 73/78 (oil pollution). The Marine Orders provide standards for the discharge of certain oily mixtures or oily residues and associated equipment and include duties to manage bunkering and transfers of oil between vessels; to maintain Oil Record Books and Shipboard Oil Pollution Emergency Plans	Vessels ≥400 gross tonnes (GT) are required to maintain: • International Oil Pollution Prevention (IOPP) certificates to demonstrate that the vessel or facility and onboard equipment comply with the requirements of Annex I of MARPOL 73/78 (as applicable to vessel size, type and class) • Oil Record Books to record activities, such as fuel/oil bunkering and discharges of oil, oily water, mixtures and residues. • SOPEPs outlining the procedures to be followed during an oil pollution incident. Discharges must also comply with Annex I of MARPOL 73/78, and oil pollution incidents must also be reported to AMSA. The requirements will apply to vessels (as appropriate to their size, type and class) at all times.	Control measures implemented are provided in: • Section 7.4 Liquid discharges • Sections 8.6 to 8.8 Hydrocarbon Spills.

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
	(SOPEPs); and to report oil pollution.		
Marine Orders Part 93 – Marine pollution prevention — to noxious liquid substances; and Marine Orders Part 94 – Marine pollution prevention — packaged harmful substances	The requirements of Marine Orders Part 93 and Marine Orders Part 94 and the POPS Act relating to noxious liquid substances and packaged harmful substances do not apply to the activity on the basis that: the activity does not involve 'chemical tankers' or 'NLS tankers' that carry a cargo of noxious liquid substances in bulk, as defined by Annex II of MARPOL 73/78. Packaged harmful substances, as defined by Annex III of MARPOL 73/78, are not carried on board the FPSO or vessels.	N/A	Vessels are compliant with Marine Order 93 as detailed in: • Section 8.5 Unplanned release of (non-hydrocarbon) liquids.
Marine Orders Part 95 – Marine pollution prevention — garbage	Marine Orders Part 95 – Marine pollution prevention — garbage implements Part IIIC of the POPS Act, Chapter 4 of the *Navigation Act 2012,* and Annex V of MARPOL 73/78 (garbage). The Marine Orders provide for the discharge of certain types of garbage at sea, waste storage, waste incineration, and the comminution and discharge of food waste. They also set out requirements for garbage management and recording.	The FPSO and vessels ≥100 GT, or vessels certified to carry 15 persons or more, are required to maintain a Garbage Management Plan. The FPSO and vessels ≥400 GT are required to maintain a Garbage Record Book. The requirements will apply to the FPSO and vessels (as appropriate to their size, type and class) at all times.	Control measures implemented are provided in: • Section 7.4 Liquid discharges. • Section 8.4 Unplanned release of solid waste.

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
Marine Orders Part 96 – Marine pollution prevention — sewage	Marine Orders Part 96 – Marine pollution prevention — sewage implements Part IIIB of the POPS Act, Chapter 4 of the *Navigation Act 2012,* and Annex IV of MARPOL 73/78 (sewage). The Marine Orders include requirements for the treatment, storage and discharge of sewage and associated sewage systems, and for an International Sewage Pollution Prevention (ISPP) certificate to be maintained on board.	Vessels ≥400 GT are required to maintain International Sewage Pollution Prevention (ISPP) certificates to demonstrate that vessels and their onboard sewage systems comply with the requirements of Annex IV of MARPOL 73/78. Discharges of sewage must also comply with Annex I of MARPOL 73/78, and oil pollution incidents must also be reported to AMSA. These requirements do not apply to the FPSO once attached to the seabed (as a petroleum facility) and are no longer “vessels engaged on an overseas voyage" as defined by the POPS Act.	Control measures implemented are provided in: • Section 7.4 Liquid discharges. Section 7.10 Spill response activities.
Marine Orders Part 97 – Marine pollution prevention — air pollution	Marine Orders Part 97 – Marine pollution prevention — air pollution implements Part IIID of the POPS Act, Chapter 4 of the *Navigation Act 2012,* and Annex VI of MARPOL 73/78 (air pollution). The Marine Orders set requirements for marine diesel engines and associated emissions, waste incineration on board vessels, engine fuel quality, and equipment and systems containing ozone-depleting substances (ODS).	The FPSO and vessels ≥400 GT are required to have International Air Pollution Prevention (IAPP) certificates and Engine International Air Pollution Prevention (EIAPP) certificates to demonstrate that the vessel or facility and onboard marine diesel engines comply with the requirements of Annex VI of MARPOL 73/78. Low-sulfur fuel oil / marine diesel with 3.5% mass-for-mass (m/m) sulfur content is also required to be used in engines before 1 January 2020 (and 0.5% m/m sulfur content on and after 1 January 2020). From 1 March 2020, vessels are prohibited from carrying fuel oil with a sulphur content of more than 0.50 per cent m/m, unless an exhaust gas cleaning system (EGCS) is fitted. In accordance with Annex VI of MARPOL 73/78, the requirements do not apply to the following: • emissions resulting from the incineration of substances that are solely and directly the result of the exploitation and offshore processing of seabed mineral resources (i.e. hydrocarbons), including but not limited to flaring during well completion and testing operations and flaring arising from upset conditions	Control measures implemented are provided in: • Section 7.3 Atmospheric Emissions.

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
		• emissions associated solely and directly with the treatment, handling, or storage of seabed minerals (i.e. hydrocarbons) • emissions from marine diesel engines that are solely dedicated to the exploration, exploitation and associated offshore processing of seabed mineral resources (i.e. hydrocarbons). Therefore, the requirements do not apply to emissions from the gas export compressor, gas turbine generators and associated backup diesel-powered generators (there is no legislative requirement for these generators to have EIAPP certificates). Vessels ≥400 GT are required to have an IMO-approved waste incinerator, as confirmed by the IAPP certificate. The provisions of the Marine Orders that require vessels ≥400 GT with rechargeable systems containing ODS to maintain an ODS Record Book do not apply to the FPSO and vessels engaged in the activity, as they will remain within the Australian exclusive economic zone (EEZ) for the duration of the petroleum activity included in the scope of this EP, and therefore, will not be “vessels engaged on an overseas voyage" as defined by the POPS Act. The provisions of the Marine Orders that require Vessels ≥400 GT to have an International Energy Efficiency (IEE) certificate and a Ship Energy Efficiency Management Plan do not apply to the FPSO or vessels engaged in the activity. The FPSO is connected to the seabed and is therefore a facility under the OPGGS Act and not “vessels engaged on an overseas voyage" as defined by the POPS Act. Vessels will remain within the Australian EEZ for the duration of the petroleum activity included in the scope of this EP, and therefore, will not be “vessels engaged on an overseas voyage" as defined by the POPS Act. From 1 January 2023, engine suppliers and anyone who carries out a major conversion on a marine diesel engine will be required to provide an EIAPP certificate (and supporting Technical File) for each marine diesel engine with a power output above 130 kW. Crew members must be properly trained in the use of the EGCS and the system must be kept in good working order, with maintenance up-to-date and monitoring devices fully operational. The EGCS approval documents as well as operational and maintenance records for the EGCS must be maintained on board the vessel and made available for inspection upon Port State Control Officer (PSCO) request.	

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
		Prior to being discharged into Australian waters, EGCS wash water must comply with discharge water quality criteria set out in the 2021 Guidelines for Exhaust Cleaning Systems (Resolution MEPC 340 (77)).	
Marine Order 98 (Harmful anti-fouling systems	This Marine Order prescribes matters for the *Protection of the Sea (Harmful Anti-fouling Systems) Act 2006* (AFS Act) and gives effect to survey requirements under the International Convention on the Control of Harmful Anti-fouling Systems on Ships (Convention).	Marine order 98 sets out the requirements for: • survey of anti-fouling systems installed on vessels • form of anti-fouling system certificates, endorsements and declarations • forms to be used to report incidents.	Control measures implemented are provided in: Section 8.2 Marine Pest Introduction.
Biosecurity Act 2015 Biosecurity Regulations 2016 Biosecurity Amendment (Biofouling Management) Regulations 2021	The Act and its supporting legislation are the primary legislative means for managing risk of pests and diseases entering into Australian territory and causing harm to animal, plant and human health, the environment and/or the economy.	*The Biosecurity Act 2015* (Biosecurity Act) came into effect on 16 June 2016 and replaces the *Quarantine Act 1908*. The key legislative change between the two acts is the jurisdictional shift of the Department of Agriculture and Water Resources from 200 nautical miles (nm) to 12 nm (i.e. Australian territory). In the context of the oil and gas industry, this shifts the regulatory compliance responsibility from offshore facilities located outside Australian territory to the domestic conveyances that service/support them. The Australian Ballast Water Requirements, Version 8 include legislative obligations under this Act with regards to the management of ballast water and ballast tank sediment when operating within Australian seas. The *Australian biofouling management requirements, Version 2* set out vessel obligations and best practice for the management of biofouling when operating vessels under biosecurity control within Australian territorial seas. *National Biofouling Management Guidance for the Petroleum Production and Exploration Industry* (voluntary to adhere to) and *Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species* provide guidance on management of biofouling for vessels, infrastructure and immersible equipment, which is considered to be good oilfield practice to prevent introduction of IMS.	Control measures implemented are provided in: • Section 8.2 Marine Pest Introduction.

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
		The Biosecurity Amendment (Biofouling Management) Regulations 2021 entered into force in June 2022 and requires operators of all vessels to provide information on biofouling management practices prior to arriving in Australia.	
Biodiversity Conservation Act 2016 (WA) *Animal Welfare Act 2002* (WA)	*Biodiversity Conservation Act 2016* replaced the *Wildlife Conservation Act 1950* (WA) and came into effect 1 January 2019. Protection of ecological communities and habitats, flora and fauna. Ensures the humane treatment, protection, housing, release and euthanising of fauna.	Consult with WA DBCA and obtain relevant permit(s) before a wildlife hazing and post-contact wildlife response.	Oiled wildlife response is described in Section 7.10 Spill response activities. Consultation with WA DBCA would occur in the event of a spill as described in the OPEP. Table 6-10 of the EP also requires consultation with response agencies.
National Greenhouse and Energy Reporting Act 2007	This Act provides for the National Greenhouse and Energy Reporting (NGER) Scheme to account for and manage (via the safeguard mechanism) greenhouse gas emissions and energy consumption and production.	Report project greenhouse gas emissions, energy consumption and energy production data, as well as emissions performance compared to the facility emissions baseline, to the Clean Energy Regulator annually, following the commencement of production.	Since commissioning, the total annual flaring volumes (MMscf) as listed in the EP (Section 7.3) have been reported within the NGERS Annual Reports and continue to be reported.
National Environment Protection (National Pollutant Inventory) Measure 1998	The National Pollutant Inventory NEPM Goals are • To collect a broad base of information on emissions and transfers of substances on the reporting list, and • To disseminate the information collected to all sectors of the community in a useful, accessible and understandable form.	The NEPM does not require reporting of greenhouse gas emissions as this is covered by the NGER Act, other emissions are reported if a facility exceeds certain levels of pollutants.	http://www.npi.gov.au/reporting

Legislation	Description of the legislation	Legislative requirement relevant to environmental management of the activity	Demonstration of how requirements are met
Underwater Cultural Heritage Act 2018	This Act replaces the *Historic Shipwrecks Act 1976* and extends protection from shipwrecks to other wrecks such as submerged aircraft and human remains. It also increases penalties applicable to damaged sites. The Act came into effect 1 July 2019.	Planned activities will not impact on shipwrecks, and it is unlikely that a large hydrocarbon spill would impact on shipwrecks.	Appendix C Cultural Heritage notes the shipwrecks that are known to be present in the EMBA.

Table 2-3: Summary of applicable industry standards, guidelines and policy documents

Guideline	Description
Australian and New Zealand guidelines for fresh and marine water quality (ANZECC/ARMCANZ 2018)	These guidelines provide a framework for water resource management and state specific water quality guidelines for environmental values, and the context within which they should be applied.
International Convention for the Prevention of Pollution from Ships, 1973/1978 (MARPOL 73/78)	This convention is designed to reduce pollution of the seas, including dumping, oil and exhaust pollution. MARPOL 73/78 currently includes six technical annexes. Special areas with strict controls on operational discharges are included in most annexes.
Guidelines for Exhaust Gas Cleaning Systems (IMO) 2021 (MEPC.340 (77))	MARPOL Annex VI requires ships to use fuel oil with a sulphur content not exceeding that stipulated in regulations 14.1 or 14.4. These Guidelines have been developed to allow for the testing, survey, certification, and approval of Exhaust Gas Cleaning Systems (EGCSs) in accordance with Regulation 4.3 of MARPOL Annex VI.
International Convention on the Control of Harmful Anti-fouling Systems	This convention prohibits the use of harmful organotins in anti-fouling paints used on ships and establishes a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems.
International Convention for the Safety of Life at Sea (SOLAS) 1974	In the event of an offshore emergency event that endangers the life of personnel, the International Convention for the Safety of Life at Sea (SOLAS) 1974 may take precedence over environmental management.

Guideline	Description
Bonn Agreement for Cooperation in Dealing with Pollution of the North Sea by Oil and other harmful substances (Bonn Agreement)	The Bonn Agreement is the mechanism by which the North Sea states, and the European Union (the Contracting Parties), work together to help each other in combating pollution in the North Sea area from maritime disasters and chronic pollution from ships and offshore installations; and to carry out surveillance as an aid to detecting and combating pollution at sea. The Bonn Agreement Oil Appearance Code (BAOAC) may be used during spill response activities.
Convention on Biological Diversity (1992)	The objectives of the convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.
Convention Concerning the Protection of the World Cultural and Natural Heritage (1972)	The Convention links together in a single document the concepts of nature conservation and the preservation of cultural properties. The Convention recognizes the way in which people interact with nature, and the fundamental need to preserve the balance between the two.
United Nations Framework Convention on Climate Change (1992)	The objective of the convention is to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous interference with the climate system. Australia ratified the convention in December 1992, and it came into force on 21 December 1993.
International Convention on Oil Pollution Preparedness, Response and Co-operation (1990)	This convention sets up a system of oil pollution contingency plans and cooperation in fighting oil spills.
Vienna Convention on the Protection of the Ozone Layer (1985) and the Montreal Protocol; on Substances that Deplete the Ozone Layer (1987)	The Convention (ratified by Australia in 1987) and the Protocol (ratified in 1989) concern the phasing out of ozone depleting substances.
United Nations Convention on the Law of the Sea (UNCLOS) (1982)	Part XII of the convention sets up a general legal framework for marine environment protection. The convention imposes obligations on State Parties to prevent, reduce and control marine pollution from the various major pollution sources, including pollution from land, from the atmosphere, from vessels and from dumping (Articles 207 to 212). Subsequent articles provide a regime for the enforcement of national marine pollution laws in the many different situations that can arise. Australia signed the agreement relating to the implementation of Part XI of the Convention in 1982, and UNCLOS in 1994.
London (Dumping) Convention (1972)	Dumping at sea is regulated by the convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter 1972 (the 'London Convention'). Article 4 provides a general prohibition on dumping of wastes except as specified in the Convention. The convention has annexed to it two lists of substances, the 'black list' of substances which may not be dumped at all, and the 'grey list' of substances which may only be dumped under a specific permit.
International Convention Relating to Intervention on the High Seas in	The convention gives States Parties powers to intervene on ships on the high seas when their coastlines are threatened by an oil spill from that ship.

Guideline	Description
Cases of Oil Pollution Casualties (1969)	
International Convention on Civil Liability for Oil Pollution Damage (1969)	The convention and the associated International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage 1971 set up a system of compulsory insurance and strict liability up to a certain figure for damages suffered as a result of an oil spill accident.
Bilateral Agreements on the Protection of Migratory Birds	Australia has negotiated bilateral agreements with Japan (Japan-Australia Migratory Birds Agreement [JAMBA] 1974), China (China-Australia Migratory Birds Agreement [CAMBA] 1986) and the Republic of Korea (Republic of Korea – Australia Migratory Birds Agreement [ROKAMBA], 2007) to protect species of migratory birds with international ranges. In November 2006, the East Asian-Australasian Flyway Partnership (Flyway Partnership) was launched in order to recognise and conserve migratory waterbirds in the East Asian – Australasian Flyway for the benefit of people and biodiversity.
The Australian Petroleum Production and Exploration Association (APPEA) Code of Environmental Practice (APPEA 2008)	In Australia, the petroleum exploration and production industry operate within an industry code of practice developed by the Australian Petroleum Production and Exploration Association (APPEA); the APPEA Code of Environmental Practice (2008). This code provides guidelines for activities that are not formally regulated and have evolved from the collective knowledge and experience of the oil and gas industry, both nationally and internationally. The APPEA Code of Practice covers general environmental objectives for the industry, including planning and design, assessment of environmental risks, emergency response planning, training and inductions, auditing and consultation and communication. The 'offshore development and production' section of the Code is of particular relevance to the Montara operations. As an APPEA member, Jadestone adheres to this Code of Environmental Practice when undertaking offshore exploration and production activities.
Australian Ballast Water Requirements, Version 8	Australian Ballast Water Management Requirements outline the mandatory ballast water management requirements to reduce the risk of introducing harmful aquatic organisms into Australia's marine environment through ballast water from international vessels. These requirements are enforceable under the *Biosecurity Act 2015*.
Australian Biofouling Management Requirements, Version 2 2023.	The Australian biofouling management requirements set out vessel operator obligations for the management of biofouling when operating vessels under biosecurity control within Australian territorial seas. These requirements apply to all operators of vessels subject to biosecurity control and provide guidance for vessel operators on best practice biofouling management. The department's powers to manage biosecurity risk associated with biofouling are contained in the Biosecurity Act 2015 and associated legislation.
International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Convention) 2004. BWM	The IMO has been addressing the problem of IMS in ship's ballast water since the 1980s. Ballast water and sediments guidelines were adopted in 1991 and the ballast water convention was adopted in 2004. Recent accession by Finland has triggered the final entry into force of these international requirements. As a result, the International Convention for the Control and Management of Ships Ballast Water and Sediment will enter into force on 8th September 2017 (IMO Briefing 22 2016). It aims to prevent the spread of harmful aquatic organisms from one region to another, by establishing standards and procedures for the management and control of ships'

Guideline	Description
	ballast water and sediments. Ballast Water Management systems must be approved by the Administration in accordance with this IMO Guidelines.
International Convention for the Control and Management of Ships' Ballast Water and Sediments. Guidance on ballast water record-keeping and reporting (IMO, 2023b)	Guidance on ballast water record-keeping and reporting to assist in bringing clarity to the record-keeping and reporting process under the BWM Convention, including guidance on completing the Ballast Water Record Book, an updated example ballast water reporting form and an example form for voluntary tank-by-tank logging of ballast water operations.
National Biofouling Management Guidance for the Petroleum Production and Exploration Industry (Commonwealth of Australia 2009).	A voluntary biofouling management guidance document developed under the National System for the Prevention and management of Marine Pest Incursions. Its purpose is to provide tools to operators to minimise the amount of biofouling accumulating on their vessels, infrastructure and submersible equipment and thereby to minimise the risk of spreading marine pests.
Guidelines for the Control and Management of Ship's Biofouling to Minimise the Transfer of Invasive Aquatic Species (IMO 2023c)	The Guidelines are intended to provide useful recommendations for measures to minimize biofouling for all types of ships. The objective of these Guidelines is pursued by providing a globally consistent approach to stakeholders on the control and management of biofouling, which will contribute to minimizing the risk of transferring invasive aquatic species from biofouling on ships
Circular for reporting and using contingency measures for ships installed with Ballast Water Management Systems	This circular is to inform the industry of Australia's requirements regarding the use of contingency measures for ships utilising a Ballast Water Management Systems.
Plans of management for: • World Heritage properties • Commonwealth/National Heritage places	Sites accepted to the World Heritage listing are only inscribed if considered to represent the best examples of the world's cultural and natural heritage. There are no World Heritage properties that intersect with the EMBA. The Commonwealth Heritage List is a list of natural, Indigenous and historic heritage places owned or controlled by the Australian Government. There are five Commonwealth Heritage places that intersect with the EMBA; Ashmore Reef National Nature Reserve, Christmas Island Natural Areas, Mermaid Reef – Rowley Shoals, North Keeling Island and Scott Reef and Surrounds – Commonwealth Area. The National Heritage list is Australia's list of natural, historic and Indigenous places of outstanding significance to the nation. There are no National Heritage properties that intersect with the EMBA.
Australian Marine Parks	Australian Marine Parks are established by proclamation under the EPBC Act for the purpose of protecting and maintaining biological diversity in the parks. Environment plan (EP) must be consistent with the Australian Marine Park Management plans.

Guideline	Description
	In all cases where an activity has potential to impact or present risk to AMPs, regardless of whether the activity is inside or outside a park, the EP should evaluate how these impacts and risks will be of an acceptable level and reduced to as low as reasonably practicable (ALARP).
EPBC Act-related guidelines	Relevant guidelines/policies are considered in the management of impacts and risks (e.g. EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales: Industry guidelines).
NOPSEMA OPGGS Act-related guidelines	NOPSEMA guidelines applicable to Montara operations include: • NOPSEMA Guidance: Ageing assets and life extension (N-04300-GN1975 A783718, July 2021) • NOPSEMA Guidance: ALARP (N04300-GN0166, August 2022) • NOPSEMA Guidance: Change to titleholder with operational control of activities (N-04000-GN1746, January 2024) • NOPSEMA Guidance: Environment plan content requirements (N04750-GN1344, January 2024) • NOPSEMA Guidance: Petroleum Activity (N-04750-GN1343 A336223, January 2024) • NOPSEMA Guidance: Oil pollution risk management (N-04750-GN1488, July 2021) • NOPSEMA Guidance: Notification and Reporting of Environmental Incidents (N-03000-GN0926, January 2024) • NOPSEMA Guidance: Notification and Reporting of Environmental Incidents (N-03000-GN0926, January 2024) • NOPSEMA Guidance: Notification and reporting of accidents and dangerous occurrences (N-03000-GN0099, September 2023) • NOPSEMA Guidance: Notification, reporting and recording requirements for well-related incidences (N-03300-GN1636, November 2023) • NOPSEMA Guidance: Offshore project proposal content requirements (N-04750-GN1663, January 2024) • NOPSEMA Guidance: Petroleum activities and Australian Marine Parks (N-04750-GN1785, January 2024) • NOPSEMA Guidance: Responding to public comment on environment plans (N-04750-GN1847, January 2024) • NOPSEMA Guideline: Consultation with in the course of preparing an environment plan (N-04750-GL2086, May 2023) • NOPSEMA Guideline: Consultation with Commonwealth agencies with responsibilities in the marine area (N-04750-GL1887), January 2024 • NOPSEMA Guideline: Environment Plan Decision Making (N-04750-GL1721, January 2024 • NOPSEMA Guideline: End of an operation of an environment plan- Regulation 46 (N-04750-GL1691, January 2024 • NOPSEMA Guideline: Making submissions to NOPSEMA (N-04000-GLO225 July 2022) • NOPSEMA Guideline: Offshore project proposal decision making (N-04790-GL1816, January 2024) • NOPSEMA Guideline: When to submit a proposed revision of an EP (N-04750-GL1705, January 2024)

Guideline	Description
	• NOPSEMA Policy: Environment plan assessment (N-04750-PL1347, January 2024) • NOPSEMA Policy: Financial assurance for petroleum titles (N-04730-GN1381, January 2024) • NOPSEMA Policy: Offshore project proposal assessment (N-04790-PL1650, January 2024 • NOPSEMA Policy: Offshore oil pollution incidents (N-00500-PL1922, January 2024) • NOPSEMA Information Paper: Australian dispersant acceptance processes (N-04750-IP1597, January 2024) • NOPSEMA Information Paper: Acoustic impact evaluation and management information paper (N-04750-IP1765, January 2024) • NOPSEMA Information Paper: Operational and Scientific Monitoring Programs (N-04750-IP1349, January 2024) • NOPSEMA Information Paper: Planning for proactive decommissioning (N-00500-IP2002, January 2024) • NOPSEMA Information Paper: Source control planning and procedures (N-04750-IP1979, January 2024) • National Biofouling Management Guidance for the Petroleum Production and Exploration Industry (Commonwealth of Australia 2009) • Australian Ballast Water Management Requirements (Version 8, Department of Agriculture, Water and the Environment 2020) • Australian biofouling management requirements (Version 2, Department of Agriculture, Fisheries and Forestry 2023) • Australian and New Zealand guidelines for fresh and marine water quality (ANZECC/ARMCANZ 2018) • The Australian Petroleum Production and Exploration Association (APPEA) Code of Environmental Practice (APPEA 2008). • APPEA Joint Industry Operational and Scientific Monitoring Plan Framework (APPEA 2021). • NOPSEMA bulletin: Oil Spill modelling (Bulletin #1, April 2019) Relevant guidelines/ policies are considered in the management of impacts and risks.
Ramsar wetland ecological character descriptions	There are no Ramsar wetlands that have coastal boundaries intersecting with the EMBA.
Marine Bioregional Plan	Marine bioregional plans are identified and considered in Section 5. Key Ecological Features (KEF) are elements of the Commonwealth marine environment that are considered to be of regional importance for either a region's biodiversity or its ecosystem function and integrity. 8 KEFs intersect with the EMBA: • Ashmore Reef and Cartier Island and Surrounding Commonwealth Waters • Seringapatam Reef and Commonwealth Waters in the Scott Reef Complex • Continental Slope Demersal Fish Communities • Carbonate bank and terrace system of the Van Diemen Rise • Pinnacles of the Bonaparte Basin

Guideline	Description
	• Ancient Coastline at 125 m Depth Contour • Canyons linking the Argo Abyssal Plain with the Scott Plateau • Carbonate Bank and Terrace System of the Sahul Shelf.
The Conservation Values Atlas (DoEE 2018a)	The Conservation Values Atlas has been developed by the Commonwealth Government. This is used for the identification of Biologically Important Areas (BIA), KEFs etc. which have been presented in Section 5 and considered in the assessment of impacts and risks in Sections 7 and 8. BIAs are identified by the Commonwealth government, are spatially defined areas where aggregations of individuals of a species are known to display biologically important behaviour, such as breeding, foraging, resting or migration.
Species Profile and Threats Database (DoEE 2018b)	This database has been used in Section 5 as a source of information on the receptors. Information accessed has included species details such as habitat, movements, feeding, reproduction and taxonomic comments. Noting that profiles are not available for all species and ecological communities.

Table 2-4: EPBC approval conditions from consolidated approval notice relating to Montara operations activities (EPBC 2002/755, 12 June 2018)

#	Condition	How this condition is met within the EP
1	The person taking the action must submit for the Minister's approval, an Oil Spill Contingency Plan (OSCP) that demonstrates the response preparedness of the person taking the action for any spills, including hydrocarbons from offshore wells and infrastructure, pipelines, construction and operation vessels. This must include the capacity to respond to a spill and mitigate the environmental impacts on the Commonwealth marine area and species listed as threatened or migratory under the EPBC Act. The OSCP must include, but is not limited to:	An Oil Pollution Emergency Plan (OPEP) is submitted to NOPSEMA with this EP for acceptance. As per Condition 13, a NOPSEMA accepted EP is taken to also be approved by the Minister.
a)	identification of sensitive areas, species or habitats that may be impacted by a potential spill, as determined by site-specific modelling of worst-case scenario spills;	The receptors and locations that may be impacted by the potential spill scenarios identified are described in Section 5. Modelling has been undertaken and is described further in Section 8.6.
b)	specific response measures for those sensitive areas, species or habitats and prioritisation of those areas during a spill response, including a net environmental benefit analysis of the response options;	Response measures and a preliminary NEBA are described in the Montara Operations OPEP.

#	Condition	How this condition is met within the EP
c)	a description of resources available for use in containing and minimising impacts in the event of a spill and arrangements for accessing them;	Response measures and a preliminary NEBA are described in the Montara Operations OPEP.
d)	a demonstrated capacity to respond to a spill at the site and measures that can feasibly be applied within the first 48 hours of a spill occurring;	First strike response measures applied within the first 48 hours are described in the Montara Operations OPEP.
e)	training of staff in spill response measures and identifying roles and responsibilities of personnel during a spill response;	Training and competency of personnel involved in spill response and roles and responsibilities are described in the Montara Operations OPEP.
f)	procedures for reporting spill incidents within 48 hours of a spill occurring; and	Spill reporting arrangements are provided in described in the Montara Operations OPEP.
g)	a demonstrated procedure or a plan for testing, maintenance and review of the OSCP.	Testing and maintenance of the OPEP is described in the Montara Operations OPEP.
	The OSCP must be submitted and approved by the Minister prior to the recommencement of operations, or as otherwise agreed to in writing by the Minister. The person taking the action must not recommence the operations unless the Minister has approved the OSCP. The approved OSCP must be implemented.	A NOPSEMA accepted OPEP is taken to also be approved by the Minister and meets the requirements of an OSCP as referred to in this condition.
3	The person taking the action must monitor produced formation water in accordance with a NOPSEMA accepted Environment Plan for the activity, including aspects of quality, quantity and effects on the receiving environment.	The monitoring regime for produced formation water is described in detail in Section 7.6.
7	The person taking the action must submit for the Minister's approval, an Operational and Scientific Monitoring Program (OSMP) that will be implemented in the event of a spill to determine the potential extent and ecosystem consequences of such a spill, including, but not limited to:	As per Condition 13, a NOPSEMA accepted OSMP is taken to also be approved by the Minister.
a)	triggers for the initiation and termination of the OSMP, including, but not limited to, spill volume, composition, extent, duration and detection of impacts;	Jadestone's OSMP details triggers for initiation and termination of SMPs.
b)	a description of the studies that will be undertaken to determine the operational response, potential extent of impacts, ecosystem consequences and potential environmental reparations required as a result of the spill;	Jadestone's OSMP details studies to be undertaken.
c)	inclusion of sufficient baseline information on the biota and the environment that may be impacted by a potential spill, to enable an assessment of the impacts of such a spill;	Jadestone's OSMP details arrangements for baseline information to be referenced in evaluation of impacts and recovery in sensitive receptors impacted by a spill.

#	Condition	How this condition is met within the EP
d)	a strategy to implement the scientific monitoring plan, including timelines for delivery of results and mechanisms for the timely peer review of studies; and	Jadestone's third party service provider for scientific monitoring provides a plan that details implementation arrangements.
e)	provision for periodic review of the program.	Jadestone's OSMP specifies periodic review requirements.
	The OSMP must be submitted and approved by the Minister within three (3) months following the recommencement of operations, or as otherwise agreed to in writing by the Minister. The approved OSMP must be implemented.	A NOPSEMA accepted OSMP is taken to also be approved by the Minister.
10	The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plans/ monitoring programs required by this approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	Section 9 provides detail on the monitoring, recording and reporting requirements associated with the Montara operations activity.
11	Upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister	Jadestone will respond to the Minister's directions with regard to independent audits as and when required.
13	A plan, program or strategy required by condition 1, 2 or 7 is automatically deemed to have been submitted to, and approved by, the Minister if the measures (as specified in the relevant condition) are included in an environment plan (or environment plans) relating to the taking of the action that:	
a)	was submitted to NOPSEMA after 27 February 2014; and	This EP is submitted after 27th February 2014
b)	either: i) is in force under the OPGGS Environment Regulations; or ii) has ended in accordance with regulation 25A of the OPGGS Environment Regulations.	This EP, once accepted, will be in force under the OPGGS(E) Regulations.

#	Condition	How this condition is met within the EP
13A	Where a plan, program or strategy required by condition 1 or 7 has been approved by the Minister and the measures (as specified in the relevant condition) are included in an environment plan (or environment plans) that:	
a)	was submitted to NOPSEMA after 27 February 2014; and	This EP is submitted after 27th February 2014
b)	either: i) is in force under the OPGGS Environment Regulations; or ii) has ended in accordance with regulation 25A of the OPGGS Environment Regulations, the plan, program or strategy approved by the Minister no longer needs to be implemented.	This EP, once accepted, will be in force under the OPGGS(E) Regulations.
13B	Where an environment plan, which includes measures specified in the conditions referred to in conditions 13 and 13A above, is in force under the OPGGS Environment Regulations that relates to the taking of the action, the person taking the action must comply with those measures as specified in that environment plan.	Compliance with this EP is reported annually to NOPSEMA as required under the OPGGS(E)R and further detailed in Section 9.

3. DESCRIPTION OF THE ACTIVITY

3.1 Overview

Production at the Montara field commenced in Quarter 2 2013. The Montara operations activity is expected be fully operational until approximately 2030. The activity commenced with an indicative production rate of 30,000 bbl/d crude oil, and current production rate is approximately 16,000 bbl/d which is expected to decline over the life of the activity as is typical for oil field developments.

This EP is written to allow for the continuation of production at the Montara Facility for a period of five (5) years from the date of its acceptance by NOPSEMA, which is within the expected operational life of the Montara activity.

Oil is extracted from production wells in each of the Montara, Skua, Swift and Swallow fields and is transported in flow lines to the Montara Venture FPSO facility via the Montara WHP.

3.2 Field Infrastructure

3.2.1 Wellhead platform

The WHP is an unmanned operation platform. No hydrocarbon processing is performed on the WHP. Hydrocarbon production fluids from the Swift, Swallow and Skua subsea wells are co-mingled subsea and arrive at the WHP to then be co-mingled with the Montara production fluids, or Montara can be segregated via one of the export flowlines..

The WHP is designed to:

- Act as a support structure for Montara wellheads and risers, including future allowances
- Collect and co-mingle the output from the individual wells and facilitate well flow rate and control
- Provide for gas re-injection and gas lift
- Provide for remote control from the FPSO
- Provide for well testing with control from, and data to, the FPSO and the ability to backflow re-injection gas through flowlines.

The WHP is a normally unmanned platform which will be visited as required for maintenance and operations purposes. When visiting the WHP, a minimum of two personnel visit the WHP, based on the buddy system principle. Safety equipment onboard the facility provides for up to 10 personnel, the maximum POB that can attend the WHP when the facility is in production. When the WHP is not in production, the maximum POB on the WHP may be expanded to 20 personnel during campaigns based on the design capacity of each muster point with extra safety equipment.

3.2.2 Montara Venture FPSO

The Montara Venture FPSO is a converted Suez max crude oil tanker. The FPSO is permanently moored (for the operational life of the field) in the Montara field utilising a turret mooring system.

Summary details of the FPSO are provided in Table 3-1.

Table 3-1: Details of the Montara Venture FPSO

Aspect	Detail
Vessel name	Montara Venture (ex-Freeway/ Genmar Alta)
IMO number	8714982
Dead weight tonnage	146,251 mt

Aspect	Detail
Length	274.3 m
Moulded breadth	43.2 m
Moulded depth	23.8 m
Maximum oil storage capacity (98%)	965,977 bbl

The Montara Venture FPSO has been built and equipped to include the following:

- 1 x three-stage oil separation train
- Gas reinjection compressor
- Gas dehydration via glycol contactor
- Glycol re-generation
- Produced water treatment
- Fuel gas treatment
- Inert gas system
- Chemical injection and storage
- Seawater cooling water lift pumps
- Electrical power generation and distribution
- Crude offloading facility
- Submerged turret production and hydraulic power unit systems
- Flare tower.

The maximum personnel on board for the FPSO is 58 personnel, based on the accommodation and safety equipment provisions. The expected normal complement for operation and maintenance of the facility is 34 crew plus an average of 17 contractors and casual visitors. Minimum manning distribution is 18 crew.

Activities normally undertaken by a marine crew (such as cargo loading and discharge, cargo tank inspections and maintenance) are undertaken by suitably trained operations personnel.

The Montara Venture FPSO is moored by a single point mooring (SPM) system. The system comprises nine chain and wire mooring legs secured to the seabed by piles, a buoy and riser system and a fluid, gas, power and utility swivel system. Each mooring line is composed of chain and wire rope segments, which is connected to a submerged turret production (STP) buoy at the turret level and to nine driven anchor piles driven to a depth of 25 m at the extents of the mooring pattern.

The turret for the FPSO is an inboard design to allow the vessel to freely weathervane. The FPSO is designed to remain on station during all weather conditions and will be permanently moored. Operations on the turret are limited to maintenance and repair activities. The turret provides connections for all dynamic risers and umbilical lines.

Vessel stability during normal operational and adverse weather conditions is maintained by ensuring cargo tanks and ballast tanks are at optimum levels. This is achieved by effective distribution of crude to the crude storage tanks which, due to the number of tanks and their varying capacity, provide operational flexibility.

The vessel has a fully segregated ballast system to prevent contamination from the cargo tanks, with hydraulic valves for ballast control. However, in heavy weather or an emergency case the cargo pumps can be used for salt water ballasting and de-ballasting of Cargo Oil Tanks.

"Loading and Stability Information" has been produced which provides sufficient information to check the vessels stability according to IMO A749 (18) criteria. Static stability information including draft, trim, heel, GZ curve, Metacentric Height (GM), bending moment and shear force for all standard and operational loading conditions is also provided. This booklet which is located offshore enables personnel to manage the loading and stability aspects of the installation in compliance with Class requirements.

Optimum loading and ballasting arrangements are calculated with the assistance of the load computer. Stability calculations have been performed to Class requirements for the intact and damage condition for various tank configurations. The Ballast System has been identified as a safety critical element; and is subject to the Performance Standard Report (MV-70-REP-F-00002).

3.2.3 Wells

The Montara operations activity consists of both subsea and dry platform wells. The subsurface completion consists of the wellbore drilled to penetrate the oil-bearing sands, and all equipment items installed within the wellbore are designed to allow well fluids to be produced in a safe and controlled manner. These items include the steel or steel/ chrome alloy casing and liner (chrome alloy materials used in flow wetted areas to prevent CO2 related corrosion) cemented into the wellbore.

The production string consists of production tubing, chemical injection points, isolation packers, landing nipples, sand control screens and other specialised equipment to provide a flow path for the reservoir fluids to the wellhead.

The Skua 10 and 11 are horizontally completed wells that have three additional hydraulic control lines that support the operation of two downhole zone isolation valves.

The dry platform production wells all feature downhole pressure gauges. Skua 10 and Skua 11 are the only subsea wells with downhole pressure gauges.

A Surface Controlled Subsurface Safety Valve (SCSSV) is installed in each well's tubing string at approximately 300 m below the seabed to prevent uncontrolled flow in an emergency. The SCSSVs are a fail-safe (closed) design that requires continuous hydraulic control pressure supplied from the control system on the FPSO to remain in the open position.

3.2.4 Subsea trees

The subsea trees provide the interface between the subsurface completion and the subsea flowlines. The components of the subsea wells are as follows:

- Surface casing, wellhead and tubing hanger
- Production guide base
- Subsea tree.

The production guide base is mechanically locked to the wellhead and provides connection between the tree choke valves and the gas lift and production flowlines.

Each subsea tree assembly consists of:

- Subsea tree connector
- Valve block with pressure and temperature transducers, tree valves and actuators
- Hydraulic flowline connectors
- Removable subsea control module
- Removable annulus and production choke modules.

The tree valves serve to shut off and seal in the well from the surface and control the routing of fluids through the tree.

The subsea trees are controlled from the FPSO via the MCS interface in the CCR. The valves are held open by hydraulic pressure via control lines from well control panels and will fail-safe (closed) upon loss of hydraulic control pressure for any reason.

3.2.5 Dry platform trees (WHP)

The dry platform trees provide the interface between the subsurface completion and the flow control pipework on the WHP. The components of the dry platform wells include the surface casing, wellhead and tubing hanger and the dry surface trees.

Each tree assembly consists of a starter head and tree block with pressure and temperature transducers, tree valves and actuators. The ancillary pipework located on the WHP hosts the choke valves, chemical injection points and flow control valves.

The tree valves serve to shut off and seal in the well from the surface and control the routing of fluids through the tree.

The dry platform trees are controlled from the FPSO via the ICCS interface in the CCR. The valves are held open by hydraulic pressure via control lines from well control panels and will fail-safe (closed) upon loss of hydraulic control pressure for any reason.

A wellhead hydraulic control panel (WHCP) is provided on the WHP for control of the Montara wells. The WHCP is used to manipulate the tree valves and SCSSVs for the Montara wells. Since the Montara wells have been developed with sand control screens and integrated inflow control devices (ICDs), facilities on WHP for handling sand are not required.

3.2.6 Swift Manifold

A single manifold is located at the Swift field to incorporate multi-phase metering, chemical/ controls umbilical and gas lift distribution and production fluid co-mingling. The manifold is a carbon steel structure and will co-mingle the hydrocarbons from Swift, Swallow and Skua wells into the WHP flowline and support a subsea distribution unit for the subsea production control system. A multi-phase flow meter is incorporated into the manifold and valving has been arranged so that flowlines can be isolated to allow individual well testing at periodic intervals.

3.2.7 Flowlines

All subsea flowlines and spools are carbon steel, with the exception of the connection to the FPSO where there is a transition to flexible flowlines. A summary of the flowlines is provided in Table 3-2.

Table 3-2: Summary of flowlines within the Montara operations field

Tag	Component start	Component end	Length (m)	Diameter (inch)	Outer diameter (mm)	Design pressure (MPag)
14-WHP-RISER-A	WHP	FPSO	1,413	14	355.6	7
14-WHP-RISER-B	WHP	FPSO	1,387	14	355.6	7
14-SWIFTMAN-WHP	Manifold	WHP	17,775	14	355.6	28
10-SKUAPLET-SWIFTMAN	Skua PLET	Manifold	5,207	10	273.1	28
6-SWIFT1-SWIFTTEE	Swift North 1	Swift Tee	1,292	6	168.3	28
6-SWIFT2-SWIFTTEE	Swift 2	Swift Tee	55	6	168.3	28

Tag	Component start	Component end	Length (m)	Diameter (inch)	Outer diameter (mm)	Design pressure (MPag)
6-SWIFTTEE-SWIFTMAN	Swift Tee	Manifold	1,129	6	168.3	28
6-SKUA10-SKUAPLET	Skua 10	Skua PLET	53.106	6	168.3	28
6-SKUA11-SKUAPLET	Skua 11	Skua PLET	41.4	6	168.3	28
6-SWALLOW-SWIFTMAN	Swallow	Manifold	31.2	6	168.3	28

The flowlines are installed on the seabed untrenched, with the gas lift flowlines piggybacked onto the main production lines. All flowlines are carbon steel and have been coated with 3LPP for external corrosion protection. The WHP to FPSO production flowlines are concrete-coated to achieve on-bottom stability.

Internal corrosion protection is via continuous injection of corrosion inhibitor at the wellheads (via the umbilical) and each flowline has additional wall thickness for use as corrosion allowance.

Hydrocarbons produced from the wells will be transported via flexible risers connected through the STP Buoy. The flexible riser system consists of three risers approximately 150 m long each configured in a steep wave configuration running through the STP buoy to individual riser bases supported by buoyancy modules. Specifications of the flexible flowlines are provided in Table 3-3.

Table 3-3: Flexible flowline specifications

Flowline	Internal diameter (mm)	Approx. length (m)	Design pressure (Barg)	Operating pressure (Barg)
2 x 10” production	254	150	70	60
1 x 6” gas lift	152.4	150	280	250

3.2.8 Umbilicals

The umbilicals supply instrument power, signal, hydraulic power and chemical injection from the FPSO to each of the subsea wells and the Swift manifold. A separate umbilical supplies these services in addition to electric power and fibre optic control/ communication from the FPSO to the WHP.

The umbilicals consist of thermoplastic hoses, insulated cables, plastic fillers and steel armour wire wrapped in a polymer outer sheath. They are laid directly on the seabed and are not buried or protected.

Suspended and Abandoned Subsea Infrastructure

Table 3-4 provides a listing of all subsea infrastructure, including those that have been suspended/ abandoned. The list includes five exploration/ appraisal wells that were previously drilled prior to commencement of production facilities within the field: Montara-1,-2, -3, Sea Eagle-1 and Tahbilk-1.

No other subsea suspended/ abandoned infrastructure exists within the AC/L7 or AC/L8 permits, including no wet-parked or mothballed infrastructure or equipment.

Suspended wells

Jadestone plans to undertake monitoring of the two temporarily abandoned (suspended) wells, Sea Eagle-1 and Tahbilk-1 via vessel-based activities. These wells are intended to be used for future hydrocarbon exploitation in the Montara field. The ongoing monitoring of these wellheads is described within the NOPSEMA accepted Sea Eagle-1 and Tahbilk-1 Vessel Based Activity EP (TM-50-PLN-I-00004). This EP is valid until the end of 2024, a decision on the next steps for these wells will be made in Q4 2024 under the purview of the decommissioning working group. If the wells will not be developed, plans to plug and

abandon the wells and remove the wellheads will be implemented. It is likely this will coincide with removal of the Montara-1,2,3 wellheads (below).

Abandoned wells

In 2021, both the primary and secondary barrier envelopes of Montara-1,2 and 3 were verified, and the wells confirmed to be plugged and abandoned as per the NOPSEMA accepted Well Operations Management Plan (WOMP) (Doc Number MV-00-PLN-W-00007 Revision 0 accepted on 22 Jun 2021). A final abandonment report was submitted to NOPSEMA for these wells in September 2021. These wells (and any associated debris) are intended to be removed prior to end of field life, removal will be subject to a separate EP.

As the wells are abandoned, there are no pressure containment requirements and because of this, a high degree of corrosion prior to their removal can be accepted as all that is required is mechanical cuttings and recovery. Recovery of the wellheads will require a means to insert a mechanical cutting tool into the wellhead and 2–4 m below mud line to cut the casings and conductor then recover the material above the cut point.

Expert advice has guided that based on the NACE Corrosion Engineers Handbook (Baboian, 2016) for steel in soil <1,000 ohm-cm, that a corrosion rate of 0.2 mm/year for unprotected steel can be utilised. In the presence of paint and other protective films, corrosion would be delayed. On the basis of no cathodic protection from when the wells were first drilled, they can be left without cathodic protection for a further 126 years without compromising the ability to mechanically recover and lift to the recovery vessel. The wellheads are currently monitored every 6 years by ROV as outlined in Subsea Well ROV GVI and Seabed Survey Procedure (TM-50-PR-U-00001) until they are removed.

Removal of infrastructure associated with these abandoned wells is discussed further in Section 3.10.

3.2.9 Full field inventory

Jadestone maintains a full inventory of all infrastructure in field in the CMMS, which also includes the history of all inspections and any anomalies that may affect the maintenance lifecycle. A list of the infield infrastructure is provided in Table 3-4, with the exception of protection or stabilisation items such as mattresses (or other physical structures); the location and integrity of these 'secondary' items are inspected regularly as part of regular subsea infrastructure inspections.

The CMMS also provides details on the relifing of infrastructure as part of ongoing maintenance activities and to ensure the infrastructure is maintained.

All the items listed in the below table as "operational" are currently in service in the field and maintained in accordance with the CMMS. Of the infrastructure listed, the only items not currently operational are the Sea Eagle-1 and Tahbilk-1 wellheads and the Montara-1,2,3 wellheads. These are further discussed in Section 3.10. All structures, equipment and property associated within the title areas AC/L7 and AC/L8 will be maintained in good condition and repair as described in Section 3.6 to ensure it can be removed, unless there is agreement at that time from NOPSEMA to do otherwise through an accepted EP.

Table 3-4: Infield subsea infrastructure in AC/L7 and AC/L8

Infrastructure type	Infrastructure name	Status
FPSO Vessel and 16" floating hose	Montara Venture	Operational
FPSO Mooring System	Anchor piles 1–9 (3 clusters of 3 pipes) Mooring lines 1–9 (3 clusters of 3 lines) STP buoy	Operational
Riser system	Riser base x 3	Operational

Infrastructure type	Infrastructure name	Status
	FPSO to Riser Base • 10" production riser x 2 • 6" gas lift riser	
Wellhead Platform	Wellhead Platform • 14" Swift production import riser • 6" Swift gas lift export riser • 14" WHP production export riser x 2 • 6" Swift gas lift import riser	Operational
Subsea Manifold	Swift Manifold • Includes subsea (hydraulic) distribution unit	Operational
Flowlines	WHP to Riser Base • 14" production x 2 • 6" gas lift Swift manifold to WHP • 14" production • 4" gas lift Skua PLET to Swift manifold • 10" production • 4" gas lift Swift PLET to Swift manifold • 6" production • 6" production in-line tee • 4" gas lift • 4" gas lift in-line tee	Operational
Tie-in Spools	Skua 10 to Skua PLET – 6" and 3.5" Skua 11 to Skua PLET – 6" and 3.5" Swift North 1 to Swift PLET – 6" and 3.5" Swift TEE Swift 2 to Swift TEE – 6" and 3.5" Swallow to Swift Manifold – 6" and 3.5" Skua flowlines to Swift manifold – 10" and 4" Swift flowlines to Swift manifold – 6" and 4" Swift manifold to Swift Flowlines – 14" and 4" Swift Flowlines to WHP – 14" and 4" WHP to PR1, PR2 and GL flowlines – 14" x 2 and 6" PR1, PR2 and GL flowlines to Riser Bases – 14" x 2 and 6"	Operational
Umbilicals	Riser base x 3 UM-01 Dynamic Section – Hydraulic Only UM-01 Static Section – Hydraulic Only UM-02 – Hydraulic Only UM-04 – Hydraulic Only	Operational

Infrastructure type	Infrastructure name	Status
	UM-05 Dynamic Section – Electro/Hydraulic/Fiber Optic UM-05 Static Section – Electro/Hydraulic/Fiber Optic UM-06 – Hydraulic Only UM-07D (Dynamic Section) – Electrical Only UM-07S (Static Section) – Electrical Only UM-08 – Electrical Only UM-09 – Electrical Only UM-10 – Electrical Only	
Subsea Umbilical Termination (SUT)	SUT-02-2 – Hydraulic Only SUT-06-2 – Hydraulic Only SUT-04-2 – Hydraulic Only SUT-07-01 – Electrical Only SUT-07-02 – Electrical Only SUT-07-03 – Electrical Only SUT-08-01 – Electrical Only SUT-08-02 – Electrical Only SUT-09-01 – Electrical Only SUT-09-02 – Electrical Only SUT-10-01 – Electrical Only SUT-10-02 – Electrical Only	Operational
Hydraulic Distribution (flying leads)	SUT-02-2 to Skua 10 well SUT-02-2 to Skua 11 well SUT-04-2 to Swift North 1 well SUT-06-2 to Swift 2 well Swift manifold to Swallow Well	Operational
Electrical Distribution (ESDU and flying leads)	Electrical Subsea Distribution Unit (ESDU) SUT-07-01 to SUT-07-02 SUT-07-03 to ESDU ESDU to Swift Manifold ESDU to Swallow 1 well ESDU to SUT-08-01 SUT-08-02 to Skua 10 well SUT-08-02 to Skua 11 well ESDU to SUT-09-01 SUT-09-01 to SUT-10-01 SUT-09-01 to Swift-2 well SUT-10-02 to Swift North well	Operational
Subsea Anode Skid (per well/PLET location)	Tahbilk-1 Sea-Eagle-1 Swallow-1 Skua PLET (1 &2) Skua 10	Operational

Infrastructure type	Infrastructure name	Status
	Skua 11 Swift-2 Swift North-1 Swift PLET	
Subsea Wellheads	Swallow-1 Swift North-1 Swift 2 Skua 10 Skua 11	Operational
	Sea Eagle-1 Tahblik-1	Suspended
	Montara-1 Montara-2 Montara-3	Plugged and Abandoned with wellhead in place
Wells	MONTARA H2 MONTARA H3 ST-1 MONTARA H4 MONTARA H5 ST-2 MONTARA H6 ST-1 MONTARA G2 SKUA -10 ST2 SKUA-11 SWALLOW-1 SWIFT NORTH-1 ST1 SWIFT-2	Operational Platform/ Subsea Development Wells (all production wells except Montara G2, which is a gas injector)
	MONTARA GI ST-1 MONTARA H1 ST-1 MONTARA H1 ST-2 MONTARA H1 ST1 RW1ST4 MONTARA H5 ST-1 BILYARA-1 ST-1 TALTARNI-1 YERING-1 PADTHAWAY-1 SWIFT-1 SKUA-2 SKUA-3 SKUA-4 SKUA-5 SKUA-6 SKUA-7 SKUA-7A SKUA-8	Plugged and Abandoned

Infrastructure type	Infrastructure name	Status
	SKUA-9 ST-1 SKUA-10 ST-1 ROWAN-1 ST-1 BIRCH-1 ST-1 SPRUCE-1 ST-1 SWIFT NORTH-1	
	Montara-1 Montara-2 Montara-3	Plugged and Abandoned with wellhead in place
	Sea Eagle-1 Tahbilk-1	Suspended

3.3 Operational Activities

3.3.1 Commissioning

Commissioning of infill wells will be required; but will be part of the standard procedures as per the Safety Case and WOMP requirements.

As part of the engineering work required for these activities, an environmental impact assessment will be completed and evaluated against the in-force environment plan as part of the management of change of process required with the engineering change. If further impacts or controls are determined from the impact assessment due to changed emissions and discharges, the EP will be revised and resubmitted to NOPSEMA for assessment.

3.3.2 Hydrocarbon Processing

Production fluids from the subsea production wells co-mingle at the Swift manifold and are transferred to the WHP. Subsea well fluid and Montara well fluid can also be co-mingled or exported separately to the FPSO via two export flowlines.

On the FPSO the production fluids are processed through a three-stage separation system into three streams – oil, gas and water. The oil stream is then stabilised to meet specifications for storage, transport and sale. Separation of fluids and stabilisation of oil occur simultaneously in a single, three stage process train consisting of a high-pressure separator, medium pressure separator and low-pressure separator in series. Each separator is a three-phase flooded weir separator designed for gas, oil and produced water separation by gravity. The system is controlled through field transmitters, detection devices and controlling elements strategically located between discrete sections of the process.

The bulk of the produced water and gas are separated from the oil during the separation process. Gas from the separator is routed to the reinjection gas compression system; oil is routed to the crude oil heater and produced water routed to the produced water degasser. Further gas and water is removed by the second and third stage separators. Oil from second stage separation is routed to the third stage separator where it is pumped by the crude oil rundown pump(s) or gravitated through crude oil rundown cooler and subsequently to the storage tank.

3.3.3 Gas Treatment

Associated gases are routed from the separation process to the reinjection gas compression system. This gas stream is compressed, dehydrated and cooled prior to being used as fuel gas at the FPSO, and lift gas at each well, with the surplus reinjected into the Montara reservoir through the G2 reinjection well on the WHP. Gas for gas lift is exported from the FPSO via the gas swivel and gas lift flowline network. Dehydration

is achieved via a glycol contactor located between the second and third stages of the three-stage reinjection compressor. Water recovered from gas dehydration is boiled off with stripping gas to LP flare at the glycol reboiler and still column.

3.3.4 Produced Water

Produced formation water associated with production fluids is routed from the separation process to the produced water storage tanks located port and starboard. Each produced water storage tank has a volume of 4,065 m^3. Produced water is pumped by the produced water pumps located at the storage tank to the produced water module, located amidships. The produced water treatment system consists of two hydrocyclone units, a degasser, discharge cooler, produced water pumps and valving and pipework to route the water either directly overboard or diverted back to the produced water storage tanks. Both streams incorporate a monitoring system for monitoring discharged oil-in-water levels. The produced water system is designed to handle the produced water streams from the separators and to remove oily contaminants to provide a treated water outlet stream suitable for discharge overboard.

Produced water is then pumped by the produced water pumps from the produced water storage tanks overboard via the hydrocyclones (2). The hydrocyclones are designed to reduce the oil content from a maximum oily water concentration of 2,000 mg/L to a treated water discharge concentration below 30 mg/L for discharge overboard. If the oil content of the treated produced water stream is above the prescribed level, then the flow is diverted automatically back to the produced water tanks and recirculated until the oil in water level in the treated water stream is sufficiently reduced to resume overboard discharge.

Design parameters and performance requirements for Montara development is described in the Basis of Design. The FPSO topsides production plant has been designed to meet a 24 hr Average OIW Overboard of 30 mg/L maximum. The FPSO topsides production plant was designed to process a maximum of 60,000 bbl/d (9,630 m^3/d) (PTTEP, 2012). Based on the 20-year produced water forecast with increasing water cuts the design capacity will be likely be exceeded in 2030, with peak produced water rates increasing to approximately 65,000 bbl/d (10,333 m^3/d).

3.3.5 Bilges

There are three bilge wells in the machinery space which collect oily water drainage from the various items of equipment in the space. These wells are monitored by high level alarms and are manually emptied to the bilge holding tank using the bilge pump. The contents of the bilge holding tank are then pumped to the starboard slop tank where it is treated for oil recovery and water handling.

3.3.6 Slops Water

Slops water consists of oily water from the open and closed drain system, bilge system, as well as tank stripping and washing operations that is collected in Slops Tanks on the FPSO.

The process plant is provided with three separate drains facilities:

- Open hazardous drains
- Open non-hazardous drains
- Closed hazardous drains.

An open drain system is provided to collect drips and spills from various areas on the installation and direct the liquids to the slops tanks for treatment and disposal. Levels in the slops tanks are monitored remotely in the CCR utilising a continuous wave radar level measurement device fitted to each of the tanks with a high and high-high level alarm facility. Slops can be redirected to cargo storage tanks if required.

Open drains also collect rainwater and deck wash-down water, which may be contaminated with low levels of detergents, oil and grease, used machinery chemicals and general dirt from the deck.

Coaming (a raised border) is provided for the drains located in close proximity to the hydrocarbon containing vessels, produced water treatment equipment and on the chemical injection skid. For the large drip trays under the main process vessels there are two outlets at the aft end. Each outlet is sealed by a bubble cap which is removable for cleaning or a liquid seal to prevent gas breakthrough from the hazardous to the non-hazardous areas. Smaller drip trays have just one sealed outlet.

Open non-hazardous drains flow directly to the main deck via the grated process decks, where they can be discharged overboard via the scuppers. The scuppers are normally unplugged for safety reasons to allow hydrocarbon spills (during a major accident event) outside of primary containment (and rainwater or seawater) to drain, thus minimising the potential for a pool to collect and ignite. For a minor spill the scuppers may be plugged to allow for the containment and clean-up of hydrocarbons.

The closed hazardous drain system collects fluid from process vessels and elsewhere throughout the process.

The following areas have closed hazardous drain connections:

- M1 Oil Separation
- M2 Produced Water Treatment
- M3 Recycle Gas
- M4 Reinjection Compression
- M5 Chemical Injection
- M7 Flare Knock Out
- M8 Glycol Regeneration
- M9 Fuel Gas Treatment
- M10 Cooling Water.

A hazardous closed drain header is provided for the main hydrocarbon containing vessels. This is routed to the LP flare drum.

Washing of crude oil cargo tanks generally takes place as part of an offloading operation. Periodic tank cleaning is typically undertaken on completion of crude oil washing to remove sludge for maintenance purposes or in preparation of tank inspections. Oil and water recovered from tank washing is circulated to the slops tanks.

The slops system consists of two tanks: one “dirty” and one “clean”. Both tanks use gravity to separate the oil from the water. When sufficient oil has collected in the slops tank, the cargo discharge or stripping pumps are used to pump the oil to the crude storage tanks. The water is transferred to the dirty slops tank for gravity separation and further transferred to the produced water storage tanks for treatment and discharge via the produced water treatment system.

Slops tank water (from the clean tank) can also be over boarded via the Pump Room oil in water monitor.

3.3.7 Volatisation of product

A degree of volatisation of the crude oil product occurs while it is held in the FPSO’s storage tanks. These volatile organic compounds (VOCs) and light hydrocarbons are contained in the head space within each tank, the volume of which varies as crude oil is transferred into and out of the tanks. The build-up of VOCs, with the inherent risk of combustion, is minimised by the FPSO’s inert gas system.

The purpose of the FPSO inert gas system is to create an atmosphere inside tanks in which the hydrocarbon oil vapours cannot burn due to low oxygen content. To control oxygen levels, inert gas is introduced into storage tanks where it displaces the oxygen within the tanks.

The VOCs may be released to atmosphere by displacement with inert gas. The rate of release increases as product is transferred into a tank, reducing the volume of the head space therefore displacing VOCs.

The inert gas source for the FPSO is exhaust gas from the boiler up-take. A seawater scrubber pump provides water to remove sulphur dioxide (SO2) and soot particles from the gas, cool the exhaust gas and maintain a water level in the scrubber. The draw off water from the scrubber is sent overboard through the Inert Gas drain system.

3.3.8 Crude oil storage

Stabilised crude is contained within the FPSO's ten dedicated crude storage tanks comprising centre tanks 1 through 6 and wing tanks 1 and 3 (on both port and starboard). Product is held in these tanks before offloading to export tankers. The crude oil cargo storage tank capacities are given in Table 3-5.

Table 3-5: Cargo storage tank capacities

Crude cargo storage tank	Capacity (m^3)	Capacity (bbls)
#1 Centre	12,867	80,930
#2 and #5 Centre	2 x 29,152	183,356
#3 and #4 Centre	2 x 14,576	91,678
#6 Centre	17,787	111,874
#1 Wing (Port and Starboard)	2 x 6,6164	38,771
#3 Wing (Port and Starboard)	2 x 11,570	72,769
Total (98%)	153,578	965,977
Total (100%)	156,712	985,691

Stabilised crude oil flows to the selected cargo tanks via two drop lines and enters the appointed tank(s) via the manual crude rundown system to the respective tanks. Levels in the tanks are monitored remotely in the CCR utilising a continuous wave radar level measurement device fitted to each of the cargo tanks with a level alarm facility.

Oil is gravity pumped into centre oil tanks #3 and #4 via the rundown cooler. Control of flow between cargo oil tanks is achieved via the cargo oil pumps located in the pump room and a system of headers within the tanks and hydraulically activated valves. Wing tanks #2 and #4 (port and starboard) are ballast tanks. Produced water and slops wing tanks are located port and starboard aft of the COT #4 P/S wing tanks and adjacent to COT #6C (Figure 3-1).

Crude Oil Washing (COW) of cargo tanks generally takes place as part of an offloading operation to ensure the removal of wax deposits and crude build-up on structural members within each tank. The washing medium is stabilised crude.

Washing is carried out by jetting stabilised crude at high pressure around each tank by rotating COW guns which gradually lower the jet angle down the tank and fixed bottom COW guns.

In addition to crude oil washing operations, tank cleaning is done periodically for maintenance purpose and inspections.

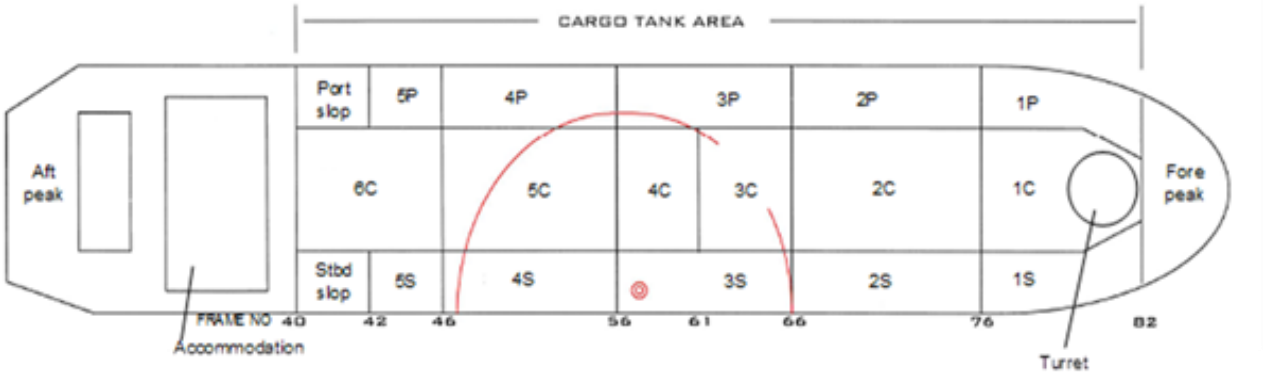

Figure 3-1: FPSO tank configuration

3.3.9 Crude Offloading

Crude oil is offloaded to a commercial offtake tanker moored in tandem configuration at the stern of the FPSO. The frequency of offtake depends on production rates.

Prior to crude offloading a Discharge Plan is developed to ensure safe and effective management of the FPSO stability, and stresses and strains on the hull.

Procedures associated with crude offtake activity require:

- The development and agreement of a Discharge Plan
- Floating hose with breakaway coupling
- Crude transfer operations and communications
- Static tow operation.

Prior to an offload, the offtake tanker arrives near the FPSO location and waits in a defined area approximately five nautical miles away until required. A contracted offtake crew of three or four personnel consisting of a pilot, marine superintendent, the agent and surveyor are transferred offshore to the FPSO prior to an offload operation. In some instances, the surveyor performs the agency work, thus only three personnel are required. The FPSO core crew is not increased during the offtake.

A contracted support vessel will always be in attendance to provide a static tow to the offtake tanker. The offtake tanker will be moored with a mooring hawser shackled to the mooring attachment point on the stern of the FPSO and equipped with a load-cell pin which provides a mooring force reading on a readout panel located in the CCR. An emergency release system for the mooring hawser is provided.

Due to operational requirements, the transfer of the offtake crew and hose handling may be carried out using the FPSO workboat.

The cargo pumps comprise 3 x 3,500 m3/h steam turbine driven pumps located in the pump room. There is also a steam driven stripping pump of capacity 300 m3/h and a jet stripping system comprising 3 x 800 m3/h eductors for complete emptying of the cargo tanks. The jet stripping eductors are driven by the cargo oil pumps. The Montara Shipboard Oil Pollution Emergency Plan (SOPEP) (MV-70-PLN-G-00002) and Montara Operations OPEP (MV-70-PLN-G-00001) detail the preventative and response arrangements related to pollution events.

Offloading takes nominally between 20–30 hours. The offtake tanker may be on station for up to 48 hours allowing time for connection and disconnection.

The Emergency Shutdown (ESD) Systems and controls in place for tanker offtakes include:

- A low pressure in the discharge line will result in a process shut down which will stop the cargo pumps

- In case of an emergency at the offloading station, a local pushbutton is available to stop the cargo pump
- ESD-1 will activate on low IG Pressure
- Gas detection or manual ESD station will stop the cargo pumps.

3.3.10 Flaring

Flaring will be minimised as produced gas will be used as fuel gas, or re-injected into the gas injection well. In the case of shutdown of the reinjection system, gas is temporarily diverted via the HP and LP flare knock-out (KO) drums to the flare system. Purge gas for the flare headers, required for safety reasons and from the glycol system will also be routed to the flare.

The flare is located on the centreline at the bow. Its boom is approximately 55 m long raked at 60 degrees to the horizontal. The flare system incorporates separate high pressure (HP) and low pressure (LP) headers and knock-out drums located forward of the separation module on the port side.

The HP Flare knockout drum is designed for collection of excess gas from First and Second Stage Separators and emergency loads from systems designed for more than 1,000 kPag. The HP Flare is fitted with a sonic type tip with multiple nozzles creating sonic exit velocity to improve combustion.

The LP Flare KO Drum is designed for collection of excess gas from the Third Stage Separator, Produced Water Degasser and emergency loads from systems designed for 1,000 kPag or less. Gas is routed to the LP Flare Tip and flared to reduce emission of methane gas. The design of the LP Flare Tip is open flare type within the HP sonic flare. This design maximises the effect of high velocity to minimise smoke associated with flaring for both the HP and LP flares.

Flaring during routine stable process operating conditions will be restricted to the continuous loads to HP and LP flare headers. These sources include associated gas from separator pressure control, flash gas from crude oil stabilisation and produced water degasser, flare header purge and pilot gas as an ignition source in case the flare needs to be activated in an emergency. This routine operational flaring is expected to be approximately 6 MMscf/d based on upon routine operations that is, the reinjection system being operational.

3.3.11 Light Well Intervention

Light well intervention (LWI) activities may be necessary over the course of field life to maintain well integrity levels and to optimise production from the existing wells. It is estimated that the frequency is in the order of four interventions over the five-year period.

While LWI activities do not make use of a drilling BOP, additional barriers including lubricators, check valves, wireline blowout preventers, stuffing boxes and riserless well control packages (subsea) are installed on the well to ensure that the two-barrier philosophy is maintained during the activity. These barriers can either be automatic or manually operated if required in the event of an emergency. These interventions can utilise slickline, braided line, electric line (utilising a tractor or as required), digital line or coiled tubing. The intervention may be performed from a vessel for subsea wells (Riserless Light Well Intervention – RLWI), or from the helideck in the circumstance of wells at the Montara Wellhead (WHP) Platform wells.

LWI operations and activities include the following well tasks:

- Installation, testing and operation of Intervention Equipment and well control interface (including displacement/ venting of lubricators as required)
- Removal of Debris Caps and Crown plugs
- Deployment and operation of well survey equipment and production logging tools
- Tractor/ well stroker deployed tools in horizontal sections of the well

- Cement bond logging and corrosion logging tools
- Heavy duty fishing
- Heavy flow control devices/ straddle
- Deployment and operation of perforation tools
- Non-explosive and explosive tubing punches
- Multifinger tubing caliper runs
- Mechanical/ chemical scale breaker/ dissolver runs
- Removal and pulling of TRSSV hold open sleeves, insert TRSSVs or similar
- Removal and resetting of Gas Lift Valve and setting of straddles and gas lift straddles as required
- Setting and pulling of plugs, running drift runs, and other diagnostic runs
- Chemical injection for scale removal and hydrate remediation
- Acid stimulation/ injection
- Annulus flushing
- Venting of production tubing above a deep-set well barrier
- Flushing of intervention equipment, surface/ subsea tree and flowlines with fluids (MEG, Brine or methanol) or Gas (Nitrogen)
- Wax or scale removal.

Each well intervention campaign covers one or more wells and can generally last up to 30 days per well. Each well intervention program can comprise one or more of the scopes listed above.

Provided below are further descriptions on the LWI activities relevant to wells at the wellhead platform, and subsea wells. The impacts and risks associated with the activities described below, along with required management measures, are assessed in Section 7.5.

Wells at the Wellhead Platform

Equipment for LWI activities undertaken for wells at the WHP will be established on the helideck with access to the well heads made possible through an access port in the helideck. Once equipment is set up at the WHP, the following steps will occur:

- Install and test pressure control equipment (PCE) onto well
- Entry into the well with required tooling
- Tooling/ component recovery into PCE
- Draining well fluids from PCE to WHP closed drain system and/ or venting of gas to atmosphere
- Change out tooling and components from inside of PCE and re-run additional tooling into well as required to achieve objective of the LWI
- Once achieved recommence production from the well. Any fluids used during the intervention works will (i.e. inhibited brine, scale dissolver chemicals, etc.) be produced to the FPSO.

Subsea Wells

Equipment for RLWI activities undertaken for subsea wells will be managed from a RLWI vessel. Once on location, the following steps will occur:

- Vessel maintains station using dynamic positioning

- PCE is deployed to the wellhead during which the ROV is used to monitor placement
- Control of the tree valves is transferred to the RLWI vessel
- After removal of the crown plugs, the well is entered using wireline to achieve the well objectives. A pressure control head (PCH) is run with the tool and made up to the PCE
- In the event well fluids are required to be pumped into the well, a hose (kill line) will be used to deliver fluids from the RLWI vessel. If annulus fluids need to be flushed, the fluids will be pumped into the flow line and routed to the FPSO for handling
- Gas lift inventory in the A annulus will either be flowed to the flowline or bled off to the RLWI vessel and cold vented
- Upon completion of the individual wireline or slickline runs, with the tool recovered in the PCE, well barriers below the tool are established
- The lubricator section above the well barriers is flushed back to the vessel with inhibited fluids to remove well fluids/ gas from the lubricator section
- The PCH and toolstring is then retrieved to surface through the water column to change the tool string. During disconnection of the PCH a small quantity of well fluids may be discharged at depth adjacent to the lubricator
- Upon completion of the RLWI activity, the crown plugs will be replaced, well barriers confirmed, the well returned to production, the PCE and ROV recovered, and control of the well returned to production. Any fluids used during the intervention works (i.e. inhibited brine, scale dissolver chemicals, etc.) will be produced to the FPSO.

3.4 Chemicals and Hazardous Materials

3.4.1 Chemical injection

Chemical injection is required at all the wells and topside facilities. The chemical types/ functions required are:

- Scale inhibitor
- Corrosion Inhibitor (both liquid and gas phase types)
- Hydrate inhibitor
- Biocide
- Emulsion Breaker
- Water clarifiers
- Pour Point Depressant.

Biocide injection has been provided to prevent the possible organic generation of H2S, and consequent corrosion from sulphate reducing bacteria.

Chemicals will be stored and supplied from the FPSO to the wells via the combined chemical/ control umbilicals. The chemical injection system consists of topsides chemical injection skid packages on the FPSO for hydrate inhibitor, PPD, corrosion inhibitor, and scale inhibitor. For all the chemicals except methanol, air operated plunger type pumps are provided for pumping fluid from the tote tank to the chemical injection points. Injection rate controls are provided for each injection line for the topsides injection only.

3.4.2 Hazardous Materials

In addition to hydrocarbons associated with the processing and storage facilities, hazardous materials include diesel, lube oils, hydraulic oil, aviation fuel, acetylene, oxygen, nitrogen, hydrogen, radioactive materials, paint and thinners, and proprietary cleaning agents as well as chemicals for chemical injection listed in the preceding section. Safety Data Sheets (SDSs) for all hazardous substances are maintained on a database aboard the FPSO as well as hard copies that are kept in the general office of the FPSO.

Hazardous materials are stored in accordance with the relevant SDS requirements in the following locations on the FPSO:

- Topsides chemical skid M5
- Paint locker, located in alleyway near Accommodation, next to emergency generator switchboard room
- Hazardous waste storage area
- Oxygen/ acetylene lockers on poop deck
- Aviation fuel tanks main deck aft of laydown Skid M12
- Diesel oil and lube oil storage
- Propane flare pilot fuel located on the KO Drum module
- Machinery space chemicals and lubricants and grease storage
- HPU skid
- Laboratory.

On the WHP, hazardous materials are stored, again in accordance with the relevant SDSs, in the following locations:

- Nitrogen storage adjacent to the laydown area on the main deck
- Diesel tank for generator and crane are stored in pedestal storage tank.

The following hazardous materials will be stored in either of the bunded laydown areas:

- Lube oil for generator set and crane
- Cleaning agents
- General purpose hydraulic fluid for the crane.

The following controls are in place for the storage of bulk chemicals:

- Bunding and closed drains
- SDS information available
- Spill kits
- Signage.

3.4.3 Production Hydrocarbons

Montara crude is a medium crude oil. The oil is characterised by a low viscosity (4.5 cP) and a medium density of 845 kg/m3 (API 35.8) categorising it as a Group III oil in accordance with the International Tanker Owners Pollution Federation (ITOPF 2011). Assay data indicates that approximately 27% (by volume) of the Montara crude is considered persistent under international oil property benchmarks.

The oil from Skua, Swift and Swallow fields that are comingled with Montara oil to varying degrees are considered Group II oils (International Tanker Owners Pollution Federation (ITOPF 2011) with low viscosities of 3.0, 3.8 and 3.2 cP and medium densities of 42.7, 43 and 49.5 API, respectively.

Fuel Oil

The FPSO is equipped with two diesel bunkering stations. One station is located on the aft starboard side above the slops tank and the other station is located on the midship starboard. Specific bunkering procedures are contained in Jadestone's Montara Marine Facility Manual (MV-90-PR-H-00001). The bulk fuel oil/ diesel tanks are within the hull, with capacities as shown in Table 3-6.

Table 3-6: Fuel tank capacities

Tank	95% capacity (m3)
Side tank forward (P&S)	778
Side tank aft (P&S)	571
Side	906
Aft	544
Settling tanks (S)	64
Diesel service tank	64
Total	2,927

The diesel fuel is used by:

- Solar turbines, for power generation and gas reinjection
- Steam boilers
- Midships crane
- Essential diesel generators
- Emergency diesel generator
- Emergency Starting Air Compressor
- Fire pumps
- Fast Rescue Craft
- Facility Work Boat
- Totally Enclosed Motor Propelled Survival Craft (TEMPSC)
- Well services.

Contingency plans are in place for dealing with emergencies including spills with the Montara Operations OPEP detailing the response to oil spills.

During bunkering, there shall be direct contact via agreed VHF channel between the transfer vessel and the FPSO. Should there be a spill at any time, pumping will be stopped immediately; and the general alarm sounded. The vessel SOPEP, Montara Operations OPEP and Montara Incident Response Plan (MV-70-PLN-F-00001) will be initiated.

The FPSO generally operates on fuel gas, however if due to maintenance or unplanned events the maximum diesel usage per month would be between 400–600 t, which would require one to two supply boat bunker trips per month (depending on boat size).

3.4.4 Naturally Occurring Radioactive Materials

Naturally Occurring Radioactive Materials (NORMs) can sometimes be present in piping and vessels of an oil processing facility.

NORMs are in the category of low specific activity (LSA) radioactive materials. LSA radioactive materials can emit only a limited amount of radiation which cannot deliver a fatal radiation dose. This EP addresses risk with NORMs in relation to removal and disposal ashore. NORMs are managed in accordance with the Montara Radiation Management Plan (MV-70-PLN-F-00002). This plan has been developed in accordance with the Northern Territory *Radiation Protection Act*, to outline the potential sources, storage, transportation, and emergency management requirements.

3.5 Hazardous Substances and Chemical Selection Process

Production chemicals are required to be added to the production process to ensure the process is operating efficiently. Other chemicals are also used offshore that are planned to be discharged to the marine environment such as subsea control fluids. The primary means of reducing the risk of environmental impacts from the composition of chemicals used is achieved through Jadestone's Chemical Selection Evaluation and Approval Procedure (JS-70-PR-I-00033). The procedure prioritises the use of environmentally low risk chemicals.

The risk assessment process assesses chemicals planned for discharge based on toxicity, biodegradation and bioaccumulation to select an appropriate product. Selection is based on the United Kingdom's Offshore Chemical Notification Scheme (OCNS):

- Chemicals that are Gold, Silver, group E and D under the OCNS Definitive Ranked Lists and have no substitution warning do not require further assessment, as they do not represent a significant impact on the environment in standard discharge scenarios.
- Chemicals not meeting the criteria above (i.e. OCNS white, blue, orange, purple, A, B, C or have product/ substitution warning) require additional assessment to understand the environmental implications for an expected portion to be discharged into the marine environment.
- Chemicals that are not OCNS registered require further assessment to determine the environmental implications if the chemical is discharged into the marine environment.

The selection of chemicals that fall into the last two assessment types require the additional development of an ALARP justification using a standard template in the procedure. The assessment considers the below before it can be approved for use and discharge offshore:

- Availability of alternative chemicals that are lower risk
- Availability of alternative chemicals that have no OCNS substitution warnings
- Technical, safety and process considerations; a reasoning for why an alternative is not available must be provided.
- The concentration and maximum dosage rates required. A suitable methodology to determine an environmental discharge limit for production chemicals based on toxicity of the products (noting this may include scenarios for each individual production chemical and/or the 'comingled' end-of-pipe discharge based on co-occurring production chemical dosing) is included in the procedure
- Periodic review of chemicals selected for use and stored offshore to check for new or alternative chemicals.

An alternative methodology where the existing procedure is technically challenging or cannot be applied in strict accordance with the OCNS framework or becomes cost prohibitive may also be utilised. The quantity of chemicals used, and therefore the residual concentration discharged to the environment, is reduced to as low as practicable through routine sampling and assessment from various points in the production

process. Concentrations and dosages of chemicals need to be maintained at certain levels to meet the production requirements, but excessive levels are not desirable due to increased operational costs as well as the potential for environmental impacts..

3.6 Inspection, Maintenance and Repair

The facilities are maintained to ensure that over the field life they can perform their intended functions such that risk to personnel, the environment and assets is minimised in a cost-effective manner. The facility is designed for continuous service with a design life of 20 years. Shore-based maintenance support services (where appropriate) are provided by contractors to assist with planned maintenance, unscheduled breakdown and non-core activities.

The FPSO vessel, turret and mooring systems have been designed to allow all essential maintenance and mandatory inspections to be performed in the field whilst in continuous operation. This strategy makes full use of in-water survey in lieu of dry docking (UWILD).

IMR is undertaken at planned intervals to maintain performance, reliability and prevent deterioration or failure of equipment and ensure safe and reliable operation of the facility. IMR activities, including corrosion control; refer Section 3.6.1) are scheduled through CMMS and generally involve up to four campaigns per year and is conducted on all operating assets included suspended infrastructure at appropriate frequencies.

IMR activities include maintenance of the topside equipment and structural components of the WHP, all subsea infrastructure and crude oil transfer facilities. This may include activities such as cycling of valves, pressure and leak testing, lubrication of rotating equipment, and cleaning and painting activities for corrosion protection.

Inspection of subsea infrastructure is the process of physical verification and assessment of components to detect changes to its as-built state. Inspections are planned to occur at planned intervals in accordance with the Subsea Inspection Strategy (JS-16-PR-U-00001) (Table 3-7) and techniques may include general visual inspections (GVI), cathodic protection (CP) surveys using ROV, side-scan sonar (SSS) using the vessel's transducer or autonomous underwater vehicle (AUV), and wall thickness measurements using ROV-deployable tools. Other inspections may be triggered by environmental effects, such as cyclone or earthquake, by JSE or external parties' activities, by significant anomalies reported at any time, or by inspection results that exceed defined limits.

Maintenance is managed using the Computerised Maintenance Management System (CMMS) as defined by Performance Standards. All systems and equipment shall be maintained to meet the specified functions in accordance with these Performance Standards and process requirements. All infrastructure present in field is recorded in the CMMS. If equipment is offline or shutdown, it is maintained in a state of readiness for when the equipment is back online. If the equipment is no longer required or not fit for purpose, the equipment /infrastructure is inspected and maintained to confirm and maintain its integrity to ensure property can be managed as required through an accepted EP. The CMMS provides information to enable:

- The ability to analyse equipment for better maintenance regimes, design changes or replacement
- The ability to schedule and plan timely removal of infrastructure in a safe and environmentally responsible manner
- Timely preventative maintenance schedules
- Improved control over maintenance expenditures
- Automatic parts ordering and inventory control
- Reduction of inventory costs and improved stores accountability

- Improved utilisation of labour.

Preventative maintenance information is incorporated into the CMMS and includes:

- All routine inspections
- All statutory inspections
- All maintenance carried out on a usage basis such as machine running hours.

Maintenance activities are detailed and recorded in the CMMS. Each maintenance activity has a priority based on its integrity criticality. A history of the maintenance for a piece of equipment can be recalled by the system at any time, along with scheduling requirements for periodic inspection, testing and maintenance. Implementation of work and work closeout quality is assured for compliance by the Maintenance team, and is subjected to oversight by the Technical Authorities at Quarterly Reviews and an external audit by an Independent Competent Person.

Jadestone requires that, on completing an inspection of any component, the inspector confirms the presence or absence of anomalies relating to that component within the limits of the inspection method.

Any measurement that the inspector identifies to be outwith acceptable limits, or any significant feature that is identified not to be within operational or design parameters during the inspection of the component, shall be considered to be anomalous, recorded in a standard format, and reported in the appropriate section of the DPR and Final Report.

The anomaly report shall be communicated to the responsible JSE engineer in the form of a complete, stand-alone report at the earliest opportunity, and no longer than 24 hours after the anomaly is identified. It should uniquely and clearly identify the affected components, the nature and extent of the anomaly, and all related and contributing information that will allow the relevant Technical Authority to determine the significance of the anomaly and appropriate immediate and longer-term actions. These anomalies are also reviewed by the decommissioning working group to ensure that any anomalies which could impede future removal are reviewed and rectified to meet Jadestone's obligations under s572 of the OPGGS Act (refer Section 3.10.3.5).

Table 3-7: Summary of planned inspections and frequency

Asset	Inspection	BASSnet ID	Frequency	Comment
WHP members, conductors and J-tube	CP	CHK-M-0025	1 yr.	Drop-cell survey of jacket & all attachments
	GVI &CCP	INS-M-0349	5 yr.	Every component
WHP members	FMD	INS-M-0460	10 yr.	50% of members, including low fatigue, members
WHP rigid risers & spools	GVI & CCP	INS-M-0345	3 yr.	GVI full coverage, CP on flanges & outer clamps
Flowlines & umbilicals	Acoustic	INS-M-0465	6 yr.	Alternating with GVI
	GVI	INS-M-0466	6 yr.	Alternating with Acoustic
Subsea structures, manifold, spools, flowline flanges and CP monitoring points, and PLETs/ PLEMs	GVI & CCP	INS-M-0463	3 yr.	CP on pipework flanges and structure steelwork.
Flowlines	WT mapping	INS-M-0467	2 yr.	At identified corrosion risk locations. Frequency adjusted based on findings
Dynamic risers, flotation,	GVI & CCP	INS-M-0462	2.5 yr.	GVI full coverage, CP on flanges

& bases	Vent port test	INS-M-0347	1 yr.	Confirm topside vents are clear
	Annulus test	INS-M-0461	3 yr.	Vacuum test
Dynamic umbilicals	GVI	INS-M-0462	2.5 yr.	Includes flotation
Producing wells	GVI & CCP	INS-M-0464	3 yr.	
Suspended wells	GVI	INS-M-0436	1 yr.	
	CCP		3 yr.	
Abandoned wells	GVI	INS-M-0477	6 yr.	
FPSO Hull & attachments	IWS	INS-M-0047	2.5 yr	
FPSO turret & mooring system	IWS	INS-M-0346	2.5 yr	

Maintenance and repair activities may include corrective (e.g. repair of equipment) and non-routine maintenance, which may occur during shutdown periods. Wetblasting or grit blasting may be used to prepare structures or equipment prior to painting/ coating. Before commencing wet blasting or grit blasting, the work area is walled-in using sheeting that is taped down to create a fully contained work environment. Wastewater and particulate material (e.g. garnet if grit blasting, paint flakes and rust off old surface coatings) generated during the activity is managed within the work environment and is not discarded to the marine environment. Other activities specific to subsea infrastructure during the life of field include repairs to damaged components, replacement of umbilicals, anode-retrofits, external inspection, measurement, non-destructive testing, rectification of scour or freespans, and cleaning of marine growth.

Wetblasting or grit blasting may be used to prepare structures or equipment prior to painting/ coating. Before commencing wet blasting or grit blasting, the work area is walled-in using sheeting that is taped down to create a fully contained work environment. Wastewater and particulate material (e.g. garnet if grit blasting, paint flakes and rust off old surface coatings) generated during the activity is managed within the work environment and is not discarded to the marine environment.

3.6.1 Subsea Integrity and Corrosion Control

Integrity and corrosion control work involves anode replacements on the various subsea pipelines and offshore facilities, cathodic protection monitoring, weld inspections, ultrasonic wall thickness testing, flooded member detection surveys, free span inspection of pipelines, coating inspection and repairs, protective leg wrap maintenance and installation, non-destructive testing (NDT) and general inspections and maintenance of subsea valves, Xmas trees and conductors, conductor guide centralisers and other subsea infrastructure. These activities can involve ROV/ AUV inspections or diver assisted surveys.

Following an inspection, it may be necessary to modify the seabed in the vicinity of subsea infrastructure such as the pipeline to correct for free spans (by placing grout bags under the free span) or burial (by jetting or airlifting sediments from on top of the pipeline).

As part of the maintenance of these facilities, marine growth on the substructures is monitored using ROV and / or divers and if determined to be beyond the design imposed acceptable thickness it is periodically removed. This is usually undertaken by either water blasting or manual ROV, divers or bespoke automatic devices.

Subsea control valves are required to be opened and closed depending on operational requirements. Each time a subsea tree or manifold is closed completely, control fluid is vented. Shutting in a single subsea tree releases approx. 14 L of control fluid. The volume of the subsea tree valve actuators vary, with the largest discharge volume being 16.6 L for the Manifold gate valves. In the case of an emergency shutdown and closure of all subsea actuated valves, 130 L of fluid is vented.

The subsea infrastructure is designed to be maintenance free over the entire life of the field, however there are a number of sub-assemblies in the trees that may wear or fail in service that are replaceable. On the subsea trees, Subsea Control Modules (SCMs), production choke inserts and annulus choke inserts and chemical metering valves are replaceable components and spares are maintained in inventory. The Swift manifold also has a replaceable SCM and the Subsea Distribution Unit (SDU) is designed to for in-service replacement.

A freespan is an unsupported length of flowline suspended between two or more elevated points on the seabed. Stabilization of freespans is by installation of supporting appurtenances underneath the flowline at the mid-point of the span. Methods of stabilization include concrete mattresses, grout bags, concrete sleepers, and inflatable grout pyramids.

If the span is in evidence and remains over length during inspection, an engineering assessment would be conducted to determine the risk of damage (Subsea Inspection Strategy JS-16-PR-U-00001). If the risk assessment determines that freespan rectification is required, management of change process will ensue.

3.7 Utilities

3.7.1 Power Generation and Distribution

Main electrical power for the FPSO is provided by two gas turbine generators. The gas turbines are dual fuelled units, normally operating on fuel gas produced from the process train but also capable of operating on diesel. Hydraulic power, chemical injection, electric power and fibre optic control/ communication are supplied to the WHP via the 1.8 km long subsea umbilical from the FPSO. The subsea umbilical cable will also provide fibre optic communications between the WHP and the FPSO.

Auxiliary power is provided by the three (3) 800 kW diesel powered generators located in the facility's machinery space below deck. A 600 kW emergency generator located in the emergency generator room supplies the emergency switchboard. Emergency generator start is fully automatic on loss of voltage on the essential switchboard. It can also be manually started in the emergency generator room.

In case of main power failure, the emergency diesel generator supplies power to services that are essential for safety. The emergency lighting philosophy is based on approximately 1/3 of lights powered from the main supply, 1/3 from the emergency supply and 1/3 from the emergency supply with battery back-up. If main power and emergency power are unavailable, the 24 V DC UPS system supplies power to sustain critical users requiring a no-break supply during the period of emergency or the loss of main power supply.

During operations, WHP is powered by the FPSO via a subsea umbilical. Boilers

Two boilers located in the machinery space provide steam. These have been converted to dual fuel, operating normally on fuel gas with the option to operate on diesel. The system is designed to 2,650 kPag, with normal supply at 2,452 kPag. Generated steam is used for driving the cargo discharge pumps, cargo tank heating coils, production heat exchangers and the freshwater generators. The boiler exhaust gas is the source of inert gas used to inert the cargo tanks.

3.7.2 Compressed air systems

There are two compressed air systems on the FPSO which provide instrument air:

- Starting air:
  - The starting air system for the three essential diesel generators and emergency diesel generator
  - A diesel driven Emergency Air Compressor with an 80 L capacity air receiver supplying the emergency generator starter system.
- Control and working air:

- The instrument and plant air system consist of three Instrument Air Compressors and two instrument air dryers.

3.7.3 Nitrogen generation package

The nitrogen generation package provides nitrogen for the supply of inert gas to the flare and process facilities. It is in the engine room third deck level. Filtered Instrument air is supplied to the nitrogen generator membrane separators. Using reverse osmosis, two streams of gas are produced: one 95–99% pure nitrogen and the other is oxygen rich and vented.

Nitrogen is supplied to the following areas and equipment:

- Produced Water Module
- Separation Module
- Reinjection Compressor Module
- Glycol regeneration Module
- Flare Knockout Drum Module
- Chemical Injection Module
- Turret–STP Compartment
- Boiler Fuel Gas Line
- Chemical injection storage area (for Methanol tank blanketing).

If the nitrogen generators are temporarily out of service, nitrogen can be supplied by contingent nitrogen cylinders which are connected to the distribution header.

3.7.4 Fresh water generators

Two desalination units, located in the engine room, provide potable water. The system is supplied with seawater from the seawater system and heated with steam from the boilers.

Potable water is supplied to the accommodation for domestic services (via UV sterilizers and clarifiers). Potable water is also supplied to the essential diesel engine expansion tanks, emergency generator room, eye wash and safety shower systems and the utilities water system on deck. The fresh water storage tank has a capacity of 422 m^3. Freshwater can also be bunkered to augment the water generators if required.

3.7.5 Seawater lift pumps

Two seawater lift pumps are installed in caissons penetrating through the 4-starboard wing ballast tank and provide seawater for cooling purposes. The seawater from the pumps passes through two manually operated strainers to remove any marine solid particles in the seawater. Marine growth is controlled by sterilisation via electrolysis by the marine growth prevention system (MGPS) which is injected into the caisson, following which it is deoxygenated and sterilised by electrolysis (by release of chlorine from the salt solution) and then circulated through a heat exchange prior to discharge back into the ocean. The heated water is discharged at up to 45 °C above ambient seawater temperature. The seawater cooling is provided to the crude oil rundown cooler, re-injection compressor, power generation modules, produced water discharge cooler and glycol cooler.

3.7.6 Sewage, grey water and putrescible waste system

The sewage system consists of a Grey Water collection system and a Black Water collection system from the accommodation. The sewage treatment package has been sized to cope with the potential for extended POB of 78 personnel, although there will be considerably fewer POB during normal operations.

The sewage treatment unit is a self-contained system for the treatment of sewage to prevent the pollution of surrounding waters. The system uses the aerobic principle of sewage digestion, coupled with treatment of the final effluent, and is generally accepted as the most compact, efficient and flexible system for use on an FPSO.

The sewage treatment package receives the sewage which enters the first of three chambers where the sewage is exposed to bacteria and aeration which breaks down the sewage before discharge overboard from the final chamber, in accordance with MARPOL regulations. During planned maintenance periods on the sewage treatment system, sewage will be discharged from the system untreated into the marine environment for a limited amount of time (24–48 hours) at a frequency expected to be approximately 4–6 times annually.

An FPSO with a crew of approximately 25–30 discharges in the order of 30 m^3 of treated domestic wastewater per day during normal production operations.

Putrescible waste from the galley shall be discharged to sea after maceration to a particle size of less than 25 mm in accordance with MARPOL.

Under ECR 0768, sewage from the toilet located on the unmanned WHP is contained in a portaloo that is 'exchanged' for a new one when necessary. Due to the limited and infrequent volumes discharged, associated only with inspection and maintenance activities, this is not considered further in this Environment Plan.

3.7.7 Solid waste management

Non-hazardous solid waste materials are expected to include paper, rope, cardboard, sacking, timbers, scrap metal, domestic packaging (food and drink containers) and plastic.

Hazardous waste can be defined as materials with potential to endanger the health or safety of personnel, or harm the environment. Hazardous waste associated with the facilities may include fuel and lubricating oils, aerosol cans, batteries, acids/ caustics, chemicals associated with operation and maintenance processes, spent fluorescent tubes, paint and thinners and proprietary cleaning agents.

All dangerous goods or materials will be assessed case by case. Empty packaging that has previously carried hazardous waste shall also be treated as hazardous waste unless adequate precautions have been taken to ensure that there is no potential for harm to the marine environment, personnel and/or the facility.

Storage and handling of mixed class of dangerous goods in packages and intermediate bulk containers and corrosive substances will follow the guidelines set in AS/NZS 3833 and 3780 respectively. The transport of hazardous wastes is regulated using the Multimodal Dangerous Goods Form in accordance with MARPOL 73/78 Annex III Regulation 4, and in accordance with State and Territory legislative requirements.

3.8 Emergency Shutdown

The Montara Emergency shutdown is staged and follows the Montara Emergency Shutdown System Philosophy (MV-00-PHL-G-00001). The types of shutdown include:

- FPSO and Field Shutdown
  - ESD 0 – Abandon Field
  - ESD 1 – Total Facility Shutdown
  - ESD 1.1 – Total Production Shutdown
  - ESD 2 – Emergency Production Shutdown with Blowdown
- WHP shutdown
  - WESD 0 – Abandon WHP

- WESD 1 – Total Installation Shutdown
- WESD 2 – Total Production Shutdown.

3.9 Support Facilities

3.9.1 Aviation

Regular crew change and freight exchange are met by fixed wing aircraft followed by a helicopter transfer to the facility.

It is anticipated that there will be an average of two crew change flights per week plus additional flights on an as-required basis for visitors, maintenance campaigns, non-standard operational activities etc.

The FPSO helideck is located aft of the accommodation. A helicopter refuelling system is installed on the upper deck, starboard side, forward of the accommodation block.

3.9.2 Supply vessels and support operations

Regular supply vessel runs are made to the facility and typically occur once every two to three weeks. General cargo is offloaded by the mid-ships crane and galley stores via the aft crane. In conjunction with the visits to the FPSO, supply boats may visit the WHP to deliver maintenance supplies.

Support vessels are utilised over field life for activities such as inspection, maintenance and remedial works including ROV inspection of subsea systems, as well as static tow during offtake. Underwater operations may be carried out using diving or ROV support vessels.

The following types of underwater operations may be undertaken during the life of operation, but are not limited to:

- Inspection of subsea equipment
- Metrology
- Non-destructive testing
- Side scan sonar surveys of subsea equipment
- Hull survey
- Cleaning of the sea chests
- Ship’s valve replacements
- Repairs to damaged components
- Replacement of worn or failed components
- Anode-replacements
- Rectification of scour or freespans; and/or
- Cleaning of marine growth.

All subsea inspection/ intervention work must comply with the following as a minimum:

- Specific Simultaneous Operations (SIMOPS) Matrix
- Support vessels can only enter the FPSO 500 m petroleum safety zone (PSZ) with the FPSO OIM’s permission
- Support vessels can only anchor in permitted anchorage positions in the field.

3.10 Maintenance and removal of property

3.10.1 Maintenance of property

Section 572(2) of the OPGGS Act requires that a titleholder must maintain in good condition and repair all structures that are, and all equipment and other property that is:

(a) in the title area; and

(b) used in connection with the operations authorised by the permit, lease, licence or authority

Through ongoing monitoring and maintenance (as described in Section 3.6), Jadestone will ensure that property is monitored, maintained and repaired as required throughout operations. This includes

- Routine inspections on operational and suspended infrastructure
- Assurance activities
- Maintenance activities
- Crane and lifting equipment load ability is maintained for decommissioning activities
- Disconnection of unused infrastructure in preparation for removal

A full list of in field inventory is provided in Section 3.2.9.

3.10.2 Asset Lifecyle and removal of property

Jadestone is committed to managing the lifecycle of its assets and proactive decommissioning planning through the implementation of Jadestone's Management of Aging Assets Philosophy (JS-00-PHL-G-00001) which applies to all Jadestone's operating assets. The objectives of this philosophy are to:

- Describe the systematic approach taken to implement, verify and assure the management of ageing assets
- Identify how the organisation supports delivery on a sustainable basis
- Describe how planning and implementation is affected
- Identify how validation and assurance activities influence the overall program.

The current expected field life for Montara is estimated at 2030 therefore, no end of facility life (EOFL) decommissioning activities for the subsea or topsides infrastructure is scheduled to occur within the 5-year in-force period of this EP. Design life in the context of facilities is used in procurement to avoid any obsolescence issues arising during the nominated period, whereas facility integrity is indefinite subject to ongoing integrity management. Equipment that becomes obsolete during the re-life period, is changed out as needed. As required, re-lifing projects occur which consider the age and integrity of property and future use in the consideration of life extension.

Life extension beyond original design life is an ongoing independently certified process which is subject to an agreed ongoing integrity management program), and the current strategy for decommissioning the Montara field is to undertake removal of property at the end of field life. Property may also be decommissioned and removed prior to this date, if that property is determined at any time to have no future utility.

The Management of Aging Assets Philosophy (JS-00-PHL-G-00001) also requires that Quarterly Technical Authority (TA) meetings provide assurance that aging asset issues are being managed appropriately against the risk profile of each asset and adequately prioritised against conflicting operational demands.

Section 572 (3) of the OPGGS Act requires that a titleholder remove from the title area all structures that are, and all equipment and other property that is, neither used nor to be used in connection with the operations:

a) in which the titleholder is or will be engaged; and

b) that are authorised by the permit, lease, licence or authority.

Unless other arrangements are made to the satisfaction of NOPSEMA decommissioning activities are not covered as part of this EP (including the plug and abandonment of wells, or removal of wellheads) and will be subject to separate approval. Prior to the end of field life (currently estimated as 2030) whilst the title is still in force, a decommissioning plan will be in place that sets out the strategy for removal of property from the permit area. As parts of the facilities and infrastructure become redundant, these will be part of a removal plan whilst the decision for removal of these will be subject to approval and costs. Cost optimisation can be achieved through multi-asset campaigns to share mobilisation/demobilisation fees, decrease vessel day rates and improve labour and services unit cost rates. Therefore, for infrastructure to remain in field under a maintenance and inspection regime (refer above), the assets will need to be assessed to ensure that:

- risks to other marine users by their presence is low;
- environmental risks (e.g. NORM, microplastics) of leaving infrastructure in situ for a period of time are low;
- the ability to remove the infrastructure at a future date is not compromised by leaving the infrastructure in situ for a period of time;
- the costs to recover standalone pieces of equipment are considered disproportionate to the costs of leaving in situ until a later period when cost optimisation can occur;
- Following consideration of the above, there may be a change in the monitoring and maintenance regime that is in place, including additional maintenance for example, to ensure that Jadestone can continue to meet its obligations under the OPGGS Act; or removal or property earlier than planned through opportunistic vessel campaigns.

3.10.2.1 Montara-1,2,3 Wellhead Removal

Jadestone plan to have a mobile offshore drilling unit (MODU) in the Montara field in Q1 2024 to undertake drilling of the Skua-11 well to restore the integrity of the secondary barrier within the well. An accelerated regulatory planning and approvals process was instigated to enable the restoration to occur and is also reliant on the availability of a MODU in Australian waters.

Jadestone considered the removal of the Montara-1,2,3 wellheads which are on title as these could be recovered to the MODU whilst in field. However, this would require an additional 4 days per wellhead to undertake the rig move, jack-up, cut and recover the wellhead and move off. The cost estimation for this is approximately $2.5 million per wellhead and is significantly more than the costs to undertake wellhead removal via vessel.

Jadestone will not undertake removal of the Montara-1,2,3 wellheads during the Skua-11 campaign, however Jadestone plan to submit the wellhead removal EP in 2025 to enable opportunistic removal of the wellheads as EOFL approaches. Regulatory approval budget has already been assigned for development of the EP in 2024 and Jadestone have been consulting on the wellhead removal activity throughout 2023 concurrently with the Montara Operations activity. The current date for removal is still unconfirmed, but Jadestone are committed to removing the wellheads prior to EOFL (refer control measures in Section 7.7.3. This activity is on the agenda for the decommissioning working group (Section 3.10.3.5).

To properly plan and execute the wellhead removal, adequate time and resources need to be assigned and budgeted to enable this to occur. The following tasks are required to be undertaken:

- Define methodology for removal of the wellheads through engagement with vendors including types of equipment for cutting and recovery;
- Determine vessel availability for recovery of wellheads through engagement with vendors;

- Determine disposal location for the wellheads;
- Assign a bottom-up budget for planning and execution of removal campaign;

Expert advice has guided that for steel in soil <1000 ohm-cm, that a corrosion rate of 0.2 mm/year for unprotected steel can be utilised (Baboian, 2016). In the presence of paint and other protective films, corrosion would be delayed. On the basis of no cathodic protection from when the wells were first drilled, they can be left without cathodic protection for a further 126 years without compromising the ability to mechanically recover and lift to the recovery vessel. The wells remain on an inspection schedule in accordance with the Subsea Inspection Strategy (JS-16-PR-U-00001).

3.10.2.2 Sea Eagle-1 and Tahbilk-1 well plug and abandonment

As a firm decision on the future use of the Sea Eagle-1 and Tahbilk-1 wells has not yet been approved by the board, therefore planning for the plug and abandonment of these two suspended wells and wellhead removal has not been progressed at this time. The *Sea Eagle and Tahbilk Vessel Based Activity EP* (TM-50-PLN-I-00004; accepted by NOPSEMA 09/05/2022) in place for these wells describes their potential future use. It also provides further detail on the condition and integrity of the wells, and the monitoring regime in place.

The EP states that "*Jadestone plan to develop and commercially produce from the existing Sea Eagle-1 well in the 2027-2028 time period or sooner. Jadestone commit to that by the time this EP's validity has expired (5 years following acceptance i.e. in 2027), the well will either be sanctioned for development with the permissioning cycle started or permissioned for decommissioning*." Therefore, an EP to plug and abandon or develop Sea Eagle-1 is planned for submission at least 12 months prior to that (i.e. by May 2026).

For Tahbilk-1, there is a potential path to commerciality with another operator which has not yet concluded. The EP states that "*Jadestone plan to de-risk and develop to commercially produce from the existing Tahbilk-1 well. By the end of this EP's Validity period, in 2027, one of the following criteria will be met.*

1. *The well will be permissioned for Permanent Abandonment.*
2. *If not already concluded, a commercial agreement will be in negotiation between Jadestone and the third-party Operator with a view to sanction for development. The expected date for a decision is Q2 2027 and it is anticipated that the commercial agreement would be in place, however this is dependent on third party operator timelines as well.*

Therefore, prior to the expiry of this EP, it is expected that the permissioning cycle will have started for decommissioning or development (additional approvals will be submitted)."

Therefore, submission of an EP to plug and abandon Sea Eagle-1 is planned for submission at least 12 months prior to that (i.e. by May 2026) if development is not planned.

As a decision on both of these wells is expected by mid-2027, regulatory approvals for the next stage (either development or permanent abandonment) will be submitted in 2026. This will allow for adequate time before the planned activity commencement date to allow for regulatory assessment periods, equipment procurement and budgeting and align with EOFL planning for the potential removal of other infrastructure. The wells remain on an inspection schedule in accordance with the Subsea Inspection Strategy (JS-16-PR-U-00001).

3.10.3 Decommissioning Planning Process

3.10.3.1 Decommissioning and Restoration Liability Review

As part of ongoing validation of the Montara Asset Decommissioning and Restoration (D&R) liability, Jadestone completes an external review of the facilities D&R technical basis and associated cost estimate annually with a report compiled every 3 years which effectively follows a 3-year cycle of 2-years top-down review followed by a bottom-up budget in the 3rd year. The cost estimate study is based on the available

technical information using previous Operator D&R studies, facilities engineering documents, current Australia D&R Regulations and current Australia project execution cost norms. It is based on identification of key activities, high level estimation of activity duration or scope (including validation against previous D&R estimates). Jadestone acknowledges that there is inherent uncertainty in estimating CoP, and the D&R liability review undertaken annually will Inform a definitive timeframe for EOFL to ensure adequate planning can occur.

In December 2022, Jadestone obtained an independent review of the well Plug and Abandonment (P&A) and facilities D&R technical basis and associated cost estimate as a further update to consider current market conditions since the Q4 2019 D&R study which is completed every bottom-up year.

The process used to develop the Q4 2019 facilities D&R cost liability was as follows:

- Establish the well P&A and facilities D&R technical basis for completion of the cost estimate.
- Identify the current costing basis for cost estimate development.
- Establish the cost methodology for cost estimate build-up, including pre-sanction, direct costs, indirect/overhead costs and contingency and allowances including a review of previous operator's budgets and philosophies.
- Generate the well P&A and facilities D&R cost estimate for each facility.

The cost estimates were defined with some contingency to consider changes to assumptions, uncertainties and risks that could result in cost estimate escalation. Significant changes in exchange rates, scrap value, cost of vessels and MODUs based on recent regional projects were incorporated into the review.

The cost estimate is based on stand-alone D&R activities for the Montara asset. Further cost optimisation can be achieved through multi-asset campaigns to share mob/demob fees, decreasing vessel and rig day rates and improving labour and services unit cost rates.

3.10.3.2 Suspension of Assets

The suspension of assets will require flushing and de-oiling immediately after field shutdown to leave the infrastructure without hydrocarbon inventory and ensure integrity is maintained as part of the "lighthouse keeping" process required before D&R operations are executed. This includes:

- WHP well and topsides flushing and purging;
- Subsea Flowlines, umbilicals and risers flushing and de-oiling;
- Removal of floating assets within 12 months of cessation of production i.e. FPSO, mooring system;
- FPSO flushing/purging equipment as needed, flush and de-oil all processing equipment prior to disconnection and sail-away.

3.10.3.3 Removal of floating assets

It is assumed that the FPSO Operations team, supplemented by additional contractors and flushing/purging equipment as needed, will flush and de-oil all processing equipment prior to disconnection and sail-away.

The FPSO will be disconnected from the STP and the STP and mooring chains will be recovered, with the 9x driven anchors to be left in-situ. A CSV with ROV and diving support, is proposed for use to complete this operation. Site remediation and restoration works will be required to clear seabed debris from within the Montara Venture footprint.

Within 12 months of cessation of production, floating assets, which includes the FPSO and CALM buoy mooring will be removed from the field.

3.10.3.4 P&A of wells and removal of assets

It is assumed that all Montara wells will be abandoned using a Jack-up rig. Based on advice from Jadestone, the following exploration, platform and subsea wells will require abandonment:

- Exploration wells: abandonment and wellhead recovery (Tahbilk-1 and Sea Eagle-1)
- Platform wells: pull completion, cut/recovery of casing and conductor and cementing (H2, H3ST1, H4, H5, H6 and GIST2)
- Montara-1/2/3 – wellhead removal using cutting technology and recovery to the Construction Support Vessel
- Subsea wells – pull completion, cut/recovery of casing and conductor and cementing (Swift N-ST1, Swallow-1, Swift-2, Skua-10 1)

A Reverse Installation approach will be applied to the Topsides decommissioning. A single topsides lift will be completed using a Heavy Lift Vessel. As the topsides weight is less than 2000 MT, a regionally available HLV will be sourced for to complete the WHP decommissioning. An allowance for deck strengthening will be made to allow topsides lifting onto the cargo barge for transport to the disposal and dismantling facility for material salvage and waste disposal. A Heavy Lift Vessel, supported by infield Support Vessels and a cargo barge, is proposed for use to complete this operation.

International Maritime Organisation (IMO) guidelines for the removal of offshore installations and structures stipulate that full jacket removal will be required if the abandoned installation is located in less than 75 meters water depth and weighing less than 4,000 MT (excluding topsides). As the Montara WHP is in water depth of 77 meters and weighs approximately 900 MT, this would require full removal of the Montara WHP jacket. Removal activities would be completed using a single lift of the jacket after jet cutting of the piles at the mud-line. Piles will be left in-situ. An allowance for stiffening, flotation and removal aids will be made to allow efficient removal of the jacket as a single piece removal.

Jadestone has undertaken a cost estimate for the base case of full property removal at the cessation of the activity including the multi-phase rigid flowlines and gas lift/injection pipelines, infield manifolds, PLETs, flexible jumpers/flying leads and risers.

NOPSEMA's base case for decommissioning at Montara is complete removal, however Jadestone will consider the partial abandonment in situ of some structures which will be subject to further assessment, management approvals, studies, regulatory approvals and stakeholder consultation; and these options may change during the approvals process.

3.10.3.5 Decommissioning Working Group

In Q2 2024, Jadestone established a decommissioning working group to ensure timely planning and execution of decommissioning. The group meets quarterly to plan and execute the decommissioning of Jadestone's Australian assets.

The working group is a decision-making management forum which reports to the Country Manager, Australia and the Group Operations Manager to put forward recommendations for matters relevant to decommissioning in Australia.

The group is formed from representatives from HSE, Subsea, Drilling, Operations and Finance to inform decision making. The current agenda (Q3-Q4 2024) considers:

- current regulatory requirements and guidelines including the Offshore Petroleum Decommissioning Guideline (DISER, 2018); and the NOPSEMA Decommissioning Compliance Strategy (February 2024).
- Commissioning of any required studies (refer Section 3.9.3.5) to inform decommissioning.
- Review of survey report results (e.g. infield subsea surveys of infrastructure conducted under the CMMS) with a particular focus on anomalies that could lead to complications with infrastructure removal if not rectified with review by a Jadestone approved Technical Authority.
- Planning and commissioning of regulatory approvals for the next stage of activity including cessation of operations and removal of floating assets. Given EOFL is currently predicted to be

2030, planning has commenced on the regulatory approvals schedule for the next stage of operations and removal activities.

Opportunities register to identify potential removal or decommissioning options whilst conducting in field activities during operating field life

- Tracking of decommissioning commitments e.g. timelines for Sea Eagle-1 and Tahbilk-1 decisions on development or permanent abandonment; submission of regulatory approvals for Montara-1,2,3 wellhead removal.

3.10.3.6 Planning Decommissioning Technical Studies

In developing the decommissioning framework, Jadestone intends to undertake further technical and environmental studies to further inform decisions and comparative assessment of options for removal. This may include comparison between full removal, partial removal and full in situ abandonment; technical studies are required to undertake the assessments and will be completed in the five years leading up to end of field life to inform decision making and planning. Planning for these studies will commence 6 years prior to EOFL with the establishment of the working group.

Some studies may be undertaken earlier as opportunities arise, such as water and sediment quality sampling that is undertaken for produced water monitoring which can be interrogated to inform any potential remediation required (for example); or any equipment that is removed from field can be sampled for contaminants to assist with decision making for decommissioning at EOFL. These studies may include:

- Detailed materials inventory of all infield infrastructure. i.e. the components of each piece of infrastructure in field (e.g. steel, polymers, rubber) to inform degradation assessments of infrastructure that may be left in situ;
- Material degradation assessments of subsea infrastructure that may be considered for in situ abandonment; this assists in the understanding of the way that the individual components of infrastructure breaks down over time and the end fate of components. This may include the reaction of components as they break down over time in sediment and water, and the potential chemical reactions that could also occur;
- Engineering studies for removal of infrastructure based on current technologies, technical feasibility and availability of equipment and vessels to undertake removal of the infrastructure in field. This may also include studies to understand any modifications required (e.g. deck strengthening of the WHP) to facilitate removal;
- Waste management studies for end point disposal (comprising options for recycling, repurposing and disposal) of recovered infrastructure including location and end fate. This may include re-purposing in situ (e.g. artificial reef or fish attraction device for commercial or recreational purposes), relocation of infrastructure to a different location for re-use, recycling of infrastructure onshore;
- Stakeholder consultation to understand the potential impacts of leaving infrastructure in situ long term or permanently vs. removing the infrastructure completely. This will include assessment of commercial fishery use and other marine users that may utilise the current operational area. Relevant persons that may have interests, functions or activities in the operational area will continue to be engaged through the decommissioning planning process to ensure any feedback is considered in the early planning stages.
- Legislative requirements including clearance below sea level for commercial fishers (currently <30m from the sea surface in the water column); requirement to remove all infrastructure (OPGGS Act); Sea Dumping Act for leaving any infrastructure in situ
- Analysis of existing environmental data taken from in field monitoring (e.g. sediment and water quality, ROV footage) to identify ecological features and communities, potential impacts of

infrastructure that has been in field long term and understanding any effects in sediment from long term discharges (such as produced water). This would also include understanding of any mercury or NORM that may be present in the infrastructure;

- Opportunistic analysis of infrastructure that is removed from field for presence of marine growth, mercury, NORMs or other contaminants, or the potential for studies on the degradation of infrastructure in laboratory studies;
- Potential requirements for remediation and monitoring following removal of infrastructure or if infrastructure has been abandoned in situ.

The above studies may not all be required, and will be completed in phases to inform equipment/vessel procurement, budgeting and regulatory approvals as outlined in Figure 3-2.

3.10.4 Decommissioning Planning Timeline

The timeframe allocated to planning for decommissioning allows for any studies to be scoped out and completed, comparative assessments to be completed and the preparation of necessary regulatory approvals and to have each assessed by the Regulator sufficiently in advance of activities commencing. Key objectives and tasks considered are outlined below. Jadestone have established a decommissioning working group that will drive the planning and execution of the strategy supported by financial and investor decisions. In the time leading up to five years prior to end of field life, Jadestone will continue monitoring and maintaining infrastructure and seek opportunities for decommissioning of property ahead of the proposed timeline. The timeframe allocated to planning for decommissioning in the five years prior to EOFL allows for the preparation of a Cessation of Production (CoP) EP and/or decommissioning EP and to have each assessed by NOPSEMA sufficiently in advance of activities commencing to ensure each EP is accepted prior to activities commencing. It is expected that this EP would be submitted at least 18 months prior to EOFL.

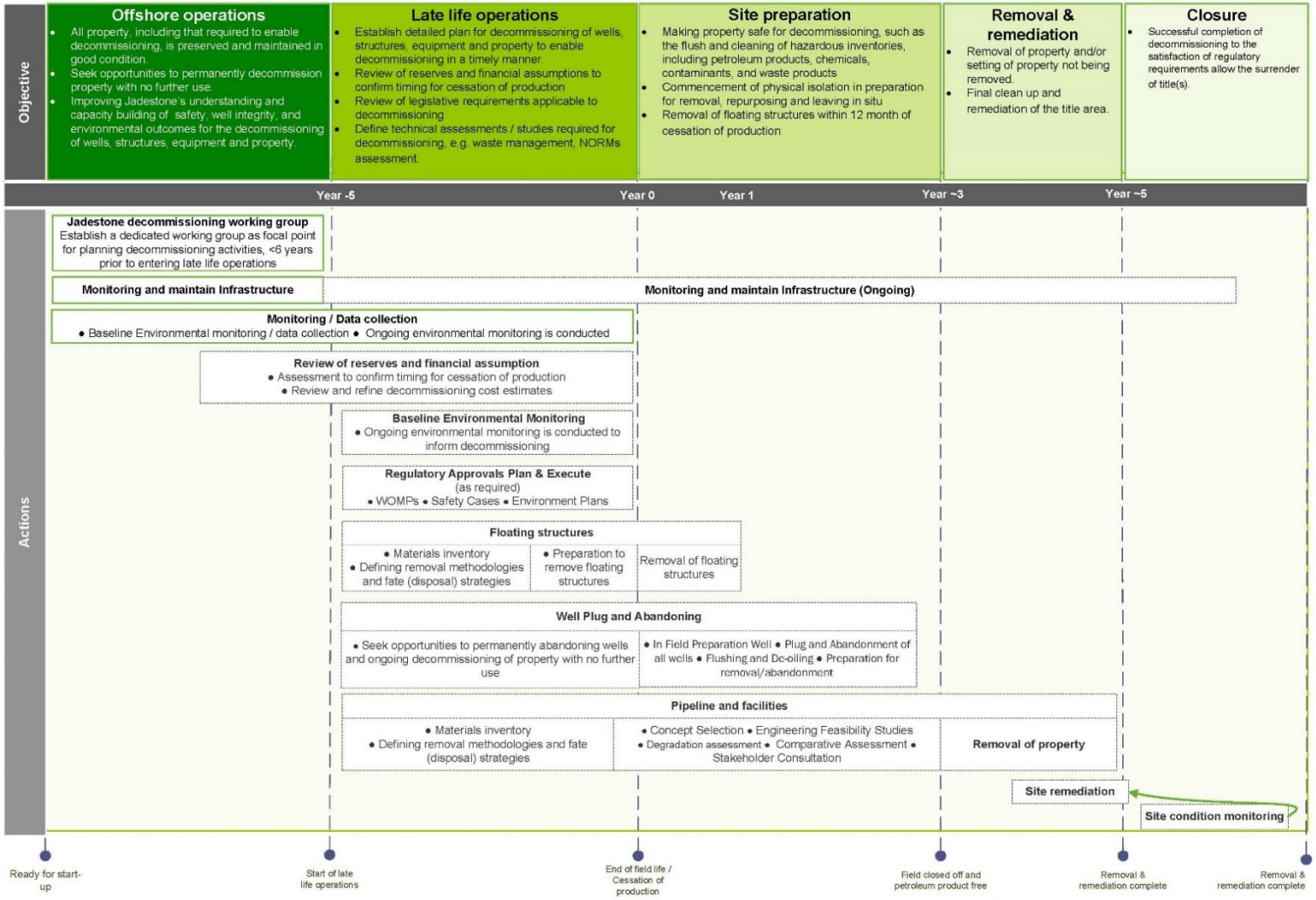

Figure 3-2: Jadestone Montara decommissioning timeline

Jadestone's commitment to having a decommissioning framework is provided in management control 061: *No later than five years prior to the end of field life, Jadestone will have a decommissioning framework that details how JSE will meet the obligations under s.572 of the OPGGS Act. This will include establishment of a detailed plan for decommissioning of well, structures, equipment and property to enable decommissioning in a timely manner. This will require detail on*:

- Ongoing monitoring and maintenance commitments
- Baseline environmental monitoring requirements to inform decision making
- Any technical studies to support options assessment
- Timeframes for the planning and execution of all regulatory approval documents
- Full inventory of all in-field infrastructure
- Continually updated status of all in-field infrastructure
- overall decommissioning concept.

4. EVALUATION OF ENVIRONMENTAL IMPACTS AND RISKS

As required by Regulation 21(5) of the Environment Regulations, this section of the EP provides an outline of Jadestone's approach to the evaluation of impacts and risks due to an activity (Section 4.1), and the outcomes of the impact and risk assessment undertaken for operation of the Montara operations activity (Section 4.6).

4.1 Assessment Method

The environmental impacts and risks associated with the proposed operations activities within production licenses AC/L7 and AC/L8 have been assessed using the Jadestone Risk Management Framework (JS-70-PR-F-00009 Rev 1) and methods consistent with HB 203:2012 and AS/NZS ISO 31000:2018.

Impact is evaluated in terms of the extent, duration, severity and certainty pertaining to the effect that will or may occur in the environment due to a planned or accidental event associated with the activity.

Risk is evaluated in terms of likelihood and consequence, where likelihood is defined as the probability or frequency of the event occurring, while consequence, like impact, is defined as the extent, duration, severity and certainty pertaining to the effect that will or may occur in the environment due to a planned or accidental event associated with the activity.

The assessment methodology provides a framework to demonstrate:

- That the identified impacts and risks are reduced to as low as reasonably practicable (ALARP) (Regulation 34(b))
- The impacts and risks are acceptable (Regulation 34c).

The impact and risk management process is shown in Figure 4-1.

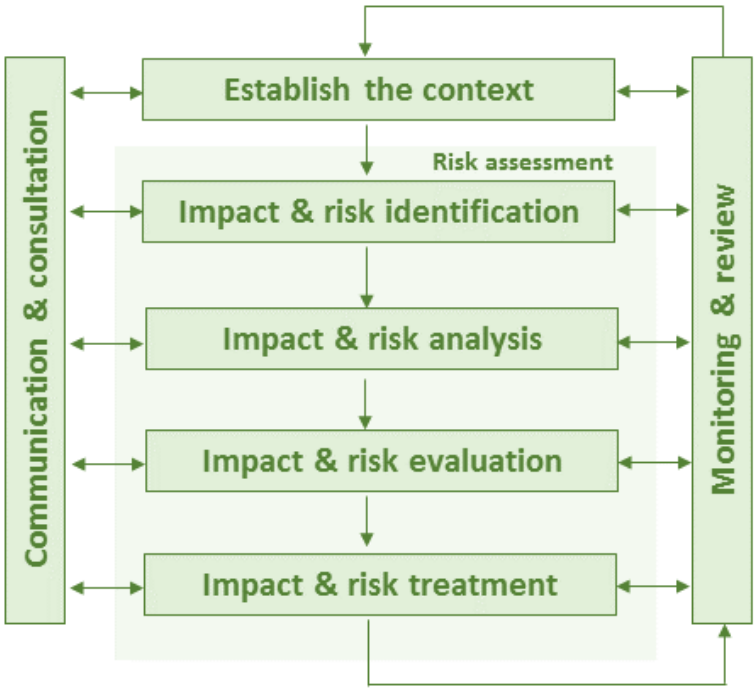

Image source: NOPSEMA (GN0165 Risk Assessment Rev 5 2017)

Figure 4-1: Impact and risk evaluation process

Further detail on the steps involved in the impact and risk evaluation process is provided below.

4.2 Risk Assessment

The assessment process evaluates impacts and risks associated with planned and accidental events that will or have the potential to impact the environment. Impacts and risks are identified through a number of activities:

- Workshopping process attended by a team that includes relevant technical knowledge and experience in the activities being assessed
- Information relating to previous environmental performance relevant to the activity being assessed such as findings of audits and inspections, incident investigations, performance reports
- Feedback from Relevant Persons
- Industry related information of exploration and production activities relevant to the activity being assessed.

Analysis of the impacts and risks identified for the activity includes a number of steps intended to treat the impacts and risks to levels that are acceptable and as low as reasonably practicable for the business. The steps are:

- Identification of appropriate control measures (preventative and mitigative) to treat likelihood and consequence/ impact (below)
- Determination of the residual impact/ risk ratings (Section 4.6).

4.2.1 Identification of control measures

The following framework tools are applied, as appropriate, to assist with identifying control measures:

- **Legislation, Codes and Standards** – identifies the requirements of legislation, codes and standards which are to be complied with for the activity

- **Good Industry Practice** – identifies further engineering control standards and guidelines which may be applied over and above that required to meet the legislation, codes and standards
- **Professional Judgement** – uses relevant personnel with the knowledge and experience to identify alternative controls. When formulating control measures for each environmental impact or risk, the 'Hierarchy of Controls' philosophy (see below), which is a system used in the industry to minimise or eliminate exposure to impacts or risks, is applied
- **Risk Based Analysis** – assesses the results of probabilistic analyses such as modelling, quantitative risk assessment and/ or cost benefit analysis to support the selection of control measures identified during the assessment process
- **Company Values** – identifies values referenced in Jadestone's HSE Policy
- **Societal Values** – identifies the views, concerns and perceptions of Relevant Persons and addresses their concerns as gathered through consultation.

In addition, Jadestone applies a hierarchy of control measures to help evaluate potential management controls to ensure reasonable and practicable solutions have not been overlooked:

- **Elimination –** it is preferable to remove the impact or risk altogether
- **Substitution –** substitute the impact or risk for a lower one
- **Engineering control measures** – use engineering solutions to prevent or detect the hazard or control the severity of consequences/ impacts
- **Administrative control measures** – use of procedures, JHA etc. to assess and minimise the environmental impacts or risks of an activity
- **Protective** – use of protective equipment (e.g. the use of appropriate containers).

4.2.2 Risk ranking process

Risks are ranked using the Jadestone Qualitative Risk Matrix (Table 4-1). Environmental ranking of a measure between **Low** to **Extreme** is determined by evaluating the likelihood of the accidental event occurring, and evaluation the expected severity of the consequence with standard expected control measures in place.

Table 4-1: Jadestone qualitative risk matrix

Rating		**Consequence**				
		Negligible	Minor	Moderate	Major	Critical
Likelihood	Expected	Medium	Medium	High	Extreme	Extreme
	Probable	Medium	Medium	Medium	High	Extreme
	Likely	Low	Medium	Medium	Medium	High
	Unlikely	Low	Low	Medium	Medium	Medium
	Rare	Low	Low	Low	Medium	Medium

Consequence levels for accidental events are assigned based on the expected extent of area that may be affected, the duration of effect and the severity of the effect. A consequence level of **Negligible** to **Critical** may be assigned (Table 4-2).

Table 4-2: Definition of consequence level

Consequence		Socio-economic
5. Critical	Massive effect; recovery in decades; ecosystem collapse	Extensive damage International impact
4. Major	Major effect; recovery in 1–2 years; impact to population	Major damage National reputation impact
3. Moderate	Local effect; recovery in months to a year; impact to localised community	Local damage Considerable reputation impact
2. Minor	Minor effect; recovery in weeks to months; death of individuals	Minor damage Limited reputation impact
1. Negligible	Slight effect; recovery in days to weeks; injury to organism	Slight damage Slight reputation impact

Likelihood levels for accidental or unplanned events are assigned on the basis of preceding performance in relation to the specific activity, within the region or in industry. A likelihood level of **Rare** to **Expected** maybe be assigned to accidental events or unplanned events (Table 4-3). A likelihood level is not assigned to planned events.

Table 4-3: Definition of likelihood levels

Likelihood	
5. Expected	Happens several times a month in similar exploration and production operations
4. Probable	Happens several times a year in similar exploration and production operations
3. Likely	Event has occurred in similar exploration and production operations
2. Unlikely	Heard of in the exploration and production industry
1. Rare	Never heard of in the exploration and production industry

Once assessed and treated, an assessment as to whether the impacts and risks recorded can be demonstrated as being acceptable and ALARP is made. The processes for determining if risks and impacts have been reduced to ALARP and acceptable levels are described below.

4.3 Impact Assessment

Environmental impacts that will occur as a result of planned activities may cover a wider range of issues, multiple species, persistence, reversibility, resilience, cumulative effects and variability in severity. The degree of environmental impact and the corresponding level of acceptability is assessed against a number of guiding principles:

- Principles of ecologically sustainable development (ESD)
- Conservation and management advice
- Stakeholder feedback
- Reputational ramifications
- Environmental context

- Jadestone HSE Policy and Management System.

The application of the guiding principles within the acceptability matrix are outlined in Table 4-4.

The following process has been applied to demonstrate acceptability in the reduction of planned impacts:

- **GREEN** residual impacts are Tolerable, if they meet management requirements, stakeholder requirements, environmental context, and the Jadestone HSE Policy and management system requirements
- **ORANGE** residual impacts are Intolerable and therefore unacceptable. Planned impacts with this rating will require further investigation and mitigation to reduce them to a lower and acceptable level. If after further investigation the impact remains in the unacceptable category, the impact requires appropriate business sign-off to accept the impact or risk.

A reduction of impacts to as low as reasonably practicable follows the process as described for the reduction of risks to ALARP in Section 4.5.

4.4 Demonstration of Acceptability

An acceptable level of risk of an accidental event occurring must be scored with a low or medium rating. Risks receiving a score of high (orange) or extreme (red) risk ratings are unacceptable. For those risks found to have an unacceptable rating, return to the planning process for the activity is required to determine if an alternative approach to undertaking the activity can be identified.

Table 4-4: Jadestone's acceptability matrix

Guiding principles	Impact level				
	1	2	3	4	5
Principles of ESD	Discharges/ emissions have slight effect – recovery in days to weeks	Discharges/ emissions have minor effect – recovery in weeks to months	Discharges/ emissions have local effect – recovery in months to a year	Discharges emissions have major effect – recovery in multiple years	Discharges emissions have catastrophic effect – recovery in decades
Conservation and management advice	Activity does not contact/ interact with sensitivities protected by conservation and management advice	Activity triggers and adopts conservation and management advice of affected sensitivities	Activity must be modified to uphold conservation and management requirements of affected sensitivities	Activity as planned cannot uphold conservation and management requirements of affected sensitivities	Activity as planned will contravene conservation and management requirements of affected sensitivities
Stakeholders	No issues raised by stakeholders	Concern/ query received by stakeholders due to activity	Delay in commencement of activity due to stakeholder consultation	Modification of planned activity to achieve negotiated outcome	Executive involvement in resolving stakeholder concerns
Reputation	Slight impact – no media coverage	Limited impact – State media coverage	Considerable impact – national coverage	National impact – persistent national coverage	International impact – international coverage
Environmental context	Slight effect – recovery in days to weeks	Minor effect – recovery in weeks to months	Local effect – recovery in months to a year	Major effect – recovery in multiple years	Catastrophic effect – recovery in decades

Guiding principles	Impact level				
	1	2	3	4	5
Policy and Management System compliance	Proposed activity complies with JSE HSE Policy and Management System	Parts of the activity will not align with JSE HSE Policy and Management System	Proposed activity must be modified to align with JSE HSE Policy and Management System	Proposed activity cannot uphold intent of JSE HSE Policy and Management System	Proposed activity does not comply with JSE HSE Policy and Management System

4.5 Demonstration of ALARP

Regulation 34(b) of the Environment Regulations requires a demonstration that risks are reduced to ALARP.

The ALARP principle states that it must be possible to demonstrate that the cost involved in reducing the risk further would be grossly disproportionate to the benefit gained. The ALARP principal arises from the fact that infinite time, effort and money could be spent attempting to reduce a risk to zero. An iterative evaluation process is employed until such time as any further reduction in the residual ranking is not reasonably practicable to implement. Following identification of the residual ranking, the ALARP principle is applied:

- Where the residual rank is **LOW** as:
  - Good industry practice or comparable standards have been applied to control the risk, because any further effort towards reduction is not reasonably practicable without sacrifices grossly disproportionate to the benefit gained.
- Where the residual rank is **MEDIUM**:
  - Good industry practice is applied for the situation or risk
  - Alternatives have been identified and the control measures selected to reduce the risks to ALARP. This may require assessment of Company and industry benchmarking, review of local and international codes and standards, consultation with stakeholders, etc. to demonstrate that alternatives have been considered, and reasons for rejection provided.
- Where the residual rank is **HIGH** or **EXTREME** the risk is not considered to be acceptable and the activity cannot continue as described. Further control measures must be applied such that an acceptable risk is demonstrated; and the residual risk is reduced to 'Medium' or lower as described above. The activity should not be carried out if the residual risk remains 'High or Extreme'.

The process of evaluating the reduction of risks to ALARP is illustrated in Figure 4-2.

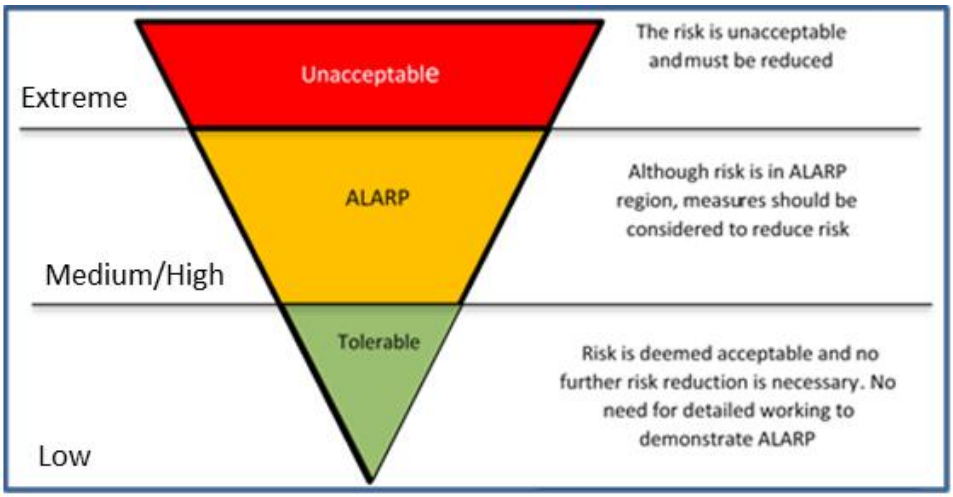

Figure 4-2: ALARP triangle

4.6 Evaluation Summary

An impact and risk assessment workshop was conducted by Jadestone in June 2023 to generate a register to reflect the Jadestone Impact and Risk Management Framework (JS-70-PR-F-00009). The assessment was undertaken by a multidisciplinary team with sufficient breadth of knowledge, training and experience to reasonably assure that risks and impacts were identified and assessed. The assessment team included management, maintenance, operations, emergency response and environmental personnel. Following the ENVID, a series of smaller workshops specific to certain elements (produced water, Greenhouse Gas Emissions, Bird Management and decommissioning) further updated environmental performance tables and assessments as necessary.

The assessment process undertaken by Jadestone in 2023 for the operations activities within production licenses AC/L7 and AC/L8 identified nine planned aspects and seven unplanned hazards and their associated environmental impacts and risks that will or may occur during the activities.

The output of the assessment process is documented in the Montara Operations Impact and Risk Register, and summarised in Table 4-5.

Table 4-5: Summary of the environmental impact and risk assessment rankings for aspects and hazards associated with planned and unplanned events during the Montara operations

Hazard	Consequence ranking
Planned activities	
1. Light emissions	Negligible
2. Noise emissions	Negligible
3. Atmospheric emissions	Minor
4. Liquid discharges	Negligible
5. Chemical discharges	Negligible
6. Produced Water discharges	Negligible
7. Physical presence	Minor
8. Bird Presence and Management Strategies	Minor
9. Seabed disturbance	Negligible
10. Spill response activities	Negligible

Unplanned activities	Consequence	Likelihood	Residual ranking
1. Unplanned Flaring	Negligible	Unlikely	Low
2. Marine pest introduction	Moderate	Unlikely	Medium
3. Interaction with Fauna	Minor	Likely	Medium
4. Unplanned release of solid waste	Minor	Likely	Medium
5. Unplanned release of (Non-hydrocarbon) liquids	Negligible	Rare	Low
6. Worst Case Crude Spill	Critical	Unlikely	Medium
7. Worst Case Diesel Spill	Minor	Unlikely	Low

4.7 Risk Assessment Approach for Worst-case Hydrocarbon Spill Response

The risk assessment approach for the worst-case hydrocarbon spill response requirements follows the risk assessment process as described above, with additional steps and considerations to determine an environmentally acceptable oil spill response strategy and an ALARP level of response preparedness:

- Determine threshold concentrations to be used in oil spill modelling
- Determine the environment that may be affected (EMBA)
- Identify sensitive receptors
- Determine priority receptors
- ALARP and acceptability evaluation for spill response activities.

4.7.1 Determine Oil Spill Modelling Thresholds

Threshold concentrations for each of the hydrocarbon component types (floating oil, entrained oil and dissolved aromatic hydrocarbons (DAH)) are specified as inputs for the model to determine what potential exposure is recorded for each hydrocarbon type and the receptor/ location, to ensure that potential exposure is assessed as per NOPSEMA Bulletin #1.

Threshold concentrations for each of the hydrocarbon component types (floating oil, entrained oil and dissolved aromatic hydrocarbons) are specified as inputs for the model to determine what contact is recorded for each hydrocarbon type and the location, to ensure that recorded contacts are for environmentally meaningful concentrations. Meaningful concentrations are those concentrations at which environmental (or biological) impacts may occur, and at which societal values (e.g. visual aesthetics, economics) may be impacted.

The determination of environmentally meaningful impact thresholds is complex since the degree of impact will depend on the sensitivity of the value, the duration of the contact (exposure) and the toxicity of the hydrocarbon mixture making the contact. The chemical and physical properties of a hydrocarbon change over time due to weathering processes altering the composition. To ensure conservatism in defining the EMBA and the subsequent impact assessment, the threshold concentrations applied to the model are based on the most sensitive environmental resources that may be exposed, the longest likely exposure times and on toxicity information for the hydrocarbon. Impact pathways and impact threshold concentrations are detailed in Appendix D.

4.7.2 Determine the EMBA

The EMBA for hydrocarbon concentration thresholds for the worst-case spill scenario for this EP is shown in Figure 5-1. These contact concentrations are used to inform spill response preparedness and planning as they are the most conservative, environmentally meaningful, impact thresholds for oil (Appendix D). A detailed description of the spill scenario resulting in the EMBA is provided in Section 8.7.

4.7.3 Sensitive Receptor Identification

Jadestone has generated spatial layers of known environmental and socio-economic values within the marine and coastal environment in WA State, Commonwealth and adjacent international jurisdictions, to identify sensitive receptors (locations with highest environmental and/ or socio-economic values relative to other locations). The EMBA is overlaid as a boundary to identify the sensitive receptors that exist within.

Sensitive receptor assessment considers:

- Protected Area Status: used as an indicator of the biodiversity values contained within that area e.g. World Heritage Area, Ramsar site and Marine Protected Area
- Biologically Important Areas (BIA) of Listed Threatened Species: these are spatially defined areas where aggregations of individuals of a species are known to display biologically important behaviour such as breeding, feeding, resting or migratory
- Social values: socio-economic and heritage features (e.g. commercial fishing, recreational fishing, amenities, aboroginal and cultural heritage and aquaculture)
- Economic values: recreational and commercial fishing areas
- Listed species status and predominant habitat (surface versus subsurface): critically endangered/ endangered species, listed species, surface species (e.g. reptiles and birds) and subsurface species (e.g. mammals, sharks and fish)
- Recovery Plans, Conservation Advice for threatened species.
- Once the sensitive receptors within the EMBA have been identified, the potential oil pollution risks are described and evaluated (refer Sections 8.7and 8.8 impacts and risks sections); in addition, the environmental risks from implementing spill response activities are described and evaluated (refer Section 7.10).
- Sensitive receptors are further evaluated by considering what values are contained within them when determining appropriate spill response strategies (refer Section 7.10). This informs the Oil Pollution Emergency Plan (OPEP) and guides spill response preparedness and planning.
- The next step is to determine those sensitive receptors within the EMBA that are considered to be at the highest risk from the worst-case credible oil spill scenario and are common across ALL modelled scenarios and seasons, that is, the protection priorities.

4.7.4 Protection Priorities

It is important to note that in the event of a single worst-case hydrocarbon spill, not all sensitive receptors and areas within the EMBA will be contacted at the same time or at all. Instead, the EMBA is a collation of numerous possible scenarios (generally 100 or more) to develop the areas for focus in response preparedness and strategic planning. As such, only a portion would be contacted during a spill event.

It is best practice to develop spill response strategies for those areas most likely to be contacted in a single maximum credible worst-case spill. To be able to develop these strategies, the sensitive receptors in the EMBA and their vulnerability to a hydrocarbon event (considering nature and scale of spill) need to be understood. A critical first step is to identify these areas – a concept termed here as ‘priority receptors’. The selection of priority receptors is based on stochastic modelling of multiple hydrocarbon spills.

Defining protection priorities determines the scale and needs of the oil spill response strategy. Thus, priority receptors (as a subset of all the sensitive receptors present within the full extent of the EMBA) specific to a particular spill are selected using the following criteria:

- Sensitive receptors within RISK EMBA; AND
- Emergent receptors (i.e. coastal areas and islands) that are predicted to be contacted at moderate thresholds at greater than 5% probability; AND
- Receptors predicted to be contacted within the shortest timeframe; OR
- Receptors predicted to be contacted at the highest volumes; OR
- Vulnerable to impact from hydrocarbons – e.g. mangroves are more vulnerable than intertidal rock pavement; known turtle nesting beaches are vulnerable during nesting periods[1]; OR
- Any other area of interest within the EMBA including areas that have a high social value or are a concern raised through stakeholder consultation (refer Section 6).

Implementation of operational and scientific monitoring may focus on other receptors, including submerged receptors, as outlined in the Montara Operations OSM-BIP (TM-70-PLN-I-00006).

It is logical and best practice to focus spill response planning and strategies on those locations most likely to be contacted in the credible worst-case oil spill scenario; that is, the scenario that represents the highest risk across all modelled scenarios covering any season, rather than attempt to cover the full spatial extent of the EMBA. This allows for flexibility in response planning as plans are developed for environmental resources at greatest risk of being contacted by an oil spill and can be adapted for any scenario that occurs (refer Jadestone Energy Incident Management Team Response Plan [JS-70-PLN-F-00008], Section 6, Figure 6-1).

4.7.5 ALARP and Acceptability Evaluation for Spill Response

Jadestone applies a robust and systematic process to ensure that credible spill scenarios are adequately evaluated, to promote a clear link between the nature and scale and the priority receptors, and, to ensure that effective control measures exist to mitigate environmental risks and impacts to a level that is ALARP and acceptable. This process is depicted in Figure 4-3.

The process promotes a clear link between the nature and scale of the maximum credible worst-case spill scenario and the identified priority receptors to ensure that selected response strategies are appropriate and demonstrated to be effective and adequate.

As part of the risk assessment process, the spill response strategies selected are evaluated for their environmental impact (Figure 4-4).

[1] IPIECA, the global oil and gas industry association for environmental and social issues, the International Maritime Organisation (IMO) and International Association of Oil and Gas Producers (OGP) developed a guidance document for 'Sensitivity mapping for oil spill response' IPIECA/IMO/OPG (2012). This document was used as a reference and basis for the sensitivity of habitats vulnerability assessment.

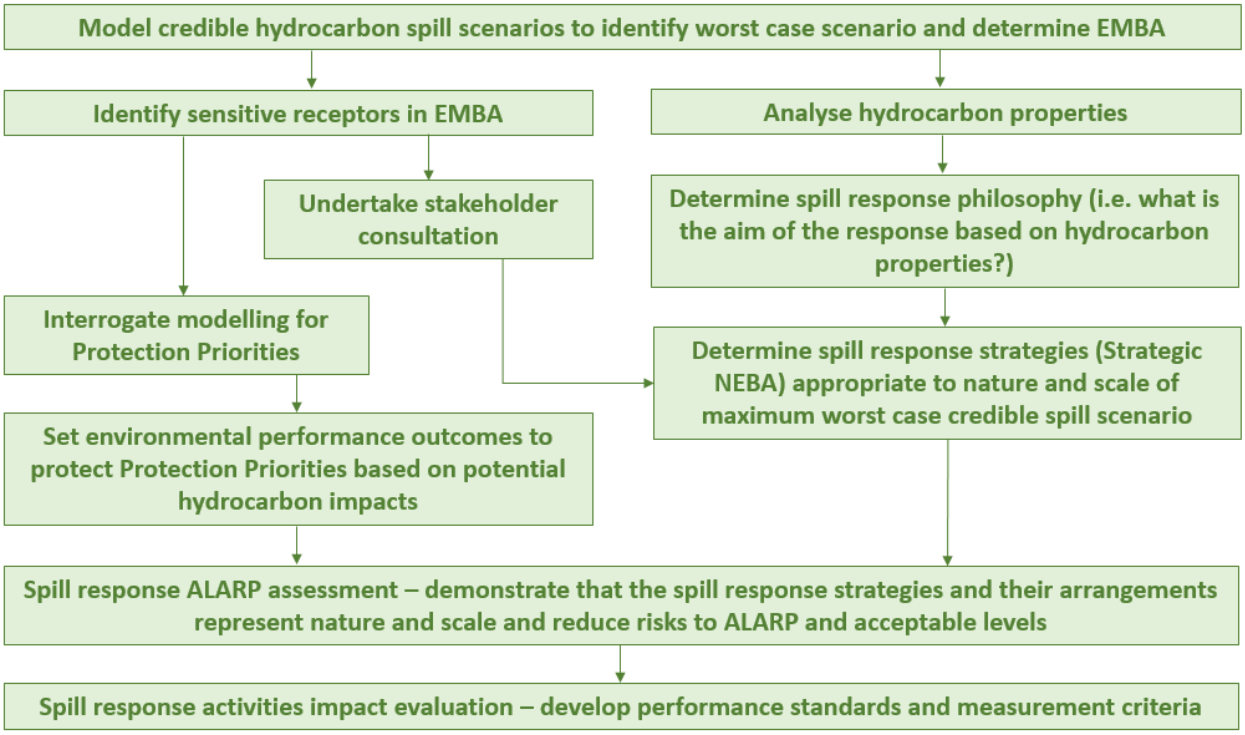

Figure 4-3: Spill scenario evaluation and ALARP determination process

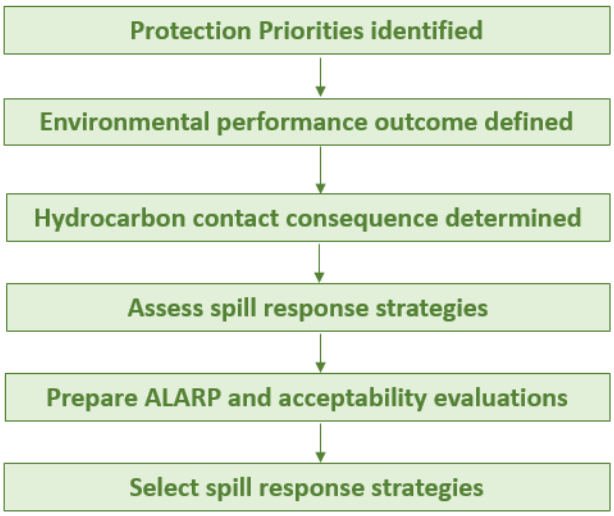

Figure 4-4: Spill control analysis and ALARP determination process

5. EXISTING ENVIRONMENT

This section summarises environmental values and sensitivities, including physical, biological, socio-economic and cultural features in the marine and coastal environment that are relevant to the operational area and the EMBA.

A comprehensive description of the environmental values and sensitivities of the existing environment within the Operational Area and EMBA are provided in Appendix C. The Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) was used to determine conservation values and sensitivities listed and protected under the EPBC Act include Matters of Environmental Significance (MNES). The results of these searches for the EMBA and Operational area are provided in Appendix C.

5.1 Definition of Areas

Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, Regulation 21(2) requires the proponent to:

> '(a) describe the existing environment that may be affected by the activity; and
>
> (b) include details of the relevant values and sensitivities (if any) of that environment.'

To address this requirement, Jadestone has evaluated the values and sensitivities within two types of areas related to the activity:

- **The Operational Area** – the geographical area encompassing the environment that may be affected by the planned activities (Section 2.3)
- The **Environments that May Be Affected (EMBAs)** – the geographical area encompassing the environment that may be affected by the unplanned events associated with the activities described (Section 3). Refer to Section 8.7.4 for more detail on how the thresholds were defined and the modelling underpinning the EMBAs delineation.

The spatial extent of the EMBAs and location of the Operational Area is presented in Figure 5-1.

- To assist in the later impact assessment, four sub-categories of EMBA were defined:
- Surface hydrocarbons EMBA– hydrocarbons that are 'on' the water surface (1 g/m^2)
- Entrained hydrocarbons EMBA– hydrocarbon that is entrained 'in' the water; (100 ppb)
- Dissolved hydrocarbons EMBA– the dissolved component of hydrocarbon in' the water (50 ppb)
- Shoreline loading EMBA – hydrocarbons greater than 10 g/m^2.

Collectively the total area of impact they intersect with is referred to as the "EMBAs".

The environmental values and sensitivities in the EMBAs have been used to inform the assessment of unplanned events, particularly diesel and oil spill response planning and oil spill risk assessment (Section 8.7 and Section 8.8). A detailed description in provided in Section 5 and within the *Montara Existing Environment* in Appendix C. A full search for both the Operational Area and EMBA was undertaken using Department of Climate Change, Energy, the Environment and Water's Protected Matters Search Tool (PMST) and is also available in Appendix C.

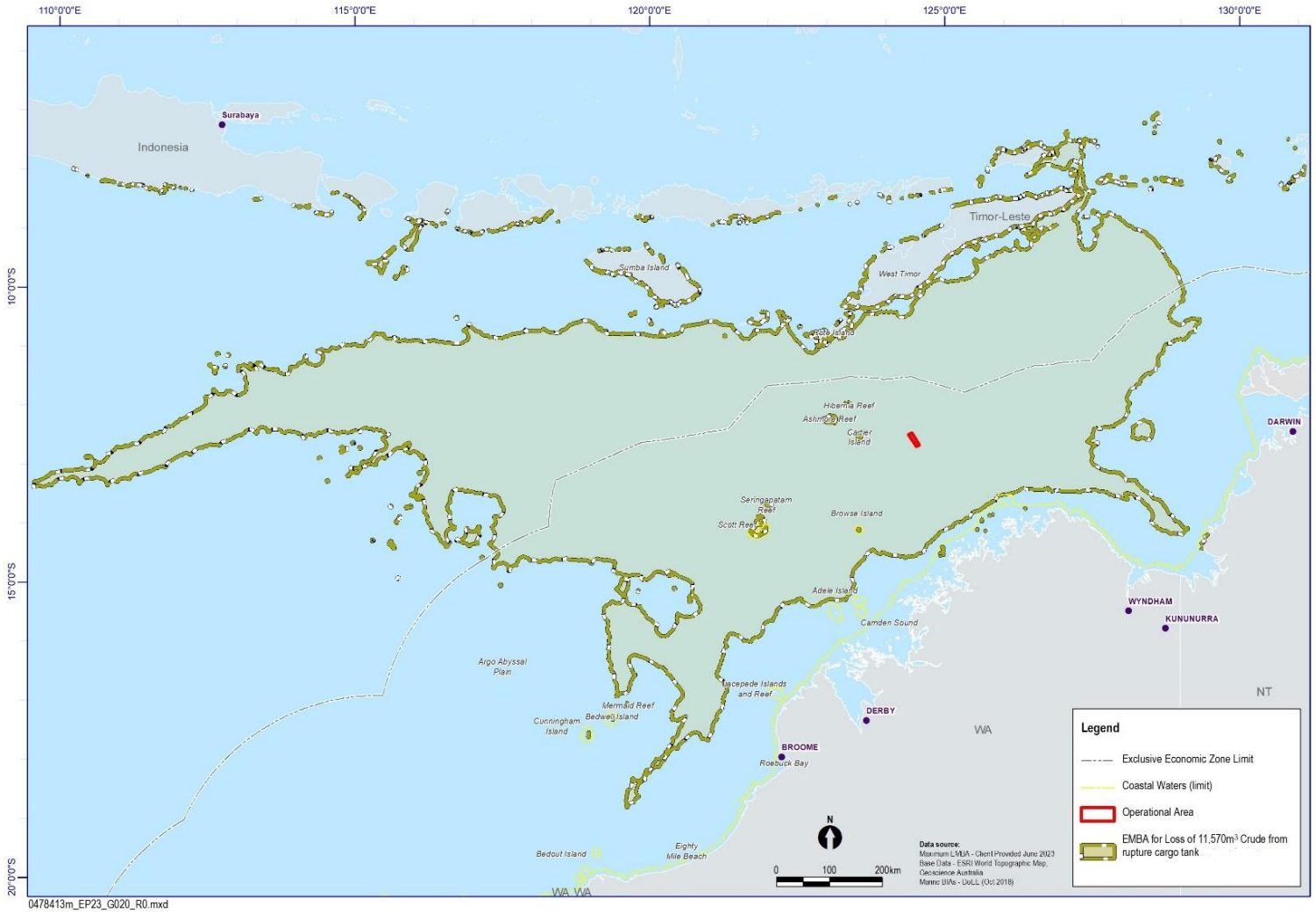

Figure 5-1: Montara operations and EMBA

5.2 Regional Context

5.2.1 Marine Bioregions

Australia's offshore waters have been divided into six marine regions in order to facilitate their management by the Australian Government under the EPBC Act. The Montara operations activity is located within the North West Marine Region (NWMR). The NWMR encompasses Commonwealth waters from the Western Australia/ Northern Territory border in the north, to Kalbarri in the south. Within the NWMR the Operational Area lies at the junction of two provincial bioregions: Timor province and North West Shelf Transition. The EMBA also overlaps the North West Shelf Province, the Northern Shelf Province, Christmas Island Province and the Northwest Transition (Figure 5-2). The Montara Existing Environment (Appendix C) summarises the characteristics of these bioregions.

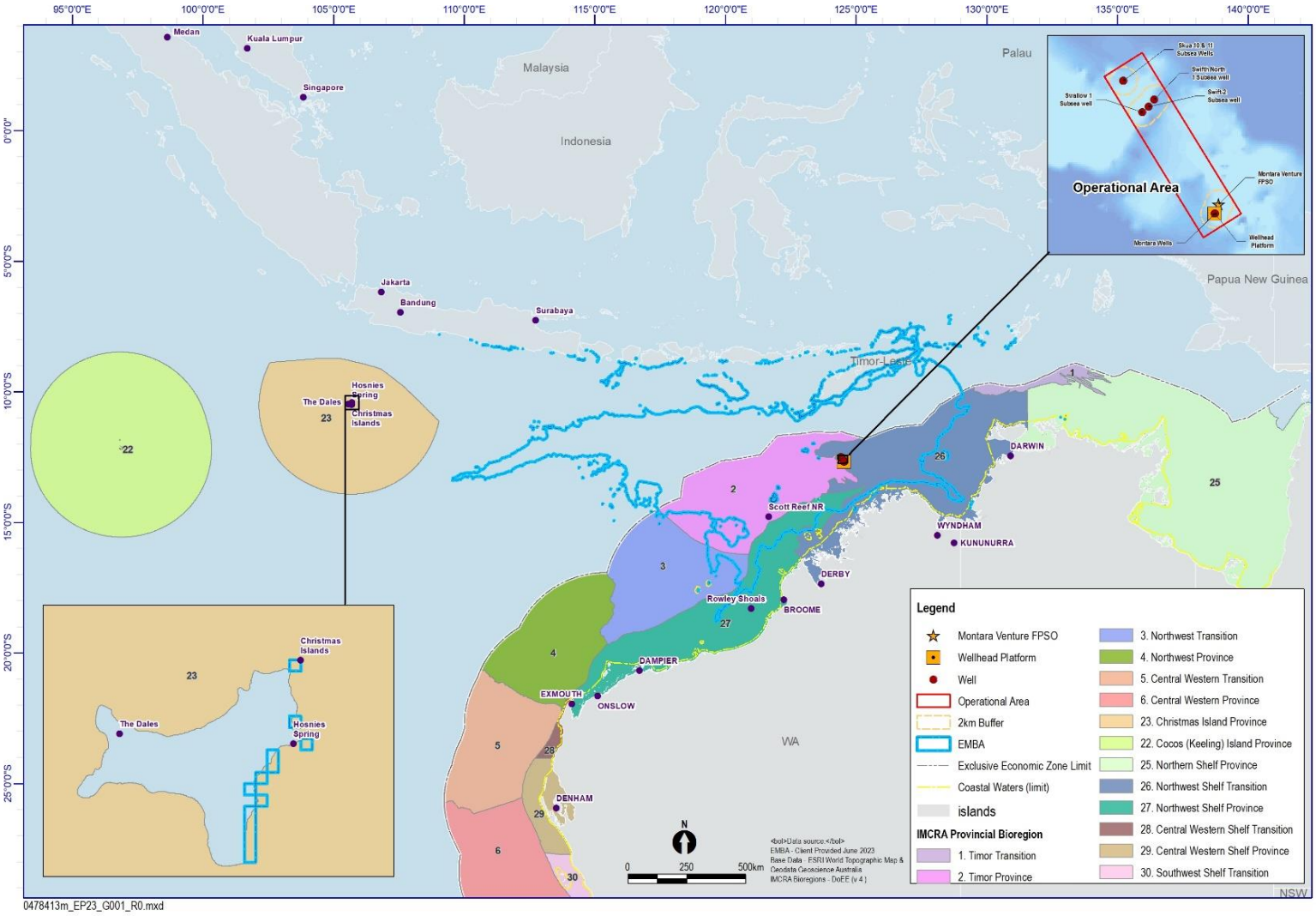

Figure 5-2: Provincial Bioregions relevant to the Operational Area

5.3 Conservation Values and Sensitivities

Conservation values and sensitivities listed and protected under the EPBC Act include Matters of Environmental Significance (MNES) and Other Protected Matters. MNES occurring, or potentially occurring, in the Operational Area and EMBA are summarised in Table 5-1 and Table 5-2. The full EPBC Act Protected Matters report is provided in Appendix C. Additional information on these MNES is provided in subsequent sections of this chapter and described in detail in *Montara Existing Environment* (Appendix C).

Table 5-1: Summary of conservation values and sensitivities in the Operational Area

MNES and Other Matters Protected under EPBC Act	Operational Area	Description
Commonwealth Marine Area	✓ (1)	See Appendix C
Listed Threatened Species	✓ (22)	See Section 5.4
Listed Migratory Species	✓ (35)	See Section 5.4
Listed Marine Species	✓ (62)	See Appendix C
Whales and other cetaceans (many of which are also Listed Threatened or Migratory Species)	✓ (23)	See Appendix C
Biological Important Areas	✓ (1)	Whale shark Foraging

Table 5-2: Summary of conservation values and sensitivities in the EMBA

MNES Protected under EPBC Act	EMBAs Presence	Description
National Heritage Places	✓ (1)	See Appendix C The West Kimberley
Wetlands of International Importance (Ramsar)	✓ (3)	See Appendix C Ashmore Reef, Hosines Spring, The Dales (Christmas Island)
Commonwealth Marine Areas	✓ (2)	See Appendix C Extended Continental Shelf and EEZ and Territorial sea
Listed Threatened Species	✓ (60)	See Section 5.4
Listed Migratory Species	✓ (64)	See Section 5.4
Commonwealth Heritage Places	✓ (4)	See Appendix C Ashmore Reef National Nature Reserve, Christmas Island Natural Area, Mermaid Reef (Rowley Shoals), Scott Reef and Surrounds
Listed Marine Species	✓ (125)	See Appendix C
Whales and other cetaceans (many of which are also Listed Threatened or Migratory Species)	✓ (29)	See Appendix C
Australian Marine Parks	✓ (19)	See Section 5.5
Habitat critical to the survival of marine turtles	✓ (3)	See Section 5.4
State and Territory Reserves	✓ (3)	See Section 5.5

MNES Protected under EPBC Act	EMBAs Presence	Description
		Scott Reef, North Kimberley and Rowley Shoals
Nationally Important Wetlands	✓ (2)	See Appendix C Ashmore Reef, Hosine's Spring, Mermaid Reef
Key Ecological Features	✓ (10)	See Section 5.5
Biologically Important Areas	✓ (55)	See Section 5.4

5.4 Marine Fauna

The environmental values and sensitivities (threatened and migratory species) within the operational area and EMBA are described in Table 5-3 to Table 5-6. These include all relevant Matters of National Environmental Significance (MNES) protected under the EPBC Act as identified in the PMST search for the operational area and EMBA. For each species identified, the extent of likely presence is provided, including any overlap with designated Biologically Important Areas (BIAs). BIAs such as an aggregation, breeding, resting, nesting or feeding areas or known migratory routes for these species are shown in Figure 5-3 to Figure 5-13 and described in the Existing Environment (Appendix C).

The PMST search (Appendix C) identified 22 Listed Threatened Species (LTS) and 35 Listed Migratory Species (LMS) as having the potential to occur within the Operational area. The LTS included:

- Three species of marine mammals
- Seven species of marine reptiles
- Six shark species
- Five marine bird species.

The relevant sections of this EP discuss the likelihood of these species and their biologically important areas occurring within the Operational Area. Those species that have been identified as likely to be present in the Operational area are summarised in Table 5-3 to Table 5-6 and further detailed below.

The relevant sections also outline the management such as:

- Recovery plans
- Conservation advice; or
- Threat abatement plan for the impacts of marine debris on vertebrate marine life (DoEE 2018).

The requirements of the species recovery plans and conservation advice are considered to identify any requirements that may be applicable to the risk assessment

5.4.1 Fish, Sharks and Rays

The Operational Area PMST report (Appendix C) identified a total of thirteen threatened and/or migratory of which:

- Four are threatened and migratory
- Three are threatened only
- Six migratory only.

The Operational area intersects with the Whale Shark foraging BIA (Figure 5-3).

The EMBA PMST report (Appendix C) identified a total of fifteen threatened and/or migratory of which:

- Five are threatened and migratory
- Four are threatened only

- Six migratory only.

A summary of fish, sharks and rays is provided in Table 5-3 and further described in Existing Environment (Appendix C).

Table 5-3: Fish, shark and ray EPBC listed species

Common Name (Scientific Name)	EPBC Act Status[2]	Type of presence		BIA within Operational Area	Management		
		Operational Area	*EMBA*		Conservation advice	Recovery Plan	Threat Abatement Plan
Whale Shark (*Rhincodon typus*)	V,M	Foraging, feeding or related behaviour known to occur within area	Foraging, feeding or related behaviour known to occur within area	✓	Conservation advice *Rhincodon typus* whale shark (Threatened Species Scientific Committee 2015d)	Ceased 2015	No
Great White Shark (*Carcharodon carcharias*)	V,M	Species or species habitat may occur within area	Species or species habitat may occur within area	No	No	Recovery Plan for the White Shark (*Carcharodon carcharias*) (Commonwealth of Australia 2013)	No
Northern River Shark (*Glyphis garricki*)	E	Species or species habitat may occur within area	Species or species habitat may occur within area	No	Approved Conservation Advice for *Glyphis garricki* (northern river shark) (DoE 2014a)	Sawfish and river shark multispecies recovery plan (Commonwealth of Australia 2015b)	No
Green Sawfish (*Pristis zijsron*)	V	Species or species habitat known to occur within area	Species or species habitat known to occur within area	No	Approved conservation advice for *Pristis zijsron* green sawfish (Threatened Species Scientific Committee 2008b)	Sawfish and river shark multispecies recovery plan (Commonwealth of Australia 2015b)	No
Freshwater/ Largetooth sawfish (*Pristis pristis*)	V, M	Species or species habitat may occur within area	Species or species habitat may occur within area	No	Approved Conservation Advice for *Pristis pristis* (largetooth sawfish) (DoE 2014b)	Sawfish and river shark multispecies recovery plan (Commonwealth of Australia 2015b)	No

[2] CE = Critically Endangered; E = Endangered; V = Vulnerable; M = Migratory; CD = Conservation Dependant

Common Name (Scientific Name)	EPBC Act Status2	Type of presence		BIA within Operational Area	Management		
		Operational Area	*EMBA*		Conservation advice	Recovery Plan	Threat Abatement Plan
Scalloped Hammerhead (Sphyrna lewini)	CD	Species or species habitat likely to occur within area	Species or species habitat known to occur within area	No	No	No	No
Southern Bluefin Tuna (Thunnus maccoyii)	CD	Breeding known to occur within area	Breeding known to occur within area	No	No	No	No
Narrow Sawfish (*Anoxypristis cuspidata*)	M	Species or species habitat may occur within area	Species or species habitat likely to occur within area	No	No	No	No
Oceanic Whitetip Shark (*Carcharhinus longimanus*)	M	Species or species habitat may occur within area	Species or species habitat may occur within area	No	No	No	No
Shortfin Mako (*Isurus oxyrinchus*)	M	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	No	No	No	No
Longfin Mako (*Isurus paucus*)	M	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	No	No	No	No
Giant Manta Ray (*Manta birostris*)	M	Species or species habitat likely to occur within area	Species or species habitat known to occur within area	No	No	No	No

Common Name (Scientific Name)	EPBC Act Status2	Type of presence		BIA within Operational Area	Management		
		Operational Area	*EMBA*		Conservation advice	Recovery Plan	Threat Abatement Plan
Reef Manta Ray (*Manta alfredi*)	M	Species or species habitat likely to occur within area	Species or species habitat known to occur within area	No	No	No	No
Speartooth Shark (*Glyphis glyphis*)	CE	N/A	Species or species habitat may occur within area	No	Approved Conservation Advice for *Glyphis glyphis* (speartooth shark) (DoE 2014c)	Sawfish and river shark multispecies recovery plan (Commonwealth of Australia 2015b)	No
Dwarf Sawfish (*Pristis clavata*)	V, M	N/A	Species or species habitat known to occur within area	No	Approved Conservation Advice for *Pristis clavata* (Dwarf Sawfish) (DoE 2014d)	Sawfish and river shark multispecies recovery plan (Commonwealth of Australia 2015b)	No

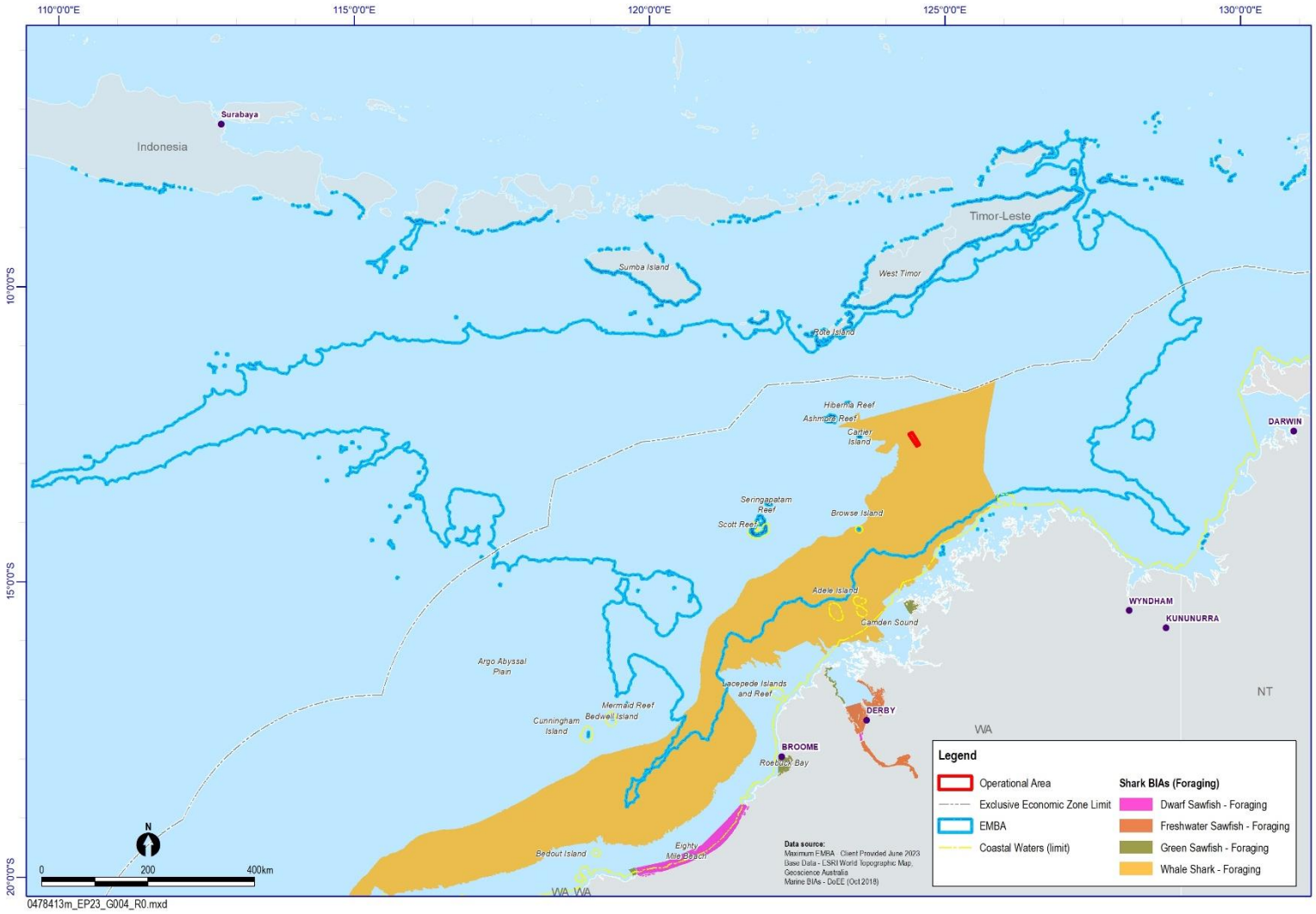

Figure 5-3: BIAs for fish, sharks and rays

5.4.2 Marine Reptiles

The Operational Area PMST report (Appendix C) identified a total of seven threatened and/or migratory of which:

- Six are threatened and migratory
- One is threatened only.

The Operational area does not intersects with any BIAs for reptiles.

The EMBA PMST report (Appendix C) identified a total of nine threatened and/or migratory of which:

- Six are threatened and migratory
- One is migratory only
- Two is threatened only.

The EMBA intersects with the BIAs and habitat critical for the survival of flatback, green, hawksbill, and loggerhead turtles (Figure 5-4 to Figure 5-7). The EMBA also intersects with habitat critical to the survival of marine turtles (nesting) (Figure 5-8).

A summary of marine reptiles is provided in Table 5-4 and further described in Existing Environment (Appendix C).

Table 5-4: Marine reptile EPBC listed species

Common Name (Scientific Name)	EPBC Act Status[3]	Type of presence		BIA within Operational Area	Management		
		Operational Area	EMBA		Conservation advice	Recovery Plan	Threat Abatement Plan
Leaf-scaled Seasnake	CE	Species or species habitat may occur within area	Species or species habitat may occur within area	No	Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake). Threatened Species Scientific Committee 2011	No	No
Loggerhead Turtle (*Caretta caretta*)	E,M	Foraging, feeding or related behaviour likely to occur within area	Foraging, feeding or related behaviour known to occur within area	No	No	Recovery plan for marine turtles in Australia (DoEE 2017)	Marine debris
Green Turtle (*Chelonia mydas*)	V,M	Foraging, feeding or related behaviour known to occur within area	Breeding known to occur within area	No	No	Recovery plan for marine turtles in Australia (DoEE 2017)	Marine debris
Leatherback Turtle (*Dermochelys coriacea*)	E,M	Foraging, feeding or related behaviour likely to occur within area	Species or species habitat known to occur within area	No	Approved conservation advice for *Dermochelys coriacea* (Leatherback Turtle) (Threatened Species Scientific Committee 2008a)	Recovery plan for marine turtles in Australia (DoEE 2017)	Marine debris
Hawksbill Turtle (*Eretmochelys imbricata*)	V,M	Foraging, feeding or related behaviour likely to occur within area	Foraging, feeding or related behaviour known to occur within area	No	No	Recovery plan for marine turtles in Australia (DoEE 2017)	Marine debris

[3] CE = Critically Endangered; E = Endangered; V = Vulnerable; M = Migratory

Common Name (Scientific Name)	EPBC Act Status[3]	Type of presence		BIA within Operational Area	Management		
		Operational Area	EMBA		Conservation advice	Recovery Plan	Threat Abatement Plan
Olive Ridley Turtle (*Lepidochelys olivacea*)	E, M	Foraging, feeding or related behaviour likely to occur within area	Foraging, feeding or related behaviour likely to occur within area	No	No	Recovery plan for marine turtles in Australia (DoEE 2017)	Marine debris
Flatback Turtle (*Natator depressus*)	V, M	Species or species habitat known to occur within area	Breeding known to occur within area	No	No	Recovery plan for marine turtles in Australia (DoEE 2017)	Marine debris
Short- nosed Seasnake (Aipysurus apraefrontalis)	CE	N/A	Species or species habitat known to occur within area	No	Approved Conservation Advice for *Aipysurus apraefrontalis* (Leaf-scaled Sea Snake). Threatened Species Scientific Committee 2010	No	No
Salt-water crocodile	M	N/A	Species or species habitat likely to occur within area	No	No	No	No

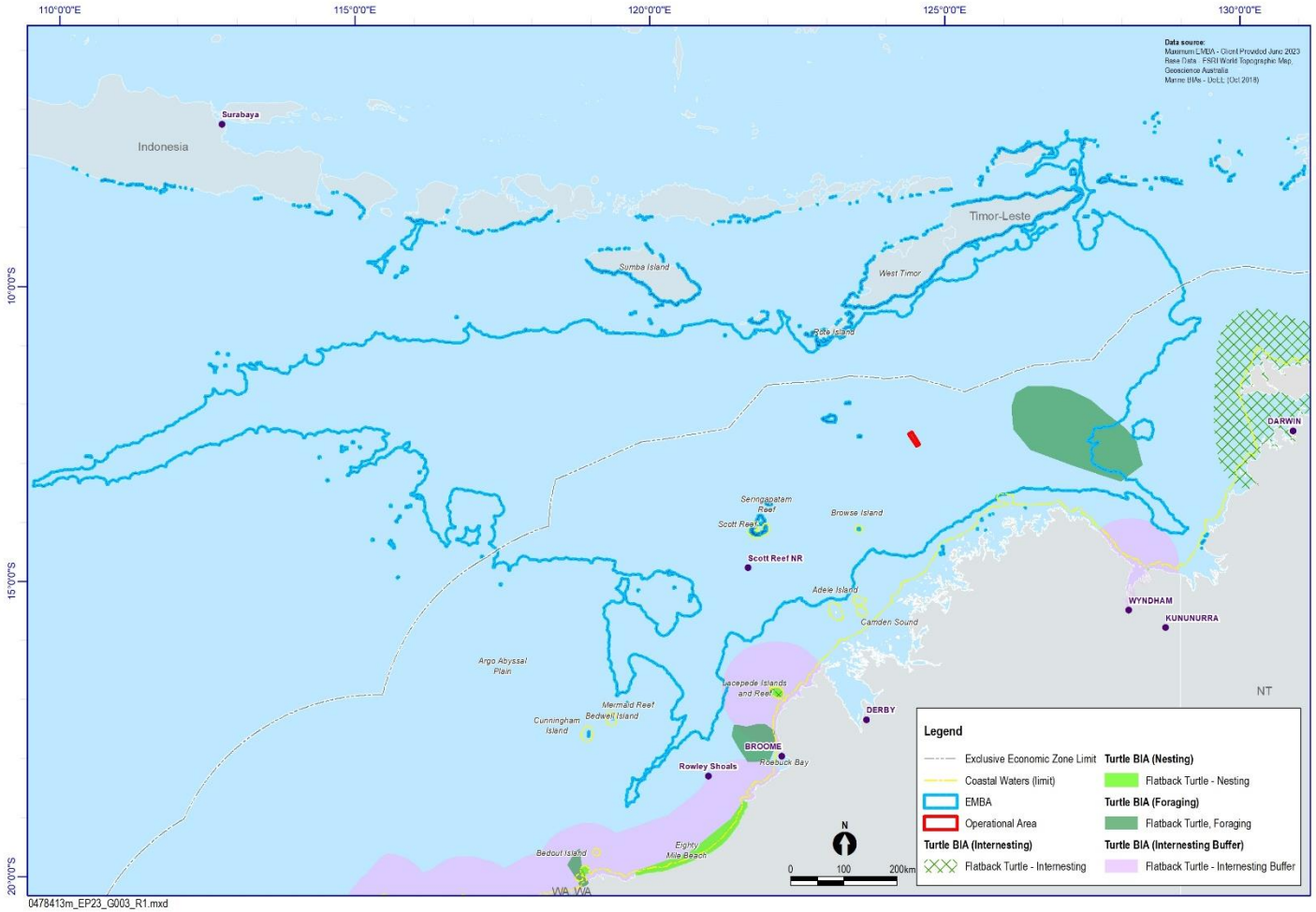

Figure 5-4: BIAs for flatback turtles

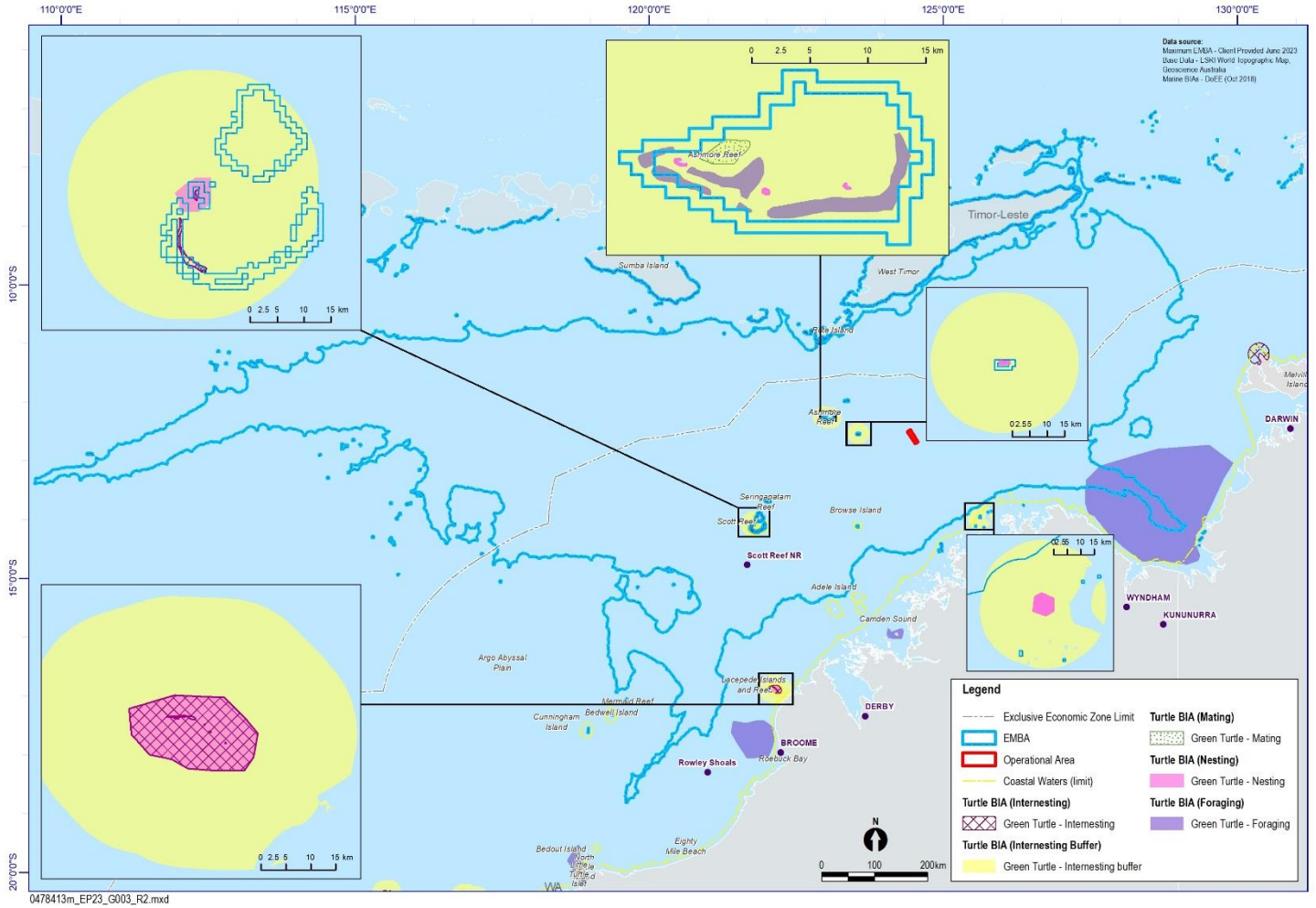

Figure 5-5: BIAs for green turtles

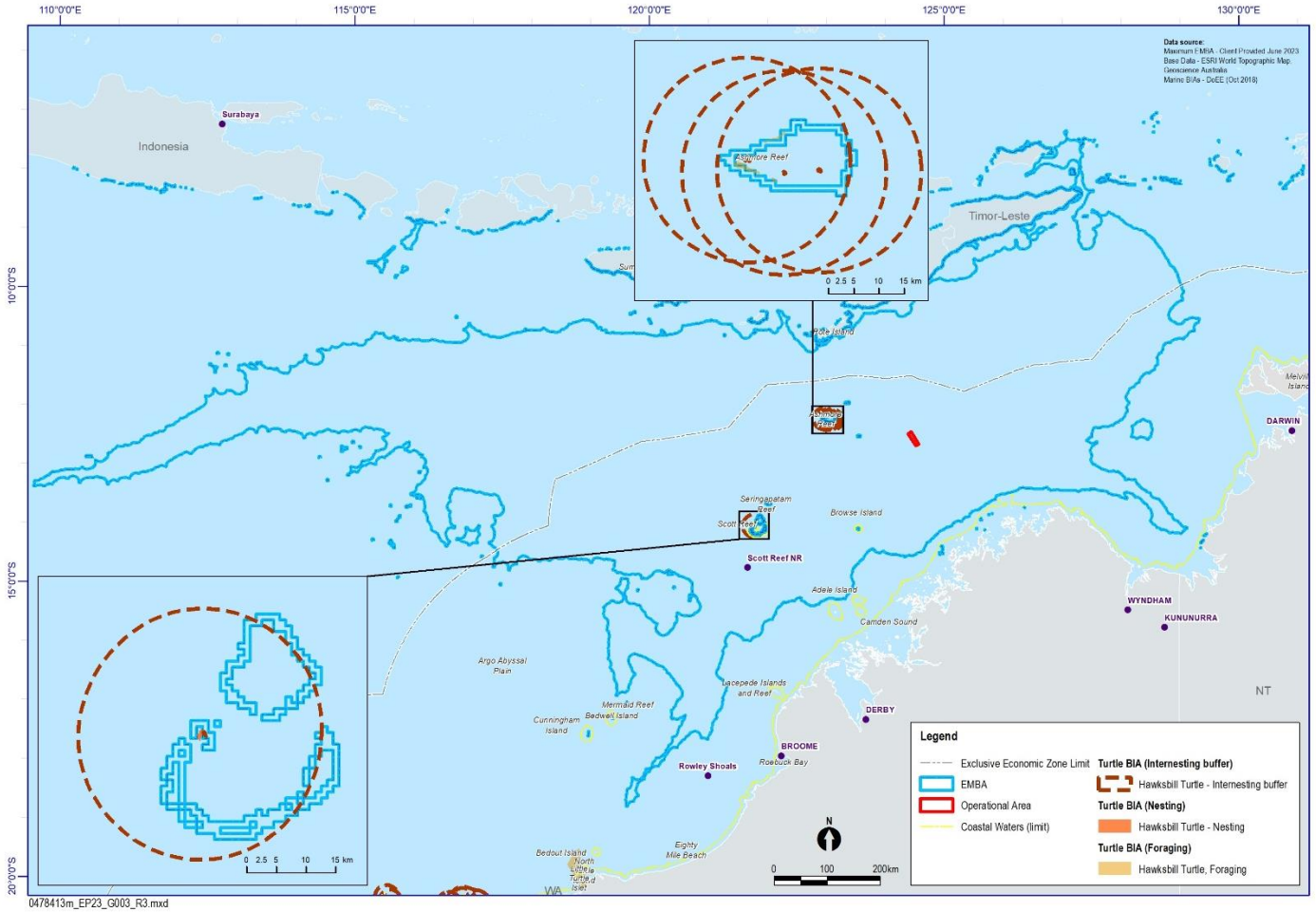

Figure 5-6: BIAs for hawksbill turtles

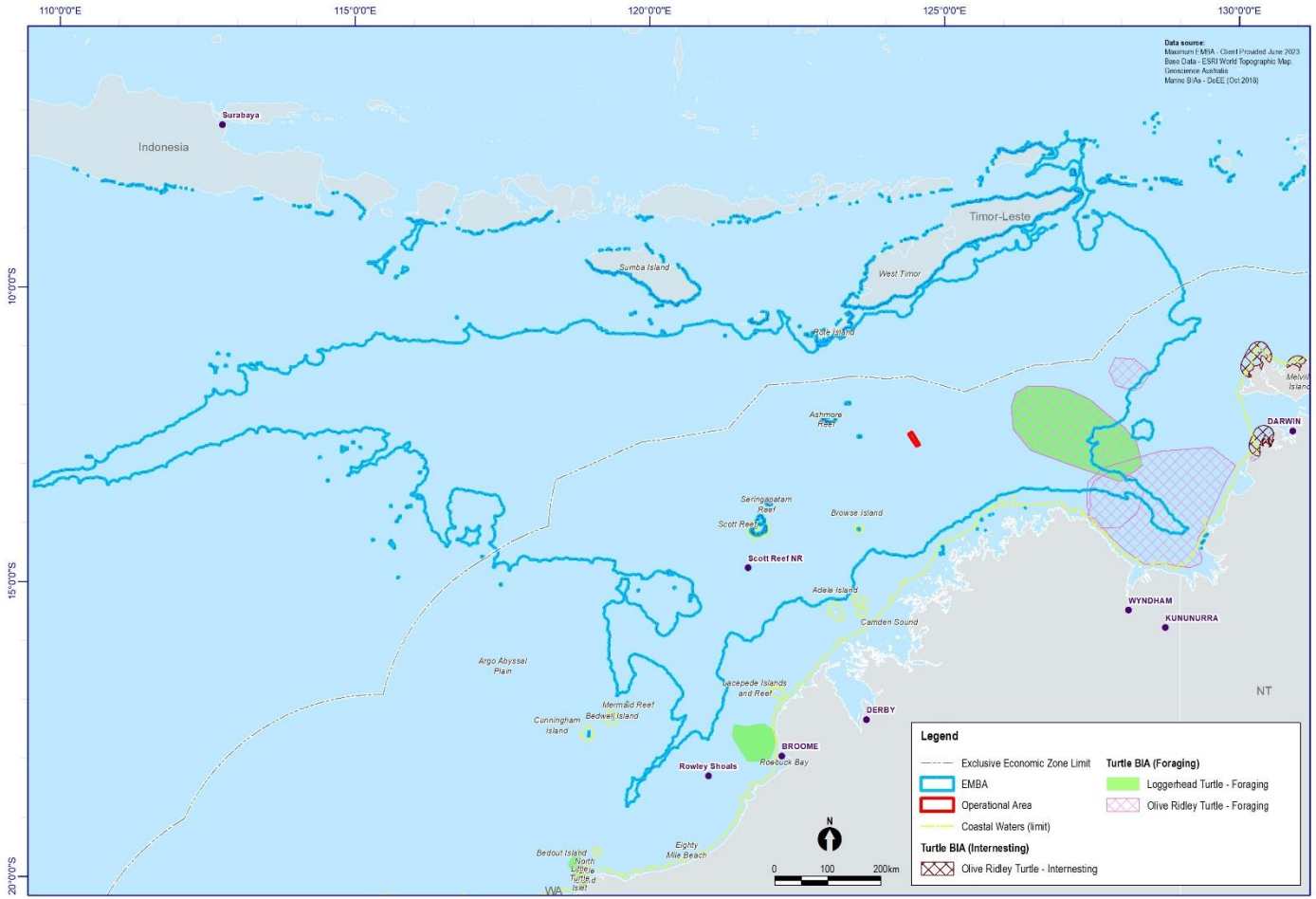

Figure 5-7: BIAs for loggerhead and olive ridley turtles

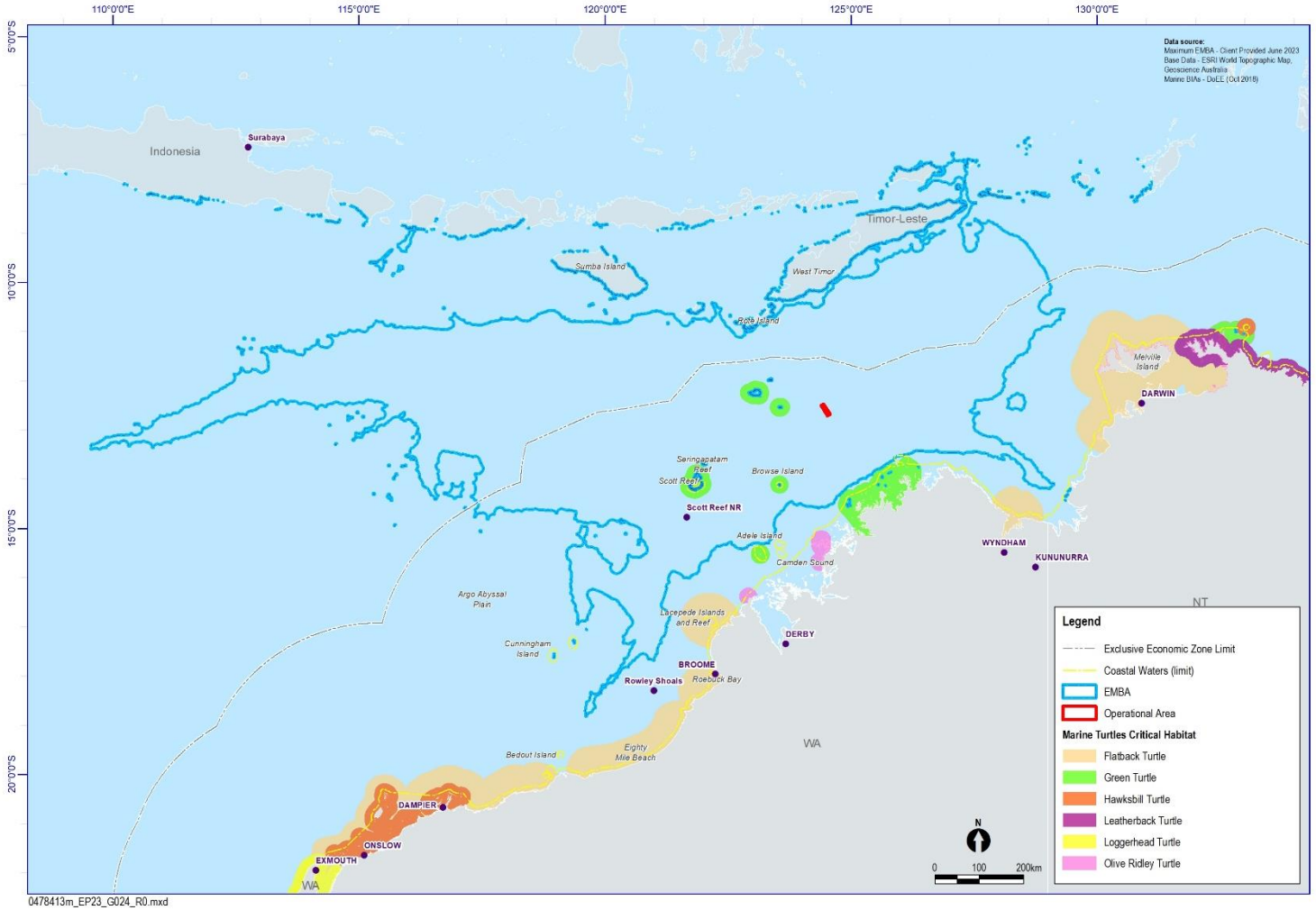

Figure 5-8: Habitat critical for the survival of marine turtles

5.4.3 Marine Mammals

The Operational Area PMST report (Appendix C) identified a total of eight threatened and/or migratory of which:

- Three are threatened and migratory
- Five are migratory only.
- The Operational area does not intersects with any BIAs for marine mammals.

The EMBA PMST report (Appendix C) identified a total of eleven threatened and/or migratory of which:

- Three are threatened and migratory
- Eight are migratory only.

The EMBA intersects with the BIAs for pygmy blue whale, humpback whale, dugong, Australian snubfin dolphin, and the Indo-pacific humpback dolphin (Figure 5-9 to Figure 5-12). A summary of marine mammals is provided in Table 5-5 and further described in Existing Environment (Appendix C).

Table 5-5: Marine mammal EPBC listed species

Common name (Scientific name)	EPBC Act status[4]	Type of presence		BIA within Operational Area	Management		
		Operational Area	EMBA		Conservation advice	Recovery Plan	Threat Abatement Plan
Blue whale (*Balaenoptera musculus*) Including Pygmy Blue Whale	E,M	Species or species habitat likely to occur within area	Migration route known to occur within area	**No**	No	Conservation management plan for the blue whale: A recovery plan under the EPBC Act 1999 2015–2025 (Commonwealth of Australia 2015a)	Marine debris
Sei Whale (*Balaenoptera borealis*)	V, M	Species or species habitat likely to occur within area	Foraging, feeding or related behaviour likely to occur within area	**No**	Conservation advice *Balaenoptera borealis* sei whale (Threatened Species Scientific Committee 2015b)	Ceased in 2015	Marine debris
Fin Whale (*Baleenoptera physalus*)	V, M	Species or species habitat likely to occur within area	Foraging, feeding or related behaviour likely to occur within area	**No**	Conservation advice *Balaenoptera physalus* fin whale (Threatened Species Scientific Committee 2015c)	Ceased 2015	Marine debris
Bryde's Whale (*Balaenoptera edeni*)	M	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area	No	No	No	Marine debris
Humpback Whale (*Megaptera novaeangliae*)	M	Species or species habitat likely to occur within area	Breeding known to occur within area	No	Ceased	Ceased 2015	Marine debris

[4] CE = Critically Endangered; E = Endangered; V = Vulnerable; M = Migratory

Common name (Scientific name)	EPBC Act status[4]	Type of presence		BIA within Operational Area	Management		
		Operational Area	EMBA		Conservation advice	Recovery Plan	Threat Abatement Plan
Orca, Killer Whale (*Orcinus orca*)	M	Species or species habitat may occur within area	Species or species habitat may occur within area	No	No	No	Marine debris
Sperm Whale (*Physeter macrocephalus*)	M	Species or species habitat may occur within area	Species or species habitat may occur within area	No	No	No	No
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) (*Tursiops aduncus*)	M	Species or species habitat may occur within area	Species or species habitat known to occur within area	No	No	No	No
Dugong (*Dugong dugon*)	M	N/A	Breeding known to occur within area	No	No	No	Marine debris
Australian Snubfin dolphin (*Orcaella heinsohni*)	M	N/A	Breeding known to occur within area	No	No	No	No
Australian Humpback Dolphin (*Sousa sahulensis*)	M	N/A	Breeding known to occur within area	No	No	No	No

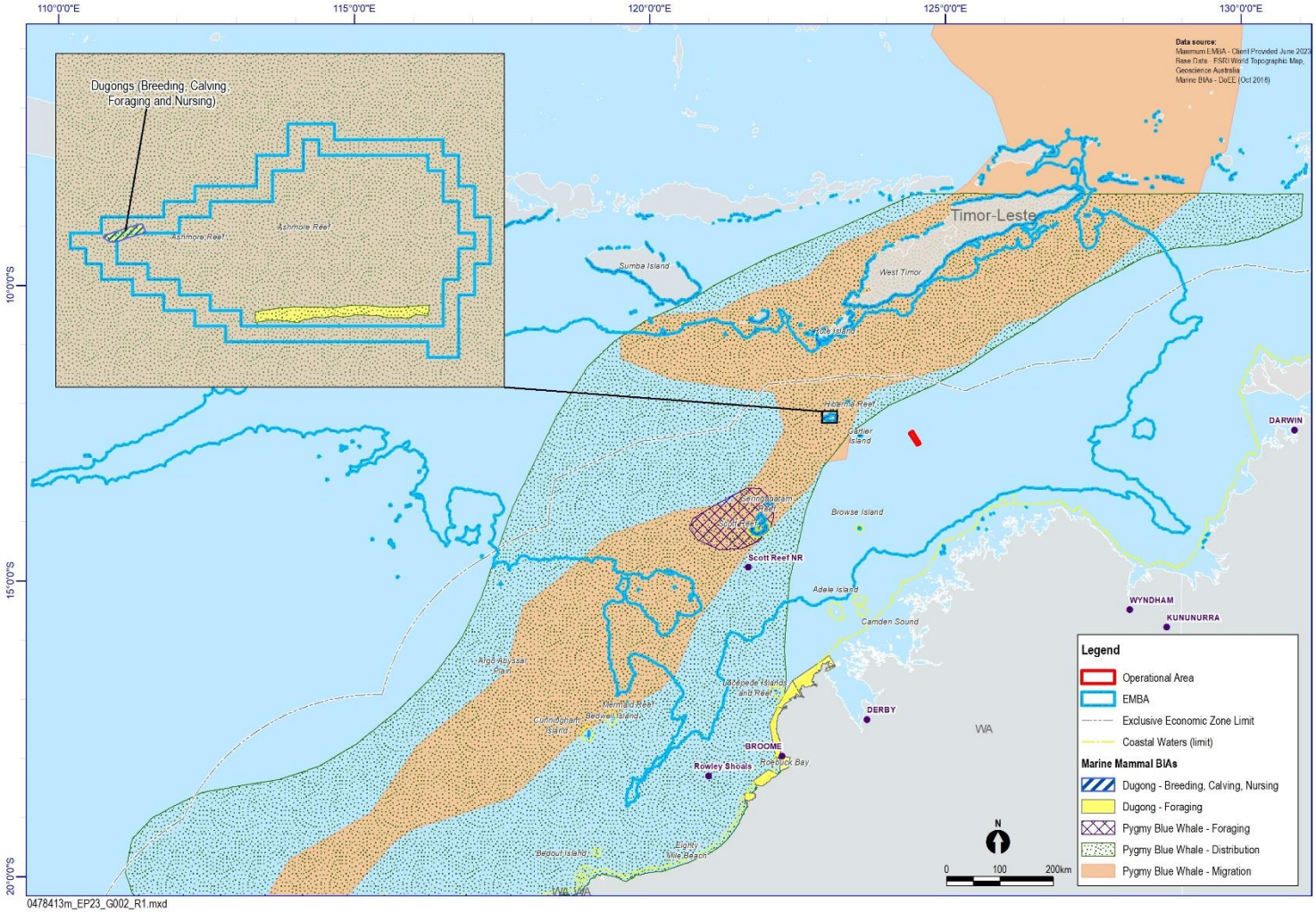

Figure 5-9: BIAs for pygmy whales and dugongs

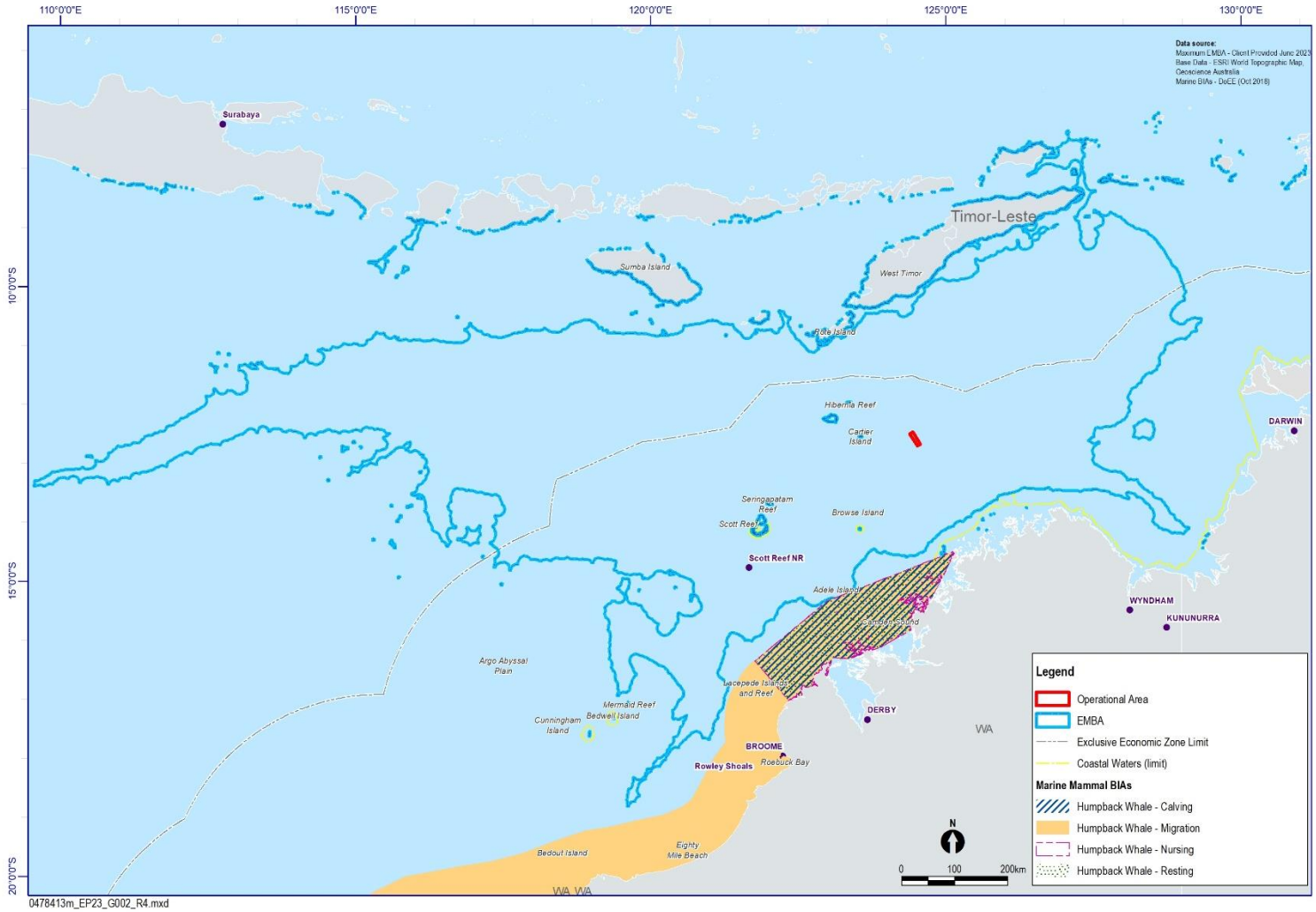

Figure 5-10: BIAs for humpback whales

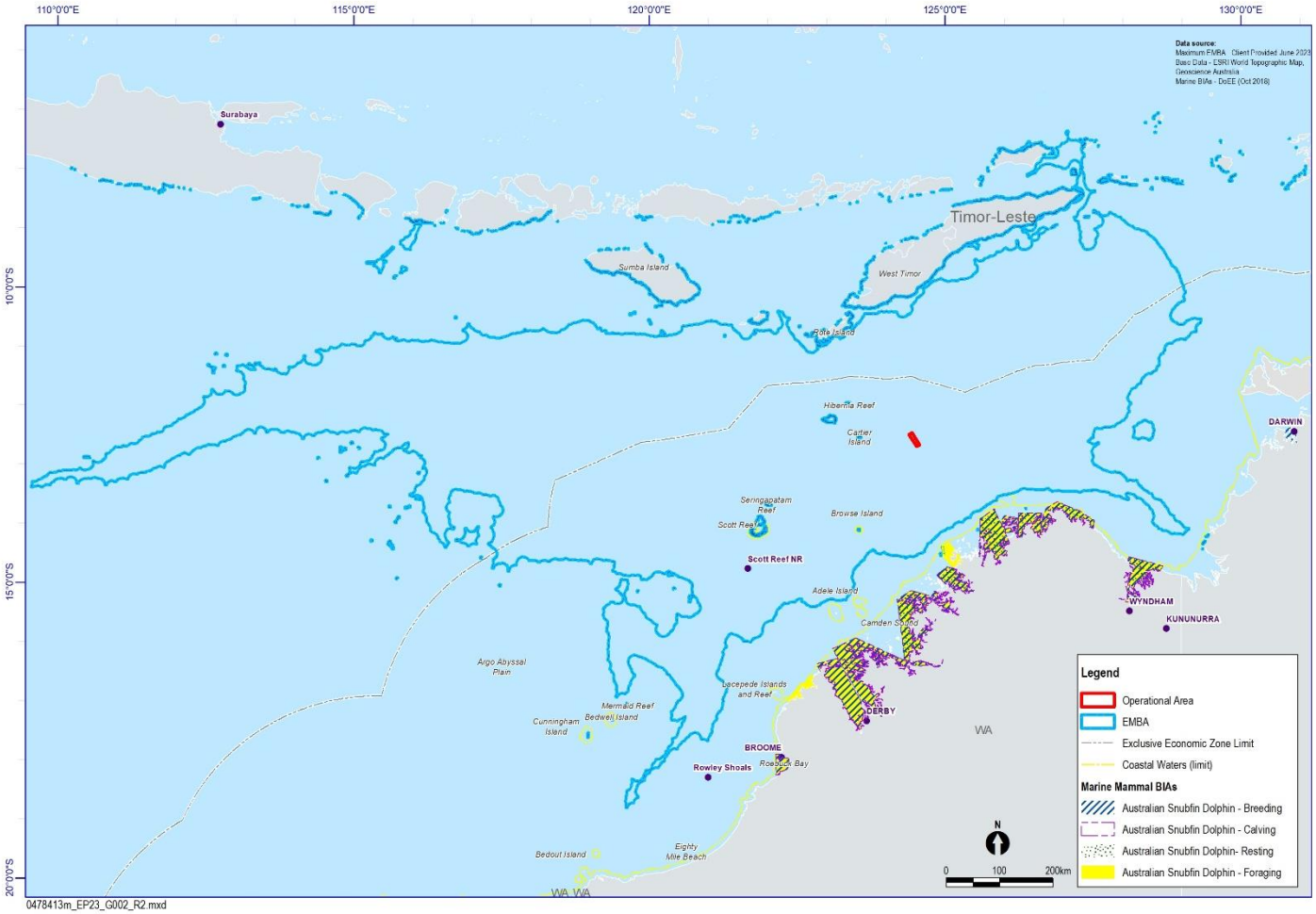

Figure 5-11: BIAs for Australian snubfin dolphins

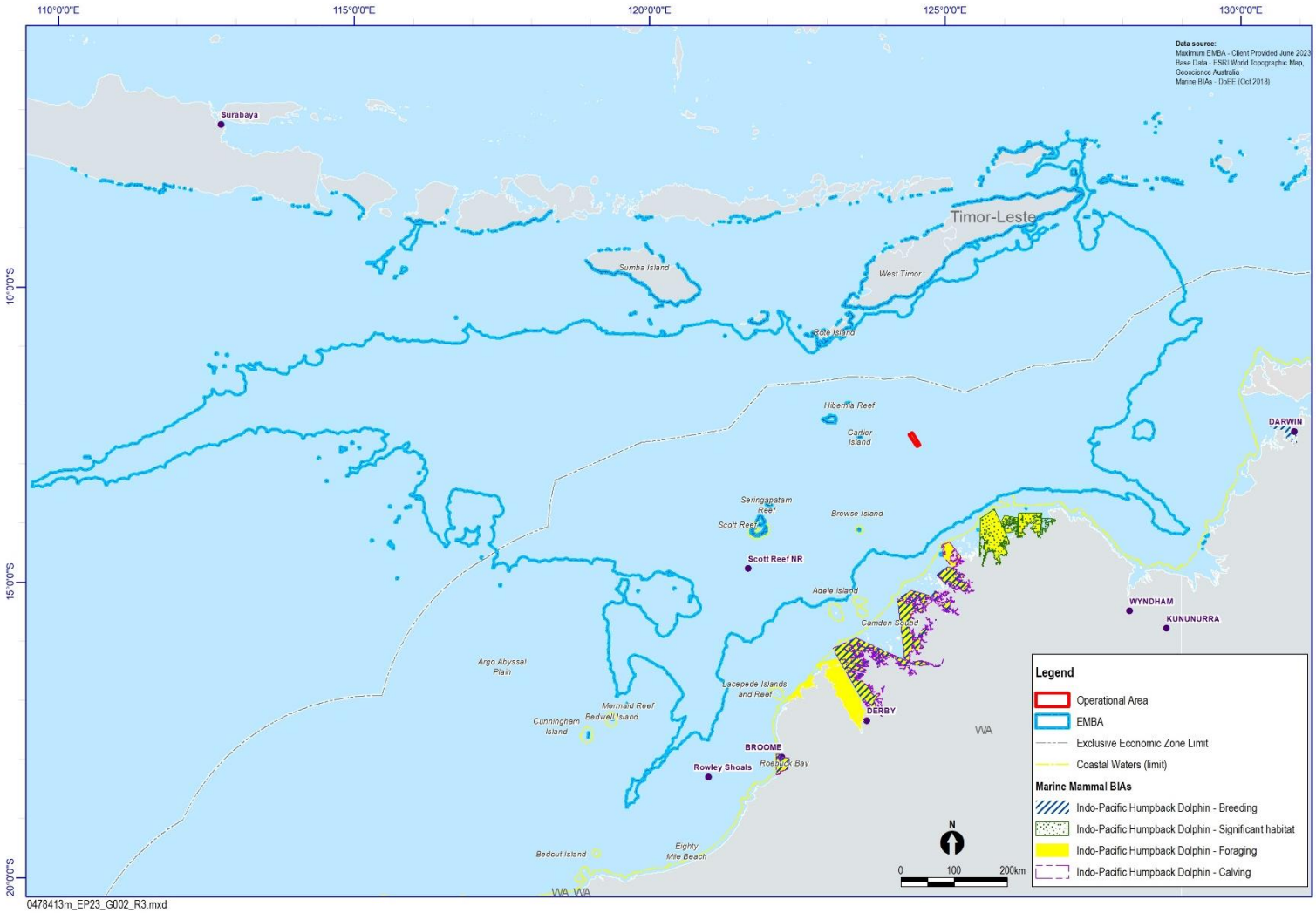

Figure 5-12: BIAs for Indo-Pacific humpback dolphins

5.4.4 Avifauna

The Operational Area PMST report (Appendix C) identified a total of thirteen threatened and/or migratory of which:

- Three threatened and migratory
- Two threatened only
- Eight migratory only.

The Operational area does not intersects with any BIAs for avifauna.

The EMBA PMST report (Appendix C) identified a total of forty seven threatened and/or migratory of which:

- Five are threatened and migratory
- Twenty eight are migratory only
- Fourteen are threatened only.

A summary of avifauna species is provided in Table 5-6 and further described in Existing Environment (Appendix C). Several species listed in the PMST Report could be considered as potentially terrestrial and unlikely to be affected by panned or unplanned activities.

No designated avifauna migration, resting, foraging or breeding BIAs are present within the Operational area (Figure 5-13). The EMBA overlaps breeding BIAs for wedge tailed shearwaters, lesser and greater frigatebirds, white tailed tropicbird, roseate, little and lesser crested terns and brown and red-footed boobies. It also overlaps a resting BIA for Little Terns (Figure 5-13). The nearest breeding/roosting site to the Operational Area is Cartier Island approximately 80 km away. However, the FPSO and WHP attract a number of foraging and breeding listed migratory species in large numbers. This is described further in Appendix C.

Table 5-6: Avifauna EPBC listed species

Common Name (Scientific Name)	EPBC Act Status[5]	Type of presence		BIA within Operational Area	Management		
		Operational Area	EMBA		Conservation advice	Recovery Plan	Threat Abatement Plan
Australian Lesser Noddy (*Anous tenuirostris melanops*)	V	Foraging, feeding or related behaviour likely to occur within area	Breeding known to occur within area	No	Conservation advice *Anous tenuirostris melanops* Australian lesser noddy (Threatened Species Scientific Committee 2015e)	No	Reduce the impacts of exotic rodents
Red Knot (*Calidris canutus*)	V, M	Species or species habitat may occur within area	Species or species habitat known to occur within area	No	Conservation advice *Calidris canutus* red knot (DCCEEW 2024b)	No	No
Curlew Sandpiper (*Calidris ferruginea*)	CE, M	Species or species habitat may occur within area	Species or species habitat known to occur within area	No	Conservation advice *Calidris ferruginea* curlew sandpiper (Threatened Species Scientific Committee 2015f)	No	No
Eastern Curlew (*Numenius madagascariensis*)	CE, M	Species or species habitat may occur within area	Species or species habitat known to occur within area	No	Conservation advice *Numenius madagascariensis* eastern curlew (Threatened Species Scientific Committee 2015g)	No	No
Abbott's Booby (*Papasula abbotti*)	E	Species or species habitat may occur within area	Species or species habitat known to occur within area	No	Conservation advice *Papasula abbotti* Abbott's booby (Threatened Species Scientific Committee 2015h)	No	No

[5] CE = Critically Endangered; E = Endangered; V = Vulnerable; M = Migratory

Common Name (Scientific Name)	EPBC Act Status[5]	Type of presence		BIA within Operational Area	Management		
		Operational Area	EMBA		Conservation advice	Recovery Plan	Threat Abatement Plan
Common Sandpiper (*Actitis hypoleucos*)	M	Species or species habitat may occur within area	Species or species habitat known to occur within area	No	Wildlife Conservation Plan for Seabirds (Commonwealth of Australia 2020)	No	No
Common/brown Noddy (*Anous stolidus*)	M	Species or species habitat may occur within area	Breeding known to occur within area	No	Wildlife Conservation Plan for Seabirds (Commonwealth of Australia 2020)	No	No
Sharp-tailed Sandpiper (*Calidris acuminata*)	V, M	Species or species habitat may occur within area	Species or species habitat known to occur within area	No	*Conservation* Advice for *Calidris acuminata* (sharp-tailed sandpiper) (DCCEEW 2024a)	No	No
Pectoral Sandpiper (*Calidris melanotos*)	M	Species or species habitat may occur within area	Species or species habitat may occur within area	No	Wildlife Conservation Plan for Seabirds (Commonwealth of Australia 2020)	No	No
Streaked Shearwater (*Calonectris leucomelas*)	M	Species or species habitat may occur within area	Species or species habitat known to occur within area	No	Wildlife Conservation Plan for Seabirds (Commonwealth of Australia 2020)	No	No
Lesser Frigatebird (*Fregata ariel*)	M	Species or species habitat likely to occur within area	Breeding known to occur within area	No	Wildlife Conservation Plan for Seabirds (Commonwealth of Australia 2020)	No	No
Great Frigatebird (*Fregata minor*)	M	Species or species habitat may occur within area	Breeding known to occur within area	No	Wildlife Conservation Plan for Seabirds (Commonwealth of Australia 2020)	No	No

Common Name (Scientific Name)	EPBC Act Status[5]	Type of presence		BIA within Operational Area	Management		
		Operational Area	EMBA		Conservation advice	Recovery Plan	Threat Abatement Plan
White- tailed tropicbird (*Phaethon lepturus*)	M	Species or species habitat likely to occur within area	Breeding known to occur within area	No	Wildlife Conservation Plan for Seabirds (Commonwealth of Australia 2020)	No	No
Christmas Island Goshawk (*Accipiter hiogaster natalis*)	E	N/A	Species or species habitat known to occur within area	No	Conservation advice *Accipiter hiogaster natalis* Christmas Island *Goshawk* (Threatened Species Scientific Committee 2016b)	*National Recovery Plan for Christmas Island Goshawk* Accipiter fasciatus natali (Hill 2004a)	Reduce the impacts of exotic rodents Predation by feral cats
Christmas Island Emerald Dove (*Chalcophaps indica natalis*)	E	N/A	Species or species habitat known to occur within area	No	Conservation advice *Chalcophaps indica natalis* Christmas Island emerald dove (Threatened Species Scientific Committee 2016b)	No	Reduce the impacts of exotic rodents
Greater Sand Plover, Large Sand Plover (*Charadrius leschenaultii*)	V, M	N/A	Species or species habitat known to occur within area	No	Conservation Advice *Charadrius leschenaultii* Greater sand plover (Threatened Species Scientific Committee 2016c)	No	No
Red Goshawk (*Erythrotriorchis radiatus*)	E	N/A	Species or species habitat likely to occur within area	No	Conservation Advice for *Erythrotriorchis radiatus* (red goshawk) (DCCEEW 2023)	National recovery plan for the red goshawk *Erythrotriorchis radiatus* (DERM 2012)	No

Common Name (Scientific Name)	EPBC Act Status[5]	Type of presence		BIA within Operational Area	Management		
		Operational Area	EMBA		Conservation advice	Recovery Plan	Threat Abatement Plan
Gouldian Finch (*Erythrura gouldiae*)	E	N/A	Species or species habitat may occur within area	No	Conservation Advice *Erythrura gouldiae* Gouldian finch (Threatened Species Scientific Committee 2016d)	National Recovery Plan for the Gouldian Finch (*Erythrura gouldiae*) (O'Malley, C. 2006)	Reduce the impacts by five listed grasses Predation, habitat degradation, competition and disease transmission by feral pigs
Grey Falcon (*Falco hypoleucos*)	V	N/A	Species or species habitat may occur within area	No	Conservation Advice *Falco hypoleucos* Grey Falcon (Threatened Species Scientific Committee 2020a)	No	No
Crested Shrike-tit (northern) (*Falcunculus frontatus whitei*)	V	N/A	Species or species habitat likely to occur within area	No	Conservation Advice *Falcunculus frontatus whitei* crested shrike-tit (northern) (Threatened Species Scientific Committee 2016e)	No	Reduce the impacts by five listed grasses
Christmas Island Frigatebird (*Fregata andrewsi*)	E, M	N/A	Breeding known to occur within area	No	Conservation Advice for the Christmas Island Frigatebird – *Fregata andrewsi* (Threatened Species Scientific Committee 2020b)	National recovery plan for the Christmas Island Frigatebird (*Fregata andrewsi*) (Hill and Dunn 2004)	Predation by feral cats Reduce the impacts of exotic rodents

Common Name (Scientific Name)	EPBC Act Status[5]	Type of presence		BIA within Operational Area	Management		
		Operational Area	EMBA		Conservation advice	Recovery Plan	Threat Abatement Plan
Western Alaskan Bar-tailed Godwit (*Limosa lapponica baueri*)	E	N/A	Species or species habitat may occur within area	No	Conservation Advice *Limosa lapponica baueri* Bar-tailed godwit (western Alaskan) (DCCEEW 2024d)	No	No
Northern Siberian Bar-tailed Godwit (*Limosa lapponica menzbieri*)	E	N/A	Species or species habitat known to occur within area	No	Conservation Advice *Limosa lapponica menzbieri* Bar-tailed godwit (northern Siberian) (DCCEEW 2024e)	No	No
Christmas Island Hawk-Owl, (*Ninox natalis*)	V	N/A	Species or species habitat known to occur within area	No	Conservation Advice *Ninox natalis* Christmas Island hawk-owl (Threatened Species Scientific Committee 2016h)	National recovery plan for the Christmas Island Hawk-Owl *Ninox natalis* (Hill 2004b)	Predation by feral cats Reduce impacts of exotic rodents
Christmas Island White-tailed Tropicbird, (*Phaethon lepturus fulvus*)	E	N/A	Species or species habitat known to occur within area	No	Conservation Advice *Phaethon lepturus fulvus* white-tailed tropicbird (Christmas Island) (DoE 2014f)	No	Predation by feral cats
Australian Painted Snipe (Rostratula australis)	E	N/A	Species or species habitat may occur within area	No	Conservation Advice for *Rostratula australis* Australian painted snipe (DSEWPaC 2013)	National Recovery Plan for the Australian Painted Snipe (*Rostratula australis*) (DCCEEW 2022)	No

Common Name (Scientific Name)	EPBC Act Status[5]	Type of presence		BIA within Operational Area	Management		
		Operational Area	EMBA		Conservation advice	Recovery Plan	Threat Abatement Plan
Christmas Island Thrush (*Turdus poliocephalus erythropleurus)*	E	N/A	Species or species habitat likely to occur within area	No	Approved Conservation Advice for *Turdus poliocephalus erythropleurus* (Christmas Island thrush) (DoE 2014g)	No	Reduce the impacts of exotic rodents
Masked Owl (northern) (*Tyto novaehollandiae kimberli)*	V	N/A	Species or species habitat likely to occur within area	No	Conservation Advice *Tyto novaehollandiae kimberli* masked owl (northern) (Threatened Species Scientific Committee 2015i)	No	Reduce the impacts of five listed grasses
Oriental Reed-Warbler (*Acrocephalus orientalis*)	M	N/A	Species or species habitat known to occur within area	No	No	No	No
Fork-tailed Swift (*Apus pacificus*)	M	N/A	Species or species habitat likely to occur within area	No	No	No	Predation by feral cats
Wedge-tailed Shearwater (*Ardenna pacifica*)	M	N/A	Breeding known to occur within area	No	No	No	Impacts of marine debris Incidental catch (or bycatch) of seabirds
Red-rumped Swallow (*Cecropis daurica*)	M	N/A	Species or species habitat known to occur within area	No	No	No	No
Oriental Plover (*Charadrius veredus*)	M	N/A	Species or species habitat may occur within area	No	No	No	No

Common Name (Scientific Name)	EPBC Act Status[5]	Type of presence		BIA within Operational Area	Management		
		Operational Area	EMBA		Conservation advice	Recovery Plan	Threat Abatement Plan
Oriental Cuckoo (*Cuculus optatus*)	M	N/A	Species or species habitat known to occur within area	No	No	No	No
Oriental Pratincole (*Glareola maldivarum*)	M	N/A	Species or species habitat may occur within area	No	No	No	No
Barn Swallow (*Hirundo rustica*)	M	N/A	Species or species habitat known to occur within area	No	No	No	No
Caspian Tern (*Hydroprogne caspia)*	M	N/A	Breeding known to occur within area	No	No	No	No
Asian Dowitcher (*Limnodromus semipalmatus*)	V, M	N/A	Species or species habitat known to occur within area	No	Conservation Advice *Limnodromus semipalmatus* (Asian dowitcher) (DCCEEW 2024c)	No	No
Bar-tailed Godwit (*Limosa lapponica*)	M	N/A	Species or species habitat known to occur within area	No	No	No	No
Grey Wagtail (*Motacilla cinerea*)	M	N/A	Species or species habitat known to occur within area	No	No	No	No
Yellow Wagtail (Motacilla flava)	M	N/A	Species or species habitat known to occur within area	No	No	No	No
Bridled Tern (*Onychoprion anaethetus*)	M	N/A	Breeding known to occur within area	No	No	No	No

Common Name (Scientific Name)	EPBC Act Status[5]	Type of presence		BIA within Operational Area	Management		
		Operational Area	EMBA		Conservation advice	Recovery Plan	Threat Abatement Plan
Osprey (*Pandion haliaetus*)	M	N/A	Breeding known to occur within area	No	No	No	No
Red-tailed Tropicbird (*Phaethon rubricauda*)	M	N/A	Breeding known to occur within area	No	No	No	Predation by feral cats
Roseate Tern (*Sterna dougallii*)	M	N/A	Breeding known to occur within area	No	No	No	No
Little Tern (*Sternula albifrons*)	M	N/A	Breeding known to occur within area	No	No	No	No
Masked Booby (*Sula dactylatra*)	M	N/A	Breeding known to occur within area	No	No	No	No
Brown Booby (*Sula leucogaster*)	M	N/A	Breeding known to occur within area	No	No	No	Impacts of marine debris
Red-footed Booby (*Sula sula*)	M	N/A	Breeding known to occur within area	No	No	No	No
Greater Crested Tern (*Thalasseus bergii*)	M	N/A	Breeding known to occur within area	No	No	No	No

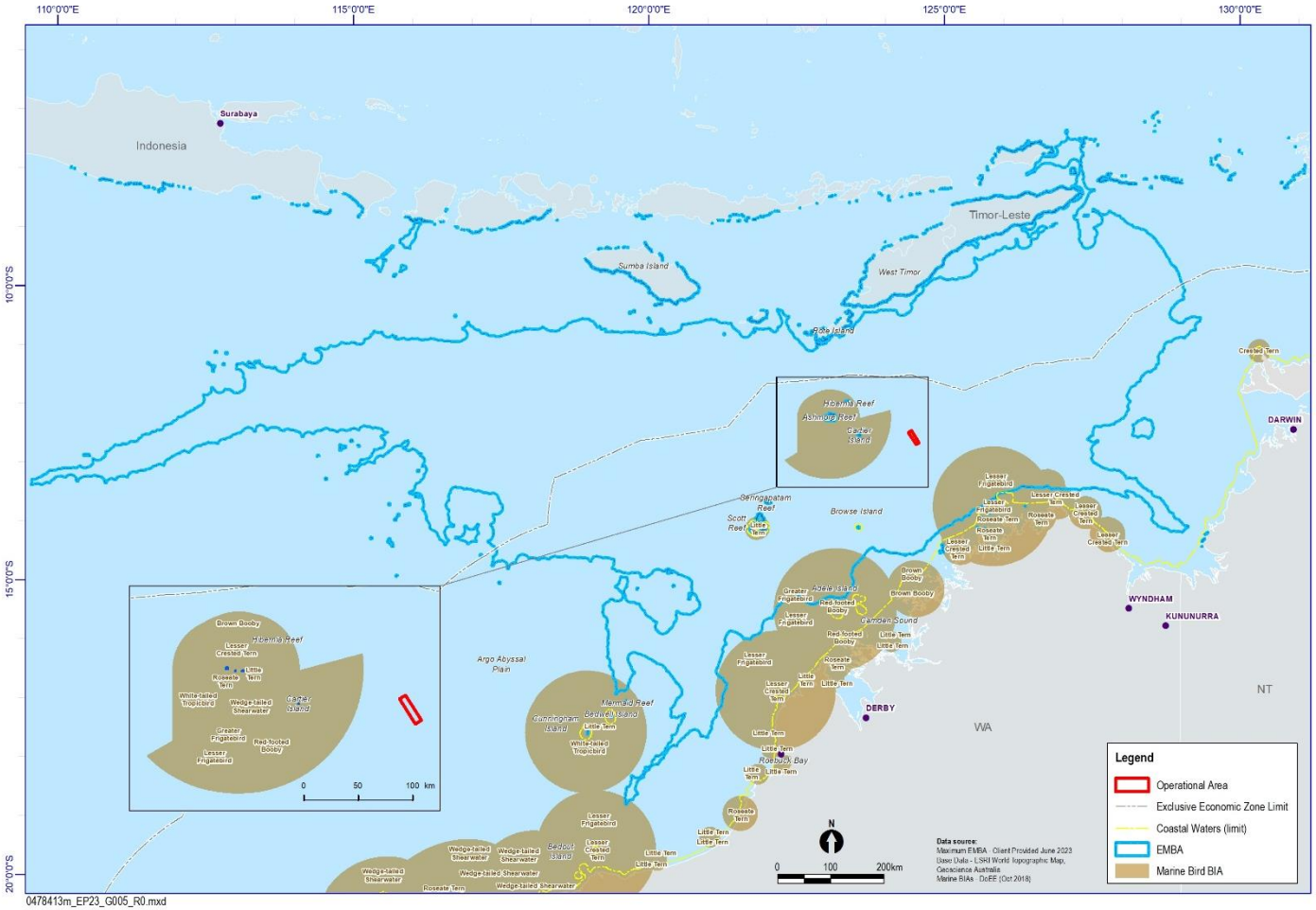

Figure 5-13: BIAs for avifauna

5.5 Protected and Significant areas

There are a number of Matters Protected Under the EPBC Act that lie within the operational area and EMBA; these are listed in Table 5-7 and shown in Figure 5-14. These areas are further described in Appendix C.

There are no World Heritage properties that overlap the operational area or the EMBA.

There are three Ramsar sites within the EMBA; Ashmore Reef National Nature Reserve, and Hosnies Spring and The Dales located on Christmas Island.

One National Heritage Properties was identified from the EPBC Protected Matters database as occurring within the EMBA; The West Kimberley Area (Natural National Heritage). The value of this site has been described in *Existing Environment* (Appendix C).

Key ecological features (KEFs) are elements of the Commonwealth marine environment that are considered to be of regional importance for either a region's biodiversity or its ecosystem function and integrity. The Operational Area does not include any KEFs. The nearest of the spatially defined KEFs is the Carbonate bank and terrace system of the Sahul Shelf at approximately 46 km from the Operational Area at its closest point. The EMBA overlaps a number of KEFs. Table 5-7 lists the KEFs in the EMBA. Further detail on these KEFs are described in Appendix C.

The EMBA overlaps a number of AMPs and State Marine Parks and Marine Management Areas (Figure 5-14, Table 5-7). The values and sensitivities of these are detailed in the *Existing Environment,* Appendix C.

Table 5-7: Protected and significant areas located in the Operational Area and EMBA

Value/Sensitivity Name	Presence in Operational Area	Presence in EMBA	Status, Zone or IUCN Classification
World Heritage			N/a
	✗	✗	
National Heritage			
The West Kimberley	✗	✓	
Wetlands of International Importance			
Ashmore Reef National Nature Reserve	✗	✓	
Hosnies Spring	✗	✓	
The Dales	✗	✓	
Commonwealth Marine Area			
EEZ and Territorial Sea	✓	✓	
Extended Continental	✗	✓	
Commonwealth Heritage Places			
Ashmore Reef National Nature Reserve	✗	✓	
Christmas Island Natural Areas	✗	✓	
Mermaid Reef – Rowley Shoals	✗	✓	
Scott Reef and Surrounds – Commonwealth Area	✗	✓	

Value/Sensitivity Name	Presence in Operational Area	Presence in EMBA	Status, Zone or IUCN Classification
Key Ecological Features			
Ancient coastline at 125 m depth contour	✗	✓	
Ashmore Reef and Cartier Island and surrounding Commonwealth waters	✗	✓	
Canyons linking the Argo Abyssal Plain with the Scott Plateau	✗	✓	
Carbonate bank and terrace system of the Sahul Shelf	✗	✓	
Carbonate bank and terrace system of the Van Diemen Rise	✗	✓	
Continental Slope Demersal Fish Communities	✗	✓	
Pinnacles of the Bonaparte Basin	✗	✓	
Pinnacles of the Bonaparte Basin	✗	✓	
Seringapatam Reef and Commonwealth waters in the Scott Reef Complex	✗	✓	
Australian Marine Parks			**Status, Zone or IUCN Classification**
Argo-Rowley Terrace	✗	✓	National Park Zone (IUCN II)
	✗	✓	Special Purpose Zone (Trawl) (IUCN VI)
	✗	✓	Multiple Use Zone (IUCN VI)
	✗	✓	Multiple Use Zone (IUCN VI)
Ashmore Reef	✗	✓	Recreational Use Zone (IUCN IV)
	✗	✓	Sanctuary Zone (IUCN Ia)
Cartier Island	✗	✓	Sanctuary Zone (IUCN Ia)
Christmas Island	✗	✓	Habitat Protection Zone (IUCN IV)
Joseph Bonaparte Gulf	✗	✓	Special Purpose Zone (IUCN VI)
	✗	✓	Multiple Use Zone (IUCN VI)
Kimberley	✗	✓	Multiple Use Zone (IUCN VI)
	✗	✓	National Park Zone (IUCN II)
Oceanic Shoals	✗	✓	Special Purpose Zone (Trawl) (IUCN VI)
	✗	✓	Multiple Use Zone (IUCN VI)
	✗	✓	Multiple Use Zone (IUCN VI)
State and Territory Reserves			
North Kimberley	✗	✓	Marine Park
Scott Reef	✗	✓	Nature Reserve

Value/Sensitivity Name	Presence in Operational Area	Presence in EMBA	Status, Zone or IUCN Classification
Rowley Shoals	✗	✓	Marine Park

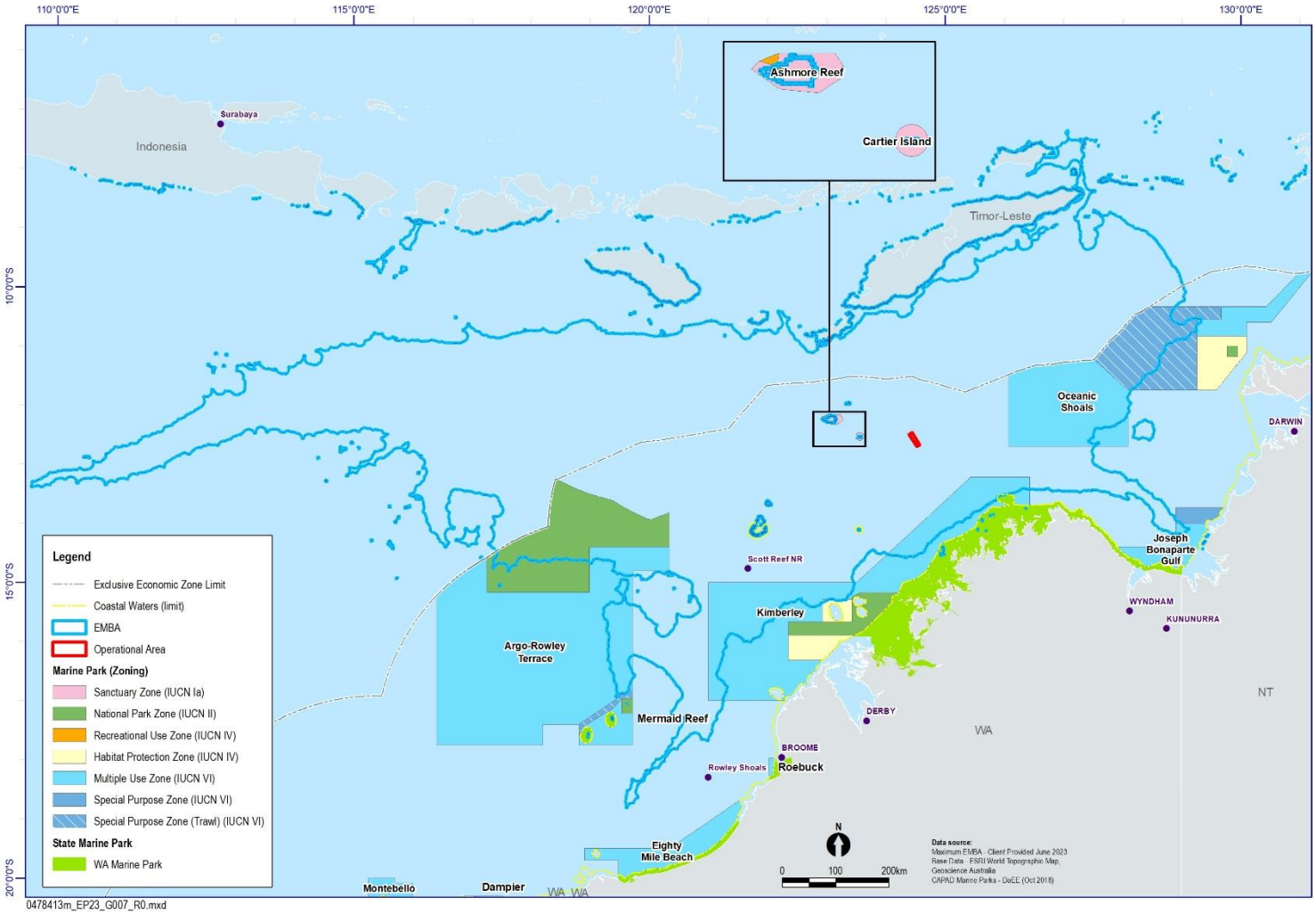

Figure 5-14: Australian and State Marine Parks within the EMBA

5.6 Social Values

The socioeconomic environmental values and sensitivities (cultural and socio-economic) within the Operational Area, which also include all relevant matters of National Environmental Significance (NES) protected under the EPBC Act, are summarised in Table 5-8. Further details of these and what is located within the EMBA are provided in Appendix C.

Table 5-8: Socio-economic values and sensitivities within the Operational Area

Value/ sensitivity	Description	Operational Area presence
World Heritage Properties	Sites accepted to the World Heritage listing are only inscribed if considered to represent the best examples of the world's cultural and natural heritage. There are no World Heritage properties that intersect with the Operational Area.	None
Shipping	The Operational Area is not located on a major international shipping route. Heavy vessels following the charted Osborn Passage will pass through both permits to the north of the Montara Venture FPSO. Support vessels servicing the nearby infrastructure do pass through the Operational Area (AMSA 2014)	✓
Commercial Fishing	The Northern Demersal Scalefish Fishery (Area 2) has low levels of fishing activity in the vicinity the Operational Area. The following fisheries are permitted, and it is feasible that they may operate in the Operational Area: • JA Northern Shark Fishery (WA) (No activity has been recorded in this fishery since 2009) • Mackerel Area 1 (WA) • Western Tuna and Billfish Fishery	Minimal effort
Recreational Fishing	Remoteness of Operational area limits recreational fishing usage.	Limited
Traditional Fishing	Traditional Australian indigenous fishing activities are generally concentrated within 3 nm of the NT/WA coastline (DPIF 2015). Indonesian/Timor Leste indigenous fishing is concentrated in the vicinity of Sahul Bank, Echo Shoals and MoU Box and boats may pass through the Operational area to reach these fishing grounds.	Transit
Defence	No declared defence areas in Operational area.	–
Oil and Gas	Various petroleum exploration and production activities have been undertaken within the Timor Sea, including some within close proximity of the Operational area.	Adjacent
Tourism	No regular tourism activity occurs in the Operational area due to its remoteness.	–
Cultural Heritage	No known sites of shipwrecks or Aboriginal Heritage significance within the Operational area.	–

Through ongoing engagement with traditional owners, Jadestone continues to seek further information on relevant cultural values for this activity.

Jadestone understands that traditional owners have deep connections to, and concerns about the protection of Sea Country, also referred to as Saltwater Country, and is viewed the same way they view their onshore Country, without separation.

Sea Country is an important part of traditional owners culture and whilst the many coastal and island First Nations groups around Australia have different languages and their own unique belief systems, ceremonies and relationships with Country, they all regard the estuaries, beaches, bays and marine areas, or Sea Country, as essential parts of their traditional estates.

Traditional owners who reside along the coasts or on islands believe that Sea Country contains the evidence of creation stories, about animals, plants and people, as well as the creation of landscape features such as islands and reefs. Coastal and island communities held cultural responsibilities to ensure Sea Country is cared for and Sea Country was managed very carefully, and they are playing an increasingly important role in the management of their Sea Country, through formalised roles and programs that work alongside various State and Commonwealth government structures.

Values and sensitivities regarding Sea Country may include different features such as:

- Historic and contemporary cultural harvesting of marine fauna and flora
- Sea and landscape features that hold dreamtime and creation stories, such as offshore islands
- Different marine and avian species that hold deep connections to lore and represent spiritual emblems.

Prescribed body corporates in the vicinity of the EMBA that may have connection to sea country are provided in Figure 5-15.

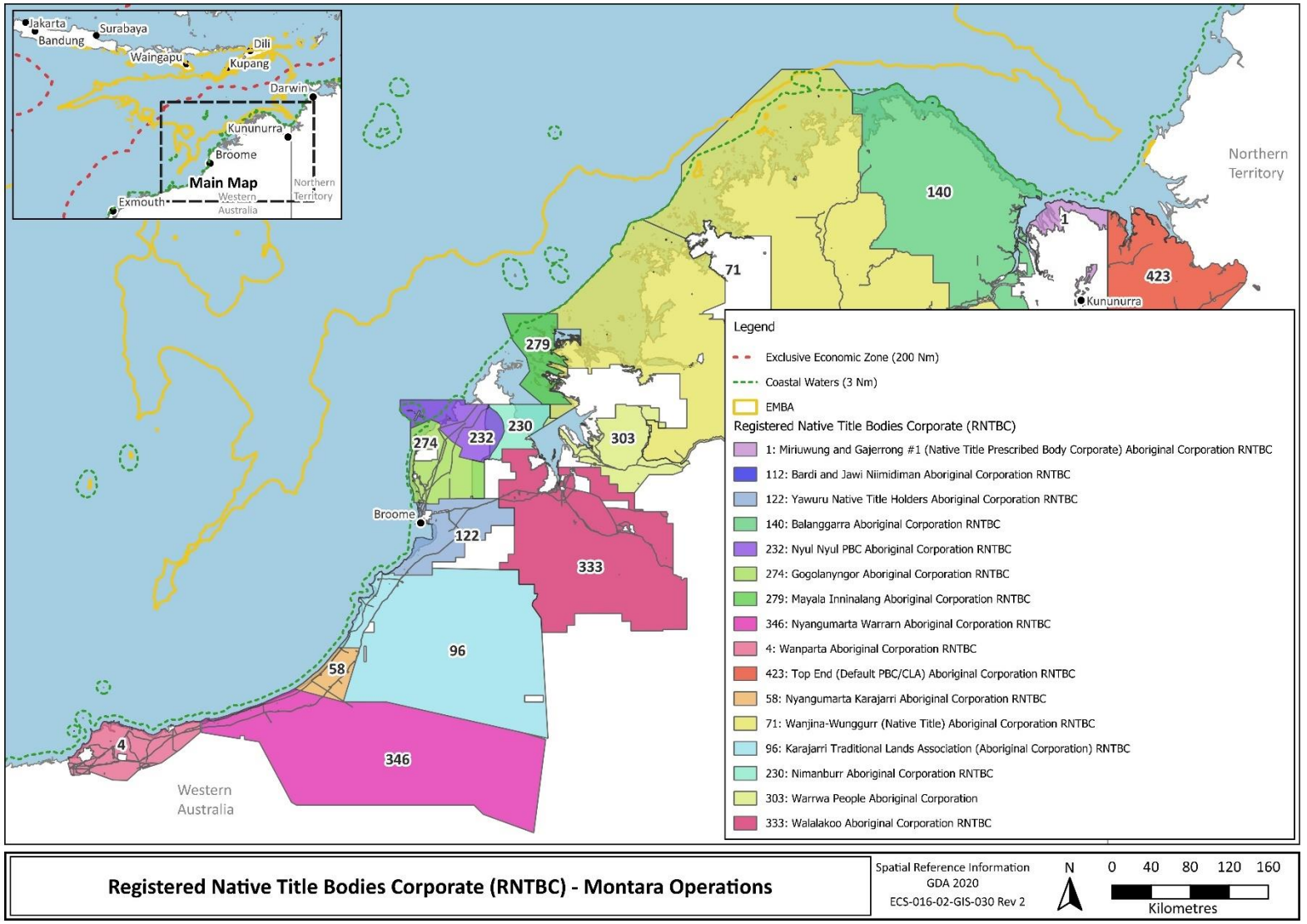

Figure 5-15 Prescribed Body Corporates within the Montara EMBA vicinity

6. CONSULTATION OF RELEVANT PERSONS

6.1 Consultation background

Jadestone Energy (Jadestone) has a Stakeholder Management Plan (SMP) (JS-70-PR-I-00034) that guides its stakeholder consultation responsibilities and activities for its Australian operations – Montara and Stag.

The SMP has been written to assist in consistently engaging with Relevant Persons across its approvals. This provides a strategic and systemic approach to Relevant Person consultation, aiming to foster an environment where ongoing, open dialogue and two-way communication is undertaken to build positive relationships. This approach is in line with the International Association for Public Participation (IAP2) spectrum.

The title and operatorship of the Montara Operations was transferred to Jadestone from the previous operator, PTTEP Australasia (Ashmore Cartier) Pty Ltd, on 6 August 2019. Montara is an existing facility that has been in operation since 1998. The previous operator had a Consultation Strategy that incorporated providing regular updates of Montara related activities to Relevant Persons. As a result, the identified Relevant Persons have been informed and consulted on a regular basis for some time.

Relevant Persons were originally identified and classified according to criteria outlined in a consultation plan based on their interest / activity / function for the operations activity in 2016. A review of the originally identified and classified Relevant Persons was undertaken in June 2020 when the operations activity changed from having a floating storage and offtake vessel in the field, to a third-party tanker. Relevant Persons were again identified as part of previous drilling scopes and as part of this EP revision.

The SMP has been further updated for the purpose of complying with the decision of the Federal Court in *Tipakalippa v National Offshore Petroleum Safety and Environment Management Authority (No 2)* (the Decision), the outcome of the subsequent unsuccessful appeal outcome against the Decision (the Appeal), and the NOPSEMA Guideline *Consultation in the course of preparing an environment plan* (N-04750-GL2086 A900179) (the Guideline) published on 12 May 2023.

6.2 Consultation purpose

Consultation is required to ensure compliance with the applicable Regulations and with the Decision, the Appeal and the Guideline. Jadestone has now completed its consultation for this EP, including with recently identified additional Relevant Persons.

Jadestone also undertakes consultation for the purpose of compliance with its internal policies and procedures, and in recognition of its broader corporate responsibilities.

6.3 Applicable regulations

The OPGGS(E) Regulations 2023 stipulate several requirements in relation to consultation associated with an EP (Table 6-1).

Table 6-1: Applicable regulatory requirements

Legislation	Summary	Requirement
OPGGS Act S 280	No interference	A person carrying out activities in an offshore permit area should not interfere with other users of the offshore area to a greater extent than is necessary for the reasonable exercise of the rights and performance of the duties of the first person.
OPGGS(E)R 21	Environment description	Description of the environment (2) The environment plan must: (a) describe the existing environment that may be affected by the activity; and

Legislation	Summary	Requirement
		(b) include details of the particular relevant values and sensitivities (if any) of that environment. Note: The definition of environment in regulation 5 includes its social, economic and cultural features. (3) Without limiting paragraph (2)(b), particular relevant values and sensitivities may include any of the following: (a) the world heritage values of a declared World Heritage property within the meaning of the EPBC Act; (b) the national heritage values of a National Heritage place within the meaning of that Act; (c) the ecological character of a declared Ramsar wetland within the meaning of that Act; (d) the presence of a listed threatened species or listed threatened ecological community within the meaning of that Act; (e) the presence of a listed migratory species within the meaning of that Act; (f) any values and sensitivities that exist in, or in relation to, part or all of: (i) a Commonwealth marine area within the meaning of that Act; or (ii) Commonwealth land within the meaning of that Act.
OPGGS(E)R 25(1)	Relevant Persons	In the course of preparing an environment plan, or a revision of an environment plan, a titleholder must consult each of the following (a Relevant Person): (a) each Department or agency of the Commonwealth to which the activities to be carried out under the environment plan, or the revision of the environment plan, may be relevant; (b) each Department or agency of a State or the Northern Territory to which the activities to be carried out under the environment plan, or the revision of the environment plan, may be relevant; (c) the Department of the responsible State Minister, or the responsible Northern Territory Minister; (d) a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the environment plan, or the revision of the environment plan; (e) any other person or organisation that the titleholder considers relevant.
OPGGS(E)R 25(2)	Sufficient information	For the purpose of the consultation, the titleholder must give each Relevant Person sufficient information to allow the Relevant Person to make an informed assessment of the possible consequences of the activity on the functions, interests or activities of the Relevant Person.
OPGGS(E)R 25(3)	Reasonable period	The titleholder must allow a Relevant Person a reasonable period for consultation.
OPGGS(E)R 25(4)	Sensitive information	The titleholder must tell each Relevant Person the titleholder consults that: (a) the Relevant Person may request that particular information the Relevant Person provides in the consultation not be published; and

Legislation	Summary	Requirement
		(b) information subject to such a request is not to be published under this Part.
OPGGS(E)R 26(8)	Sensitive information	All sensitive information (if any) in an environment plan, and the full text of any response by a Relevant Person to consultation under regulation 25 in the course of preparation of the plan, must be contained in the sensitive information part of the plan and not anywhere else in the plan.
OPGGS(E)R 22(9)	Ongoing consultation	The implementation strategy of the environment plan must provide for appropriate consultation with: (a) Relevant authorities of the Commonwealth, a State or Territory; and (b) Other relevant interested persons or organisations.
OPGGS(E)R24(b)	Consultation report	The environment plan must contain: A report on all consultations between the titleholder and any relevant person, for regulation 25, that contains: (i) A summary of each response made by a Relevant Person; (ii) An assessment of the merits of any objections or claim about the adverse impact of each activity to which the environment plan relates; (iii) A statement of the titleholder's response, or proposed response, if any, to each objection or claim; and (iv) A copy of the full text of any response by a Relevant Person.
OPGGS(E)R34	Measures adopted from consultations are appropriate	For regulation 34, the criteria for acceptance of an environment plan are that the plan: (g) demonstrates that: (i) the titleholder has carried out the consultations required by Section 25; and (ii) the measures (if any) that the titleholder has adopted, or proposes to adopt, because of the consultations are appropriate.
OPGGS(E)R52 (1) 52 (7)	Storage of records:	• Records must be stored in a way that makes retrieval reasonably practicable during the following periods: • a) when the environment plan is in force for the activity • b) for 5 years beginning on the day that the environment plan ceases to be in force for the activity; • Records generated through preparation of the environment plan, demonstrating environmental performance, incidents, emissions and discharges, calibration and maintenance, and in relation to the implementation strategy arrangements must be kept.

6.4 Applicable case law and guidance

The OPGGS(E)Regulations are the legal basis for undertaking offshore operations in the oil and gas industry. These regulations are administered by NOPSEMA who are responsible for ensuring compliance.

A judicial review of a NOPSEMA decision to accept the Barossa Development Drilling and Completions Environment Plan was undertaken by Justice Bromberg in mid-2022. Justice Bromberg found in favour of the Applicant (Dennis Murphy Tipakalippa), that NOPSEMA could not be reasonably satisfied that all

Relevant Persons were consulted as is required under regulations 10A[6] and Division 2.2A and set aside the accepted EP (*Tipakalippa v National Offshore Petroleum Safety and Environmental Management Authority (No. 2) [2022] FCA 1121* (the Decision)).

Santos NA Barossa Pty Ltd appealed the Decision made by Justice Bromberg, with a hearing held on 15 and 16 November 2022. Justices Kenny, Mortimer, and Lee JJ appeal decision, in favour of the Applicant, was given on 2 December 2022, confirming the Santos EP should be set aside (*Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (the Appeal)). The appeal decision represents the law regarding requirements for consultation in accordance with Environment Regulations.

Based on these findings NOPSEMA developed a Guideline (*Consultation in the course of preparing an environment plan Doc No N-04750-GL2086 A900179*) (the Guideline) to assist Titleholders to comply with their obligations to consult Relevant Persons.

That guidance being:

- The representative bodies (Land Councils and Prescribed Body Corporates (PBCs) remain Relevant Persons.
- Traditional Owners are also Relevant Persons, i.e. they need to be actively consulted, and therefore through that process need to be given every encouragement to respond, formally through their representative spokesperson/s, i.e. Clan leaders, generally identified as Elders, and the Directors of Prescribed Body Corporates (PBCs).
- The residents of the Indigenous lands are to be consulted, although those residents are not required to be individually identified and consulted directly. Rather providing reasonable means for those residents to become aware of a project, and its associated potential impacts and remedies, with a reasonable means to respond to the titleholder and a reasonable time to respond, is likely to be sufficient.

Consequently, Jadestone has sought to:

- Identify relevant Traditional Owners, and their Elders, and the Directors of PBCs that can be regarded as their representative spokesperson/s.
- Ensure every reasonable effort is made to provide the project information in a way that is clear and able to be understood by Traditional Owners, and that Traditional Owners (through their representative spokesperson/s) provide a response to Jadestone, even if considered 'no response'.
- Decide on the reasonable means by which residents are to become aware of a project, similarly in a way that is clear and able to be understood by residents, and their response opportunities.

Jadestone has taken particular care in gaining an understanding of the construct of Traditional Owners and their representatives. That is, Native Title holders associated with a PBC (generally an Aboriginal Corporation) as a result of a Native Title Determination, or the Aboriginal peoples in the Northern Territory who are residents on Freehold Aboriginal Land, held by a Land Trust and administered by a Land Council.

Jadestone notes also that the Decision and the Appeal has implications for consultation with the fishing industry, i.e. how individual fishery licence holders are to be regarded.

The Decision and subsequent Appeal outcome must be applied as law and has been thoroughly considered and applied in the development of this EP, including but not limited to the following (extracts from the Decision, emphasis added):

> 138 *For the exercise of identifying the universe of Relevant Persons falling within the description in reg 11A(1)(d), the titleholder will have to be faithful to that description. The titleholder will*

[6] The OPGGS(E) Regulations that are referred to in this section are written as is in the *Santos NA Barossa Pty Ltd v Tipakalippa 2022 decision* and 2023 NOPSEMA guideline. These refer to the 2009 OPGGS(E) regulations and these do not correlate to appropriate regulation numbers in the new 2023 OPGGS(E) Regulations.

need to properly understand its proposed activity and at least broadly understand the extent of the physical environment that may be affected, the values and sensitivities in that physical environment and thus the functions, interests or activities of each person or each category of persons that may intersect with that physical environment.

139 *The exercise of identifying the universe of Relevant Persons within the description in reg 11A(1)(d) is capable of being described person by person, category by category, or alternatively, by the titleholder describing the methodology utilised in terms which, as stated above, demonstrate an understanding of the considerations that have to be and which were taken into account in order for the exercise to be faithfully consistent with the description of relevant person in reg 11A(1)(d) (a methodological demonstration). A critical aspect of such a demonstration would be the identification of the totality of the sensitivities and values considered relevant and how each was evaluated to discover their possible intersection with the functions, interests and activities of particular people or organisations.*

140 *If that were done in an environment plan, NOPSEMA could then properly arrive at the foundational conclusion for the remainder of its tasks in relation to the consultation criteria, that the environment plan demonstrates that the universe of Relevant Persons was identified by the titleholder consistently with the description of a relevant person provided by reg 11A(1).*

6.5 Relevant Persons Identification Methodology

6.5.1 Relevant Persons Methodology Workflow

To ensure that all Relevant Persons for Montara are identified (self-identifying Relevant Persons excepted) Jadestone has now carried out, with regard to the Regulations and the applicable case law summarised in Section 6.4, a methodological approach to identification (Figure 6-1). This builds on the historical consultation already undertaken.

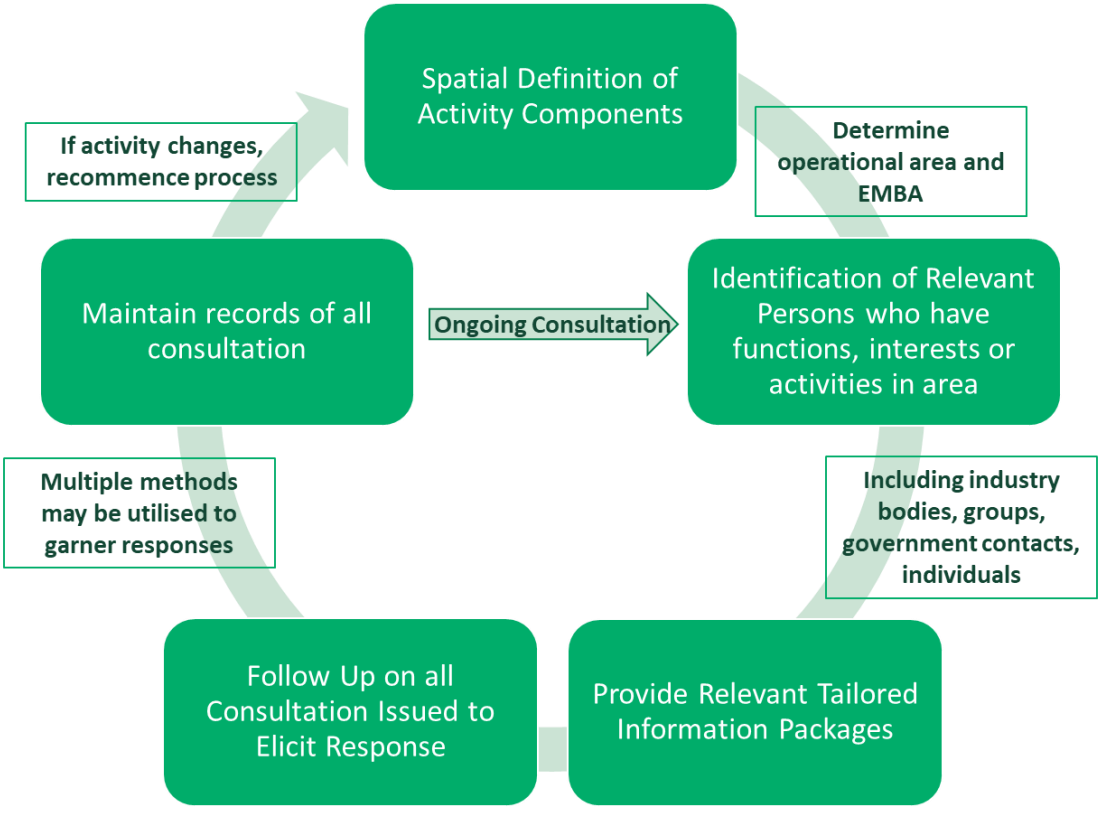

Figure 6-1: Relevant person identification and consultation process

6.5.2 Approach to identifying organisations and people

Organisations and people within each Relevant Person category of the OPGGS(E)R were identified using the following steps and resources:

- Jadestone's stakeholder database for Montara contains a list of organisations and people identified since 1998. Following the methodology applied to identify Relevant Person categories the database was reviewed for the purpose of identifying Relevant Persons who had been contacted previously.
- Jadestone has also contracted consultants with experience in stakeholder consultation in the Australian petroleum industry, including the identification of Relevant Persons, consultation, and negotiation with Indigenous peoples in the remote coastal areas of Northern Australia, to prepare a complete list of Relevant Persons.
- Figures developed with the EMBA showing overlap with fisheries, coastlines, protected areas, and other areas of interest.

A Review of stakeholders contacted previously included identifying:

- All Relevant Persons previously contacted through various campaigns undertaken at Montara (for historic drilling and operations EPs).
- Any Relevant Persons who had identified themselves through previous notifications.
- Any Relevant Persons who self-identified in historic consultation or were identified by other stakeholders previously consulted.

As a result of the above, and as a consequence of the Decision, the Appeal and the Guideline, Jadestone identified gaps in Relevant Persons that had not been consulted on the Montara project previously, being a number of individual commercial fishery licence holders in the Commonwealth, Western Australian and Northern Territory fisheries that intersect with the EMBA, the Traditional Owners with coastline, near shore and sea country interests within or immediately adjacent to the EMBA, and cruise and charter operators operating in waters off of the coast of northwest Western Australia and the Northern Territory. New consultation packages were prepared to reflect the new legislative requirements to issue to all Relevant Persons identified for the activity.

Due to the revision of the Montara EMBA in June 2023, consideration was given to the potential for some organisations and people to no longer have functions, interests, or activities within or adjacent to the revised EMBA, and therefore may not be affected by the activity.

Jadestone wrote to those organisations and people who remain Relevant Persons to advise them of the revised Montara EMBA and that Jadestone considers they remain Relevant Persons.

Jadestone also wrote to those organisations and people no longer considered Relevant Persons to advise that as a result of the revised Montara EMBA they are no longer considered Relevant Persons, but should they consider they remain Relevant Persons they may self-identify as such.

In addition, due to the revised Montara EMBA, Jadestone considers the eight Traditional Owner Clans on the Tiwi Islands are no longer Relevant Persons.

The correspondence issued to the above persons included a copy of both the original and revised EMBA to ensure that sufficient information was provided to enable stakeholders to make an informed decision on their continued relevance to the activity.

Relevant Persons within the EMBA were identified by understanding if they had functions, activities or interests that overlapped the EMBA. The exception to this were eNGOs, there are further described in Section 6.5.6.

6.5.3 Initial approach to identifying commercial fishers

Jadestone has access to lists of all the individual commercial fishery licence holders in the Commonwealth, Northern Territory and Western Australian fisheries that intersect with the EMBA and for the purpose of consultation has undertaken the approach described below:

- Once the EMBA had been defined, the fisheries that overlap were identified as shown in Appendix C.
- Jadestone contacted the Commonwealth Government's AFMA, the Northern Territory's DITT and the Western Australia's DPIRD seeking the names and addresses (noting that telephone numbers or email addresses are not provided through this process) of the commercial fisheries licence holders within the EMBA. That process was also supported by researching the individual fisheries. Such research identified that significant areas of each fishery zone were not fished. That research was able to identify those fisheries where no fishing activity occurred within or adjacent to the EMBA.
- Initially, all licence holders in the Commonwealth, Northern Territory and Western Australian commercial fisheries that overlapped or were adjacent to the EMBA were consulted. The number of individual licence holders was significant, with the designated areas of many of the fisheries being over large areas offshore of the Australian coast.
- Further analysis of the postal addresses of the individual licence holders suggests that many of those licence holders do not fish at any time within or adjacent to the EMBA; and Jadestone's initial consultation included a request that those individual licence holders that do fish within the EMBA indicate that in return correspondence.

6.5.3.1 Changed approach to identifying Western Australian Commercial Fisheries

In February 2023, the Western Australian Fishing Industry Council (WAFIC) posted on its website an advice to offshore petroleum titleholders that consultation with Western Australian commercial fishery licence holders is necessary only in the event of a significant unplanned event. In July 2023, NOPSEMA confirmed to Jadestone (through formal correspondence on the Stag Operations EP submission) that the advice from WAFIC was, if followed by offshore petroleum titleholders, and because all Western Australian commercial fishery licence holders are mandated members of and are represented by WAFIC sufficient to demonstrate consultation with Western Australian commercial fishery licence holders.

The advice on the WAFIC website states:

> *The Western Australian Fishing Industry Council (WAFIC) is the peak industry body representing commercial fishing, pearling and aquaculture enterprises, processors and exporters in Western Australia.*
>
> *WAFIC works to secure a responsible and sustainable industry that is confident of resource sustainability and security of access to a fair share of the resource; cost-effective fisheries management so that businesses can be operated in a safe, environmentally responsible and profitable way; and ensures investment in industry research and development is valued and promoted.*
>
> *In response to the appeal decision made by the Federal Court of Australia Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 (appeal decision) on 2 December 2022, WAFIC would like to communicate the preferred approach in undertaking consultation with commercial fishing licence holders that will only be affected by a significant unplanned event (emergency scenario).*
>
> *To manage consultation fatigue with the commercial fishing licence holders, WAFIC requests titleholders develop separate consultation strategies for significant unplanned events (for example oil spill) where titleholders can demonstrate the likelihood of such events occurring is extremely low.*

Consultation on unplanned events resulting in an emergency scenario should only be undertaken if an incident occurs.

Based on the advice from NOPSEMA and WAFIC in 2023, Jadestone did not intend to, except for a significant unplanned event (emergency scenario), consult further with Western Australian commercial fishery licence holders within or adjacent to the EMBA.

6.5.3.2 Fishing Effort within the EMBA

Due to the revision of the Montara EMBA in June 2023 consideration was also given to the potential for some commercial fishery licence holders to no longer have functions, interests, or activities within or adjacent to the revised EMBA.

Consideration was also given to records of recent and current fishing effort in a number of fisheries, and advice was sought from the Australian Southern Bluefin Tuna Industry Association (ASBTIA) about the level of fishing effort for Australian Southern Bluefin Tuna within or adjacent to the revised EMBA.

Research into catch and effort data for the Western Tuna and Billfish Fishery and the Western Skipjack Tuna Fishery confirmed that no fishing effort has occurred in the EMBA in recent years and as such the commercial licence holders for those fisheries were also removed from the follow up mail out.

As a consequence, in addition to the removal of the Western Australian commercial fishery licence holders as Relevant Persons, the commercial fishery licence holders in the Northern Territory's Coastal Net, Barramundi, Mollusc, Pearl Oyster, Mud Crab, Bait Net fisheries, and the commercial fishery licence holders in the Commonwealth's Australian Southern Bluefin Tuna, Western Skipjack, Western Tuna and Billfish, and Western Deepwater Trawl fisheries have also been removed as Relevant Persons.

Tuna Australia have requested Jadestone consult with them instead of individual commercial tuna fishery licence holders. However, as a result of the Decision, consultation with Relevant Persons by consulting just with the representative bodies of those Relevant Persons was no longer deemed to be adequate consultation with those Relevant Persons.

It is for that reason that Jadestone have elected to continue to consult directly with the commercial fishery licence holders.

Jadestone continues to regard organisations such as Tuna Australia as Relevant Persons in their own right, but do not regard consultation with those organisations as a legal means of also consulting with the individual commercial fishery licence holders as Relevant Persons; particularly as it appears not all commercial fishery licence holders are members of those organisations.

In consideration of the above Jadestone has continued its practice of, as necessary, consulting with individual commercial fishery licence holders, and in addition the peak (representative) bodies of those licence holders, as Relevant Persons in their own right.

6.5.4 Approach to identifying Traditional Owners

The Decision, the Appeal and the Guideline has led to a significant change to the approach now required for identifying and consulting with Traditional Owners. The past wide-spread practice of consulting only with the Land Councils, and not the Traditional Owners represented by PBCs, is no longer appropriate. If Traditional Owners are identified as Relevant Persons, consultation is required to be with the PBCs, and wherever possible face-to-face on country.

Given the Sea Country values and sensitivities (refer Section 5.6) Jadestone acknowledges that Traditional Owners will be Relevant Persons in relation to the proposed activities set out in this EP.

Nevertheless, legislative requirements mean working through Land Councils is the appropriate means by which the consultation with Traditional Owners is to be facilitated and aligns with cultural protocols.

Therefore, Jadestone sought the assistance of the Kimberley Land Council (KLC), the Northern Land Council (NLC) and the Tiwi Land Council (TLC), to obtain:

- details of the PBCs representing the Traditional Owners with coastline, near shore and sea country within the EMBA
- advice on the most appropriate and effective means of consulting directly with those PBCs.

The KLC referred Jadestone to KRED Enterprises as an organisation able to be engaged to assist in the identification of the PBCs along the Kimberley coast.

Jadestone engaged KRED Enterprises to provide the details of the Kimberley coast PBCs, enabling Jadestone to provide consultation presentations to the Directors of the PBC and the Elders associated with each PBC.

Jadestone has contacted all the PBCs along the coastline adjacent to the Montara EMBA and to date has consulted face-to-face with four of the PBCs. Jadestone has offered to present to another eight PBCs multiple times, one PBC has declined the offer. While Jadestone consider consultation to be complete based on sufficient information provided and a reasonable period to respond provided, Jadestone, if requested, remains available for presentations to those seven PBCs in the future. Table 6-2 provides a summary as of May 2024, showing consultation with PBCs is complete.

Table 6-2: Summary of PBC Engagement (May 2024)

PBC	Relevant PBC Info	Effort	Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
	Correct Detail confirmation		Meeting Held	Meeting Actions		Relevant Sections	25(2) Sufficient Information provided	25(3) Reasonable Period	Assessment	Actions
Balanggarra Aboriginal Corporation	Emails have not bounced back. Still awaiting PBC response.	Have not responded to initial introductory email on 11.08.23 or subsequent emails. Follow up emails sent on: 23.10.23 28.11.23 11.01.24 31.01.24 14.02.24 14.03.24 08.05.24.	No	N/A	North East Kimberly - northern boundary runs through sea country and encompasses several islands near the coast, including the Sir Graham Moore Islands, Adolphus Island and Reveley Island. There are strong traditions to collect and harvest saltwater fish and other sea-foods from the open sea and reefs. Mullet, silver bream, coral trout and stingrays are all caught along rocky coast or shallow water. Other seafoods collected includes oysters, cockle shells and Baler shells.	None required. EP assesses the potential impact on fish in general in the EP. No additional control measures required to manage potential impacts from planned events. OPEP includes for scientific monitoring of habitats and fauna in the event of a large spill. OPEP includes an EPS to inform PBC if spill trajectory modelling indicates a significant spill moving towards WA coastline.	11.08.2023 Initial email, with Invitation for Consultation document attached, seeking opportunity to make presentation to Directors. 14.03.24 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend.	First contact on 11.08.2023 Follow ups x 7. Deadline for response sent on 23.02.2024. Total time - 28 weeks from first contact to deadline.	**Consultation considered complete.** A reasonable period has been provided (Reg 25(3)). Information on cultural heritage has been requested. In lieu of receiving information from the PBC, JSE has undertaken research to inform themselves of any areas of significance. Offer to present to PBC Directors and Elders have been sent multiple times. Offer to attend community engagement sessions was provided ahead of the sessions. JSE have provided Invitation for Consultation document describing sufficient information (Reg 25(2)): ○ the operational area and EMBA ○ the potential impacts to the waters and coast adjacent to the PBC ○ Maps showing the operational area and EMBA ○ NOPSEMA guidance brochure ○ control measures and mitigation measures in place for the activity ○ Full EP available online at JSE website.	In the event of a change in the activity which could lead to a significant increase in risk or impact to receptors such as islands adjacent to the coastline, or to fish communities that may be food sources, provide: ○ updated details of the change to the PBC ○ offer a meeting to present and discuss the change. Remain available for presentation to PBC if requested. For a level 2 or 3 spill: ○ if oil spill trajectory modelling shows potential contact with the WA coastline, relevant PBCs will be notified within 24 hours of oil spill modelling trajectory confirmation (verbal or written). Every 6 months from EP acceptance, reach out to PBC contact to confirm: ○ Contact name ○ Contact details ○ JSE contact details ○ Who to inform in the event of a spill event heading towards the coastline. If unavailable reach out to KRED and relevant land council to confirm contact.

PBC	Relevant PBC Info	Effort	Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
	Correct Detail confirmation		Meeting Held	Meeting Actions		Relevant Sections	25(2) Sufficient Information provided	25(3) Reasonable Period	Assessment	Actions
Wanjina Wunggurr Aboriginal Corporation	Emails have not bounced back. Email received on 24.10.23 from KLC confirming information has been received and passed on to PBC.	Have not responded to initial introductory email on 11.08.23 or subsequent emails. Follow up emails sent on: 23.10.23 14.11.23 28.11.23 08.01.24 11.01.24 15.01.24 31.01.24 06.02.24 KLC emailed response indicating Directors meeting scheduled for March. 06.02.24 JSE responded to request one hour of the Directors time. 28.02.24 JSE follow up email requesting meeting date. 05.03.24 KLC emailed indicating Directors meeting, due to time constraints will now be in May. 05.03.24 Phone call placed and JSE left a voice message trying to organise a date for presentation. 5.03.24 Further follow up email to arrange presentation to Directors. 08.05.2024 Further follow up email.	No	N/A	Only one to overlap EMBA. Sea country and coast. Strong customary practices for collecting and harvesting fish and other seafoods from reefs and mangroves.	None required. EP assesses the potential impact on the marine environment in general in the EP. No additional control measures required to manage potential impacts from planned events. OPEP includes for scientific monitoring of fish, including fish as food sources (commercial) in the event of a large spill. OPEP includes EPS to inform PBC if spill trajectory modelling indicates a significant spill moving towards WA coastline.	11.08.2023 Initial email, with Invitation for Consultation document attached, seeking opportunity to make presentation to Directors. 14.03.24 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend.	First contact on 11.08.2023 Follow ups x >10.. Deadline for response sent on 23.02.2024. Total time – 28 weeks from first contact to deadline.	**Consultation considered complete.** A reasonable period has been provided (Reg 25(3)). Information on cultural heritage has been requested. In lieu of receiving information from the PBC, JSE has undertaken research to inform themselves of any areas of significance. Offers to present to PBC Directors and Elders have been sent multiple times. Offer to attend community sessions was provided ahead of the sessions. JSE have provided Information packages describing sufficient information (Reg 25(2)): ○ the operational area and EMBA ○ the potential impacts to the waters and coast adjacent to the PBC ○ Maps showing the operational area and EMBA ○ NOPSEMA guidance brochure ○ control measures and mitigation measures in place for the activity ○ Full EP available online at JSE website.	In the event of a change in the activity which could lead to a significant increase in risk or impact to receptors such as islands adjacent to the coastline, or to fish communities that may be food sources, provide: ○ updated details of the change to the PBC ○ offer a meeting to present and discuss the change. ○ Remain available for presentation to PBC if requested. For a level 2 or 3 spill: ○ if oil spill trajectory modelling shows potential contact with the WA coastline, relevant PBCs will be notified within 24 hours of oil spill modelling trajectory confirmation (verbal or written). Every 6 months from EP acceptance, reach out to contact to confirm: ○ Contact name ○ Contact details ○ JSE contact details ○ Who to inform in the event of a spill event heading towards the coastline. If unavailable reach out to KRED and relevant land council to confirm contact.

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Warrwa People Aboriginal Corporation	Emails have not bounced back. Email received on 14.08.23 confirming information has been received.	Responded to 11.08.2023 initial introductory email on 14.08.23, indicating will provide date and location for opportunity to present to Directors, but nothing further heard. Follow up emails sent on: 23.10.23 28.11.23 11.01.24 31.01.24 14.03.24 08.05.24.	No	N/A	Eastern shores of King Sound (166km from EMBA).	None required. No contact with King Sound. OPEP includes an EPS to inform PBC if spill trajectory modelling indicates a significant spill moving towards WA coastline.	11.08.2023 Initial email, with Invitation for Consultation document attached, seeking opportunity to make presentation to Directors. Information package attached. 14.03.24 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend.	First contact on 11.08.2023 Follow ups x 6. Deadline for response sent on 23.02.2024. Total time = 28 weeks from first contact to deadline.	**Consultation considered complete.** A reasonable period has been provided (Reg 25(3)). Information on cultural heritage has been requested. In lieu of receiving information from the PBC, JSE has undertaken research to inform themselves of any areas of significance. Offers to present to PBC Directors and Elders have been sent multiple times. Offers to attend community engagement sessions was provided ahead of the sessions. JSE have provided Information packages describing sufficient information (Reg 25(2)): ○ the operational area and EMBA ○ the potential impacts to the waters and coast adjacent to the PBC ○ Maps showing the operational area and EMBA ○ NOPSEMA guidance brochure ○ control measures and mitigation measures in place for the activity ○ Full EP available online at JSE website.	In the event of a change in the activity which could lead to a significant increase in risk or impact to eastern shores of King Sound, provide: ○ updated details of the change to the PBC ○ offer a meeting to present and discuss the change. ○ Remain available for presentation to PBC if requested. For a level 2 or 3 spill: ○ if oil spill trajectory modelling shows potential contact with the WA coastline, relevant PBCs will be notified within 24 hours of oil spill modelling trajectory confirmation (verbal or written). Every 6 months from EP acceptance, reach out to contact to confirm: ○ Contact name ○ Contact details ○ JSE contact details ○ Who to inform in the event of a spill event heading towards the coastline. If unavailable reach out to KRED and relevant land council to confirm contact.
Walalakoo Aboriginal Corporation	Emails have not bounced back. Email received on 14.08.23 confirming information has been received.	Responded to 11.08.23 initial introductory email on 14.08.23. 15.08.23 JSE emailed acknowledgement. 16.08.23 JSE received letter proposing joint Walalakoo, Bardi Jawi Niimidiman and Mayala Inninalang community presentations. 28.08.23 JSE responded, accepting proposed approach. Follow-up emails sent on: 23.10.23 28.11.23 12.01.24	Yes. Meeting held on 14.03.24 at Derby	Presentation meeting notes sent on 10.04.24. WAC to provide any further questions and feedback to JSE and confirm when like to meet JSE again. PBC still to advise the names of the	The Walalakoo has a cultural relationship with people from other communities along the coastline. Historically fished at the Brue Reef and it is culturally important. East and western shores of King Sound through the Fitzroy Valley to the Great Sandy Desert	None required. EP assesses the potential impact on the marine environment including fish in general in the EP. No additional control measures required to manage potential impacts from planned events. No additional control measures are considered applicable to manage any potential impacts to Brue Reef. Noted that the OPEP includes for scientific monitoring of reefs and fish in the event of a large spill.	11.08.2023 Initial email, with Invitation for Consultation document attached, seeking opportunity to make presentation to Directors. Information package attached. 14.03.24 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend. Meeting held on 14.03.24.	First contact on 11.08.2023. Follow ups >20. Deadline for response sent on 23.02.2024. Total time – 28 weeks from first contact to deadline.	**Consultation considered complete.** A reasonable period has been provided (Reg 25(3)). Information on cultural heritage has been requested and PBC have noted that fishing and a particular reef are of importance. JSE have requested location information of Brue Reef but there is no proposed change to the management and mitigation measures described in the EP and OPEP. Offer to attend community engagement sessions was provided ahead of the sessions. All queries were closed in the PBC meeting on JSE side. JSE have provided Information packages and a presentation describing sufficient information (Reg 25(2)):	In the event of a change in the activity which could lead to a significant increase in risk or impact reefs or coastline, provide: ○ updated details of the change to the PBC ○ offer a meeting to present and discuss the change. ○ Remain available for presentation to PBC if requested. For a level 2 or 3 spill: ○ if oil spill trajectory modelling shows potential contact with the WA coastline, relevant PBCs will be notified within 24 hours of oil spill modelling trajectory confirmation (verbal or written). Every 6 months from EP acceptance, reach out to contact to confirm:

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		31.01.24. Emails exchanged to organise meeting on: 02.02.24 08.02.24 09.02.24 14.02.24 15.02.24 26.02.24. JSE emailed re Mayala Inninalang Aboriginal Corporation and Bardi Jawi Niimidiman Aboriginal Corporation. Emails exchanged with Legal on re WAC- JSE Consultation Resourcing Protocol on: 07.02.24 14.02.24 26.02.24 27.02.24 28.02.24. Further emails re Consultation Protocol (now executed) in March April and May detailed in log, Appendix G. Continued email correspondence in March to confirm meeting logistics, minutes and actions detailed in log, Appendix G. Request for further information (meeting attendees and location of Brue Reef) following meeting: 20.03.2024 21.03.2024 10.04.2024 (meeting minutes sent) 18.04.2024. 19.04.2024 Follow up email re location of Brue Reef.		Directors and Elders that attended and the location of Brue Reef so JSE can provide distances to key communities and areas of cultural importance.		OPEP includes an EPS to inform PBC if spill trajectory modelling indicates a significant spill moving towards WA coastline.			○ the operational area and EMBA ○ the potential impacts to the waters and coast adjacent to the PBC ○ Maps showing the operational area and EMBA ○ NOPSEMA guidance brochure ○ control measures and mitigation measures in place for the activity ○ Full EP available online at JSE website.	○ Contact name ○ Contact details ○ JSE contact details ○ Who to inform in the event of a spill event heading towards the coastline. ○ Review cycle of consultation agreement and any conditions of the agreement. If unavailable reach out to KRED and relevant land council to confirm contact.

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Mayala Inninalang Aboriginal Corporation	Email has not bounced back. Email received on 11.03.24 confirming information has been received.	Have not responded to initial introductory email on 11.08.23. Refer to Walalakoo Aboriginal Corporation (WAC) for further effort. 06.03.24 JSE email requesting opportunity to meet with Directors having received confirmation from WAC on 05.03.24 that need to contact PBC boards directly for any decision making. 11.03.24 Response received indicating Directors meeting tomorrow and will discuss JSE email and be in touch. Further follow up email sent 08.05.24.	No	N/A	Traditional owners of hundreds of islands, interconnecting seas and reefs in the Kimberley's Buccaneer Archipelago and King Sound. Unique island culture and deep knowledge of the complex currents and tides in their Sea Country.	None required. EP assesses the potential impact on the marine environment in general in the EP. No additional control measures required to manage potential impacts from planned events. OPEP includes for scientific monitoring of habitats and fauna in the event of a large spill. OPEP includes an EPS to inform PBC if spill trajectory modelling indicates a significant spill moving towards WA coastline.	11.08.2023 Initial email, with Invitation for Consultation document attached, seeking opportunity to make presentation to Directors. 14.03.24 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend.	First contact on 11.08.2023. Follow ups x 3 (however please refer WAC for other follow ups). Deadline for response sent on 23.02.2024. Total time – 28 weeks from first contact to deadline.	**Consultation considered complete.** A reasonable period has been provided (Reg 25(3)). Information on cultural heritage has been requested through meetings with WAC. In lieu of receiving information from the PBC, JSE has undertaken research to inform themselves of any areas of significance. Offers to present to PBC Directors and Elders have been sent multiple times. JSE have presented to WAC in lieu direct response from PBC. Offer to attend community sessions was provided ahead of the sessions. JSE have provided Information packages describing sufficient information (Reg 25(2)): ○ the operational area and EMBA ○ the potential impacts to the waters and coast adjacent to the PBC ○ Maps showing the operational area and EMBA ○ NOPSEMA guidance brochure ○ control measures and mitigation measures in place for the activity ○ Full EP available online at JSE website.	In the event of a change in the activity which could lead to a significant increase in risk or impact to receptors such as islands adjacent to the coastline, or to fish communities that may be food sources, provide: ○ updated details of the change to the PBC ○ offer a meeting to present and discuss the change. Remain available for presentation to PBC if requested. For a level 2 or 3 spill: ○ if oil spill trajectory modelling shows potential contact with the WA coastline, relevant PBCs will be notified within 24 hours of oil spill modelling trajectory confirmation (verbal or written). Every 6 months from EP acceptance, reach out to PBC contact to confirm: ○ Contact name ○ Contact details ○ JSE contact details ○ Who to inform in the event of a spill event heading towards the coastline. If unavailable reach out to KRED and relevant land council to confirm contact.

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Bardi Jawi Niimidiman Aboriginal Corporation	Email has not bounced back Still awaiting PBC response.	Have not responded to initial introductory email on 11.08.23. Refer to Walalakoo Aboriginal Corporation (WAC) for further effort. 07.03.24 JSE email requesting opportunity to meet with Directors having received confirmation from WAC on 05.03.24 that need to contact PBC boards directly for any decision making. Further follow up email sent 08.05.24.	No	N/A	Traditional Owners of Dampier Peninsula (107.75km from EMBA), including ownership of the island chain located to the east of its tip. Depend upon the sea. Reefs are important food-gathering places and fish is their most important food. Green turtle and dugong also play a major role in culture. Turtle is hunted all year round while dugong is typically targeted from May to July	None required. EP assesses the potential impact on the marine environment in general in the EP. No additional control measures required to manage potential impacts from planned events. OPEP includes for scientific monitoring of habitats and fauna in the event of a large spill. OPEP includes an EPS to inform PBC if spill trajectory modelling indicates a significant spill moving towards WA coastline.	11.08.2023 Initial email, with Invitation for Consultation document attached, seeking opportunity to make presentation to Directors. 14.03.24 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend	First contact 11.08.2023. Follow ups x 3 (however please refer WAC for other follow ups). Deadline for response sent on 23.02.2024. Total time = 28 weeks (from 1st contact to deadline closure).	**Consultation considered complete.** A reasonable period has been provided (Reg 25(3)). Information on cultural heritage has been requested through WAC. In lieu of receiving information from the PBC, JSE has undertaken research to inform themselves of any areas of significance. Offers to present to PBC group have been given multiple times. JSE have presented to WAC in lieu direct response from PBC. Offer to attend community sessions was provided ahead of the sessions. JSE have provided Information packages describing sufficient information (Reg 25(2)): ○ the operational area and EMBA ○ the potential impacts to the waters and coast adjacent to the PBC ○ Maps showing the operational area and EMBA ○ NOPSEMA guidance brochure ○ control measures and mitigation measures in place for the activity ○ Full EP available online at JSE website.	In the event of a change in the activity which could lead to a significant increase in risk or impact to receptors such as islands adjacent to the coastline, or to fish communities that may be food sources, provide: ○ updated details of the change to the PBC ○ offer a meeting to present and discuss the change. Remain available for presentation to PBC if requested. For a level 2 or 3 spill: ○ if oil spill trajectory modelling shows potential contact with the WA coastline, relevant PBCs will be notified within 24 hours of oil spill modelling trajectory confirmation (verbal or written). Every 6 months from EP acceptance, reach out to PBC contact to confirm: ○ Contact name ○ Contact details ○ JSE contact details ○ Who to inform in the event of a spill event heading towards the coastline. If unavailable reach out to KRED and relevant land council to confirm contact.
Nimanburr Aboriginal Corporation	Emails have not bounced back. Still awaiting PBC response.	Have not responded to initial introductory email on 11.08.23 or subsequent emails. Follow up emails sent on: 23.10.23 28.11.23 22.01.24 31.01.24 08.05.24.	No	N/A	Located on the western shores of King Sound	None required. No contact with King Sound. OPEP includes EPS to inform PBC if spill trajectory modelling indicates a significant spill moving towards WA coastline.	11.08.2023 Initial email, with Invitation for Consultation document attached, seeking opportunity to make presentation to Directors. 14.03.24 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend.	First contact on 11.08.2023. Follow ups x 5. Deadline for response 23.02.2024. Total time = 28 weeks (from 1st contact to deadline closure).	**Consultation considered complete.** A reasonable period has been provided (Reg 25(3)). Information on cultural heritage has been requested. In lieu of receiving information from the PBC, JSE has undertaken research to inform themselves of any areas of significance. Offers to present to PBC group have been given multiple times. Offer to attend community sessions was provided ahead of the sessions. JSE have provided Information packages describing sufficient information (Reg 25(2)): ○ the operational area and EMBA	In the event of a change in the activity which could lead to a significant increase in risk or impact to eastern shores of King Sound, provide: ○ updated details of the change to the PBC ○ offer a meeting to present and discuss the change. Remain available for presentation to PBC if requested. For a level 2 or 3 spill: ○ if oil spill trajectory modelling shows potential contact with the WA coastline, relevant PBCs will be notified within 24 hours of oil spill modelling trajectory confirmation (verbal or written).

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									○ the potential impacts to the waters and coast adjacent to the PBC ○ Maps showing the operational area and EMBA ○ NOPSEMA guidance brochure ○ control measures and mitigation measures in place for the activity ○ Full EP available online at JSE website.	Every 6 months from EP acceptance reach out to contact to confirm: ○ Contact name ○ Contact details ○ JSE contact details ○ Who to inform in the event of a spill event heading towards the coastline. If unavailable reach out to KRED and relevant land council to confirm contact.
Nyul Nyul Aboriginal Corporation	Emails have not bounced back. Email received on 27.10.23 confirming information has been received.	Did not responded to initial introductory email on 11.08.23. Response received 27.10.23. Follow up emails sent: 23.10.23 28.11.23 11.01.24 31.01.24 02.02.24 09.02.24 14.02.24 15.02.24 19.02.24 21.02.24. Follow ups post meeting: 23.02.24 08.03.24 (meeting minutes sent).	Yes. Meeting held on 22.02.24. JSE participated via Teams due to airlines strike.	Presentation meeting notes sent on 08.03.24. Nyul Nyul to issue invitation to JSE to meet on country, including a visit to Lacepede Islands if they would like JSE to visit..	The Nyul Nyul Directors emphasized that the Lacepede Islands are one of the most significant places to their culture and want to share the knowledge that the rangers and the neighbouring PBCs have about the Islands. Northwestern of Dampier Peninsula (107.75km from EMBA), including the Lacepede Islands.	None required. EP assesses the potential impact on fish, turtles and other marine communities in general in the EP. The Lacepede Islands are outside of the EMBA. No additional control measures required to manage potential impacts from planned events. No additional control measures are considered applicable to manage any potential impacts to the Lacepede Islands. It is noted that the OPEP includes for scientific monitoring of reefs, turtles and fish in the event of a large spill. OPEP includes EPS to inform PBC if spill trajectory modelling indicates a significant spill moving towards WA coastline.	11.08.2023 Initial email, with Invitation for Consultation document attached, seeking opportunity to make presentation to Directors. 14.03.24 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend. Meeting held on 22.02.24	First contact 11.08.2023. Follow ups>10.. Deadline for response 23.02.2024. Total time = 28 weeks (from 1st contact to deadline closure).	**Consultation considered complete.** A reasonable period has been provided (Reg 25(3)). Information on cultural heritage has been requested and PBC have noted that fishing and the Lacepede Islands are of importance. The Lacepede Islands are outside of the EMBA, but JSE recognises the importance of turtles, fish and birds in the context of the activity and if there was an unplanned event. However, there is no proposed change to the management and mitigation measures described in the EP and OPEP already. All queries were closed in the PBC meeting on JSE's side. Offer to attend community sessions was provided ahead of the sessions. JSE have provided Information packages and a presentation describing sufficient information (Reg 25(2)): ○ the operational area and EMBA ○ the potential impacts to the waters and coast adjacent to the PBC ○ Maps showing the operational area and EMBA ○ NOPSEMA guidance brochure ○ control measures and mitigation measures in place for the activity ○ Full EP available online at JSE website.	In the event of a change in the activity which could lead to a significant increase in risk or impact the Lacepede Islands and surrounding fauna activities (e.g. turtle breeding, seabird foraging), provide: ○ updated details of the change to the PBC ○ offer a meeting to present and discuss the change. Remain available for presentation to PBC if requested. For a level 2 or 3 spill: ○ if oil spill trajectory modelling shows potential contact with the WA coastline, relevant PBCs will be notified within 24 hours of oil spill modelling trajectory confirmation (verbal or written). Every 6 months from EP acceptance, reach out to contact to confirm: ○ Contact name ○ Contact details ○ JSE contact details ○ Who to inform in the event of a spill event heading towards the coastline. If unavailable reach out to KRED and relevant land council to confirm contact.

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Gogolanyngor Aboriginal Corporation	Emails have not bounced back. Email received on 15.08.23 confirming information has been received.	Initial introductory email sent on 11.08.23. Response received on 15.08.23 indicating GAC does not consider they are Relevant Persons and consultation is not required. 31.08.23 - Follow up phone call with GAC confirming that they do not regard themselves as Relevant Persons and do not wish to be consulted on the matter.	N/A	N/A	Middle Dampier Peninsula. Sea country.	N/A	11.08.2023 Initial email, with Invitation for Consultation document attached, seeking opportunity to make presentation to Directors. 14.03.24 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend. Gogolanyngor Aboriginal Corporation does not consider they are Relevant Persons and do not wish to be consulted on this matter.	First contact 11.08.2023. Phone call 31.08.2023. Follow ups x 1. Deadline for response 23.02.2024. Total time = 28 weeks (from 1st contact to deadline closure).	**Consultation complete.** Response from GAC indicates that it considers its members will not be affected and do not wish to be consulted further.	No further action unless there is a change in EMBA.
Yawuru Native Title Holders Aboriginal Corporation	Emails have not bounced back. Email received on 15.09.23 confirming information has been received.	Initial introductory email sent on 11.08.23. Response received 15.09.23 indicating first presentation opportunity likely to be February/March 2024. Follow up emails sent: 18.09.23 23.10.23 12.01.24 31.01.24 01.02.24 05.03.24 06.03.24 Emails to organise meeting: 21.03.24 22.03.24 09.04.24. Follow up post meeting: 07.05.24 09.05.24 (meeting minutes sent).	Meeting held 10.04.24 at Broome	Presentation on meeting notes sent on 09.05.24. PBC have provided the names of Directors and Elders that attended. JSE to inform PBC if a spill occurs. PBC to provide any further questions and feedback to JSE and confirm when like to meet JSE again.	Around Broome from Bangarangara to Willie Creek	None required. PBC raised no comments in the meeting around potential unplanned impacts but would like to remain informed in the event of a spill. No additional control measures required to manage potential impacts from planned events. OPEP includes for scientific monitoring of the habitats and fauna in the event of a large spill. OPEP includes EPS to inform PBC if spill trajectory modelling indicates a significant spill moving towards WA coastline.	11.08.2023 Initial email, with Invitation for Consultation document attached, seeking opportunity to make presentation to Directors. 14.03.24 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend. Meeting held on 10.04.24.	First contact 11.08.2023. Follow ups x >10. Deadline for response 23.02.2024. Total time = 28 weeks (from 1st contact to deadline closure).	**Consultation considered complete.** A reasonable period has been provided (Reg 25(3)). Information on cultural heritage has been requested and discussed in meeting on 10.04.2024 – no areas of interest or specifics were identified. Offers to present to PBC group have been given multiple times. Offer to attend community sessions was provided ahead of the sessions. JSE have provided Information packages and a presentation describing sufficient information (Reg 25(2)): ○ the operational area and EMBA ○ the potential impacts to the waters and coast adjacent to the PBC ○ Maps showing the operational area and EMBA ○ NOPSEMA guidance brochure ○ control measures and mitigation measures in place for the activity ○ Full EP available online at JSE website.	In the event of a change in the activity which could lead to a significant increase in risk or impact around Broome, provide: ○ updated details of the change to the PBC ○ offer a meeting to present and discuss the change. Remain available for presentation to PBC if requested. For a level 2 or 3 spill: ○ if oil spill trajectory modelling shows potential contact with the WA coastline, relevant PBCs will be notified within 24 hours of oil spill modelling trajectory confirmation (verbal or written). Every 6 months from EP acceptance, reach out to contact to confirm: ○ Contact name ○ Contact details ○ JSE contact details ○ Who to inform in the event of a spill event heading towards the coastline. If unavailable reach out to KRED and relevant land council to confirm contact.

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Karajarri Traditional Owners Aboriginal Corporation	Emails have not bounced back. Still awaiting PBC response.	Have not responded to initial introductory email on 11.08.23, or subsequent emails. Follow up emails sent on: 23.10.23 30.11.23 11.01.24 14.03.24 08.05.24.	No	N/A	Intertidal zone along the southwest Kimberley coast	None required. No contact with southwest Kimberely Coast. OPEP includes for scientific monitoring of habitats and fauna in the event of a large spill. OPEP includes an EPS to inform PBC if spill trajectory modelling indicates a significant spill moving towards WA coastline.	11.08.2023 Initial email, with Invitation for Consultation document attached, seeking opportunity to make presentation to Directors. 14.03.24 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend.	First contact 11.08.2023. Follow ups x 5. Deadline for response 23.02.2024. Total time = 28 weeks (from 1st contact to deadline closure).	**Consultation considered complete.** A reasonable period has been provided (Reg 25(3)). Information on cultural heritage has been requested. In lieu of receiving information from the PBC, JSE has undertaken research to inform themselves of any areas of significance. Offers to present to PBC group have been given multiple times. Offer to attend community sessions was provided ahead of the sessions. JSE have provided Information packages describing sufficient information (Reg 25(2)): ○ the operational area and EMBA ○ the potential impacts to the waters and coast adjacent to the PBC ○ Maps showing the operational area and EMBA ○ NOPSEMA guidance brochure ○ control measures and mitigation measures in place for the activity ○ Full EP available online at JSE website.	In the event of a change in the activity which could lead to a significant increase in risk or impact to the intertidal zone along the southwest Kimberely Cost, provide: ○ updated details of the change to the PBC ○ offer a meeting to present and discuss the change. Remain available for presentation to PBC if requested. For a level 2 or 3 spill: ○ if oil spill trajectory modelling shows potential contact with the WA coastline, relevant PBCs will be notified within 24 hours of oil spill modelling trajectory confirmation (verbal or written). Every 6 months from EP acceptance, reach out to contact to confirm: ○ Contact name ○ Contact details ○ JSE contact details ○ Who to inform in the event of a spill event heading towards the coastline. If unavailable reach out to KRED and relevant land council to confirm contact.

PBC	Relevant PBC Info	Effort	Meetings		Cultural Heritage	EP Updates	OPGGS(E)R Obligations			Ongoing Consultation
	Correct Detail confirmation		Meeting Held	Meeting Actions		Relevant Sections	25(2) Sufficient Information provided	25(3) Reasonable Period	Assessment	Actions
Nyangumarta Karajarri Aboriginal Corporation	Emails have not bounced back. Email received on 07.08.2023 confirming the information has been received.	Initial email for Montara Operations sent 03.08.23. Response received 07.08.23. Follow up emails sent: 09.08.23 17.10.23 28.11.23 12.01.24 14.02.24. Arrangement to make a presentation to Directors on Stag and Montara on 21.08.2023 cancelled on morning of presentation. Emails sent to arrange meeting on: 21.03.24 25.03.24 03.04.24 04.04.24 09.04.24. 09.05.24 Meeting minutes sent.	Meeting held 10.04.24	Presentation meeting notes sent on 09.05.24. JSE to inform PBC if a spill occurs. PBC to provide any further questions and feedback to JSE and confirm when like to meet JSE again. PBC to confirm the names of the Directors and Elders that attended.	Native Title across 2,000 square kilometres of land and sea country across Anna Plains Station, a portion of Mandora Station and 80 Mile Beach, in the East Pilbara and West Kimberley.	None required. PBC raised no comments in the meeting around potential unplanned impacts but would like to remain informed in the event of a spill. EP assesses the potential impact on marine receptors present in sea country in general. No additional control measures required to manage potential impacts from planned events. OPEP includes for scientific monitoring of marine environment in the event of a large spill. OPEP includes EPS to inform PBC if spill trajectory modelling indicates a significant spill moving towards WA coastline.	03.08.2023 Initial email, with Invitation for Consultation document attached, seeking opportunity to make presentation to Directors. 14.03.24 Email sent requesting information on community engagement sessions be passed onto members of the PBC and with invitation to attend. Meeting held on 10.04.24.	First contact: 03.08.2023. Follow ups x >10. Deadline for response sent 23.02.2024. Total = 29 weeks (from 1st contact to deadline closure).	**Consultation considered complete.** A reasonable period has been provided (Reg 25(3)). Information on cultural heritage has been requested and discussed in meeting on 10.04.2024 – none have been identified by the PBC. Offers to present to PBC group have been given multiple times. Offer to attend community sessions was provided ahead of the sessions. JSE have provided Information packages and a presentation describing sufficient information (Reg 25(2)): ○ the operational area and EMBA ○ the potential impacts to the waters and coast adjacent to the PBC ○ Maps showing the operational area and EMBA ○ NOPSEMA guidance brochure ○ control measures and mitigation measures in place for the activity ○ Full EP available online at JSE website.	In the event of a change in the activity which could lead to a significant increase in risk or impact to 80 Mile Beach, provide: ○ updated details of the change to the PBC ○ offer a meeting to present and discuss the change. Remain available for presentation to PBC if requested. For a level 2 or 3 spill: ○ if oil spill trajectory modelling shows potential contact with the WA coastline, relevant PBCs will be notified within 24 hours of oil spill modelling trajectory confirmation (verbal or written). Every 6 months from EP acceptance, reach out to contact to confirm: ○ Contact name ○ Contact details ○ JSE contact details ○ Who to inform in the event of a spill event heading towards the coastline. If unavailable reach out to KRED and relevant land council to confirm contact.

The purpose of the presentations to the PBCs are to:

- develop a respectful relationship with the Relevant Persons identified for current and future activities;
- seek advice on the format and type of information the Relevant Persons require to enable them to make an informed decision as to whether the activity may affect their functions, interests or activities;
- provide sufficient information to inform Relevant Persons of the potential impacts from the Montara activity;
- seek information on the cultural heritage and sea country values within the EMBA;
- document and address any comments on the activity and the potential impacts;
- seek advice of any preference on how Jadestone contact them in the future, or continue consultation dialogue (e.g. further meetings, regular updates, community sessions);
- request the Relevant Persons identify whether they need anything further from Jadestone to assist them with comments they might wish to make; and
- confirm if the Relevant Persons do not wish to receive further updates for activities associated with the Montara Field.

Information gathered from the consultation presentations may help Jadestone to inform the environmental impact assessment for the activity by providing further information on the cultural heritage values that may be present within the EMBA. Jadestone is also attempting to use the consultation to identify those sensitive cultural and environmental places that may be prioritised in the event of a significant oil spill. Whilst in the event of a spill, Jadestone would seek the advice of a heritage advisor (as described in the OPEP), the information gathered on the locations of sensitive places through the consultation presentations will assist response planning and provide a means of direct communication with Traditional Owners through their PBC.

In the absence of responses from PBCs on the potential cultural and environmental places, Jadestone has conducted research into the likely areas of interest.

6.5.5 Community Engagement Sessions

Jadestone also engaged KRED Enterprises to arrange and assist Jadestone with community engagement sessions at Mowanjum, Derby, Broome, Bidyadanga, Beagle Bay, Djarindjin, Kalumburu (was unable to proceed due to a lack of interest when KRED attempted to arrange the sessions), Wyndham and Kununurra. These meetings were held between 19 March 2024 and 25 March 2024 and further details are provided in **Table 6-3**.

Jadestone undertook newspaper and social media advertising between one and two weeks before each community engagement session to ensure as many people as possible were informed of the opportunity to meet with Jadestone. KRED Enterprises also advertised the sessions at each community through their contacts there and word of mouth.

The sessions were also advertised through Jadestone's Instagram and Facebook accounts.

A half page advertisement in the Broome Advertiser reached members of Mowanjum, Derby, Broome, Bidyadanga, Beagle Bay and Djarindjin communities. A half page advertisement in the Kimberley Echo reached members in Wyndham and Kununurra communities.

Posters were also produced and displayed on community notice boards in Broome, Wyndham, and Derby.

A QR code that took people to the Jadestone Montara field webpage was inserted into the newspaper advertisements and the posters displayed at the community notice boards.

The purpose of these sessions was to ensure that community members who were not represented by PBCs and businesses and organisations that Jadestone had already consulted, and other potentially Relevant Persons could speak directly with Jadestone representatives and should they wish to had the opportunity to self-identify as a Relevant Person.

At each session the Invitation for Consultation document, copies of PowerPoint presentations and maps were available to provide context to discussions and queries were available to be taken. NOPSEMA's *Consultation on offshore petroleum environment plans*: *Information for the community* brochure was also available at each session. A summary of the community engagement sessions is provided in Section6.10.4. Jadestone believe that they have made reasonable efforts to engage with any person who wishes to be consulted.

The Land Councils and the PBCs representing Traditional Owner Clans continue to be identified as Relevant Persons

Table 6-3: Summary of Planned Community Information Sessions

Location	Date and Time	Venue
Mowanjum	Tuesday 19 March, 10am - 12pm	Mowanjum Art Centre
Derby	Tuesday 19 March, 2pm - 4pm	Front of the IGA store
Broome	Wednesday 20 March, 2pm - 4pm	Boulevard Shopping Centre
Bidyadanga	Thursday 21 March, 10am - 2pm	General Store
Beagle Bay	Friday 22 March, 10am - 12pm	Community Hall
Djarindjin	Friday 22 March, 2pm - 4pm	General Store
Kalumburu (cancelled)	Sunday 24 March, 10am – 12pm	Kalumburu Resource Centre
Wyndham	Sunday 24 March, 2pm – 4pm	Front of the IGA store
Kununurra	Monday 25 March, 9am – 11am	Gateway Shopping Centre

6.5.6 Non-government environment organisations (eNGOs)

Jadestone carried out a review to identify the non-government environment organisations (eNGOs) that may have interests in the environment of the area within the EMBA and more broadly and added in those organisations as Relevant Persons. They include those eNGOs that have publicly declared interest in the potential impacts associated with climate change. The review included the examination of the EPs of other titleholders in proximity to Montara, and a search of the Australian Department of Foreign Affairs and Trade (DFAT) NGO list for Western Australia based eNGOs that had identified an interest in oil and gas or climate change impacts. Coastal conservation groups adjacent to the EMBA were also identified through a search for registered conservation groups on the DBCA website, and the identified organisations were reviewed to determine if they were a Relevant Persons for Montara. In addition, through advertisements and exposure through other mediums, Jadestone provided the opportunity for other eNGOs to self-identify.

6.5.7 Self-identified Relevant Persons

Promulgation of project information, through a range of mediums, may result in the identification of additional Relevant Persons through self-identification. Throughout the life of each of its projects, including

Montara, Jadestone is continually assessing the merits of self-identified Relevant Persons and as appropriate, adding to the list of Relevant Persons.

The Aboriginal Areas Protection Authority (AAPA) and a Northern Territory mud crab fishermen have self-identified during the consultation process for this EP.

6.6 Project Activities

Section 3 of this EP details the activity description including the location, timing, infrastructure, vessels and each relevant on-going Montara activity.

6.7 Environmental values and sensitivities

6.7.1 Spatial extent of the environment that may be affected

Section 5 of this EP sets out a detailed description of the environment that commences with the spatial extent of the EMBA, different zones and thresholds within those areas, enabling the first step in identification of Relevant Person categories. As part of revisions to this EP, the EMBA was updated and has reduced in size due to a change in the credible spill scenario. Once the operational area and EMBA spatial footprints have been created, the information is overlaid on a number of environmental, social and economic geospatial information layers to identify values and sensitivities within the operational area and EMBA, respectively, enabling the Relevant Persons and the values or sensitivities that might be affected to be identified.

Sources of information are to include:

- National matters of environmental significance;
- Conservation atlas (biologically important areas);
- Exclusive Economic Zone for Australia, and Commonwealth and State waters;
- Commercial and State fishing jurisdictions;
- Shipping fairways;
- Other commercial operations such as oil and gas facilities, ecotourism;
- Protected areas, parks, reserves, management areas, special zones;
- Intertidal and benthic habitats (may include point data, satellite, remote sensing or aerial imagery);
- Management and recovery plans;
- Public and scientific literature;
- Non-Government environment organisations (eNGOs); and
- Cultural heritage sites and values, including the identification of Traditional Owner Clans with coastline, near shore and sea country interests.

Due to their broader interest in climate change eNGOs as Relevant Persons have interests that extend beyond an EMBA and therefore may include National organisations in addition to State/Territory organisations.

6.7.2 Totality of environmental values and sensitivities

The totality of the defined activities, the EMBA, the relevant values and sensitivities of that environment, identification and assessment of risks and impacts, have been re-assessed to identify where a person's or organisation's functions, interests or activities may be affected by the activities to be carried out in the EP.

Consistent with the description of Relevant Person provided by Regulation 25(1), to be affected means the functions, interests or activities of a person or organisation would be affected by activities to be carried out

under the EP, including the totality of the environment values and sensitivities considered relevant. This is based on the EMBA of the low exposure value from the worst-case credible spill scenario.

The EMBA boundary was used to determine the Relevant Persons that may be affected. However, the EMBA is adjacent to shorelines along the WA and NT coasts, and therefore in these instances Relevant Persons were considered to be those who may use the coastline adjacent to the EMBA as well as waters within the EMBA. Arguably the EMBA is overly conservative as it delineates the low exposure threshold which does not necessarily equate to potential environmental impact to a receptor or a Relevant Persons functions, activities, or interests (typically this is triggered at the moderate exposure threshold). Therefore, the totality defined by the low threshold EMBA is considered to be overly conservative.

In addition, the potential impacts from climate change as a result of the activity have been considered. This led to the identification of eNGOs with an interest in climate change, and an attempt to capture other self-identified Relevant Persons by the publication of project information through a range of mediums.

6.7.3 Relevant Person categories

Table 6-4 outlines the government departments and agencies that have been identified as relevant within Regulation 25 (1)(a), (b), (c), (d) and (e). The Relevant Persons list was modified based on the updated EMBA. Table 6-4 details all Relevant Persons initially consulted, as well as those who will be consulted going forward based on the updated EMBA.

Table 6-4: Assessment of relevance of identified Relevant Persons

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Commonwealth government department or agency			
Australian Communications and Media Authority (ACMA) within the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDC)	Considered Relevant Persons under Regulation 25(1)(a)	Administrator of submarine cable protection zones. Relevant when active activity may impact on subsea cables.	✓
Australian Fisheries Management Authority (AFMA)	Considered Relevant Persons under Regulation 25(1)(a)	AFMA is the Australian Government agency responsible for the efficient management and sustainable use of Commonwealth fish resources on behalf of the Australian community. AFMA manages and monitors commercial Commonwealth fishing to ensure Australian fish stocks and the Australian fishing industry is viable now and in the future. Relevant when the activity has the potential to impact on fisheries resources in AFMA-managed fisheries.	✓
Australian Hydrographic Office (AHO)	Considered Relevant Persons under Regulation 25(1)(a)	AHO is part of the Department of Defence, responsible for providing Australia's national charting service under the terms of SOLAS and the *Navigation Act 2012* (Cth). Role includes provision of nautical charting (including charts in electronic form) and associated services in support of maritime safety. Responsible for the publication and distribution of nautical charts and other information required for the safe shipping and navigation in Australian waters. Relevant when the activity may impact operational requirements and where nautical products and other maritime safety and information is required to be updated, including Notice to Mariners.	✓
Australian Maritime Safety Authority (AMSA)	Considered Relevant Persons under Regulation 25(1)(a)	AMSA is the statutory authority established under the *Australian Maritime Safety Act 1990*. Principal functions are promoting maritime safety and protection of the maritime environment, preventing, and combating ship-sourced pollution in the marine environment, providing infrastructure to support safety of navigation in Australian waters, and providing national search and rescue service to the maritime and aviation sectors.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Clean Energy Regulator	Considered Relevant Persons under Regulation 25(1)(a)	The Clean Energy Regulator administers schemes legislated by the Australian Government for measuring, managing, reducing, or offsetting Australia's carbon emissions, determined by climate change law. The Regulator has administrative responsibilities for the National Greenhouse and Energy Reporting Scheme, the Emissions Reduction Fund, the Renewable Energy Target, and the Australian National Registry of Emissions Units. As an economic regulator, the Regulator does not have any direct role or powers under our legislation to enforce work health and safety, environmental protection, or planning laws.	✓
Department of Agriculture, Fisheries and Forestry (DAFF)	Considered Relevant Persons under Regulation 25(1)(a)	Department responsible for managing biosecurity for incoming goods and conveyances. Relevant due to the potential for the transfer of marine pest between MODU, vessels and the mainland. Activities such as seismic surveys, drilling, exploration, geotechnical surveys, construction, and installation of sub-sea infrastructure have the potential to affect commercially important fish species, their prey and habitats, and the business activities of commercial fishers.	✓
Department of Defence (DOD)	Considered Relevant Persons under Regulation 25(1)(a)	Responsible for Australian defence activities. Relevant when the activity encroaches on known training areas and /or restricted airspace.	✓
Department of Foreign Affairs and Trade (DFAT)	Considered Relevant Persons under Regulation 25(1)(a)	Promotes and protects Australia's interests internationally. Manages relationships with countries bordering Australia's north, including Indonesia, Timor Leste and Papua New Guinea. Relevant when the activity may impact on waters outside Australia's maritime jurisdiction (such as an oil spill).	✓
Department of Industry, Science and Resources (DISR)	Considered Relevant Persons under Regulation 25(1)(a)	DISR is responsible for development and reform of policy relating to the resources sector, including oil and gas. Relevant due to influence on Commonwealth Government sector policy.	✓
Director of National Parks, Parks Australia, part of the Department of	Considered Relevant Persons under Regulation 25(1)(a)	Parks Australia supports the Director of National Parks who has responsibility under federal environment law for six Commonwealth national parks, the Australian National Botanic Gardens and 60 Australian Marine Parks.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Climate Change, Energy, the Environment and Water (DCCEEW)		Relevant when activities undertaken outside of an Australian Marine Park may impact on the values within a Marine Park.	
Maritime Border Command (MBC), part of Australian Border Force (ABF), part of the Department of Home Affairs (DHA)	Considered Relevant Persons under Regulation 25(1)(a)	MBC is enabled by ABF and the Australian Defence Force (ADF), supporting the whole of government effort to protect Australia's national interests by responding with assigned maritime and air assets for civil maritime security operations. Relevant when the activity may impact on border protection activities (eg vessel patrols).	✓
National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA)	Considered Relevant Persons under Regulation 25(1)(a)	NOPSEMA is Australia's independent expert regulator for health and safety, structural (well) integrity and environmental management for all offshore oil and gas operations and greenhouse gas storage activities in Commonwealth waters, and in coastal waters where regulatory powers and functions have been conferred.	✓
National Offshore Petroleum Titles Administrator (NOPTA)	Considered Relevant Persons under Regulation 25(1)(a)	NOPTA is responsible for the day-to-day administration of petroleum and greenhouse gas titles in Commonwealth waters in Australia.	✓
Office of Northern Australia (ONA), within the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDC)	Considered Relevant Persons under Regulation 25(1)(a)	Office of Northern Australia (ONA) is the Australian Government's area of expertise for Northern Australia. ONA coordinates implementation of the Government's Northern Australia policy agenda to achieve a sustainable and contemporary northern economy. ONA provides policy advice, coordinates operational support for the Northern Australia Infrastructure Facility, supports Indigenous inclusion of First Nations involvement in the agenda, coordinates whole-of-government reporting, and facilitates governance structures.	✓
NT Government department or agency			
Aboriginal Areas Protection Authority (AAPA)	Self-identified as a Relevant Person	AAPA is an independent statutory authority established under the Northern Territory *Aboriginal Sacred Sites Act*, responsible for overseeing the protection of Aboriginal sacred sites on land and sea across the whole of Australia's Northern Territory. Relevant when the activity could impact on onshore and near shore Indigenous cultural sites.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Department of Chief Minister and Cabinet (NT)	Considered Relevant Persons under Regulation 25(1)(c)	The Department of the Chief Minister and Cabinet plays a vital role in the economic, social and environmental development of the Northern Territory, including responsibility for overseeing or coordinating major government strategies.	✓
Department of Environment, Parks and Water Security (DEPWS)	Considered Relevant Persons under Regulation 25(1)(b)	Protect the environment and natural resources in the Northern Territory, including marine fauna management. Relevant when activities may impact on marine or coastal values.	✓
Department of Industry Tourism and Trade (DITT)	Considered Relevant Persons under Regulation 25(1)(b)	The Department of Industry, Tourism and Trade is the Northern Territory coordinating agency for economic and industry development. The Department administers and regulates petroleum tenure and activities in within the Territory's coastal waters, including petroleum resource exploration and development and the construction and operation of oil and gas facilities and transmission pipelines. The Department manages Northern Territory commercial fisheries. Relevant when the activity has the potential to impact on fisheries resources in Northern Territory managed fisheries.	✓
Marine Safety Branch – Department of Transport (DOT) (NT), part of the Department of Infrastructure, Planning and Logistics (DIPL)	Considered Relevant Persons under Regulation 25(1)(b)	Manage oil pollution preparedness for and response in NT waters. Relevant if the activity results in impacts to NT waters or coastlines.	✓
Northern Territory Environment Protection Authority (NTEPA)	Considered Relevant Persons under Regulation 25(1)(b)	NTEPA is an independent authority established under the Northern Territory *Environment Protection Act*. NTEPA provides advice on the environmental impacts of development proposals and advice and regulatory services to encourage effective waste management, pollution control and sustainable practices.	✓
Northern Territory Gas Taskforce	Considered Relevant Persons under Regulation 25(1)(b)	The Gas Taskforce drives the Northern Territory Government's vision for the Territory to become a world class hub for gas production, manufacturing, and services by 2030. Relevant as a supporter of the industry sector and potential facilitator in dealing with urgent project matters to do with Northern Territory Government Departments and Agencies.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Northern Territory Regional Harbourmaster, part of the Department of Infrastructure, Planning and Logistics (DIPL)	Considered Relevant Persons under Regulation 25(1)(b)	Responsible for moorings in the Port of Darwin. Relevant when the activity could impact on Port operations.	✗
WA government department or agency			
Department of Biodiversity, Conservation and Attractions (DBCA)	Considered Relevant Persons under Regulation 25(1)(b)	Manage State marine parks and reserves and protected marine fauna and flora. Relevant when activities undertaken outside of a marine park may impact on the values within a marine park.	✓
Department of Mines, Industry Regulation and Safety (DMIRS)	Considered Relevant Persons under Regulation 25(1)(b)	The mission of DMIRS is to support a safe, fair, and responsible future for the Western Australian community, industry and resources sector. The DMIRS Resource and Environmental Regulation Group is responsible for regulating one of Western Australia's largest industry sectors, and plays a critical role in building Western Australia's economy while ensuring the State's resources are developed in a sustainable and responsible manner.	✓
Department of Planning, Lands and Heritage (DPLH)	Considered Relevant Persons under Regulation 25(1)(b)	Protect aboriginal heritage, assist with compliance with the *Aboriginal Heritage Act 1972* and provide access to heritage information. Relevant if the activity results in impacts to Aboriginal heritage.	✓
Department of Primary Industries and Regional Development (DPIRD)	Considered Relevant Persons under Regulation 25(1)(b)	A primary responsibility of the Department of Primary Industries and Regional Development is to conserve, sustainably develop and share the use of Western Australia's aquatic resources and their ecosystems for the benefit of present and future generations, through managing fisheries and aquatic ecosystems, assessment and monitoring of fish stocks, enforcement and education, biosecurity management and licensing commercial and recreational fishing activity, including commercial aquaculture.	✓
Department of Transport (DOT)	Considered Relevant Persons under Regulation 25(1)(b)	In accordance with the Western Australian *Emergency Management Act 2005* (the Act) and Emergency Management Regulations 2006 (the Regulations), the WA DoT is the Hazard Management Agency (HMA) for the Marine Oil Pollution (MOP) hazard in State waters. The MOP hazard is prescribed in the Regulations as an; 'actual or impending spillage, release or escape of oil or an oily mixture that is capable of causing loss of life, injury to a person or damage to the health of a person, property or the environment'.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Department of Water and Environmental Regulation (DWER)	Considered Relevant Persons under Regulation 25(1)(b)	The department is responsible for managing and regulating the State's environment and water resources.	✓
Local Government Authorities			
Belyuen Community Government Council	Considered Relevant Persons under Regulation 25(1)(d)	Local government provides services to the Belyuen Community, which is located on the Cox Peninsula, approximately 120 km from Darwin.	×
City of Darwin	Considered Relevant Persons under Regulation 25(1)(d)	Local government authority for land abutting Darwin Harbour.	×
City of Palmerston	Considered Relevant Persons under Regulation 25(1)(d)	Local government authority for land abutting Darwin Harbour.	×
Shire of Derby / West Kimberley	Considered Relevant Persons under Regulation 25(1)(d)	Local government area in the Kimberley region.	✓
Shire of Wyndham / East Kimberley	Considered Relevant Persons under Regulation 25(1)(d)	Local government area in the Kimberley region.	✓
Tiwi Islands Regional Council	Considered Relevant Persons under Regulation 25(1)(d)	Council governing the Tiwi Islands.	×
Victoria Daly Regional Council	Considered Relevant Persons under Regulation 25(1)(d)	The Victoria Daly Regional Council is a local government area in the Northern Territory.	×
Wagait Shire Council	Considered Relevant Persons under Regulation 25(1)(d)	The Wagait Shire Council is a local government area in the Northern Territory.	×

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
West Daly Regional Council	Considered Relevant Persons under Regulation 25(1)(d)	The West Daly Regional Council is a local government area of the Northern Territory.	✓
Oil and Gas Industry			
Australian Maritime Oil Spill Centre (AMOSC)	Considered Relevant Persons under Regulation 25(1)(d)	AMOSC operates the Australian oil industry's major oil spill response facility. AMOSC's stockpile of oil spill response equipment includes oil spill dispersant and containment, recovery, cleaning, absorbent and communications equipment. Relevant due to the immediate availability of support in recovering from an oil spill event.	✓
Carnarvon Energy	Considered Relevant Persons under Regulation 25(1)(d)	Titleholder of exploration permits, production licences and retention leases in adjacent areas.	✓
Eni Australia	Considered Relevant Persons under Regulation 25(1)(d)	Titleholder of several exploration permits, production licences and retention leases in adjacent areas.	✓
Inpex	Considered Relevant Persons under Regulation 25(1)(d)	Relevant due to LNG operations at Bladin Point (within Darwin Harbour).	✓
Melbana Energy	Considered Relevant Persons under Regulation 25(1)(d)	Titleholder of NT/P87 and WA-544-P.	✓
Oil Spill Response Limited (OSRL)	Considered Relevant Persons under Regulation 25(1)(d)	OSRL is the largest international industry-funded oil spill response cooperative, and provides preparedness, response and intervention services anywhere in the world. Relevant due to the immediate availability of support in recovering from an oil spill event.	✓
Santos	Considered Relevant Persons under Regulation 25(1)(d)	Titleholder of WA-454-P, WA-545-P &NT/P84.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Shell	Considered Relevant Persons under Regulation 25(1)(d)	Titleholder of exploration permits, production licences and retention leases in adjacent areas.	✓
NT Commercial fishers[7] and fishing associations			
Amateur Fishermens Association of the Northern Territory (AFANT)	Considered Relevant Persons under Regulation 25(1)(d)	Represents the interests of recreational fishing in the Northern Territory. AFANT has significant political influence. Relevant when the activity could impact on recreational fishing in coastal waters.	✓
Aquarium Fish/ Display Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and follow-up mail-out. Relevant when the activity could impact on commercial fishing activity.	✓
Bait Net Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and NTSC. Relevant when the activity could impact on commercial fishing activity.	×
Barramundi Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and NTSC. Relevant when the activity could impact on commercial fishing activity.	×
Coastal Line Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and follow-up mail-out. Relevant when the activity could impact on commercial fishing activity.	✓
Coastal Net Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and NTSC. Relevant when the activity could impact on commercial fishing activity.	×
Demersal Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and follow-up mail-out. Relevant when the activity could impact on commercial fishing activity.	✓

[7] All individual licence holders within the identified commercial fisheries continue to be consulted with as Relevant Persons unless they have explicitly requested to be removed from the mailing list or they have requested Jadestone consult through another avenue e.g. industry body.

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Individual mud crab fishermen	Self-identified as a Relevant Person for Montara Operations	Consultation through direct communication with fishery licence holder. Relevant when the activity could impact on commercial fishing activity.	✓
Mud Crab Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and NTSC. Relevant when the activity could impact on commercial fishing activity.	×
Pearl Oyster Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and NTSC. Relevant when the activity could impact on commercial fishing activity.	×
Northern Prawn Fishing Industry Pty Ltd	Considered Relevant Persons under Regulation 25(1)(d)	The NPF Industry Pty Ltd is a collective of trawler operators, processors and marketers acting together as a single voice for the industry in the Northern Prawn Fishery, which spans the pristine waters from Cape York to the Kimberley. Relevant when the activity could impact on commercial fishing activity.	✓
Northern Territory Guided Fishing Industry Association (NTGFIA)	Considered Relevant Persons under Regulation 25(1)(d)	NTGFIA is the industry body for guided fishing and recreational fishers. The Guided Fishing activity includes the use of mother ships moored offshore from which multi-day recreational fishing expeditions are based. Relevant due to significance as a significant and influential local industry sector.	✓
Northern Territory Seafood Council (NTSC)	Considered Relevant Persons under Regulation 25(1)(d)	Represents the seafood industry in the Northern Territory. Relevant when the activity could impact on commercial fishing activity.	✓
Offshore Net and Line Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and follow-up mail-out. Relevant when the activity could impact on commercial fishing activity.	✓
Spanish Mackerel Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and follow-up mail-out. Relevant when the activity could impact on commercial fishing activity.	✓
Timor Reef Fishery (NT)	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and follow-up mail-out. Relevant when the activity could impact on commercial fishing activity.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
WA Commercial fishers and fishing associations			
Broome Prawn Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and through WAFIC. Relevant when the activity could impact on commercial fishing activity.	✓
Gascoyne Demersal Scalefish Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and through WAFIC. Relevant when the activity could impact on commercial fishing activity.	✓
Kimberley Crab Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and WAFIC. Relevant when the activity could impact on commercial fishing activity.	✓
Kimberley Gillnet and Barramundi Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and through WAFIC. Relevant when the activity could impact on commercial fishing activity.	✓
Kimberley Prawn Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and through WAFIC. Relevant when the activity could impact on commercial fishing activity.	✓
Mackerel Managed Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and through WAFIC. Relevant when the activity could impact on commercial fishing activity.	✓
Marine Aquarium Fish Managed Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and through WAFIC. Relevant when the activity could impact on commercial fishing activity.	✓
Nickol Bay Prawn Managed Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and through WAFIC. Relevant when the activity could impact on commercial fishing activity.	✓
Northern Demersal Scalefish Managed Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and through WAFIC. Relevant when the activity could impact on commercial fishing activity.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Onslow Prawn Managed Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and through WAFIC. Relevant when the activity could impact on commercial fishing activity.	✓
Pearl Oyster Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and through WAFIC. Relevant when the activity could impact on commercial fishing activity.	✓
Pearl Producers Association (PPA)	Considered Relevant Persons under Regulation 25(1)(d)	Peak representative organisation of the Australian South Sea Pearling Industry. Relevant when the activity could impact on commercial pearl farming. activity.	✓
Specimen Shell Managed Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and through WAFIC. Relevant when the activity could impact on commercial fishing activity.	✓
West Coast Deep Sea Crustacean Managed Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and through WAFIC. Relevant when the activity could impact on commercial fishing activity.	✓
Western Australian Fishing Industry Council (WAFIC)	Considered Relevant Persons under Regulation 25(1)(d)	Peak industry body representing the interests of the Western Australian commercial fishing, pearling and aquaculture sectors. Relevant when the activity could impact on commercial fishing activity.	✓
Commonwealth Commercial fishers and fishing associations			
Australian Southern Bluefin Tuna Industry Association	Considered Relevant Persons under Regulation 25(1)(d)	Peak body representing Southern Bluefin Tuna companies in Australia. The SBTF overlaps the EMBA.	×
Commonwealth Fisheries Association (CFA)	Considered Relevant Persons under Regulation 25(1)(d)	The peak body representing the collective rights, responsibilities, and interests of a diverse commercial fishing industry in Commonwealth regulated fisheries. Relevant when the activity could impact on commercial fishing activity.	✓
Northern Prawn Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and follow-up mail-out. Relevant when the activity could impact on commercial fishing activity.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
North West Slope Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation and follow-up mail-out. Relevant when the activity could impact on commercial fishing activity.	✓
Seafood Industry Australia (SIA)	Considered Relevant Persons under Regulation 25(1)(d)	Seafood Industry Australia is committed to ensuring there is appropriate consultation between the Australian seafood industry and oil and gas companies on matters including impact, access, regulation and the long-term impacts to fish-stocks from petroleum-related activities. SIA has facilitated a series of conversations between the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) and interested parties on what adequate consultation with oil and gas companies means, and how it can be improved. SIA is a member of the NOPSEMA Transparency Taskforce Steering Committee and recently chaired a reinvigorated Seafood and Petroleum Industry Roundtable. Relevant when the activity could impact on commercial fishing activity.	✓
Southern Bluefin Tuna Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation. ASBTIA subsequently confirmed there is no Southern Bluefin Tuna fishing effort within or adjacent to the EMBA. Relevant when the activity could impact on commercial fishing activity.	×
Tuna Australia	Considered Relevant Persons under Regulation 25(1)(d)	Formed in 2016, Tuna Australia represents statutory fishing right owners, holders, fish processors and sellers, and associate members of the Eastern and Western tuna and billfish fisheries of Australia.	✓
Western Deepwater Trawl Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation. Relevant when the activity could impact on commercial fishing activity.	✓
Western Skipjack Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation. Relevant when the activity could impact on commercial fishing activity.	✓
Western Tuna and Billfish Fishery	Considered Relevant Persons under Regulation 25(1)(d)	Consultation through mail-out of Invitation for Consultation. Relevant when the activity could impact on commercial fishing activity.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Recreational fishing associations			
RecFish West (WA)	Considered Relevant Persons under Regulation 25(1)(d)	Peak body representing recreational fisheries in Western Australia. Relevant when the activity could impact on recreational fishing activity.	✓
First Nations peoples			
Balanggarra Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Balanggarra people. Relevant when the activity could impact on the coastline, coastal waters and sea country.	✓
Bardi Jawi Niimidiman Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Bardi Jawi Niimidiman people. Relevant when the activity could impact on the coastline, coastal waters and sea country.	✓
Gogolanyngor Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Gogolanyngor people. Relevant when the activity could impact on the coastline, coastal waters and sea country.	✓
Jikilaruwu Traditional Owner Clan	Considered Relevant Persons under Regulation 25(1)(d)	Traditional Owner Clan on Bathurst Island, part of the Tiwi Islands. Relevant when the activity could impact on the coastline, coastal waters and sea country.	×
Karajarri Traditional Owners Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Karajarri people. Relevant when the activity could impact on the coastline, coastal waters and sea country.	✓
Kimberley Land Council (KLC)	Considered Relevant Persons under Regulation 25(1)(d)	Peak Indigenous body in the Kimberley region. Relevant when the activity could impact on coastal waters and coastlines.	✓
Larrakia Nation Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	The Larrakia Nation Aboriginal Corporation was established in 1997 through the Northern Land Council, to provide a corporate identity for Larrakia people to uphold Native Title claims, to represent the Traditional Owners of the Darwin region and to speak on behalf of Larrakia people while delivering community and outreach services to the broader Darwin community, including land and sea Rangers.	×

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
		The Larrakia Rangers work across Larrakia land and sea country, which comprises the greater Darwin region west across the Cox Peninsula and east to the Adelaide River. Relevant when the activity could impact on the coastline, coastal waters and sea country.	
Malawu Traditional Owner Clan	Considered Relevant Persons under Regulation 25(1)(d)	Traditional Owner Clan on Bathurst Island, part of the Tiwi Islands. Relevant when the activity could impact on the coastline, coastal waters and sea county.	×
Mantiyupwi Traditional Owner Clan	Considered Relevant Persons under Regulation 25(1)(d)	Traditional Owner Clan on both Bathurst Island and Melville Island, part of the Tiwi Islands. Relevant when the activity could impact on the coastline, coastal waters and sea country.	×
Marrikawuyanga Traditional Owner Clan	Considered Relevant Persons under Regulation 25(1)(d)	Traditional Owner Clan on Melville Island, part of the Tiwi Islands. Relevant when the activity could impact on the coastline, coastal waters and sea country.	×
Mayala Inninalong Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Mayala Inninalong people. Relevant when the activity could impact on the coastline, coastal waters and sea country.	✓
Munupi Traditional Owner Clan	Considered Relevant Persons under Regulation 25(1)(d)	Traditional Owner Clan on Melville Island, part of the Tiwi Islands. Applicant in the successful action against NOPSEMA and Santos in the Federal Court. Relevant when the activity could impact on the coastline, coastal waters and sea country.	×
Nimanburr Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Nimanburr people. Relevant when the activity could impact on the coastline, coastal waters and sea country.	✓
Northern Australian Indigenous Land and Sea Management Alliance (NAILSMA)	Considered Relevant Persons under Regulation 25(1)(d)	NAILSMA is an Indigenous led not-for-profit company operating across northern Australia, working to assist Indigenous people manage their country sustainably for future generations, by providing Indigenous leadership in the delivery of large-scale and complex programs that meet the environmental, social, cultural, and economic needs of Indigenous people across northern Australia. Relevant when the activity could impact on the coastline, coastal waters and sea country.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Northern Land Council (NLC)	Considered Relevant Persons under Regulation 25(1)(d)	The NLC is an independent statutory authority of the Commonwealth, responsible for assisting Aboriginal peoples in the Top End of the Northern Territory to acquire and manage their traditional lands and seas. Relevant when the activity could impact on the coastline, coastal waters and sea country.	✓
Nyangumarta Karrajarri Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Nyangumarta Karrajarri people. Relevant when the activity could impact on the coastline, coastal waters and sea country.	✓
Nyul Nyul Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Nyul Nyul people. Relevant when the activity could impact on the coastline, coastal waters and sea country.	✓
Tiwi Land Council (TLC)	Considered Relevant Persons under Regulation 25(1)(d)	The Tiwi Land Council represents all Tiwi people in the protection of our land, sea and environment, while at the same time supporting sustainable economic development to improve Tiwi lives through employment, income, education and health opportunities. Relevant when the activity could impact on coastlines, coastal waters and sea country.	×
Walalakoo Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Walalakoo people. Relevant when the activity could impact on the coastline, coastal waters and sea country.	✓
Wanjina-Wunggurr Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Wanjina-Wunggurr people. Relevant when the activity could impact on the coastline, coastal waters and sea country.	✓
Warrwa People Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Warrwa people. Relevant when the activity could impact on the coastline, coastal waters and sea country.	✓
Wulirankuwu Traditional Owner Clan	Considered Relevant Persons under Regulation 25(1)(d)	Traditional Owner Clan on Melville Island, part of the Tiwi Islands. Relevant when the activity could impact on the coastline, coastal waters and sea country.	×
Wurankuwu Traditional Owner Clan	Considered Relevant Persons under Regulation 25(1)(d)	Traditional Owner Clan on Bathurst Island, part of the Tiwi Islands. Relevant when the activity could impact on the coastline, coastal waters and sea country.	×

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Yawuru Native Title Holders Aboriginal Corporation	Considered Relevant Persons under Regulation 25(1)(d)	Prescribed Body Corporate (PBC) for the Yawuru people. Relevant when the activity could impact on the coastline, coastal waters and sea country.	✓
Yimpinari Traditional Owner Clan	Considered Relevant Persons under Regulation 25(1)(d)	Traditional Owner Clan on Melville Island, part of the Tiwi Islands. Relevant when the activity could impact on the coastline, coastal waters and sea country.	×
Port Authorities			
Darwin Port	Considered Relevant Persons under Regulation 25(1)(d)	Darwin Port is operated by Darwin Port Operations Pty Ltd which is part of the Landbridge Group. The Landbridge Group is a private company based in Rizhao city in Shandong Province in China, operating businesses in China and Australia. The Darwin Port operates commercial wharf facilities at East Arm Wharf and the cruise ship terminal at Fort Hill Wharf. Relevant when the activity could impact on Port infrastructure and operations.	×
Kimberley Ports Authority	Considered Relevant Persons under Regulation 25(1)(d)	Kimberley Port Authority head office is in Broome, and they are responsible for the ports of Derby, Yampi Sound and Wyndham and the Port of Broome. Relevant when the activity could impact on Port infrastructure and operations.	✓
Pilbara Ports Authority	Considered Relevant Persons under Regulation 25(1)(d)	Pilbara Port Authority encompasses the Port of Ashburton, Dampier, Port Hedland, and Varanus Island. Relevant when the activity could impact on Port infrastructure and operations.	×
Wyndham Port (WA Cambridge Gulf Ltd)	Considered Relevant Persons under Regulation 25(1)(d)	The Wyndham Port operations and management are currently overseen by Cambridge Gulf Ltd, however the facility is owned by the Department of Transport (WA), who regulates the facility jointly with its transitioning successor, the Kimberley Ports Authority. Principal office in Kununurra. Relevant when the activity could impact on Port operations.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Tourism and Business Associations/ Tour Operators			
Absolute Ocean Charters	Considered Relevant Persons under Regulation 25(1)(d)	Absolute Ocean Charters operates from Broome, providing offshore fishing experiences. Relevant when the activity could impact on coastal waters.	✓
Anglers Choice Fishing Safaris	Considered Relevant Persons under Regulation 25(1)(d)	Anglers Choice Fishing Safaris operates from Dundee Beach on the Cox Peninsula, providing offshore fishing experiences. Relevant when the activity could impact on coastal waters.	×
APT Kimberley Coast Cruises	Considered Relevant Persons under Regulation 25(1)(d)	APT Kimberley Coast Cruises offer luxury cruises from Broome to Darwin. Relevant when the activity could impact on coastal waters.	✓
Arafura Bluewater Charters	Considered Relevant Persons under Regulation 25(1)(d)	Arafura Bluewater Charters operates from Darwin, specialising in bluewater reef and game fishing charters. Relevant when the activity could impact on coastal waters.	×
Archipelago Adventures	Considered Relevant Persons under Regulation 25(1)(d)	Archipelago Adventures operates out of Broome, specialising in catamaran charters off Broome and the Dampier Archipelago. Relevant when the activity could impact on coastal waters.	✓
Australia's North West	Considered Relevant Persons under Regulation 25(1)(d)	Australia's North West is the peak tourism body for the Kimberley and Pilbara regions. Relevant when the activity could impact on coastal waters.	✓
Broome Tours	Considered Relevant Persons under Regulation 25(1)(d)	Small group tour operator with a powered sailing catamaran, operating out of Broome with a focus on ecotourism. Relevant when the activity could impact on coastal waters.	✓
Broome Visitor Centre	Considered Relevant Persons under Regulation 25(1)(d)	Membership-based organisation representing tourism operators in Broome and the broader Kimberley region. Relevant when the activity could impact on coastal waters and coastlines.	✓
Broome Whale Watching	Considered Relevant Persons under Regulation 25(1)(d)	Broome Whale Watching operates whale and dolphin watching tours from Broome. Relevant when the activity could impact on coastal waters.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Cannon Charters	Considered Relevant Persons under Regulation 25(1)(d)	Cannon Charters operates from Darwin, offering multi-day fishing experiences along the Northern Territory and Kimberley coast. Relevant when the activity could impact on coastal waters.	✗
Clearwater Island Lodge	Considered Relevant Persons under Regulation 25(1)(d)	Clearwater Island Lodge is located on Melville Island. Relevant when the activity could impact on the coastline and coastal waters.	✗
Coral Expeditions	Considered Relevant Persons under Regulation 25(1)(d)	Coral Expeditions operates from Darwin and Broome providing small ship expeditions. Relevant when the activity could impact on coastal waters.	✓
Darwin Harbour Fishing Charters	Considered Relevant Persons under Regulation 25(1)(d)	Darwin Harbour Fishing Charters operates from Darwin, providing offshore and onshore fishing experiences. Relevant when the activity could impact on coastal waters.	✗
Dundee Beach Fishing Charters	Considered Relevant Persons under Regulation 25(1)(d)	Dundee Beach Fishing Charters operates from Dundee Beach on the Cox Peninsula, providing offshore fishing experiences. Relevant when the activity could impact on coastal waters.	✗
Equinox Fishing Charters	Considered Relevant Persons under Regulation 25(1)(d)	Equinox Fishing Charters operates from Darwin, providing offshore fishing experiences. Relevant when the activity could impact on coastline.	✗
Fish Darwin	Considered Relevant Persons under Regulation 25(1)(d)	Fish Darwin operates from Darwin, providing offshore fishing experiences. Relevant when the activity could impact on coastal waters.	✗
HeliSpirit Luxury Kimberley Helicopter Safari	Considered Relevant Persons under Regulation 25(1)(d)	HeliSpirit Luxury Kimberley Helicopter Safari operate helicopter safaris exploring the Kimberley and NT. Relevant when the activity could impact on coastal waters and coastlines.	✓
Kimberley Cruise Centre	Considered Relevant Persons under Regulation 25(1)(d)	Kimberley Cruise Centre arranges Kimberley adventure cruises. Relevant when the activity could impact on coastal waters and coastlines.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Kimberley Expeditions	Considered Relevant Persons under Regulation 25(1)(d)	Kimberley Expeditions offers Kimberley cruise expeditions. Relevant when the activity could impact on coastal waters and coastlines.	✓
Kimberley Pearl Charters	Considered Relevant Persons under Regulation 25(1)(d)	Kimberley Pearl Cruises offer boat tours through the Kimberley Coast. Relevant when the activity could impact on coastal waters and coastlines.	✓
Kimberley Quest	Considered Relevant Persons under Regulation 25(1)(d)	Kimberley Quest offer luxury cruises through the Kimberley. Relevant when the activity could impact on coastal waters and coastlines.	✓
Kuri Bay Sport Fishing and Adventures	Considered Relevant Persons under Regulation 25(1)(d)	Kuri Bay Sport Fishing and Adventures offer fishing expeditions from Kuri Bay, 330 km north of Broome. Relevant when the activity could impact on coastal waters and coastlines.	✓
Lady M Luxury Cruises	Considered Relevant Persons under Regulation 25(1)(d)	Lady M Luxury Cruises offer cruises of the Kimberley Coast. Relevant when the activity could impact on coastal waters and coastlines.	✓
Monsoon Aquatics	Considered Relevant Persons under Regulation 25(1)(d)	Monsoon Aquatics are a world leading supplier of premium hand-picked Australian Coral and Marine life. With state-of-the-art facilities in Darwin, Cairns and Bundaberg, collection capability in the North, East and West of Australia and a growing aquaculture program, Monsoon Aquatics supplies an unmatched range of coral to retailers in Australia and wholesalers and public aquaria all around the world. Relevant when the activity could impact on coastal waters.	✓
Ocean Dream Charters	Considered Relevant Persons under Regulation 25(1)(d)	Ocean Dream Charters offer cruises of the Kimberley. Relevant when the activity could impact on coastal waters and coastlines.	✓
Offshore Boats Fishing Charters	Considered Relevant Persons under Regulation 25(1)(d)	Offshore Boats Fishing Charters operates from Darwin, providing offshore fishing experiences. Relevant when the activity could impact on coastal waters.	×

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
One Tide Charters	Considered Relevant Persons under Regulation 25(1)(d)	One Tide Charters offer cruises of the Kimberley. Relevant when the activity could impact on coastal waters and coastlines.	✓
Oolin Sunday Island Cultural Tours	Considered Relevant Persons under Regulation 25(1)(d)	Oolin Sunday Island Cultural Tours offer tours of Sunday Island and the Kimberley. Relevant when the activity could impact on coastal waters and coastlines.	✓
Ponant Luxury Expeditions	Considered Relevant Persons under Regulation 25(1)(d)	Ponant Luxury Expeditions offer sailing tours of the Kimberley. Relevant when the activity could impact on coastal waters and coastlines.	✓
Red Devil Fishing Charters	Considered Relevant Persons under Regulation 25(1)(d)	Red Devil Fishing Charters operates from Darwin, providing offshore fishing experiences. Relevant when the activity could impact on coastal waters.	×
Seafarms Group Ltd Project Sea Dragon	Considered Relevant Persons under Regulation 25(1)(d)	As at 31 March 2024 Project Sea Dragon is in Liquidation. Developer of land-based prawn aquaculture project (Sea Dragon) in the Northern Territory. Relevant if the activity could impact on seawater quality.	×
Seaestar Boat Charters	Considered Relevant Persons under Regulation 25(1)(d)	Seaestar Boat Charters provides diving and fishing experiences in the Rowley Shoals and Scott Reef. Relevant when the activity could impact on coastal waters.	✓
Silversea Cruises	Considered Relevant Persons under Regulation 25(1)(d)	Silversea Cruises offer cruises of the Kimberley. Relevant when the activity could impact on coastal waters and coastlines.	✓
The Great Escape Charter Company	Considered Relevant Persons under Regulation 25(1)(d)	The Great Escape Charter Company offer cruises of the Kimberley. Relevant when the activity could impact on coastal waters and coastlines.	✓
Tiwi Island Adventures	Considered Relevant Persons under Regulation 25(1)(d)	Tiwi Island Adventures operates from two remote locations on the Tiwi Islands – Melville Island Lodge situated on the shores of Snake Bay and Johnson River Camp situated in the upper reaches of the Johnson River on the east coast of Melville Island. Relevant when the activity could impact on coastal waters and coastlines.	×

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Tourism Top End	Considered Relevant Persons under Regulation 25(1)(d)	Regional Tourist Association for the Top End Region of the Northern Territory. Relevant when the activity could impact on coastal waters and coastlines.	✓
True North	Considered Relevant Persons under Regulation 25(1)(d)	True North offer cruises of the Kimberley. Relevant when the activity could impact on coastal waters and coastlines.	✓
Willie Pearl Lugger Cruises	Considered Relevant Persons under Regulation 25(1)(d)	Willie Pearl Lugger Cruises offer sail cruises of the Kimberley. Relevant when the activity could impact on coastal waters and coastlines.	✓
Yknot Fishing Charters	Considered Relevant Persons under Regulation 25(1)(d)	Yknot Fishing Charters operates from Darwin, providing fishing charters to as far as the Tiwi Islands and as far West as the Peron islands. Relevant when the activity could impact on coastal waters.	×
Environmental Conservation Groups/ eNGOs			
Australian Marine Conservation Society (AMCS)	Considered Relevant Persons under Regulation 25(1)(d)	Australian national independent charity dedicated solely to protecting ocean wildlife and working for healthy seas with representation in WA and NT.	✓
Conservation Council of Western Australia (CCWA)	Considered Relevant Persons under Regulation 25(1)(d)	CCWA is WA's foremost not for profit, non-government conservation and environment organisation. A current active campaign of the CCWA is Say No to Scarborough Gas. Relevant due to in principle opposition to the extraction and use of fossil fuels. Would have the potential to delay but not prevent the Project going ahead.	✓
Environment Centre Northern Territory (ECNT)	Considered Relevant Persons under Regulation 25(1)(d)	ECNT is the peak community sector environment organisation in the Northern Territory. ECNT works closely with communities across the Northern Territory to stop environmentally destructive projects, hold government and industry to account, and improve environmental regulation and governance. ECNT has a link on its webpage to the Stop Barossa Gas campaign website which identifies the ECNT as a member of the international alliance opposing the Barossa project. Relevant due to in principle opposition to the extraction and use of fossil fuels. Would have the potential to delay but not prevent the Project from going ahead.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Environs Kimberley	Considered Relevant Persons under Regulation 25(1)(d)	Environmental NGO for the Kimberley region, including protecting the Kimberley Coast (and North Kimberley Marine Park)	✓
Greenpeace	Considered Relevant Persons under Regulation 25(1)(d)	Independent campaigning organization that uses peaceful protest and creative confrontation to expose global environmental problems and promote solutions that are essential to a green and peaceful future.	✓
Save the Kimberley	Considered Relevant Persons under Regulation 25(1)(d)	Independent not for profit awareness organisation run by volunteers made up of a diverse and passionate group of individuals (traditional custodians, local Kimberley community and other committed Australians from all parts).	✓
The Wilderness Society	Considered Relevant Persons under Regulation 25(1)(d)	Public company that works to support the living world. They take on transnational corporations, rogue operators, and the armies of lobbyists and politicians who defend them in relation to projects that could affect the environment. They have been active in WA and NT in the past.	✓
World Wildlife Fund	Considered Relevant Persons under Regulation 25(1)(d)	Independent conservation organisation for the protection of wildlife in Australia and around the world.	✓
Other Associations			
Australian Council of Prawn Fisheries	Considered Relevant Persons under Regulation 25(1)(d)	Is made up of membership from local industry bodies and companies that deal with wild prawns or the prawn industry.	✓
Marine Tourism Association of Western Australia (MTWA)	Considered Relevant Persons under Regulation 25(1)(d)	Represents the tourism industry in Western Australia (in the context of this project the fishing charter sector). Association currently has one Kimberley member. Relevant when the activity could impact on coastal waters and coastlines.	✓
Northern Territory Chamber of Commerce (NTCA)	Considered Relevant Persons under Regulation 25(1)(d)	NTCA is the largest employer association in the Northern Territory. NTCA is an independent, not-for-profit and non-government body whose membership and offices span the Territory.	✓

Relevant person initially consulted	Relevance to the activity	Functions, interest or activities	RP based on updated EMBA
Thamarrurr Development Corporation (TDC), including the Thamarrurr Rangers	Considered Relevant Persons under Regulation 25(1)(d)	TDC is a not-for-profit corporate entity owned by members of the Wangka, Lirrga and Tjanpa peoples. TDC has been established by the 20 clans of the Thamarrurr Region, to represent them in relation to business, socio-economic development, employment and training. Thamarrurr Rangers was established in 2001 by the Traditional Owners of the Thamarrurr Region, who sought to actively address land and sea management issues. Relevant should the activity result in impact on the coastline, coastal waters and sea country.	✓
Academic and Research Organisations			
Australian Institute of Marine Science (AIMS)	Considered Relevant Persons under Regulation 25(1)(d)	Organisation concerned with conservation and research outcomes in the area.	✓

6.8 Consultation Methodology

The approach Jadestone is undertaking for consultation in this EP is outlined below:

- Identify Relevant Persons (as per Section 6.5)
- Provide detailed information sheets and area map to commence the consultations via various avenues such as consultation packages and the Jadestone website
- Provide a table of risks and management measures for those seeking additional information
- Respond to requests for additional information from Relevant Persons who have concerns or interests and offer direct consultation with relevant technical staff where applicable
- Advertise and offer information sessions
- Allow a reasonable period of time for the Relevant Person to review and respond to any information provided, at least four weeks
- Follow up with Relevant Persons whose functions, interests, or activities may be affected by the activities of the EP, via phone, email/s or in person to ensure they have received the information and verify if they have remaining questions or concerns
- Ensure Relevant Persons were informed about the consultation process and how their feedback, questions and concerns were considered in the EP, including the management of sensitive information.

A number of communication methods may be used to exchange information during consultation, including:

- Written documentation or information provided in person or remotely by methods such as post, email, via website or social media; and/ or
- Verbal communication during telephone calls (pre-emptory or in response/follow up), targeted meetings, focus groups, workshops, information sessions; webinars and/or
- Other means as recommended, particularly in relation to cultural heritage values and sites.

Regardless of the method applied, the information provided to the Relevant Person has been targeted as much as possible to reduce the information burden on the Relevant Person, to reduce the possibility of confusion or misinformation, and to improve the likelihood of receiving valuable feedback from the consultation process. The methods Jadestone is using are listed below. The method/s adopted has depended on the nature and scale of an activity and advice on the most appropriate method as advised by each Relevant Person at the time of the initial consultation.

- Email
- Post
- Phone calls
- Public meetings, including by way of webinars
- For Traditional Owner Clans, presentations face-to-face on country
- Newspaper advertisements
- Social media
- Community notice boards
- Liaison with other titleholders to collaborate in undertaking consultation and thereby reduce stakeholder fatigue.

Where post is returned to sender, this is lodged and a follow up issued to the custodian of the individual licence holder database (e.g. DPIRD, AFMA) to request confirmation of the postal address. Similarly, if emails are undelivered, Jadestone make attempts to identify the correct email address to issue correspondence to and follow up with phone calls to confirm receipt if no email response is received (wherever feasible).

6.8.1 General Follow-up

Jadestone has developed a procedure (Figure 6-2) for follow-up with Commonwealth and State/Territory Government Departments, agencies, and authorities, with Local Governments, with representative peak industry bodies, with other petroleum title holders, and with businesses, including tourism businesses. It should be noted that timeframes for follow up may change depending on the nature and scale of changes to activities and information provided to each Relevant Person.

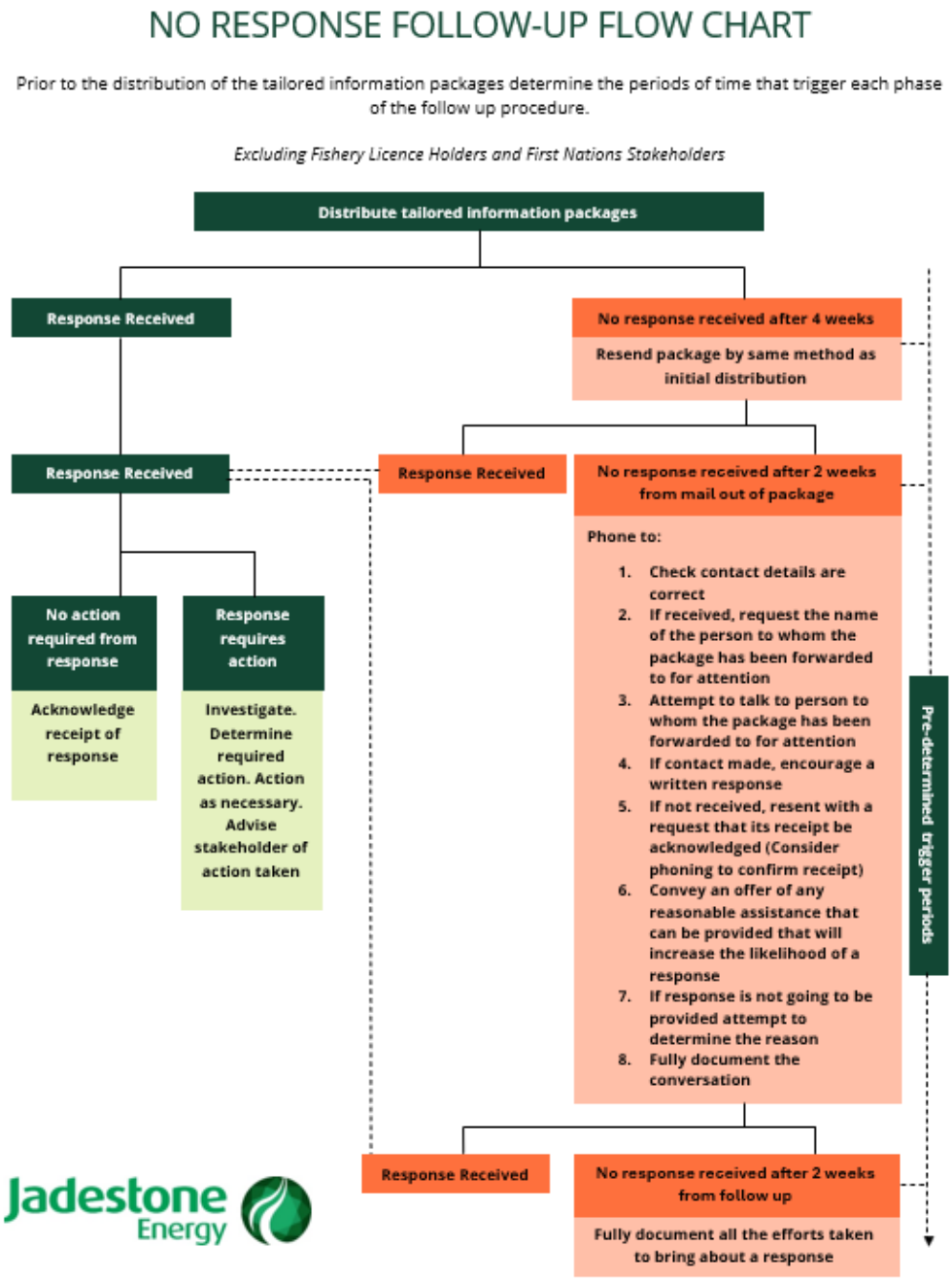


Figure 6-2: No response follow-up flow chart

6.8.2 Newspaper Advertisements

To assist Relevant Persons to self-identify display advertisements inviting consultation were placed in a number of newspapers (Appendix G) in March 2023:

- The Australian
- The West Australian
- NT News
- Koori Mail
- Kimberley Echo

To date, no responses have been identified as being elicited by the newspaper advertisements with no additional Relevant Persons self-identifying themselves.

Notifications on upcoming community engagement sessions held at various locations (refer to **Table 6-3**) were also advertised in the Broome Advertiser and Kimberley Echo from 14/03/2024 – 21/03/2024 to ensure relevant persons had opportunity to engage with Jadestone directly at the sessions, or through the advertisements themselves which had a QR code for the Jadestone website where key information packages and the EP are available for review.

6.8.3 Provision of Information

The OPGGS(E) requires titleholders to give each Relevant Person sufficient information to allow the Relevant Person to make an informed assessment of potential effects on their functions, interests, or activities from the activities in the EP. Provision of information is responsive and adaptive to the individual needs and circumstances of the Relevant Person seeking the information.

Updates on the Montara project, and advice about future activities have been provided via email and published on the Jadestone website. Copies of these emails (and responses from Relevant Persons) have been previously provided to NOPSEMA as a Sensitive Information Appendix under Regulation 9(8) of the OPGGS(E) and consultation specific to this EP revision has been included in Appendix G and the Sensitive Information Report submitted to NOPSEMA.

Jadestone believe that reasonable timeframes have been afforded to all Relevant Persons and following completion of community presentations is in a position to close consultation required for the development of this EP. A further email was issued to all Relevant Persons requesting that to enable feedback to be included in this resubmission that feedback is received by 31st January 2024.

As at the time of this current re-submission Jadestone will have been attempting to consult with all Relevant Persons for over twelve months.

6.8.4 Management of objections and claims

Objections or claims raised during consultation have been assessed and substantiated, as appropriate, by evidence, such as publicly available credible information and / or scientific data, including fishing data.

Where the objection or claim is substantiated, it has been assessed against Jadestone's risk assessment process and, where appropriate, controls applied to manage impacts and risks to ALARP and an acceptable level. Relevant Persons have been provided with feedback as to how their objection or claim has been assessed and if any controls were put in place to manage the risk or impact or risk to ALARP and an acceptable level. If the objection or claim is raised after the EP is accepted and triggers a revision of the EP this will be managed in accordance with Jadestone's Management of Change processes and the Relevant Person will be advised of the process.

6.9 International Consultation

The EP must demonstrate that Jadestone has consulted with Relevant Persons in accordance with regulations 25(1), which includes having consulted with each Relevant Person defined by sub regulations 25(1)(a), (b), (c), (d) and (e).

The EMBA has been used to determine the Relevant Persons for the activity. Through mapping and interrogation of databases, Jadestone is confident it has adequately identified Relevant Persons within the Australian jurisdiction.

The oil spill modelling predicts that in the event of a significant spill, oil could reach the shorelines of Timor Leste and Indonesia. Jadestone carefully considered its approach to consultation with international Relevant Persons and determined, for a number of reasons. it is not reasonably practicable to consult with all international Relevant Persons.

Identification of Relevant Persons

Indonesia, is an archipelagic nation, with about 150 million people (60%) living in coastal areas (Rudiarto, 2018). It is estimated that in Timor Leste approximately 600,000 people reside in coastal and lowland areas (UNDP, 2020). Due to the sheer numbers Jadestone cannot reasonably undertake identification of all potentially Relevant Persons within the area that may be affected in the event of a spill. Also, ascertaining the contact details of potentially Relevant Persons through the usual mechanisms such as consultation with industry bodies or government departments is not considered feasible.

Translation and dissemination of information

Even if it were possible to identify potentially Relevant Persons the number of dialects spoken in Indonesia and Timor Leste would make meaningful communication of information difficult. Estimates of the number of dialects in Timor Leste range from 15-40 (Usman, 2017). In Indonesia the number of languages reach over 800 (Translators without Borders, 2023).

Likelihood of an incident

Jadestone acknowledges the Montara oil spill incident in 2009 did result in impacts to the functions, activities, or interests of seaweed farmers in Indonesia. There is, due to a number of changes since then, a very low likelihood of an incident of this size occurring again. Additionally, a loss of well control incident is not considered credible during production operations at Montara (refer Section 8.6.2.2).

The Australian offshore oil and gas sector has re-evaluated its operational practices and response preparedness in light of the Montara incident and the 2010 Macondo incident in the Gulf of Mexico (also referred to as the Deepwater Horizon Incident) resulting in significant changes in regulations, well integrity, employee competencies and the preparedness and response capability in the event of a loss of hydrocarbons (DISR, 2017). The establishment of NOPSEMA along with regulatory reform has resulted in a significant change to management and execution of oil and gas activities in Australia.

Following the Montara and Macondo incidents, international well integrity guidance has been updated to reflect lessons learned from these incidents.

Appeal Decision

Given the difficulty of identifying and consulting with international Relevant Persons; Jadestone have determined that consultation with such international Relevant Persons is not capable of being discharged within a reasonable time due to the “opacity as to the identity of those with whom consultations are to take place” (Appeal decision, paragraph 136), and the above described changes in legislation, the management of the activity and the low likelihood of a significant spill event occurring.

6.10 Engagement Process

6.10.1 Historical engagement

Jadestone Energy purchased the existing Montara Operations Activity from PTTEP AA. PTTEP AA had already been in contact with many stakeholders regarding their intended review of the Operations EP. This included engaging WAFIC to consult with the relevant Western Australian managed commercial fisheries and fishing associations. PTTEP AA passed on issues and information gathered from this consultation. Jadestone has considered any referred information about the intended operation of the Montara facilities, and where appropriate addressed it in this EP (Table 1 in Appendix E).

Noting any comments in relation to PTTEP AA's response to the previous spill at the site or compensation from this spill were not considered relevant and have not been included. This summary of response was provided back to Relevant Persons who had previously commented through the PTEPP consultation to show how JSE were addressing these issues.

Following the purchase of Montara from PTTEP updates on the Montara project, and advice about future activities were provided via email to Relevant Persons and posted on the Jadestone website. Key notices were issued in October 2018, when an email with factsheet notifying Relevant Persons of change in operator and that Jadestone was preparing an EP for ongoing operations over the coming five years (general and fisheries package) was sent to Relevant Persons. A summary log is included in Table 5 of Appendix E and associated emails in the Sensitive Information Report (SIR).

6.10.2 Additional consultation – Montara-1,2,3 Wellhead Abandonment EP

Additional consultation on the Montara-1, 2, 3 wellheads was conducted as part of the now withdrawn Montara-1, 2, 3 Wellhead Abandonment Environment Plan (TM-70-PLN-I-00003) when the wellheads were planned to be left in situ. However, Jadestone are now committed to removing the wellheads prior to end of field life, and therefore additional consultation was issued to inform Relevant Persons of this change, and that the information pertaining to the wellheads would be included in an update to this Operations EP. The full text consultation on the wellheads has previously been submitted to NOPSEMA, and under Regulation 31 of the OPGGS(E)R is not included here. However, Jadestone's consultation with Relevant Persons since the decision to remove the wellheads has been included in this revised EP, in Appendix F and the SIR.

Relevant Persons contacted for the Operations EP update were selected based on those relevant for the proposed changes to the EP (i.e. produced water, decommissioning, bird management and GHG) as well as those Relevant Persons considered relevant to receive an update regarding the wellhead removal. A full list of those contacted and full text consultation is provided in the SIR to NOPSEMA. Given the minor changes to ongoing operations, no further consultation is proposed.

Consultation with DCCEEW was undertaken specifically around withdrawing the sea dumping permit for the originally proposed wellhead abandonment and with NOPSEMA for withdrawing the Montara-1,2,3 Wellhead Abandonment EP itself. Additional consultation was also conducted specifically with the DCCEEW to obtain advice on EPBC permits required in relation to proposed bird management measures. A summary of this consultation is provided in Appendix G.

In a future EP that includes removal of the wellheads or any other infrastructure, all Relevant Persons will be re-assessed for that activity and for the purposes of consultation to ensure all Relevant Persons are kept informed of the proposal.

6.10.3 Additional consultation – Current

Table 6-5 provides a summary of consultation undertaken to date for this revision of the EP.

Table 6-5: Information provided to Relevant Persons

Format	Description
Consultation document	An Invitation for Consultation document was prepared and distributed. The document was prepared with sub-regulation 25(2) and associated guidance in mind to ensure it adequately described the activity, including the risks associated with the activities. The document can be found in Appendix G.
Individual Responses	Jadestone provided written responses to all written enquires received from stakeholders to address their specific concerns throughout the duration of EP development. A separate SIR submitted to NOPSEMA contains all individual responses provided to stakeholders as part of this process.
Mail-outs, emails and phone calls	Mailouts, emails and phone calls were used to consult with Relevant Persons as part of the development of the EP. The SIR contains all of the mail-out correspondence, emails and phone call details, captured as part of Relevant Person consultation.
Community Engagement Sessions	In summary, eight community engagement sessions were held between 19 and 25 March 2024. All sessions were advertised in newspapers, on social media and on local notice boards (where available). All Relevant Persons that Jadestone have email addresses for were also informed of the sessions to provide further opportunity for engagement.

6.10.4 Community Engagement Sessions Summary

Community engagement sessions were held in March 2024 to ensure engagement with as many members of the communities along the coastline adjacent to the EMBA as possible. This was undertaken to complement the extensive searches and historical engagement already undertaken to identify Relevant Persons. The sessions ensured that Jadestone are confident that all potentially Relevant Persons have been identified and provided with adequate information and a reasonable timeframe to respond in accordance with Regulation 25 of the OPGGS(E)R. The overall statistics for the newspaper and social media reach are provided in Table 6-6. Through the advertising of these sessions, there was potential for over 16,074 readers (newspaper advertisements) and over 9,136 social media users to become aware of the community engagement sessions. Although attendance at the sessions was not close to this, the QR code on the advertisements also provided quick and easy access to further information.

Table 6-6: Summary of community information session statistics

Location	Advertising			Newspaper	Attendance	
	Reach[1]	Impressions[2]	Clicks[3]	Readership	Visits[4]	Conversations[5]
Mowanjum	544	3,312	18	14,474	6	2
Derby	1,006	4,856	29		38	10
Broome	3,796	12,530	82		60	8
Bidyadanga	160	2,873	9		10	6
Beagle Bay	611	3,214	17		10	8
Djarindjin	133	1,801	8		5	1
Wyndham	541	4,511	39	1600	55	9
Kununurra	2,160	7,517	56		50	11
Kalumburu[6]	185	1,680	15		n/a	n/a
TOTAL	**9,136**	**42,294**	**273**	**16,074**	**234**	**55**

Terms used:

1. *Reach: The number of people who saw the ad at least once.*
2. *Impressions: The number of times the advertisement was seen (e.g. if 1 person sees an ad 5 times, the reach would be 1 and impressions would be 5).*
3. *Clicks (links): The number of clicks on links within the advertisement.*
4. *This refers to the number of people that walked immediately past the information session location and either engaged in a conversation or choose to walk past.*
5. *This refers to the number of people that engaged in conversation.*
6. *Kalumburu social ads were cancelled in line with visit not proceeding due to lack of interest when KRED attempted to arrange a visit.*

Overall, the areas of concern related to:

- Protection of the natural environment, in particular food sources such as fish, dugong, and turtle habitats
- Receiving timely notification of spill events when such events are predicted to move towards the communities
- Beagle Bay specifically referenced the Lacepede Islands as an area to be protected as it is considered an area of significance to the community, largely due to Green Sea Turtle and Dugong presence. No other sites of significance were identified (one member indicated some areas are private and limited to either only men or only women).

In response to the above, Jadestone have included updates to the OPEP ensuring notifications to PBCs in the event of a level 2 or 3 spill moving towards the WA coastline.

6.10.5 Current status of consultation (May 2024)

Stakeholder	Key dates and information	Next steps
All Relevant Persons excluding commercial fishing licence holders and First Nations peoples.	19 December 2023 – Information package emailed. 8 February 2023 – Follow up email sent. Week commencing 22 February 2023 – follow up phone calls commenced and ongoing. 28 July 2023 – information package with updated EMBA emailed to all Relevant Persons and those no longer considered Relevant Persons. 14 March 2024 – email sent notifying all Relevant Persons of upcoming community consultation information sessions.	If two weeks later no response had been received, Jadestone commenced follow up phone calls to determine if the contact details were correct and if the information package had been received. If not received, the information package was sent to the contact details provided on the call. This process is complete and evidence is detailed in the stakeholder log, Appendix G. Consultation complete. No further actions required.
Commercial fishing licence holders. Details of licence holders consulted as part of the initial mailout are provided in the SIR.	9 January 2023 – Hard copy information package posted. 4 August 2023 – mail out information package with updated EMBA to relevant fisheries licence holders and those NT fisheries licence holders no longer considered Relevant Persons. To date of the 341 letters mailed out 9 have been returned to sender and one response received from a mud crab	Consultation complete. No further actions required.

Stakeholder	Key dates and information	Next steps
	fishermen self-identifying as a Relevant Person.	
Traditional Owners: Northern Land Council, Kimberley Land Council and Tiwi Land Council	7–10 March 2023	Consultation complete. No further actions required.
Nyul Nyul Aboriginal Corporation	22 February 2024 – Presentation to Directors of Nyul Nyul via Teams.	
Walalakoo Aboriginal Corporation	14 March 2024 – Presentation to Directors of Walalakoo in Derby.	
Yawuru Native Title Holders Aboriginal Corporation	10 April 2024 – meeting held with Directors of Yawuru In Broome.	
Nyangumarta Karajarri Aboriginal Corporation	10 April 2024 – meeting held with Directors of Nyangumarta Karajarri in Broome.	
Community Engagement Sessions	19 March 2024 – 25 March 2024: Community presentations held in Mowanjum, Derby, Broome, Bidyadanga, Beagle Bay, Djarindjin, Wyndham and Kununurra. Further details provided in Table 6-3.	No further actions required. Information provided to three people who requested information packs following the sessions.

6.11 Reasonable period

Recipients of the Invitation for Consultation document were encouraged to provide comment within a six-week period, allowing time for postal letters to be delivered and potential return posts to be received, as well as a timeframe for consideration of a response. Comments provided outside of this time were still considered and incorporated into the approvals process wherever practicable. Following this period, email reminders and phone calls were undertaken to remind Relevant Persons to respond, and Jadestone afforded a further four weeks to those Relevant Persons.

The Montara EP includes emergency response plans. Pursuant to the environment regulations, Commonwealth, and State and Territory Government departments, agencies and authorities have been, and will continue to be, consulted on response preparedness for an uncontrolled discharge of oil from vessels or the well. As of November 2023, any Relevant Persons who have not yet responded to any consultation efforts were contacted again to ask for responses to be sent by 31 January 2024. Allowing a further six- week timeframe for response. This marks over twelve months of consultation effort for this activity.

6.12 Assessment of Relevant Persons Objections and Claims

Prior to engaging with Relevant Persons, Jadestone reviewed the comments, objections and claims raised through the previous Montara Operations EPs.

For all responses received by Jadestone during the engagement, the merit of each of these responses was assessed. Historical assessment of merit is detailed in Appendix E. Assessment of merit for historical Montara-1,2,3 wellheads EP is found in Table 6-7 and the assessment of merit for current consultation

(post the Decision) in Table 6-8. The responses provided for other approvals were specific to those documents, therefore the references to tables and sections of the EP and OPEP have likely changed. However, as relevant, the required changes have been incorporated into the Montara Operations EP and OPEP.

The summary provides details of the information sent to Relevant Persons and others, and any responses received. It also details the assessment undertaken of any objection or claims. Consultation undertaken prior to this time has been reported in other EPs prepared for the Montara Project, along with all of Jadestone's and previous Montara titleholders accepted EPs and can be viewed on the NOPSEMA website.

Where an objection or claim was raised by a Relevant Person, they were provided feedback as to how it was assessed, whether the objection or claim was substantiated, and if so, if any additional controls were put in place to manage the impact or risk to ALARP and an acceptable level.

Where an objection or claim was substantiated by evidence such as publicly available credible information and/or scientific data, including fishing data, this was assessed as per the risk assessment process detail in Section 4 and controls applied where appropriate to ensure impacts and risks are managed to ALARP and an acceptable level.

Copies of the full text of any responses by Relevant Persons have been provided to NOPSEMA as a Sensitive Information Appendix under Regulation 9(8) of the OPGGS(E).

Table 6-7: Assessment of merit of concerns – Historical Montara-1,2,3 wellheads

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
Department of Transport	What will be the timing of EP submission to DoT? Ongoing communications with DoT. JSE requested clarification of the DoT focus of OPEP review.	***No objection, concern or claim.*** ***Request only:*** DoT is the key regulatory agency for the management of WA Oil Spill Response and provides significant input for EP consideration.	• Jadestone will submit the OPEP and supporting documents to DoT as per the IGN upon submission of the Montara EP to NOPSEMA • Jadestone will set up regular meetings with DoT to provide an update on the transitional process • DoT review focus for the OPEP is to ensure that Jadestone has the response arrangements in place to allow DoT to use and is aligned with the IGN
	Submission of 'Montara Ops EP Specific Information for DoT' with relevant EP and OPEP sections highlighted, in addition to an initial meeting, enabled a smooth review process. Documents refer to DoT Industry Guidance Note December 2017. Please refer to most recent version – July 2020. This version refers to the new 'State Hazard Plan which was subsequently updated in 2023– Maritime Environmental Emergency', WestPlan-MOP has been superseded. OSR Arrangements Table 8.1 information on Control Agency is incorrect.	Information noted and where appropriate OPEP updated	• DoT satisfaction with engagement and format noted • OPEP updated based on 'State Hazard Plan – Maritime Environmental Emergency' July 2020 • OSR arrangement has been updated
	Known or indicative oil type/properties – OPEP Appendices A3, A4 and A5 not provided.	JSE considers these comments have merit and have incorporated these into the OPEP.	• Oil assay information provided in Jadestone IMT Response Plan (Appendix C)

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
	Potential Incident Control Centre arrangements – inadequate detail. OSR Arrangements does not give details of ICC location or facilities. Section 11 states that IMT will be established in Perth, however no information given on: • what facilities are required for the ICC will ICC will be established at Jadestone offices, or • if alternate ICC locations have been identified.	JSE considers these comments have merit and have incorporated these into the OPEP.	• Jadestone ICC arrangements (Primary and alternative) detailed within IMT Response Plan sections 5.6, 6.6, and 6.7.
	Potential staging areas/ Forward Operating Base – OSR Arrangements focusses on North West Shelf activities: Section 11 refers to Dampier, Stag, Exmouth and North West Shelf. Lack of detail around Montara requirements in Kimberley region.	JSE considers these comments have merit and have incorporated these into the OPEP.	• Jadestone FOB arrangements detailed within IMT Response Plan sections 5.7 and 5.8.
	Details on proposed IMT structure – OSR Arrangements Figure 5.1 shows Jadestone IMT Structure. In the event of a cross jurisdictional response as per the Montara scenario please show how the DoT IMT would interact with the Jadestone IMT. Include detail on IMT structures relevant to this specific scenario. For example, how Version: 1 Approved Date: N Owner: OSRC Objective ID: A2492301 Page 2 of 2 would Northern Territory oil spill response arrangements interact with these structures?		• Jadestone IMT Structure detailed within IMT Response Plan section 5.5 and Appendix A (OSRA), sections 3.2 (WA) and 3.3 (NT).
	Details of exercise and testing arrangements of OPEP/OSCP – OSR Arrangements Section 12.2 focuses on Stag. No detail given around Montara. As stated in the Industry Guidance	JSE considers these comments have merit and have incorporated these into the OPEP.	• Jadestone Test/Exercising arrangements detailed within IMT Response Plan section 10 (Administration).

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
	Note, DoT has capacity for involvement in Petroleum Titleholder exercises, subject to availability of DoT resources.		
	Confirmation that the Petroleum Titleholder has access to staff for the Initial Personnel Requirements as outlined in Annex 2 of the IGN – OSR Arrangements Section 4.2 confirms the initial personnel requirement. Please also note that as per the IGN, the Deputy Planning Officer and the Deputy Logistics Officer must have intimate knowledge of Jadestone processes.	JSE considers these comments have merit and have incorporated these into the OPEP.	• Jadestone arrangements detailed within IMT Response Plan Appendix A (OSRA) section 3.2 (WA).
Australian Maritime Safety Authority	Shipping traffic plot shows area clear of major international shipping routes but noting that some heavy vessels following the charted Osborn Passage will pass through both permits to the north of the Montara Venture FPSO. The AIS also shows support vessels in the area of activity.	Information noted and risk assessment updated.	• Considered during ENVID. Refer to Interference with other users in EP.
	To notify AMSA's JRCC (rccaus@amsa.gov.au, Ph 1800 641 792) 24-48 hrs prior to operations commencing.	JSE considers these comments have merit and have incorporated these into the EP.	• Item included in implementation section of EP to ensure notification 48 hrs prior to operations commencing.
	Australian Hydrographic Office (datacentre@hydro.gov.au) to be contacted no less than 4 weeks prior to operations commencing for the promulgation of related notices to mariners.	Action to be taken.	• Item included in implementation section of EP to ensure notification 4 weeks prior to commencement.
DPIRD (Fisheries)	Key items raised by DPIRD (Fisheries) regarding Montara operation were:	DPRID (Fisheries) is the key regulatory agency for the management of State fisheries and provides significant input for EP consideration.	

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
	Consultation Request for JSE to consult with: • WAFIC, PPA and Recfishwest • Commercial fishers.	JSE agrees with DoF comments and has undertaken consultation with the representative bodies requested.	• Consultation undertaken with WAFIC, PPA, Recfishwest and Commercial fishers using current datasets which fulfils Fisheries request.
	Timeframes • Advice provided valid for duration of activity commencing within six months of the date this letter is signed. • Request to be advised of actual commencement date and any changes to this proposal as soon as practicable prior to the commencement of any activity. Response to any updated advice provided at this time required.	JSE considers these comments have merit and have incorporated these into the EP.	• Timeline for validity of advice noted. • Item included in implementation section of EP to ensure notification 4 weeks prior to commencement.
	Pollution Emergency Plans • Request that when developing OPEP JSE collects baseline marine data to compare against post spill monitoring. Baseline data should be made available to the Department. • Consideration of spawning grounds and nursery areas should be included in OPEP.	JSE considers these comments have merit and have incorporated these into the EP.	• Baseline sampling was undertaken by PTEPP (Montara Environmental monitoring: Produced Formation Water Chemical Characterisation and Potential effects on the receiving Environment 2018). These reports can be made available to the DPIRD. • Fish spawning is addressed in Section 5.5.3 including Table 5-2.
	Biosecurity • JSE must take reasonable measures to minimise the biosecurity risk. Recommend using the Departments Vessel Check tool. • Request that any suspected marine pest or disease be reported within 24 hours.	JSE considers these comments have merit and have incorporated these into the EP.	• ALARP assessment of biosecurity risk included in Section 8.2, including management of residual risks. This includes a performance standard (Section 8.2.3) that all vessels sourced from outside WA must use the Vessel check process and for this assessment to indicate low/acceptable risk rating. Vessels mobilised from international

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
			waters will have DoA approval and Ballast Management Plans and Ballast Record Books. • Item included in implementation section of EP to ensure notification within 24 hours of biosecurity incident.
	Implementation Ensure all vessel and asset operators associated with the project are aware of IMS risk and management methods.	JSE considers these comments have merit and have incorporated these into the EP.	• A JSE IMS management plan has been developed to ensure implementation of appropriate standards across the company, including contractors.
WAFIC	Response requesting consideration of more detailed response to previous queries raised with PTEPP.	JSE considers these comments have merit and actioned them during consultation process.	• JSE responded 14.11.18. Response to PTEPP issues included in package sent to previous fisheries responders.
	Response in relation to PTEPP news article seeking clarification of safety, maintenance and risk reduction and existing issues leading to another oil spill.	JSE considers merit in providing further information to address their concerns.	• 20.11.18- response to WAFIC outlining JSE position and commitments. This was forwarded by WAFIC to fishers on 20.11.18. Refer to Appendix F and SIR for full text of response. No further issues raised following response.
	Additional consultation with WAFIC to discuss removal of wellheads and WAFIC's position on decommissioning in the future and future engagement considerations.	***No objection, concern or claim.*** Information noted and where appropriate EP updated.	• Refer to Appendix F and SIR for full text of response.
DCCEEW	Additional consultation to withdraw permit application for sea dumping. Additional consultation with DCCEEW on bird management on the Montara facility and confirmation on regulatory permitting associated with this.	***No objection, concern or claim.*** Information noted and where appropriate EP updated.	• No further information required to action the withdrawal of the permit application. • Confirmation that a Part 13 permit under the EPBC Act is not applicable for the Montara FPSO. • Refer to Appendix F for full text of response.

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
NOPSEMA	Additional consultation to withdraw the Montara-1,2,3 Wellhead Abandonment Environment Plan.	***No objection, concern or claim***. Information noted and where appropriate EP updated.	• Refer to Appendix F for full text of response.

Table 6-8: Assessment of merit of concerns – Current consultation (post the Decision) as of May 2024

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
Australian Communications and Media Authority (ACMA)	***No objection, concern or claim*** Montara facility not within the vicinity of a protection zone in relation to submarine cables of national significance.	Noted.	No further action required.
Australian Fisheries Management Authority (AFMA)	***No objection, concern or claim*** Noted the importance of consulting with all fishers who have entitlements to fish within proposed area, either through the relevant fishing industry associations or directly with fishers.	Comment has merit and has been actioned.	In accordance with this guidance, as part of Jadestone's standard approach to consultation the relevant fishing industry associations and/or individual fishers have been engaged with during the development of the EP.
Australian Hydrographic Office (AHO)	***No objection, concern or claim*** Acknowledged and noted will be included in charting information.	Noted.	No further action required.
Australian Institute of Marine Science (AIMS)	***No objection, concern or claim*** Planned activities will not interfere with AIMS operations.	Noted.	No further action required.

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
Australian Maritime Oil Spill Centre (AMOSC)	***No objection, concern or claim*** Request for Jadestone to verify contents of OPEP are consistent with AMOSC's Service Level Statement.	Noted.	OPEP updated to be in line with SLS.
Australian Maritime Safety Authority (AMSA)	***No objection, concern or claim*** Stakeholder Engagement: • Australian Hydrographic Office (datacentre@hydro.gov.au) to be contacted no less than 4 working weeks prior to operations commencing for the promulgation of related notices to mariners. • Notify AMSA's Joint Rescue Coordination Centre (JRCC) (rccaus@amsa.gov.au, Ph 1800 641 792) 24-48 hrs prior to operations commencing and at cessation of operations. • Plan to provide updates to both the Australian Hydrographic Office and the JRCC on progress and, importantly, any changes to the intended operations.	JSE considers these comments have merit and have incorporated these into the EP.	• Item included in implementation section of EP (Table 6-9) to ensure notification 4 working weeks prior to commencement. • Item included in implementation section of EP (Table 6-9) to ensure notification 48 hrs prior to operations commencing and at cessation. • Item included in implementation section of EP (Table 6-9) to ensure notification to AHO and JRCC.
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	***No objection, concern or claim*** Correspondence in relation to commercial Southern Bluefin Tuna fishing effort within the EMBA.	Noted.	No action required.

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
Beagle Bay – Community Engagement Session Attendees	***No objection, concern or claim*** *Reference to the Lacepede Islands as an area to be protected in the event of a spill.*	Noted.	No action required as the islands are outside of the Montara and Skua EMBAs.
Broome Visitor Centre (BVC)	***No objection, concern or claim*** Correspondence in relation to communicating with the Broome tourism industry through its regular newsletter.	Noted.	No action required.
Carnarvon Energy	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
City of Darwin (COD)	***No objection, concern or claim*** Stakeholder Engagement • COD to be listed as RP in EP. • COD to be notified in event of spill. • COD to be notified when EP is approved. • COD to be notified if waste for disposal at Shoal Bay Waste Management Facility planned for future wellhead removals.	Comment has merit and has been actioned.	• Table 6-4 updated to include COD. • COD added to Table 6-10 Triggered consultation actions and will be notified as soon as possible of any hydrocarbon spill. • COD to be notified once EP approved. • COD to be notified if waste for disposal at Shoal Bay Waste Management

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
			Facility is planned for future wellhead removals.
Clean Energy Regulator (CER)	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Commonwealth Fisheries Association (CFA)	***No objection, concern or claim*** CFA are not resourced to give feedback. Advised to direct enquiries to the associations that represent the directly affected fisheries/fishers. May need to engage on a fee for service basis.	Comment has merit and has been actioned.	In accordance with this guidance, as part of Jadestone's standard approach to consultation the representative bodies for Commonwealth fisheries have been engaged with during the development of the EP.
Community Engagement Sessions Feedback	***No objection, concern or claim*** *General request to receive timely notification of spill events when such events are predicted to move towards the communities and that ranger groups could assist.* *General concern about protection of food sources such as dugong and turtles as well as natural environment.*	Comment has merit and has been actioned.	An EPS has been included in the OPEP for a level 2 or 3 spill, if oil spill trajectory modelling shows potential contact with the WA coastline, relevant PBCs will be notified within 24 hours of oil spill modelling trajectory confirmation.

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
			The OPEP also includes SMPs for the monitoring of impacts to fauna and the natural environment in the event of a spill and the EP and OPEP have preventative and mitigative control measures in place for all credible spill scenarios. No further action required.
Department of Agriculture, Fisheries and Forestry (DAFF) Marine Biosecurity Unit	***No objection, concern or claim*** Provided information on general biofouling management requirements.	Comment has merit and has been actioned.	Biofouling management is covered under Jadestone's Biosecurity Manual and has been included in the EP (Section 8.2 Marine Pest Introduction).
Department of Biodiversity, Conservation and Attractions (DBCA) (WA)	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Department of Foreign Affairs and Trade (DFAT)	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
Department of Industry Tourism and Trade (DITT) (NT)	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
WA Department Transport (DoT)	***No objection, concern or claim*** Provided guidance note.	Noted.	No action required.
Director of National Parks (DNP)	***No objection, concern or claim*** Stakeholder Engagement • Confirmed no authorisation required as outside AMP and no objections or claims at this time. • Link to guidance note on Marine Parks provided. • When preparing the EP AMP values and representativeness should be considered and all impacts and risks to AMPs identified and shown to be managed to acceptable level and ALARP. Consistency with the management plans should also be included. • Notification details in the event of an incident provided. • DNP should be made aware of oil/gas pollution incidences which occur with a marine park or are likely to impact on a marine park as soon as possible. Notification should be provided to the 24-hour Marine Compliance Duty Officer on 0419 293 465. Notification should include: o Titleholder details o Time and location of the incident (including name of marine park likely to be affected) o Proposed response arrangement as per the Oil Pollution Emergency Plan o Confirmation of providing access to relevant monitoring and evaluation reports when available and o Contact details for the response coordinator.	Jadestone considers these comments to have merit and they have been addressed in the EP.	• Guidance note is reference in EP. • EP has been drafted to include information on the AMPs. With no AMP in the operational area there is not expected to be any impact from planned activities on any AMPs. • Triggered consultation item included to notify AMP DG if any change to planned activity that results in change in risk to AMP (Table 6-10). • Item included in Implementation

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
			section of the EP (Table 6-10) to ensure DNP notification in event of an oil/gas pollution incident.
Department of Defence (DOD)	***No objection, concern or claim*** • Activity is located outside any Defence Training Areas and restricted airspace. • Advised of risk of UXOs. • Continued liaison with AHS for Notice to Mariners required.	Jadestone considers these comments to have merit and they have been addressed in the EP. JSE considers this comment to have merit and have incorporated these into the EP.	Item included in Implementation section of the EP (Table 6-10) to ensure AHS notification three weeks prior to commencement of activities.
Department of Environment, Parks & Water Security (DEPWS) (NT)	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Department of Planning, Lands and Heritage (DPLH) (WA)	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Department of Primary Industries and Regional Development (DPIRD) (WA)	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Department of Water and Environmental Regulation (DWER) (WA)	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
Greenpeace	Requested information on emissions, spill modelling and spill response plan as well as information on how Jadestone have identified Relevant Persons and why Greenpeace is considered a relevant person.	Comment has merit and has been actioned.	Response sent with information detailing how Relevant Persons have been identified, as well as requested information on emissions, spill modelling and spill response plans. No further response received.
Kimberley Land Council (KLC)	***No objection, concern or claim*** Ongoing discussions seeking guidance and parties to contact for fair and meaningful consultation process and learning about the location and capabilities of the Indigenous marine ranger groups around the Kimberley coastline and possible future opportunities for interaction with marine rangers.	Noted.	No action required.
Kimberley Port Authority (KPA)	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Kimberley Quest	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Kuri Bay Sport Fishing and Adventures	Requested information on capacity to deal with a spill, response time and where are response team based.	Comment has merit and has been actioned.	Objectives of OPEP sent as well as information on spill response strategies and response time and resources.
Melbana Energy	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
National Offshore Petroleum Titles Administrator (NOPTA)	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Northern Land Council (NLC)	***No objection, concern or claim*** Ongoing discussions seeking guidance and parties to contact for fair and meaningful consultation process.	Noted.	No action required.
Northern Territory Chamber of Commerce (NTCC)	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Northern Territory Seafood Council (NTSC)	***No objection, concern or claim*** Ongoing correspondence in relation to advice on identifying commercial fishing licence holders.	Noted.	No action required.
Northern Territory Guided Fishing Industry Association (NTGFIA)	***No objection, concern or claim*** Ongoing correspondence in relation to advice on identifying commercial fishing licence holders.	Comment has merit and has been actioned.	Jadestone sent through information on wellheads to be removed.
Northern Prawn Fishery (NPF)	NPF requested project EMBA to be able to provide advice on impacts on the NPF.	Noted	Jadestone have provided NPF with updated EMBA
Nyangumarta Karajarri Aboriginal Corporation	Questions raised include: **How will NKAC and its members know if an oil spill has occurred?* The Environment Plans have a notification requirement that if an oil spill occurred and the oil was heading towards the Corporation's coast the Corporation would be advised. **Are there job opportunities for members of the Corporation?* Jadestone is part of the National Energy Technician Training Scheme (NETTS) Apprentice Program run by Programmed. The Program welcomes and encourages Aboriginal and Torres Strait Islander people to apply. **Can Jadestone provide support to marine rangers program?* As a small company, Jadestone is not in a position to provide funding to marine ranger groups for oil spill response.	Comments have merit and have been actioned.	JSE has issued response to Nyangumarta Karajarri questions. Refer to SIR for responses.

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
Nyul Nyul Aboriginal Corporation	Questions raised in meeting include: **Is it expected that Jadestone would continue to own and operate the field through to the end of production?* Yes, most likely Jadestone would own and operate the field through to the end of production and be responsible for decommissioning. **Why are Nyul Nyul being consulted when Montara operation is so far away?* Due to EMBA. In addition to consulting with the Directors and Elders of PBCs Jadestone had on the recommendation of KLC, engaged KRED to assist Jadestone to provide presentations on the Montara Operations EP and the Skua-11 Drilling EP at communities along the Kimberley coast and into the western side of the Top End of the Northern Territory. *The Nyul Nyul Directors indicated the Lacepede Islands, an A-class reserve, about 30 kilometres from the Dampier Peninsula is an important breeding habitat for green turtles, and an Important bird area, supporting brown boobies, roseate terns, masked boobies, Australian pelicans, lesser frigatebirds, eastern reef egrets, silver gulls, crested, bridled and lesser crested terns, common noddies, pied and sooty oystercatchers, grey-tailed tattlers, ruddy turnstones, great knots and greater sand plovers.* *The Nyul Nyul Directors emphasised that the Lacepede Islands are one of the most significant places to their culture and want to share the knowledge that the rangers and the neighbouring PBCs have about the Islands.* *Nyul Nyul Directors indicated the importance of Jadestone taking the opportunity to visit Nyul Nyul country to talk directly with traditional owners and understand potential impacts, and issued an invitation to Jadestone to visit country, including the Lacepede Islands.* *Nyul Nyul mentioned the importance of talking to their neighbouring PBCs, Jadestone confirmed they are consulting with all PBCs along the coastline adjacent to the EMBA to ensure everyone has an opportunity to review the potential impacts on any functions, activities, and interests.*	Comments have merit and have been actioned.	JSE has issued responses to Nyul Nyul questions. Refer to SIR for responses.
Oil Spill Response Limited (OSRL)	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Pilbara Port Authority	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
Ponant	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Recfishwest	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Regional Harbour Master (RHM)	***No objection, concern or claim*** Vessel collision doesn't mention compliance with International Regulations for Prevention of Collisions at Sea.	Comment has merit and has been actioned.	The EP details legislative requirements EP will comply with, including the *Navigation Act*, SOLAS and COLREGS.
Santos	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Shell	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Shire of Derby/ West Kimberley (SDWK)	***No objection, concern or claim*** Shire has limited capacity to deal with a spill.	Comment has merit and has been actioned.	• No requirement for resources from the Shire in the unlikely event of a spill. • Objectives of OPEP sent to SDWK.
Shire of Wyndham East Kimberley (SWEK)	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
The Great Escape Charter Company	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Tiwi Land Council (TLC)	***No objection, concern or claim***	Noted.	No action required.

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
	Ongoing discussions seeking guidance and parties to contact for fair and meaningful consultation process.		
Victoria Daly Regional Council	***No objection, concern or claim*** No comments on the proposed activity.	Noted.	No action required.
Walalakoo Aboriginal Corporation	Questions raised in meeting include: ** What communities will Jadestone visit during community sessions?* JSE provided dates, locations and times. Confirmed these were information sessions, consultation is done through PBC in the first instance and the PBC will also be informed of the sessions which are all being coordinated by KRED. ** Jadestone buys old assets, how are these maintained?* Provided overview of asset integrity inspection and maintenance program implemented at Montara. **What chemicals are used that can harm the environment?* Provided explanation of produced water and the addition of chemicals to assist in the process. All chemicals must be approved before they can be used and chemicals for planned discharges in produced water must include an environmental assessment. ** How far is Kalumburu from Montara Venture?* Figure will be provided with distances to key communities and also to Brue Reef, which was identified during the meeting as culturally important to WAC (historically fished at Brue Reef). Jadestone have requested the coordinates of Brue Reef. ** How JSE is engaging with other communities?* JSE reached out to other PBCs with similar request to meet. Additionally, community information sessions.	Comments have merit and have been actioned.	JSE has issued responses to WAC questions. Refer to SIR for responses.
Western Australian Fishing Industry Council (WAFIC)	***No objection, concern or claim*** Ongoing correspondence in relation to advice on identifying commercial fishing licence holders.	Noted.	No action required.
Wyndham Port WA Cambridge Gulf Limited	***No objection, concern or claim*** No concern to shipping operations resulting from proposed activities. Offered logistical report if required.	Noted.	No action required.

Relevant Person	Relevant Person concern, objection or claim	JSE assessment of merit	JSE response
Yawuru Native Title Holders Aboriginal Corporation	Questions raised include: **How will YAC and its members know if an oil spill has occurred?* The Environment Plans have a notification requirement that if an oil spill occurred and the oil was heading towards the Corporation's coast the Corporation would be advised.	Comments have merit and have been actioned.	JSE has issued response to YAC questions. Refer to SIR for responses.

6.13 Ongoing Consultation with Relevant Persons

Whilst Jadestone considers that, for the purpose of this EP, its consultation is now complete, it will continue to consult with Relevant Persons by continuing to seek face-to-face meetings with the Directors of the seven PBCs it has not yet had the opportunity to meet with, providing project updates as information becomes availablerelation to specific activities and broader project information, via emails and by the provision of information on the Jadestone website or other means (such as advertising) as appropriate. Jadestone will also remain available to attend meetings and presentations as requested where reasonable.

Table 6-9 outlines the ongoing consultation (and timing) requirements for the activity. Records of ongoing Relevant Person consultation are maintained in Jadestone's electronic Document Management System (eDMS). Any changes to the activity that could result in a change to the interests, functions, or activities to Relevant persons will be subject to Jadestone's Management of Change process (Section 9.4.3) in order to determine if Relevant Persons and potentially Relevant Persons would be significantly affected by the change. If so, additional information will be provided to Relevant Persons and any potentially Relevant Persons for the purpose of seeking feedback on the proposed changes. Additional triggered consultation actions are provided in Table 6-10.

Table 6-9: Standard consultation actions

Activity	Frequency and method	Responsibility
Provision of updates on activity progress.	Updates to Jadestone website on the Montara Operations activity provided as needed.	HSE Manager
Close out of communication commitments made during pre-start consultation including: • Provide response organisations with a copy of the OPEP. • Summary Notification to DMIRS of NOPSEMA EP acceptance. • Consultation with DNP regarding SMP design.	Email DMIRS, DNP and DoT stakeholder contacts within 3 months with details on acceptance date and any significant changes to the activity.	HSE Manager
Email DPIRD and AHO stakeholder contact.	Within 4 weeks of commencement date.	HSE Manager
Review of Relevant Persons list.	Annually unless triggered earlier. Review the list of Relevant Persons within the EMBA to confirm relevance and any updates due to responses received through the consultation mailbox.	Country Manager
Confirmation of fishery licence holders within EMBA.	Annually – request contact details of fishers within the operational area and EMBA, compare against database for any additions to the list. Provide information package via post.	Country Manager
Notify PBCs of acceptance of EP and provide NOPSEMA's Statement of Reasons.	Within 4 weeks of EP acceptance.	HSE Manager
Review of PBC contacts within EMBA.	Every 6 months, Jadestone will confirm contact name and details of PBCs to ensure strong relationship is maintained.	HSE Manager

Activity	Frequency and method	Responsibility
Provision of broader information relating to Jadestone environmental policy.	Website updates as required.	Country Manager
Notification of AMSA Joint Rescue Coordination Centre (JRCC).	48-24 hours from commencement of operations.	Emergency Response Lead

In addition, Jadestone will undertake additional triggered consultation as outlined below, (Table 6-10).

Table 6-10: Triggered consultation actions

Trigger	Action	Responsibility
Feedback received from Relevant Person.	Follow consultative process outlined in the Jadestone Stakeholder Management Plan (SMP) (JS-70-PR-I-00034) to understand if a revision to the EP is required.	Country Manager
Meeting with PBC identifies new informationnot currently addressed in EP.	Follow Jadestone Management of Change process to identify if a change to the EP is required. Log correspondence.	HSE Manager
Deviation to Montara operations from those originally provided in consultation.	Notification to Relevant Persons via email. Email DPIRD stakeholder contact a minimum of 4 weeks prior to commencement of any varied activity. Notify AMP Director General any change to risk within AMPs. The deviation will be assessed through the Management of Change procedure to understand which other Relevant Persons and potentially Relevant Persons may need to be notified.	Country Manager
Change to risk profile in operational area.	The deviation will be assessed through the Management of Change procedure to understand which Relevant Persons and potentially Relevant Persons may need to be notified describing the change in risk profile and proposed risk management.	Country Manager
Change to risk profile in EMBA.	The deviation will be assessed through the MOC procedure to understand which Relevant Persons and potentially Relevant Persons may need to be notified describing the change in risk profile and proposed risk management.	HSE Manager
Oil spill event.	• Notification to response agencies and government agencies by phone. • Attempt to electronically notify all Relevant Persons listed in Montara EP Consultation plan within 72 hours of spill. • Ongoing updates and communication in accordance with requirements and response procedures. • Notification of DPIRD via environment@fish.wa.gov.au within 24 hours of incident report. • If oil spill trajectory modelling shows potential contact with the Western Australian coastline, relevant PBCs will be notified within 24 hours of oil spill modelling trajectory confirmation.	IMT Lead

Trigger	Action	Responsibility
	• Notify AMP Director General within 24 hours of incident report and prior to spill response activities within AMP on 0419 293 465. To include titleholder details, time and location of the incident, proposed response arrangements and locations as per the OPEP and contact details for the response coordinator.	
AMP access.	Notify AMP Director General of SMP (or other response activities) within AMP 10 days prior to entering (where possible) and at the cessation of activities in AMPs.	IMT Lead
Biosecurity incident: suspected marine pest or disease.	Notification of DPIRD via aquatic.biosecurity@dpird.wa.gov.au or 1800 815 507 within 24 hours.	HSE Manager
Change to Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations 2009 consultative requirements.	Review of SMP.	HSE Manager
Change to Montara operating jurisdiction such that other legislative instruments stipulate new or additional consultative requirements.	Review of SMP.	HSE Manager
An element of Jadestone's continuous improvement process identifies the consultation procedure needs to be amended.	Review of SMP	HSE Manager
Change to infrastructure that affects Petroleum Safety Zone (PSZ).	Notify the Australian Hydrographic Service of activities and infrastructure for inclusion in Marine Notices.	HSE Manager

The purpose of ongoing consultation is not to elicit further information for the management of the activity, but rather to maintain relationships and notify Relevant Persons of any significant changes to the activity or risk.

Any potentially new Relevant Persons or changes to existing Relevant Persons will be identified through ongoing consultation through the EP review process, in accordance with Section 6.5. Where potentially new Relevant Persons are identified, they will be contacted and provided information about the activity relevant to their functions, interests, or activities. Any objections or claims will be managed as per Section 6.8.4.

Jadestone will undertake additional triggered consultation as outlined in Table 6-10, should an unplanned event occur.

Whilst Jadestone considers that, for the purpose of this EP, its consultation is now complete it is committed to continue their efforts to consult with each of the Traditional Owner Relevant Persons that have been identified. As a result of the community engagement sessions and the presentations to PBCs that have already occurred, and any presentations to PBCs that may occur in the future, Jadestone will make any necessary amendments to its ongoing consultation strategy.

Presently the ongoing consultation strategy includes attendance at appropriate community forums, meetings with the Directors and Elders of the PBCs as needed, meetings with Australian Energy Producers (AEP) and other titleholders.

6.14 Environmental Performance

Hazard		**Relevant Person consultation**		
Performance outcome		**Relevant Persons are kept informed of activities**		
ID	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
001	Stakeholder Management Plan (JS-70-PR-I-00034)	Relevant Persons identified according to current Regulatory requirements.	Consultation records.	HSE Manager
002		Relevant Persons provided a minimum 4-week period to respond to stakeholder information issued on the proposed planned activities and followed up in accordance with the Plan.		
003		If there is a potential significant change in the risks or impacts to Relevant Persons due to planned activities the Relevant Persons are to be consulted prior to the activity commencing.		

7. ASSESSMENT – PLANNED ACTIVITIES

7.1 Light emissions

7.1.1 Description of aspect

Artificial light	During the Activity, safety lighting on the FPSO, WHP and support vessels will generate light emissions that may potentially affect marine fauna behaviour. Lighting typically consists of bright white (metal halide, halogen, fluorescent) lights. Direct light spill on surface waters will be limited to the area directly adjacent to the facility and support vessels as they operate within the Operational Area. In addition to the light emitted from navigational and safety lighting, continuous flaring occurs during operations. The flare system is located on the FPSO. Flaring of gases may occur during routine operations, unplanned maintenance shutdowns, process upset conditions and events that for safety reasons require hydrocarbon inventory to be released to the flare.

7.1.2 Impacts

Artificial lighting has the potential to affect marine fauna that use visual cues for orientation, navigation, or other purposes, resulting in behavioural responses which can alter foraging and breeding activity in marine reptiles, seabirds, fish and dolphins, create competitive advantage to some species and reduce reproductive success and/ or survival in others.

Potential impacts to marine fauna from artificial lighting associated with the Montara operations infrastructure are:

- Disorientation, attraction or repulsion
- Disruption to natural behavioural patterns and cycles.

These potential impacts are dependent on:

- Density and wavelength of the light and the extent to which light spills into areas that are significant for breeding and foraging
- Timing of overspill relative to breeding and foraging activity
- Sensitivity and resilience of the fauna populations that are affected.

Sensitive receptor	Impact description
Plankton Fish, Sharks and Rays	The response of fish to light emissions varies according to species and habitat. Experiments using light traps have found that some fish and zooplankton species are attracted to light sources (Meekan et al. 2001). Lindquist et al. (2005) concluded from a study that artificial lighting resulted in an increased abundance of clupeids (herring and sardines) and engraulids (anchovies); these species are known to be highly photopositive. Shaw et al. (2002), in a similar light trap study, noted that juvenile tuna (Scombridae) and jack (Carangidae), which are highly predatory, may have been preying upon higher than usual concentrations of zooplankton that were attracted to a vessels light field. There is a potential for individuals to be impacted by light emissions from lighting and flaring. However, as the Operational area does not contain any significant feeding, breeding or aggregation areas for fish it is more likely there will individuals traversing the area then large groups of species. Light associated with the Operations will affect a small portion of the vast biologically important foraging area for whale sharks. However, impacts at a population level are not expected. Light impacts to plankton, fish, sharks (including whale sharks) are considered ***negligible.***

Sensitive receptor	Impact description
Marine reptiles	Turtles are known to use a variety of cues for navigation when in the water. However, light is not thought to be an important cue for adults, although adults are considered to have a preference for non-illuminated beaches (EPA 2010). The most significant risk posed to marine turtles from artificial lighting is the potential disorientation of hatchlings following their emergence from nests. Hatchlings use the light of the oceanic horizon to orientate themselves towards the sea when making their way into the water for the first time; the oceanic horizon is almost always brighter than the elevated landward horizon (EPA 2010). Hatchling behaviour may therefore be affected when exposed to an artificial light source at certain intensities and distributions, potentially leading to disorientation when attempting to migrate to the ocean. The diffuse glow from light sources can cause disorientation to hatchlings up to 4.8 km from the light source (Limpus 2006, in EPA 2006). The closest turtle nesting habitat to the Operational Area is significantly beyond this distance as Cartier Island is approximately 84 km north-west of the FPSO. The nearest BIA boundary for marine reptiles (green turtle) is 64 km west of the Operational area. As a result, impacts to adults and hatchlings are expected to be ***negligible***. Light generated by flaring events may not affect hatchlings as much as other light sources. With the most disruptive wavelengths to marine turtle hatchlings to be in the range of 300–500 nm, spectral analysis of flares on Thevenard Island on the North-West Shelf (Pendoley 2000) suggests that flare light does not contain a high proportion of light wavelengths within this range. Due to the paucity of information, the direct effect of artificial light on sea snakes is largely unknown. Sea snakes may experience indirect effects such as changes in predator-prey relationships and disorientation, attraction or repulsion may occur. Sea snakes are thought to occur more commonly on reef habitats that are not present in the Operational area. It is recognised that some pelagic sea snake individuals may occur and be attracted to the light from the infrastructure. However, while such individuals may come to investigate the light source it is considered unlikely that they will stay within the area. As such impacts to sea snakes are considered ***negligible.***
Seabirds.	It is broadly accepted that seabirds do aggregate around offshore production facilities in above average numbers (Verhejen 1985; Weise et al. 2001). This is predominantly attributed to the observation that structures in deeper water environments tend to aggregate marine life at all trophic levels, creating food sources and shelter for seabirds (Surman 2002). The light from the operating production facilities and the flare may also provide enhanced capability for seabirds to forage at night (BHPB 2005). Studies in the North Sea indicate that migratory birds are attracted to lights on offshore platforms when travelling within a radius of 3–5 km from the light source. Outside this area their migratory path will be unaffected (Marquenie et al. 2008). Given that the Operational area is outside a flyway, and the nearest migratory bird breeding/ roosting site is Cartier Island which is located approximately 80 km north-west of the FPSO only a small number of seabirds are expected to be affected by artificial light emissions whilst in transit, any behavioural disturbances such as disorientation and attraction would be a *Slight effect; recovery in days to week*. As such impacts to seabirds are considered ***negligible.***
Other species	There is no evidence to suggest that artificial light sources adversely affect the migratory, feeding or breeding behaviours of cetaceans. Cetaceans predominantly utilise acoustic senses to monitor their environment rather than visual sources (Simmonds et al. 2004), so light is not considered to be a significant factor in cetacean behaviour or survival. Light from the Montara operations is not considered to have an impact on marine mammal behaviour.

Consequence	Ranking
Negligible	Acceptable

7.1.3 Environmental performance

Aspect		**Light**		
Performance outcome		**Activity lighting managed in accordance with OHS requirements**		
ID	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
004	Performance Standards Report (MV-70-REP-F-00002) ensures navigation aids and equipment meet regulatory and safety requirements	Vessel navigation lights are visible as per COLREGs requirements.	CMMS confirms navigational lighting is maintained as per COLREGs	Maintenance and Integrity Team Lead
005	Performance Standards Report (MV-70-REP-F-00002) ensures lights are present and working	Aircraft warning lights mark tall objects that may be an obstruction to a helicopter approach to the helideck. Lights are positioned on infrastructure such that at least one light is visible to a vessel approaching from any direction.	Formal inspection confirms lights present and functioning, recorded in CMMS	OIM
006	Vessel navigation aids and equipment meet regulatory and safety requirements by aligning with *Navigation Act 2012*	• Vessels will comply with maritime safety and navigation requirements including: • International Regulations for Preventing Collisions at Sea 1972 (COLREGS) • Chapter V of Safety of Life at Sea (SOLAS) • Marine Order 21 (Safety of navigational and emergency procedures) (as appropriate to vessel class) • Marine Order 30 (Prevention of collisions) (as appropriate to vessel class)Vessels to maintain radio channels and other communication systems.	Vessel PMS maintenance system confirms navigational equipment is maintained to regulatory and safety standards Records confirm that required navigation equipment is fitted to all vessels to ensure compliance with maritime safety and navigation requirements. Records confirm vessels maintain communication systems.	Vessel Master Marine Superintendent

7.1.4 ALARP Assessment

On the basis of the impact and risk assessment process completed, Jadestone considers the control measures described above are appropriate to manage the risk of light emissions to ALARP. Additional controls considered but rejected are detailed below. The potential impacts are 'tolerable' as they are within the green category (negligible impacts). No further controls are required (see below) and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
All activities completed in daylight hours only	Eliminate	No	No	Daylight operations only considered to introduce unnecessary cost (i.e. 12 vs 24-hour ops.), whilst delivering little/ no environmental benefit. The operations cannot be shut down on a daily basis, and there would be a >100% increase in time taken to complete the activities resulting in significant costs and loss of production. Light from the FPSO, WHP and vessels will not illuminate beaches where receptors (including turtle hatchlings) sensitive to light emissions are present.
Replace external lights or reduce the lighting	Substitute	No	No	Lights are required to create illumination levels needed for safe working, emergencies and navigational requirements. No additional cost but introduces unacceptable safety risks to personnel and vessels. Little benefit given relatively low numbers of turtles and seabirds in operational area and surrounding waters.
Add filters to lights or re-design placement/ positioning	Engineering	No	No	Lighting has been positioned such that maximum illumination of work surfaces within asset structures is achieved. Costly and considered grossly disproportionate to any gain when considering the distances that the Operational Area is from turtle or seabird nesting areas.
Reduce usage of lighting in peak sensitive receptor windows	Isolation	No	N/a	To ensure lighting meets health and safety requirements, lighting is required throughout the day/ night for the duration of the activities. To isolate usage such that lights were not used during sensitive receptor windows would create a non-conformance with health and safety requirements.

None identified	Administrative	N/a	Na/a	N/a
Steam facilitating low opacity emissions currently there is no steam line running to the flare tip because the original engineering design did not include this feature. A steam system would need to be supplied with steam 24 hours per day in the event it was required for combustion emission management (i.e. it needs to be instantaneously operable when required). This would place an operational load on the boiler which is the equipment that would supply steam. The boiler system may need to be redesigned to enable the steam supply function to the flare tip (the cost for re-engineering the boiler has not been considered in this assessment). The cost for design, installation and commissioning is estimated to be approx. $0.5M cost.	Engineering	Yes	No	No parties (e.g. air force, navy, border force, local users) have complained or reported dark emissions at Montara. The cost for the improvement versus the benefit that would be achieved is not ALARP.
High pressure water cleaning to create white smoke: as for the steam cleaning system, the flare system at Montara has not included this function within the original design of the facility. The cost that would be incurred due to engineering design, construction and commissioning of a high-pressure water cleaning system at the flare tip is estimated at approx. $0.3M.	Engineering	Yes	No	No parties (e.g. air force, navy, border force, local users) have complained or reported dark emissions at Montara. The cost for the improvement versus the benefit that would be achieved is not ALARP.
Increased flaring: another option is to increase flaring in the event of dark smoke emissions due to lack of oxygen at the flare tip. Increased flaring results in better combustion at the flare tip due to the sonic design of flare and thereby a reduction in the opacity of emissions.	Administrative	Yes	Yes	Not adopted – the increased flaring would be contrary to the intent of the environmental performance outcome of planned flaring operations

7.1.5 Acceptability Assessment

The potential impacts due to light emissions are considered acceptable in accordance with Section 4.4, based on the acceptability criteria outlined below. No control measures are proposed as a reduction below maintenance of light levels in accordance with health and safety regulations would compromise personnel health and safety, and the environmental consequence is considered negligible.	
Policy and management system compliance	Jadestone's HSE Policy objectives are met. Section 9 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for the activities.
Stakeholders and reputation	Stakeholder consultation has been undertaken (see Section 6), and no stakeholder concerns have been raised with regards to impacts from lighting on sensitive receptors.
Environmental context and ESD	While there is direct light spill to sea surface immediately around the FPSO and WHP and support vessels, the impact and risk assessment process indicates that the light spill will not cause significant effects to adult turtles or birds that may transit the Operational Area. The potential impact is considered acceptable after consideration of: • Potential impact pathways • Preservation of critical habitats • Assessment of key threats as described in species and Area Management / Recovery plans • Consideration of North-West Bioregional Plan • Principles of ecologically sustainable development (ESD).
Conservation and management advice	Light is identified in the National recovery plan for Turtles (2023) as a threat to turtles on nesting beaches only. There will be no light spill on nesting beaches and therefore the activity is considered to be conducted in a manner that is consistent with the Recovery Plan. Jadestone has had regard to the representative values of the protected areas within the adjacent EMBA, and the respective management plans and other published information. Impacts from light emissions will have a negligible impact on any of the social and ecological objectives and values, of any AMPs, or state marine parks. This is consistent with the objectives of the protected area management plans (Appendix C) and considered acceptable.

7.2 Noise Emissions

7.2.1 Description of aspect

Noise emissions	Noise will be generated during Montara operations from a number of sources, in particular: • Machinery operated on the decks and working areas of the Montara FPSO and WHP • Operational noise from wellheads and flowlines • Vessel engines, and propeller rotations and cavitation • Equipment operated on the decks and working areas of support vessels that radiate through the vessel hulls • Helicopter operations, which typically occur twice a week for crew changes and personnel transfers • Side scan sonar during ROV surveys. Marine operations conducted on the decks and working areas of a vessel introduce sounds of varying characteristics into the water column, largely at low frequencies. A large proportion of the sound generated will be from above the water surface rather than through the water. A significant proportion of the sound will be reflected at the air-water interface and would not penetrate the water column. The sound produced by facilities and vessels will generally be 'continuous' (i.e. non-

impulsive) in nature and will fluctuate depending on the number of vessels operating around the facilities at any one time.

It is recognised that noise may occasionally be generated from a range of other operations activities and sources, though such noise is considered to be incidental relative to other key noise sources. For example, inspection, maintenance and repair works on subsea equipment, such as flowline span correction (e.g. rock/ cement bag/ concrete mattress placement) has previously been recorded and found not to result in a noticeable increase in noise levels over and above the noise generated from the dynamic positioning system thrusters of the vessels undertaking the work (Nedwell and Edwards 2004; Jiménez-Arranz et al. 2017). Water jetting to remove marine growth from infrastructure will also result in low level noise.

Facility Operations and Vessel Noise

Underwater noise generated during operations, will primarily consist of non-impulsive noise sources from the *Montara Venture* FPSO and WHP. Vessel noise will also contribute to the sound profile of the operations with increased noise levels during loading and unloading activities where dynamic positioning thrusters are used to maintain position. Some continuous noise will also be generated at the seabed by valves on the wellheads, manifolds and flowlines.

Operational FPSO noise has been reported to be in the order of 180 dB re 1µPa@1 m (SPL) (Erbe et al. 2013) and production platforms have been reported to produce sound up to 196 dB re 1µPa@1 m (SPL), rapidly reducing to approximately 135 dB re 1µPa at a distance of 500 m (Nedwell et al. 2003). Wellhead noise was modelled for the Browse LNG project (Woodside 2015) and sound levels were predicted to fall below 120 dB re 1µPa within 1 km and so noise from subsea infrastructure is not expected to contribute significantly to the sound field during operations.

Vessel noise varies with the size, age, speed, and engine type and the activity being undertaken. Noise levels for a range of support vessels have been measured at 150–189 dB re µPa at 1 m, while large tankers have been measured at 175–190 dB re µPa at 1 m (Jiménez-Arranz et al. 2017). Vessel noise is expected to decrease rapidly with distance from the source. For example, measured noise from tankers has been found to reduce to less than 115 dB re µPa over distances of approximately 3 km and measured noise from support vessels has been found to reduce to approximately 120 dB re µPa within approximately 1 km (Jiménez-Arranz et al. 2017).

Modelling of noise from an FPSO and vessels in the Barossa field (ConocoPhillips 2017) predicted that noise would fall to 120 dB re 1µPa within 1.4 km during normal operations, and within 11.4 km during offtake activities. For comparison, modelling of operational noise produced by the Browse floating LNG (FLNG) facility, which has a significantly larger sound profile than the Montara FPSO, predicted that sound levels would fall to 120 dB re 1µPa within 4 km during average operational conditions and within a maximum of 14 km during maximum operational and offloading conditions.

Therefore, operational noise combined with associated vessel noise may result in sound that is detectable above ambient noise levels over several kilometres from the FPSO, WHP and vessels, but will be most evident within closer proximity, potentially causing a range of behavioural response from different marine fauna species.

Side-scan sonar (SSS) is an activity that may be used during inspection, maintenance and repair work, likely to be applied for several days at a time every few years.

Sidescan transducers may be mounted on AUV systems, vessel hulls or more commonly using a towfish. The towfish is towed behind the vessel at a pre-determined speed (approximately 4–10 knots depending on equipment specification). Towfish are generally towed at 10–20% of the swath width above the seabed.

The technique uses pulses of sound at perpendicular angles to the side scan sonar system. They transmit and receive sensors are both contained within the same unit. When the return acoustic pulses is processed they provide information on the amplitude of the return pulse, which in turn provides information on the composition of the seabed. Side scan sonar systems are generally high frequency (100–500 kHz) and high sound source (220–226 dB re 1 µPa @ 1 m) (Department of Energy and Climate Change 2011).

The extent of helicopter noise impacts is limited to take off and landing at the facilities as they do not fly close to the ocean surface (with a typical cruising height of between approximately 1,000–1,400 m) except to undertake these tasks.

	The main acoustic source associated with helicopters is the impulsive noise from the main rotor and high-speed impulsive noise related to trans-sonic effects on the advancing blade. Dominant tones in noise spectra from helicopters and fixed wing aircraft are generally below 500 Hz (McCauley 1994). Other tones associated with the main and tail rotors and other engine noise can result in a larger number of tones at various frequencies (BHPB 2005). Sound travelling from a source in the air (e.g. helicopter) to a receiver underwater is affected by both in-air and underwater propagation processes, which are further complicated by processes occurring at the air-seawater surface interface. The received level underwater depends on source altitude and lateral distance, receiver depth, water depth, and other variables. The angle at which the line from the aircraft and receiver intersects the water surface is important. In calm conditions, at angles greater than 13° from vertical, much of the sound is reflected and does not penetrate into the water (Richardson et al. 1995; NRC 2003). Therefore, strong underwater sounds are detectable for a period roughly corresponding to the time the helicopter is within a 26° cone above the receiver (BHPB 2005). A summary of anthropogenic noise sources associated with the operations, and natural underwater noise sources, are provided in Table 7-1 below.

Table 7-1: Summary of anthropogenic and natural underwater noise sources

Source	Sound intensity (dB re 1 µPa)	Dominant frequency (Hz)
Natural Noises		
Ambient sea sound [1, 2]	80–120	Varied
Undersea earthquake [2]	272	50
Seafloor volcanic eruption [2]	255+	Varied
Lightning strike on sea surface [2]	250	Varied
Breaching whale [2]	200	10-100
Bottlenose dolphin click [2]	Up to 229	Up to 120,000
Humpback whales (tail fluke, fin slaps) [3]	192	30–1,200
Humpback whale song [4]	179	50–10,000
Sperm whale clicks [2]	Up to 235	100–30,000
Blue whale vocalisations [2]	190	12–400
Anthropogenic Noise Sources Expected from the MDP		
FPSO noise (production operations) [5, 6]	170–185 dB re 1µPa@1 m (route-mean-square sound pressure level; SPL)	Non-impulsive, predominantly low frequency (<500 Hz).
WHP noise (fixed platform production noise) [5, 7]	129–196 dB re 1µPa@1 m (SPL)	Non-impulsive, predominantly low frequency (<500 Hz).
Wellheads and flowlines [8, 9]	Approx. 159 dB re 1 µPa @1 m (SPL)	Non-impulsive, predominantly between 100 Hz and 2.5 kHz.
Support vessels (<100 m length) [5]	150–189 (SPL), depending on size, age, speed and engine characteristics	Non-impulsive, modulated by propeller cavitation and dynamic positioning. Tonal and broadband noise up to 100 kHz, dominant at low frequency (50-150 Hz).
Tankers (>100 m length) [5]	175–190 (SPL), depending on size, age, speed and engine characteristics	Non-impulsive, modulated by propeller cavitation. Tonal and broadband noise up to 10 kHz,

Source	Sound intensity (dB re 1 µPa)	Dominant frequency (Hz)
		dominant at low frequency (<100 Hz).
Helicopter flyover [5, 9]	Depends on type and size of helicopter and height above sea level. E.g. from 101–109 dB re 1 uPa measured at 3 m water depth for a helicopter at altitudes of 610 m and 152 m respectively.	Most acoustic energy is low frequency (<500 Hz).
Side Scan Sonar	Typically, 220-226 dB re 1 µPa @ 1 m	100,000–500,000 Hz (100–500 kHz)

7.2.2 Impacts

Potential impacts to marine fauna due to noise and vibration in the underwater environment may occur, and can result in a range of responses including (Richardson et al. 1995; Southall et al. 2007):

- Injury to hearing or other organs: hearing loss may be temporary (temporary threshold shift [TTS]) or permanent (permanent threshold shift [PTS])
- Masking or interfering with other biologically important sounds (including vocal communication, echolocation, signals and sounds produced by predators or prey)
- Disturbance leading to behavioural changes or displacement of fauna. The occurrence and intensity of disturbance is highly variable and depends on a range of factors relating to the animal and situation.

EPBC Act listed and threatened migratory species that may be present near the activities include whales migrating through the operational area, whale sharks and turtles. Noise is identified as a threat within the conservation advice or recovery plan for a number of the EPBC species that may occur in the operational area.

Sensitive receptor	Impact description
Marine Mammals	Whales are low-frequency hearing cetaceans with an estimated functional hearing frequency range of 7–22 kHz (Southall et. al.2007). The thresholds of recommended root square mean sound pressure level (ms SPL) that could result in behavioural response for cetaceans is expected to be: • 120 dB (ms SPL) for continuous noise sources • 160 dB RMS SPL for impulsive noise sources. More permanent injury would be expected to occur at 230 dB re 1 µPa (peak) (Parvin et al. 2007, Gomez *et al.* 2016). Behavioural responses to noise are highly variable and context-specific; higher received levels are not always associated with stronger behavioural responses (Southall et al. 2007; Gomez et al. 2016). Different individuals or groups may respond differently depending on their behaviours and motivation at the time (e.g. foraging, socializing, reproduction) and sudden exposure to noise may also result in more apparent responses than more gradual exposures (Gomez *et al*. 2016). Cetaceans approaching the MDP facilities will be gradually exposed to increasing noise levels and, therefore, animals will not be startled by sudden or loud noises and behavioural responses are expected to be limited. Based on these findings however, it is reasonable to expect that significant behavioural responses such as avoidance are more likely to occur in closer proximity to the sound source and in response to higher sound levels. There is the potential for

Sensitive receptor	Impact description
	some cetaceans to display some level of avoidance when in close proximity to the facilities and vessels. Sound levels are expected to approach ambient levels over several kilometres. Reactions of whales to circling aircraft (fixed wing or helicopter) are sometimes conspicuous if the aircraft is below an altitude of approximately 300 m, uncommon at 460 m and generally undetectable at 600 m plus (NMFS 2001). Baleen whales sometimes dive or turn away during overflights, but sensitivity s to vary depending on the activity of the animals. The effects on whales appear to be transient, and occasional overflights are not thought to have long-term consequences to cetaceans (NMFS 2001). Observations by Richardson and Malme (1993) indicate that, for bowhead whales, most individuals are unlikely to react significantly to occasional low-flying single helicopter passes ferrying personnel and equipment to offshore operations at altitudes above 150 m. Leatherwood et al. (1982) observed that minke whales responded to helicopters at an altitude of 230 m by changing course or slowly diving. Modelling has previously been undertaken to determine the sound levels at increasing horizontal distance away from the source array for two geophysical sparker sound sources (Squid 2000 and Squid 500). The peak source level for the Squid 2000 and the Squid 500 were 222 dB re 1 µPa and 216 dB re 1 µPa respectively at 1 m from the array (0.5–300 kHz). In the four cases that were modelled, the received sound exposure levels are predicted to have dropped below 160 dB re 1 µPa2s within 20 m of the source for Squid 500 and within 40 m of the source for the Squid 2000 (Duncan and Salgado-Kent 2011). As side can sonar equipment generates similar sound pulses at or above the low frequency limit of the low range of the squid sparkers (0.5 kHz), it is expected sound levels will dissipate within (or far more rapidly) a similar distance to the modelling described. For example, as the side scan sonar generates sound pulses of a higher frequency, but similar sound source, the sound pressure level from the side scan sonar is expected to attenuate more quickly with increasing distance from the source array. Although there are likely to be transient whales passing through the Operational area (refer Section 5.4.3), it does not contain any significant feeding, breeding or aggregation areas for marine mammals. The nearest BIA for cetaceans is the pygmy blue whale migration BIA, which is located 80 km from the Operational area and is therefore not expected to be impacted by noise from the facility. Impacts to cetaceans from underwater noise generated by Operations is considered ***negligible.***
Marine reptiles	The auditory sensitivity of marine turtles is reported to be centred in the 400–1,000 Hz range, with a rapid drop-off in noise perception on either side of this range (Richardson *et al.* 1995). Turtles have been shown to respond to low frequency sound, with indications that they have the highest hearing sensitivity in the frequency range between 100–700 Hz (Bartol and Musick 2003). Reported responses of turtles to high levels of anthropogenic noise include increased swimming activity and erratic swimming patterns (McCauley et al. 2002). No absolute thresholds are known for the sensitivity of turtles to underwater noise, or the levels required causing pathological damage. However, Popper *et al.* (2014), a working group of leading experts, suggested that behavioural responses which are less sensitive to noise than cetaceans, are more likely to occur within tens or hundreds of metres from vessels and other continuous/ non-impulsive noise sources. Sidescan sonar frequencies are outside of the hearing range that turtles are sensitive to, and consequently, it is not considered credible that auditory impairment to turtles could occur from side scan sonar surveys. The Operational area does not intersect any known internesting areas and is 84 km from nearest BIA and key nesting sites (Cartier Island). As such, it is more likely that a transient individual might be affected by noise. However, any impacts are expected to be limited to behavioural impacts, with recovery in days to weeks (***negligible***). Sea snakes may also be affected by noise, although as they generally associated with reef systems including at submerged shoals (the closest are approximately 30 km away from the operational area), it is considered unlikely they will frequent the area of operations.
Fish, Sharks and Rays	Fish sensitivity and resilience to underwater noise varies greatly depending on the species, hearing capability, habits, proximity to the noise source, and the timing of the noise (i.e. the

Sensitive receptor	Impact description
	noise may occur during a critical part of the fish's lifecycle; McCauley and Salgado-Kent 2008). Most marine fish are hearing generalists (Amoser and Ladich 2005) with relatively poor hearing. Hearing generalists are not as sensitive to noise and vibration as hearing specialists, which have developed hearing specialisations and can be particularly vulnerable to intense sound vibrations because many possess an air-filled swim bladder (Gordon et al. 2004). Popper et al. (2014), a working group of leading experts, suggested that behavioural responses in fish, which are less sensitive to noise than cetaceans, are more likely to occur within tens or hundreds of metres from vessels and other continuous/ non-impulsive noise sources. While fish may show an initial behavioural response, fish are known to quickly habituate to continuous noise sources (Smith et al. 2004; Wysocki et al. 2006; Spiga et al. 2012; Nichols et al. 2015; Johansson et al. 2016; Holmes et al. 2017). In particular, many fish species are known to aggregate around the foundations of oil and gas platforms and subsea structures, despite operational noise. Therefore, behavioural impacts to turtles and fish are expected to be limited and highly localised. There are also no known key feeding/ breeding areas occur within the Operational area, however fish will likely transit the area. Scientific literature indicates that behavioural affects due to artificial noise may include changes to schooling behaviour and avoidance of noise sources. A number of shark species may also occur in the region, including the EPBC Act listed whale shark as a foraging BIA overlaps the area. Elasmobranchs (rays, skates, sharks) rely on low frequency sound to locate prey (Myrberg 1978). The large hearing structure of the whale shark will be most responsive to long-wave, low-frequency sound (Myberg 2001) in the range of 20–800 Hz. Elasmobranchs do not have swim bladders and are not typical hearing specialists (Baldridge 1970). Sidescan sonar frequencies are outside of the hearing range that fish are sensitive to, and consequently, it is not considered credible that auditory impairment to fish could occur from side scan sonar surveys As such any impacts to fish, sharks or rays are expected to be ***negligible.***
Seabirds	Birds generally hear at a narrower frequency range than mammals, with best hearing at frequencies between 1 and 5 kHz (Dooling and Popper 2007). However, there is little information available specific to seabird and shorebird hearing and thresholds for disturbance. It is not expected that noise generated from activities will greatly affect seabirds and shorebirds that may overfly or land on the facility. Therefore, any impacts are expected to be limited to behavioural impacts, with recovery in days to weeks (***negligible***).
Consequence	**Ranking**
Negligible	Acceptable

7.2.3 Environmental performance

Aspect		Noise		
Performance outcome		**Controls implemented to minimise potential harmful impacts to marine fauna from noise**		
ID	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
007	Support vessels will comply with EPBC Regulations 8.05 and 8.06 as per Montara Marine Facility Operating Manual (MV-90-PR-H-00001)	Support Vessel Masters will comply with relevant parts of EPBC Regulation (2000): Reg. 8.05 and 8.06 respectively, where safe to do so: • Within the caution zone for a cetacean (including a calf) (within 300 m of a cetacean), the Vessel Master must operate the vessel at a constant speed of less than 6 knots and minimise noise • If a calf appears within an area that means the vessel is then within the caution zone of the calf, the Vessel Master must immediately stop the vessel and turn off the vessel's engines or disengage the gears or withdraw the vessel from the caution zone at a constant speed of less than 6 knots.	Vessel Masters provided and required to operate in accordance with the Montara Marine Facility Operating Manual (MV-90-PR-H-00001) – Sign-off sheet for completed by Vessel Master. Incident reports record non-compliances with EPBC Regulations 2000 – Part 8 Division 8.1 (interacting with cetaceans)	Marine Superintendent
008	Helicopters will comply with EPBC Regulations 8.07 as per Aviation Operations Procedure (MV-90-PR-G-00004)	Helicopters will comply with the following elements of EPBC Regulations 2000 Regulation 8.07, except during take-off/ landing, during an emergency or when action is required to maintain safe operations: • A helicopter will not operate at a height lower than 1,650 ft or within a horizontal radius of 500 m of a cetacean • A helicopter will not deliberately approach a cetacean from head-on. Helicopter operators are required to report any instances where these standards are breached, and any event involving injury to or death of marine fauna due to helicopter operations.	Helicopter Contractor's provided Jadestone's Aviation Operations Procedure (MV-90-PR-G-00004) – Sign-off sheet completed by Helicopter contract. Incident reports record non-compliances with EPBC Regulations 2000 – Part 8 Division 8.1 (interacting with cetaceans) Incidents of bird strike are reported as per Table 10-1	Logistics and Materials Lead
009	FPSO and WHP machinery is certified and maintained	FPSO and WHP machinery is maintained in accordance with CMMS.	CMMS shows maintenance has been satisfactorily completed as scheduled	OIM
0010	Competency and Training Management System (JS-60-PR-Q-00015) provides a	Online induction includes information on speed limits in the PSZ and requirements on interacting with marine fauna	Induction Records (Vessel Masters)	HR Manager

Aspect		Noise		
Performance outcome		Controls implemented to minimise potential harmful impacts to marine fauna from noise		
ID	Management controls	Performance standards	Measurement criteria	Responsibility
	process for ensuring that Contractors and Services Providers have the appropriate level of HSE capability			

7.2.4 ALARP Assessment

On the basis of the impact and risk assessment completed, Jadestone considers the control measures described above are appropriate to manage the impact and risk of noise due to operation of machinery, vessels and helicopters to ALARP. Additional controls considered but rejected are detailed below. The potential impacts are considered Tolerable as they are within the green category (negligible impacts). No further controls are required and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost-effective	Justification
Remove machinery that emits noise	Eliminate	No	N/a	Noise from the FPSO, vessels, ROVs, helicopters and machinery cannot be eliminated. Without these assets, the activities cannot be undertaken.
Replace machinery that emits noise with quieter machinery	Substitute	No	No	All equipment as listed is required; no opportunities for substitution were identified.
Provide additional muffling on machinery, or design to reduce noise emissions	Engineering	No	No	Machinery is generally designed with human health hearing requirements taken into consideration, reducing operating noise to as low as efficiently and cost effectively as possible.
Do not operate noisy machinery in times/ areas of sensitivity	Isolation	No	N/a	The activities are located at distance from sensitive receptors and the coastline. Other fauna in the vicinity may experience short term behavioural effects only.
Additional activity specific noise emissions procedures for assets	Administrative	No	No	Through the application of EPBC Regulation 8 for helicopter and vessel marine fauna interaction procedures, and application of machinery maintenance, potential impacts are reduced. No further procedures are considered necessary.

7.2.5 Acceptability Assessment

The impacts due to machinery, FPSO, helicopter and vessel noise are considered acceptable in accordance with Section 4.4, based on the acceptability criteria outlined below. The control measures proposed are consistent with relevant legislation, standards and codes, and the environmental consequence is considered negligible.

Policy and management system compliance	Jadestone's HSE Policy objectives are met. Section 9 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for the proposed drilling activities.
Stakeholders and reputation	Stakeholder consultation has been undertaken (see Section 6), and no stakeholder concerns have been raised with regards to impacts from noise on sensitive receptors.
Environmental context and ESD	While there are noise emissions expected, the impact and risk assessment process indicate that noise will not result in death, injury or significant behavioural effects to marine fauna The potential impact is considered acceptable after consideration of: • Potential impact pathways • Preservation of critical habitats • Assessment of key threats as described in species and Area Management/ Recovery plans

	• Consideration of North-West Bioregional Plan • Principles of ecologically sustainable development (ESD).
Conservation and management advice	Noise interference is identified as a threat in: • The Recovery Plan for Marine Turtles in Australia (2003) • The Conservation Management Plan (Recovery Plan) for the Blue Whale (*B. musculus*) (DoE 2015) Jadestone has had regard to the representative values of the protected areas within the EMBA, and the respective management plans and other published information. Impacts from noise will have a negligible impact on any of the social and ecological objectives and values, of any AMPs, or state marine parks. This is consistent with the objectives of the protected area management plans (Appendix C), and considered acceptable. EPBC Regulation 8 and the Australian National Guidelines for Whale and Dolphin Watching 2017 (Commonwealth of Australia 2017). Noise is not identified as a risk in the Whale Shark Management Plan.

7.3 Atmospheric Emissions

7.3.1 Description of aspect

Emissions	Atmospheric emissions generated during the Montara operations include atmospheric pollutants (non-greenhouse gases) that can have an impact on local air quality as well as greenhouse gas emissions. Direct GHG emissions (scope 1) Sources of atmospheric emissions during operational activities are: • Flaring of gases associated with the oil extraction process on board the FPSO, including increased flaring during commissioning, shutdown and upset and emergency conditions • Fuel gas combustion for power generation for gas turbines and compressors (which can also run on diesel when gas production is short) • Diesel combustion for mobile and fixed plant as well as back-up power. Smaller volumes of fugitives and process vents are also associated with operations and include emissions from crude oil production leaks, natural gas processing and emission of sulphur hexafluoride from use of lubricants. Liquid fuels (oils and greases) are also used as lubricants. The operations will result in emissions of greenhouse gases (GHG) such as carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), along with non-GHG such as sulphur oxides (SO_x) and nitrous oxides (NO_x). Vessels may use ozone-depleting substances (ODS) in closed-system rechargeable refrigeration systems. **Flaring** The release of small amounts of associated gas to atmosphere by flaring is an essential practice, driven by safety requirements. In addition, routine flaring is practiced at Montara as there is an excess of associated gas that exceeds site's power demand and the currently available reinjection capacity. In addition, non-routine flaring of gases encountered from the production process on board the FPSO, includes: • Flaring during planned and unplanned maintenance shutdowns of the reinjection system (Compressor and injection well) • Flaring during planned and unplanned maintenance shutdowns of other sections of the process that results in increased flaring • Process upset conditions that result in gas, over and above the purge, pilot and routine flaring from the second and third stage separators (estimated as a total of 6 mmscf/d) as being routed to the flare. Unplanned flaring is considered in detail in Section 8.1.

	Fuel gas combustion Associated gas is used to power the site's gas turbines and compressors, with 4.5 mmscfs of gas consumed on average per day. **Fugitive and process emissions** In addition, the below sources contribute to emissions, albeit making a less material contribution compared to the main sources above: • Fugitive emissions from infrastructure including losses during loading, product storage, offtake and upset and emergency conditions • Use of refrigerants for air conditioning and refrigeration on board the FPSO. Fugitive emissions are inherent in the design of a facility and can originate from pressurised equipment, with such sources as e.g. valves, flanges, pump seals, process drains, open-ended lines, casing, tanks etc. Jadestone follows the methods stipulated by the National Greenhouse and Energy Reporting Scheme (NGERS) when quantifying its fugitive emissions. **Indirect GHG emissions electricity (scope 2)** Jadestone does not procure any electricity for its Montara operations, its scope 2 GHG emissions are therefore null. **GHG emissions from support vessels and helicopter support (Scope 3)** GHG and atmospheric emissions are generated by the support vessels and helicopters servicing and supporting the Montara field. Sources of emissions are from fuel use in combustion engines and fugitive emissions as well as small volumes of refrigerants. The types of volumes of emissions vary depending on the types of activities undertaken and include: • Travelling to and from the field • Undertaking safety standby activities whilst on DP • Minimal emissions if vessels are at anchor • Holding station on DP whilst loading or unloading • Undertaking IMR work The expected annual GHG emissions from vessel and helicopter activities have been estimated for 2022 based on some actual emissions data from the contractors as well as using a high-level spend-based estimation, as summarised in Scope 3 GHG Emissions" in this chapter.

As per the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (2015), GHG emissions are categorised as:

- Scope 1: GHG emissions are direct emissions from sources owned or controlled by the company.
- Scope 2: GHG emissions are indirect emissions from the consumption of purchased electricity.
- Scope 3: GHG emissions are indirect emissions that are a consequence of the activities of the company, but occur from sources not owned or controlled by the company

In relation to the Montara facility, scope 1 and scope 3 emissions are relevant, but scope 2 emissions are not as electricity purchased from the grid is not used on the facility.

Australia is a signatory to the Paris Agreement and in June 2022 lodged an updated Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCC) that commits Australia to reducing greenhouse gas (GHG) emissions by 43% below 2005 levels by 2030.

The National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 (Cth) (the Safeguard Mechanism) made under the NGERS Act and administered by the Clean Energy Regulator. The Safeguard Mechanism was developed to ensure that Australia's largest greenhouse gas emitters keep their net emissions below an emissions limit (a baseline). The Safeguard Mechanism currently applies to facilities that emit more than 100,000t of $CO_{2\text{-}e}$ per annum and the Montara facility currently falls under the scope of the Safeguard Mechanism.

In 2022, the Australian government proposed Safeguard Mechanism reforms to align more closely with Australia's climate targets. The government has proposed the following changes that will commence 1 July 2023:

- a prescriptive reduction in emissions of 4.9% year-on year to 2030;
- new method for defining production-adjusted baselines, from site-specific to industry-average; and
- compliance options for affected businesses and assistance for emissions-intensive, trade-exposed business.

The Montara facility emissions are regulated under the Safeguard Mechanism through establishment of a cap (baseline) on emissions. Under this policy, annual emissions are reported under NGERS and compared against the facility baseline, and Jadestone is required to generate or procure and surrender Australian Carbon Credit Units for any emissions above the baseline for the compliance period, to ensure that net emissions for the facility remain under the prescribed baseline. There are also penalties for non-compliance.

7.3.1.1 Scope 1 emissions

A summary of the carbon dioxide equivalent emissions at the Montara facility 2019-2022 is provided in Figure 7-1. Annual emissions that have been forecasted for the remaining field life range from 273,000–291,000 t of CO_2 equivalent (including CO_2, N_2O and CH_4). GHG forecast estimates have focused on material GHG sources only and are based on current business plans which may be subject to change. The profile has been modelled using business-as-usual flaring, gas as fuel and diesel consumption forecasts, that will inevitably carry a margin of error. Fugitive emissions have also been included based on historical values.

GHG emissions from the Montara facility come from associated gas (either flared or used as fuel gas) and diesel combustion. Associated gases are routed from the separation process to the reinjection gas compression system. This gas stream is compressed, dehydrated and cooled prior to being used as fuel gas at the FPSO, and lift gas at each well, with the surplus reinjected into the Montara reservoir through the reinjection system. In 2021, approximately 24% of associated gas was routed to the facility and 76% was reinjected. The FPSO generally operates on fuel gas, with main electrical power being supplied by two gas turbine generators and compressors that use approximately 9% of associated gas. The gas turbines and compressors normally operate on fuel gas but can also operate on diesel if required.

The remaining 15% of associated gas is flared. This routine operational flaring (when the reinjection system is operational) is expected to be approximately 6 mmscf/d. The actual annual total volume will be larger than this estimate given there will be planned maintenance undertaken on the reinjection system and unplanned down-time.

Diesel is used onboard the FPSO for turbines, generators (including back-up generators), crane, boilers, back up compressor and fire pumps. GHG emissions are produced when the diesel is combusted. The boiler exhaust gas is the source of inert gas used to inert the cargo tanks. In 2021 diesel use represented approximately 5% of combustion emissions.

Minor amounts of fugitive GHG emissions occur on the facility. Fugitive emissions at Montara have been calculated as 1,072 tCO_2e (2020); 1,289 tCO_2e (2021) and 739 tCO_2e (2022). The main driver for the reduction in 2022 was the change to the NGER Determination for crude oil facilities. Fugitive emissions calculations are related to the handling of crude (vaporisation of crude during transfers and fugitives associated with the oil component of produced formation water) and no longer include fugitives associated with natural gas to avoid double-counting by crude oil facilities.

Fugitives are released from storage tanks and equipment as Volatile Organic Compounds (VOCs) when lighter hydrocarbons in the crude vaporise. Emissions of fugitive VOCs are minimised by pumping blanket gas (inert gas from the boiler flue gas) into cargo tanks of the third-party tanker. As these tanks are filled,

VOCs may be vented to atmosphere as they are displaced by the inert gas. Fugitive emissions are also associated with small amount of crude that are discharged into the marine environment as PFW.

Scope 1 emissions are reported by Jadestone to the Clean Energy Regulator as part of the statutory annual *National Greenhouse and Energy Reporting Act 2007* (NGER Act). The NGER Scheme is a single national framework for reporting company information about GHG emissions, energy production, and energy consumption. Key NGER Scheme legislation includes the NGER Act, the National Greenhouse and Energy Reporting Regulations 2008, and the National Greenhouse and Energy Reporting (Measurement) Determination 2008. NGER reporting includes direct emissions from fuel use, venting and fugitive emissions associated with the facilities but does not include indirect emissions associated with helicopters transfers and vessels used. The primary sources of emissions at Montara result from flaring of excess associated gas that exceeds the available reinjection capacity as well as combustion of fuel gas and diesel to power the sites. Other less material sources of emissions include fugitives and minor emissions associated with the use of greases and lubricants. The historical emissions for the Montara facility are illustrated in Figure 7-1. This graph shows calendar year emissions, representing 100% operational control. Jadestone acquired Montara in August 2019, however the full calendar year of emissions for 2019 has been included in the graph for accurate comparison between years.

As per Jadestone's business strategy of acquiring mature, mid-life assets and transforming them into more sustainable and efficient entities, the Company has invested in efficiency measures and introduced improvements to Montara's operational practices. After acquiring the site in 2019, the Company made a substantial investment into the gas reinjection system and has adopted improved operating practices, which led to 40% reduction of flaring year on year, reducing overall emissions in 2020 by an estimated 90,000 tCO_2-e, as seen in the graph. Fuel gas combustion related GHGs increased that year due to higher utilisation of the compressor system.

In 2021, unplanned events resulting in upset to the reinjection system in the first half of 2021 resulted in periods of excessive flaring. Furthermore, the mobilisation of the drilling rig for the drilling campaign in the latter half of 2021, led to extended periods of time where Montara operations had to either be fully shut in or had partial production, without associated gas reinjection. Investigation into the root cause of the reinjection system downtime in H1 2021 was undertaken, identifying preventative measures such as replacement of valves, holding of spares as well as further reinjection capacity initiatives to be tested throughout 2022 and beyond.

Accidental releases are estimated as accurately as possible and the assumptions as well as the basis of estimation are documented for reporting purposes. Overestimation is to be chosen where there is high uncertainty (conservative approach). Best estimate on the likely accuracy of the estimation shall be made using professional judgement and the basis of such judgement shall be made known to the verifier.

In 2022, emissions were significantly lower which was largely driven by the suspension of production from the Montara venture, resulting in less flaring and fuel gas combustion and increased diesel consumption as no gas was available for fuel. Montara returned to full production in 2023. However, with repairs made to the reinjection system, emissions are likely to be comparable to 2020 levels.

Figure 7-1: GHG emissions due to combustion sources at Montara Facility in 2019–2022 (CO_2-e)

7.3.1.2 Scope 3 GHG emissions

Scope 3 emissions are defined as all indirect GHG emissions (not included in scope 1 or 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions. Scope 3 GHG emissions can be considered indirect consequences of the activity and therefore have impacts (EPBC Act 1999 in Section 527E). Scope 3 GHG emissions are not reported under the NGER Scheme and have been estimated using the most appropriate emission factors available.

Jadestone has engaged a specialist third-party to undertake a review of its scope 3 emissions relating to Montara operations. When defining its approach, the Greenhouse Gas Protocol and relevant sector guidance have been consulted, which included:

- GHG Protocol: Corporate Accounting and Reporting Standard
- GHG Protocol: Corporate Value Chain Accounting and Reporting Standard
- IPIECA: Estimating petroleum industry value chain (scope 3) greenhouse gas emissions

As a first step, Group reporting boundaries were defined and a consolidation approach for direct GHG emissions selected. As Jadestone reports its GHG direct emissions based on the operational control principle, the scope 1 boundary is clearly delineated from the relevant value chain activities falling within scope 3 categories.

Subsequently, in order to establish a view of the likely material scope 3 emission categories, benchmarking of relevant E&P operators was undertaken. Materiality of value chain categories is dependent on the type

of business operations and there is no uniform approach to scope 3 across the industry, however key scope 3 trends have been established through the benchmarking exercise.

As a next step, Jadestone has undertaken a detailed review of the value chain activities pertaining to Montara operations, considering all 15 categories defined by the GHG Protocol. Factors such as relevance to Jadestone business operations, materiality threshold, sphere of influence as well as availability of data were taken into account, with the following categories shortlisted:

- Category 1: Purchased Goods and Services
- Category 3: Fuel and energy related activities
- Category 6: Business travel (helicopters)
- Category 9: Downstream transportation and distribution
- Category 10: Processing of sold products
- Category 11: Use of sold products

Table 7-2 provides an overview of the assumptions and methods applied for quantifying the value chain emissions for Montara.

Table 7-2: Overview of the assumptions and methods applied for quantifying the value chain emissions for Montara

Category	Assumptions	Method of quantification
1: Purchased Goods and Services	Includes emissions from supply boats and vessels that are contracted for ongoing supply of goods and support of maintenance activities.	Spend-based method, using the monetary spend on OSVs in the year and applying the most relevant emission factor
3: Fuel and energy related activities	Includes all upstream (i.e. cradle-to-gate) emissions from the extraction, production and transportation of diesel, being the only fuel type consumed in the generation of power at the Montara facilities, that was acquired by Jadestone in the reporting year and was not included in scope 1 or scope 2. Purchased diesel is the only fuel source that is purchased from outside of Jadestone Energy.	Jadestone determined the quantity of diesel purchased and utilised at Montara operations and then applied cradle-to-gate emission factors
6: Business travel (helicopters)	Includes emissions from helicopters only that are contracted for ongoing crew transfers.	For helicopter contracts were GHG emission data could be sourced, actuals were used, combining with a spend-based method for remaining contracts, applying a conversion factor based on actual data
9: Downstream transportation and distribution	All transportation of crude is by vessel hired by Jadestone Energy from Dampier WA to Jurong Singapore, emissions only counted for one way trip.	The monetary amount spent for an offtake tanker by Jadestone in the reporting year was multiplied by the relevant emission factor
10: Processing of sold products	Montara crude oil is marketed by Jadestone's trading services contractor in the deeply fungible oil market. This means that it is not possible to determine how the product will be processed as it is not possible to predict the buyer. In recent years, Montara crude has attracted buyers that deploy the product directly as bunker fuel. As bunker fuel is	Crude oil refining emission factors were applied to processed crude only

Category	Assumptions	Method of quantification
	utilised in combustion engines and results in net greater emissions, it is assumed that only a small amount (~5%) of Montara crude sales generate Scope 3 emissions from processing. .	
11: Use of sold products	As Montara's crude is stock-standard crude, it is assumed that 87% of the refined product is used as fuel based on EIA data. This is a reasonable estimate, as it is possible that some by products are used as petrochemical feedstock and therefore not combusted for energy.	All sales volumes for each reporting year were converted into combustion emissions by applying IPCC emission factors for diesel

Table 7-3: Summary of Scope 3 GHG emissions in 2022

Scope 3 category	Total emissions (tCO_2e)	% coverage
1 Purchased Goods and Services	6,496	0.63
3 Fuel and Energy Related Activities	923	0.09
6 Business Travel	4,025	0.39
9 Downstream Transportation and Distribution	6,268	0.62
10 Processing of Sold Products-Oil	56,856	5.61
11 Use of Sold Products-Oil	948,848	93.68
Scope 3 Total	**1,023,416**	**100.00**

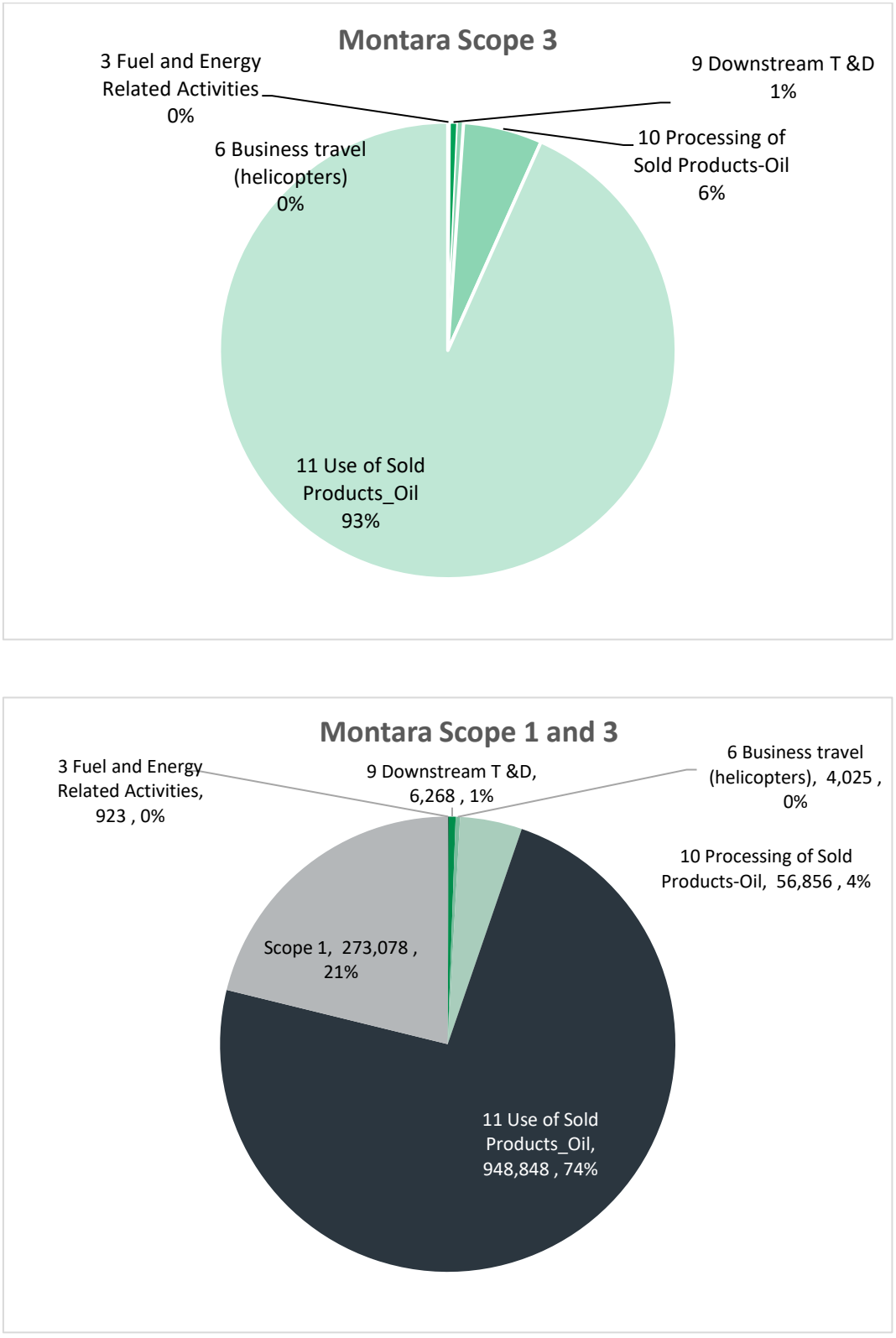


Figure 7-2: Scope 3 emissions in 2022 (top) and including scope 1 (bottom)

In 2022, the majority of scope 3 emissions came from Use of Products (category 11) (93% of quantified scope 3 emissions) (Figure 7-2**)**. This category covers the use of refined products by the consumer. Processing emissions (category 10) comprise5. 6%, downstream transport and distribution (category 9) as well as purchased goods and services – supply boats (category 1) represent 0.6%,each, business travel – helicopters (category 6) – 0.4% and upstream emissions of diesel use (category 3) comprise 0.1% of

quantified scope 3 emissions (Figure 7-2). Scope 1 emissions are approximately 21% of the total direct and indirect emissions (scope 1 and 3) associated with the Montara facility. In 2023, Jadestone will increase engagement with suppliers to understand their emissions data and GHG ambitions. This may identify opportunities to reduce Scope 3 emissions in the supply chain.

7.3.1.3 GHG emissions outlook

Direct GHG emissions forecasts are developed for all operated assets and sanctioned developments over the anticipated working life of the assets. A GHG emissions "business-as-usual" scenario is developed which does not include any capex or opex-intensive GHG reduction initiatives. It represents a baseline scenario with a set of underlying conditions that plausibly would have occurred in an absence of any reduction project. In other words, it assumes continued production from existing installations without any further proactive GHG abatement. A "mitigated" scenario is also drafted, once GHG reduction options have been identified and evaluated, with delta between scenarios established to illustrate the GHG impact.

Any GHG reductions captured in the mitigated scenario are quantified relative to a reference level of GHG emissions, referred to as the business-as-usual or baseline scenario

Jadestone developed scope 1 business-as-usual GHG emissions forecasts over the life of the assets for all of its operated assets as part of the workstreams underlying the Net Zero by 2040 pledge. Direct GHG emissions sources such as combustion of fuels (associated gas, diesel, crude etc.) and flaring are included in the forecast. The mitigated GHG forecast for the portfolio of assets is being finalised as feasibility studies of the shortlisted GHG reduction options, including those at the Montara site, are being progressed throughout 2023. At a corporate level, options for abatement of emissions are being developed and no credit is considered for these activities at this stage.

Jadestone has a process in place to ensure GHG forecasts remain current and reflective of both internal and external developments. GHG forecasts are reviewed and updated on at least an annual basis, in alignment with the corporate business planning process and a 3-year plan. Monthly actual GHG performance is accounted and reviewed monthly, applying the NGERS GHG estimation methodology for Montara. Actual performance is compared against the forecast and root cause of any discrepancy identified. Further, a regular reforecasting exercise is undertaken throughout the year to manage performance and identify any potential unexpected changes in business plans that may impact GHG performance.

For the Montara venture, a Safeguard Mechanism baseline for FY2022/23 of 299,674 t of CO2-e applies and a new baseline will be calculated for FY24 following the hybrid methodology as per the 2023 Safeguard Mechanism reforms. The new baseline will be integrated into the monthly GHG dashboard to ensure GHG performance is managed accordingly.

Over the remaining 10 years of field life, when considering a business-as-usual scenario, scope 1 emissions are forecasted to remain relatively flat, whilst scope 3 emissions are expected to decrease along with the decline in production (Figure 7-3). Cumulative scope 3 emissions (extrapolated from those quantified here) are expected to be approximately 5,237,199 tCO_2e over the remaining life of the field.

For the Montara forecast, a number of assumptions have been made to determine the forecast based on previous activities and planned shutdowns. Each year, an allowance is made for quarterly compressor servicing and other maintenance tasks. For the forecast shown in Figure 7-3, this assumes installation of the small reinjection compressor in 2025, a shutdown each year to facilitate various tasks, and a major shutdown every 4 years (first planned in 2026) to complete internal inspections (as required by code). The period of shutdown is based on the duration of previous shutdowns and campaigns at the facility. The annual emissions forecast is calculated taking these planned shutdowns into account. An assumption for unplanned shutdowns is also included in the forecast based on previous years. The duration of the yearly shutdowns will vary depending on operational requirements.

For Montara, the uptime is assumed to be 90% for producers and 80% for subsea producers but is dependent on the availability of individual wells. The emissions forecast is derived from the production forecast proportional to the flaring, diesel consumption and crude combustion.

The annual Work, plan and budget (WP&B)involves detailed reservoir analysis and performance profile forecast which is approved by the Board and forms the basis of annual production targets.

It is also recognised that baseline and mitigated scenarios will need to be revised over time, at least on an annual basis, and may require more frequent revisions in case of e.g.:

- An anticipated change in activity level relative to the baseline, where the effect of the change is significant enough to warrant a change to the baseline scenario;
- New information with regard to GHG reduction projects (e.g. post feasibility studies)
- Impact post infill well drilling
- The remaining life of equipment;
- Potential implications of legislative or regulatory changes; and
- A change in available resources (e.g., a gas pipeline to the area).

7.3.1.4 Implementation and accountability

The ultimate responsibility for ensuring implementation of this policy rests with the Jadestone Board and Executive Directors. Jadestone expects its employees and contractors to comply with the policy. We will use our influence with contractors, suppliers and business partners to encourage them to follow similar principles in the assets where we do not have full operational control. Effective implementation will be undertaken , and includes communication to employees, contractors and through the supply chain. Meanwhile, we will continue to integrate climate-related risk analysis into our short, medium and long-term strategic planning, including through scenario analysis.

Jadestone improves GHG performance through the following measures:

- We identify operational efficiencies and opportunities to minimise flaring from operated facilities and integrate GHG emissions mitigations into the design and development of new production streams.
- We take steps to eliminate fugitive GHG emissions by employing appropriate Leak Detection and Repair (LDAR) programmes.
- We seek opportunities to reduce GHG emissions when screening potential new acquisitions.

Jadestone will consider employing nature-based solutions and offsets to balance only those emissions that are economically or technically difficult to eliminate. In these cases, we will identify solutions where the impacts are credible and verifiable.

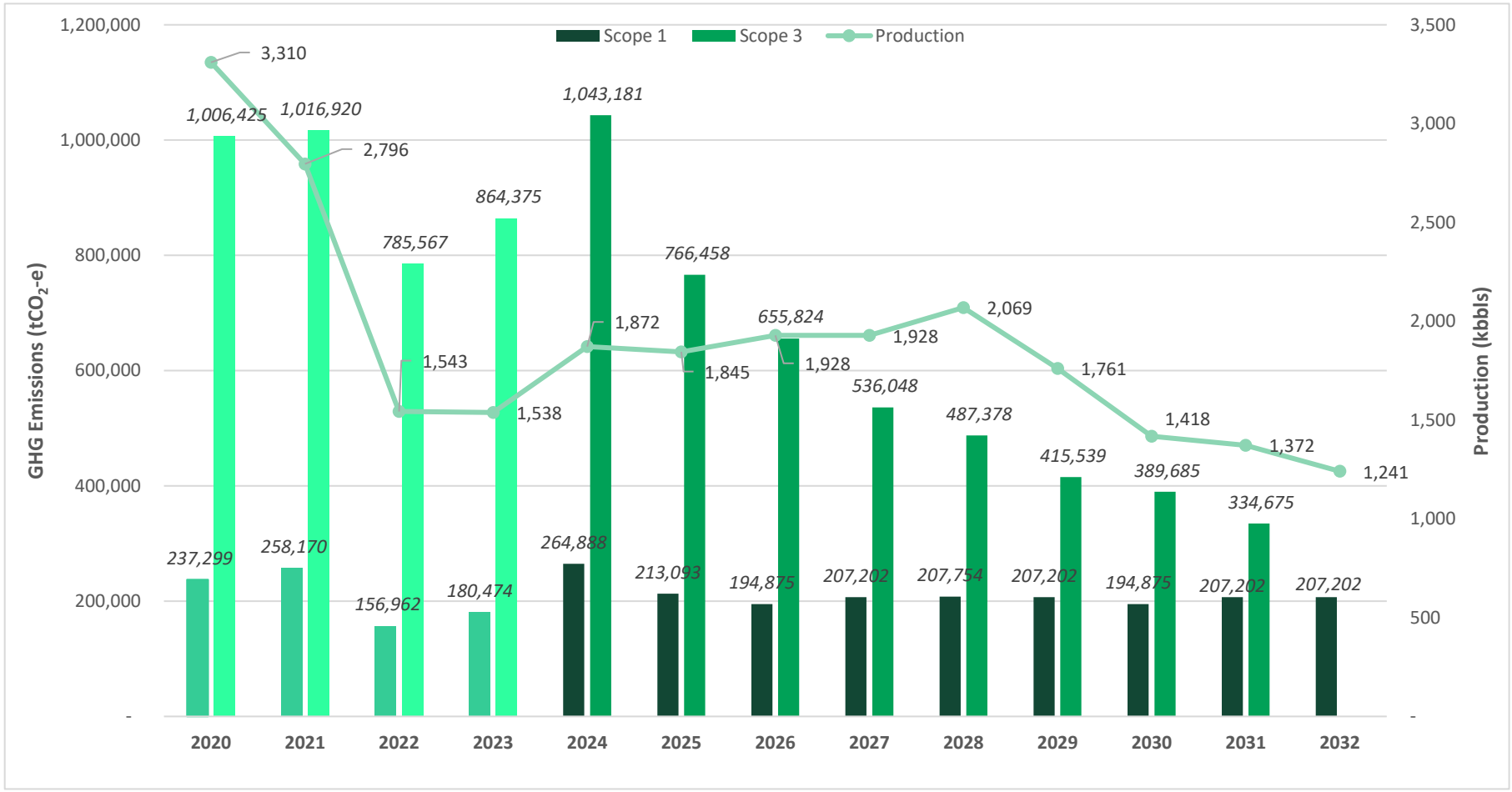


Figure 7-3: Business-as-usual forecast scope 1 and 3 emissions over remaining life of Montara facility

Notes:

The secondary axis shows anticipated production.

Scope 1 2022–2023 include actual numbers (2023 6 months of actuals and 6 of forecast)

7.3.2 Impacts

Emissions can reduce air quality in the immediate vicinity of the Facility. Under normal circumstances, any gaseous emissions from the facility will quickly dissipate into the surrounding atmosphere. As Montara Facility operations occur in offshore waters, the combustion of fuels in such remote locations will not impact on air quality in coastal towns or other sensitive locations, and impacts to nearby petroleum activities such as the Wandoo facility operated by Vermillion Energy (approximately 20 km north east) are not expected.

Greenhouse gases are persistent by nature and the key impact of these emissions is that they accumulate in the atmosphere. Once released from a facility, CO_2 persists for thousands of years in the atmosphere, nitrous oxides persists for hundreds of years and methane persists for a least a decade (EPA 2022). Whilst CO_2 is naturally cycled out of the atmosphere by various carbon sinks (such as vegetation and the ocean surface) this natural source/sink cycle has been disrupted since the beginning of the industrial revolution. The combustion of fossil fuels like coal, along with reduced sink capacity due to development, has led to a continuous rise in greenhouse concentrations in the atmosphere.. This increasing concentration has led to a greenhouse or warming effect resulting in the physical, chemical and biological consequences associated with climate change.

Global climate change is the result of atmospheric accumulation of GHG emissions and reduction of GHG sinks since the beginning of the industrial revolution. Predicting GHG emissions' impacts at the ecosphere level is an inherently complex exercise because of the influence of variables such as surface pressure, wind, temperature, humidity and rainfall within multiple ecosystems. These are all interdependent variables that would have to be considered in determining a contribution to global temperature increase.

Annually, emissions from Montara represent 0.6% of total emissions from energy industries in Western Australia and 0.1% of energy industries nationally (DCCEEW 2022). Whilst this facility is a relatively low contributor to state and national emissions, due to the persistent nature of greenhouse gases, it is important to acknowledge that all emissions contribute to climate change. Montara has been operational since 2013, however Jadestone only acquired the asset in September 2018. The facility is expected to stay operational until approximately 2030. Over the entire period of Jadestone ownership, total, cumulative Scope 1 emissions associated with Montara are forecast in a business-as-usual scenario to be approximately 3,757,991 tCO_2e.

Table 7-4: Comparison of Montara's annual emissions with State and National emissions profiles (Energy Industries category)

Emissions Profile	Annual (2020, in tCO_2-e)
Montara scope 1 emissions	237,299
Western Australia energy industry* emissions*	36,536,000
Australian energy industry emissions*	207,566,000

**Source: Australia's Greenhouse Gas Inventory 2022*

It is important to acknowledge that climate change impacts cannot be directly attributed to any one activity, as they are the result of global GHG emissions, minus global GHG sinks, that have accumulated in the atmosphere since the industrial revolution began. Therefore, there is no direct link between GHG emissions from the Montara facility operations and climate change impacts to specific ecological receptors.

The consequence of GHG accumulation in the atmosphere will result in an increase in temperature and will have an adverse effect on ecosystems and threaten biodiversity (IPCC 2021). Ecosystems that are particularly vulnerable to the negative effects of climate change include alpine habitats, coral reefs, wetlands and coastal ecosystems, polar communities, tropical forests, temperate forests as well as arid and semi-arid environments (DoEE 2019). Human-induced global warming has already resulted in observed

changes in the climate system including increased land and ocean temperatures, and more frequent and prolonged heatwaves on land and in marine environments (Hoegh-Guldberg et al. 2018).

Extreme weather events such as droughts, floods, storms and fire can affect population dynamics, species boundaries, morphology, reproduction, behaviour, community structure and composition and ecosystem processes. The changes in the frequency and intensity of these events may have a greater impact on many species and communities than temperature increases and rainfall pattern changes (Steffen et al. 2009).

Hoegh-Guldberg et al. (2018) concludes that constraining global warming to 1.5ºC, as opposed to 2ºC, provides significant benefits for terrestrial wetland ecosystems. Species range losses, increased extinction risks, changes in phenology together with projected increases in extreme weather events all contribute to the disruption of ecosystem functioning and loss of services provided by these ecosystems to humans such as avoidance of desertification, flood control, water and air purification, pollination, nutrient cycling, some sources of food, and recreation.

Impacts on ecosystems from this are spatially variable and species dependent due to the varying degrees of sensitivity to changes in the local and global ecosystem. At the point where global temperature rise, due to climate change, reaches 2 °C, increasing numbers of receptor groups suffer impacts which are high to very high, and likely to be irreversible (terrestrial ecosystems, warm-water corals, unique and threatened systems, and arctic regions) (Hoegh-Guldberg et al. 2018).
In Australia, the values and sensitivities that have been identified as having a potential to be impacted by climate change include:

- Terrestrial ecosystems: Alpine regions, rainforests, wetlands, grasslands, forests
- Marine ecosystems: coral reefs, mangroves, estuaries and inland waterways

The Australian Natural Resource Management Ministerial Council (NRMMC) recognizes climate change as a key additional threat to the conservation of Australia's biodiversity (Steffen et al. 2009). The impacts on physical, biological and socioeconomic receptors within these areas can vary greatly between ecosystems and even within them, affecting both the structure of the ecosystems and their flora and fauna. While the impacts of climate change on biodiversity are often worsened by other pressures like land clearing and invasive species, there are instances where the impacts can be directly attributed to climate change (Hughes et al. 2019). A summary of the potential impacts on each of these is provided in Table 7-5.

Table 7-5: Potential impacts of climate change on identified receptors from greenhouse gas emissions

Receptor	Potential impacts
Terrestrial Ecosystems	
All terrestrial ecosystems are likely to be impacted by a changing climate (Steffen et al 2009, Hughes 2011, Dunlop et al. 2012, Hoegh-Guldberg et. Al. 2018). The predicted impact of climate change on these ecosystems is highly variable, both between ecosystems and within individual ecosystems (Dunlop et al. 2012). A warming climate has significant effects on El Niño and La Niña phenomena (Cai et al. 2023), which in turn have profound impacts on terrestrial ecosystems. The frequency of strong El Niño and La Niña events is expected to increase significantly as a result of a warmer climate. Impacts of the two phenomena are also expected to be more intense due to climate change. During El Niño, warmer and drier conditions prevail, leading to increased droughts, reduced rainfall, and elevated temperatures. Increasing the magnitude of these events can result in more water scarcity, wildfires, and stress on plants and animal species, causing disruptions in ecosystems and further threatening biodiversity. Conversely, La Niña brings cooler and wetter conditions, with climate change predicted to increase rainfall, flooding, and shifts in vegetation patterns. These changes can affect water quality, soil erosion and the distribution of species.	
Tropical Rainforests	Changes in the timing of seasons resulting in longer hot or wet seasons which could in turn result in changes in seasonal responses and alterations to species range and abundance

Receptor	Potential impacts
	(Hoegh-Guldberg et al. 2018) through the change in patterns of flowering, fruiting or leaf flush. Increased temperatures leading to hotter and potentially more intense fires and cyclones. An increased probability of fires may change the dynamics of the rainforest, promoting a shift from fire-sensitive vegetation to fire-tolerant species (McInnes 2015). Increasing disturbance to rainforest as cyclones become more intense (Hughes 2011). Change in vegetation structure or vegetation species dominance due to tolerance/intolerance of increased CO_2 levels (Steffen et al. 2009).
Temperate forests	An increased probability and intensity of fires may change the dynamics of the forest, with a change from fire-sensitive vegetation to fire-tolerant species (Steffen et al. 2009) resulting in a change of ecosystem structure. Increases in temperature and decreases in rainfall may result in reduction in productivity and forest cover as soils dry out. Increased rainfall may increase productivity of temperate forests and result in greater areas of coverage (Steffen et al. 2009). The ranges of the majority of Australia's eucalypt species are predicted to shrink in size over the next 60 years (González-Orozco et al. 2016). Eucalypts dominate forest canopies and ecosystems across Australia. They were once more widespread but are now restricted to small ranges and are predicted to disappear or shift their location, with both scenarios introducing significant flow-on effects for ecosystem structure and function.
Alpine Regions	Alpine and montane areas are considered to be very vulnerable to climate change (Hughes 2003) due to the increase in temperature reducing the areas covered by snow. Alpine ecosystems and biodiversity in Australia are particularly vulnerable to climate change that affects snow depth and the spatial and temporal extent of snow, which have all declined since the late 1950s (BOM and CSIRO 2020). Long-term monitoring of alpine vegetation in Australia has shown shifts in plant species composition and diversity, changes in the timing of flowering, and declines in endangered fauna such as the mountain pygmy possum (Hoffmann et al. 2019). Species that are dependent on snow coverage for stable temperature maintenance (during hibernation), or for protection from predation may be more vulnerable (Hughes 2003).
Grasslands	Increased CO_2 levels may result in a shift in species dominance between woody and grass species due to individual species tolerance. This will affect herbivores and change the spatial availability of habitat for fauna associated with specific plant species (Steffen et al. 2009). Increased temperatures may lead to hotter and potentially more intense fires that may also increase in size and frequency due to a shift in the vegetation fuelling the fires.
Arid and semi-arid regions	Reduction in patches of fire-sensitive mulga in spinifex grasslands potentially leading to landscape-wide dominance of spinifex. Increased drying due to increase in CO_2, with a large shift in vegetation distribution due to changes in annual precipitation. Shifts in the seasonality or intensity of rainfall which can result in enhanced runoff distribution which will intensify vegetation patterning. Reduction in rainfall can result in increased fire frequency and intensity. Dryland salinity could be affected by changes in the timing and intensity of rainfall. Surface melting and runoff from Antarctic ice shelves is expected to increase with a warming global climate (Gilbert and Kittel 2021). Even a relatively moderate increase in global temperatures of 1.5 °C and 2 °C could significantly contribute to increased surface melting and the formation of melt ponds, which can weaken the ice shelf structure. Some parts of the Antarctic ice sheet have experienced increased melt rates in recent decades and this trend is expected to continue (Shepard et al. 2019). An overall increase in ice loss was observed from 1992 to 2017.

Receptor	Potential impacts
Marine and freshwater ecosystems	
Sea surface temperatures have increased across the globe over recent decades which poses a significant threat to marine ecosystems, including changes to species abundance, community structure and increased frequency and intensity of thermally induced coral bleaching events (CSIRO 2017). Sea surface temperatures in the Australian region have been increasing. Since 1900, they have risen by approximately 1.1 °C (BOM and CSIRO 2020). As on land, most of the increase has occurred since the 1950s. The increase of sea surface temperatures has been more gradual when compared to temperatures on land. Sea-surface temperatures are projected to continue to increase. The western Tasman Sea has warmed especially quickly in recent decades, with some areas having warmed by more than 1 °C since 1980 (BOM and CSIRO 2020). Since near-global satellite altimetry records began in 1993, global mean sea level has been rising at a rate of 3.3 millimetres per year (mm/yr), amounting to a total increase of about 9 centimetres (cm) from 1993 to 2020 (DCCEEW 2021). Ocean currents have also been shown to be affected by a change in temperature and stratospheric ozone depletion with currents increasing in strength (Cai and Cowan 2006), subsequently resulting in suppression of upwellings (leading to a shift in productivity) and a change in the distribution and productivity of marine ecosystems both spatially and temporally (Steffen et al. 2009).	
Coral reefs	An increase in sea surface temperatures across the globe has resulted in changes to species abundance, community structure and increased frequency of coral bleaching events (CSIRO 2017a). Climate change has emerged as a threat to coral reefs, with temperatures of just 1 °C above the long term summer maximum for an area over 4–6 weeks being enough to cause mass coral bleaching and mortality (Hoegh-Guldberg 1999, Hughes et al. 2017, Spalding and Brown 2015). An increase in the frequency of bleaching events can result in less time for reefs to recover and therefore remaining in early successional state (unable to support extensive habitat for organisms) or be replaced by ecosystems dominated by macroalgae. Coral mortality or die off following coral bleaching events can stretch across thousands of square kilometres of ocean (Hoegh-Guldberg 1999, Hughes et al. 2017). The impacts associated with a warming ocean, coupled with increasing acidification, are expected to undermine the ability of tropical coral reefs to provide habitat for fish and invertebrates, which together provide a range of ecosystem services (e.g. food, livelihoods, coastal protection) (Hoegh-Guldberg et al. 2018). As CO_2 is gradually absorbed by oceans and fresh water, the water becomes more acidic, which increases the solubility of calcium carbonate, the principal component of the skeletal material in aquatic organisms (Steffen et al. 2009) reducing the capacity for corals to build and maintain skeletons. Coral reefs are likely to degrade over the next 20 years, presenting fundamental challenges for those who derive food, income or coastal protection from coral reef ecosystems (Hoegh-Guldberg et al. 2017).
Saltmarsh and coastal freshwater wetlands	Sea levels are predicted to increase by 18–59 cm by 2100 in response to both thermal expansion and melting of ice-sheets (Solomon et al. 2007). This will lead to some coastal inundation affecting mangroves, salt marshes and coastal freshwater wetlands. Changes to the upstream freshwater habitats will result in changes to the spatial distribution of saltwater intolerant species further upstream with freshwater swamps and groundwater affected and areas of riparian vegetation being replaced by mangroves over time (Steffen et al. 2009). Further inland, reduction in rainfall may result in reduced river flows and changes in seasonality of flows as well as potentially exacerbating the frequency and intensity of droughts. Altered water quality, as well as quantity, will be a major trigger for climate change effects on freshwater biodiversity. For example, the combination of hot conditions, low flows and significant algal blooms during the recent major drought (2018–20) resulted in mass fish kills in the Murray–Darling Basin (Koehn et al. 2020).

Receptor	Potential impacts
	Changes in water quality including nutrient flows, sediment loading, O2 and CO2 concentration can result in increased intensity, duration and frequency of eutrophication (Steffen et al. 2009). Rocky shore and saltmarsh species in areas of low topographic relief will be vulnerable to complete loss of habitat, especially when bounded by cliff lines or coastal development (Steffen et al. 2009).
Mangroves	Mangrove ecosystems in Australia will face higher temperatures, increased evaporation rates and warmer oceans (McInnes 2015) as well as an associated sea-level rise (Hoegh-Guldberg et al. 2018). Mangrove species may increase their southern range as temperatures increase in the region, but the higher temperatures, ocean acidification and sea level rise may also result in a decrease in mangrove abundance (Duke et al. 2017). There is some evidence to suggest that sea level rise may not affect mangroves in such a negative way as they can accumulate more peat or mud to constantly adjust to the gradual sea level rise (Field 1995). However, as mangroves are found along the coastline, they can be exposed to multiple pressures such as drought and sea level drop, el Niño events or other extreme weather systems combined with increased sea surface temperatures; this occurred in the Gulf of Carpentaria in 2015-2016 along a 1,000 km stretch of coastline (Duke et al. 2017). Climate projections indicate an increased occurrence of anomalously low and high sea level events in the coming century. This, alongside enhanced temperature stress, is likely to significantly increase risk to mangrove health in the Gulf of Carpentaria (Chung et al. 2023).
Biodiversity	
Changes occur in species interactions as responses to environmental change, and usually have knock-on effects for communities and whole ecosystems. These higher order changes range from direct species–species interactions – such as mutualism, competition and predation – to changes in the ways in which species influence the structure and functioning of ecosystems, including cascading impacts through ecosystems, and the formation of novel communities and ecosystems (Steffen et al. 2009) including invasion of species.	
Mammals	Terrestrial mammals may be affected by a change in fire regime and extreme weather events resulting in drought, vegetation loss and starvation. Removal or addition of key species in the food web can also result in ecological cascades. Terrestrial mammals across Australia have experienced high rates of extinction and are subject to population decline. This is evidenced by further increase in the number of species listed as threatened or vulnerable (DCCEEW 2021). Narrow-ranged endemics (particularly in montane regions) are susceptible to rapid climate change in situ (Williams et al. 2003). Changes in ocean temperatures, upwellings, ocean acidification and melting of Antarctic sea ice may impact krill availability, the major food source for blue whales (DoE 2015). It is predicted that cetaceans limited to warmer areas such as pygmy blue whales will experience a southward shift in distribution as ocean temperature increases. There is evidence of these changes already occurring in other marine mammal species, but such changes are difficult to detect for whales due to the complexity of ecological systems and the lack of long-term records (DoE 2015). Due to rising sea surface temperatures (SST) and/or reducing sea ice extent, many cetacean species have demonstrated a poleward shift, following their preferred SSTs to higher latitudes, while some have altered the timing of their migrations (van Weelden et al. 2021). Climate change drives range shifts through effects on habitat and shelter, impacts on reproduction and disease, and changing distribution of sources of food (Grose et al. 2020).
Birds	Impacts to birds can include (Steffen et al. 2009): • Changes in phenology of migration and egg laying (Chambers et al. 2005)

Receptor	Potential impacts
	• Increased competition of resident species with migratory species as the latter species stay at breeding grounds for longer periods • Reduced breeding of waterbirds susceptible to reduction of freshwater flows into wetlands • Changes in food supply as a result of ocean warming (Smithers et al. 2003) • Rising sea levels will affect birds that nest on or burrow in sandy and muddy shores, salt marshes, inter-tidal zones, coastal wetlands and low-lying islands • Saltwater intrusion into freshwater wetlands, especially in northern Australia, will affect breeding habitat (Williams et al. 1995) Bird species in Australia are suffering population declines and increased risks of extinction (DCCEEW 2021). Numerous Australian landbirds have undergone significant southward range expansions (Silcocks and Sanderson 2007) with some species moving as much as 200-300 km in just two decades (Olsen 2007). Within the south-western region of Australia, notable changes have been observed in the migration timing of many waterbird and landbird species (Chambers 2008). Species that arrive in spring are tending to arrive earlier, while species arriving in autumn and winter arrived later.
Reptiles	Warming temperatures may alter sex ratios of species with environmental sex determination (ESD) such as crocodiles and turtles (some species likely to modify use of microhabitats to cope with warming in situ) (Steffen et al. 2009) Climate change is likely to have impacts on marine turtles and seasnakes across their entire range and at all life stages. Climate change is expected to cause changes in dispersal patterns, food webs (e.g. seagrass die-off), species range, primary sex ratios, habitat availability (e.g. loss of nesting beaches due to sea level rise), reproductive success and survivorship. Impacts will differ based on the ability of a stock to adapt to changes in suitable nesting beaches and food availability (DEE 2017a). Sea level rise presents a risk of nests flooding which may complicate increase hatchling mortality. The magnitude of sea level rise is expected to be greater at more southerly latitudes, particularly for WA.
Amphibians	Increased drying in bog and swamp areas will limit the range of habitat available to frogs and toads. Threatened alpine species (such as the southern corroboree frog *Pseudophryne corroboree*) at risk from changes to their breeding sites as snow coverage is reduced and suitable habitat dries out (Steffen et al. 2009). Increased outbreaks of pathogenic chytrid fungus in frogs as high temperatures provide optimum growth conditions (Laurance 2008). Cane toad distribution may increase resulting in increased predation and competition as their range expands with warming.
Invertebrates	Invertebrates are expected to be more responsive than vertebrates due to short generation times, high reproduction rates and sensitivity to climatic variables. Flying insects such as butterflies may be able to adapt by shifting ranges, as long as they are not limited by host plant distributions; non-flying species with narrow ranges are susceptible to rapid change in situ (e.g. Wilson et al. 2005 estimated that 25% of insect diversity in the wet tropics may be threatened this century). Invertebrate herbivores may also be affected by reduced foliar quality under elevated CO_2 and changes in rainfall and localised ecosystem changes. Some marine invertebrate groups are expected to experience significant impacts resulting from ocean acidification (OA). There is constant gas exchange between our oceans and the atmosphere and human-driven increased levels of atmospheric CO_2 result in more CO_2

Receptor	Potential impacts
	dissolving into the ocean. In the past 200 years, ocean water has become 30% more acidic – faster than any known change in ocean chemistry in the last 50 million years (Barker and Ridgwell 2012)). The building of skeletons of many marine invertebrates is particularly sensitive to acidity. Shell-building organisms rely on extracting carbonate ions from the water column to create calcium carbonate structures. Increasing ocean acidity binds up available carbonate and reduces the availability for invertebrates that rely on it (Steffen et al. 2009). In some extreme cases, calcium carbonate shells may even be dissolved in particularly acidic conditions. Blue mussel (*Mytilus edulis*) has been observed to produce outer shell that is more brittle while inner shell is softer and less stiff under OA conditions, which could be problematic in predation scenarios (Fitzer et al. 2015). Most threatened invertebrates are suffering from large-scale habitat degradation and loss of biodiversity.
Fish and plankton	Many marine fauna are sensitive to average temperature changes, even by less than 3 degrees, resulting in effects on dispersal, growth rates, reproduction, susceptibility to disease and survival; this includes impacts throughout the food web starting with phytoplankton production and secondary production in benthic communities. Changes in seasonal cycles of plankton abundance, with potential for mismatch between phytoplankton blooms and zooplankton growth, leading to cascading effects to the rest of the marine food chain (Hays et al. 2005). Freshwater species are vulnerable to changes in water flow and quality with limited capacity for species to move to new waterways. Many marine organisms are highly sensitive to changes in temperature, leading to effects on growth rates, survival, dispersal, reproduction and susceptibility to disease. Increasing temperatures may reduce larval development time, potentially reducing dispersal distances and warm-water assemblages may replace cool-water communities.
Plants	Longer-lived plants such as trees may be highly vulnerable if climate change 'moves' suitable establishment sites for seedlings beyond seed dispersal distance at a rate exceeding generation time. Narrow-ranged endemic plants requiring a very specific set of environmental characteristics (such as specific soil types) will have limited capacity to disperse to similar, rare sites. Elevated CO_2 will increase photosynthetic rates as long as other factors, such as water and nutrients, are not limiting (Steffen et al. 2009). There is potential for productivity to be boosted in some regions by a combination of increased CO_2 and longer growing seasons (e.g. Dunlop and Brown 2008). This effect, however, may not occur in regions where drying occurs. Increasing CO_2 will increase water use efficiency at an individual plant level. But at an ecosystem level, total water use may not necessarily decrease, due to decreased total leaf area and increased evaporation from soil as a consequence of warmer temperatures (Steffen et al. 2009). Any changes in productivity and foliar nutrients will have flow-on effects to herbivores. Changes to fire regimes will have significant impacts on vegetation; increases in frequency and intensity of fires may disadvantage obligate seeders relative to vegetative resprouters. Changes in the timing of plant phenology and insect life cycles will affect pollination and some forms of dispersal.
Socioeconomic factors	Socioeconomic impacts resulting from climate change include impacts on the functions, interests or activities of other users which rely on these ecological values, including commercial and recreational fisheries and aquaculture. There may also be impacts to cultural heritage sites and places of spiritual importance in coastal locations due to sea level rises. Climate change could also be a severe hindrance to many tourism industries. Range shifts may result in shorter or more infrequent visitation by tour targeted species (e.g. cetaceans).
Consequence	**Ranking**
Minor	Acceptable

Table 7-6: Potential impacts of atmospheric emissions on identified receptors within the operational area

Receptor	Impact description within the operational area
Air quality	Emissions can reduce air quality in the immediate vicinity of the Facility in the Operational Area. The quantities of gaseous emissions are relatively small, and will under normal circumstances, quickly dissipate into the surrounding atmosphere. As the facility operations occur in offshore waters, the combustion of fuels in such remote locations will not impact on air quality in coastal towns or other sensitive locations, and impacts to any other nearby petroleum activities are not expected. As such impacts to air emissions are considered ***negligible.***
Birds	A reduction in air quality may have a temporary effect on transient bird species passing through the operational area. As described in Section 5, no avifauna BIAs overlap the Operational area, however, 13 threatened and/or migratory seabirds were identified as potentially occurring within, or having habitat potentially occurring within the EMBA. These species may be impacted by deterioration in air quality if they are transiting the immediate area of the FPSO and vessel exhaust release points. Symptoms of exposure could include irritation of eyes and respiratory tissues or breathing difficulties. Given that the Operational area is outside a flyway, and the nearest migratory bird breeding/ roosting site is Cartier Island which is located approximately 84 km north-west of the FPSO only a small number of seabirds are expected to be affected by a reduction in air quality whilst in transit, any behavioural disturbances such as alteration of flight path would be a *Slight effect; recovery in days to week* There are no known air quality standards or guidelines specifically for avifauna. However, if avifauna are exposed it is expected they would only be exposed to changes in air quality for an extremely short period. Chronic exposures are not considered credible given that avifauna would be transiting through the area. As such impacts to seabirds are considered ***negligible.***
Social receptors	As Montara Facility operations occur in offshore waters, the combustion of fuels in such remote locations will not impact on air quality in coastal towns or other sensitive locations. No impacts are therefore expected.
Consequence	**Ranking**
Negligible	Acceptable

7.3.3 Environmental performance

Aspect	Atmospheric emissions			
Performance outcome	Manage direct GHG emissions to comply with the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 Develop emission reduction strategy for Australia that contributes to the JSE net zero road map by 2050 and aligns to Australian climate commitment			
ID	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
011	CMMS requires equipment certification and maintenance	All engines, compressors and machinery on the FPSO and WHP are maintained via the CMMS to ensure efficient operation	CMMS records maintenance has been satisfactorily completed as scheduled	OIM
012	International Air Pollution Prevention (IAPP) Certificate valid	FPSO (when disconnected[8]) and vessels (as appropriate to vessel class) will maintain a current International Air Pollution Prevention (IAPP) Certificate or equivalent which confirms that the following measures during the activity are in place: • Diesel engines >130 kW are certified to meet prescribed emission standards • Vessels have a Ship Energy Efficiency Management Plan (SEEMP) to monitor and reduce air emissions • Use of low sulphur diesel (<0.50% m/m) • Current waste management plan • Measures to prevent ozone-depleting substance (ODS) emissions are in place	Valid and current IAPP SEEMP Records Certification documentation	OIM (FPSO) Marine Superintendent (Vessels)
013	FPSO and vessels compliant with Marine Order 97	FPSO (when disconnected[8]) and vessels (as appropriate to vessel class) will comply with Marine Order 97 (Marine pollution prevention – air pollution), which requires vessels to have a valid IAPP Certificate (for vessels >400 tonnage) and use of low sulphur diesel, when possible (required to be less than 0.50% m/m as of 1 March 2020)	Valid and current IAPP	OIM (FPSO) Marine Superintendent (Vessels)

[8] When the FPSO is disconnected from the CALM buoy for any reason, the FPSO becomes a vessel that is bound by MARPOL and other relevant regulations

Aspect	Atmospheric emissions
Performance outcome	Manage direct GHG emissions to comply with the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 Develop emission reduction strategy for Australia that contributes to the JSE net zero road map by 2050 and aligns to Australian climate commitment

ID	Management controls	Performance standards	Measurement criteria	Responsibility
014	Production is maintained and monitored	Continuous monitoring of flare rates, fuel gas and diesel consumption. Monthly reporting completed to evaluate emissions intensity to comply with the CER safeguard mechanism targets	NGER Submissions	OIM
015	Maintenance and servicing of flare system and compressor to ensure efficient burning and reinjection	The flare system and tip are maintained and inspected to ensure efficient burning. This includes testing of the ignition system and corrective actions implemented to minimise downtime	CMMS records show maintenance and testing of flare and flare tip	Maintenance and Integrity Team Lead
016		A maintenance and servicing contract is in place to maintain the re-injection compressor to ensure reliability and availability is as high as possible with regular review of failure rates and trends to inform forecasting assumptions	Monthly review of failure rates TA quarterly meeting to review systemic trends	Engineering Manager
017		2 Yearly NGERS flare calibration undertaken to ensure efficient flaring	Calibration records	Maintenance and Integrity Team Lead
018	Fugitive emissions surveys are completed annually	Fugitive emissions surveys (for example using a FLIR camera) are undertaken annually on the FPSO to detect any weeps and seeps to confirm tightness of the system and where discrepancies are found, they will be prioritized and addressed according to the Integrity Management System. Fugitive emissions are also checked after startup of any newly installed equipment to ensure they are fitted correctly. The next survey is planned for 2024.	CMMS records demonstrate fugitive emissions surveys carried out Completed job orders evidence any corrective actions	OIM
019	NGERS reporting to the CER is undertaken and results fed back	Reporting of direct GHG emissions is undertaken as per the NGERS regulatory requirements, using a specialist third-party	NGERS reporting completed annually GHG forecasting estimates reviewed annually in line with the business plans	Group HSE Manager – NGERs reporting

Aspect	Atmospheric emissions
Performance outcome	Manage direct GHG emissions to comply with the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 Develop emission reduction strategy for Australia that contributes to the JSE net zero road map by 2050 and aligns to Australian climate commitment

ID	Management controls	Performance standards	Measurement criteria	Responsibility
	into the emissions inventory	Forecasts of GHG emissions for Montara venture are undertaken following NGERS methodology and compared against the NGERS submission to the CER, with any discrepancies documented and addressed in the emissions inventory.		Group ESG Manager – GHG forecasting
020	Apply for and manage direct GHG emissions to within the relevant baseline under the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015	Manage direct GHG emissions to within the accepted baseline, under the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 New Safeguard Mechanism baseline submission is completed in 2024 with the application accompanied by an audit. Continue efforts of the Climate Change Working Group towards finalizing the asset reduction options for Montara to manage any excess emissions and contribute to the corporate Net Zero pledge	SGM Audit Climate Change Working Group	Country Manager
021	Emissions performance review	Monthly flare and fuel usage review undertaken to track forecasted emissions vs. actual emissions at the facility to allow for forecasting throughout each year and manage compliance with the Safeguard Mechanism Comparison of actual emissions vs forecasted emissions undertaken at least 6 monthly and the root cause of any discrepancies identified	Records maintained in P2	Operations Manager
022	Climate Change working group (Australia)	Australia CCWG established in 2023 to support the Climate change steering committee and implementation of the Climate Change Policy in - providing advice and recommendations to the board on climate related issues - Reviewing Jadestone actual and forecast climate related targets, and re-baselining as appropriate	CCWG Terms of reference and meeting minutes	Group HSE Manager Group ESG Manager

Aspect	Atmospheric emissions			
Performance outcome	Manage direct GHG emissions to comply with the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 Develop emission reduction strategy for Australia that contributes to the JSE net zero road map by 2050 and aligns to Australian climate commitment			
ID	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
		- Incorporating external influences (such as legislation changes) into business level strategies - Maintain and review the asset reduction options for Montara to manage any excess emissions as guided by the corporate Net Zero pledge - Increase our understanding of Scope 3 indirect value chain emissions and seek opportunities to reduce them where the Company has direct control and/or influence		
023	Scope 3 emissions data collation undertaken	Data enquiry questionnaires provided to suppliers through Jadestone's procurement process commencing in 2023 to allow for evaluation and calculation of scope 3 emissions Vessel and helicopter fuel consumption recorded for emissions reporting purposes	Supplier questionnaires Fuel records	Supply Chain Manager
–	Gas compressor	Refer to performance standards in Section 8.1.3		

7.3.4 ALARP Assessment

On the basis of the impact and risk assessment completed, Jadestone considers the control measures described above are appropriate to manage atmospheric emissions from production and operations equipment, as well as vessels to ALARP. Additional controls considered but rejected are detailed below. The potential impacts are considered Tolerable as they are within the green category (negligible impacts). No further controls are required and therefore ALARP has been demonstrated. Jadestone continues to review control options periodically and is currently investigating an alternative, mitigated GHG forecast for the site, subject to techno-economic analysis.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
All emissions producing equipment is removed	Eliminate	No	N/a	Atmospheric emissions from production and operating equipment is required to undertake the Activity. Equipment cannot be removed completely.
No incineration of waste	Eliminate	No	N/a	Costs associated with transporting waste to shore for landfill and/or incineration outweighs onboard incineration. There are health implications for storage of waste onboard, and implications for deck space and additional vessel transfers to remove waste.
Installation of a second compressor to improve availability of the FPSO (of the same capacity as the existing unit) thus resulting in increased uptime and increased capacity	Engineering	No	No	To allow this, a completely new compression module is required. There is limited deck space to accommodate a second compressor and the structural competency of the vessel would require significant modification to facilitate installation. The cost compared to the benefit of the increased capacity is high. Rejected based on the feasibility of installing on the facility.
Increase reinjection capability by bringing in a smaller capacity reinjection compressor to be installed on the FPSO. The equipment would have a limited capacity to reinject the smaller unit would not require a new module. This would improve uptime of the compression system.	Engineering	No	No	Less deck space is required compared to the second compressor, but would still require structural modification and addition deck space. This would result in a flaring reduction and could result in up to 73,500tCO2e/yr reduction for the remaining field life. However, the impact on flaring reduction still needs to be confirmed and the CAPEX is currently estimated at $20 million. With a positive MAC of 52.1, this option is being investigated further for feasibility.
Utilise carbon capture and storage on the current wells to minimize gas emissions.				The current set of wells require gas lift injection to a limited number of well to maintain the pressure required for production. If CCS was introduced, production would likely be decreased due to the change in

				pressure. Not considered economically viable.
Natural Gas Liquid recovery undertaken through proper gas dehydration to remove heavier components such as butane which is then stored	Engineering	No	No	This technology has variable success as it is dependent on the gas composition, temperature and pressure (amongst other requirements). Consideration has to be given to the impact on total vapour pressure in storage tanks to ensure crude export specification is not exceeded (shipping standard). There is a minimal reduction in emissions and the resulting product may not be considered safe to store and transport.
Bottlenecking of the crude export pump to reduce fuel reduction; but then need to use that fuel gas and this may end up being flared	Engineering	No	No	By bottlenecking the crude export pump fuel use would be reduced, but then will potentially result in excess fuel gas which would then end up being flared. This would therefore not result in a net benefit. Fuel would be reinjected using existing compressors and could result in a minimal reduction in emissions of ~200tCO2e/yr. The MAC for this is currently zero. This opportunity will continue to be considered but is presently uneconomic.
Use of waste heat as a fuel to reduce fuel gas usage	Engineering	No	No	If the fuel gas is not burnt then it will be flared, therefore there is no significant environmental benefit to this option.
None identified	Isolation	N/a	N/a	The Activity is located at distance from sensitive receptors and the coastline.
None identified	Administrative	N/a	N/a	Compliance with relevant and appropriate MARPOL requirements

7.3.4.1 Mitigations

Jadestone is committed to achieve Net Zero (scope 1 and 2) GHG emissions for its operated assets by no later than 2040. Jadestone defines Net Zero as the state reached when its GHG emissions are reduced in line with the goals of the Paris agreement, and any remaining emissions that cannot be reduced further, are fully neutralised by like-for-like permanent removals. For those emissions that are economically or technically difficult to eliminate, Jadestone will employ nature-based solutions and offsets to mitigate. Jadestone is currently developing a Net Zero Plan which will be finalized and published end of 2023. The use of offsets to mitigate hard to abate emissions is the least preferred option in the mitigation hierarchy and Jadestone will continue to assess reduction options over the life span of the facility. Where offsets are used, Jadestone will ensure they are properly measured, verified, and represent permanent removal of carbon from the atmosphere.

A listing of current priorities applied to flaring management is provided below:

- Improving process stability – focus on process optimisation: reducing pressure fluctuations reduces the necessity to flare operational gas for short repetitive periods.
- Reinjecting gas – strong focus on increasing gas reinjection capacity to avoid GHG emissions, enhance oil recovery and preserve reservoir pressure.
- Gas as fuel source – produced gas is used to fuel gas turbines, which in turn provide power to the facility, thus reducing the need to purchase and supply diesel for the operation of plant and equipment.

The ability to control routine flaring can be particularly challenging at mid-life assets due to legacy constraints related to site design as well as changing subsurface characteristics. Eliminating routine flaring often requires major capital investments in new equipment and/or infrastructure to manage, process or export the gas. Jadestone continues to investigate ways to increase its reinjection capacity and control volumes flared.

Jadestone are currently reviewing a number of options to improve efficiency at the Montara facility with an aim of reducing emissions. This is reviewed in the Australia Climate Change working Group; recommendations to implement the efficiency measures are then taken to the CCSC for approval. This may require approval from the Board depending on the Capex and MAC outcomes. The decision-making process for any identified option is in Figure 7-4, this is managed through the CCWG with decisions to trial any mitigation option based on high-level MAC.

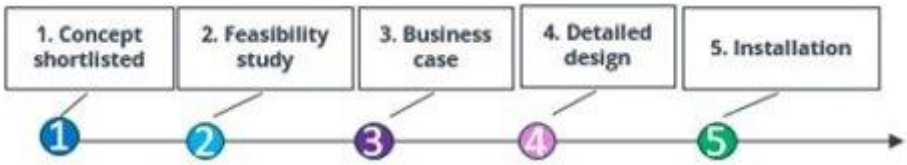


Figure 7-4: Decision making process for concepts shortlisted for trial

The MAC is adjusted over time as the cost and scale of carbon reduction opportunities changes with the price of oil and capital costs. Therefore concepts that are feasible but may not make business sense to implement now, may become more favourable in future and therefore the concepts are reviewed regularly by the CCWG.

The shortlisted options require further investigations before integrating into work plans and budgets. Jadestone is commissioning engineering partners to conduct feasibility studies for the options listed and will progress these investigations to finalise its alternative, mitigated GHG forecast and develop an interim Net Zero target by the end of 2023. The completion of this workstream is included as a performance outcome within the 2023 Corporate scorecard, reflecting its significance to the business.

7.3.4.2 Anticipated changes to the National Safeguard Mechanism

The National Safeguard Mechanism has undertaken a reform, enshrined in law in 2023. The anticipated changes as far as the baseline reductions over time will inform Jadestone's Net Zero plan as it relates to the Montara venture.

7.3.5 Acceptability Assessment

The potential impacts of atmospheric emissions are considered acceptable in accordance with Section 4.4, based on the acceptability criteria outlined below. The control measures proposed are consistent with relevant legislation, standards and codes, and the environmental consequence is considered negligible.	
Policy and management system compliance	Jadestone's HSE Policy objectives are met. Section 9 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for the activities.

Stakeholders and reputation	Stakeholder consultation has been undertaken (see Section 6), and no stakeholder concerns have been raised with regards to impacts from atmospheric emissions on sensitive receptors.
Environmental context and ESD	While there are atmospheric emissions to the airshed immediately around the facility and vessels, the impact and risk assessment process indicates that emissions will not result in significant effects to the environment or receptors. The potential impact is considered acceptable after consideration of: • Potential impact pathways • Preservation of critical habitats • Assessment of key threats as described in species and Area Management/ Recovery plans • Consideration of North-West Bioregional Plan • Principles of ecologically sustainable development ESD. Whilst direct impacts to localised receptors is considered negligible, the cumulative impact of Montara's annual emissions does contribute to climate change. The potential impact is considered acceptable after consideration of: • Remaining project life span • Decreasing emissions • Limited options to reduce actual emissions • Offset hard to abate emissions in line with objectives of Paris Agreement Through the Paris Agreement, Australia acknowledges that climate change is a common concern of humankind and the Parties should consider their respective obligations, including intergenerational equity. Through Jadestone's net zero road map by 2050 they are ensuring alignment to the Australian climate commitment and therefore contribute to global efforts to meet the objective of the Paris Agreement to "hold the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change". Jadestone's role as a true energy transition company is guided by the key findings of the IEA's Net Zero by 2050 Roadmap, stating that "there is no need for investment in new fossil fuel supply in the (IEA's) Net Zero pathway" as well as 2022 World Energy Outlook, which states that "the trajectory of oil demand in the NZE (Net Zero emissions scenario) means that no exploration for new (oil) resources is required" whilst recognising that there is a need for continued investment in existing sources of oil production in order to meet energy demand. Jadestone support a number of the UN Sustainable Development Goals ("SDGs"), which aim to address global challenges such as poverty, inequality and climate change. Informed by IPIECA guidance, Jadestone believes it can support a number of UN SDGs, either through positive contributions or by preventing and mitigating negative impacts. This includes the 5 goals below as detailed in Jadestone's sustainability reports (https://www.jadestone-energy.com/sustainability/). 

	As a responsible steward of mid-life assets that is committed to upholding climate targets, as it continues to execute its Net Zero strategy, the principle of intergenerational equity is considered to be met. Jadestone's core strategy of providing the Asia-Pacific region with necessary energy, whilst implementing GHG mitigations at operations, is helping the region balance the energy security, affordability and climate action priorities. This strategy is considered to reduce the risks and impacts of climate change, thereby ensuring that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
Conservation and management Plans	A number of management plans include consideration of the effects of climate change on species, including the following: • Marine Bioregional Plan for the North Marine Region • Recovery Plan for the White Shark (*Carcharodon carcharias*) • Approved Conservation Advice for *Rhincodon typus* (whale shark) • Conservation Management Plan for the Blue Whale 2015–2025 • Approved Conservation Advice for *Balaenoptera physalus* (fin whale) (2015) • Approved Conservation Advice for *Balaenoptera borealis* (sei whale) (2015) • National Light Pollution Guidelines for Wildlife (DCCEEW2023) • Recovery Plan for Marine Turtles in Australia 2017–2027 (CoA 2017) • Commonwealth Conservation Advice on *Dermochelys coriacea* (2008) • Approved Conservation Advice on *Aipysurus foliosquama* (Leaf-scaled seasnake) (2011) • Wildlife Conservation Plan for Seabirds (CoA 2020b) • Wildlife Conservation Plan for Migratory Shorebirds • Approved Conservation Advice for *Numenius madagascariensis* (Eastern Curlew) (2015) • Approved Conservation Advice for *Calidris canutus* (Red knot) (2024) • Conservation Advice *Limosa lapponica menzbieri* (Bar-tailed godwit (northern Siberian)) (2024) • Conservation Advice *Limosa lapponica baueri* Bar-tailed godwit (western Alaskan) (2024) • Conservation Advice for the Abbott's Booby *Papasula abbotti* (2020) • Conservation Advice for the Asian Dowitcher *Limnodromus semipalmatus* (2024) • Conservation Advice for the Sharp-tailed Sandpiper (2024) • Conservation Advice for the Christmas Island Frigatebird *Fregata andrewsi* (2020) • National recovery plan for the Christmas Island Frigatebird (*Fregata andrewsi*) (2004) • Conservation advice *Accipiter hiogaster natalis* Christmas Island Goshawk (2016) • National Recovery Plan for Christmas Island Goshawk *Accipiter fasciatus natali* (2004) • Conservation advice *Chalcophaps indica natalis* (Christmas Island emerald dove) (2014) • Conservation Advice for *Anous tenuirostris melanops* (Australian lesser noddy) (2015) • Conservation Advice for *Phaethon lepturus fulvus* (white-tailed tropicbird) (2014) • Approved Conservation Advice for *Rostratula australis* (2013) • National Recovery Plan for the Australian Painted Snipe (*Rostratula australis*) (2022) • Conservation Advice *Falco hypoleucos* Grey Falcon (2020) • Conservation Advice *Falcunculus frontatus whitei* crested shrike-tit (northern) (2016) • Conservation Advice *Charadrius leschenaultia* sand plover (2016) • Conservation Advice for *Erythrotriorchis radiatus* (red goshawk) (2023) • National recovery plan for the red goshawk *Erythrotriorchis radiatus* (2012) • Conservation Advice *Erythrura gouldiae* Gouldian finch (2016) • National Recovery Plan for the Gouldian Finch (*Erythrura gouldiae*) (2006)

	• Conservation Advice *Tyto novaehollandiae* masked owl (northern) (2015) Jadestone has had regard to the representative values of the protected areas within the EMBA, and the respective management plans and other published information. Impacts from atmospheric emissions will have a negligible impact on any of the social and ecological objectives and values, of any AMPs, or state marine parks. This is consistent with the objectives of the protected area management plans (Appendix C), and considered acceptable. Jadestone is committed to achieve Net Zero (scope 1 and 2) GHG emissions for its operated assets by no later than 2040 to align with Australian climate commitments and the goals of the Paris agreement. This target will in turn reduce the potential effects of climate change and meet the objectives of the recovery plans and conservation advices. It is important to acknowledge that climate change impacts cannot be directly attributed to Any one activity, as they are the result of global GHG emissions, minus global GHG sinks, that have accumulated in the atmosphere since the industrial revolution began. Therefore, there is no direct link between GHG emissions from the Montara facility operations and climate change impacts to specific ecological receptors.

7.4 Liquid Discharges

7.4.1 Description of Aspect

Liquid discharges	Liquid discharges generated from the FPSO and vessels and routinely discharged to the marine environment include: • Slops water (Deck drainage, bilge water, tank washing) • Cooling water • Desalination Brine • Treated Sewage • Greywater • Putrescible food waste • Guano (water blasted off the facility) A summary of each waste type is provided below. **Deck drainage and bilge water** Deck drainage from the Montara facilities and support vessels consists primarily of stormwater and deck wash-down water. It may include low levels of detergents, oil and grease, spilt chemicals, used machinery chemicals and general dirt from the deck. The volume of drainage likely to be generated is difficult to determine with accuracy as it depends on the rainfall and frequency of deck washing. As described in Section 3.3.5, the FPSO will have three separate drain facilities; open non-hazardous drains, open hazardous drains and closed hazardous drains. The two drain types that receive hazardous discharge are directed to the dirty slops tank for gravity separation and further transferred to the Produced Water storage tanks for treatment and discharge via the Produced Water treatment system. Deck drainage and bilge water from the FPSO are therefore assessed separately in Section 7.6 (Produced Formation Water). This risk assessment covers the open non-hazardous drains on the FPSO, which flow directly to the Main Deck via the grated process decks, where they can be discharged overboard via the scuppers. This section does not include the management of chemical spills, which is addressed in Section 8.5. On vessels, oily water from bilges will be collected and treated via an oil-water separator in accordance with MARPOL requirements (<15 ppm (v) oil-in-water) prior to discharge. Once separated, the oil and grease will be stored in suitable containers ahead of transfer ashore for recycling, and the treated water discharged to sea. **Cooling Water and Desalination Brine** Cooling water is used as a heat exchange medium to cool machinery; the water is then discharged at a temperature higher than that of the ambient seawater (Black et al. 1994). Seawater will be pumped aboard the Montara FPSO and then circulated through various process and marine heat exchangers prior to discharge back into the ocean. Slipstream of seawater is passed through Marine Growth Prevention System (MGPS) anode treatment tanks where electrodes immersed in the seawater release copper (Cu) and Aluminium (AI) ions into the sea water. Copper and aluminium are anti-fouling agents and are maintained at the trace concentrations of 2 ppb Cu and 0.5 ppb Al. This treated seawater stream is then directed to each inlet sea chest and pump caisson to prevent blockage of marine growth inside pipes and exchangers. Discharge rate of cooling water from the FPSO is up to 65,000 m^3/d (2,200 m^3/h). Freshwater is produced on board the Montara FPSO via desalination. The fresh water makers on board result in discharge of maximum 40 t per day of brine of 50.5 °C and a maximum salinity of 50 ppm. The cooling water discharge system is a segregated system, with no direct contact with hydrocarbons. Cooling water may be treated with biocide to prevent biofouling of pipes. Given the Montara FPSO is an existing operating facility in a fixed location with a fairly consistent fresh water and cooling water requirements, operations are well established. GEMS (2003) examined the potential behaviour of cooling water discharge from the Montara FPSO during production using wind and tidal driven currents during the dominant seasons (winter and summer). The report

	concluded that the zone of impact associated with temperature impact from the discharge of cooling water is predicted to be extremely limited in extent with the plume mixing to within 2ºC of the ambient temperature within 40 m from the point of discharge. A water quality monitoring program conducted in 2017 (Jacobs 2017) confirmed at 100 m from the point of discharge, there was not been greater than 3 °C above the ambient water temperature. **Sewage, Grey water and Food waste** With the maximum persons on board (POB) of the Montara FPSO being 60 personnel (with a lower average number typically on board), the volume of treated sewage and greywater is conservatively estimated to be <35 m^3/d (based on 0.6 m^3/person/d) and putrescible waste of 60 kg/d (based on 1 kg/person/d). These quantities are derived from existing PTTEP AA Montara Operations. Given the Montara FPSO is manned on a continuous basis, discharges of treated sewage, greywater and putrescible food waste is expected to occur daily throughout operations, over all seasons of the year. During planned maintenance periods on the sewage treatment system, sewage will be discharged from the system untreated into the marine environment for a limited amount of time (24–48 hours) at a frequency expected to be approximately 4–6 times annually. In addition to the Montara FPSO, support vessels operating within the permit areas routinely discharge sewage, greywater and putrescible wastes. Given the lower POB of vessels and the intermittent nature of support operations, overall discharge volumes and frequencies are less than that from the FPSO. **Guano and water blasting** Guano is water-blasted (using seawater) as required to maintain the helideck for safe helicopter landing and the surfaces throughout the facility to maintain personnel health and safety. The guano and water are discharged directly to sea.

7.4.2 Impacts

Sensitive receptor	Impact description
Water Quality	The impacts associated with the discharge of liquids to the marine environment include a potential change to ambient water quality within the direct vicinity of the facilities and support vessels through chemical loading, increased water temperature, eutrophication, and change in salinity. *Deck drainage and bilge water* The potential impact associated with the discharge of treated deck drainage and bilge water is a change to ambient water quality through chemical loading within the direct vicinity of the operational facilities and support vessels. If not properly managed, the discharge of oily water has the potential to create an oil sheen on surface waters and a temporary localised decline in water quality. Dispersion and biodegradation of potentially contaminated oily water drainage is expected to be rapid and highly localised resulting in no long-term or adverse effects on water quality and the consequence was assessed as ***negligible***. *Cooling water and desalination brine* Cooling water discharges to the marine environment will result in a localised and temporary increase in the ambient water temperature of approximately 10ºC. Once discharged into the ocean, the cooling water will initially be subject to mixing due to ocean turbulence and some heat will be transferred to the surrounding waters. The plume will then disperse and rise to the ocean surface, where further loss of heat and dilution will occur (Black et al. 1994). The volume of water discharged will be small compared to the receiving waters, the environmental effects of the elevated temperature of discharged waters is therefore predicted to be insignificant due to the large buffering capacity of the ocean. The plume will quickly lose heat and water in only a small area around the outfall will have a substantially elevated temperature (Black et al. 1994). The consequence was assessed as negligible. Residual brine typically has a salinity of 40,000 ppm in comparison to seawater which has a salinity of 35,000 ppm. Any increase in salinity within the receiving environment as a result of desalination

Sensitive receptor	Impact description
	brine discharges is expected to be limited to the immediate point of discharge. As brine is of greater density than seawater and it is expected to sink and rapidly disperse in the currents. For desalination brine discharges from the Montara FPSO the increase in salinity will be further reduced due to combining of the brine with the return seawater from the cooling water system prior to discharge. The consequence was assessed as ***negligible***. *Treated Sewage, grey water, guano and food waste* The potential impact associated with the routine discharge of guano contaminated washwater, sewage, grey water and putrescible food waste on water quality is changes to ambient water quality and BOD levels from nutrient loading within the direct vicinity of the FPSO and support vessels. The discharges of guano washwater, treated sewage and grey water result in localised increases in nutrient concentrations, exert Biological Oxygen Demand (BOD) on the receiving waters and may promote localised elevated levels of phytoplankton and bacteria activity due to nutrient inputs. Guano discharge studies have found that biological recycling of nutrients by seabirds likely supports marine primary production and enhances productivity of associated food webs in the vicinity of islands where the surrounding coastal waters are nutrient limited (Shatova et al. 2016). However, the open water conditions and swift currents of the receiving environment will dilute the discharge and prevent environmentally significant reductions of oxygen levels in the water column (Somerville et al. 1987, cited in Swan et al. 1994). The consequence was assessed as ***Negligible***. *Summary* The consequence of liquid discharges to the marine environment are considered to be negligible given the low toxicity of the discharges and expected dilution within the open water.
Marine fauna: cetaceans, turtles, fish, seasnakes, sharks, rays, seabirds	Changes in water quality as a result of liquid discharges can lead to impacts on fauna including: • Potential chemical toxicity to marine species within the direct vicinity of the facilities and support vessels • Potential behavioural change in marine species • Chemical effects to marine fauna • Alteration of physiological processes of exposed biota • Bio-stimulation of planktonic communities • Biological exposure to pathogens • Deposition and accumulation of solids/ particulates leading to a change in sediment quality *Deck drainage and bilge water* The potential impact associated with the discharge of treated deck drainage and bilge water is chemical toxicity to marine species within the direct vicinity of the facilities and support vessels. If not properly managed, the discharge of oily water has the potential to create an oil sheen on surface waters and a temporary localised decline in water quality and toxic effects to marine fauna. Toxicity to marine organisms would be from trace amounts of dissolved hydrocarbons in the oily water drainage after treatment. Given that oil and grease residues in oily water drainage will be in low concentrations, the potential for impact is low and would be further reduced due to the strong tidal movements experienced in the region and the naturally turbid environment. Dispersion and biodegradation of potentially contaminated oily water drainage is expected to be rapid and highly localised resulting in no long-term or adverse effects on marine ecology. The consequence was assessed as negligible. *Cooling water and desalination brine* Discharge of cooling water has the potential to cause changes in marine ecology through elevated temperatures, as well as the presence of anti-fouling biocides with trace chemical concentrations of copper and aluminium ions being discharged. These small amounts of biocides will disperse rapidly on discharge to concentrations below levels of environmental concern. When discharged to the sea surface, cooling water will initially be exposed to the atmosphere and subsequently air-cooled. Upon reaching sea surface cooling water will then be subjected to

Sensitive receptor	Impact description
	turbulent mixing and some transfer of heat to surrounding waters. The plume will disperse mainly within surface waters being thermally buoyant, primarily in the direction of prevailing tidal currents (northwest–southeast). A water quality monitoring program conducted in 2017 (Jacobs 2017) have confirmed at 100 m from the point of discharge, there has not been greater than 3 °C above the ambient water temperature. Most marine species are able to tolerate short-term fluctuations in salinity in the order of 20–30% (Walker and McComb 1990), and it is expected that most pelagic species would be able to tolerate short-term exposure to the slight increase in salinity caused by the discharged brine. Given the relatively low volume of discharge, low salinity increase and deep, open water surrounding the operational area, impacts on fauna from increased salinity in the operational area is expected to be low. Fish and plankton are likely to be at greatest risk from cooling water discharge impacts since they are most likely to be attracted to the discharge location (fish) or entrained within the discharge plume (plankton). Fish and plankton are relatively small organisms that may experience increased body temperature and altered physiological processes (e.g. increased respiration rate and oxygen demand). However, given that the area of raised water temperature will be highly localised and within the range of temperature on the North-West Shelf significant impacts on a larger ecosystem or population level to fish or plankton are not expected to occur. Given the hydro-dynamically active open water environment surrounding the Montara operations, it is expected that the surface discharges of cooling water and desalination brine would rapidly disperse, cool and dilute in the surrounding waters, therefore temperature, biocides and increased salinity loading leading to changes to water quality or behavioural changes in marine species would be negligible. Therefore, only receptors in close proximity to the discharge point have the potential to be impacted. *Sewage, greywater and putrescible food waste* The potential impact associated with the routine discharge of sewage, grey water and putrescible food waste is changes to water quality resulting in a change in BOD and behavioural responses of marine fauna to discharges as an alternative food source. As cited within NERA (2017), any potential change in phytoplankton or zooplankton abundance and composition is expected to be localised, typically returning to background conditions within tens to a few hundred metres of the discharge location (e.g. Abdellatif 1993; Axelrad et al. 1981; Parnell 2003). Effects on environmental receptors further up the food chain, namely, fish, reptiles, birds and cetaceans are therefore not expected beyond the immediate vicinity of the discharge in deep open waters. Some fish and oceanic seabirds may be attracted to the FPSO and support vessels by the discharge of sewage. This attraction may be either direct, in response to increased food availability, or secondary, as a result of prey species being attracted to the area. Given the small quantities and intermittent nature of disposal however, any attraction is likely to be minor and is not expected to result in adverse impacts at an ecosystem or population level. *Summary* No important foraging or nesting BIA for marine turtles, fish or marine mammals overlaps the Operational area. However, the northern boundary of the whale shark foraging BIA does overlap providing potential for whale sharks to be present. The presence of marine fauna is expected to be limited to individuals transiting through the area with the exception of the seabirds that use the facilities as a roosting and nesting location, including whale sharks due to the size of the whale shark foraging BIA. Impacts to marine fauna are expected to be short term with rapid recovery and the consequence of liquid discharges was assessed as ***negligible.***
Consequence	**Ranking**
Negligible	Acceptable

7.4.3 Environmental performance

Aspect	Operational discharges			
Performance outcome	**No unplanned operational discharges within the Operational Area; Operational discharges to sea are in accordance with legislative requirements**			
ID	**Management controls**	**Performance standard**	**Measurement criteria**	**Responsibility**
	Deck drainage and bilge water			
–	Oily water discharge from FPSO	Oily water on the FPSO discharged via produced water treatment system – refer Section 7.6	-	-
024	Oily water filtering and monitoring equipment fitted and maintained	If required under MARPOL, support vessels have oily water filtering and monitoring equipment that is compliant (e.g. discharges oily water with OIW <15 mg/L) and surveyed/ maintained as per MARPOL	Maintenance records IOPP certificate	Marine Superintendent
025	Oily sludge is contained	Oily residue (sludge) is not discharged to sea but is contained and transferred to shore for disposal.	Oil Record Book	OIM (Montara Venture) Marine Superintendent (all other vessels)
	Cooling water			
026	Water cooled equipment on FPSO is maintained	Water cooled equipment/ machinery and heat exchangers maintained in accordance with the CMMS	CMMS shows maintenance is scheduled and completed	Maintenance and Integrity Team Lead
	Desalination brine			
027	Potable water systems are maintained	Potable water systems maintained in accordance with the CMMS	CMMS shows maintenance has been satisfactorily completed as scheduled	Maintenance and Integrity Team Lead
	Sewage and greywater			
028	FPSO and vessel STP meets operational needs and is maintained	Pursuant to MARPOL, FPSO and support vessels have a current International Sewage Pollution Prevention (ISPP) Certificate or equivalent which confirms that required measures to reduce impacts from sewage disposal are in place	Valid ISPP Certificate	Marine Superintendent (vessels)

Aspect	Operational discharges			
Performance outcome	**No unplanned operational discharges within the Operational Area; Operational discharges to sea are in accordance with legislative requirements**			
ID	**Management controls**	**Performance standard**	**Measurement criteria**	**Responsibility**
	Putrescible waste			
029	Garbage record book maintained	Vessel's garbage record book maintained to record quantities of food waste in accordance with MARPOL	Garbage Record Book	OIM (Montara Venture) Marine Superintendent (vessels)

7.4.4 ALARP Assessment

On the basis of the impact and risk assessment completed, Jadestone considers the control measures described above are appropriate to manage liquid waste discharges from the FPSO and support/ supply vessels to ALARP. Additional controls considered but rejected are detailed below. The potential impacts are considered Tolerable as they are within the green category (negligible impacts). No further controls are required and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
Wastes stored onboard and transferred to shore for onshore treatment and disposal	Eliminate	No	No	Costs associated with complete reengineering such that wastes contained onboard and disposed of onshore, onshore treatment and disposal costs and increase in fuel consumption due to multiple vessel transfers would be disproportionate to the environmental benefit gained given the rapid dilution in offshore water and low potential impact from discharges. In addition, transfers increase the risks of spills/ leaks and safety risks to personnel during transfer operations.
Re-engineer equipment to retain wastes onboard	Engineering	No	No	Costs associated with complete reengineering such that wastes contained onboard and disposed of onshore would be disproportionate to the environmental benefit gained. There is not enough space on board the facility or vessels to have storage tanks for all the waste produced prior to transferring to a vessel for onshore treatment and disposal. Substantial additional costs for re-engineering is grossly disproportionate to the benefit gained.
N/a	Isolation	N/a	N/a	The activity is located at distance from sensitive receptors and the coastline and no significant impacts on receptors are predicted.
N/a	Administrative	N/a	N/a	Maintenance management system implemented, compliance with relevant and appropriate MARPOL requirements and certified equipment ensure discharges meet regulatory requirements.

7.4.5 Acceptability assessment

The potential impacts of liquid waste discharges are considered acceptable in accordance with Section 4.4, based on the acceptability criteria outlined below. The control measures proposed are consistent with relevant legislation, standards and codes and the environmental consequence is considered negligible.

Policy and management system compliance	Jadestone's HSE Policy objectives are met. Section 9 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.
Stakeholders and reputation	Stakeholder consultation has been undertaken (see Section 6), and no stakeholder concerns have been raised with regard to impacts from liquid waste discharges on sensitive receptors.
Industry best practice	The APPEA Code of Environmental Practice (CoEP) (2008) objectives are met with regard to offshore production operations.

Environmental context and ESD	While there are liquid waste discharges to sea surface immediately around the Montara, the impact and risk assessment process indicates that discharges will not result in significant effects to marine fauna. The potential impact is considered acceptable after consideration of: • Potential impact pathways • Preservation of critical habitats • Assessment of key threats as described in species and Area Management/ Recovery plans • Consideration of North-West Bioregional Plan • Principles of ecologically sustainable development ESD.
Conservation and management advice	No Management Plans identified operational discharges such as those described above as being a threat to marine fauna or habitats Jadestone has had regard to the representative values of the protected areas within the EMBA, and the respective management plans and other published information. Impacts from liquid discharges will have a negligible impact on any of the social and ecological objectives and values, of any AMPs, or state marine parks. This is consistent with the objectives of the protected area management plans (Appendix C), and considered acceptable.

7.5 Chemical Discharges

7.5.1 Description of aspect

Chemical discharges	Chemicals are planned to be discharged via ongoing operations within the operational area. Chemicals that are planned for discharge include: • Firefighting foam • Chemicals and chemically treated water from maintenance and well intervention • Subsea control fluids. *Firefighting Foam* The discharge of fire-fighting foams from the FPSO is required for safety critical annual fire system testing as part of the automatic fire protection performance standard. This chemical will also be discharged during emergency situations and annual testing of the emergency systems on board the facility. The foam blanket suppresses evaporation preventing emissions of flammable and toxic gases. The fire risk and environmental impact thus are reduced considerably. During testing, discharge of between 50–100 L of fire extinguishing agent is to be expected. During an emergency incident, the volume will be higher. *Discharges from Maintenance* Discharges to the marine environment associated with maintenance activities include: • Fluorescein and other marker dyes • Biocides and oxygen scavengers in tanks, flowlines and equipment • Guano removal and other high-pressure spraying. *Discharges during LWI activities* Discharges to the marine environment associated with LWI activities include: • Fluorescein and other marker dyes (~1 L) • Pressure control grease and control fluid (~1,000–15,000 L) • Hydrate management and decalcification chemicals (~200 L) • Corrosion inhibitor/ biocide (~50 L) • Brine (~2,000 bbl)

	• Descaler (~32 bbl). *Subsea Control Fluids* Subsea control valves are required to be opened and closed depending on operational requirements. Each time a subsea tree or manifold is closed completely, control fluid is vented. Shutting in a single subsea tree releases approximately 14 L of control fluid. The volume of the subsea tree value actuators varies with the largest discharge volume being 16.6 L for the Manifold gate valves. In the case of an emergency shutdown and closure of all subsea actuated valves, 130 L of fluid is vented.

All chemicals that may be used in operational and LWI activities are subject to Chemical Selection, Evaluation and Approval Procedure (JS-70-PR-I-00033) which reviews the risk ranking, concentrations and discharges. Chemicals may be trialled and tested before phasing out other chemicals for example due to a change in chemical supplier**.**

7.5.2 Impacts

Sensitive receptor	**Impact description**
Plankton Fish, Sharks and Rays Marine reptiles Marine Mammals Seabirds	The impacts associated with the discharge of liquids to the marine environment include a potential change to ambient water quality within the direct vicinity of the facilities and support vessels through chemical loading. This can lead to toxic effects on marine fauna in the vicinity. *Firefighting foam* The potential for exposure of marine fauna to fire extinguishing agents is limited to individuals close to the discharge point at the time of release. The closest worst-case impact may include a biochemical oxygen demand (BOD) on the surrounding water or toxic effects or irritation from exposure to toxic compounds in local waters surrounding the point of discharge. The potential impacts associated with fire extinguishing agent are: • Physical contact with floating or suspended foam solids • Potential change to ambient water quality (e.g. BOD, acute/chronic toxicity) through chemical loading within the direct vicinity of the facilities and support vessels • Potential chemical toxicity to marine species within the vicinity of the release • Chemical contact with the atmosphere as it may evolve toxic gases (carbon oxides, hydrocarbons) when heated to decomposition. On discharge to the marine environment, the small volumes of treated water and chemicals are expected to rapidly disperse in the offshore marine environment. Hence, any potential impacts would be confined to a highly-localised area immediately surrounding the release location. There may be a localised and temporary (hours) reduction in water quality in the immediate vicinity of the release. Toxicity impacts to marine fauna/seabirds from the release of chemically-dosed water are unlikely to eventuate because: • The chemicals have been risk assessed for their suitability for discharge to the marine environment prior to use • Strong ocean currents mean that the discharge will become further diluted upon discharge, so the duration of exposure of chemicals to fauna will be minimal • Potential discharges will be localised and temporary within the operational area. There is no emergent habitat that could be impacted by a surface discharge and the benthic habitat is predominately bare sand, with a very sparse assemblage infauna. Sub-lethal or lethal effects from toxic chemicals to marine fauna and seabirds, is considered unlikely given the expected low concentrations and short exposure times. Given the small volumes that could be released to the marine environment and the nature of the marine environment within the vicinity of the operational area, the discharge of chemicals and treated seawater is unlikely to have spatially or ecologically significant effects and was assessed as ***Negligible***. *Subsea control fluids, LWI discharges, and maintenance discharges*

Sensitive receptor	Impact description
	Hydraulic fluids are used extensively in the petroleum industry in subsea production systems. Hydraulic fluids are either petroleum or water-based blends with additives. The main properties required of a hydraulic control fluid are low viscosity, low compressibility, corrosion protection, resistance to microbiological attack, and compatibility with seawater. The potential impacts of hydraulic fluid discharges near the seabed are a localised reduction in water quality and potential toxicity to benthic marine fauna associated with bare sediments or attracted/ attached to subsea infrastructure (e.g. fish, infauna and sessile filter feeding organisms). Marker dyes, biocides, oxygen scavengers, descalers/decalcifiers, brine and hydrate management fluids that will be used as part of the activities are also commonly used in the offshore oil and gas industry. Biocides in offshore oil and gas are commonly used in the treatment of infrastructure susceptible to corrosion due to sulphate reducing bacteria. Biocides are commonly disinfectants, antiseptics and preservatives and often have the action of damaging cellular membranes and are therefore particularly toxic to unicellular organisms due to an oxidative effect. Oxygen scavengers alternatively are administered with the intent of removing oxygen from the immediate are to reduce the reducing effect of oxygen-respiring organisms (commonly microorganisms). The scavenging effect is chemical and effective as long as the active agent is free of being bound by an oxygen molecule. Thus, the effect of oxygen scavengers in the open environment is often short-lived as their effect is void once oxygen is encountered. Brine is commonly used during LWI activities to establish a barrier while working within the well, and hydrate management product (often methanol) is used to ensure production flow from the wells. The Offshore Chemical Notification Scheme (OCNS) system (based on UK North Sea chemicals) uses the ecotoxicity data for offshore chemical products to assess the potential environmental risk in the marine environment. The least environmentally hazardous grade is Gold (CHARM assessed), and E (through a non-CHARM assessment). The OCNS system requires bioaccumulation and biodegradation data, and aquatic toxicity data from three trophic levels (algae, crustacean and fish) to predict the potential ecosystem risk and, in turn, rank the product by Hazard Quotient (HQ). Chemicals such as the subsea control fluid, decalcifier/descaler, hydrate management and brine products used at the Montara facilities for these activities have been risk assessed to select chemicals that have the least environmental impact in terms of ecotoxicity, biodegradation and bioaccumulation. All chemicals planned for discharge must be Gold/Silver/D/E or PLONOR, or risk assessed through the Jadestone Chemical Selection, Evaluation and Approval Procedure (JS-70-PR-I-00033). *Summary* Benthic communities within the operational area are primarily associated with soft sediment habitats and are considered to be relatively low sensitivity and widely represented in the region. No important foraging or nesting BIA for marine turtles or marine mammals overlaps the area. The northern boundary of the whale shark foraging BIA does overlap the area providing potential for whale sharks to be present. The presence of marine fauna is expected to be limited to individuals transiting through the area, including whale sharks due to the size of the whale shark foraging BIA. There is also only a small overlap of active commercial fisheries with the Operational area. As such, with the controls on place the impacts from chemical discharges was assessed as ***Negligible.***
Consequence	**Ranking**
Negligible	Acceptable

7.5.3 Environmental performance

Aspect		Operational discharges		
Performance outcome		**No unplanned chemical discharges within the Operational Area**		
ID	**Management controls**	**Performance standard**	**Measurement criteria**	**Responsibility**
	Firefighting Foam			
030	Performance Standards Report (MV-70-REP-F-00002) ensures automatic fire protection system is adhered to	Performance standards implemented for fire-fighting foam to ensure fire protection system is maintained and operated in accordance with Montara's Automatic Fire Protection System	CMMS maintenance record close out	Maintenance and Integrity Team Lead
	Planned chemical discharge			
031	Chemical Selection Evaluation and Approval Procedure (JS-70-PR-I-00033)	Chemicals planned for discharge to sea, are • Gold/Silver/D or E rated through OCNS, or • PLONOR substances listed by OSPAR, or • have a complete risk assessment justifying the use of the chemical including (where applicable) consideration of OCNS substitution warnings, alternative chemicals, technical/process/HSE justifications, dosage rates and periodic review. •	Chemical Risk Assessment completed form	Production Superintendent

7.5.4 ALARP assessment

On the basis of the impact and risk assessment completed, Jadestone considers the control measures described above are appropriate to manage chemical discharges from the FPSO and support/ supply vessels to ALARP. Additional controls considered but rejected are detailed below. The potential impacts are considered Tolerable as they are within the green category (negligible impacts). No further controls are required and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
Zero discharge of fire-fighting foam, subsea control fluids and chemicals	Eliminate	No	No	Costs associated with complete reengineering such that drainage is all contained from areas where fire-fighting foam is present and disposed of onshore; followed by onshore treatment and disposal costs would be disproportionate to the environmental benefit gained given the rapid dilution in offshore water and low potential impact from discharges. In addition, transfers increase the risks of spills/leaks and safety risks to personnel during transfer operations.

				Subsea control fluids discharged through valve actuation cannot be practically avoided.
Reduce toxicity of discharges	Substitute	No	No	Chemicals selected for discharge in accordance with the procedure to ensure that there is a low potential impact. Further substitution of all chemicals to the lowest potential impact only (e.g. only PLONOR) is not practicable as chemicals are required for the activity. Little benefit given lack of sensitive receptors in area.
N/a	Isolation	N/a	N/a	The activity is located at distance from sensitive receptors and the coastline and no significant impacts on receptors are predicted.
N/a	Administrative	N/a	N/a	Compliance with chemical selection procedures ensures toxicity to the marine environment is as low as practicable.

7.5.5 Acceptability assessment

The potential impacts of chemical discharges are considered acceptable in accordance with Section 4.4, based on the acceptability criteria outlined below. The control measures proposed are consistent with relevant legislation, standards and codes and the environmental consequence is considered negligible.	
Policy and management system compliance	Jadestone's HSE Policy objectives are met. Section 9 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.
Stakeholders and reputation	Stakeholder consultation has been undertaken (see Section 6), and no stakeholder concerns have been raised with regard to impacts from chemical discharges on sensitive receptors.
Environmental context and ESD	While there are chemical discharges to sea surface and subsea in the vicinity of infrastructure immediately around the Montara, the impact and risk assessment process indicates that discharges will not result in significant effects to marine fauna. The potential impact is considered acceptable after consideration of: • Potential impact pathways • Preservation of critical habitats • Assessment of key threats as described in species and Area Management/Recovery plans • Consideration of North-West Bioregional Plan • Principles of ecologically sustainable development ESD.
Conservation and management advice	No Management Plans identified operational discharges such as those described above as being a threat to marine fauna or habitats. Jadestone has had regard to the representative values of the protected areas within the EMBA, and the respective management plans and other published information. Impacts from chemical discharges will have a negligible impact on any of the social and ecological objectives and values, of any AMPs, or state marine parks. This is consistent with the objectives of the protected area management plans (Appendix C), and considered acceptable.

7.6 Produced Water Discharge

7.6.1 Description of aspect

Produced water	Water produced during the recovery of hydrocarbon from the reservoir and during processing of the production fluid stream, is termed produced water. Produced water is separated from gas and oil within the production fluid stream during topsides processing at the FPSO. The resultant produced water is a mixture of condensed water extracted from the reservoir as a gas, and formation water extracted from the reservoir as a liquid. Produced water at the Montara facility contains a mixture of dissolved hydrocarbons and suspended oil droplets, naturally occurring radioactive materials (NORMs), inorganic salts, metals, as well as low residual concentrations of a small number of chemical additives that are introduced during the production process such as wax inhibitor, corrosion and scale inhibitors and biocides. Produced water is discharged overboard in batches at sea surface. Adjacent to the produced water discharge the cooling water discharge from the FPSO also occurs.

In describing the produced water discharges made from the *Montara Venture* FPSO, the following information is provided:

- **Production and processing**: an outline of where produced water originates during the Activity and how the discharge is modified/ added to during topside processing (Section 7.6.1.1)
- **Characterisation:** a list of produced water constituents and concentrations, and ecotoxicological information gathered from Whole Effluent Toxicity (WET) testing (Section 7.6.1.2)
- **Volume and loads**: a history of produced water discharge volumes and loads (Section 7.6.1.3)
- **Area of Impact**: the area of dispersion within the marine environment from produced water discharges as determined by modelling and verification of the modelling with field data (Section 7.6.2).

7.6.1.1 Production and processing

Well fluids from the wellhead platform are transferred to the FPSO via two flow lines. The fluid from each flow line enters first stage separators 'A' or 'B' before the separated oil continues forward for further processing in the second and third stage separators. Produced water is separated from other well fluids (oil, gas) in each separator.

Produced water from first stage separators 'A' and 'B' and the second and third stage separators are co-mingled and routed to the produced water degasser 44-VA-001 where associated gas is separated and sent to flare. Produced water from the third stage separator, which operates at near atmospheric pressure, is routed via produced water rundown pumps 44-PC-002A/B to the produced water degasser. These pumps operate on a duty/ standby basis.

In produced water degasser 44-VA-001, further separation of oil, gas and water occurs. The gas exits the vessel to the low-pressure flare. Any oil rises to the top of the liquid level and is skimmed into a bucket arrangement. Emulsion breaker injection points are provided upstream and downstream of the produced water degasser 44-VA-001. Front and reverse emulsion breaker chemicals are injected when necessary to assist oil/ water separation.

The produced water exits the produced water degasser via a vortex breaker and is directed to the tube side of produced water discharge cooler 44-HA-001. Fresh cooling water enters on the shell side and flows counter current. Produced water exiting the cooler is directed to produced water tanks 5P/5S.

The operating philosophy is that one produced water tank is designated as the receiving 'settling' tank for water from the produced water degasser; the other produced water tank is designated as the 'supply tank' for water directed to the produced water hydrocyclones 44-VX-001A/B. The tanks are connected by a decanting line with two nozzles (with shut off valves) in each tank. Produced water in the 'settling' tank

enters the open base nozzle of the decanting line and exits the open 11 m riser nozzle on the decanting line of the supply tank. This ensures the 'settling' tank always has sufficient retention time/ height for most of the entrained oil to separate from the produced water. The oil layer that eventually builds up on the produced water in the 'settling' tank is detected by level and interface elements provided in each tank. Oil is removed by closing the decanting line and allowing the level in the 'settling' tank to increase to the level of the stripping and oil skimming nozzle at 17 m. Skimmed oil is directed to the existing cargo oil stripping and bilge pump 33-PB-001 in pump room.

Note: in the case of a rapidly increase in produced water level in the settling tank, decanting can also be carried out via the bottom line instead of going via the 11 m nozzle in the supply tank.

Produced water from the designated produced water tanks is transferred by produced water pumps 44-PS-001A/B to produced water hydrocyclones 44-VX-001A/B. Produced water flows into the hydrocyclone chamber and enters the top of the hydrocyclone liners. In each liner, water enters tangentially inducing a swirling motion, which is maintained over the length of the liner. The centrifugal force generated by the swirling motion results in the water, having higher specific gravity, being forced to the wall of the liner and the lighter oil and gas forming an inner core in the centre low pressure area. By setting up the valving to give backpressure control on the oil reject line, the inner oil column is made to flow in the reverse direction back up the column and out through the reject line to the third stage separator for re-processing. Adjustable valves are installed instead of a downstream restriction orifice to permit tuning of the hydrocyclone efficiency for a broader range of operating conditions.

Two produced water hydrocyclones (2 x 50%) are provided, each with a design capacity of 30,000 bbl/d (200 m^3/h) of gross liquids. The produced water hydrocyclones are designed to separate oil-in-water down to a level of less than 36 ppm to meet overboard discharge specifications. The water flows out of the end of the liner into the outlet chamber. In the outlet chamber, the water mixes with the water from the other liners and enters the disposal line for discharge overboard or is returned to produced water tanks 5P/5S for further treatment if it is not below the desired specification. Manual liquid sampling points are provided on each hydrocyclone reject oil outlet lines and produced water outlet lines.

The oil-in-water content is continuously measured by the oil-in-water meter AIT-4400. High oil-in-water protection content diverts flow of off-specification water from overboard discharge to the produced water tanks 5P/5S for further processing.

Manual liquid sampling points are provided upstream of the oil-in-water meter on both hydrocyclone underflow lines to allow calibration and verification of the oil-in-water meter AIT-4400 measurements. A log of the discharge is maintained to conform to statutory requirements. Sampling must be carried out by approved personnel and to required standards, while observing all safety regulations.

Produced water tanks 5P/5S are located within the hull of the FPSO. These were originally cargo oil tanks. The produced water tanks contain enough capacity for approximately 20 hours (52,000 bbls) of full water production at a rate of 60,000 bbls/d.

For noting, the contents of the bilge holding tank are discharged to the starboard slops tank for further treatment and discharge with the slops water via the produced water system.

A number of chemicals are used during processing of the production fluid stream. Their purposes include:

- Corrosion inhibition
- Biocide
- Hydrate inhibition
- Reverse emulsion breaker
- Forward emulsion breaker
- Scale inhibitor

All chemicals that may be present in produced water are subject to the Chemical Selection, Evaluation and Approval Procedure (JS-70-PR-I-00033) which reviews the risk ranking, concentrations and dosages, and discharges. Chemicals may be trialled and tested before phasing out other chemicals for example due to a change in chemical supplier.

PW is discharged from approximately one metre above the receiving water surface, while the adjacent cooling water is discharged below the water line. It is visually apparent that the cooling water rises to the surface and in doing so, dilutes the hypersaline PW (112‰) and prevents it from sinking through the water column, this is supported by the salinity water column profiles and the dilutions of the parameters in the PW in the surface water at sites sampled in the direction of the prevailing current during annual produced water monitoring. In the 2022 survey, the PW was detectable in an approximate 15 m radius from the discharge and then in the direction of the prevailing current in the surface water. Past monitoring has shown that the PW is also detectable at approximately 5 m depth at the discharge location but not at 10 m or lower.

7.6.1.2 Characterisation

The main contaminants of concern in discharged produced water are (Neff et al. 2011):

- Oil in water (OIW)
- Aromatic hydrocarbons as a component of OIW
- Trace metals and nutrients
- Naturally occurring radioactive materials (NORMs).

To understand the potential impacts of the effluent discharge in the receiving environment, produced water characterisation and toxicity testing are used to assess the discharge stream. Provided below is a summary of results collected for the Montara produced water discharge stream between 2018 and 2022.

Oil in water

Measurement of oil in water concentrations within the produced water discharged is made using the inline spectrophotometer (TD-4100XD) and verified with a hand-held spec unit (TD500).

Metals/metalloids, nutrients and physico-chemical parameters

Results of annual analyses for trace metals nutrient concentrations and physico-chemistry measured in produced water samples collected over the last five years are provided in Table 7-7 to Table 7-9. Ammonia, total nitrogen, barium, manganese and zinc are the only analytes in high enough concentration to be detectable in the receiving water. In the most recent receiving water monitoring (April 2022) concentrations of these analytes were not able to be detected above background concentrations any further than 200 m from the discharge.

Table 7-7: Nutrients and physico-chemicals measured in produced water annual analyses 2018–2022

Analyte	2018	2019	2020	2021	2022
pH	5.8	6.0	5.9	5.9	5.7
Salinity (ppt)	111	113	111	112	112
TOC (mg/L	95	61	86	86	90
DOC (mg/L)	92	62	92	82	89
BOD (mg/L)	170	170	57	83	70
TSS (mg/L)	69	14	9	4	7
Total sulphide (mg/L)	<0.1	<0.1	<0.5	0.2	<0.5

Analyte	2018	2019	2020	2021	2022
Orthophosphate (µg/L)	16	45	100	100	<50
Ammonia (NH_3-N µg/L)[b]	110,000	80,000	96,000	96,000	90,000
Nitrate+nitrite (µg/L)	<6	52	<40	<40	<40
Total phosphorus (µg/L)	840	1,100	590	590	560
Total nitrogen (µg/L)	110,000	84,000	100,000	100,000	91,000

Table 7-8: Filtered metals/metalloids (µg/L) measured in produced water annual analyses 2018–2022

Analyte	ANZG (2018) Guideline value*	2018	2019	2020	2021	2022
Silver	0.8 (mod)	<0.3	<0.3	<0.3	<0.3	<0.3
Arsenic	2.3(III) (low)	<1.5	<1.5	<1.5	<1.5	3
Barium	5.5‡	29,000	6,800	7,600	18,000	26,000
Cadmium	0.7 (very high)	<0.3	<0.3	<0.3	<0.3	<0.3
Cobalt	1 (95% high)	0.5	0.3	<0.15	0.2	0.3
Chromium	0.14 (VI) (very high)	<0.6	<0.6	<0.6	<0.6	<0.6
Copper	0.3 (very high)	4.9	0.8	0.9	1.8	2.6
Manganese	130†	1,100	1,600	890	900	1,600
Molybdenum	10‡	<1.5	<1.5	<1.5	<1.5	<1.5
Nickel	7 (very high)	7.8	2.5	2.3	6.3	4.5
Lead	2.2 (low)	1.3	<0.3	0.3	1.3	0.6
Vanadium	50 (mod)	<0.9	<0.9	<0.9	<0.9	<0.9
Zinc	3.3 (very high)	1,900	110	76	140	220
Inorganic Mercury	0.1 (very high)	<0.3	<0.3	<0.5	<0.5	<0.5

** 99% species protection guideline value (ANZG 2018) as of 18 July 2022. Rankings of very low, low, moderate, high and very high reliability are shown in parenthesis.*

‡ No guideline value – background concentration in the receiving water (surface water) 2 km from the FPSO discharge location

† Draft submission paper to the Council of Australian Government's Standing Council on Environment and Water (Stauber et al. 2008).

Table 7-9: Particle size distribution measured in produced water annual analyses 2018–2022

Year	Size range (µm)	% smaller than 5 µm	% ≤63 µm
2018	0.25–159	54	98
2019	0.25–63	78	100
2020	0.25–142	77	99
2021	0.28–89	76	99.9
2022	0.28–50	62	100

Hydrocarbons and other organics

Results of annual analyses for hydrocarbon concentrations and other organics measured in produced water samples collected over the last five years are provided in Table 7-10. Total petroleum hydrocarbon concentrations (TPH) are high in the PW, however, organic matter is also known to be high in some of the Montara wells. Silica gel cleanup was undertaken in the 2022 PW monitoring to determine if some of the readings were due to naturally occurring non-hydrocarbon organics. After silica gel cleanup the TPH concentration decreased to 25 mg/L indicating naturally occurring organics are also present. A sheen can also be detected in the receiving water surrounding the FPSO however surface water grabs were unable to detect hydrocarbons (TPH, BTEX or PAH) any further than 200 m from the discharge

Table 7-10: Aromatic hydrocarbons (mg/L) measured in produced water samples 2018–2022

Analyte		ANZG Guideline value*	2018	2019	2020	2021	2022
BTEX	Benzene	0.5 (moderate)	5.3	5.1	5.2	7.6	5.0
	Toluene	0.11 (unknown)	3.4	2.7	3.1	5.6	2.9
	Ethylbenzene	0.05 (unknown)	0.14	0.16	0.13	<0.5	<0.25
	m&p-Xylene	0.25 (unknown)	1.1	0.83	0.84	2.0	0.81
	o-Xylene	0.35 (unknown)	0.35	0.35	0.28	0.62	0.28
TPH	Total C6-C36		19.8	24.3	32.2	43.5	33.1
TPH after silica gel cleanup	Total C6-C36						25.1
PAHs	Naphthalene	50 (moderate)	188	110	290	270	190
	Acenaphthylene	0.1‡	<9.4	<0.1	<0.3	<2	<5
	Acenaphthene	0.1‡	<9.4	<0.1	<3	<2	<5
	Fluorene	0.1‡	<9.4	2.4	8.8	19	11
	Phenanthrene	0.6 (unknown)	<9.4	2.3	20	28	28
	Anthracene	0.01 (unknown)	<9.4	<0.1	<3	<2	<0.4
	Fluoranthene	1 (unknown)	<9.4	<0.1	1.2	2	<0.3
	Pyrene	0.1‡	<9.4	<0.1	0.4	<2	<0.7
Phenols	Phenol	0.27 (moderate)	2.8	4.6	3.5	4.0	6.2
	2-Methylphenol	0.0077†	1.1	1.2	1.6	0.42	1.5
	3-&4-Methylphenol	0.0077†	1.3	1.3	1.7	2.1	1.9
	2,4-Dimethylphenol	0.002 (unknown)	0.22	0.25	0.58	<6	0.32
Organic acids	Acetic Acid	10	156	96	130	50	74
	Butyric Acid	10‡	4.1	<10	<10	<10	<10
	Propionic Acid	10‡	16.7	13	10	<10	12

**ANZG (2018) guideline values for 99% species protection in marine water. Rankings of unknown, very low, low, moderate, high and very high reliability are shown in parenthesis.*

‡ No guideline value – laboratory limit of reporting (if background concentration below the LOR)

† OSPAR Commission (2014) PNECs for various toxicants

When undertaking the produced water samples, water quality monitoring is also undertaken. In 2022, sixteen water quality locations were sampled in the receiving water around the FPSO. Six locations were situated in the direction of the prevailing current and three perpendicular to the direction of the current. Another three sampling locations, located 2000 m away from the FPSO, served as reference locations. Another four locations were sampled at various vectors around the 500 m mixing zone boundary. At the closest location to the discharge (within ten metres), samples were taken at three depths, surface, 15 m and 30 m. At the other sites, surface water and water at 70 m depth were sampled.

A sheen has been visible on the sea surface downstream from the PW discharge on occasion. Although the results of previous monitoring occasions indicated that hydrocarbon concentrations were below detection limits at the edge of the mixing zone, they were retested in the surface water of the sites in the prevailing current in the 2022 monitoring of the receiving water to support the proposed discharge limit of 30 mg/l OIW concentration. The total petroleum hydrocarbon (TPH) concentration (total of C6-C36) in the 2022 PW was similar to that of 2020. After silica gel cleanup the TPH concentration decreased to 25 mg/L indicating naturally occurring organics are also present. However, the TPH concentrations in the receiving water were also examined to determine if TPH was above the background concentrations at the edge of the mixing zone. No sites at the 500 m mixing zone or beyond had concentrations of BTEX or PAHs above the guideline values. The sampling and analysis results for the 2022 sampling program indicated that there were no impacts to seawater, at levels above ANZECC Water Quality Triggers (based on 99% species protection) beyond the 500 m mixing zone. This is consistent with the previous monitoring undertaken at Montara.

Historically, the OIW concentration limit in the Operations EP has been 15 mg/l (18 ppmV) which is far below the facility BoD and has resulted in multiple exceedances per annum (42 occasions in 2021-2022 reporting period). As evidenced from the water quality sampling and monitoring program, despite the higher discharge limit of 30 mg/l (36 ppmV) that was provided as a contingency measure (with any OIW concentration exceeding 30 mg/l inboarded), being utilised, there has been no evidence of impacts to the seawater beyond the 500 m mixing zone.

Naturally Occurring Radioactive Materials

NORMs were analysed several ways to determine whether they are associated with the particulates in the PW or the dissolved fraction by examining gross alpha and beta fractions in unfiltered and filtered forms. The most abundant NORM radionuclides in produced water are the natural radioactive elements radium-226 and radium-228 (Neff et al. 2011), therefore these were also examined. Radium 226 and radium 228 were compared to the National Health and Medical Research Council and Natural Resource Management Ministerial Council Australian Drinking Water Guidelines (NHMRC and NRMMC 2011). The principle of environmental radiation protection for flora and fauna is based on the International Commission on Radiological Protection (ICRP) recommendation (ICRP 1991). If people are protected by certain radiological standards, then biota are also protected.

The results and trigger values are provided in Table 7-11.

Table 7-11: NORMS activity levels measured in filtered (dissolved) and unfiltered (total) produced water samples

Analyte		Guideline value*	2018	2019	2020	2021	2022
NORMs (Bq/L)	Gross Alpha unfiltered	0.5[a]	11.8	10.5	16.2	8.9	23.1
	Gross Alpha filtered		2.86	10.3	16.0	15.2	13.2
	Gross Beta unfiltered[b]	0.5[a]	14.2	15	16.5	10.3	21.5
	Gross Beta filtered[b]		<5.0	11.5	13.3	17.2	15.2
	Radium 226[†]	1	2.40	7.51	11.1	7.6	18.0
	Radium 228[†]	0.1	1.92	6.88	11.6	7.7	13.5

[a] *Guideline values for drinking water NHMRC/ARMCANZ (2011).*

[b] *Excluding K-40*

† Guideline values for drinking water WHO (2017).

Whole of Effluent (WET) Toxicity Testing

Full toxicity assessment of produced water was undertaken by Ecotox Services Australia and Hydrobiology Pty Ltd using a sample of produced water collected in August 2017 (Jacobs 2017). WET Testing was also completed in 2023 but the full report is not yet available.

A total of eight toxicity tests were carried out with the produced water sample. The toxicity tests included a range of tropical and temperate Australian marine species and were selected based on their ecological relevance, known sensitivity to contaminants, availability of robust test protocols and known reproducibility and sensitivity as tests species for assessing produced water in marine environments. The tests used were:

- Microalgal 72-hour growth rate inhibition using *Tisochrysis lutea*, previously called *Isochrysis galbana* (chronic, tropical)
- Macroalgal 14-day growth rate inhibition using *Ecklonia radiata* (chronic, sub-tropical/ temperate)
- Copepod 7-day early life stage development test with *Gladioferens imparipes* (chronic, temperate)
- Sea urchin 72-hour larval development with *Echinometra mathaei* (chronic, tropical/ sub-tropical)
- Oyster 48-hour larval development test with *Saccostrea echinate* (chronic, tropical)
- Sea anemone 8 day pedal lacerate development with *Aiptasia pulchella* (chronic, tropical)
- Fish 7-day imbalance/ biomass using *Lates calcarifer* (chronic, tropical).

As all eight toxicity tests used were chronic, the general fit of the species sensitivity distributions (SSDs) determined provided a good general fit of the SSD curve to the toxicity data and thereby improved the reliability of the safe dilution estimate of produced water required in the receiving environment to achieve environmental performance requirements.

The guideline values derived from the SSD included a concentration that is protective of 95% of species (PC95 = 0.67%), and a concentration which is protective of 99% of species (PC99 = 0.31%). Corresponding safe dilution factor estimates of 1 in 149, and 1 in 322 dilutions, respectively.

7.6.1.3 Single species toxicity assessment

The 2022 Montara PW was toxic to the bacteria (Vibrio fischeri), with an IC50 of 5.8% (Table 7-12). Therefore, only 5.8% PW is required to cause a 50% inhibition in bacterial light output. The IC10 value was 0.8%. The toxicity of the Montara PW to the bacteria was very similar to the 2021 PW sample and decreased from 2020.

Table 7-12: Bacteria (microtox) toxicity data of the PW (%, v/v) over various years

Year of Study	NOEC[a]	IC_{50}[b]	IC_{10}[c]
2020	<0.4%	1.27%	0.097%
2021	0.8%	5.44%	0.9%
2022	0.8%	5.76%	0.85%

a Highest concentration tested to have no significant (p≤0.05) inhibition in bacterial light output compared to control

b Concentration of the sample to cause 50% inhibition in bacterial light output. In which the lower the IC50, the more toxic the sample.

c Concentration of the sample to cause 10% inhibition in bacterial light output

7.6.1.4 Volumes

The produced water generated during processing of the production fluid stream is discharged at sea surface from the side of the FPSO in batches (that is, an intermittent discharge).

The volumes of produced water discharged from the *Montara Venture* FPSO to the marine environment vary depending on production profiles and rates. Figure 7-5 displays the actual and forecast discharge rates from 2023 to end of field life. This shows an increasing water cut as the reservoir depletes with age. .

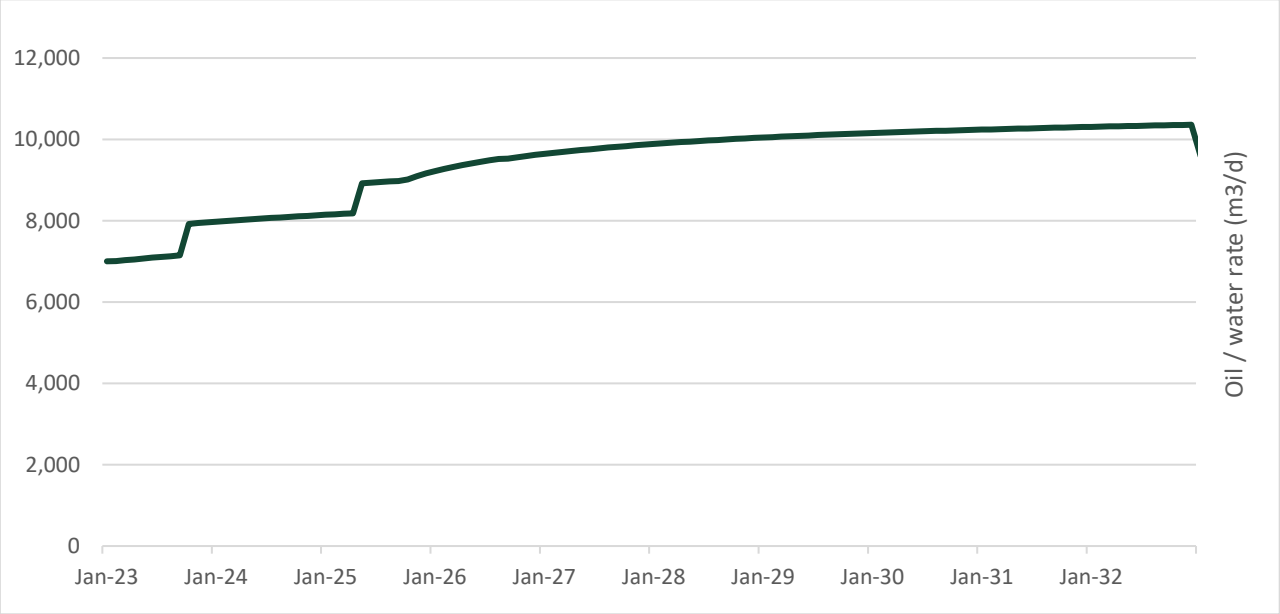


Figure 7-5: Produced water discharge volumes (m^3/d) 2023 (actual) and forecast from the Montara Venture FPSO until end of field life based on year end 2022 reserves profile

7.6.2 Impacts

7.6.2.1 Area of impact

RPS was engaged to prepare modelling representing the discharge of produced water from the *Montara Venture* FPSO. Modelling (RPS 2018) represented the current discharge arrangements as follows:

- Treated produced water is discharged at sea surface from the side of the FPSO
- Adjacent to the produced water discharge is the cooling water discharge
- The ratio of produced water discharge volume to cooling water discharge volume is 1:4.28. The modelling represented this ratio.

To account for uncertainty of the exact mixing ratio due to cooling water in the receiving environment, additional mixing scenarios of 1:2 and 1:1 due to cooling water influence were considered as well as the 1:4 expected mixing scenario, based on discharge volumes.

The input parameters for the produced water and cooling water discharge streams used in the modelling are provided in Table 7-13.

Table 7-13: Produced water and cooling water discharge characteristics applied in modelling

Parameter	Produced water	Cooling water	Commingled – summer	Commingled – winter
Salinity (ppt)	110	Ambient	48.94	48.69
Temperature (°C)	37	40	39.43	39.43

Parameter	Produced water	Cooling water	Commingled – summer	Commingled – winter
Flow (m^3/h)	420	1,800	2,220	2,220
Diameter (m)	0.25	0.45	0.5	0.5

The objectives of the modelling study were to:

- Model mixing and dispersion of produced water discharge plume under seasonal receiving water conditions
- Model the distance from the release site at which the plume temperature and contaminants comply with environmental guidelines across all seasonal conditions.

Based on the ecotoxicity testing (Jacobs 2017), RPS was advised that the level of dilution required in the receiving environment to meet water quality management criteria (ANZG 2018) were:

- Dilution of 1:322 times to meet 99% protection criteria by the edge of the mixing zone
- Dilution of 1:149 times to meet 95% protection criteria by the edge of the mixing zone.

Results of the modelling were as follows:

- Scenario 1 – dilution of 1:322 times: for the strong and moderate current circumstances, the required dilutions are achieved in the near-field mixing zone and within 500 m from the discharge location for summer and winter seasons regardless the pre-dilution level due to cooling water influence. For the weak current conditions, required dilution was achieved in the far-field where influence of cooling water had a dilution effect of only 1:1; where cooling water had a dilution effect of 1:2 or 1:4, required dilution was achieved in the near-field.
- Scenario 2 – dilution of 1:149 times: regardless of the level of dilution effect due to cooling water, the required dilutions were predicted to occur for all seasonal and current circumstances in the near-field mixing zone and within 500 m from the discharge location.

A summary of the predicted plume characteristics in the near-field mixing zone is provided in Table 7-14.

Table 7-14: Plume characteristics at the end of the modelled near-field mixing zone

Parameter	Summer/ current scenario			Winter/ current scenario		
	Strong	Moderate	Weak	Strong	Moderate	Weak
Distance from source (m)	620.94	247.7	70.31	629.74	244.3	67.88
Dilution (1:S)	1:1,654	1:860	1:148	1:1,621	1:827	1:147
Plume width (m)	63.24	62.7	187.24	63.24	62.64	173.9
Travel time to end of near-field (min)	19.5	13.3	13.5	20.2	15.58	12.8

Modelling of the far-field plume behaviour was then modelled to determine the likely mixing and dispersion of contaminants within the produced water discharge stream. The main objective of the far-field modelling was to predict the extent of the mixing zones under representative environmental conditions by modelling a complete year. The far-field adds to the near-field as it takes into account the time-varying nature of currents as well as the potential for recirculation of the plume back to the discharge location for second dosing with fresh produced water. The discharge was modelled as a 12-month continuous discharge. This is a conservative assumption as the discharge is typically only intermittently discharged for 1–18 hours.

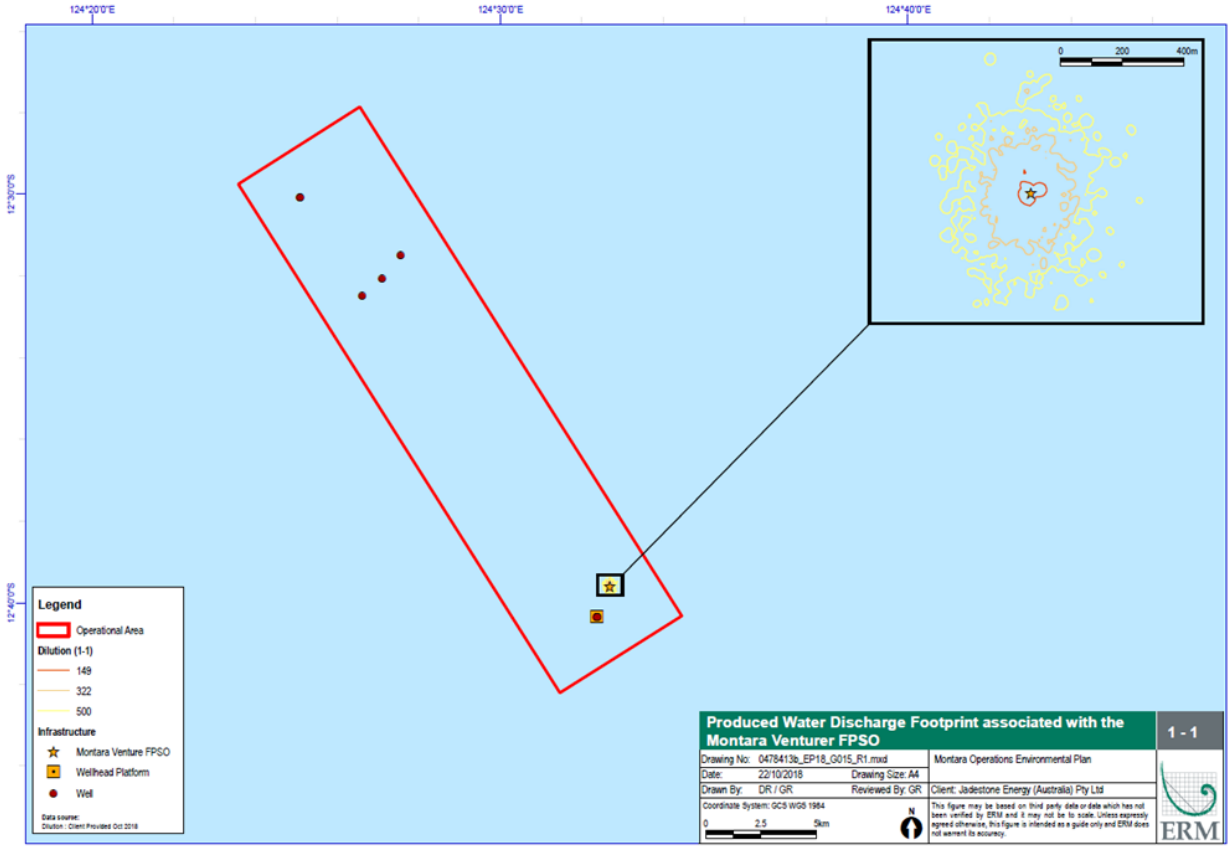
A summary of the far-field modelling results is provided in Table 7-15 for each scenario due to mixing with the cooling water discharge stream.

For the purposes of impact management in this EP, the 1:1 discharge scenario has been assumed as this is the most conservative mixing scenario for the produced water discharge (i.e. the biggest impact footprint).

Table 7-15: Summary of maximum distance to achieve required 1:322 dilutions to meet 99% species protection criteria

Cooling water effect	Maximum distance from source (m)	Total area (km^2)
1:1	340	0.14
1:2	150	0.075
1:4	51	0.0096

Based on the modelling results summarised above, the predicted area of impact due to produced water discharge from the *Montara Venture* FPSO is depicted in Figure 7-6.



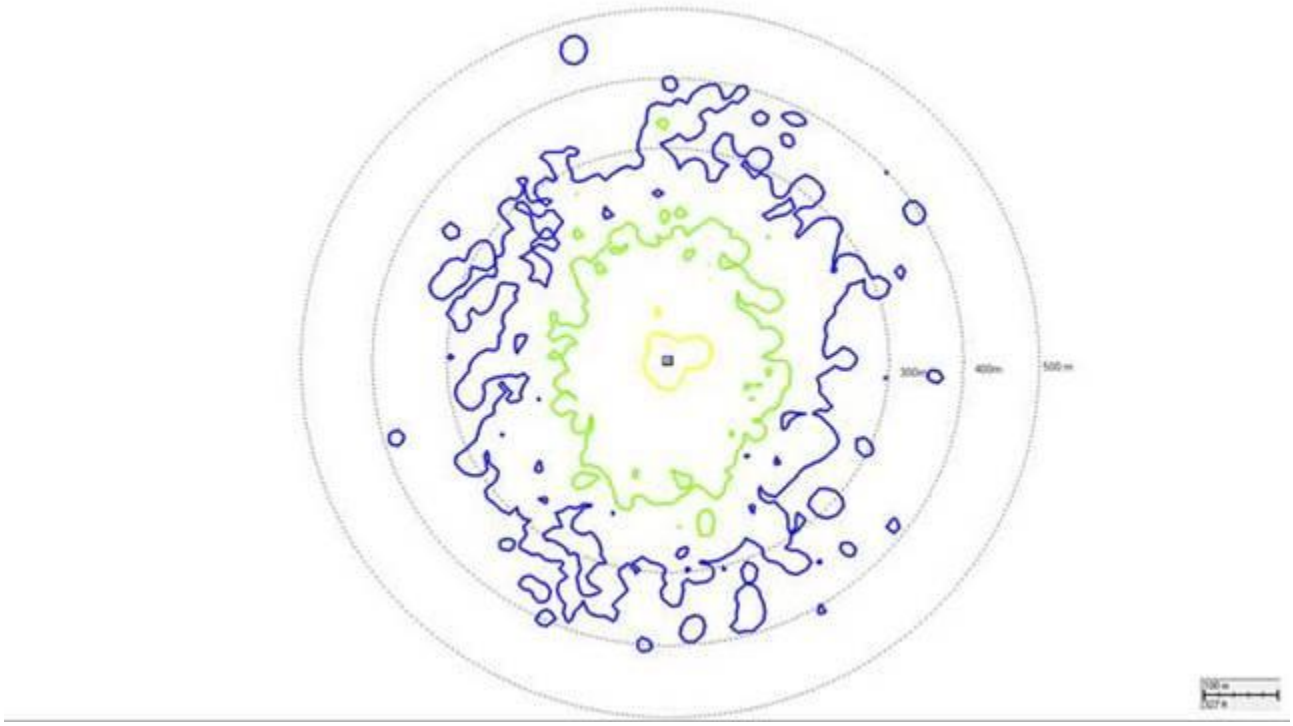


Figure 7-6: Predicted produced water discharge impact area in a locality context (top), and enlargement to show the discharge area (bottom)

7.6.2.2 Contaminants of concern

Potential impacts to sensitive receptors from discharged produced water may be attributable to dissolved hydrocarbons and suspended oil droplets, naturally occurring radioactive materials (NORMs), dissolved metals and nutrients as well as low residual concentrations of a small number of process chemicals such as corrosion and scale inhibitors and biocides. Hydrocarbons, however, are considered the constituent of most concern to marine fauna, particularly polycyclic aromatic hydrocarbons (PAHs).

Hydrocarbons

Dissolved hydrocarbons in produced water comprise monocyclic aromatic hydrocarbons (MAH), such as BTEX (benzene, toluene, ethylbenzene and xylene), and lower molecular weight polycyclic aromatic hydrocarbons (PAHs) such as naphthalene, phenanthrene and their alkyl homologues (Neff *et al.* 2011a).

Hydrocarbon exposure may lead to mortality in marine organisms as well as sub-lethal chronic (long exposure) effects such as decreased genetic diversity in communities, decreased growth and fecundity, lower reproductive success, respiratory problems, behavioural and physiological problems, decreased developmental success and endocrine disruption (Neff *et al.* 2011a). It is generally agreed that within produced water the components of greatest threat to the environment are the more persistent hydrocarbons, primarily PAHs (Neff et al. 2011a), which can bioaccumulate within marine organisms (that is, increase in tissue of marine organisms over time; see Bioaccumulation below).

Metals

The type and concentration of trace metals within produced water depends on the geology of the reservoir formation from which it is produced (Neff et al. 2011a). The metals most frequently found at elevated concentrations in produced water include barium, iron, manganese, mercury and zinc (Neff *et al.* 2011a).

As with hydrocarbons, dissolved metals may create impacts to marine organisms if present at high enough concentrations. Some metals also have the potential to bioaccumulate within marine organisms. ANZECC/ ANZG (2018) suggest the heavy metals mercury, selenium and cadmium have the greatest potential for bioaccumulation and secondary poisoning, although bioaccumulation may occur for a range of metals.

Metal-bioaccumulation, is a complex process and depends upon the concentration and bioavailability of metals and physiology of individual species and can vary greatly among species in the same environment (Luoma and Rainbow 2005).

Heavy metals in produced water undergo a series of chemical reactions once they enter seawater and ultimately precipitate out as metal hydroxides or sulphides. Metals present in marine sediments as hydroxides or sulphides are not generally available for biological uptake.

Nutrients

Elevated nutrient levels can lead to increased bacterial and phytoplankton production (e.g. phytoplankton blooms). In nutrient poor waters such as those in offshore marine environments, introduction of dissolved nutrients such as ammonia and nitrate to surface waters where high light levels are available will lead to rapid uptake by phytoplankton with associated increased biomass. Increased biomass will be a highly-localised feature (within tens of metres) associated with the availability of dissolved nutrients.

NORMs

Naturally occurring radioactive materials (NORMs) are present within geological formations and are typically found in produced water. Within produced water the most abundant radionuclides are ^{226}Ra and ^{228}Ra, derived from the radioactive decay of ^{238}U and ^{232}Th, respectively (Bou-Rabee *et al.* 2009). Other radionuclides have been identified in produced water including ^{212}Bi, ^{214}Bi, ^{228}Ac, ^{210}Pb, ^{212}Pb and ^{214}Pb, however, activities of these radionuclides are typically lower than that of ^{226}Ra and ^{228}Ra (Bou-Rabee *et al.* 2009).

When formation water is brought to the surface, the rapid drop in temperature and pressure causes NORMs (primarily ^{226}Ra and ^{228}Ra) to precipitate out, which may result in accumulation of sludge and hard scales in the gas processing equipment (OGP 2005). However, ^{226}Ra and ^{228}Ra may also remain dissolved within produced water.

A review of the ^{226}Ra and ^{228}Ra concentrations in produced water by Neff et al. (2011a) across discharges worldwide indicated that ^{226}Ra activity ranges from 0.002–1,119 Bq/L and ^{228}Ra activity ranges from 0.3–180 Bq/L. This compares to natural levels within ocean surface waters of 0.001–0.0015 Bq/l and 0.0002–0.0011 Bq/L for ^{226}Ra and ^{228}Ra, respectively (Neff et al. 2011a).

The environmental risk around radioisotopes in produced water is due to ionising radiation (alpha, beta and gamma radiation). Within produced water the radioisotopes of primary concern are ^{226}Ra and ^{228}Ra, which are more likely to be dissolved within produced water than other NORMs, and which have the relatively longest half-lives of 1,601 and 5.7 years, respectively (i.e. they show greatest persistence in the marine environment).

The principal radionuclide of concern is ^{226}Ra for which studies into health and ecological impact have been carried out (OGP 2005). A food web study by Brookhaven National Laboratory in the Gulf of Mexico concluded that there would be no detectable impacts on fish, molluscs and crustaceans and the environmental risk of discharge within Gulf of Mexico is small (OGP 2005). The MARINA II study conducted in the North Sea determined that the offshore oil and gas industry was the largest contributor of alpha radiation emitters in the North Sea but that the discharges were of insignificant risk to the health of marine life or humans (OGP 2005).

7.6.2.3 Impact mechanisms

Bioaccumulation

Chronic exposure to a contaminant can lead to bioaccumulation of the contaminant within marine organisms over time (accumulation of chemicals from the water or from food sources into tissues over time). ANZECC/ ANZG (2018) guidelines provide an indication of chemicals for which possible bioaccumulation and secondary poisoning effects should be considered. These include PAHs and the heavy metals mercury, selenium and cadmium.

Uptake of PAHs can occur in all marine organisms to varying levels; however, there is a wide range in tissue concentrations from variable environmental concentrations, level and time of exposure, and species ability to metabolise these compounds (Meandor et al. 1995). Since the elimination of PAHs is generally very efficient in fish and other vertebrates, bioaccumulation of PAH within these taxa do not generally reflect their level of exposure (van der Oost et al. 2003). Instead bioaccumulation of PAH has been mainly recorded within invertebrates which are less efficient at metabolising PAH.

Hydrocarbon taint

Elevated hydrocarbon levels in fish flesh have the potential to impact humans if affected fish species are targeted by fisheries. When present in foods, petroleum hydrocarbons stimulate an olfactory response in humans that causes a tainting of flavour or taste. Connell and Miller (1981) compiled a summary of studies listing the threshold concentrations at which tainting occurred for hydrocarbons. The results contained in their review indicate that tainting of fish occurs when fish are exposed to ambient concentrations of 4–300 ppm (mg/L) of hydrocarbons in the water, for durations of 24 hours or more, with response to phenols and naphthenic acids being the strongest.

Accumulation of contaminants in sediments

While the produced water plume from the *Montara Venture* FPSO primarily influences the quality of localised surface waters, there is the potential for particles and associated contaminants (e.g. higher molecular weight PAHs), to drop out of the plume in the far-field mixing zone (Neff et al. 2011a). These components of the produced water then have the potential to accumulate in sediments, resulting in longer term contamination.

Jadestone conducted sediment quality monitoring of the sediments surrounding the FPSO in September 2021. All metals and metalloids were below ANZG (2018) default guideline values (DGVs) in the sediment at each site sampled. Four of the metals had no DGVs including barium, manganese, molybdenum and cobalt. Silver, molybdenum and mercury were also below the laboratory limits of reporting (LOR) at each site.

Cobalt concentrations in the sediment at the reference sites ranged from 1.6–2.0 mg/kg; all the sites around the FPSO were within this range. Manganese concentrations in the sediment at the reference sites ranged from 79–87 mg/kg, while the manganese concentrations in the sediment at the sites sampled around the FPSO ranged from 53–96 mg/kg. Barium was lowest at the reference sites ranging from 9.4–10 mg/kg and highest at sites SW3 (270 mg/kg), SW4 (260 mg/kg), W (250 mg/kg) and S (median 150 mg/kg), these sites were closest to the well head platform where drilling was being undertaken. The European Chemicals Agency (ECHA) has a PNEC for barium in freshwater sediments of 589.9 mg/kg while there is no hazard identified for barium in marine sediments (https://echa.europa.eu/registration-dossier/-/registered-dossier/19625/6/1). Barium transported into marine systems combines with sulfate ions present in salt water to form barium sulfate. Barium compounds that do not dissolve well in water are not generally harmful therefore the precipitation of barium as a sulfate salt reduces its potential for adverse health effects.

Biomagnification

Biomagnification occurs when concentrations in the tissues of one organism exceed those in its food or in an adjacent trophic level (Reinfelder et al. 1998). Biomagnification of PAHs is possible in invertebrate food webs (Jorgensen 2010), although unlikely to occur within food chains comprising marine vertebrates (e.g. fish, marine reptiles and mammals and seabirds).

In a field study, PAHs in lower order consumers (molluscs) were shown to be higher than in higher order consumers (fish and decapod crustaceans) indicating biomagnification of PAH was unlikely to be occurring (Takeuchi et al. 2009). Organisms at higher trophic levels tend to show increased ability to metabolise PAHs indicating that biomagnification of PAH up the food chain is unlikely to occur (Takeuchi et al. 2009).

In terms of metals, biomagnification of inorganic mercury (as methyl-mercury) in aquatic food webs has been observed in a number of studies with highest concentrations in the long-lived high order consumers

(Cabanna and Rasmussen 1994, Bowles et al. 2001, Power et al. 2002). However, for other metals biomagnification into higher trophic levels is not believed to occur (Fisher and Reinfelder 1995, Miramand et al. 1998, Gray 2002). Instead concentration within a trophic level is mainly determined by the feeding strategy of the particular species at that trophic level (Rainbow 2002).

7.6.2.4 Potential impacts to sensitive receptors

Pelagic environment

WET testing of produced water discharged from *Montara Venture* FPSO captured potential additive effects of constituents of the produced water. The WET testing determined that after sufficient dilution (assessed as 322:1 dilution) 99% species protection limits will be met. The spatial scale of the area of impact is described in Section 7.6.2.1 and it accommodates this dilution for 99% species protection.

NORMs within produced water discharged from *Montara Venture* FPSO have been measured up to 23 and 21 Bq/L (alpha/beta, respectively) which is at the lower range of levels recorded in produced water samples worldwide (Neff et al. 2011a). Given that studies from regions of very active oil and gas regions have not concluded significant environmental impacts from NORMs it is not predicted that NORMs in discharged produced water will lead to significant environmental impacts.

Plankton and invertebrates

Components of the plankton that could be impacted by produced water include micro-invertebrates; eggs; larvae of invertebrates; and fish. Acute effects include lysis of single-celled organisms and narcosis of motile invertebrates leading to impaired swimming ability.

The predicted small scale of the area of impact suggests that exposure impacts (sub-lethal or lethal) from produced water are likely to be insignificant at population or ecosystem scales. There are no nearby hard coral areas that would suggest that impacts from produced water on hard coral eggs and larvae would occur during coral spawning season (peaking in March/ April).

In addition to invertebrates within the plankton assemblage, larger pelagic invertebrates (e.g. jellyfish, squid, salps) may be present in the area of the discharge activity. Based on WET testing of produced water, impacts could occur to these invertebrates within the discharge area of impact.

Macro-invertebrates present in surface waters are expected to be mobile and while they may be exposed to produced water and may experience sub-lethal effects such as impaired mobility, these effects will be short-term and will recover rapidly once outside the area of impact of the produced water discharge (approximately 340 m from the discharge point).

Fish and fisheries

Effects may be experienced by pelagic fish within the produced water discharge area of impact. Impacts to pelagic fish are likely to be caused by exposure to dissolved hydrocarbons (e.g. BTEX hydrocarbons) or metals across gill structures, although impacts could also occur through ingestion of hydrocarbon droplets. PAHs are the hydrocarbon of most concern in terms of long-term exposure to produced water. While PAH concentrations may be elevated in fishes exposed to the discharge, the elimination of PAHs is generally very efficient in fish and other vertebrates and bioaccumulation of PAH within these taxa do not generally reflect their level of exposure (van der Oost et al. 2003).

No fishing is permitted within the 500 m exclusion zone around the *Montara Venture* FPSO. Given that the area of impact for produced water discharge lies within this exclusion zone, no impact to fish targeted by nearby fisheries is predicted.

Furthermore, for the actively fished commercial fisheries in the area, the approved fishing area is extensive for the purposes of flexibility and boundary simplicity, rather than being a true representation of where catch and effort is actually undertaken. Although the habitat within the operational area may represent suitable habitat for some of the commercial species (Appendix C), in reality fishing effort for these species will be focussed on areas of most suitable habitat and away from constraints such as infrastructure. Noting

only one fishery (the Northern Demersal Scalefish Managed Fishery (WA)) has recent recorded catch in the Operations Area and its immediate vicinity (2015-2017). Although some of the larger fish species may be transient through the operational area and then travel significant distances to active fishing grounds, this was not considered a significant risk.

EPBC species

With regards to impacts to protected matters, a conservative 1 km search radius from the *Montara Venture* FPSO was used to conduct the EPBC protected matters search to cover the risk of produced water discharges. For noting, the 1 km radius EPBC protected matters search area used is well beyond the 340 m radial distance from the FPSO for mixing of produced water discharge.

The search found 22 listed threatened species and 19 migratory species that may or do occur within the discharge impact area. No Australian marine parks were identified as occurring within the Operational area.

The Conservation advice for the whale shark identifies habitat disruption from the resource sector as a minor threat to the species (SPRAT Whale shark, DEE 2017as). Whale sharks spend the majority of their time in deeper waters, and would avoid the surface produced water plume, however it may have a small indirect effect on plankton which is a food source for whale sharks (Meekan 2008). The predicted small scale of the area of impact however suggests that exposure impacts (sub-lethal or lethal) from produced water is not likely to significantly impact whale shark food sources (as described above in impacts to fish).

Blue whale migration is thought to follow deep oceanic routes, although little is known about their precise migration routes (DoEE 2017b). Observations suggest most Pygmy Blue whales pass along the shelf edge out to water depths of 1,000 m depth contour. The Operational area does not include any recognised blue whale migratory routes or known feeding, breeding or resting areas. However, low numbers of blue whales migrating to and from Indonesian waters may occasionally pass through the Operational area, most likely during the southern migration (October to November) (DoEE 2017b).

The conservation management plan for pygmy blue whales identifies the threats of whaling, acute and chronic chemical discharge, climate variability and change, noise interference and vessel disturbance. The discharge of produced water is not considered likely to have any impact on the species or habitat used by the species due to the small area affected by the produced water discharge in spatial extent and depth, relative to the habitat range of the species considered.

As such, with the controls on place the impacts from produced water was assessed as localised within the mixing zone boundary with a consequence assessment of ***Negligible.***

7.6.3 Environmental performance

Hazard		Produced Water Discharge		
Performance outcome		**Produced water discharges achieve the national marine water quality guidelines for protection of 99% of species and the sediment quality ISQG-low values as defined by ANZG (2018) at the boundary of the area of impact**		
ID	**Control measure**	**Performance standard**	**Measurement criteria**	**Responsibility**
Monitoring of OIW concentration in produced water				
032	Daily discharge of PW is monitored and recorded in spec as per Produced Water System (MV-19-PR-G-00001) to not exceed OIW concentration of 30 mg/l [9]	Produced water is treated so that the OIW concentration does not exceed 30 mg/l (batch average)	Production records (e.g. P2 Explorer or laboratory records) confirming OIW concentrations <30 mg/L during overboard discharge.	Operations Supervisor
033		OIW concentration is monitored via an inline analyser and verified by manual sampling[i][10] once during day shift and once during night shift to verify OIW concentration.	Laboratory records of manual sampling CCR logs recording of in-boarding events if the OIW concentration exceeds 30 mg/l	Operations Supervisor
034		If the OIW concentration exceeds 30 mg/L as measured by the inline analyser, overboard discharge is automatically ceased within 10 minutes of detection.		
035		If OIW concentration measured by the inline analyser exceeds 25 mg/l, then the frequency of manual sampling[10] will be increased to at least twice during day shift and twice during night shift to verify OIW concentration.		
036		If OIW concentration measured by manual sampling exceeds 25mg/l, then the frequency of manual sampling[8] will be increased to every 2 hours to verify OIW concentration.		
037		When produced water has been diverted inboard, manual sampling may be undertaken to verify OIW concentrations.	Manual sampling records (e.g. laboratory reports) and CCR logs	Operations Supervisor

[9] The calculation of mg/L to ppmV is 0.85, therefore <30 mg/l is measured as <36 ppmV by in line meter.

[10] OIW concentrations in manual sample and inline analyser measurement at same time are compared within one hour of manual sampling results being available. Manual sampling includes analysis of sample

Hazard		Produced Water Discharge		
Performance outcome		**Produced water discharges achieve the national marine water quality guidelines for protection of 99% of species and the sediment quality ISQG-low values as defined by ANZG (2018) at the boundary of the area of impact**		
ID	**Control measure**	**Performance standard**	**Measurement criteria**	**Responsibility**
		Discharge of produced water can recommence if manual sampling results indicate OIW concentration is <25 mg/l and manual sampling[1] is repeated every 2 hours until OIW concentration measured by the inline analyser is <30 mg/L.		
038		If the inline analyser is not operational i.e. - The analyser is physically offline; or - Inline analyser results are considered unreliable when compared to manual sampling; Then the frequency of manual sampling[1] will be increased to every 2 hours to verify the OIW concentration is <30 mg/L during discharge	Manual sampling records (e.g. laboratory reports) and CCR logs	Operations Supervisor
Measurement of PW components				
039	Montara Produced Water Monitoring and Management Framework (TM-70-PLN-I-00001) is implemented to measure PW	Annual characterisation of contaminants in produced water is undertaken to check contaminant concentrations are acceptable by applying a required dilution rate to concentrations indicated by WET Testing and modelling to achieve protection of 99% of species as defined by ANZG (2018) guideline values within mixing zone or compared against previous monitoring results where there is no guideline.	Annual report provides characterisation of the produced water	Environment Lead
040		If the annual chemical characterisation verifies that contaminant concentration/s will not be sufficiently diluted to required background levels undertake WET testing of relevant effluent stream to demonstrate what dilution is required to achieve protection of 99% of species as defined by the guideline values derived from the species sensitivity distribution (SSD).	Annual report details contaminant concentrations WET Testing results	Environment Lead

Hazard		Produced Water Discharge		
Performance outcome		Produced water discharges achieve the national marine water quality guidelines for protection of 99% of species and the sediment quality ISQG-low values as defined by ANZG (2018) at the boundary of the area of impact		
ID	**Control measure**	**Performance standard**	**Measurement criteria**	**Responsibility**
041		If WET testing shows produced water does not meet dilution requirements, undertake MoC to determine if changes to risks and impacts (as per Section 4) as provided for in the EP. If new or significant increases to risks and impacts are expected, additional monitoring or management may be required.	Completed Management of Change process	Environment Lead
042		In situ marine water quality monitoring is undertaken every five years to check contaminant concentrations against ANZG (2018) guideline values. If one or more samples outside of the mixing zone are above the trigger values, the significance of this will be investigated with a risk assessment e.g. - Statistical tests may be completed to determine if difference is significant, - further monitoring - modelling - WET testing if required	Marine water quality report WET Testing results (if required)	Environment Lead
043		In situ marine sediment quality monitoring is undertaken every five years to check contaminant concentrations against ANZG (2018) SQG low guidelines and: If one or more samples outside of the mixing zone are above the trigger values, the significance of this will be investigated with a risk assessment e.g. • Statistical tests may be completed to determine if difference is significant,	Marine sediment quality report Sediment modelling report (if required)	Environment Lead

Hazard		Produced Water Discharge		
Performance outcome		**Produced water discharges achieve the national marine water quality guidelines for protection of 99% of species and the sediment quality ISQG-low values as defined by ANZG (2018) at the boundary of the area of impact**		
ID	**Control measure**	**Performance standard**	**Measurement criteria**	**Responsibility**
		• Further monitoring • Modelling • WET testing if required		
044		WET testing of PW discharge undertaken every three years (last tested 2023) to determine mixing zone. If WET Testing results indicate an increase from current dilution, undertake MoC to determine if changes to risks and impacts (as per Section 4) as provided for in the EP. If new or significant increases to risks and impacts are expected, additional monitoring or management may be required.	WET Testing Report Mixing zone remodelling (if required)	Environment Lead
045		If mixing zone area is predicted to increase based on WET results, undertake MoC to determine if changes to risks and impacts (as per **Section 4**) as provided for in the EP. If new or significant increases to risks and impacts are expected, additional monitoring or management may be required.	Completed Management of Change process	Environment Lead
Calibration[11] and maintenance				
046	Equipment maintained as per Produced Water System (MV-19-PR-G-00001)	Inline OIW analyser is serviced weekly by production technician	Laboratory reports verify servicing	Operations Supervisor

[11] For noting, successful calibration for all instruments listed in this section of the performance table used for measurement of produced water discharges is assumed to be achieved if the instrument accepts the reading of the calibration standard and does not reject the standard measurement, notified by the instrument as an error. This is as per the calibration procedure provided by the vendor of the instrumentation

Hazard		Produced Water Discharge		
Performance outcome		**Produced water discharges achieve the national marine water quality guidelines for protection of 99% of species and the sediment quality ISQG-low values as defined by ANZG (2018) at the boundary of the area of impact**		
ID	**Control measure**	**Performance standard**	**Measurement criteria**	**Responsibility**
047	Equipment is successfully calibrated as per MV-19-PR-P-00005 and MV-14-PR-M-00015	Prior to batch start-up, inline analyser is checked against the Check Point Standard.	Calibration records	Operations Supervisor
048		Six monthly service and calibration of inline analyser by production technician to ensure accurate calibration	Calibration records demonstrate six monthly service completed and any work order raised for repair or replacement	Operations Supervisor
049		Annual service and calibration of inline analyser completed by a third party	Calibration records demonstrate annual calibration and service completed and any work order raised for repair or replacement	Operations Supervisor
050		If inline analyser does not successfully calibrate, manual sampling[1] will be completed every 2 hours to verify the OIW concentration is <30 mg/l during discharge	Manual sampling records (e.g. laboratory reports) verify concentrations and timings	Operations Supervisor
051		Accuracy of hand-held meter checked weekly by production technicians. If check is unsuccessful, calibration completed according to manufacturer specifications and work order raised to repair or replace as needed or undertake independent calibration.	Laboratory reports verify weekly calibration checks Work orders for repair/replacement if required	Operations Supervisor
Production and processing				
052	Chemical Selection and Approval Procedure (JS-70-PR-I-00033) details requirements of risk assessment for production chemicals	Production chemicals to be assessed and approved for use before application according to the process detailed in the Procedure.	Approval record of all production chemicals	Production Superintendent
053	Production fluids managed in accordance with the EP and management process details the requirement for	Production fluids to be processed as per the activity description in the EP with any changes documented through the MOC process	MOC records change and impact assessment process	Production Superintendent

Hazard		Produced Water Discharge		
Performance outcome		Produced water discharges achieve the national marine water quality guidelines for protection of 99% of species and the sediment quality ISQG-low values as defined by ANZG (2018) at the boundary of the area of impact		
ID	**Control measure**	**Performance standard**	**Measurement criteria**	**Responsibility**
	risk and impact assessment prior to change to operation			

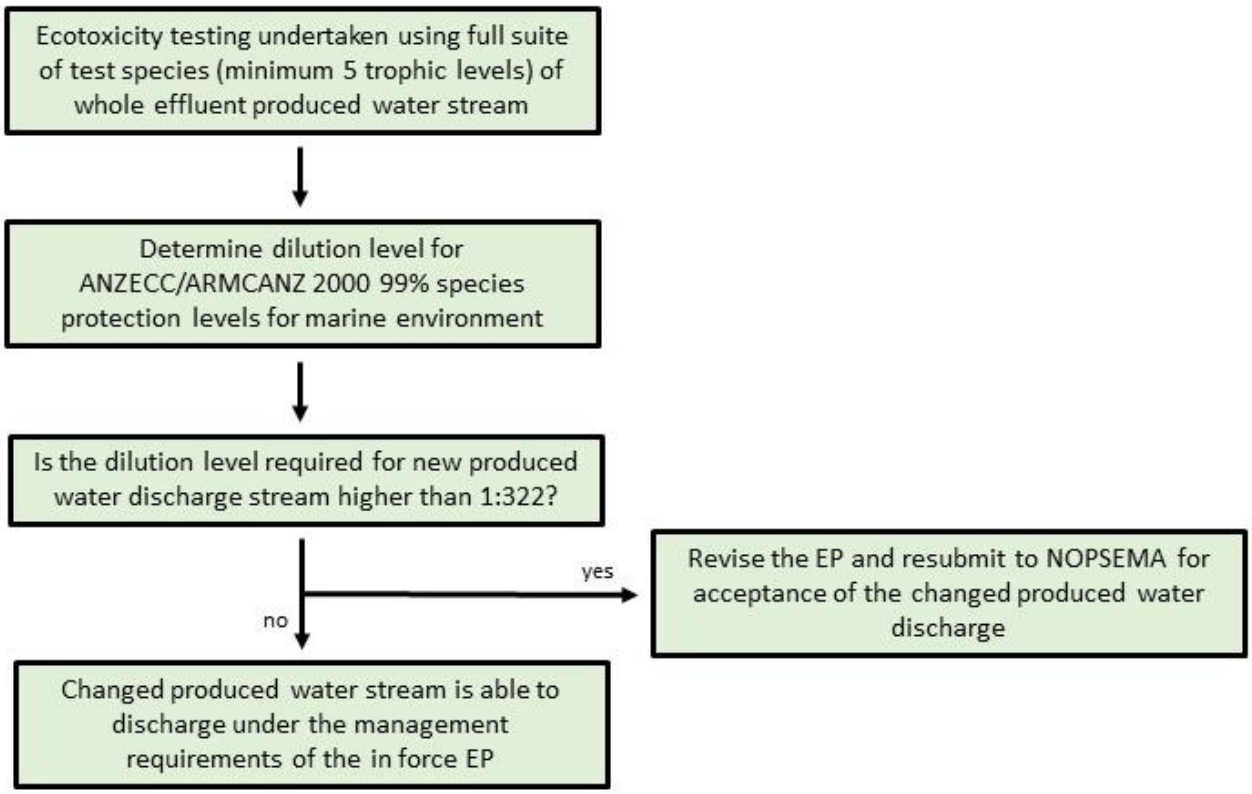


Figure 7-7: Impact assessment process for produced water discharge from the Montara Venture FPSO

7.6.4 ALARP assessment

On the basis of the impact and risk assessment completed, Jadestone considers the control measures described above are appropriate to manage produced water discharges from the FPSO to ALARP. Additional controls considered but rejected are detailed below. The potential impacts are considered Tolerable as they are within the green category (negligible impacts). No further controls are required and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
Contain all PW and transfer to shore for onshore treatment and disposal	Eliminate	No	No	The daily discharge volume would require multiple trips to shore. Containment would require storage on tanker for approx. 2 weeks, mooring system would be required, offtake tanker or swap for another one. Increases risk of vessel collision incident with increased frequency of vessel trips. SIMOPS additional vessel in field, additional costs for treatment and disposal onshore
Reinjection of produced water to the reservoir	Substitute	Yes	No	Drilling of a well to allow reinjection of produced water to the reservoir would cost in the order of $15–20 million. Given the expected environmental impacts associated with discharge of produced water, the environmental benefit that would be gained from reinjection of produced water would not be commensurate to the cost required.

Process polishing	Engineering	Yes	No	Provision of additional treatment packages to improve OIW separation from produced water. Coalescer modules and Gas Flotation Units have both been pursued. While improvements in produced water quality can be achieved with such technologies, the costs and installation complexities have proven to be infeasible. Efforts continue in this area with a trial planned for Compact Flotation Unit technologies, which offer process intensification technologies to address feasibility constraints. This includes the potential to introduce new chemicals to assist with achieving higher separation efficiencies..
Comingling with seawater return from cooling system	Engineering	Yes	No	Co-mingling with the seawater return from the cooling system would maximise dilution on board and allow the validation of overboard concentrations prior to discharge overboard. Modelling assumes this co-mingling occurs between the two parallel discharge flows in the initial mixing zone at the ocean surface. Survey data validates the modelling information and thus renders the onboard co-mingling as offering limited benefit at significant cost.
Engineering changes to the PW treatment system	Engineering	Yes	Yes	A number of changes have been made to the PW treatment system already to improve the OIW treatment. This has included removal of valve PCV-4405 at the inlet to the hydrocyclones as this reduced the pressure differential across the hydrocylone and created a negative impact on efficiency. The hydrocylcone reject stream was also rerouted from the 3rd stage separator to the produced water tanks to reduce the pressure of the oil discharge and therefore improve the hydrocyclone efficiency. Further improvements to hydrocyclones are also being investigated to increase efficiency.
Chemical selection trials to improve OIW separation	Substitution	Yes	Yes	Chemical trials are ongoing to improve the OIW separation efficiency whilst also ensuring an acceptable impact from the discharge of proposed chemicals. Due to the high EOM in the produced water stream, this can affect the OIW concentration detection limits providing interference. Previously Jadestone applied a correction factor to the OIW analyser reading to account for this, however given the known variation in the characteristics of hydrocarbons from the various wells, there is no single correction factor that will apply for each well, and different combinations of wells. Therefore, the process to determine which wells require a correction factor or not, would need an extensive sampling and testing process to produce the data required for such an analysis and may not be possible. Therefore the correction factor utilised previously is no longer in use.
N/a	Administrative	N/a	N/a	The primary means of reducing the risk of environmental impacts from the composition of these chemicals is through the implementation of Jadestone's Chemical Selection Evaluation and

				Approval Procedure (JS-70-PR-I-00033) which promotes the use of environmentally low risk chemicals based on ecotoxicity data and information gathered from ChemAlert. Production chemicals are required to be added to the production process to ensure the process is operating efficiently.
N/a	Administrative	N/a	N/a	The quantity of chemicals used in the production process, and therefore the residual concentration discharged within produced water, is reduced to as low as practicable through routine sampling and assessment from various points in the production process. Concentrations of these chemicals have optimal levels; dosages need to be maintained above certain levels to meet the production requirements but excessive levels are reduced to reduce costs and the potential for environmental impacts from discharge of produced water.

7.6.5 Acceptability assessment

The potential impacts of produced water discharges are considered 'Acceptable' in accordance with the Environment Regulations, based on the acceptability assessment provided in the table below, and as per Section 4.3. In particular, the acceptability assessment provided below presents the risks, acceptable level of impact and an assessment of impact for each of the following environmental values:

- Water
- Fauna and habitat
- Commercial fishing
- Principles of ecologically sustainable development.

For each environmental value, a summary of the acceptable level of impact is provided at the end of each sub-section within the table.

Impact aspect	Acceptable level of impact	Assessment
Water		
Consideration: the key contaminants of concern in produced water are hydrocarbons, naturally occurring radioactive materials (NORMs), dissolved metals and nutrients. These contaminants may be associated with the water fraction, and/ or the particulate fraction, of the discharge stream.		
Hydrocarbons are considered the constituent of most concern to marine fauna within produced water, particularly polycyclic aromatic hydrocarbons (PAHs). Hydrocarbon exposure may lead to mortality in marine organisms as well as sub-lethal chronic (long exposure) effects such as decreased genetic diversity in communities, decreased growth and fecundity, lower reproductive success, respiratory problems, behavioural and physiological problems, decreased developmental success and endocrine disruption (Neff *et al.* 2011a).	Water quality concentrations for hydrocarbons, metals and nutrients meet the 99% species protection guidelines for contaminants (ANZG 2018) after accounting for the 1:322 required dilution rate. For noting, the 99% species protection limits provide for the management of bioaccumulation/ biomagnification processes.	Components of the plankton that could be impacted by produced water include micro-invertebrates; eggs; larvae of invertebrates; and fish. In addition to invertebrates within the plankton assemblage, larger pelagic invertebrates (e.g. jellyfish, squid, salps) will be present around the Facility. The attached assemblages have an increased frequency and duration of exposure to the discharge stream given their fixed placement in the receiving environment. For motile species within the open water plankton assemblage, the exposure is limited in frequency (perhaps one-off events with the exception of motile species that may return to the artificial structure of the CPF and become exposed again), and duration given they are not held at one point in the environment. Pathways of exposure to the contaminants within the produced water stream include uptake of dissolved constituents (e.g. volatile, low molecular weight hydrocarbons such as BTEX hydrocarbons) across cellular structures, ingestion (filter feeding) of higher molecular weight hydrocarbons (e.g. PAHs associated with suspended oil droplets) or precipitated metals which may be bound to organic particulate matter that is small enough to remain buoyant (i.e. <63 µm in size). Impacts include acute effects at high concentrations such as lysis of single-celled organisms and narcosis of motile invertebrates leading to impaired swimming ability. Bioaccumulation of hydrocarbons (e.g. PAHs) and metals (in particular, Hg, Se and Cd) is most likely to occur in sessile invertebrates attached to the FPSO hull close to the discharge location experiencing repeated exposure. Included in this assemblage are macroalgae and macroinvertebrates (e.g. tunicates, soft coral, molluscs). The area of impact for the water column environment is predicted to be small scale (up to 340 m from the discharge point before reaching 99% species protection concentrations) and is therefore unlikely to be significant at population or ecosystem scales for the organisms exposed to the discharge stream.
Dissolved metals may create impacts to marine organisms if present at high enough concentrations and some metals have the potential to bioaccumulate, in particular mercury, selenium and cadmium (ANZG (2018)		
Elevated nutrient levels can lead to increased bacterial and phytoplankton production (e.g. phytoplankton blooms). In nutrient poor waters		Increased water column biomass will be a highly-localised feature (within tens of metres) associated with the availability of dissolved nutrients. The influence of produced water on nutrient levels within the water column is predicted to dissipate within 340 m of the

Impact aspect	Acceptable level of impact	Assessment
such as those in offshore marine environments, introduction of dissolved nutrients such as ammonia and nitrate to surface waters where high light levels are available will lead to rapid uptake by phytoplankton with associated increased biomass.		discharge point and does not exceed ANZG (2018) 99% species protection concentrations beyond this distance.
Within produced water the radioisotopes of primary concern are ^{226}Ra and ^{228}Ra, which are more likely to be dissolved within produced water than other NORMs, and which have the relatively longest half-lives of 1,601 and 5.7 years, respectively (i.e. they show greatest persistence in the marine environment).	Radium 226 and radium 228 meet the National Health and Medical Research Council and Natural Resource Management Ministerial Council Australian Drinking Water Guidelines (NHMRC and NRMMC 2011). After accounting for the 1:322 dilution rate.	The environmental risk around radioisotopes in produced water is due to ionising radiation (alpha, beta and gamma radiation). Ionising radiation is high in energy and can break chemical bonds of exposed atoms. In some cases in which the ionising energy is high enough, the nucleus of an atom may be damaged or destroyed, and in the circumstance of an organism's cell being exposed, the DNA may be damaged leading to mutations (Gordon 1957). Within produced water the radioisotopes of primary concern are ^{226}Ra and ^{228}Ra, which are more likely to be dissolved within produced water than other NORMs, and which have the relatively longest half-lives of 1,601 and 5.7 years, respectively (i.e. they show greatest persistence in the marine environment) (OGP 2005). A food web study by Brookhaven National Laboratory in the Gulf of Mexico concluded that there would be no detectable impacts on fish, molluscs and crustaceans and the environmental risk of discharge within Gulf of Mexico is small (OGP 2005). The MARINA II study conducted in the North Sea determined that the offshore oil and gas industry was the largest contributor of alpha radiation emitters in the North Sea but that the discharges were of insignificant risk to the health of marine life or humans (OGP 2005). Jadestone completed water quality analysis of NORMs in produced water samples to evaluate water quality for radioactivity and to determine whether they are associated with the particulates in the PW or the dissolved fraction by examining gross alpha and beta fractions in unfiltered and filtered forms. Radium 226 and radium 228 were also compared to the National Health and Medical Research Council and Natural Resource Management Ministerial Council Australian Drinking Water Guidelines (NHMRC and NRMMC 2011). Gross alpha and gross beta concentrations were lower than guideline values with dilutions taken into account. Similarly, Radium-226 and radium-228 concentrations were lower than guideline values with dilutions considered.

Impact aspect	Acceptable level of impact	Assessment
Summary: monitoring and measurement of the produced water discharge demonstrates that the marine water quality trigger values recommended by ANZG (2018) for the protection of 99% species are met when taking into account a 1:322 dilution, as required by the Area of Impact showing that the discharge has an acceptable level of impact on water quality of the receiving environment.		
Fauna and habitat values (incl. recovery plans and conservation advices)		
Consideration: The Area of Impact for the discharge of the produced water from the FPSO coincides with habitats that support fauna with conservation status, or the fauna directly.		
The facility and produced water discharge environment overlaps with the whale shark and pygmy blue whale BIAs.	Produced water discharges do not contravene management objectives of fauna and habitat values as identified in bioregional plans, including recovery plans and conservation advices	Conservation advice for the whale shark identifies habitat disruption from the resource sector as a minor threat to the species (SPRAT Whale shark, DEE 2017as). Whale sharks spend the majority of their time in deeper waters, and would avoid the surface produced water plume, however it may have a small indirect effect on plankton which is a food source for whale sharks (Meekan 2008). The predicted small scale of the area of impact however suggests that exposure impacts (sub-lethal or lethal) from produced water is not likely to significantly impact whale shark food sources. Blue whale migration is thought to follow deep oceanic routes, although little is known about their precise migration routes (DoEE 2017b). Observations suggest most pygmy blue whales pass along the shelf edge out to water depths of 1,000 m depth contour. The Operational area does not include any recognised blue whale migratory routes or known feeding, breeding or resting areas. However, low numbers of blue whales migrating to and from Indonesian waters may occasionally pass through the Operational area, most likely during the southern migration (October to November) (DoEE 2017b). The conservation management plan for pygmy blue whales identifies the threats of acute and chronic chemical discharge, whaling, climate variability and blue whale change, noise interference and vessel disturbance. The discharge of produced water is not considered likely to have any impact on the species or habitat used by the species.
Summary: evaluation of the Area of Impact and quality considerations of the produced water discharge did not identify that either conservation objectives are compromised by the discharge stream, or threaten the fauna of interest, showing that the discharge is acceptable to conservation objectives relevant to the area.		

Impact aspect	Acceptable level of impact	Assessment
Commercial fishing values		
Consideration: The Area of Impact for the discharge of the produced water from the FPSO coincides with habitats that support commercial fishing interests.		
Elevated hydrocarbon levels in fish flesh have the potential to impact humans if affected fish species are targeted by fisheries. When present in foods, petroleum hydrocarbons stimulate an olfactory response in humans that causes a tainting of flavour or taste. Connell and Miller (1981) compiled a summary of studies listing the threshold concentrations at which tainting occurred for hydrocarbons. The results contained in their review indicate that tainting of fish occurs when fish are exposed to ambient concentrations of 4–300 ppm (mg/L) of hydrocarbons in the water, for durations of 24 hours or more, with response to phenols and naphthenic acids being the strongest.	Water quality concentrations for hydrocarbons meet the 99% species protection guidelines for contaminants (ANZG 2018) after accounting for the 1:322 required dilution rate.	Effects may be experienced by pelagic fish within the produced water area of impact. Pelagic fish are commonly associated with offshore structures and therefore higher abundances are likely to occur around the CPF and FSO than in surrounding open water. Impacts to pelagic fish are likely to be caused by exposure to dissolved hydrocarbons (e.g. BTEX hydrocarbons) or metals across gill structures, although impacts could also occur through ingestion of hydrocarbon droplets. PAHs are the hydrocarbon of most concern in terms of long term exposure to produced water. While PAH concentrations may be elevated in fishes attracted to the FPSO the elimination of PAHs is generally very efficient in fish and other vertebrates and bioaccumulation of PAH within these taxa do not generally reflect their level of exposure (van der Oost et al. 2003). No fishing is permitted within the 500 m restricted zone around the FPSO and other subsea infrastructure. Given that the area of impact for produced water discharge lies within this PSZ, no impact to fish targeted by nearby fisheries is predicted. Furthermore, for the actively fished commercial fisheries in the area, the approved fishing area is extensive the purposes of flexibility and boundary simplicity, rather than being a true representation of where catch and effort is actually undertaken. Although the habitat within the operational area may represent suitable habitat for some of the commercial species, in reality fishing effort for these species will be focussed on areas of most suitable habitat and away from constraints such as infrastructure. Although some of the larger fish species may be transient through the operational area and then travel significant distances to active fishing grounds, this is was not considered a significant risk.
Summary: evaluation of the Area of Impact and quality considerations of the produced water discharge did not identify that commercial fishing activities are or will be compromised by the discharge stream, or threaten target species, showing that the discharge is acceptable to conservation objectives relevant to the area.		
Ecologically sustainable development		
Consideration: Jadestone must ensure that discharge of produced water from the FPSO does not contravene or perform in conflict with the intent of the principles of Ecologically Sustainable Development.		

Impact aspect	Acceptable level of impact	Assessment
a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations	The activity does not contravene or perform in conflict with the intent of the principles of Ecologically Sustainable Development.	The Jadestone risk assessment process and the Jadestone business management system both include long-term and short-term economic, environmental, social and equitable considerations when assessing exploration and development activities. The residual consequence ranking for discharge of produced water to the environment from the FPSO was assessed as a category 1, 'slight effect; recovery in days to weeks; injury to organism'.
(b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation		No threats of serious or irreversible environmental damage were identified in the impact assessment process for the discharge of produced water to the environment. Scientific knowledge is available and supports this: produced water has been researched for over 20 years and is well documented in the scientific literature.
I the principle of inter-generational equity--that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations		As assessed above in the impact pathway overviews, no medium to long term effects are predicted or expected from the discharge of produced water from the FPSO that will have inter-generational equity considerations.
(d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making		No impacts are expected or predicted that will threaten or contravene conservation values for those species that do or may occur in the discharge footprint. The deliberation on this matter is documented above in this table under *Fauna and habitat values (incl. recovery plans and conservation advices)*
(e) improved valuation, pricing and incentive mechanisms should be promoted		Technical risk assessments for new or changes to activities within Jadestone consider safety, the environment and the economics of the activity prior to approval and implementation. By taking multiple lines of risk into account when planning and implementing activities, Jadestone includes the consideration of improved value, pricing and incentive mechanisms for itself, as well as other beneficiaries.
Summary: Evaluation of the Area of Impact and quality considerations of produced water did not identify that discharge from the FPSO will contravene or perform in conflict with the intent of the principles of Ecologically Sustainable Development, showing that the discharge is acceptable in this regard.		

7.7 Physical Presence

7.7.1 Description of aspect

Physical presence	The Montara FPSO, WHP and subsea infrastructure are static facilities fixed to the sea floor. A permanent 500 m Petroleum Safety Zone (PSZ) is present around the facilities to ensure restricted and controlled vessel access within close proximity of the facilities. There is currently no PSZ around the Montara-1,2,3 wellheads, however all infrastructure in the field is marked on nautical charts and will continue to be going forward. A cautionary zone of 2.5 nautical miles (NM) radius is maintained around subsea structures including all wellheads. Support vessels and offtake tankers move in and out of the Operational area on a routine basis. The physical presence of the Montara operation, associated infrastructure and PSZ result in the preclusion of other users including commercial and recreational fishers, and commercial shipping traffic, to use the area for their purposes. The physical presence of infrastructure may alter marine fauna behaviour and creates habitat for organisms that are attracted to and/ or attach to hard substrates. Significant numbers of brown noddies have been recorded nesting on the FPSO (266 nests at last count in August 2022), with brown noddies, bridled terns and brown boobies also using the FPSO and WHP as roosting sites, the presence of seabirds and potential impacts are considered further in Section 7.8. Helicopters operating at low altitude during ascent from and descent to the FPSO helideck also have the potential to disrupt the behaviour of marine fauna because of noise. Avoidance behaviours in response to vessel and helicopter noise are assessed separately in Section 8.3.

7.7.2 Impacts

Table 7-16: Impact assessment summary

Sensitive receptor	Impact description
Social receptors	
Fishing Shipping	Interaction between Montara support vessels and other marine users is expected to be minimal due to the remote location and low fishing effort expended within the Operational area. The Montara facilities and PSZs have been established and effective since 2012. Any overlap with active fisheries is relatively small, with only the Northern Demersal Scalefish Managed Fishery having recent catch returns for the Operations Area or its immediate vicinity. The PSZ represents a very small part of the Northern Demersal Scalefish Managed Fishery licenced area, with numerous alternatives available. There is the potential for interactions between fishing activities and support vessels. The presence of the Montara facility and 500 m PSZ, and the movement of support vessels, present obstacles for shipping traffic in the region and are potential navigational hazards and a collision risk. The Montara Facility is located northwest of the nearest designated shipping route with heavy vessels utilising the Osborne passage in the northern part of the permit areas, however it is not anticipated there will be high commercial shipping traffic in the Operational Area or immediate surrounds (refer to Section 5.6 and Appendix C for details on commercial shipping, including designated shipping routes) (AMSA 2012). Any detour by shipping traffic that may occur is considered negligible in comparison to the area available for vessels to navigate through. As such impacts to other users are considered ***negligible.***

Sensitive receptor	Impact description
Environmental receptors	
Seabirds	Migratory species such as seabirds may experience localised and short-term effects through behavioural changes; such as resting or roosting on platforms (Montara FPSO and WHP), or changed feeding patterns in nearby waters in response to other factors such as attraction of fish to the infrastructure (Verhejen 1985; Weise *et al*. 2001) with subsequent short term positive effects. This is predominantly attributed to the observation that structures in deeper water environments tend to aggregate marine life at all trophic levels, creating food sources and shelter for seabirds (Surman 2002). Behavioural changes could affect the size and composition of the seabird community in the local area. Birds striking infrastructure or being struck by helicopters, causing injury/mortality, may cause a minor disruption to a small proportion of the population. The utilisation of the FPSO as a nesting site for Brown Noddies poses several risks to Brown Noddies. Impacts to the species that could impact the local population due to the implementation of bird management strategies are discussed further in Section 7.8
Cetaceans, Whale sharks	The only known biologically important areas (BIAs) that overlap the Operational area are the most northern part of the whale shark foraging BIA, as described in Appendix C. However, only occasional individuals are expected to occur as there are no whale shark aggregations (such as the Ningaloo Reef aggregation) in the region and pygmy blue whales are typically solitary animals. Both species may occur year-round. Slight deviations by migrating marine fauna including whale sharks and pygmy blue whales, to avoid the Facility may be required, however this impact is considered negligible given the large navigable area available and the relatively small Operational Area. Overall, impacts to cetaceans and whale sharks are considered ***minor.***
Benthic fauna	The presence of subsea infrastructure has the potential to act as artificial habitat or hard substrate for the settlement of marine organisms that would not otherwise be successful in colonising the area. Over time the colonisation of subsea infrastructure can lead to the development of a 'fouling' community, which subsequently provides predator or prey refuges, foraging resources for pelagic fish species and artificial reefs potentially supporting fish aggregations (Gallaway et al. 1981). Infrastructure that no longer has cathodic protection (such as the Montara-1,2,3 wellheads) will slowly degrade over time releasing corrosion material. The wellheads are comprised predominantly of mild steel. Iron, the primary component of steel (98%), is only toxic to marine organisms at extremely high concentrations (Grimwood and Dixon 1997). All iron oxides are included on the OSPAR PLONOR list (Substances Used and Discharged Offshore which Are Considered to Pose Little or No Risk to the Environment). Elastomeric seals and thread grease are present in small quantities which will also slowly be released to the environment. Given the low rate of release (as they would be released gradually and in small pieces as the wellheads break down, the concentrations are not expected to have a significant impact on the water and sediment quality. Based on the low toxicity of iron, the slow-release rate and rapid dilution of the open ocean environment, any impacts to sediments and water quality will be low and in the immediate vicinity of the wellhead. Expert advice has guided that based on the NACE Corrosion Engineers Handbook (Baboian, 2016) for steel in soil <1000 ohm-cm, that a corrosion rate of 0.2 mm/year for unprotected steel can be utilised. In the presence of paint and other protective films, corrosion would be delayed. On the basis of no cathodic protection from when the wells were first drilled, they can be left without cathodic protection for a further 126 years without compromising the ability to mechanically recover and lift to the recovery vessel. The presence of seabed and floating structures may have a minor positive benefit with reef associated species such as cods and snappers preferring habitat of structural complexity. Similarly, near-surface infrastructure can support pelagic species that are commonly attracted to fixed and drifting surface structures in areas of open-ocean (Lindquist et al. 2005).

Sensitive receptor	Impact description
	Impacts associated with the provision of artificial habitat from Montara infrastructure are increased biological productivity and diversity, which can result in a localised influence on marine communities. Given the small scale of the artificial habitat created, the potential impacts are expected to be highly localised and considered ***negligible***. The abandoned wellheads are comprised of steel with metal-to-metal ring gaskets, 3-4 elastomeric seals and small quantities of thread grease. Some debris is associated with these wellheads, including wire rope, drill pipe and a j-hook (present around the abandoned Montara-1,2,3 wellheads). ROV footage indicates the abandoned wellheads are stable. Over time the wellhead will break down, potentially large pieces will break off onto the surrounding seabed, though will likely remain within the immediate vicinity (<10 m radius) of the wellhead and bury/ re-bury over time. Given the remote offshore location of the wellhead and the water depth of >72 m, no significant credible health and safety risks to marine users have been identified from leaving the wellheads in situ. The wellheads have been in place since 1988, 1991 and 2002 and no harm or events are known to have occurred as a result of their placement during this time. Impacts from the presence of unused infrastructure in field until they are removed is considered to be ***negligible***.

7.7.3 Environmental performance

Aspect		Physical presence		
Performance outcome		**Recreational and commercial fishers, and shipping traffic, are aware of the Operational Area and associated activities** **Decommissioning is planned to ensure Jadestone are compliant with obligations under s.572 of the OPGGS Act**		
ID	**Management control**	**Performance standard**	**Measurement criteria**	**Responsible**
054	FPSO and WHP navigational and communication equipment installed, maintained and operated in accordance with Performance Standard Report (MV-70-REP-F-00002).	The Montara facility and associated infrastructure are charted on Australian Hydrographic Service (AHS) nautical charts with PSZ	AHS Chart	Marine Superintendent
055		Navigation and communication equipment on the FPSO comply with Safety of Life at Sea (SOLAS) requirements	CMMS records show evidence of navigation and communication equipment maintenance	Maintenance Superintendent
056		ARPA with integrated AIS system are located on the FPSO	CCR panel.	OIM
057		A Marine VHF Radio is located and functioning in the central control room (CCR)	CMMS and assurance through daily use	OIM
058	Jadestone Energy Stakeholder Management Plan (JS-70-STD-I-00001) details consultation requirements to ensure other marine users are aware of the activity	Consultation undertaken with relevant stakeholders as per Section 6	Stakeholder communication records	HSE Manager
059	Annual validation of the Montara Asset Decommissioning and Restoration (D&R) liability	Jadestone completes a review of the facilities D&R technical basis and associated cost estimate annually with a report compiled every 3 years and EOFL date confirmed.	Cost estimate report updated annually	Country Manager
060	Decommissioning working group	No later than six years prior to the end of field life, Jadestone will establish a dedicated working group as a focal point for planning decommissioning activities to drive the planning and execution of the strategy supported by financial and investor decisions.	Decommissioning Working Group established six years prior to end of field life.	Country Manager

Aspect		Physical presence		
Performance outcome		Recreational and commercial fishers, and shipping traffic, are aware of the Operational Area and associated activities Decommissioning is planned to ensure Jadestone are compliant with obligations under s.572 of the OPGGS Act		
ID	**Management control**	**Performance standard**	**Measurement criteria**	**Responsible**
061	Decommissioning framework implemented prior to end of field life	No later than five years prior to the end of field life, Jadestone will have a decommissioning framework that details how JSE will meet the obligations under s.572 of the OPGGS Act. This will include establishment of a detailed plan for decommissioning of well, structures, equipment and property to enable decommissioning in a timely manner. This will require detail on: • Ongoing monitoring and maintenance commitments • Baseline environmental monitoring requirements to inform decision making • Any technical studies to support options assessment • Timeframes for the planning and execution of all regulatory approval documents • Full inventory of all in-field infrastructure • Continually updated status of all in-field infrastructure • overall decommissioning concept	Established decommissioning framework five years prior to end of field life	Country Manager
062	Maintenance of inactive infrastructure in accordance with the CMMS	Jadestone will maintain in good condition and repair all active and inactive subsea structures that are, and all subsea equipment and other property that is used in connection with the Montara Operations to ensure they can meet obligations under s.572 of the OPGGS Act and will continue to seek opportunities for opportunistic decommissioning where feasible..	Inspection records in CMMS	Maintenance and Integrity Team Lead
063	Planning is commenced in 2024 for the removal of unused property including Montara-1,2,3 wellheads	Jadestone will commence preparation of an EP in 2024 and plan to submit in 2025 for the removal of the Montara-1,2,3 wellheads to allow for their opportunistic removal at any time over the 5 year period of that EP. Jadestone intend to remove the wellheads prior to EOFL and will continue to opportunistically review vessel availability to remove before then.	Wellhead removal EP commenced in 2024	HSE Manager
064	Inspection of subsurface infrastructure completed in accordance with	Jadestone will inspect subsurface infrastructure in accordance with the • Montara WOMP (MV-00-PLN-W-00001) • Montara-1, Montara-2, Montara-3 WOMP (MV-00-PLN-W-00007) and	Inspection records in CMMS	Operations Manager

Aspect		Physical presence		
Performance outcome		Recreational and commercial fishers, and shipping traffic, are aware of the Operational Area and associated activities Decommissioning is planned to ensure Jadestone are compliant with obligations under s.572 of the OPGGS Act		
ID	**Management control**	**Performance standard**	**Measurement criteria**	**Responsible**
	NOPSEMA accepted WOMPs	• Subsea Well ROV GVI and Seabed Survey Procedure (TM-50-PR-U-00001).		

7.7.4 ALARP assessment

On the basis of the impact and risk assessment completed, Jadestone considers the control measures described above are appropriate to reduce the imposition due to the physical presence of the Montara facility to activities undertaken by Relevant Persons in the area to ALARP. Additional controls considered but rejected are detailed below. The potential impacts are considered Tolerable as they are within the green category (moderate impacts). No further controls are required and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
Removal of facility and vessels	Eliminate	No	No	Operation of the facility would not be possible without the infrastructure or without vessels to replenish supplies required for safe operations.
Re-engineer to remove requirement for topsides altogether	Engineering	No	No	Costs associated with complete re-engineering of the facility such that the need for topsides infrastructure was not required would be grossly disproportionate to the benefit that would be received by other users of the area.
Reduce or remove vessel and helicopter use during key sensitive periods	Isolation	No	No	Reducing or removing vessel and helicopter activities during known migration periods of marine fauna is not a viable option as these activities are necessary for the safe and efficient operation of the facility. Montara facility is located outside of shipping fairways and is not positioned in highly prized fishing habitat.
Additional activity specific navigational or communications requirements	Administrative	No	No	The navigational management and monitoring measures in place are industry standard and internationally accepted measures to minimise the potential for interference with, or collision between, vessels. Frequent and informative communication with Relevant Persons regarding activities associated with the Montara facility are undertaken. Additional procedures would provide no further benefit.
Additional support vessels on location to inform third party vessels in the vicinity of the facility	Engineering	No	No	The additional cost of 24/7 vessel presence in field is considered grossly disproportionate to the benefit gained given the facility is marked on hydrographic charts and is visible above water. The radio room on the FPSO is manned 24/7 allowing contact to be made with 3rd part vessels in the vicinity as required. If radio cannot raise the vessel, calls are made to the Home Affairs Office for their control.
Removal of the Montara-1,2,3	Engineering	No	No	The Montara-1,2,3 wellheads are no longer in use, and in accordance with

wellheads from the field under this Operations EP				Section 572(3) of the OPGGS Act will be removed from the field. The removal of wellheads is not currently in the budget forecast for 2024 as the planning and execution of the removal campaign needs to be considered whilst optimising production; and taking advantage of vessels of opportunity. As the wellheads are under a monitoring regime to ensure that any anomalies are recognised, and the rate of corrosion is very slow and impacts from the presence of unused infrastructure in field until they are removed is considered to be negligible. the timeline for removal of the wellheads is not considered in need of expediting. Jadestone are considering full cost planning and execution to ensure optimisation of cost through vessels of opportunity. Jadestone are committed to preparing a removal EP in 2024 to allow for adequate planning and execution of the removal campaign; and this detail is not currently available for inclusion in this EP.
Undertake planned maintenance activities on the WHP outside of season of peak presence of seabirds roosting on facility	Isolation	No	No	Avoidance of peak roosting and nesting periods when bird numbers are at their peak would result in less potential interaction with helicopters and personnel. However, the weather conditions must be considered when planning maintenance campaigns to ensure reduced cyclone risk and/or suitable weather for undertaking major campaign work. Compliance with safety case performance standards is required to ensure frequencies are met. Therefore, although bird presence is a consideration when planning major maintenance campaigns, avoidance of peak seasons cannot be guaranteed.
Only use workboat for transfer of personnel	Substitute	No	No	Eliminating the use of helicopters for personnel transfer removes the risk of helicopter strike to avifauna. However, the sea state for workboat use is considered further and this may not be practicable as the weather conditions may adversely impact payload availability resulting in the need to increase the number of flights to WHP.

7.7.5 Acceptability assessment

The potential impacts of physical presence from Montara infrastructure and vessels during operations are considered 'Acceptable' in accordance with Section 4.4 based on the acceptability criteria outlined below. The control measures proposed are consistent with relevant legislation, standards and codes, and the environmental consequence is considered negligible.	
Policy and management system compliance	Jadestone's HSE Policy objectives are met. Section 9 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.
Social acceptability	Stakeholder consultation has been undertaken (Section 6), and no stakeholder concerns have been raised with regards to physical presence as denoted by the PSZ and preclusions within it.
Environmental context	While the Montara facility presents a restricted zone to other users, the impact and risk assessment process indicates that the area of restriction is localised and occurs at a location that is not likely to result in significant penalties to the activities of Relevant Persons currently active in the area. With these considerations in mind, the key objective of an ongoing suspended infrastructure (suspended and abandoned wellheads) inspection regime to is verify no macro or external event (such as a fishing net) has accelerated the window for removal. Given the wells have already been in place for >20 years, the likelihood of an event of consequence for wellhead recovery is very low. Moreover, while the field is in active service, the license area is monitored for external fishing and any potentially encroaching vessels are hailed. The potential impact is considered acceptable after consideration of: • Potential impact pathways • Preservation of critical habitats • Assessment of key threats as described in species and Area Management/ Recovery plans • Consideration of North-West Bioregional Plan • Principles of ecologically sustainable development (ESD).
Conservation and management advice	No Management Plans identified physical presence as described above as being a threat to marine fauna or habitats. The Wildlife Conservation Plan for Seabirds (CoA 2020) states that an action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will: • substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for migratory species; or • seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. Jadestone has had regard to the representative values of the protected areas within the EMBA, and the respective management plans and other published information. Impacts from physical presence will have a negligible impact on any of the social and ecological objectives and values, of any AMPs, or state marine parks. This is consistent with the objectives of the protected area management plans (Appendix C) and considered acceptable.

7.8 Bird Presence and Management Strategies

7.8.1 Description of Aspect

Physical presence	The Montara FPSO and WHP are static facilities fixed to the sea floor. All floating infrastructure will be progressively and permanently removed towards end of field-life. Decommissioning of submerged infrastructure is subject to a separate activity and EP. The physical presence of static infrastructure creates artificial hard substrate enhancing biological communities until such time infrastructure is removed (Macreadie et al. 2011; Claisse et al. 2014; Fowler et al. 2018). Significant numbers of brown noddies have been recorded as roosting and nesting on the FPSO, with bridled terns also inhabiting the FPSO. The WHP is predominantly a roosting site for brown boobies. The population size of these three species at the FPSO and WHP has been monitored since 2019. During peak breeding season, the recorded population sizes of brown noddies and bridled terns on the FPSO have varied between ~450-1200 and ~250-500, respectively. Similarly, the population size of brown boobies on the WHP has varied between ~100-260 individuals. A conservative estimate suggests that the proportion of the populations at the facilities relative to estimated global population sizes amounts to ~0.2% (brown noddies), ~0.1% (bridled terns), and ~0.2% (brown boobies). The FPSO is a manned facility requiring an ongoing safe and healthy working environment for staff who reside there 24/7. The WHP is unmanned with staff accessing the facility on a routine basis from vessels or by helicopter. Support vessels and offtake tankers also move in and out of the Operational Area to undertake manned operations on a routine basis. Helicopter operations occur at low altitude during ascent from and descent to the FPSO and WHP helideck. These activities have the potential to disrupt the behaviour of marine avifauna because of noise. Avoidance behaviours in response to vessel and helicopter noise are assessed separately in **Section 7.2**. A number of management strategies (passive and active) have been implemented or are proposed to help manage presence of seabirds on the FPSO and WHP. These strategies are intended to reduce the risk to human health and safety as well as minimise harm to seabirds. The management strategies have the potential to cause behavioural impacts to birds.

7.8.2 Context of Aspect

Seabird species that may be present within the Operational Area (as identified through the PMST report, Appendix C) are listed in Section 5.4.4. Three species are both threatened and migratory; two species are threatened only; and eight species are migratory only. Through dedicated monitoring activities on the facilities since 2019, it is now well documented that the brown noddy is the dominant species colonising the FPSO, with bridled terns of secondary prominence. The brown booby is the dominant species on the WHP. Brown boobies and bridled terns are less likely to nest at the facilities appearing to utilise the facilities as roosting sites only. Whilst the three species observed at the facilities are EPBC listed and migratory, they are not considered vulnerable or threatened, and are not endemic to Australia.

brown noddy has colonised the FPSO whilst the bridled tern and brown booby inhabit the facilities seasonally as part of either their annual migration or foraging patterns. The nearest landfall from the facilities is Cartier Island ~84 km away, and nearest regionally significant seabird rookery is Ashmore Reef ~150 km away. Brown noddies have been shown to travel more than 600 km in a single foraging trip (Surman pers. comm.), whilst brown boobies have been reported to have a foraging flight range of ~80km (Clarke and Herrod 2016). Bridled terns are well known pelagic migrants with significant flight ranges and undergo a twice annual north-south migration between more southern nesting sites (NW shelf, west coast) and over wintering areas (Celebes Sea, Surman et al. 2016). At these landfall distances and flight ranges, it is possible that colonisation of the FPSO and WHP have occurred from the landfall and rookery locations within the region, and that these regional populations likely continue to be interconnected with populations on the facilities.

Through banding studies, some brown noddy chicks tagged at the FPSO have been shown to have reached sexual maturity and returned to the FPSO to nest, thereby demonstrating philopatric behaviour typical of this species elsewhere. Is it therefore likely that a mix of immigration and philopatric behaviour contributes to sustain the population at the facilities.

Region and species-specific data on the ecology and risks and impact to seabirds from the presence of industrial facilities on the Sahul Shelf is scarce. Most available information about risks and impacts are from the northern temperate or arctic hemisphere, and reports on industry interactions often involve landbirds (Ronconi et al. 2015).

Risks associated with the presence of seabirds are two-fold, namely 1) the risks to human health and safety of operations from excessive presence of seabirds during peak roosting and nesting periods, and 2) risks to migratory seabird species from interaction with offshore operations as well as associated use of passive and active management strategies to deter their presence. Management of the two risk factors require judicious balance and ongoing monitoring to ensure that human health and safety as well as wildlife conservation objectives are managed to ALARP and acceptable levels.

The risk factors and associated potential impacts are described in detail in sections below.

7.8.3 Impacts to Human Health and Safety

Seabirds are attracted to offshore production platforms, drilling rigs, and support vessels as roosting sites (Baird, 1990; Russell, 2005; Tasker et al., 1986) and for foraging opportunities (Burke et al., 2005; Ortego, 1978; Tasker et al., 1986). At the FPSO and WHP brown noddies also breed and nest.

Due to the significant numbers of seabirds colonising the FPSO and WHP, there are several issues identified that pose a risk to human health and safety:

- Risk of bird strike during helicopter operations;
- A negative effect on the anti-slip properties provided by heli-deck surface due to guano, and thereby does not achieve friction testing requirement;
- Health and hygiene issues associated with guano deposition on infrastructure (including cable trays);
- Several illnesses can arise from contact with guano, e.g. respiratory infections, transmission of avian bird flu, eye infections (conjunctivitis) and skin infections (shigellosis). This can occur through everyday activities on the facility, and through the implementation of controls such as housekeeping (pressure washing) of the facility;
- Aggressive adult bird territorial behaviour towards workforce members on board the FPSO and WHP;
- Emergency signage and lights become obscured;
- Transient obstruction (by guano and/or birds) of the ESD and gas detector communications path by birds, with the signal obscured for sufficient time to indicate a system loss and therefore shutdown (ESD).

Impacts to reduce the risks of abovementioned issues arising are managed through passive and active management strategies to deter seabird presence. These risks are assessed in the HAZID provided in Appendix H.

7.8.4 Impacts to Seabirds

7.8.4.1 Facility Presence and Operations

Impacts to seabirds arise from both direct and indirect effects including:

- Collision & Incineration

- Interaction with facility operations
- Exposure to produced water
- Provision of roosting, nesting sites
- Displacement from natural habitat
- Creation of foraging opportunities, exposure to predators
- Entanglement with infrastructure or deterrent measures (netting).

Table 7-17: Assessment of Impacts to Seabirds of Facility Presence and Operations

Risk Factor	Impact Assessment
Collision and Incineration associated with lights and flares	The most frequently observed effect of seabird interaction with offshore oil and gas platforms, is the attraction and sometimes collisions associated with lights and flares. Typically unpredictable, anecdotally, it is known that poor weather, such as fog, precipitation and low cloud cover can exacerbate the effects of nocturnal attraction to lights, especially when coincidental with bird migrations (Ronconi et al 2015). Elsewhere, and predominantly in the temperate to arctic northern hemisphere, avoiding collision events through implementation of management strategies have been shown to potentially lead to migratory birds circling platforms for long periods and suffering latent lethal effects from depleted body reserves (Hope Jones, 1980; Russell, 2005). Though mitigation strategies that address light attraction have rarely been explored in the context of offshore platforms, experiments from other contexts provide guidance on simple strategies to reduce attraction. Shielding and reduction of lights have shown to reduce the numbers of shearwaters and petrels grounded on islands (Miles et al., 2010; Reed et al., 1985) and experimental manipulations of light colour have significantly reduced the numbers of migratory landbirds attracted to lights at terrestrial and maritime installations (Poot et al., 2008). Initial trials involving light manipulations at offshore platforms suggest avenues for reduction in bird attraction (Marquenie et al., 2013), though details of the experimental procedures and results are not fully presented. Lighting and flaring on the FPSO and WHP are minimised to levels critical to safe operations. The impact is known to occur in connection with offshore production operations elsewhere and is therefore Likely, and the consequence is rated as Minor as incidental deaths of individuals has been observed to occur as a result of collision or incineration. The overall risk rating is reduced to Medium.
Physical impacts from facility operations	Human passage: Human activity may disturb roosting and nesting birds – most nest sites are elevated and situated away from high traffic areas. The delineated pathways used by staff on the FPSO means that human activity is predictable acting as a 'natural' deterrence of seabirds to roost and nest. Also, predictable human behaviour may allow seabirds to nest without being disturbed if they can predict approach/pathway. Helicopter operations: No active deterrence currently in place, when helicopters are on approach, personnel on the FPSO and WHP ensure the helideck is clear. There is no change in helicopter approach if birds are present, however the helicopter pilots are aware of the bird presence and are provided training on how to manage risks of birds striking the helicopter. Deluge testing: The fire deluge system includes piped water to production modules, with intermittent nozzle jets located in the system, and is tested at a predefined frequency to ensure the system disperses water at rates and coverage as required by the Safety Case performance standards. Although there are no nozzles in areas that brown noddies are currently nesting so the regular testing of the fire system is unlikely to impact seabirds, the increase in nests in future could result in the location of some near these nozzles; . Facility operations on the FPSO and WHP are designed to meet standards critical for safe operations to the workforce. Impacts to seabirds are known to occur in connection with offshore production operations elsewhere and are therefore likely. The consequence is rated as

Risk Factor	Impact Assessment
	Minor as incidental death of individuals has been observed to occur as a result of physical impacts from operations. The overall risk rating is Medium.
Exposure to Produced Water & Increased Risk of Exposure to Accidental Spills	Seabirds present are likely to forage in the vicinity of the FPSO and WHP where prey may aggregate as a result of installation of the facility and the emerging localised increase in biological productivity (Claisse et al. 2014). The volume of produced water discharged from platforms varies widely across oil fields and individual platforms (Fraser et al., 2006), and significant data gaps suggest that the cumulative impacts of this on seabird populations is not known (Ellis et al., 2013). Discharge of produced water is described in Section 7.6 and shows that dilution to 95% protection criteria is likely to be met within 500m of the discharge point. Seabirds present on the FPSO and WHP are not restricted in foraging within 500m of the facilities where 95% protection criteria of PW contaminants may not yet be met, and impacts are therefore likely to occur. The consequence is rated as Negligible as injury or mortality from this source of risk has not been identified and is not considered credible.
Exhaustion and Starvation	Offshore platforms may contribute to bird deaths due to exhaustion and starvation. Limited body reserves fuel the long-distance migrations of birds, thus, events that interrupt migrations may result in expenditure of irreplaceable energy reserves. This phenomenon is exaggerated when inclement weather limits visibility, and birds become entrained in circling patterns around platform lights and flares (Bourne et al., 1979; Russell, 2005; Wallis, 1981) leading to severe depletion of energy reserves and ultimately death (Hope Jones, 1980). Starvation was the most commonly identified cause of mortality (46% of deaths) observed in migrating birds located at offshore platforms in the Gulf of Mexico (Russell, 2005). Attraction to,and becoming disorientated by platform lights – notably entrained circling patterns of birds around lights and flares, has not been observed on the FPSO or WHP. Disorientation is unlikely to occur at this site as it lies outside the known pathway of bird species that may migrate at night. All species observed roosting at the WHP and FPSO are diurnal, and roost overnight. The effect is considered unlikely and with minor consequence reducing the rating of risk to Low.
Provision of roosting, nesting sites	Offshore platforms present stimuli in oceanic habitats, equating to what is described by Russell (2005) as an “artificial archipelago” of structures, providing roosting opportunities for many species. Platforms may serve as “stepping stones” during migration providing an opportunity to recover from fatigue due to accumulation of lactic acid, failure of the nerve-muscle junction, or upset central nervous coordination therefore providing a potential net benefit to the seabirds (Russell, 2005), though this stop-over behaviour is thought to be potentially detrimental because individuals nonetheless expend reserves while attending platforms (Hope Jones, 1980). Brown noddies are capable of building elaborate nests of seaweed, shells and vegetative materials when nesting on offshore islands. Most nests on the FPSO are rudimentary, comprised of some materials collected from the deck and brown algae and other anthropogenic flotsam from the sea (Surman pers. obs 2021). Voitier et al. 2011 and Lavers et al. (2013) found that marine debris found in nests poses some entanglement risk to seabirds, though this has not been observed to date at the MV facilities and is unlikely to represent a significant source of injury or mortality. The lack of nesting material in some nests results in eggs becoming dislodged from nest cups during high seas. Similarly, the elevated and exposed location of some nest sites (i.e., those on the heat shield) has resulted in some younger chicks being blown from the nest site onto the deck below where they invariably die from exposure or starvation. Roosting and nesting of seabirds has been monitored on the facilities since 2020. The colonies at the facility are conservatively estimated to make up ~0.3% (brown noddies) of the total population size of these species in Australia, and ~0.8% (bridled terns) and ~0.5% (brown

Risk Factor	Impact Assessment
	boobies) of the total WA population size of these species. The impact to provision of roosting and nesting sites, if negative, is unlikely and with minor consequence reducing the overall risk rating to Low.
Displacement from natural habitat	Although studies have documented attraction effects of offshore platforms in seabirds, the presence of platforms may also displace birds from otherwise suitable foraging habitat (Ronconi et al. 2015). The consequences of displacement from habitat are unknown but are likely to be small except in areas where platforms occur in high concentrations or where they might occur on or in the vicinity of productive sites associated with discrete physiographic features, e.g. continental shelf edges and slopes (Hedd et al., 2011). The FPSO may have been colonised by seabirds roosting at the site whilst foraging in the area and preferring it as a breeding site to locations further from potential food sources. There is no suggestion that Ashmore Reef Brown Noddy population is at capacity or that habitat is limiting there. Given the flight ranges and seasonal presence documented for the species, it is likely that populations at the facilities continue to be interconnected with other populations in the region. Brown noddy chicks that were tagged at the FPSO have now started to nest at the facility indicating that new breeders are being recruited to the colony and that the colony is expanding, through first time breeders and other breeder through social attraction. The ability of the colony to self sustain depends on the breeding success of the colony from year to year. The facilities are isolated with the nearest landfall being Cartier Island ~84 km away, and the impacts, if any, are likely to be small. The facilities are located on the Sahul Shelf with nearest shoals (that might act as alternative opportunistic foraging sites) ~30 km from the FPSO and WHP. Seabird populations at Ashmore Reef appear to be healthy, with some species showing remarkable recovery from harvesting by Indonesian fishers commensurate with increased statutory protection status (Clarke and Herrod 2016). Monitoring efforts of seabirds on the facilities to date has not established any connection between seabird colonisation of the FPSO and WHP and declines in populations elsewhere. The risk described is considered to be probable as individuals may still be attracted from original place of colonisation with negligible consequence. The overall risk rating is considered to be Medium.
Creation of foraging opportunities, exposure to predators	Platforms in the ocean may act as artificial reefs creating habitat conditions attractive to fish and invertebrates (Fabi et al., 2004; Claisse et al. 2014; Fowler et al. 2018), thus enhancing local marine food supply and creating foraging opportunities for seabirds (Ortego, 1978). Foraging may represent the only increased exposure to predators, as there are no natural predators on the facilities. Roosting and nesting of seabirds has been monitored on the facilities since 2020. The colonies at the facility are conservatively estimated to make up ~0.3% (brown noddies) of the total population size of these species in Australia, and ~0.8% (bridled terns) and ~0.5% (brown boobies) of the total WA population size of these species. The impact of the described risk factor, if negative, is unlikely and with minor consequence reducing the overall risk rating to Low.

7.8.4.2 Management Strategies for Seabird Presence

Through consultation processes for this activity, the DCCEEW has advised that no additional permitting other than a NOPSEMA accepted EP is required to undertake bird management measures on the facility.

There are a number of passive management strategies that are implemented or may be trialled on the FPSO and WHP that deter birds from roosting and nesting in areas of high egress. The purpose of deterring bird presence in these areas is to reduce the potential for necessary work processes and safe operation of the facility to interact with seabirds and potentially cause harm or mortality. Over the life of this EP, these deterrents will continue to be installed and maintained and monitored for efficacy.

The passive management strategies adopted are implemented as appropriate to specific areas of egress and are detailed in Appendix H. Table 7-17 The implementation of passive management strategies is managed under direction of the OIM and is documented to ensure implementation is appropriate, is safe for personnel, is maintained, and provides for prevention of harm or mortality to fauna that is ALARP and acceptable. This also includes a review of the efficacy of the management strategies through weekly house-keeping inspections, upon observation of an injured or dead bird, or annually through a strategic review of new technical and scientific information relating to risks and impacts and the associated efficacy of management strategies. Implementation of passive management strategies has anecdotally been shown to be effective on other facilities elsewhere in the world, however, the efficacy in the context of Montara is subject to trialling and ongoing monitoring and review.

Active management is also required to minimise the potential impacts to human health and safety and ensure no harm or mortality to seabirds occurs. A number of active management strategies are considered within the Montara Bird Management Plan (TM-70-PLN-I-00002) and once implemented, monitoring of their effectiveness and potential impacts to birds are required to ensure adequate management.

The intended outcome of implementing management strategies is to displace roosting and nesting activities away from critical infrastructure and areas that pose exposure risks to personnel. This, in turn, should reduce the overall abundance of seabirds on the facilities and notably guano build-up. Is it considered that a combination of passive and active management strategies are necessary (at least as a trial) to reach the net best outcome from an environmental and health and safety perspective.

The risk to conservation objectives of the intended impacts of management strategies is assessed in the below table. Unintended impacts include injury or mortality of seabirds at the facilities due to implementation of active and passive management strategies. Assessment of unintended impacts are covered in the HAZID/ENVID in Appendix H.

Table 7-18: Impact assessment of intended effects of implementation of passive and active management strategies.

Risk Factor	Impact Assessment
Passive and active management strategies	Passive management strategies include deck housekeeping and installation of: • Bird mesh or barrier (netting); • Bird control spiders; • Cyclone wire mesh fencing; • Rail guards; • Aviwire/birdwire; and • Bird spikes. Active management strategies include installation of: • Lasers; • Acoustic deterrence devices; • Physical deterrence, namely water sprinkling. The intended effect of these management strategies is to deter seabird roosting and nesting on the FPSO and WHP and to reduce overall numbers of seabirds interacting with the facilities. The added benefit of deck housekeeping is also to reduce risk of accidental ingestion of debris. No harm to individual seabirds is intended from any of the passive or active management strategies

Risk Factor	Impact Assessment
	proposed. Any unintended impacts are assessed in the ENVID/HAZID prepared for each of the strategies listed in Appendix H. Deterrence may cause seabirds to be re-distributed across the facilities. This may cause further up-concentration of presence in fewer areas, or it may involve species to re-distribute between the FPSO and the WHP. For example, if brown noddies were to become common at the WHP, this might in turn introduce nesting activity at a scale requiring further management. Other impacts may include those akin to seabirds being displaced from natural habitats covered in Table 7-17. Seabirds present at the facilities have sufficient flight ranges to relocate to other breeding sites within the region. The nearby Ashmore Reef provides adequate roosting, foraging and nesting areas if seabirds are displaced from the facilities. Foraging can still occur around the infrastructure regardless of implementation of management strategies, and the Operational Area represents a very small area within the overall range for all species. Installation of management strategies is limited to areas that are safe to access. Therefore, some seabirds on the facilities will likely not be displaced as a result of the management strategies. The likelihood of impact to seabirds from management strategies is likely as they are intended to reduce the overall presence of seabirds on the facilities. Seabirds are not anticipated to be injured from these activities and the consequence is considered to be negligible as controls are in place to manage any observation of injured or dead seabirds. The overall risk rating is **Low**.

7.8.5 Conservation and Management Plans

A number of conservation and management plans and advice are in place for seabirds (refer Table 7-19), relevant conditions and considerations are summarised below in relation to the potential impacts from physical presence and bird management strategies.

Table 7-19: Consideration of relevant conservation and management plans and advice involving seabirds identified for the activity

Plan	Key threats identified relating to birds or bird management	Relevance for the Montara activity	Assessment for the Montara activity
Wildlife conservation plan for seabirds 2020	Habitat modification (though not -specific to this activity) and resource extraction (aggregation around offshore platforms) identified as key threats to species	MV infrastructure represents artificial habitat for some bird species which may lead to localised biodiversity enhancement and population growth at. Migrating individuals are displaced from other, natural habitat options. A link to regional populations elsewhere impacted as a consequence of displacement has not been established. A comprehensive list of risks has been identified from the presence of operations and assessed in Table 7-17. Climate change and climatic events identified to potentially affect foraging range of streaked shearwaters, brown noddies, lesser frigatebirds, greater frigatebirds, bridled terns, all of which are known to breed and/or forage at Ashmore Reef.	**Not inconsistent with the management plan**. The plan recognises that in general, seabirds are K-selected, that is, population numbers fluctuate at or near the carrying capacity of the environment in which they inhabit. By inference, if protected from localised pressures such as harvesting or contamination, new artificial habitat is likely to create biodiversity enhancements that augment the prevalence of species at a regional level. There is no evidence that bird populations in natural habitat are displaced or otherwise impacted from the physical presence of the MV facilities. The MV facilities have provided new artificial habitat that has contributed to localised biodiversity enhancement and potential population growth at a regional scale. Climate change effects are discussed in Section 7.3 Through implementation of regular housekeeping and weekly monitoring of installed bird management strategies (refer section 7.8.7), any harm or mortality to seabirds will be identified and the management strategy reviewed; loose debris/waste materials will be collected and prevented from entering the marine environment or being used for nest building (unless already in use). In line with the recommendations of the conservation plan, the weekly monitoring program of impacts from the platform's activities and bird presence

Plan	Key threats identified relating to birds or bird management	Relevance for the Montara activity	Assessment for the Montara activity
			management strategies include recording and managing any injury or mortality (if it has occurred). It is not anticipated that the presence of the facility and its associated operations including passive and active management strategies will have significant direct or indirect impacts regional or global populations of seabirds; localised and temporary displacement of breeding and roosting birds from implementation of management strategies within the Operational Area is not anticipated to significantly affect populations elsewhere.
Ashmore Reef National Nature Reserve and Cartier Island Marine Reserve Management Plan 2002	None identified	The Ashmore islands are regarded as supporting some of the most important seabird rookeries on the North West Shelf. Bridled terns and brown noddies breed on East, West and Middle Islands.	**Not inconsistent with the management plan**. There is no evidence that bird populations occurring in natural habitat are displaced or otherwise impacted from the physical presence of the MV facilities. The MV facilities have provided for new artificial habitat that has contributed to localised biodiversity enhancement and potential population growth at regional scales. Through implementation of regular housekeeping and weekly monitoring of installed bird management strategies (refer section 7.8.7), any harm or mortality to seabirds will be identified and the management strategy reviewed; marine debris will be collected and prevented from entering the marine environment or being used for nest building (unless already in use). It is not anticipated that the presence of the facility and its associated operations including passive and active management strategies will have significant direct or indirect impacts on seabird populations at Ashmore marine reserve; localised and temporary

Plan	Key threats identified relating to birds or bird management	Relevance for the Montara activity	Assessment for the Montara activity
			displacement of breeding and roosting birds from implementation of management strategies within the Operational Area is not anticipated to significantly affect populations at Ashmore Reef or Cartier Island.
North West Marine Parks Network Management Plan 2018	Habitat modification and marine pollution identified as key pressures	The Ashmore Reef Ramsar site is located within the boundary of the Ashmore Reef Marine Park and is a key migratory bird breeding and foraging area. It is assumed that bird species roosting and nesting on the Montara facility originated from the Ashmore Reef area.	**Not inconsistent with the management plan**. There is no evidence that bird populations in natural habitat are displaced or otherwise impacted from the physical presence of the MV facilities. The MV facilities have provided for new artificial habitat that has contributed to localised biodiversity enhancement and potential population growth at regional and global scales. Through implementation of regular housekeeping and weekly monitoring of installed bird management strategies (refer section 7.8.7), any harm or mortality to seabirds will be identified and the management strategy reviewed; loose debris/waste materials will be collected and prevented from entering the marine environment or being used for nest building (unless already in use). The potential for seabirds to be exposed to produced water contamination during foraging has been assessed as being of a negligible consequence . Other potential marine pollution events arising from planned and unplanned risks such as vessel discharges and waste management, as well as accidental oil spills are covered elsewhere in the EP. It is not anticipated that the presence of the facility and its associated operations including passive and active management strategies will have significant

Plan	Key threats identified relating to birds or bird management	Relevance for the Montara activity	Assessment for the Montara activity
			direct or indirect impacts on seabird populations elsewhere; localised and temporary displacement of breeding and roosting birds from implementation of management strategies within the Operational Area is not anticipated to significantly affect populations regionally within the North West Marine Parks Network.
Marine bioregional plan for the North-west Marine Region (2012)	Collision/entanglement with infrastructure identified for 23 seabird species	The plan identifies 23 species as being ecologically significant due to the numbers found at Ashmore Reef and identified as a priority for concern. This includes five (5) species that could occur within the Montara Operational Area (Curlew Sandpiper, Greater frigatebird, Lesser frigatebird, Brown booby and white-tailed tropicbird), and they may migrate past or land on the facility. The brown booby is known to roost on the facility (namely the WHP) and individuals present could be affected by the management strategies proposed.	**Not inconsistent with the bioregional plan which identifies collision and entanglement as a risk to listed species**. There is no evidence that bird populations in natural habitat are displaced or otherwise impacted from the physical presence of the MV facilities. The MV facilities have provided for new artificial habitat that has contributed to localised biodiversity enhancement and potential population growth at regional and global scales. Whilst the brown booby is considered ecologically significant at Ashmore Reef and a priority of concern, the species is not threatened, vulnerable or endangered, and is listed as least concern species by the (non-statutory) IUCN. In the 1900's, the brown booby was subject to significant harvesting by Indonesian fishers but has since shown remarkable recovery commensurate with increased statutory protection status (Clarke and Herrod 2016). Through implementation of regular housekeeping) and weekly monitoring of installed bird management

Plan	Key threats identified relating to birds or bird management	Relevance for the Montara activity	Assessment for the Montara activity
			strategies (refer section 7.8.7), any harm or mortality to seabirds will be identified and the management strategy reviewed; loose debris/waste materials will be collected and prevented from entering the marine environment or being used for nest building (unless already in use). It is not anticipated that the presence of the facility and its associated operations including passive and active management strategies will have significant direct or indirect impacts on seabird populations elsewhere; localised and temporary displacement of breeding and roosting birds from implementation of management strategies within the Operational Area is not anticipated to significantly affect populations regionally within the North West Marine bioregion.
Threat abatement plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (2018)	Injury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris was listed as a key threatening process under the EPBC Act in August 2003	There is the potential for entanglement in netting that is installed as a management strategy that could impact on any seabird species present on the facility. Loose debris generated by the facility (e.g. ear plugs, cable ties) could be ingested by marine fauna causing harm or mortality. The three species that utilise the facility are not explicitly mentioned in the plan.	**Not inconsistent with the threat abatement plan to prevent marine debris entering the marine environment/being ingested by seabirds**. Through implementation of regular housekeeping and weekly monitoring of installed bird management strategies (refer section 7.8.7), any harm or mortality to seabirds will be identified and the management strategy reviewed; loose debris/waste materials will be collected and prevented from entering the marine environment or being used for nest building (unless already in use).
Conservation advice *Anous tenuirostris melanops* Australian lesser noddy	Habitat loss and degradation listed as key threat	Nil – the advice relates to managing habitat loss on the Houtman Abrolhos Islands and understanding the population at Ashmore Reef.	**Not inconsistent with the conservation advice.** These species have not been recorded at the facilities. Some of these species have distinct preferred

Plan	Key threats identified relating to birds or bird management	Relevance for the Montara activity	Assessment for the Montara activity
(Threatened Species Scientific Committee, 2015e)			breeding habitats, such as wetlands or sandy burrows and are therefore not expected to use the facilities as a nesting or roosting location. However, as habitat that supports the species overlaps with the Operational Area, it is possible that individuals may utilise the facilities as a resting location. The presence of the facility and its associated operations including implementation of management strategies may therefore result in impacts to individuals, however, is not considered to have a significant impact at a regional or global population level. Seabirds that are deterred from landing on the facility may be displaced from the associated localised artificial foraging habitat attributed to fish aggregations on artificial structures (e.g. McLean et al. 2018). Potential impacts from any displacement of resting birds on the MV facilities are considered negligible given the abundance of natural foraging opportunities elsewhere regionally. Through implementation of regular housekeeping and weekly monitoring of installed bird management strategies, any harm or mortality to seabirds will be identified and the management strategy reviewed; marine debris will be collected and prevented from entering the marine environment or being used for nest building (unless already in use). There is no evidence that bird populations in natural habitat are displaced or otherwise impacted from the physical presence of the MV facilities. The MV facilities
Conservation advice *Calidris canutus* red knot (Threatened Species Scientific Committee, 2024)	Habitat loss and degradation listed as key threat	Species typically found along coastlines (mudflats, sandy beaches), but may overfly the operational area or potentially rest on the facility. The foraging area will not be affected by the implementation of management strategies, though the available roosting area for this species will be reduced through implementation of the strategies. It is considered unlikely this species will be encountered on the facility due to high numbers of other bird species and their usual preference for foraging along coastlines.	
Conservation advice *Calidris ferruginea* curlew sandpiper (DCCEEW, 2023c)	Habitat loss and degradation from pollution listed as key threat		
Conservation advice *Numenius madagascariensis* eastern curlew DCCEEW,2023d)	Habitat loss and degradation from pollution listed as key threat		

Plan	Key threats identified relating to birds or bird management	Relevance for the Montara activity	Assessment for the Montara activity
			have provided for new artificial habitat that has contributed to localised biodiversity enhancement.
Conservation advice Papasula abbotti Abbott's booby (Threatened Species Scientific Committee, 2015h)	Marine debris (plastics) identified as a key threat	This species is found on and around Christmas Island but may forage around the Montara facilities. Marine debris may affect this species in its non-breeding foraging range.	**Not inconsistent with the conservation advice**. These species have not been recorded using the facility as a roosting or nesting site. However, as habitat that supports the species overlaps with the Operational Area, it is possible that individual species may utilise the facilities as a resting location. Through implementation of regular housekeeping and weekly monitoring of installed bird management strategies, any harm or mortality to seabirds will be identified and the management strategy reviewed; marine debris will be collected and prevented from entering the marine environment or being used for nest building (unless already in use).

Potential impacts of both the physical presence of the facility on the three migratory bird populations that commonly use the facility (brown noddies, brown boobies and bridled terns), and the implementation of bird management controls, have been assessed under the Matters of National Environmental Significance Significant Impact Guidelines 1.1 (under the EPBC Act) as detailed in Table 7-20.

The presence within the Operational Area of important habitat as defined in the guidelines is presented in Table 7-21. It is noted that individuals of other species may be present in the area, however not colony-forming on the facilities. -Therefore, the worst-case assessment has been completed of the three commonly found bird species is considered to represent the precautionary and conservative approach to also manage other species that may present.

Table 7-20: Important habitat definitions and presence in Montara Field in relation to brown noddies, brown boobies and bridled terns

Important habitat category	Habitat present in Montara Field
a. habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species	The facilities have provided for new artificial habitat that has likely contributed to biodiversity enhancement and population growth of some seabird species at regional scales. There is no evidence that bird populations in natural habitat (e.g. at Ashmore Reef) are displaced or otherwise impacted from any impact to the local populations associated with the facilities. Artificial habitat within the Montara Field is utilised by migratory species occasionally and periodically (i.e. seasonally by 3 migratory bird species). The Operational Area is considered to support <0.2% of the global populations of these species, <0.3% of the Australian population of brown noddies and <0.8% of the WA population of bridled terns and brown boobies (based on conservative estimates). The management plans in place across the region (refer Table 7-19) identify Ashmore Reef as a significant rookery regionally. All three species are considered abundant at Ashmore Reef during critical life-history phases. The brown booby in particular has demonstrated a remarkable recovery since the days of harvesting by Indonesian fishers (Clarke and Herrod 2016). The populations of the three species at the facilities are not considered ecologically significant as the species are not identified as threatened or vulnerable and the species are generally considered common both globally and within Australia with broad geographic distribution ranges and usual breeding and roosting areas within flying distance. All three species are listed as species of 'least concern' by the IUCN.
b. habitat that is of critical importance to the species at particular life-cycle stages	Although the FPSO does support nesting brown noddies, the habitat itself is artificial and has likely contributed to biodiversity enhancement of seabirds (Fowler et al. 2018). This in turn, may be leading to potential population growth at regional and global scales. The brown noddy population at the FPSO currently accounts for ~0.5% of the WA population. Their usual nesting area on Ashmore Reef supports the second largest breeding population of brown noddies in WA, the other population occurs at the Houtman Abrolhos. There is no evidence that bird populations in natural habitat are displaced or otherwise impacted from the physical presence of the MV facilities.
c. habitat utilised by a migratory species which is at the limit of the species range	Brown noddies, brown boobies and bridled terns are found globally (DCCEEW SPRAT database, 2023) throughout the oceans and islands and the location of the facilities represents a very small part of the species total range.

d. habitat within an area where the species is declining	There is no evidence in current literature to suggest that the brown noddy is declining in numbers. The brown noddy is protected in Australia, but some colonies have suffered declines that appear mainly to be due to introduced predators (e.g., rats on Christmas Island). Worldwide, the bridled tern occupies tropical and subtropical waters and coastlines, with several apparently discrete populations, which are treated as subspecies. In Australia, bridled terns are widespread, breeding on offshore islands in western, northern and north-eastern Australia. There is no estimate of the extent of occurrence of bridled terns in Australia. Estimated global extent of occurrence is between 400 000 and 1 000 000 km² (BirdLife International 2023). The source of this estimate is not known, and there are no available data to indicate past declines or future changes (DCCEEW, 2023). The brown booby is a very common species of booby that occurs throughout all tropical oceans approximately bounded by latitudes 30° N and 30° S. Some declines in Australian populations (unknown causes) have been documented in South and East Australia (Heatwole *et al*., 1996) but not in WA. The nearest breeding colony to the MV facilities at Ashmore Reef does not show signs of introduced predators affecting their numbers, and the species has shown remarkable recovery there since the days of harvesting by Indonesian fishers (Clarke and Herrod 2016).

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will result in any of the significant impact criteria listed in Table 7-21.

Table 7-21: Significant Impact Criteria for listed migratory species

Significant Impact Criteria	Impact assessment for the Montara Facility
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	Through the installation of the facility, artificial habitat has been introduced to the area that provides suitable habitat for 3 migratory EPBC-listed species. This has likely provided for biodiversity enhancement in an offshore location where colonisation would otherwise not have occurred. There is no evidence that bird populations in natural habitat are displaced or otherwise impacted from the physical presence and associated operations of the facilities. It is more likely that the facilities have provided for new artificial habitat (which will eventually be completely removed above the water line as a minimum), that has contributed to biodiversity enhancement and population growth at regional and global scales. Implementation of management strategies to deter roosting and nesting from continuing to occur in large numbers on the facility will likely result in displacing the seabirds to other areas of the facility. This may over time result in fewer numbers returning to the Montara facility as the carrying capacity of the facility is reached. Individuals displaced from the Operational Area are likely to return to other suitable habitat regionally including Cartier Island and Ashmore Reef which are within known flight ranges of the species. With reference to Table 7-20, the FPSO is not considered to be important habitat and does not trigger this significant impact criterion. The facility will continue until end-of-life to provide suitable habitat for a proportion of the populations at the facility should implementation of management strategies successfully achieve to reduce the bird presence.
Result in an invasive species that is harmful to the migratory species	Through implementation of control measures outlined in Section 8.2, the risk of introducing an invasive species that is harmful to any migratory species in the

becoming established in an area of important habitat for the migratory species	Operational Area is not considered to be credible. Therefore, this significant impact criterion is not met by facility presence.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	Implementation of both active and passive management strategies is intended to displace from and reduce bird presence in critical areas of operation. The overall objective is to reduce HSE risks whilst meeting conservation objectives of no harm to seabirds. The population of the 3 species recorded at the facilities are not considered to be ecologically significant at regional or global scales (see Appendix C). The populations at the facilities are not considered ecologically significant as they are not identified as threatened or vulnerable and the species are generally considered common both globally and within Australia. The species have broad geographic ranges that extend well beyond the Operational Area, or WA jurisdiction with sufficient flight ranges to connect with natural habitat for alternative roosting and nesting sites. Importantly, the facilities are artificial and may have contributed to temporarily augment the global population by a small proportion from pre-installation times. The floating infrastructure will be removed at end of its lifecycle in alignment with base position legislative principles. At such time, the populations associated with the facilities will be permanently displaced. Therefore, this significant impact criterion is not considered to be met by the implementation of management strategies to displace and reduce bird presence on the facilities.

7.8.6 Monitoring, Reporting and Bird Handling

Current approaches to monitoring seabirds at offshore platforms and associated vessels have focused on observer-based methods which can offer species-level bird identification, quantify seasonal patterns of relative abundance and distribution, and document avian mortality events and underlying factors. Observer-based monitoring is often combined with instrument-based approaches (e.g. cameras and telemetry), recognising that deleterious bird-platform interactions are episodic and likely coincidental (Roncini et al. 2015).

7.8.6.1 Monitoring

Bi-annual observer-based monitoring

The monitoring regime at the facilities is a combination of remote platform and observer-based methodologies. Observer-based surveys have been undertaken since 2020 on both the FPSO and WHP. These surveys provide for species identification and abundance estimates of roosting and nesting birds, and number of nests as well as any tagged individuals.

Monitoring over the medium term (multi seasonal) of nesting sites and tagged individuals at the facilities will allow an assessment of the population dynamics associated with the artificial habitat of the Montara field. Notably, it will highlight whether new individuals are being recruited to the population (i.e., that the FPSO has become a known reliable nesting location) and whether birds known to have nested previously have returned after having a breeding attempt disrupted.

In connection with increasing the implementation of passive and active management strategies, observer-based monitoring will increase to two campaigns per year to monitor progress of management strategies implemented. Increasing the frequency of observer-based monitoring will also provide for greater certainty of temporal dynamics of seabird populations. Monitoring is undertaken by a suitably qualified ornithologist.

Bi-annual survey data will be collected ~mid May and ~mid July to coincide with peak nesting times. An annual update of data will provide for a time-integrated trend analysis contributing to an annual strategic

review of management strategies providing for an estimation of total population size at the facilities which in turn contributes to assess their efficacy.

The annual report will also consider the photo point data to observe for trends in presence, any incidents that have occurred, new technical or scientific literature on the bird species and populations (particularly any at Ashmore/Cartier) and new monitoring data (refer below). This report will then inform the assessment of the efficacy of the active and passive strategies and any requirements for changes to location, type and number of strategies installed on the facilities.

House-keeping checklist and weekly platform-based monitoring (FPSO)

A house-keeping checklist will be maintained at least weekly involving an inspection of all passive and active management strategies (if installed) on the FPSO. This inspection will identify any rectification work required of the strategies to be actioned through work orders and also provide for a dedicated opportunity to identify any injured or dead birds. Injured or dead birds observed opportunistically in between house-keeping inspections will be reported and also summarised in the weekly checklist and all such observations will trigger bird handling procedures, a root-cause analysis, and if necessary, a review of the efficacy of passive and active management strategies.

Nine marked locations at the FPSO were established in 2023 as photo points intended to provide for comparable time-integrated data on a weekly basis on the species distribution and abundance of seabirds. These weekly photo points are intended to provide temporal information population dynamics. In addition, these photo points may support an assessment of changes in peak nesting periods. It is unlikely that weekly photos from the marked locations will be effective in identifying injured or dead seabirds and therefore will not be appropriate in assessing efficacy of passive and active management strategies.

The photo point locations are established overlooking areas where bird management strategies have and have not been implemented. Over time, the requirement for weekly monitoring outside of the peak season for birds may be reduced if the peak season period can be accurately determined each year. This would be addressed through an annual strategic review of new information and data and an associated re-assessment of management strategies.

House-keeping checklist and platform-based monitoring (WHP)

A house-keeping checklist will be maintained in connection with dedicated access campaigns to the WHP. This involves inspection of all installed passive and active management strategies. This inspection will identify any rectification work required of the strategies to be actioned through work orders and also provide for a dedicated opportunity to identify any injured or dead birds. Injured or dead birds will be reported and summarised in the checklist and all such observations will trigger bird handling procedures, root-cause analysis, and if necessary, a review of the efficacy of passive and active management strategies.

Monitoring on the WHP is completed prior to commencement of major campaigns; however, the CCTV cameras on the facility will assist in providing surveillance following implementation of management strategies, in particular active management strategies (laser and acoustic devices). Given the resolution of the current system, it is not possible to provide a count or species identification, however the CCTV may be utilised particularly to observe the effectiveness of active management strategies implemented in future e.g. the effect of noise or laser deterrents on seabird behaviour and if habitualisation occurs over time.

Tracking studies

Use of tracking devices has the potential to provide useful information on foraging ranges during breeding and may provide an understanding of the energetic and physical limits for birds to commute to alternate roosting and nesting sites in the region. Based on information from a study at Houtman Abrolhos islands, brown noddies are known to forage as far as 212 km from the colony, covering a total of 612 km during a 3 day trip. Of 87 birds tracked, the mean trip distance was 175 km. During their inter-breeding period, brown noddies migrated at least 1000 km and are likely to also rest on the water surface during this time (Surman

et al. 2018). This suggests that brown noddies at Montara are able to commute, if necessary, to other roosting or nesting sites including Ashmore Reef.

Tracking will be limited to brown noddies, for practical reasons as it is the most abundant and accessible species at the FPSO. Fitting of trackers will be undertaken by a suitably trained ornithologist during bi-annual monitoring visits where this specialist considers it to be practicable. Limiting factors include:

- Brown noddies fitted with a tracker do not subsequently continue to do significant flights away from the facilities.
- To access data, trackers must be retrieved. This may not be possible within a standard 6d monitoring trip window. Access to nests may make retrieving a tracker difficult.
- Changing implementation of passive management strategies may increase success of tracking (e.g. encourage nesting again in the flare zone on the lower heatshields and net off the walkway to encourage birds to track, pers. comm CA Surman).

Banding studies

Banding studies may be useful to demonstrate where seabirds travel for nesting. Previous banding and detection of individuals in subsequent seasons at the Montara FPSO indicates that some brown noddies have returned to nest the following season. Further, individuals banded as chicks at the FPSO have also been detected at the facilities returning to breed. Detection of banded birds on Montara has been compounded by the successful displacement of the birds from the lower heat shield mesh using bird netting - this was a high density nesting site in 2020.

Recent estimates put the current Ashmore Reef brown noddy population at ~63,000 (Clarke and Herrod 2016, Milton 2005). Since 2020, 69 brown noddies have been banded at the Montara FPSO. The probability of detecting brown noddies banded at the facilities elsewhere in the region is very small. The FPSO attracts ~900-1000 individuals with a maximum of 323 observed nests. At these abundance levels, and noting the possibility of birds relocating to other sites, any displacement of seabirds as a result of passive management strategy implementation is unlikely to have an impact at regional or global population levels.

Banding will be limited to brown noddies for practical reasons, being the most abundant and easily accessible species. Banding efforts will continue opportunistically during future monitoring trips but is limited by safe access to nest sites. Banded birds that have not been detected at the FPSO in subsequent years or trips does not mean that they are not present. Banding records have only been made during single annual survey trips to date, and in 2023 this coincided with a reported disruption to breeding. In an attempt to address this limitation, future banding of seabirds will be undertaken by a suitably trained ornithologists during bi-annual monitoring visits.

7.8.6.2 Reporting

Weekly (minimum) deck / housekeeping and associated check list will provide for inspection and review of the integrity of passive and active management strategies and summarise any incidents observed ad hoc during the course of normal operations involving harm to seabirds.

Any observed injury or mortality of seabirds by staff during the course of normal operations is subject to an incident report. This includes reporting of harm to protected species under the EPBC Act to DCCEEW.

Any incidents of wildlife injury or mortality will trigger a review of the relevant management strategy, which may result in the management strategy to be removed, repositioned or replaced. In addition to a review being triggered upon an injury/mortality incident, an annual strategic review of all management strategies will take place that considers new technical or scientific information that has become available.

7.8.6.3 Bird Handling

No licence is required to handle or relocate EPBC listed seabirds under Regulation 47 and 50 of the Biodiversity Conservation Regulations WA. Injured fauna can be held for up to 72 hours after which time a veterinarian or licenced wildlife carer is required to supervise any further action.

Staff trained in bird handling will be on site to manage wildlife injuries or mortality, should they occur and deemed related to the installation of passive and active management strategies, as determined through a root-cause analysis. These staff will be trained on handling, storage, transport, and PPE.

Advice will be sought from a wildlife carers association, veterinarian or suitably qualified ornithologist within 72 hours of detecting and taking into care an injured bird.

7.8.7 Environmental performance

Aspect		Physical presence		
Performance outcome		**Ensure that birds are managed and monitored on the FPSO and WHP to prevent harm to birds and personnel** **No injury or mortality to EPBC listed birds resulting from bird management strategies**		
ID	**Management control**	**Performance standard**	**Measurement criteria**	**Responsible**
065	Contemporary understanding of bird ecology	Contemporary understanding of bird ecology through: • Bi-annual observer-based monitoring of seabirds on the FPSO and WHP by appropriately qualified ornithologist during peak presence times. Monitoring to cover species-specific abundance, distribution, nesting/roosting behaviour, distribution of nests, recording of tagged seabirds. • Weekly photographs at established photo points on the FPSO as the same time of day, each week. • Monitoring to cover species-specific abundance, distribution, nesting/roosting behaviour, and number of tagged individuals. • Tagging trackers to seabirds will be undertaken opportunistically during bi-annual monitoring visits (6d) • Banding of seabirds will be undertaken opportunistically during bi-annual monitoring visits (6d) • Bird abundance and location will be recorded on WHP during staff visits to WHP at beginning of any major campaign as required in *First on*, last off WHP Checklist (MW-02-WP-G-00002). • Annual review and assessment of technical or scientific information that has become available that may contribute as empirical data that allow quantitative or qualitative assessment of factors that promote bird attraction to facility and inform investigation of mitigative options to minimise bird presence.	Assembly of time stamped and time-integrated empirical data that allow review of risks and impacts of the activity, including quantification of factors that promote bird attraction to platform and inform investigation of mitigative options to minimise bird presence. Annual review of the efficacy of the implemented management strategies. Time stamped register of search and review of new technical and scientific information. Documentation of assessment of risks and impacts informed by new information.	OIM
066	Deck cleaning undertaken in		Inspection reports and workorders.	OIM

Aspect		Physical presence		
Performance outcome		**Ensure that birds are managed and monitored on the FPSO and WHP to prevent harm to birds and personnel** **No injury or mortality to EPBC listed birds resulting from bird management strategies**		
ID	**Management control**	**Performance standard**	**Measurement criteria**	**Responsible**
	areas to remove waste and high pressure cleaning undertaken to remove guano.	Deck cleaning is undertaken to remove debris that may be used for nests and high-pressure cleaning undertaken to remove guano. To reduce potential for impact to personnel and birds: • Safe Work Procedures are in place for deck cleaning activities including PTW for high pressure washdown. • Staff are competent to undertake maintenance activities. • Appropriate Personal Protective Equipment for task is worn. • Soft barricading and appropriate signage in the event that an active nest or birds incapable of flying (e.g. hatchlings, injured birds) is present in high pressure cleaning area to avoid impact to bird. This is communicated to personnel at morning toolbox meeting, when high pressure washdown is planned having reviewed the area for cleaning for nest presence. • High pressure cleaning of area avoids nests on decks during season, but nests can be removed post breeding season.	Incident reports. First aid facilities and resources. Personnel trained in wildlife handling are present on board FPSO	
067	Bird handling training and competency	Staff trained in bird handling will be on site to manage wildlife injuries or mortality, should they occur and deemed related to the installation of passive and active management strategies, as determined through a root-cause analysis. These staff will be trained on handling, storage, transport, and PPE	Training and Competency Records Wildlife handling procedures for injured or dead birds as outlined in the Bird Management Plan.	HR Manager
068	Handling of injured or dead birds	Any injured or dead birds will be handled by personnel who have received wildlife handling training and are wearing suitable PPE. Advice will be sought from a wildlife carers association, veterinarian or suitably qualified ornithologist within 72 hours of detecting and taking into care an injured bird.	Incident Reports	OIM/Environment Lead

Aspect		Physical presence		
Performance outcome		**Ensure that birds are managed and monitored on the FPSO and WHP to prevent harm to birds and personnel** **No injury or mortality to EPBC listed birds resulting from bird management strategies**		
ID	**Management control**	**Performance standard**	**Measurement criteria**	**Responsible**
069	Use of laser deterrent on FPSO or WHP	Pre-implementation: Detailed review and risk assessment of design options demonstrates that all risks and impacts of preferred solution can be reduced to ALARP and Acceptable levels. This includes - testing of efficacy of power output upon installation i.e. ramping up from 25% of max power to test behavioural response in initial trials. - Upon every start up, lowest power setting will be used that provides for sufficient deterrence of birds to allow safe operations involving helicopters and on-site personnel. - Mechanical and software limits of the pan and tilt to ensure beam does not extend beyond the platform perimeters or focus upwards to the surrounding air travel corridors. - Live CCTV coverage allowing operators to observe the effectiveness of the laser devices during every start-up/ramp-up - Any observed injury or mortality of seabirds will trigger a root-cause analysis that includes expert advice from an ornithologist. If a link to an active management strategy can be established, this will trigger a review of its efficacy with possible outcomes being to remove, reposition or replace.	Risk assessment appended to the Bird Management Plan when available. Inspection reports and workorders. Incident reports. Wildlife handling procedures for injured or dead birds as outlined in the Bird Management Plan.	
070	Management of passive management strategies on FPSO	Pre-implementation: Detailed review and risk assessment of design options demonstrates that all risks and impacts of preferred solution can be reduced to ALARP and Acceptable levels. This includes mesh size and wire spacing assessment as per the HAZID/ENVID in Appendix H to prevent entanglement.	Risk assessment appended to the Bird Management Plan when available. Inspection reports and workorders. Incident reports.	OIM/Environment Lead

Aspect		Physical presence		
Performance outcome		**Ensure that birds are managed and monitored on the FPSO and WHP to prevent harm to birds and personnel** **No injury or mortality to EPBC listed birds resulting from bird management strategies**		
ID	**Management control**	**Performance standard**	**Measurement criteria**	**Responsible**
		Post-implementation: Weekly house-keeping checklists/inspection reports shows that deterrent devices are tested and maintained. Refer to preventative risk treatment and controls identified in HAZID.		
071		Any observed injury or mortality of seabirds will trigger a root-cause analysis that includes expert advice from an ornithologist. If a link to a passive management strategy can be established, this will trigger a review of its efficacy with possible outcomes being to remove, reposition or replace.	Weekly (FPSO) and campaign-integrated (WHP) housekeeping checklist/inspection reports and workorders. Wildlife handling procedures for injured or dead birds as outlined in the Bird Management Plan. Reporting to NOPSEMA and DCCEEW of incidents to EPBC listed species. Root-cause analysis of injury/mortality of seabird. Review of efficacy of passive management strategy. Annual review of the efficacy of the passive management strategies.	OIM/Environment Lead
072	Management of active management strategies on WHP	Pre-implementation: Detailed review and risk assessment of design options demonstrates that all risks and impacts of preferred solution can be reduced to ALARP and Acceptable levels. Post-implementation: Testing and maintenance of deterrents completed as per manufacturer recommendations.	Risk assessment appended to the Bird Management Plan when available. Weekly (FPSO) and campaign-integrated (WHP) housekeeping checklist/inspection reports and workorders. Incident reporting procedures.	OIM/Environment Lead

Aspect		Physical presence		
Performance outcome		Ensure that birds are managed and monitored on the FPSO and WHP to prevent harm to birds and personnel No injury or mortality to EPBC listed birds resulting from bird management strategies		
ID	**Management control**	**Performance standard**	**Measurement criteria**	**Responsible**
		Any observed injury or mortality of seabirds will trigger a root-cause analysis that includes expert advice from an ornithologist. If a link to an active management strategy can be established, this will trigger a review of its efficacy with possible outcomes being to remove, reposition or replace.	Wildlife handling procedures for injured or dead birds as outlined in the Bird Management Plan. Reporting to NOPSEMA and DCCEEW of incidents to EPBC listed species. Root-cause analysis of injury/mortality of seabird. Review of efficacy of active management strategy.	

7.8.8 ALARP assessment

On the basis of the impact and risk assessment completed, Jadestone considers the management controls described above and in the ENVID/HAZID table in Appendix H to be appropriate to reduce risks attributable to physical presence and operation (including passive and active management strategies) of facilities to ALARP. Additional controls considered but rejected are detailed below. The potential impacts are considered Tolerable as they are within the green category (moderate impacts). No further controls are required and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
Reduce or remove vessel and helicopter use during key sensitive periods	Isolation	No	No	Reducing or removing vessel and helicopter activities during known migration periods of seabirds is not a viable option as these activities are necessary for the safe and efficient operation of the facilities. The facilities are fixed in place so cannot be removed during bird nesting season.
Undertake planned maintenance activities on the WHP outside of season of peak presence of seabirds roosting on facility	Isolation	No	No	Avoidance of peak roosting and nesting periods when bird numbers are at their peak would result in less potential interaction with helicopters and personnel. However, the weather conditions must be considered when planning maintenance campaigns to ensure reduced cyclone risk and/or suitable weather for undertaking major campaign work. Compliance with safety case performance standards is required to ensure frequencies are met. Therefore, although bird presence is a consideration when planning major maintenance campaigns, avoidance of peak seasons cannot be guaranteed.
Only use workboat for transfer of personnel	Substitute	No	No	Eliminating the use of helicopters for personnel transfer removes the risk of helicopter strike to avifauna. However, the sea state for workboat use is considered further and this may not be practicable as the weather conditions

				may adversely impact payload availability resulting in the need to increase the number of flights to WHP.
Only discharge produced water when birds are not actively foraging	Reduce	No	No	The volume and timing of produced water discharge is dependent on the rate of production and the OIW concentration. Limiting the timing to avoid times of day when birds are typically foraging is not considered practicable for the activity particularly given the negligible consequence of the discharge on foraging birds.
Install bird mesh around the entirety of the WHP to prevent birds roosting on facility	Engineering	No	No	Although this management strategy was considered feasible in the short term, it poses a significant risk during cyclone season with the possibility of the netting becoming unattached and becoming a high entanglement risk. Transfer of personnel to the WHP to maintain and repair the netting would then become an additional burden on the facility. Entanglement and marine debris are specific threats identified in a number of conservation and management plans.
Installation of water jetting on the WHP	Engineering	No	Yes	There is currently only one potable water tank on the WHP and there are power restrictions on the facility that would require significant engineering to add another tank and additional water jetting to the WHP for the purposes of bird management. Using seawater would constitute too high a risk to asset integrity.
Installation of aviwire around the helideck	Engineering	No	Yes	The installation of aviwire around the helideck to prevent birds roosting introduces a significant safety risk through the

				possibility of foreign object damage, therefore the helideck must be kept clear in accordance with CASA regulations.
Capture and relocation of birds to remove breeding birds from FPSO and relocate to natural breeding areas.	Substitute	No	No	Given the species are long range foragers, it is considered likely they will return. The location of the FPSO in relation to Cartier Island and Ashmore Reef provides an additional source of other breeders. Logistically this option is not feasible.
Alternative nest sites present attractive alternative nest sites to divert birds away from areas of the MV important to keep bird-free**.**	Substitute	No	No	Has been successful in Philippines though is unlikely to deter all nesting birds. Logistically too difficult for the area due to high abundance of birds. It must also be noted that there is little to no space to place alternate nesting sites on the FPSO.
Hawk/Owl Scare attempts to deter birds from roosting and nesting	Engineering	Yes	No	Has been trialled on WHP and shown to be ineffective as the hawk scarer was covered in brown booby guano. It did not deter birds roosting.
Chemical deterrent (e.g. DTer) a non-harmful bird repellent to deter birds from roosting/nesting	Engineering	No	No	Has been trialled on other facilities on WA NWS (Harriet Alpha; Surman 2007) and was shown to not be effective on Silver Gulls or Crested Terns.
Bird repellent gel (Bird Free Gel' a non-harmful bird repellent to deter birds from roosting/nesting.	Engineering	Yes	No	Has been proven successful for gulls in the North Sea, though they have a more acute sense of smell. Is not considered to be suitable to the scale of operation of the facilities and efficacy on brown boobies, bridled terns and brown noddies would need to be trialled. Other methods are considered to be more effective over this method.

7.8.9 Acceptability assessment

The potential impacts of physical presence from Montara infrastructure and vessels during operations are considered 'Acceptable' in accordance with Section 4.4 based on the acceptability criteria outlined below. The control measures proposed are consistent with relevant legislation, standards and codes, and the environmental consequence is considered negligible.	
Policy & management system compliance	Jadestone's HSE Policy objectives are met. **Section 9** demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.
Social acceptability	Stakeholder consultation has been undertaken (**Section 6**), and no stakeholder concerns have been raised with regards to physical presence of seabirds as denoted by the PSZ and preclusions within it.
Environmental context	The artificial habitat within the Montara field is not the only place where migratory bird species are found. The bird species that roost and nest on the facilities represent a small percentage of total populations in the WA region and a negligible proportion of global populations. The proposed management strategies may displace some birds to other parts of the facility or to alternate, natural, coastlines. Seabirds will still be able to undertake foraging, feeding and nesting behaviors on the facility and through ongoing monitoring and housekeeping protocols the potential impacts of any management strategies will continue to be reviewed and revised. At the time of decommissioning of the facilities, full displacement of resting and nesting seabirds is anticipated. Displacement due to removal of the artificial habitat is likely to force individuals to migrate to natural coastlines to seek alternate rooting and nesting sites. The potential impact is considered acceptable after consideration of: • Potential impact pathways; • Preservation of critical habitats; • Protected, but not threatened, vulnerable or endangered, status of commonly observed seabirds at the facilities; • Localised biodiversity enhancements attributable to artificial habitat that is unlikely to contribute adversely on pre-installation regional and global population status once completely removed; • Assessment of key threats as described in species and Area Management/ Recovery plans; • Consideration of North-West Bioregional Plan; and • Principles of ecologically sustainable development (ESD).

Conservation and management advice	The Wildlife Conservation Plan for Seabirds (CoA, 2020) states that an action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will: • substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for migratory species; or • seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. Due to the size of the populations on the FPSO and WHP compared to the significant population at Ashmore Reef, any actions implemented are not considered in contradiction of the EPBC Act or the Wildlife Conservation Plan for Seabirds as the actions will not modify or destroy a *substantial* area of important (natural) habitat or seriously disrupt the life cycle of an *ecologically significant proportion* of the population. The Wildlife Conservation Plan for Seabirds (CoA, 2020) further recognizes the potential impacts that offshore oil and gas activities can have on seabirds and recommends implementing a comprehensive monitoring program of impacts of these offshore platforms that should include nature, timing and extent of any bird mortality caused by these structures. Weekly and bi-annual monitoring as well as implementation of passive and active management strategies (namely deck-cleaning to manage impacts of debris) as well as reporting of any incidents of injury or mortality to seabirds addresses this requirement. Jadestone has had regard to the representative values of the protected areas within the EMBA, and the respective management plans and other published information. Impacts from physical presence and operation (including passive and active management strategies) of facilities will have a negligible impact on any of the social and ecological objectives and values, of any AMPs, or state marine parks. This is consistent with the objectives of the protected area management plans (Appendix C) and considered acceptable. No other conservation of management advice or plans specifically identified physical presence and operation (including passive and active management strategies) of facilities as a threat to seabirds.

7.9 Seabed Disturbance

7.9.1 Description of aspect

Seabed disturbance	The FPSO, WHP and subsea infrastructure are static facilities fixed to the sea floor. Temporary or permanent direct loss of benthic habitat and associated biota will/has occurred under the footprint of subsea infrastructure. The Montara FPSO and other infrastructure have been in place since commissioning in 2012. In the event that: • The installation of additional or replacement subsea infrastructure (e.g. tie in spools, freespans, umbilicals, wet parked equipment) is required, this will create further disturbance to the seabed in the immediate area of existing infrastructure • There may be some minor seabed disturbance associated with, routine inspection, maintenance and repair (IMR) activities and well intervention activities. It is expected, IMR activities may include but not be limited to the installation of concrete mattresses (or other physical structures to stabilise and protect infrastructure on the seabed), flowline span correction, the removal of risers and the interaction of remote operated vehicles (ROV). Such disturbances will be limited to the immediate vicinity of existing facilities, that is within tens of metres of the affected infrastructure. During IMR activities and well interventions, there may be vessel anchoring in the Operational Area. The physical presence of the FPSO, the WHP and subsea infrastructure is discussed in Section 7.7.

7.9.2 Impacts

Sensitive receptor	Impact description
Benthic receptors	Previous marine baseline surveys conducted within AC/L7 (outlined in Appendix C), revealed a homogenous, flat, featureless sandy habitat with low and patchy abundance of microbenthic faunal assemblages. The benthic habitats and communities in AC/L8, immediately adjacent to AC/L7 have not been surveyed. The bathymetry and water depths of AC/L7 and AC/L8 are similar and so the substrate and communities are expected to be similar. The potential impacts associated with seabed disturbance from IMR activities and light well interventions are: • Direct disturbance to benthic habitats and communities within the footprint of the Operational area • Temporary and localised increase in water column turbidity as a direct result of sediment disturbance The scale of habitat loss and seabed disturbance from the installation of new infrastructure, or due to disturbance during IMR or LWI activities are small limited tens of metres either side of existing infrastructure in comparison to the vast size of soft substrata habitats spanning the North-west Shelf. The impacted benthic habitats and associated biota are well represented in the region and there are no known areas of sensitive habitat (e.g. corals, seagrass) within the Operational Area.

7.9.3 Environmental performance

Aspect		Seabed disturbance		
Performance outcome		No unintentional disturbance to the seabed and marine environment in the Operational Area Seabed disturbance limited to planned activities and defined locations		
ID	**Management Control**	**Performance standards**	**Measurement criteria**	**Responsibility**
073	Visual seabed surveys undertaken to define activity locations	Prior to commencement or as part of integrity, maintenance or repair work on subsea infrastructure, a survey using ROV/ AUV/ diving will be undertaken which will include a visual survey of the seabed within the footprint of the work area.	Survey record	Engineering Manager
074	Designated anchoring area	Offtake tanker anchoring within designated area only, as marked on charts.	Voyage Instruction	Marine Superintendent

7.9.4 ALARP assessment

On the basis of the impact and risk assessment completed, Jadestone considers the control measures described above are appropriate to reduce the impacts due to the seabed disturbance to ALARP. The residual risk ranking for this potential impact is considered Low. Additional controls considered but rejected are detailed below. No further controls are required and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
No additional infrastructure	Eliminate	No	No	Future production of the facility would not be possible without additional infrastructure or without vessels to replenish supplies required for safe operations.
No maintenance of subsea infrastructure	Eliminate	No	No	Safe operation of the facility could not occur without regular IMR or LWI intervention activities.

7.9.5 Acceptability assessment

The potential impacts of seabed disturbance from Montara infrastructure and vessels during operations are considered 'Broadly Acceptable' in accordance with the Environment Regulations, based on the acceptability criteria outlined below. The control measures proposed are consistent with relevant legislation, standards and codes.

Policy and management system compliance	Jadestone's HSE Policy objectives are met. Section 9 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.
Stakeholder and reputation	Stakeholder consultation has been undertaken (Section 6), and no stakeholder concerns have been raised with regards to seabed disturbance.
Environmental context and ESD	Disturbance is localised to immediately under or near to the footprint of Montara Facility and subsea infrastructure within the Operational Area. The impacted benthic habitats and associated biota are well represented in the region. The potential impact is considered acceptable after consideration of:

	• Potential impact pathways • Preservation of critical habitats • Assessment of key threats as described in species and Area Management/ Recovery plans • Consideration of North-West Bioregional Plan • Principles of ecologically sustainable development (ESD).
Conservation and management advice	There are no relevant management plans for – Seabed disturbance. Jadestone has had regard to the representative values of the protected areas within the EMBA, and the respective management plans and other published information. Impacts from seabed disturbance will have a negligible impact on any of the social and ecological objectives and values, of any AMPs, or state marine parks. This is consistent with the objectives of the protected area management plans (Appendix C), and considered acceptable.

7.10 Spill Response Activities

7.10.1 Description of aspect

Spill Response	In the event of a hydrocarbon spill, contingency spill response activities will be undertaken to reduce the level of impact to sensitive receptors within the environment. In summary, the response activities include:
	• Source control;
	• Monitoring, evaluation and surveillance;
	• Containment and recovery;
	• Natural recovery;
	• Surface dispersant application;
	• Shoreline protection and deflection;
	• Shoreline clean-up;
	• Oiled wildlife response;
	• Operational and scientific monitoring; and
	• Waste management.
	The Montara Operations Oil Pollution Emergency Plan (OPEP) provides further detail on how these strategies will be implemented.
	While the aim of undertaking these spill response activities is to reduce environmental impacts from the spill, there is the potential for these activities to create additional impacts or to exacerbate existing oil spill impacts. Poorly selected or implemented spill response activities may therefore do more environmental harm than good.
	Spill response activities will involve:
	• The use of vessels which are required at a minimum to display navigational lighting. Response vessels may operate near shoreline areas during spill response activities
	• Spill response activities may also involve onshore operations including the use of vehicles and temporary camps which may require lighting
	• The use of aircraft and vessels which will generate noise both offshore and in proximity to sensitive receptors in coastal areas
	• The use of equipment on coastal areas during clean-up of shorelines (e.g. pumps)
	• The use of fuels to power vessel engines, generators and mobile equipment that will result in emissions of greenhouse gases (GHG) such as carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O), along with non-GHG such as sulfur oxides (SOx) and nitrous oxides (NOx)
	• Operational discharges including those routine discharges (Section 7.4) from vessels used during spill response. In addition, there are specific spill response discharges and waste creation that may occur, including:
	  ○ Cleaning of oily equipment/vessels
	  ○ Flushing water for the cleaning of shoreline habitats
	  ○ Sewage/putrescible and municipal waste on vessels
	  ○ Creation, storage and transport of oily waste and contaminated organics.
	• Dispersant operations
	• Movement and operation of vessels, personnel and equipment on the shoreline areas including the marine/ coastal habitats and fauna, which may include those habitats and fauna within protected areas
	• Oiled wildlife response activities may involve deliberate disturbance (hazing), capture, handling, cleaning, rehabilitation and release of wildlife.

7.10.2 Impacts

The OPEP provides detail on how response strategies will be implemented.

The impacts below describe potential impacts from spill response activities to all known sensitive receptors in the EMBA. The key environmental impacts associated with the potential spill response strategies are provided together with a description of associated potential impacts to sensitive receptors. Some of these hazards are unique to spill response (e.g. shoreline clean-up, oiled wildlife response). Some hazards common to the operations have also been detailed and re-evaluated on the basis that the environment within which spill response activities take place may be of higher sensitivity than the environment within which the Montara operations occurs.

Light

Spill response activities will use vessels, which are required at a minimum to display navigational lighting and have night safety lighting. Field based spill response activities will only occur in daylight hours, although as some vessels may be moored overnight there is limited potential for night light spill from vessels to impact marine and coastal fauna habitats.

Lighting may cause behavioural changes to fish, birds and marine turtles which can have a heightened consequence during key life-cycle activities, for example turtle nesting and hatching. Turtles and birds, which includes threatened and migratory fauna (Section 5.4), have been identified as key fauna susceptible to lighting impacts that occur within the EMBA. Section 7.1 provides further detail on the nature of light impacts to fish, birds and marine turtles.

Spill response activities which require lighting may take place in protected areas important to turtles and birds, for example nearshore Ashmore Island, Browse Island, Scott Reef and Indonesian and Timor Leste coasts/ islands.

Noise

Spill response activities will involve the use of aircraft and vessels which will generate noise both offshore and in proximity to sensitive receptors in coastal areas. Spill response activities will also involve the use of equipment on coastal areas during clean-up of shorelines and monitoring activities (e.g. pumps, generators and vehicles), and for accessing shoreline areas (e.g. vehicles).

Underwater noise from the use of vessels may impact marine fauna, such as fish, marine reptiles and marine mammals which may impact key life-cycle process (e.g. spawning, breeding, calving). Underwater noise can also mask communication or echolocation used by cetaceans. Section 7.2 provides further detail on these impacts from vessels.

Spill response activities using vessels have the potential to impact fauna in protected areas; this includes the whale migration pathways (Figure 5-9).

Noise and vibration from terrestrial activities on shorelines also has the potential to cause behavioural disturbance to coastal fauna including protected and migratory species of shorebirds and turtles. Shoreline activities involving the use of noise generating equipment may take place in important nesting areas for turtles and/ or roosting/ feeding areas for shorebirds; this includes potential sites at Ashmore Island, Browse Island, Indonesian Islands and Timor Leste (Figure 5-13).

As a consequence of impacts to fauna – including shorebirds, marine mammals, fish and sharks – noise has the potential to impact supported industries such as tourism and commercial fishing and recreational values of marine parks.

Atmospheric Emissions

The use of fuels to power vessel engines, generators and mobile equipment used during spill response activities will result in emissions of greenhouse gases (GHG) such as carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O), along with non-GHG such as sulphur oxides (SOx) and nitrous oxides (NOx).

Emissions will result in localised decrease in air quality. Section 7.3 provides more detail on potential impacts.

Atmospheric emissions from spill response equipment such as the use of mobile equipment, vessels and vehicles may result in a temporary, localised reduction of air quality in the environment immediately surrounding the emission points.

Operational Discharges

Operational discharges include those routine discharges from vessels used during spill response which may include:

- Bilge water
- Deck drainage
- Putrescible waste and sewage
- Cooling water from operation of engines.

In addition, there are specific spill response discharges and waste creation that may occur, including:

- Decanting oily water back into the marine environment from offshore containment and recovery operations
- Cleaning of oily equipment/vessels and vehicles
- Flushing water for the cleaning of shoreline habitats
- Sewage/putrescible and municipal waste at camp areas
- Creation, storage and transport of oily waste and contaminated organics.

Operational discharges from vessels may create a localised and temporary reduction in marine water quality. Effects include nutrient enrichment, toxicity, turbidity, temperature and salinity increases as detailed in Section 7.4. However, given vessel use may occur in shallower coastal waters during spill response activities a different set of receptors may be impacted than previously described. Discharge could potentially occur adjacent to marine habitats such as corals, seagrass, macroalgae, and in protected areas, which support a more diverse faunal community, however discharges will still be very localised and temporary.

The decanting of oily water back into the marine environment during containment and recovery activities has the potential to impact marine organisms from the toxic effects from hydrocarbons, however, given the marine environment is already contaminated with hydrocarbons there is limited potential for an increase in impact, unless the discharge spreads the contamination to a previously uncontaminated area.

Cleaning of oil contaminated equipment, vehicles and vessels, has the potential to spread oil from contaminated areas to those areas not impacted by a spill, potentially spreading the impact area and moving oil into a more sensitive environment.

Flushing of oil from shoreline habitats is a clean-up technique designed to remove oil from the receptor that has been oiled and remobilise back into the marine environment and result in further dispersion of the oil. The process of flushing has the potential to physically damage shoreline receptors such as mangroves and rocky shoreline communities, increase levels of erosion, and create an additional, and potentially higher, level of impact than if the habitat was left to bio-remediate.

Sewage, putrescible and municipal waste will be generated from onshore activities at temporary camps which may include toilet and washing facilities. These wastes have the potential to attract fauna, impact habitats, flora and fauna and reduce the aesthetic value the environment areas, which may be within protected areas. The creation, storage and transport of oily waste and contaminated organics has the potential to spread impacts of oil to areas, habitats and fauna not previously contaminated.

Physical Presence

The movement and operation of vessels, vehicles, personnel and equipment during spill response activities has the potential to disturb the physical environment, marine/ coastal habitats and fauna, and may also impact cultural and heritage values of an area. The movement of vessels could introduce invasive marine species attached as biofouling or included within ballast water to nearshore areas, while vehicle and equipment movement could spread non-indigenous flora and fauna. The use of vessels may disturb benthic habitats in coastal waters including corals, seagrass, macroalgae and mangroves. Impacts to habitats from vessels include damage through the deployment of anchor/chain, nearshore booms and grounding. Vessel use in shallow coastal waters also increases the chance of contact or physical disturbance with marine megafauna such as turtles and dugongs. Booms create a physical barrier on the surface waters that has the potential to injure or entangle passing marine fauna that are either surface breathing or feeding.

Vehicles, equipment and personnel used during shoreline response activities have the potential to damage coastal habitats such as dune vegetation, samphire and mangroves and habitats important to threatened and migratory fauna including nests of turtles and birds and bird roosting/feeding areas. Shoreline clean-up may involve the physical removal of substrates that could cause impact to habitats and coastal hydrodynamics and alter erosion/accretion rates.

Oiled wildlife response may include the hazing, capture, handling, transportation, cleaning and release of wildlife susceptible to oiling such as birds and marine turtles. While oiled wildlife response is aimed at having a net benefit, poor response can potentially create additional stress and exacerbate impacts from oiling, interfering with life-cycle processes, hampering recovery and in the worst instance increasing levels of mortality.

Impacts from invasive marine species released from vessel biofouling include out-competition, predation and interference with other ecosystem processes. In shallow coastal areas, such as areas where vessel-based spill response activities may take place, conditions are likely to be more favourable for invasive marine species.

Impacts from invasive terrestrial species are similar in that the invasive species can out-compete local species (e.g. weeds) and interfere with ecosystem processes. Non-native species may be transported attached to equipment, vehicles and clothing. Such an introduction would be especially detrimental to wilderness areas or protected terrestrial reserves which have a relatively undisturbed flora and fauna community.

The disturbance to marine and coastal natural habitat, as well as the potential for disruption to culturally sensitive areas, which may occur in specially protected areas, may have flow on impacts to socio-economic values and industry (e.g. tourism, fisheries).

Chemical dispersant application

The application of chemical dispersants has the aim of enhancing oil dispersion and entrainment into the water column, thereby avoiding or reducing the volume of oil that could reach the shoreline.

While the aim of chemical dispersants is to provide a net benefit to the environment, the use of dispersants has the potential to increase the impact to receptors under the sea surface, including coral, seagrass and macroalgae, by increasing entrained oil and dissolved aromatic hydrocarbon concentration. These sensitive receptors are generally located in shallow coastal areas of the mainland and offshore islands, away from where surface dispersants would be applied.

Increased entrained and aromatic hydrocarbon concentration may also impact on marine fauna either directly or through impacts to subsea habitats. Direct impacts are most likely to be encountered by filter feeding invertebrates, fish and sharks. Fish and sharks include threatened/migratory species, which may ingest oil or uptake toxic compounds across gill structures. As a result of increased impact to marine fauna

and subtidal habitats, including those that represent values of protected areas, socio-economic impacts may be felt through industries such as tourism and commercial fishing.

A detailed description of the impacts from entrained oil and aromatic hydrocarbons, which may be exacerbated by the application of chemical dispersants, is provided in Section 8.7.

Disruption to other users

Spill response activities may involve the use of vessels, equipment and vehicles in areas used by the general public or industry. The mobilisation of spill response personnel into an affected area may also place increased demands on local accommodation and other businesses.

Shoreline response activities will restrict access and activities along affected shorelines which may include areas popular for tourism. Fisheries and aquaculture activities (e.g. pearl farming) may also be suspended in areas potentially affected by oil without necessarily being contacted by oil. Tourism and fisheries may be important economic drivers for the economies of local townships. Townships may also be impacted through the influx of spill responders using facilities for accommodation and forward operations areas which may negatively impact local businesses..

Table 7-22: Impact assessment of spill response operations

Sensitive receptor	Impact description
Light	The receptors considered most sensitive to lighting from vessel and shoreline operations are seabirds/ shorebirds and marine turtles. Emerging turtle hatchlings on the beaches are particularly sensitive to light spill, however, the potential impact is considered negligible as stated below. Following restrictions on night time operations by spill response vessels, which will demobilise to mooring areas offshore with safety lighting only, light impacts from vessels are considered to be *Negligible*. The positioning of temporary camps will be done in consultation with DBCA (for WA State waters) and any camp lighting will be restricted to minimum directional lighting that will reduce fauna disturbance. Following these controls, the consequence of shoreline lighting is considered *Negligible*. These species are likely to be values of the protected area they occur in, and the impact to the protected area from light is also considered *Negligible*. Response activities may occur within the highly sensitive locations of Ashmore Reef and Cartier Island, (priority receptors) however light impacts to the key values within the applicable Management Plans are also expected to be *Negligible* due to reasons described above.
Noise	The receptor considered most sensitive to vessel noise disturbance are cetaceans. The humpback whale and Blue pygmy whale (distribution) BIAs overlaps the EMBA and species may be vulnerable during their peak activity season (Jul–Oct; Apr–Aug) as they migrate north/ south through the EMBA Section 5.4.3. Control measures, by means of compliance to Part 8 of EPBC Regulations, will reduce potential impacts from response activities within this area during whale activity seasons. Given the activity will only introduce vessel engine noise, the consequence is considered to be consistent with noise impacts from activities (*minor*). With respect to noise from onshore operations (mobile equipment and vehicles), nesting, roosting or feeding birds are considered to be the most sensitive to noise, in particular shorebirds may be aggregating at Ashmore Island, Browse Island, Timor Leste and Indonesian coast lines. However, the equipment used is not considered to have excessive sound levels and following consultation with the relevant Control Agency and Jurisdictional Authority on the location of temporary camp areas, the consequence to birds from noise is expected to be *Negligible*. These species are likely to be values of the protected area they occur in, and the impact to the protected area from noise is also considered *Negligible*.

Sensitive receptor	Impact description
Atmospheric	Atmospheric emissions from spill response equipment will be localised and impacts to even the most sensitive fauna, such as birds, are expected to be *Negligible*.
Operational discharges	Operational discharges from vessels may create a localised and temporary reduction in marine water quality, which has the potential to impact shallow coastal habitats in particular, however, following the adoption of regulatory requirements for vessel discharges, which prevent discharges close to shorelines, discharges will have a *Negligible* impact. Furthermore, washing of vessels and equipment will take place only in defined offshore hot zones preventing impacts to shallow coastal habitats. Onshore, the use of flushing water has the potential to damage sensitive shoreline and intertidal habitats, e.g. mangroves, however low pressure flushing only will be used, preventing further damage to habitats or erosion of sediments. For sensitive habitats, the deployment of booms will be considered to retain flushed hydrocarbons, if this presents a net benefit. Following these controls the use of flushing to clean shorelines and intertidal habitats is seen to have a *Negligible* additional impact. The cleaning of contaminated vehicles and equipment onshore has the potential to spread oily waste and damage habitats if not contained. Decontamination units will be used during the spill response thus containing waste and preventing any secondary contamination. The consequence of cleaning discharges is therefore ranked as *Negligible*. Sewage, putrescible and municipal waste generated onshore will be stored disposed of at approved locations. There will be no discharges of this waste to the marine or coastal environment and the likelihood of an unplanned discharge is considered *Unlikely* following those controls provided. In the event that those controls failed and secondary contamination or loss of municipal waste occurred the additional consequence to coastal habitat has been assessed as *Minor.* The Risk ranking for an *Unlikely* event with a *Minor* consequence is *Low*. The response activities may occur within the Protected Areas, response activities related discharge impacts to the key values within the Protected Area also expected to be Negligible, with low risk of any unplanned releases.
Physical presence	*Physical presence of nearshore response vessels and spill equipment* The use of vessels and nearshore booms has the potential to disturb benthic habitats including sensitive habitats in coastal waters such as corals, seagrass, macroalgae and mangroves. A review of shoreline and shallow water habitats, and bathymetry, and the establishment of demarcated areas for access and anchoring (along with other controls in Section 7.7.3) will reduce the level of impact to *Negligible*. *Onshore vehicle movements, equipment use and camp set-up* The use and movement of vehicles, equipment and personnel during shoreline response activities has the potential to disturb coastal habitats such as dune vegetation, samphire and mangroves, and important habitats of threatened and migratory fauna including nests of turtles and birds and bird roosting areas. A clean-up can also involve physical removal of substrates that could cause impact habitats, fauna and alter coastal hydrodynamics. As with vessel use, an assessment of appropriate vehicles and equipment to reduce habitat damage, along with the establishment of access routes/demarcation zones, and operational restrictions on equipment/ vehicles use will limit sensitive habitat damage and damage to important fauna areas. The establishment of temporary camp areas will be done with consultation with the relevant Control Agency and Jurisdictional Authority and with a Heritage Advisor if access is sought to culturally significant areas. Following these controls the overall resultant consequence to the physical environment and habitat is assessed as *Minor*, indicating that there may be a detectable reduction in habitat area from response activities (as separate from spill impacts), but recovery will be relatively rapid once spill response activities cease. As with all spill response activities this disturbance will only occur if there is a net benefit to accessing and cleaning shoreline areas. *Wildlife response*

Sensitive receptor	Impact description
	The main direct disturbance to fauna would be the hazing, capture, handling, transportation, cleaning and release of wildlife susceptible to oiling impacts, such as birds and marine turtles. This would only be done if this intervention were to deliver a net benefit to the species but may result in a *Minor* consequence following close adherence to the WA Oiled Wildlife Response Plan. *Physical disturbance in protected area* These habitats/environments are likely to be values of the protected area they occur in, and the impact to the protected area from physical disturbance is also considered *Minor*.
IMS	*Invasive Marine Species* The mobilisation of vessels, vehicles and equipment into sensitive nearshore and coastal habitats brings the potential for non-indigenous and potentially invasive species, either attached as biofouling, in the case of vessels or as seeds/plant propagules or invasive fauna within equipment and vehicles. The release of such species is an unplanned event which is considered to have a likelihood of *Unlikely* following vessel risk assessments (on all international and interstate Australian vessels) and pre-cleaning and quarantine inspections of onshore equipment. The consequence of an outbreak of an invasive marine species is considered *Major* in the nearshore/ coastal environment, which is more conducive to establishment of invasive marine species than deeper offshore waters. Given the Unlikely likelihood the overall Risk Ranking is *Medium*.
Disturbance to other users	The use of vessels in the nearshore and offshore environment and spill response activities at shoreline locations, and within townships, may exclude general public (community villages) and industry use. It should be noted that this is distinct from the socio-economic impact of a spill itself which would have a far greater detrimental impact to industry and recreation. Following the controls outlined in Section 7.9.3 it is considered that the additional impact of spill response activities on affected industries would be *Minor*.
Dispersants	*Dispersants* While the aim of chemical dispersants is to provide a net benefit to the environment, the use of dispersants has the potential to increase exposure to habitats under the sea surface, including coral, seagrass and macroalgae, and to marine fauna (particularly fish and invertebrates) by increasing entrained oil concentration. These receptors are generally located in shallow coastal areas of the mainland and offshore islands. Increased entrained and aromatic hydrocarbon concentration can contact marine fauna, and are most likely to be encountered by plankton, benthic filter feeding invertebrates, fish and sharks. Fish and sharks include threatened/ migratory species, which may ingest oil or uptake toxic compounds across gill structures. As a result of increased exposure to marine fauna and subtidal habitats, socio-economic impacts may be felt through industries such as tourism and commercial fishing. During a response, the area over which entrained oil will increase will be a function of the area treated with aerial dispersants. The increase in entrained oil concentration will be short term (minutes to hours) as the floating oil moves into the water column after which dispersion of the entrained oil will see concentrations decrease. A description of the potential impacts from entrained oil and aromatic hydrocarbons from a maximum credible worst-case spill is provided in Section 8.7. Jadestone provided detailed assay information of Montara crude oil (Leeder 2013) to RPS to commission a report (RPS 2018), to assess whether the application of chemical dispersants reduced the probability of contact to shorelines. Key findings of this report include a reduction in the predicted probabilities for shoreline contact by 40% total volume ashore, and greater prediction times to sensitive locations following application of chemical dispersant. These key findings support the use of chemical dispersants on Montara crude as they have potential to reduce hydrocarbon contact with sensitive locations and increase the time of the hydrocarbon contact to shorelines, thus giving time for other response strategies to take effect and further reduce impacts. Section 7.10.3 provides a summary evaluation of the selected strategies performance outcomes and controls, and the benefit that will be provided in applying this strategy.

7.10.3 Environmental performance

Environmental performance standards for oil spill response are provided in the OPEP.

7.10.4 ALARP assessment

The purpose of implementing spill response activities is to reduce the severity of impacts from an oil spill to the environment. However, if the strategies do more harm than good (i.e. they are not having a net environmental benefit) then the spill response is not ALARP. The key process in determining if the strategies employed are having a net benefit is the net environmental benefit analysis (NEBA). A NEBA is conducted for each operational period during a response to ensure the best strategies are being implemented and the ALARP principle is regularly tested (refer to the OPEP for further detail). The strategic NEBA has been conducted for chemical dispersant operations (refer to the OPEP) indicates an overall positive effect, based on reduced shoreline loading of oil and spatial extent of floating oil above the impact threshold.

It is best practice to ensure all possible response strategies have been evaluated and, if there is the potential to produce a net environmental benefit, to have them in the toolbox ready for implementation if determined feasible for the scenario (IPIECA (2015). Contingency planning for oil spill on water: Good practice guidelines for the development of an effective spill response capability).

For each of the environmental hazards associated with spill response strategies an ALARP evaluation was conducted as part of the hazard identification workshop (HAZID). A number of controls were identified as industry and/ or Jadestone standard controls that will be considered during a spill response while additional controls were evaluated and either accepted or rejected on the basis of the ALARP principal, i.e. a decision was based on whether the additional control would have a cost/effort disproportionate to the level of impact reduction it would provide. Results of the evaluation are shown in Section 8.7.

Note that some of the potential impacts to fauna from spill response activities can be beneficial in the prevention of oiling by acting as deterrents. For example, if shoreline operations are being undertaken at a turtle nesting or bird breeding site, fauna may avoid the location as disturbed by noise or people and thereby not be oiled.

7.10.5 Acceptability assessment

The potential impacts of spill response activities are considered 'Acceptable' in accordance with the Environment Regulations, based on the acceptability criteria outlined below. The control measures proposed are consistent with relevant legislation, standards and codes.	
Policy and management system compliance	Jadestone's HSE Policy objectives are met. Section 9 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.
Stakeholders and reputation	Stakeholder consultation has been undertaken (Section 6), and no stakeholder concerns have been raised with regards to spill response activities. During any spill response, a close working relationship with key regulatory bodies (e.g. DoT, DBCA, AMSA, DEPW) will occur and thus there will be ongoing consultation with Relevant Persons during response operations.
Laws and standards	Jadestone is obligated to respond to a hydrocarbon spill under the following legislative instruments: • OPGGS Act Section 572A-F – polluter pays for escape of petroleum • AMSA Marine Orders Part 91 • *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* • Protection of the Sea (Civil Liability for Bunker Oil Pollution Damage) Act 2008

Industry best practice	Response planning and preparedness undertaken in accordance with:
	• National Plan for Maritime Environmental Emergencies (AMSA 2020)
	• AMOSPlan (AMOSC 201721)
	• NOPSEMA Guidance Notes (e.g. Oil Pollution Risk Management Guidance Note July 2021)
	• DoT Offshore Petroleum Industry Guidance Note, Marine Oil Pollution: Response and Consultation Arrangement July 2020
	• DoT OSCP (2015)
	• State Hazard Plan – Maritime Environmental Emergencies (MEE), 2023
	• Fingas, M.F. (2012) The Basics of Oil Spill Clean-up. CRC Press. Florida, United States of America.
	• ITOPF Technical Information Papers including:
	  ○ ITOPF (2014) Technical Information Paper Dispersant Use
	  ○ ITOPF (2024). ITOPF Members Handbook 2023/2024
	  ○ ITOPF (2014) Technical Information Paper Clean-up of oil from shorelines
	  ○ ITOPF (2013). Technical Information Paper Use of Booms in oil pollution response ·
	• IPIECA International Association of Oil and Gas Producers Good Practice Guide Series including:
	  ○ IPIECA-IOGP. (2023) Oil spill Exercises: Good practice guidelines for the development of an effective exercise programme
	  ○ IPIECA-IOGP. (2015) A Guide to Oiled Shoreline Clean-up Techniques: Good practice guidelines for incident management and emergency response personnel
	  ○ IPIECA-IOGP (2015) Oil spill preparedness and response: an introduction
	  ○ IPIECA-IOGP (2015) Contingency planning for oil spills on water Good practice guidelines for the development of an effective spill response capability
	• Oil Spill Response (OSRL) handbooks including:
	  ○ Shoreline operations handbook
	  ○ Containment and recovery handbook
	Dispersant application field guide

Environmental context and ESD	The worst-case credible spill scenario for the operating activities is as a result of a collision between the FPSO and another large vessel (e.g. third-party offtake tanker). The release of oil occurs over five hours and the area of dispersion over which the oil travels is between Eighty Mile Beach and Darwin. The oil is primarily floating and sensitive receptors at risk include seabirds, shorebirds, marine fauna and coastal habitats. While some response strategies (e.g. application of chemical dispersants and booming operations) may pose additional risk to sensitive receptors, to not implement response activities would likely result in greater negative impact to the receiving environment and a longer recovery period. Response activities are undertaken in accordance with controls which reduce and/or prevent additional risks. The mutual interests of responding and protecting sensitive receptors from further impact due to response activities is managed through the use of a net environmental benefit analysis during response strategy planning in preparedness arrangements as well as during a response. The potential impact is considered acceptable after consideration of: • Potential impact pathways • Preservation of critical habitats • Assessment of key threats as described in species and Area Management /Recovery plans • Consideration of North-West Bioregional Plan

	• Principles of ecologically sustainable development ESD.
Conservation and management advice	Jadestone will have regard to the representative values of the reserves and other information published and endeavour to ensure that priority is given to the social and ecological objectives and values, of any AMPs, or state marine parks impacted by spill response activities to ensure that the objectives of the management plans are not contravened (Appendix C). Noting 'Emergency response' is permitted in all AMPs and State marine parks. Actions required to respond to oil pollution incidents, including environmental monitoring and remediation, in connection with activities authorised under the OPGGS Act may be conducted in all zones. The Director will be notified in the event of an oil pollution incident that occurs within, or may impact upon, an Australian Marine Park and, so far as reasonably practicable, prior to a response action being taken within a marine park. The Management Plans for EPBC protected species that identify light, noise and other risks in Sections 7.1 to 7.8 apply here. The 'Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species' will be applied/used as guidance in the event of an oil spill.

8. ASSESSMENT – ACCIDENTAL EVENTS

8.1 Unplanned Flaring

8.1.1 Description of hazard

Unplanned flaring	The field design of the Montara production operation includes reinjection of produced gas. Reinjection of produced gas occurs from the FPSO by way of a gas reinjection compressor sending gas back into the reservoir where the reinjected gas facilitates production from subsea wells in the Skua, Swift and Swallow fields. From time to time however, reinjection of produced gas is unable to occur and produced gas that would otherwise be reinjected is released to the flare. The primary circumstance leading to produced gas being flared rather than reinjected would be due to the reinjection system being unavailable or other gas-fuelled equipment on the FPSO not requiring gas. In the circumstance of gas reinjection not being available, flaring rates may increase by up to two-fold. Unplanned flaring has occurred in the past due to a number of reasons including: • Reinjection compressor reliability • Unplanned shutdown events leading to flaring during blowdown and restart • Process instability leading to increased flaring rates from separation train

8.1.2 Impacts and risks

Aspect	**Impact description**
Emissions	Emissions due to flaring can reduce air quality in the immediate vicinity of the Facility or vessels present in the Operational Area. While the quantities of gaseous emissions during unplanned flaring are high relative to planned flaring rates, the volumes flared during unplanned production circumstances are expected to quickly dissipate into the surrounding atmosphere. As Montara Facility operations occur in offshore waters, the combustion of fuels in such remote locations will not impact on air quality in coastal towns or other sensitive locations. No impacts to social receptors are therefore expected. Unplanned flaring rates are expected to not occur for extended durations (months at most) and as such impacts to air emissions are considered *negligible.* Potential impacts from increased emissions due to unplanned flaring have been accounted for in the BAU and mitigated forecasts as described in Section 7.3.
Light	There is a potential for marine fauna individuals (including marine reptiles and seabirds; refer Section 7.1) to be impacted by light emissions from unplanned flaring. However, as the Operational area does not contain any significant feeding, breeding or aggregation areas for fish it is more likely there will be individuals traversing the area then large groups of species. As such impacts to marine fauna are considered ***negligible***.
Likelihood assessment	
Unlikely	A set of control measures and checks have been proposed to ensure that the risks of unplanned flaring have been minimised. Given the controls in place, the likelihood of unplanned flaring resulting in a negligible consequence is considered likely based on the operational and maintenance activities in place. Therefore, the overall risk ranking is considered conservative. The worst-case likelihood assessment with controls in place was unlikely.

Consequence	**Likelihood**	**Ranking**
Negligible	Unlikely	Low

8.1.3 Environmental performance

Hazard		Unplanned flaring		
Performance outcome		**Manage GHG emissions to comply with the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015** **Maintain and service emissions producing equipment to reduce unplanned flaring**		
ID	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
75	Performance Standard Report (MV-70-REP-F-00002) ensures integrity and maintenance requirements maintained	Pipework and pressure vessels will be maintained to Australian Standards	Satisfactory close out of work instruction	Engineering Manager
76		Unplanned flaring will be managed to comply with NGER safeguarding constraints	Daily Production Reports	Operations Manager
77	CMMS work instruction	Gas reinjection compressor and turbine maintained and operated to manufacturers recommendations	Satisfactory close out of work instruction	Maintenance and Integrity Team Lead
78	Gas reinjection system is maintained to minimise downtime	Critical spares for the gas reinjection system will be managed to reduce downtime of the system in the event of malfunction, damage or maintenance requirements. This includes critical spares for the turbine, gearbox, choke valves and compressor and control valves A spare core is also maintained to enable re-start of the compressor in the event of failure	Spares inventory	Engineering Manager
79	Maintenance and servicing of the flaring system	The flare system and tip are maintained and inspected to ensure efficient burning. This includes testing of the ignition system	CMMS records show maintenance and testing of flare and flare tip	Maintenance and Integrity Team Lead
80		A maintenance and servicing contract is in place to maintain the injection compressor to ensure reliability and availability is as high as possible	Monthly review of failure rates TA quarterly meeting to review systemic trends	Engineering Manager
81		Combustion equipment is maintained in accordance with the CMMS to ensure efficient operation	CMMS shows maintenance is scheduled and completed	Maintenance and Integrity Team Lead

8.1.4 ALARP assessment

On the basis of the impact and risk assessment completed, Jadestone considers the control measures described above are appropriate to manage unplanned flaring occurrences and durations to ALARP. Additional controls considered but rejected are detailed below. The potential impacts are considered Tolerable as they are within the green category (negligible impacts). No further controls are required and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
All emissions producing equipment is removed	Eliminate	No	N/a	Atmospheric emissions from production and operating equipment including vessels and helicopters is required to undertake the Activity. Equipment cannot be removed completely.
All equipment in the gas reinjection system is allocated a spare in inventory keeping	Substitute	No	No	Purchasing and maintaining equipment spares for the whole gas reinjection system is not practicable from a cost or maintenance perspective. As a compromise spares of some equipment will be provided for where available and obtainable. Operational consumables are kept to support startup/commissioning/operational/ maintenance activities . This includes items such as system filtration elements and gaskets, o-rings and seals. Jadestone have a consolidated ownership report that details all parts including operational consumables, critical and non-critical items for the facilities gas turbine engines. Critical parts are generally of a proprietary design and typically include higher cost items. Typical critical items include fuel control valves, pumps, motors, variable frequency drives, actuators, bleed valves, fuel injectors control modules, etc Non-critical items may or may not be of a proprietary design and typically include lower cost items. Typical non-critical items include transmitters, switches, solenoid valves, pressure regulators, miscellaneous electrical items, etc.
Topside processing of production allows recycle of gas generated between production treatments stages 2 and 3 to allow gas capture at these points and recycle of gas to the first production stage	Engineering	Yes	No	While recycle of gas from production stages 2 and 3 will reduce flared emissions, at this stage cost effectiveness of this modification is not justifiable (approx. cost of $1M).

None identified	Isolation	N/a	N/a	The Activity is located at distance from sensitive receptors and the coastline.
None identified	Administrative	N/a	N/a	Compliance with relevant and appropriate MARPOL requirements
Steam facilitating low opacity emissions currently there is no steam line running to the flare tip because the original engineering design did not include this feature. A steam system would need to be supplied with steam 24 hours per day in the event it was required for combustion emission management (i.e. it needs to be instantaneously operable when required). This would place an operational load on the boiler which is the equipment that would supply steam. The boiler system may need to be redesigned to enable the steam supply function to the flare tip (the cost for re-engineering the boiler has not been considered in this assessment). The cost for design, installation and commissioning is estimated to be approx. $0.5M cost.	Engineering	Yes	No	No parties (e.g. air force, navy, border force, local users) have complained or reported dark emissions at Montara. The cost for the improvement versus the benefit that would be achieved is not ALARP.
High pressure water cleaning to create white smoke: as for the steam cleaning system, the flare system at Montara has not included this function within the original design of the facility. The cost that would be incurred due to engineering design, construction and commissioning of a high-pressure water cleaning system at the flare tip is estimated at approx. $0.3M.	Engineering	Yes	No	No parties (e.g. air force, navy, border force, local users) have complained or reported dark emissions at Montara. The cost for the improvement versus the benefit that would be achieved is not ALARP.
Increased flaring: another option is to increase flaring in the event of dark smoke emissions due to lack of oxygen at the flare tip. Increased flaring results in better combustion at the flare tip due to the sonic design of flare and thereby a reduction in the opacity of emissions.	Administrative	Yes	Yes	Not adopted – the increased flaring would be contrary to the intent of the environmental performance outcome of planned flaring operations. Jadestone is focused on ensuring that non-routine operational flaring events are kept to minimum by: Improving process stability – focus on process optimisation where e.g. reducing pressure

				fluctuations reduces the necessity to flare operational gas for short repetitive periods; Minimising impact of unplanned compression downtime – rotating equipment maintenance and sparing strategy ensures that key component spares are available

8.1.5 Acceptability assessment

The potential impacts due to unplanned flaring are considered acceptable in accordance with Section 4.4, based on the acceptability criteria outlined below. Control measures in relation to operations and maintenance of the gas reinjection system, and operation and maintenance of the flare system, to reduce the occurrence and duration of unplanned flaring, and the environmental consequence of the event is considered negligible.	
Policy and management system compliance	Jadestone's HSE Policy objectives are met. Section 9 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for the activities.
Stakeholders and reputation	Stakeholder consultation has been undertaken (see Section 6), and no stakeholder concerns have been raised with regards to impacts from unplanned flaring on sensitive receptors.
Environmental context and ESD	While there is light associated with unplanned flaring, the impact and risk assessment process indicates that light associated with unplanned flaring will not cause significant effects to marine fauna that may transit the Operational Area. While there is an increase in atmospheric emissions to the airshed due to unplanned flaring, emissions occur immediately around the facility and vessels. The impact and risk assessment process indicate that emissions due to unplanned flaring will not result in significant effects to the environment or receptors. It is recognised that unplanned flaring emissions contribute to the overall impacts associated with climate change. Further detail on the potential impacts associated with climate change have been described in Section 7.3, including in the context of maintaining intergenerational equity and meeting the UN SDGs as provided in Section 7.3.5. The potential impact is considered acceptable after consideration of: • Potential impact pathways • Preservation of critical habitats • Assessment of key threats as described in species and Area Management / Recovery plans • Consideration of North-West Bioregional Plan • Principles of ecologically sustainable development (ESD).
Conservation and management advice	Light is identified in the National recovery plan for Turtles (2017) as a threat to turtles on nesting beaches only. There will be no light spill on nesting beaches due to unplanned flaring and therefore the activity would not contravene the intent of the Recovery Plan. No Management Plans identified air emissions such as those associated with unplanned flaring as being a threat to marine fauna or habitats. Jadestone has had regard to the representative values of the protected areas within the EMBA, and the respective management plans and other published information. Impacts from light or air emissions from unplanned flaring will have a negligible impact on any of the social and ecological objectives and values, of any AMPs, or state marine parks. This is consistent with the objectives of the protected area management plans (Appendix C), and considered acceptable.

8.2 Marine Pest Introduction

8.2.1 Description of hazard

IMS	The Montara FPSO and the WHP are stationary facilities within the Operational area, located greater than 12 NM from the nearest land and in water depths of approximately 80 m. Both facilities were cleared as low risk installations[12] when they first arrived in Australia. Therefore, the FPSO and WHP do not present a biosecurity risk. There is the potential for support vessels or vessels used for RLWI and/ or intervention systems for the Montara Wellhead Platform wells (as described in 3.3.11) to transfer invasive marine pests (IMPs) from either international waters or Australian waters into the Operational Area and for them to establish in the local environment. There is also potential for invasive marine pests to be transferred into Australian Territory and coastal waters via support vessels when commuting to/ from State/ Territory or Commonwealth waters.

8.2.2 Impacts and risks

The introduction and establishment of marine pests can result in a localised impact on native marine fauna and flora, including:

- Competition, predation or displacement of native species
- Alteration of natural ecological processes
- Introduction of pathogens with the potential to impact human and/or ecological health
- Reduction and/or competition with commercial fish and aquaculture species
- Increased requirement for maintenance of vessels and marine infrastructure.
- Potential sources for the transfer and establishment of marine pests include:
- Biofouling on vessels and other external niches (e.g. propulsion units, steering gear and thruster tunnels)
- Biofouling of vessels or other internal niches (e.g. sea chests, strainers, seawater pipe work, anchor cable lockers and bilge spaces)
- Biofouling on equipment that routinely becomes immersed in water (including but not limited to equipment such as conductor casing and ROVs)
- Discharge of high risk ballast water taken up at international or domestic sources.

Ballast water is responsible for up to 30% of all IMS incursions into Australian waters, however, research indicates that biofouling (the accumulation of aquatic micro-organisms, algae, plants and animals on vessel hulls and submerged surfaces) has been responsible for more foreign marine introductions than ballast water (DAWR 2017).

[12] Consistent with the Biosecurity (Exposed Conveyances—Exceptions from Biosecurity Control) Determination 2016, an installation may be classed as low/acceptable risk if:

a) Only domestic persons or persons confirmed by the Department of Agriculture and Water Resources to be low risk are on board the installation; and

b) Only the following kinds of goods have ever been on board the installation: i) domestic goods; ii) low risk goods (i.e. fuel or petroleum); iii) goods that are to be deployed to the sea or the seabed; iv) goods that are in the possession of a domestic person who left the installation temporarily and later returned to it; or other equipment and goods determined by the Department of Agriculture and Water Resources to be low risk; and

c) The Director of Biosecurity is satisfied that the level of biosecurity risk associated with the installation is acceptable before the exposure to vessels occurs, as confirmed in a 'low risk letter'; and

d) During the period between receiving the 'low risk letter' from the Director of Biosecurity and the exposure to the vessels occurring, no persons boarded the installation or only domestic persons boarded the installation; and no goods were brought on board the installation or only goods of a kind referred to in paragraph (b) were brought on board the installation.

There are three key steps involved for a successful Introduced Marine Pest Species (IMPS) incursion:

- Colonisation and establishment of marine pest on a vector (e.g. vessel) in a donor region (e.g. home port)
- Survival of the organism on the vector during the voyage from the donor to the recipient region
- Colonisation (e.g. reproduction or dislodgement) of the recipient region by the marine pest, followed by successful establishment of a viable new population (Commonwealth Government 2009).

Colonisation requires there to be suitable environmental conditions for the particular species, including water temperature, water depth and habitat type. As such, most exotic marine pests introduced to Australian waters have distributions restricted to shallower coastal habitats.

Introduced marine pests (IMPs) are marine fauna or flora that have been introduced into an area beyond their natural range; they do not occur naturally in that environment. IMPs able to survive outside of their natural range may pose a significant threat to the Australian marine environment. It is estimated that Australia has over 250 established marine pests, and it is estimated that approximately one in six introduced marine species becomes pests (DoE 2015).

Following their establishment, eradication of marine pest populations is often impossible, limiting management options to ongoing control or impact minimisation. For this reason, increased management requirements have been implemented by Commonwealth and State agencies with the implementation of Australia's National System for the Prevention and Management of Marine Pest Incursions which looks at managing biofouling and ballast water.

The Australian Ballast Water Management Requirements (DAWE, 2020) set out the obligations on vessel operators with regards to the management of ballast water and ballast tank sediment when operating within Australian seas. These requirements include legislative obligations under the:

- Biosecurity Act 2015 (Biosecurity Act), and
- International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Convention).

The requirements provide guidance for vessel operators on best practice policies and apply to all vessels operating internationally and domestically in Australia. These requirements are also described in Jadestone's Marine Biosecurity Manual (JS-70-MN-G-00001).

Biofouling

The central Commonwealth instrument for the control of biofouling related IMS risks is the *Biosecurity Act 2015*. The *Biosecurity Amendment (Biofouling Management) Regulations* 2021 (biofouling regulations) entered into force on 15 June 2022. This introduced requirements for operators of all vessels to provide information on biofouling management practices prior to arriving in Australia.

Australian biofouling management requirements Version 2 (DAFF, 2023) provide details of Australia's pre-arrival reporting requirements and guidance for operators of international vessels that are subject to biosecurity control while in Australian territorial seas. The requirements set out vessel operator obligations for the management of biofouling when operating vessels under biosecurity control within Australian territorial seas to comply with the *Biosecurity Act 2015*. These requirements are also described in Jadestone's Marine Biosecurity Manual (JS-70-MN-G-00001).

The potential biofouling risk presented by vessels, including MODUs, relates to the length of time vessels are in Australian waters or operating outside Australian waters, the length of time spent at these location(s) and whether the vessels have undergone hull inspections, cleaning and application of new antifoulant coating prior to operating in Australian waters.

Any vessel or marine infrastructure destined for WA waters from interstate or overseas is required to meet the aquatic biosecurity standards set out under the *Fisheries Resources Management Act 1994*, including a Marine Biosecurity Inspection for the presence of known and potential IMS to ensure compliance with Regulation 176. No target marine species of concern to Australian waters can be observed during the in-water inspection. In accordance with marine pest management guidelines (as enforced under the WA *Fish Resources Management Act 1994*; and Fish Resources Management Regulations 1995):

Immersible equipment and the vessel hull, sea chests and other niches must be 'clean' before any vessels enter WA waters and ports.

The suspected or confirmed presence of any marine pests or disease must be reported within 24 hours by email (biosecurity@fish.gov.au) or telephone (FishWatch tel: 1800 815 507). This includes any organism listed on the WA Prevention List of Introduced Marine Pests, and any other non-indigenous organism, that demonstrates invasive characteristics.

Sensitive receptor	**Impact description**
Benthic habitats	Ballast water discharge and contaminated ships and equipment may have the potential to introduce IMS. It is not likely that any IMS entering the Operational Area would establish on the natural benthic habitat (soft sediments at the seabed). The depth of the Operational Area (80 m), open ocean conditions and lack of available light at this depth provides a very different environment to that within sheltered port and shallow coastal areas which have historically been colonised by IMPs. However, in the event that IMS establishes on the benthic habitat it could result in an overall change in localised areas to the benthos. In the event that an IMS is introduced into the operational area, there could be a reduction in the physical environment. The consequence was assessed as Minor- *Minor effect; recovery in weeks to months; death of individuals* as impacts would be within 1 km of the activity and could result in potential mortality to fauna associated with the benthic habitat.
Fish and Fisheries	There are increased concerns regarding fishery impacts following the introduction of IMPs into Australian waters. Should IMPs be introduced, they have the potential to outcompete and displace native species which may in turn affect the local marine ecosystem, and potentially fisheries operating in the area affected. However, the Operational area does not contain any known critical areas (i.e. feeding, breeding) or highly significant habitat (i.e. coral reef, seagrass) for fish. It is also unlikely that IMPs will be able to establish in water depths of the Operations Area (~80 m). However, if IMPs was established it may have a 'moderate' impact – *Local effect; recovery in months to a year; impact to localised community*
Likelihood assessment	
	It is not likely that any invasive marine pests entering the Operational Area would establish on the natural benthic habitat (soft sediments at the seabed). The depth of the Operational Area (80 m), open ocean conditions and lack of available light at this depth provides a very different environment to that within sheltered port and shallow coastal areas which have historically been colonised by invasive marine pests. Subsequently the likelihood of a potential introduction of IMS is considered low.

Consequence	**Likelihood**	**Ranking**
Moderate	Unlikely	Medium

8.2.3 Environmental performance

Hazard		Marine Pest Introduction		
Performance outcome		**No introduction of marine species**		
ID	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
82	Vessels comply with the Marine Biosecurity Manual (JS-70-MN-G-00001)*.	All vessels demonstrate compliance with the biosecurity manual requirements for ballast water exchange and biofouling management on vessels and immersible equipment.	Documented evidence of compliance	Logistics and Materials Lead

** The biosecurity manual applies to all marine vessel operations in Operational Areas and has as its purpose to:*

a) Describe the marine biosecurity management process for Jadestone Energy (Australia) Pty Ltd activities including vessels contracted to perform marine operations.

b) Prevent the introduction of Invasive Marine Species (IMS) into Australian Waters and the Operational Area through translocation vectors such as marine and petroleum vessels, immersible equipment and ballast water.

c) Ensure contracted vessels and vessel operators are aware of and apply the marine biosecurity requirements when chartered to execute their scope of work.

d) Ensure compliance with Commonwealth and State Australian Government legislation.

e) Detail the risk-based approach and mitigations used to reduce the risk of IMS being introduced to the operational area to As Low as Reasonably Practicable (ALARP).

8.2.4 ALARP assessment

On the basis of the impact and risk assessment process completed, Jadestone considers the control measures described above are appropriate to manage the risk of marine pests being introduced are ALARP. The residual risk ranking for this potential impact is Medium. Good industry practice has been applied for the situation or risk. Additional controls considered but rejected are detailed below. No further controls are required and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
Support vessels to be sourced from Australian waters	Eliminate	No	No	The presence of the FPSO and associated support vessels is required to carry out operations. Delays to activities caused by delays to contracting vessel(s). Minimal benefit expected given the implemented controls ensure only low IMS risk vessel are contracted.
Follow-up marine pest inspection around 75 days after arrival if the vessel is still in WA waters	Isolation	No	No	The residual risk of IMS is considered low due to inspection and cleaning controls and follow-up inspections of vessels 75 days after arrival is not considered required. In the event that any invasive marine pests entered the Operational Area(s) the nearest habitat is the FPSO/ vessel hull or the benthic habitat (soft sediments at the seabed). The depth of the Operational Area (80 m), open ocean conditions and lack of available light at this depth provides a very hostile/ different environment to that within sheltered port and shallow coastal areas which have historically been colonised by IMPs.

N/a	Substitute	N/a	N/a	Wherever possible, domestic vessels will be sourced, but this may not always be feasible. Regardless, all vessels are subject to IMS risk assessment and must manage their ballast water in accordance with regulatory requirements.
Application of new anti-foulant coating to vessels prior to contract commencement	Engineering	No	No	Substantial additional cost, potential delay to commencement of activity. Little benefit given recent anti-fouling treatment history for vessels and requirement to complete IMS Risk assessment. Anti-fouling coating on the in-water surfaces of vessels, and the chemical dosing of sea chests (marine growth prevention system) will occur. Anti-fouling coatings containing TBT are not an option as these anti-foulants are prohibited for use in Australia.
N/a	Administrative	N/a	N/a	The implementation of a Biofouling Management Plan and maintaining a Biofouling Record Book consistent with the DAWR (2015) *Anti-fouling and in-water cleaning guidelines*. No further administrative controls were considered.

8.2.5 Acceptability assessment

The potential impacts of marine pest introduction are considered 'Acceptable' as the residual risk is Medium and ALARP can be demonstrated (refer above), based on the acceptability criteria outlined below. The control measures proposed are consistent with relevant legislation, standards and codes.	
Policy compliance	Jadestone's HSE Policy objectives are met.
Policy and management system compliance	Section 9 demonstrates that Jadestone's HSE Management System is capable of continuously reviewing and updating activities and their practices to reflect the requirements of marine pest management in Australian waters.
Stakeholder and reputation	Stakeholder consultation has been undertaken (see Section 6), and no stakeholder concerns have been raised. Jadestone will continue to liaise with Department of Primary Industries and Regional Development (Fisheries) on current requirements for the management of the risk of marine pest introduction in WA waters.
Environmental context and ESD	It is unlikely that any invasive marine pests entering the Operational Area(s) will establish on the natural benthic habitat (soft sediments at the seabed). The depth of the Operational Area (80 m), open ocean conditions and lack of available light at this depth provides a very different environment to that within sheltered port and shallow coastal areas which have historically been colonised by invasive marine pests. The potential impact is considered acceptable after consideration of: • Potential impact pathways • Preservation of critical habitats • Assessment of key threats as described in species and Area Management/ Recovery plans • Consideration of North-West Bioregional Plan • Principles of ecologically sustainable development ESD.
Conservation and management advice	Application of guidelines detailed in the National Biofouling Management Guidance for the Petroleum Production and Exploration Industry (2009), and in the IMO Guidelines for the

	Control and Management of Ships' Biofouling to Minimise the Transfer of Invasive Aquatic Species. Jadestone has had regard to the representative values of the protected areas within the EMBA, and the respective management plans and other published information. Impacts from successful establishment of marine pests will not impact on any of the social and ecological objectives and values, of any AMPs, or state marine parks. This is consistent with the objectives of the protected area management plans (Appendix C) and considered acceptable.

8.3 Interaction with fauna

8.3.1 Description of hazard

Interaction with fauna	The movement of support vessels, and helicopters in the Operational Area increases the potential for physical or disruptive interaction with marine fauna.

8.3.2 Impacts and risks

There is significant vessel traffic transiting from ports to offshore waters in the North-West and so the threat of ship strikes to megafauna is present throughout the region. Fauna most susceptible to vessel strike include cetaceans, whale sharks and turtles, and this is reflected as a threat in many of the conservation advice and recovery plans for these species (refer Appendix C). Other fauna such as fish and sea snakes are more likely to avoid vessels operating in the area and so are considered at low risk of potential strike and will not be discussed further.

Marine Mammals

Cetaceans are naturally inquisitive marine mammals that are often attracted to vessels underway; for example, dolphins commonly 'bow ride' with vessels. There have been recorded instances of cetacean deaths as a result of vessel collisions in Australian waters (e.g. a Bryde's whale in Bass Strait in 1992) (WDCS 2006), though the data collected indicates this is likely to be associated with container ships and fast ferries. Collisions between vessels and cetaceans are most frequent on continental shelf areas where high vessel traffic and cetacean habitat occur simultaneously (WDCS 2006).

The Conservation Management Plan for the Blue Whale (DoE 2015) identifies vessel strike as one of the threats to Blue Whale species.

The reaction of whales to the approach of a ship is quite variable. Some species remain motionless when in the vicinity of a ship while others are known to be curious and often approach ships that have stopped or are slow moving, although they generally do not approach, and sometimes avoid, faster moving ships (Richardson et al. 1995).

Marine Turtles and Sharks (Whale Sharks)

Other marine fauna like turtles and whale sharks that are present in shallow waters or surface waters are also susceptible to vessel strike due to their proximity to the vessel (hull, propeller or equipment) and their limited ability to avoid vessels.

Whale sharks may be behaviourally vulnerable to boat strike. They spend a significant amount of time feeding in surface waters (DEH 2005; Norman 1999) and scars have been observed on several whale sharks that have likely been caused by boat collision (DEH 2005). There have also been several reports of whale sharks being struck by bows of larger ships in other regions where whale sharks occur (Norman 1999).

Marine birds

Should individuals of listed or migratory bird species transit through the Operational Area, the worst-case consequence of a bird strike with a helicopter would be localised, with a potentially lethal effect on a single individual with no lasting effect to population or community baseline.

Vessel speed is a strong contributor to the rate of collisions with marine fauna, with increasing vessel speed resulting in a higher collision risk (Hazel et al. 2007; Silber et al. 2010). A study conducted by Laist et al. (2001) on collisions between ships and whales observed that most lethal or severe injuries to cetaceans involved vessels 80 m or longer in length and were associated with vessels travelling at 14 knots or faster.

The Montara support vessels typically travel at speeds under 14 knots during most supply runs as this represents the most economical speed. On rare occasions, higher speeds may be used where urgent delivery of supplies is needed. Supply vessel speeds within the Operational area when approaching the FPSO are low and are required to be less than 5 knots within the 500 m PSZ.

Sensitive receptor	Impact description
Marine mammals	The likelihood of vessel/ whale collision being lethal is influenced by vessel speed: the greater the speed at impact, the greater the risk of mortality (Laist et al. 2001, Jensen and Silber 2003). Vanderlaan and Taggart (2007) found that the chance of lethal injury to a large whale as a result of a vessel strike increases from about 10% at 4 knots to 80% at 15 knots. As described above vessels within the PSZ will travel no faster than 5 knots, and hence the chance of a vessel-whale collision resulting in lethal outcome is reduced. Cetaceans demonstrate a variety of behaviours in response to approaching vessels (attributed to vessel noise), including longer dive times and moving away from the vessel's path with increased speed (Baker and Herman 1989; Meike et al. 2004). These behaviours may also contribute to reducing the likelihood of a vessel strike. Three listed threatened and migratory species of cetacean were identified as potentially occurring or having habitat in the Operational area: the sei whale, blue whale and fin whale. Although Vessel strike is identified within relevant conservation and recovery plans. However, there are no known key aggregation areas (resting, breeding or feeding) located within or immediately adjacent to the Operational Area. The Blue Pygmy whale BIA (distribution) overlaps the Operational Area, pygmy blue whales are typically solitary animals or occur in low numbers. Occasional individuals or groups of a number of cetacean species may also be present from time to time. Should a support vessel strike a marine mammal, the worst-case consequence would be a potentially lethal effect on a single individual with no lasting effect to population. With the controls implemented to reduce impacts to marine mammals, any potential disturbances are expected to be **minor** – Minor effect; recovery in weeks to months; death of individuals).
Marine reptiles	Turtles and seasnakes are also susceptible to vessel strikes when they come to the sea surface to breathe. While turtles typically avoid vessels by rapidly diving, their response varies significantly in relation to the speed of the vessel and the activity of the turtle. Hazel et al. (2007) suggested that higher vessel speed is more likely to cause impacts particularly in shallow waters where turtles are abundant and the success of avoidance behaviour is a factor of the response time available (i.e. visual observation distance/ vessel speed). Six species of listed threatened and migratory marine turtle were identified as potentially occurring in, or relating to, the Operational Area; loggerhead, green, leatherback, hawksbill, olive ridley/ Pacific ridley and flatback turtles (Section 5.4.2), and the leaf scaled seasnake. Marine turtles are predominantly oceanic species except in the nesting season when they come ashore. There are no shorelines in close proximity to the Operational area. However, turtles may transit the offshore waters in proximity to the Operational area and may forage on nearby shoals (noted as BIA foraging for some species). Seasnakes are unlikely to be encountered in the operational area due to the distance from reef and shoal habitats. The Operational Area does not intersect any Habitat Critical for the Survival of marine turtles, with the closest nesting area being 84 km away (green turtle nesting area at Cartier Island boundary (Appendix C). Vessel strike is an identified impact within relevant conservation and recovery plans, given that marine turtles are known to occur in the region and in the vicinity of the Operational Area they are also susceptible to vessel strike. However, vessel strikes are unlikely in the Operational Area where vessel are travelling at low speeds. In the event of a vessel strike, it is expected that there would be an impact to individual(s) and as such there would not be a decrease in the population size at either a local or regional scale. The worst-case consequence was assessed as Minor due to the potential mortality to an individual. As a result potential impacts to adults are expected to be **Minor** – Minor effect; recovery in weeks to months; death of individuals).

Sensitive receptor	Impact description
Whale sharks	Although the whale shark's skin is thicker and tougher than any other shark species, the species may be more vulnerable to boat strike as they spend a significant amount of their time close to the surface of the water (DEH 2005a). The most northern part of whale shark foraging biologically important areas (BIAs) overlaps the Operational area and are susceptible to vessel strike. However, only occasional individuals are expected to occur as there are no whale shark aggregations (such as the Ningaloo Reef aggregation) in the region. The worst-case consequence was assessed as Minor due to the potential mortality to an individual. As a result potential impacts to adults are expected to be **Minor** – Minor effect; recovery in weeks to months; death of individuals).
Seabirds.	Helicopter movements have the potential to affect birds through direct strike, however, considering the high visibility and noise levels associated with helicopter movements, birds are expected to avoid collisions with helicopters. The number of helicopter flights required is relatively low averaging two inward/ outward flights per week. Flights also occur in the daylight and not within major roosting areas, thereby reducing potential interactions and subsequent physiological impacts. Collisions are therefore assessed as Minor due to the potential mortality to an individual. As a result potential impacts to adults are expected to be **Minor** – Minor effect; recovery in weeks to months; death of individuals).
Likelihood assessment	
Likely	Due to the general low vessel speeds, and low number of helicopter flights (and lack of any significant bird habitat) the chance of a vessel collision with marine fauna resulting in a lethal outcome is reduced as individuals are expected to display avoidance behaviour. The risk ranking with controls in place was assessed as **unlikely**. With helicopter presence and the number of birds present at FPSO and helicopter, the likelihood assessment is considered **likely** within the peak roosting and nesting season until implementation of bird management measures are effective in reducing the numbers of birds present.

Consequence	Likelihood	Ranking
Minor	Likely	Medium

8.3.3 Environmental performance

Hazard		Interaction with fauna		
Performance outcome		**No death or injury to EPBC Act listed marine fauna due to activities in the Operational Area**		
ID	**Management Control**	**Performance standards**	**Measurement criteria**	**Responsibility**
83	Potential for collision with marine fauna reduced by vessels operating at speeds in accordance with Montara Marine Facility Manual (MV-90-PR-H-00001)	Vessels operating within the PSZ must not exceed a speed of five (5) knots.	Vessel Masters provided and required to operate in accordance with the Montara Marine Facility Operating Manual – Sign-off sheet for completed by Vessel Master.	Supply Chain Manager
84	Training and Competency Management System [JS-60-PR-Q-00015] provides	Online induction includes information on speed limits in the	Induction Records (Vessel Masters)	HR Manager

Hazard		Interaction with fauna		
Performance outcome		No death or injury to EPBC Act listed marine fauna due to activities in the Operational Area		
ID	**Management Control**	**Performance standards**	**Measurement criteria**	**Responsibility**
	personnel with awareness marine fauna interaction requirements	PSZ and requirements on interacting with marine fauna		
85	Marine fauna collisions reported to National Ship Strike Database	Any vessel collision with a whale in the operational area is submitted to the National Ship Strike Database at: https://data.marinemammals.gov.au/report/shipstrike Death or injury to EPBC Act listed marine fauna (including cetaceans or whale sharks) from vessel collision are recorded/reported to NOPSEMA and DCCEEW in line with regulations	Vessel collision incident report Database entry number	HSE Manager

8.3.4 ALARP assessment

On the basis of the impact and risk assessment process completed, Jadestone considers the control measures described above are appropriate to manage the risk of collision between vessels and marine fauna or negative interaction with helicopters to ALARP. The residual risk ranking for this potential impact (minor) is considered Low. Additional controls considered but rejected are detailed below. No further controls are required and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost Effective	Justification
Removal of vessels and helicopter use	Eliminate	No	No	Vessel and helicopter presence is required during operations and there are no practicable alternatives. The potential for interaction between support vessels and fauna cannot be eliminated, however the risk is low given the location, low volume of vessel activity and speed limits.
Reduce frequency or size of support vessels	Substitute	No	No	Reducing the frequency or size of support vessels would introduce disproportionate operational and safety risks; for example, the vessel is required to be of sufficient size and power to enable efficient and timely supply of the necessities/ services to maintain effective operation of the FPSO.
N/a	Engineering	N/a	N/a	Not relevant
Reduce or remove vessel and helicopter use during key sensitive periods	Isolation	No	No	Reducing or removing vessel and helicopter activities during known migration periods of marine fauna is not a viable option as these activities are necessary for the safe and efficient operation of the FPSO all year round.

Use of marine fauna observers on all vessels to identify fauna close to vessels	Administrative	N/a	N/a	Vessel Masters will complete an environmental induction which includes the applicable requirements or speed limits and avoiding fauna. The introduction of a specialist marine fauna observer is unlikely to increase detection and the additional cost is considered grossly disproportionate given the low vessel speeds and low potential for impacts on marine fauna.

8.3.5 Acceptability assessment

The potential impacts of helicopters and vessels on marine fauna during the operation are considered 'Broadly Acceptable' in accordance with the Environment Regulations, based on the acceptability criteria outlined below. The control measures proposed are consistent with relevant legislation, standards and codes.	
Policy and management system compliance	Jadestone's HSE Policy objectives are met. Section 9 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.
Stakeholder and reputation	Stakeholder consultation has been undertaken (Section 6), and no stakeholder concerns have been raised with regards to impacts from vessel/ helicopter operations on sensitive receptors.
Environmental context and ESD	The Operational Area overlaps the whale shark BIA. However, risk to megafauna is considered low and acceptable as vessels will travel at low speeds within the Operational Area; minimal vessel activity in the area, and risk of mortality from a low-speed vessel strike is low. In this way, aspects of the EPBC Regulations 2000, Division 8.1 – Interacting with Cetaceans –are addressed. The potential impact is considered acceptable after consideration of: • Potential impact pathways • Preservation of critical habitats • Assessment of key threats as described in species and Area Management /Recovery plans • Consideration of North-West Bioregional Plan • Principles of ecologically sustainable development ESD.
Conservation and management advice	Recovery Plan for Marine Turtles in Australia, (EA 2003). • The Recovery plan for marine turtles in Australia (DoEE 2017) identifies the following risk Vessel disturbance. It requires that risk of vessel strikes is evaluated and, if required, appropriate mitigation measures are implemented. This EP and the proposed controls is consistent with this advice. Conservation Management Plan for the Blue Whale 2015–2025 • The Management Plan identifies the following risk Vessel disturbance. It requires that risk of vessel strikes is evaluated and, if required, appropriate mitigation measures are implemented. This EP and the proposed controls are consistent with this advice. Jadestone has had regard to the representative values of the protected areas within the EMBA, and the respective management plans and other published information. Interactions with fauna may have a minor impact on any of the social and ecological objectives and values, of AMPs, or state marine parks. However, with controls in place to minimise the likelihood (to protect protected fauna) this is considered consistent with the objectives of the conservation advice or management plans (Appendix C), and considered acceptable.

8.4 Unplanned Release of Solid Waste

8.4.1 Description of hazard

Solid waste release	Release of solid wastes may occur as a result of overfull and/or uncovered bins, incorrectly disposed items or spills during transfer of waste between the FPSO/WHP and support vessels. A non-hazardous release of solids to the environment has the potential to occur from the following activities: • FPSO, WHP or supply vessel operations • Lifting • Accidental discharge of dry bulk products • Accidental discharge of waste. Hazardous wastes, such as chemicals and chemical containers, batteries, waste oil, produced sands, medical wastes and oily wastes, will be generated from operations and disposed of onshore in accordance with a Waste Management Plan. Wetblasting, if performed, will generate a sludge waste comprising blasting medium (water or garnet if used), rust and particles of old surface coatings (e.g. paint, epoxy). Similarly, the waste product from wetblasting is disposed of onshore.

8.4.2 Impacts and risks

Solid waste items have the potential to pollute marine habitats and injure or kill fauna through ingestion or exposure if released to the marine environment. The effects of discharges of solid wastes are dependent on the nature of the material involved. Marine fauna can become entangled in waste plastics, which can also be ingested when mistaken as prey (Ryan et al. 1988), potentially leading to injury or death. Generally, no toxic effects are expected from non-hazardous solids. Water quality impacts are not expected from the release of solid wastes.

Sensitive receptor	Impact description
Marine fauna	Release of hazardous solid wastes may result in the pollution of the immediate receiving environment, leading to detrimental health impacts to marine flora and fauna. Physiological damage can result through ingestion or absorption and may occur to individual fish, cetaceans, marine reptiles or seabirds. Indiscriminate foraging behaviour in turtles has resulted in turtles mistaking plastic for jellyfish (Mrosovsky et al. 2009). Marine fauna (including seabirds) encountered within the Operational Area are expected to be limited to small numbers of transient individuals. There are no known critical habitats within the operational area for EPBC listed species. The operational area overlaps with the northern section of the whale shark foraging BIA; however, only low numbers are likely to be present. The accidental release of waste may result in injury or even death to individual marine fauna but is not expected to result in a threat to population viability. The consequence of an unplanned release of solid waste on marine fauna was assessed as ***Minor*** given the likely objects dropped overboard and the transient nature of marine fauna and lack of foraging habitat within the operational area.
Benthic habitats	Benthic habitats have the potential to be impacted with accidental spills of solid wastes resulting in possible damage to or loss of soft sediment communities within the area affected. The potential impact may be short term to long term depending on the waste type, its degradation rate, and the amount lost to the marine environment. The extent of the seabed damage will be limited to the size of the dropped object and given the size of standard materials lifted overboard, any impact is expected to be very small. Given there are no sensitive or unique marine habitats in the area and the diversity and coverage of epibenthos is low (ERM 2011), benthic communities are expected to rapidly recolonise any damaged area (Currie and Isaac 2004). Given the relatively small footprint of any dropped object, the widespread distribution and abundance of benthic communities within the operational area,

Sensitive receptor	Impact description
	the consequence to benthic communities would be a highly localised, negligible, and reversible change to a very small proportion of the of the overall benthos. The consequence of an unplanned release of solid waste on benthic habitats was assessed as ***Minor*** given the likely objects dropped overboard.
Other marine users	In the event of a buoyant solid waste being accidentally released to the marine environment, it may create a navigational hazard to other marine users. The consequence of an unplanned solid waste on other marine users was assessed as ***Negligible*** given the likely objects dropped overboard.
Likelihood assessment	
Likely	A set of control measures and checks have been proposed to ensure that the risks of dropped objects, lost equipment or release of solid waste to the environment has been minimised. The likelihood of transient marine fauna occurring in the operational area is limited. Given the controls in place, the likelihood of releasing non-hydrocarbon solids to the environment resulting in a negligible consequence is considered likely based on the activities undertaken in the operational area assuming the potential for a single loss of solid waste incident during the activity. It is noted that the likelihood of dropped objects and waste dropped during transfers is a lower likelihood but with a higher consequence. Therefore, the overall risk ranking is considered conservative. The worst-case likelihood assessment with controls in place was **Likely**.

Consequence	Likelihood	Ranking
Minor	Likely	Medium

8.4.3 Environmental performance

Hazard		Unplanned discharge of solid waste		
Performance outcome		**No release of non-hazardous or hazardous solid wastes to the marine environment**		
ID	**Management Control**	**Performance standards**	**Measurement criteria**	**Responsibility**
86	Waste generated during operations will be managed in accordance with the Montara Waste Management Plan (MV-70-PLN-F-00004LI)	Solid waste materials are stored in fit for purpose storage containers and/or lifting skips, labelled and equipped with lids / covers to prevent loss of material during storage and handling.	Garbage Record Book shall be maintained on all facilities in accordance with MARPOL 73/78 Annex V Regulation 9	OIM (Montara Venture) Marine Superintendent (all other vessels)
87		Hazardous solid wastes will be managed in accordance with relevant legislation	A waste register will be maintained to show that hazardous wastes are being collected and returned onshore for disposal	OIM
88	Training and Competency Management (JS-60-PR-Q-00015)*	FPSO crew and support vessel masters complete an induction containing basic information on environmental practices	Induction completion record	HR Manager
89	Montara Lifting Operations Procedure (MV-00-PR-F-00006)	All personnel involved with lifting equipment operations and maintenance receive adequate training and are	Competency matrix	OIM

Hazard		Unplanned discharge of solid waste		
Performance outcome		No release of non-hazardous or hazardous solid wastes to the marine environment		
ID	**Management Control**	**Performance standards**	**Measurement criteria**	**Responsibility**
	implemented for lifts undertaken in the operational area	competent appropriate to their level of responsibility		
90		JSA is completed for all lifts and approved under the PTW	Completed PTW documentation	OIM
91		A Lift Plan completed for Complex and/or Engineered Lifts	Approved Lift Plan	OIM

** The Competency and Training Management System outlines the framework and requirements for maintaining staff competency and training specifications for Jadestone. It provides an overview of the requirements for staff and contractors to meet their training obligations and the context within which the system operates.*

8.4.4 ALARP assessment

On the basis of the impact and risk assessment process completed, Jadestone considers the control measures described above are appropriate to manage the risk of unplanned discharges of solid waste to ALARP. The residual risk ranking for this potential impact is considered **Medium** based on a likelihood of **Likely** and consequence of **Minor**. Additional controls considered but rejected are detailed below. No further controls are required and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost Effective	Justification
Removal of solid waste generation during activity and eliminate transfers (lifts)	Eliminate	No	No	Solid wastes produced onboard are disposed of onshore and are not discharged to the marine environment. FPSO and vessels will not have enough deck space to store all required equipment, materials, supply needed for activities.
Reduce impact of solid wastes in the event of discharge	Substitute	No	No	Where appropriate, selection of chemicals or materials to achieve low or no environmental effect is made.
N/a	Engineering	N/a	N/a	Not relevant
Reduce or remove solid waste generation and transfers during key sensitive periods	Isolation	No	No	Reducing or removing waste generating activities during known migration periods of marine fauna is not a viable option as these activities are necessary for the safe and efficient operation of the FPSO all year round. The activity is located at distance from sensitive receptors and the coastline.
None identified	Administrative	N/a	N/a	None identified. Maintenance management system implemented, compliance with relevant and appropriate MARPOL and legislative requirements, certified equipment.

8.4.5 Acceptability assessment

The potential impacts of unplanned discharges of solid wastes during the activity are considered 'Broadly Acceptable' in accordance with the Environment Regulations, based on the acceptability criteria outlined below. The control measures proposed are consistent with relevant legislation, standards and codes.	
Policy and management system compliance	Jadestone's HSE Policy objectives are met. Section 9 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.
Stakeholder and reputation	Stakeholder consultation has been undertaken (Section 6), and no stakeholder concerns have been raised with regards to impacts from solid waste generation or unplanned discharges on sensitive receptors.
Environmental context and ESD	Benthic habitats have the potential to be impacted with solid wastes resulting in potential loss of soft sediment communities and harm to marine fauna. If impacted, benthic habitats and associated biota are well represented in the region and there are no known areas of sensitive habitat within the area that may be affected by accidental release of solid waste. Marine fauna can become entangled in waste plastics, which can also be ingested when mistaken as prey potentially leading to injury or death. Generally, no toxic effects are expected from non-hazardous solids The potential scale of environmental harm from accidentally discharged solid waste is small in comparison to the vast size of soft substrata habitats spanning the North-west Shelf and the transient nature of marine fauna that may be present in the operational area. The potential impact is considered acceptable after consideration of: • Potential impact pathways • Preservation of critical habitats • Assessment of key threats as described in species and Area Management /Recovery plans • Consideration of North-West Bioregional Plan • Principles of ecologically sustainable development ESD.
Conservation and management advice	Marine debris is identified as a potential threat to a number of marine fauna species in relevant Recovery Plans and Conservation Advice: • Conservation management plan for the blue whale: A recovery plan under the EPBC Act 1999 2015–2025 • Conservation advice Balaenoptera borealis (sei whale) • Conservation advice Balaenoptera physalus (fin whale) • Recovery Plan for Marine Turtles in Australia • Recovery plan for the white shark (Carcharodon carcharias). The controls implemented demonstrate that the activity will be conducted in a manner that reduces marine debris and therefore the activity will be conducted in a manner that is acceptable under the relevant Recovery Plans and Approved Conservation Advice to prevent accidental release of non-hydrocarbon solids (marine debris). The limited quantities associated with this event indicate that even in a worst-case release of solid waste, fatalities would be limited to individuals and is not expected to result in a decrease of the local population size for any of the species identified.

8.5 Unplanned Release of (Non-Hydrocarbon) Liquids

8.5.1 Description of hazard

Unplanned discharge of liquids	Both non-hazardous and hazardous chemicals are routinely transported to and from, stored and used aboard the *Montara Venture* FPSO. There is potential for these chemicals to be accidentally spilled to the marine environment from both the Montara facilities and activity support vessels. A non-hydrocarbon liquid, in particular chemicals, may be released to the environment. The maximum volume of non-hydrocarbon liquid that may be released during routine operations is likely to be small and realistically limited to the volume of individual containers (e.g. IBCs/ drums etc.) stored on-deck (1 m^3). Chemicals, for example solvents and detergents, are typically stored in small containers of 5–25 L capacity and used in areas that are bunded. Leaks and spills of non-hydrocarbon liquids are typically contained within the immediate storage/ use area or on board. Hazardous industrial wastes may include radioactive materials, paint and thinners, waste oil, proprietary cleaning agents and chemicals for chemical injection. Naturally occurring radioactive materials (NORMs) may be encountered as part of the operations and require removal and disposal ashore. Accidental chemical releases may occur during any season at any time given the ongoing nature of Montara operations and based upon existing chemical inventories, the volume of spill is conservatively estimated to be limited to a single discharge of 5 m^3 (based upon pour point depressant, with lesser volumes for other chemicals such as biocide, glycol, corrosion inhibitor, scale inhibitor, methanol, forward emulsion breaker and reverse emulsion breaker). An unplanned discharge would be an instantaneous release within the operational area. Whilst cumulative effects are not anticipated from a single accidental non-hydrocarbon liquid release, some chemicals may persist in the marine environment.

8.5.2 Impacts and risks

Should non-hydrocarbon liquids be spilled to the marine environment, the potential impact pathways to marine fauna and benthic communities are:

- Ingestion or physical contact with chemical compounds within the water column or sediment
- Accumulation and biomagnification of chemicals within the food chain.

The potential exposure to non-hydrocarbon liquids would be dependent on the type, volume of discharge, concentration at discharge, toxicity, persistence and bioaccumulation potential. Also, exposure may vary depending on the dilution and dispersion potential of the chemical, or whether the chemical sinks to the sea floor. Hazardous liquids have the potential to impact local water quality, which in turn may impact on the health and reproductive development of marine fauna (e.g. pelagic fish, cetaceans, marine reptiles and seabirds) and have a flow-on effect through the whole ecosystem including socio-economic receptors.

Sensitive receptor	Impact description
Water Quality	Environmentally hazardous chemicals and liquid wastes lost to the marine environment may lead to contamination of the water column in the vicinity of the vessel. The potential impacts would most likely be highly localised and restricted to the immediate area surrounding the spill, with rapid dispersal to concentrations below impact thresholds likely to occur in the open area of ocean. Spills of hazardous chemicals are unlikely to have widespread ecological effects given the nature of the chemicals on board, the small volumes that could be released, and the depth and exposure of the location. The consequence of an unplanned release of non-hydrocarbon liquids on water quality was assessed as ***Negligible*** given the likely volumes and types of liquids and the rapid dilution and dispersion that would occur.

Sensitive receptor	Impact description
Benthic Habitat	While unplanned liquid discharges may cause short term reductions in the change in water quality, these spikes are expected to occur for very short durations and as such any affects to benthic habitats are expected to be temporary as the most common benthic habitat soft sediments, which would recover quickly if impacted. Given the water depth and the high dispersion of any potential marine pollutant in an open-ocean environment, it is considered unlikely that there be an adverse impact on benthic communities. There is no emergent or inter-tidal habitat that could be impacted by a surface spill and the benthic habitat is predominately soft sediments. Any spilled material is unlikely to reach any of the demersal species or benthic habitats at the seabed. Sub-lethal or lethal effects from unplanned discharges at the seabed on marine fauna, is considered unlikely given the expected low concentrations and short exposure times. The consequence of an unplanned release of non-hydrocarbon liquids on water quality was assessed as ***Negligible*** given the likely volumes and types of liquids, the low sensitivity of the benthic habitat and the rapid dilution and dispersion that would occur.
Marine Fauna	Liquid discharges may cause negligible short-term water quality perturbations (see above) and as a result a possible alteration to marine fauna behaviour. The changes to water quality that may result could potentially lead to short-term impacts on marine fauna (e.g. pelagic/benthic fish, epifauna, cetaceans, marine reptiles and seabirds), with chronic impacts not expected owing to the short exposure times likely. The susceptibility of marine receptors to non-hydrocarbon releases will be dependent on the nature of the liquid released, toxicity and other chemical properties such as biodegradation and bioaccumulation potential. Contaminated fish stocks and filter feeders such as oysters and mussels can pass on harmful chemicals to humans, if contaminated organisms are consumed. Potential impacts are varied and will relate to the characteristics and volume of the spilt chemical, and the sea state of the receiving environment, and are likely to be limited to the immediate vicinity and unlikely to affect overall population viability. The consequence of an unplanned release of non-hydrocarbon liquids on marine fauna was assessed as ***Negligible*** given the likely volumes and types of liquids and the rapid dilution and dispersion that would occur in the operational area.
Likelihood assessment	
Rare	A set of control measures and checks have been proposed to ensure that the risks of unplanned releases of liquids to the marine environment is minimised. The likelihood of transient marine fauna occurring in the operational area is limited. Given the controls in place, the likelihood of releasing non-hydrocarbon liquids to the environment resulting in a negligible consequence is considered rare based on the activities undertaken in the operational area and the presence of bunding around non-hydrocarbon liquid containers, and drainage systems. Loss of non-hydrocarbon liquids during transfers is also considered rare. The worst-case likelihood assessment with controls in place was **Rare**.

Consequence	**Likelihood**	**Ranking**
Negligible	Rare	Low

8.5.3 Environmental performance

Hazard		Unplanned discharge of liquids		
Performance outcome		**Zero unplanned discharge of liquids into the marine environment.**		
ID	**Management control**	**Performance standards**	**Measurement criteria**	**Responsibility**
92	Hazardous Substances and Dangerous Goods Standards (JS-70-STD-I-00035) is complied with and meets requirements of Marine Order 94	Any hazardous liquid storage on deck must be designed and maintained to have at least one barrier (i.e. form of bunding) to contain and prevent deck spills entering the marine environment.	3 monthly HSE inspection	OIM
93		Safety data sheet (SDS) available for all chemicals to aid in the process of hazard identification and chemical management	3 monthly HSE inspection	OIM
94		Chemicals managed in accordance with SDS in relation to safe handling and storage, spill-response and emergency procedures, and disposal considerations	3 monthly HSE inspection	OIM
95	Chemical Selection, Evaluation and Approval Procedure (JS-70-PR-I-00033)	For hazardous chemicals, the following standards apply to reduce the risk of an accidental release to sea: • Selected chemical substances comply with relevant regulatory requirements and approved activity environment plans • Selected chemical substances are subject to mandatory risk review and formal approval before procurement • Transport, storage and handling of chemicals is in accordance with relevant regulations and manufacturer requirements • Least hazardous chemicals are preferentially selected for use thereby minimising and/ or eliminating potential safety and environmental impacts • If chemicals required are classified as hazardous and/ or dangerous goods, the control measures for safe transport, storage and handling are deemed adequate • Selected chemical substances meet technical specifications and are fit for purpose.	3 monthly HSE inspection	OIM
96	Vessels are compliant with Marine Order 93 to prevent any contaminating liquids and chemicals from	Vessels compliant with Marine Order 93, including: • Vessels are to have a valid International Pollution Prevention Certificate • The owner and Master of a vessel must report marine incidents to AMSA	Valid IPPC Valid SOPEP Cargo Record Book	Marine Superintendent

Hazard		Unplanned discharge of liquids		
Performance outcome		**Zero unplanned discharge of liquids into the marine environment.**		
ID	**Management control**	**Performance standards**	**Measurement criteria**	**Responsibility**
	entering the marine environment	• An incident involving a discharge from a vessel of a mixture containing a liquid substance, carried as cargo or as part of cargo in bulk, must be reported to AMSA via AMSA Form 196 (Harmful Substances Report form) within 24 hours • Vessels are to have a Shipboard Marine Pollution Emergency Plan • Vessels are to have a Cargo Record Book • Vessel tanks must be washed in accordance with MARPOL.		
97	Spill kits are present in areas of high spill risk	Spill kits are: • Located near high risk spill areas. • Intact, clearly labelled and contain adequate quantities of absorbent materials.	3 monthly HSE inspection	OIM

8.5.4 ALARP assessment

On the basis of the impact and risk assessment process completed, Jadestone considers the control measures described above are appropriate to manage the risk of unplanned discharges of non-hydrocarbon liquids to ALARP. The residual risk ranking for this potential impact is considered **Low** based on a likelihood of **Rare** and consequence of **Negligible**. Additional controls considered but rejected are detailed below. No further controls are required and therefore ALARP has been demonstrated.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
No use of hazardous materials or production of wastes	Eliminate	No	No	Solid wastes produced onboard are disposed of onshore and are not discharged to the marine environment, therefore there is no planned impact to the marine environment. Complete elimination of waste is not feasible; therefore, the risk of unplanned releases remains
Substitute any hazardous chemical use with non-hazardous chemical use	Substitute	No	No	Where appropriate selection of chemicals or materials to achieve low or no environmental effect is made. Some hazardous waste is unavoidable from the use of batteries, lights etc. and produced sand, therefore there are limited opportunities for substitution.
N/a	Engineering	N/a	N/a	All waste bins have lids and wastes are segregated at the time of disposal. No other engineering controls were considered.
N/a	Isolation	N/a	N/a	The Activity is located at distance from sensitive receptors and the coastline.
N/a	Administrative	N/a	N/a	Maintenance management system implemented, compliance with relevant and appropriate MARPOL and legislative requirements, certified equipment. No further controls were identified.

8.5.5 Acceptability assessment

The potential impacts of unplanned discharges of non-hydrocarbon liquids during the activity are considered 'Acceptable' in accordance with the Environment Regulations, based on the acceptability criteria outlined below. The control measures proposed are consistent with relevant legislation, standards and codes.

Policy and management system compliance	Jadestone's HSE Policy objectives are met. Section 9 demonstrates that Jadestone's HSE Management System is capable of meeting environmental management requirements for this activity.
Stakeholder and reputation	Stakeholder consultation has been undertaken (Section 6), and no stakeholder concerns have been raised with regards to impacts from unplanned discharges of non-hydrocarbon liquids on sensitive receptors.
Environmental context and ESD	While the risk of unplanned liquid waste discharges could occur from the activity and have an impact on the waters immediately nearby, the impact and risk assessment process indicates that unplanned discharges will have a temporary and localised impact on marine waters and will not result in significant impact to marine fauna. The potential impact is considered acceptable after consideration of: • Potential impact pathways

	• Preservation of critical habitats • Assessment of key threats as described in species and Area Management /Recovery plans • Consideration of North-West Bioregional Plan • Principles of ecologically sustainable development ESD.
Conservation and management advice	Minimising chemical discharge is an action identified by the Recovery Plan for Marine Turtles in Australia 2017. This requires that best practice industrial management is implemented to minimise impacts to marine turtle health and habitats. A marine chemical spill is unlikely due to the controls in place for secure storage and on board clean-up of spills, transient nature of marine fauna and the remote open ocean environment, there are no relevant management requirements in the recovery plan to implement for this hazard.

8.6 Unplanned Release of Hydrocarbons – Scenarios

8.6.1 Credible spill scenarios

A number of scenarios in which hydrocarbon could be released to the marine environment due to an unplanned event were identified during the Montara Operations ENVID workshop. Table 8-1 summarises the three credible worst case scenarios and the below sections detail the other scenarios considered.

Table 8-1: Credible worst-case hydrocarbon spill scenarios

Hydrocarbon	Release point	Maximum release scenario	EP section
Diesel	At surface	906 m^3 released over 5 hours	Section 8.8
Crude oil	Surface	11,570 m^3 over 5 hours	Section 8.7
Crude Oil	Subsea	1,700 m^3 over 24 hours	Section 8.7

To determine the maximum worst-case credible spill volumes for each identified spill scenario, Jadestone has adopted the AMSA (2015) guideline: *Technical guideline for preparing contingency plans for marine and coastal facilities*. Jadestone considers that in adopting the AMSA guideline the estimated spill volumes are appropriately conservative given that for the scenarios presented there are multiple barriers/ controls in place; meaning the total volumes evaluated are much greater than what would be released in the event of a spill.

8.6.2 Discounted scenarios

8.6.2.1 Helicopter Refuelling

One scenario based on refuelling of helicopters on the helideck at *Montara Venture* FPSO was discounted as a credible spill scenario to the marine environment due to the high volatility of aviation fuel and that the refuelling system for helicopters is a fully self-contained system.

8.6.2.2 Loss of well control

Previous iterations of this Operations EP have included full loss of well control (LOWC) scenarios that could occur during operations including during light well intervention activities. The previous LOWC scenarios were originally developed by PTTEP AA, the previous owner of the Montara field, and adopted by Jadestone during transition of ownership. It was clearly identified in these failure modes that “multiple and simultaneous failures of independent mechanical barriers would be required to enable a LOWC.” Whilst this may have been the philosophy in the previous version of the EP there were no specific failure modes of the “mechanical barriers” identified that were considered physically possible during review of the scenarios in 2023. The two scenarios identified were WHP well failure mode and subsea well failure mode. The

summary below sets out the reasoning why these scenarios are not considered credible during the activities described in this EP.

Failure from surface wells on WHP

Failure mode during WHP operations identified previously included:

- Well intervention activities, no specific scenario or failure mode was identified just that LOWC had occurred somewhere (not specified) during well intervention.
- Ship collision and coincidental failure of safety systems including the SCSSV which would not be adversely affected by the collision.

The wells are located inside the jacket of the WHP and therefore severance of the conductors and full flow from the tubing is not considered possible. The most likely scenario is damaged or bent outer jacket legs.

Failure from subsea wells

The failure mode during riserless light well intervention previously identified required removal of the well control package whilst tooling was in the well. This was identified as occurring by one of two ways:

- Physical unlocking of the well control package.
- External force such as anchor drag from a large vessel.

Accidental disconnection from surface is not a possible scenario due to system design. Once connected and tested to subsea well the well control package is isolated manually via ROV so that inadvertent disconnect from surface is not possible.

Dropped objects during crane lifts while undertaking riserless well intervention was considered, however the controls in place make a dropped object of any significant size from surface onto well infrastructure not possible. The most likely scenario is crane failure as the well control package is being lowered onto the subsea tree, drops height is approx. 5 m maximum. Due to tree design with a solid top plate and integral valves in master block and tubing supported in master block loss of containment from the well is not considered possible. A more likely scenario is that the outer wing blocks or flowlines would be damaged, rupture of a subsea flowline is therefore considered credible. Smaller objects could also be dropped, but due to tree and well control package design a loss of well containment is not possible; rupture of a subsea flowline is therefore considered credible.

LOWC resulting from an external force during riserless well intervention from an anchor or similar is not possible due to the riserless light well intervention vessel being on location and therefore additional vessels are unable to affect the exact well location. An errant vessel dropping an anchor on a well was also discounted as the subsea wells are a minimum 18 km north of the WHP and FPSO, and the designated anchor location for vessels is a minimum of 3NM from infrastructure. Vessels working in the Montara field are instructed to anchor south of the Montara WHP and work on DP during IMR operations so no anchoring is planned. Third party vessels passing by have no requirement for anchoring.

ROV entanglement in subsea infrastructure was considered but no loss of containment event was identified as the ROV would shear or break first.

8.7 Worst Case Crude Oil Spill

8.7.1 Description of hazard

Crude oil spill	A loss of hydrocarbons during production or planned maintenance and repairs may occur at surface or subsurface due to a number of reasons: • minor or major leaks from failed tree components • Loss of function downhole of safety critical equipment (loss of barriers) • Equipment failure during planned maintenance, well interventions or injection • Vessel drive off during light well intervention • Damage to subsea well infrastructure (well valves, wellhead) • Dropped objects on subsea flowline. Hydrocarbons may be released to the marine environment at the surface or subsea (Table 8-1). The environmental consequences of a loss of hydrocarbons are highly variable, dependant on the characteristics of the hydrocarbon released, the dynamics of the receiving environment and the proximity of the release point to sensitive environmental receptors. They may include: • Reduction in water quality • Direct/indirect toxic or physiological effects on marine biota, including corals • Direct/indirect loss/disturbance to marine mammals, marine reptiles, birds, fish and sharks/rays • Hydrocarbon/chemical contact with shoals/banks, reefs and islands at concentrations that result in adverse impacts • Direct/indirect loss/disturbance of significant habitat • Disturbance of non-conservation significant populations/ communities • Disturbance of conservation significant individuals (e.g. change in fauna behaviour/ movement, or injury/ mortality) • Physical damage and/or disturbance to unique KEF and AMP values.

Loss of containment scenarios were identified in the ENVID and a subsequent review by Jadestone that would result in crude oil being released to the marine environment. These are listed in Table 8-2.

Table 8-2: Credible crude oil spills to the marine environment due to a loss of containment event

No.	Scenario	Maximum credible spill	Release duration
Surface Release from cargo tank or hose			
1	Ruptured cargo tank	11,570 m^3	5 hours
2	Break offtake floating hose	3,500 m^3	6 hours
Release from subsea flowline			
3	Rupture of subsea flowline (subsea)	1,700 m^3	1 day
4	Pinhole leak of subsea flowline	2 m^3	7 days
Release from subsea wells			
5	Minor leak from connector or flange not detectable through though continuous monitoring system, only identified during annual tree valve testing, scheduled ROV inspection or sheen noted on surface from passing vessel	~318 m^3 Leak rate of 0.012 m^3/hr (0.29 m^3/day)	3 years
6	Major leak from connector or flange with the leak detected via continuous monitoring and well shut in immediately	3.3 m^3	15 mins

No.	Scenario	Maximum credible spill	Release duration
		Based on a single well production of 2,000 bopd)	
7	Vessel drive off during well operations causing control umbilical to part at weak link, assumes no ESD initiated by personnel. If all safety system fail, even with the disconnect of the control umbilical, well barrier integrity would remain except for the small 5/16" hole where the wireline was previously. Most systems include drop ball check valves in the grease injection heads to stop leakage on parting of wire. If this was also to fail a small hydrocarbon leak may be possible.	57 m^3 (~0.16 m^3/min)	6 hours
Release from platform wells			
8	Minor leak from connector or flange not detectable through though continuous monitoring system, only identified during planned platform visit. Minimum 38 visits per year to WHP, therefore a maximum of two weeks between visits.	~4 m^3 Leak rate of 0.012 m^3/hr (0.29 m^3/day)	2 weeks
9	Major leak from connector or flange with the leak detected via continuous monitoring and well shut in immediately	3.3 m^3 Based on a single well production of 2,000 bopd)	15 mins

The worst case surface spill is from a loss of 11,570 m^3 of crude from a cargo tank rupture, and the worst case subsea spill is 1,700 m^3 of crude from a ruptured flowline..

8.7.2 Hydrocarbon properties and weathering behaviour

Montara crude oil and Skua crude oil are considered in the possible spill scenarios. Montara crude has an API of 34.5 and a density of 845.2 kg/m^3 (at 15 °C) with a viscosity value of 4.00 cP (at 30 °C) classifying it as a Group III (medium persistent) oil according to the International Tankers Owners Pollution Federation (ITOPF 2014) and US EPA/USCG classifications.

The crude is a mixture of volatile and persistent hydrocarbons with high proportions of low-volatile and residual components. In favourable evaporation conditions, approximately 14.0% of the oil mass should evaporate within the first 12 hours (BP < 180 °C), a further approximate 19.0% should evaporate within the first 24 hours (180 °C < BP < 265 °C) and a further an approximate 35% should evaporate over several days (265 °C < BP < 380 °C). Approximately 32% of the oil is shown to be persistent. Skua Oil contains a relatively high proportion (~24% by mass) of hydrocarbon compounds that will not evaporate at atmospheric temperatures. These compounds will persist in the marine environment. The unweathered mixture has a dynamic viscosity of 2.54 cP (at 20 °C). The pour point of the whole oil (12 °C) ensures that it will remain in a liquid state over the annual temperature range observed in the Timor Sea. The properties of these oils and their weathering behaviour are detailed in the Montara Operations OPEP.

8.7.3 Modelling Approach

To determine the spatial extent of impacts from a potential crude oil spill (surface and subsurface) and the dispersion characteristics of the oil over time, modelling was completed by RPS (RPS 2023). Spill modelling was performed using a number of simulated environmental conditions from all seasons thus providing a range of realistic spill trajectories from which to determine the spatial extent of potential impacts and receptors which might be affected by a spill.

A summary of the modelling method is described below.

Stochastic approach: stochastic modelling was carried out using an historic sample of wind and current data for the 'study area' that spanned ten years (2010–2019, inclusive). For each season, a large number of replicate simulations (100) were modelled for each season (i.e. 300 simulations in total), each initialised at different, randomly selected points in time for that seasonal period and hence under a different time series of environmental conditions. This stochastic sampling approach provides an objective measure of the possible outcomes of a spill, because environmental conditions will be selected at a rate that is proportional to the frequency that these conditions occur over the study area. More simulations will tend to use the most commonly occurring conditions, while conditions that are more unusual will be represented less frequently.

Contact thresholds: oil spill models are able to track hydrocarbon concentrations of surface oil, entrained oil and dissolved aromatic hydrocarbons below biologically significant impact levels. Consequently, threshold concentrations are specified for the model to control what contact is recorded for surface oil and subsurface locations (entrained oil and dissolved aromatic hydrocarbons) to ensure that recorded contacts are for biologically meaningful concentrations. Thus, it is important to describe the thresholds used as the boundary of the EMBA will be influenced by the thresholds set in the hydrocarbon spill modelling. It is important to note that the thresholds herein are based on NOPSEMA (2019).

The determination of biologically meaningful impact thresholds is complex since the degree of impact will depend on the sensitivity of the biota contacted, the duration of the contact (exposure) and the toxicity of the hydrocarbon mixture making the contact. The toxicity of a hydrocarbon changes over time, due to weathering processes altering the composition of the hydrocarbon. To ensure conservatism in defining the EMBA boundary and the subsequent impact assessment, the threshold concentrations applied to the model are based on the most sensitive receptors that may be exposed, the longest likely exposure times and the more toxic hydrocarbons.

Impact pathways and impact threshold concentrations are detailed in Section 8.7.4 and Appendix D for floating oil, entrained oil and dissolved aromatic hydrocarbons (DAH).

Data generated: during each simulation (of which there are 100 for each season), the model recorded the location (latitude x longitude x depth) of each of the particles (representing a given mass of hydrocarbon) on or in the water column, at regular time steps.

The collective records from all simulations were then analysed by dividing the study area into a three-dimensional grid. For oil particles classified as being at the water surface, the sum of the mass in all hydrocarbon particles located within a grid cell, divided by the area of the cell provided an estimate of the concentration of oil in that grid cell, at each time step.

For entrained and dissolved hydrocarbon particles, concentrations were calculated at each time step by summing the mass of particles within a grid cell and dividing by the volume of the grid cell. The concentrations of oil calculated for each grid cell, at each time step, were then analysed to determine whether concentration estimates exceeded defined threshold concentrations. The risks were then summarised as follows:

- The probability of exposure at a location was calculated by dividing the number of spill simulations where contact occurred above a contact threshold at that location by the total number of replicate spill simulations. For example, if contact occurred at the location (above a contact threshold) 50 out of 100 simulations, a probability of exposure of 50 per cent is indicated
- The minimum potential time to a shoreline location was calculated by the shortest time over which oil was calculated to travel from the source to the location in any of the replicate simulations.
    - **Probability contours**: the results were presented in terms of statistical probability maps based on the simulations considered, each generated under different environmental conditions. The contours of probability are not representations of a single spill event.

- **Completion of modelling**: each of the 100 simulations was run for a period of two to three weeks allowing for the fate of dispersed hydrocarbons to be evaluated. Fate assessment stops once hydrocarbon concentrations fall below the defined contact thresholds. In this manner, the full extent of the spill scenario is assessed against the specified contact thresholds.

8.7.4 Modelling Thresholds

To assess environmental effects from an unplanned hydrocarbon release, four separate hydrocarbon components that pose differing environmental risks were evaluated:

- Surface hydrocarbons – hydrocarbons that are 'on' the water surface
- Entrained hydrocarbons – hydrocarbon that is entrained 'in' the water
- Dissolved hydrocarbons – the dissolved component of hydrocarbon in' the water
- Shoreline accumulation – hydrocarbons that accumulate along shorelines

Threshold concentrations for each of the three hydrocarbon phases were applied to the modelling outputs to define the EMBA for each phase in accordance with NOPSEMA (2019) guidance. A receptor was considered 'affected' by one of the phases as soon as the threshold for the phase at that location was exceeded (i.e. instantaneous impact approach).

The rationale for the selection of the thresholds is described in Appendix D and a summary of the contact thresholds applied is provided in Table 8-3.

Table 8-3: Summary of the contact thresholds applied in the hydrocarbon spill modelling

Threshold level	Floating oil (g/m^2)	Entrained oil (ppb)	Dissolved aromatic hydrocarbons (ppb)	Shoreline loading (g/m^3)
Low	1	10	10	10
Moderate	10	-	50	100
High	50	100	400	>1,000

8.7.5 Modelling results of the worst case surface and subsea crude scenarios

RPS was commissioned to conduct a quantitative hydrocarbon spill risk assessment to evaluate the worst case surface and subsurface potential crude spill scenarios.

Stochastic spill modelling was conducted for the three scenarios for each of three seasons: summer (November to February), winter (April to August) and combined transition (March, September and October). Oil spill modelling was undertaken using a three-dimensional oil spill trajectory and weathering model, SIMAP (Spill Impact Mapping and Analysis Program), which is designed to simulate the transport, spreading and weathering of specific oil types under the influence of changing meteorological and oceanographic forces. With a number of different release scenarios resulting in different floating oil, entrained oil and dissolved aromatic hydrocarbon affected areas, the results for each hydrocarbon component and scenario were combined to create total EMBAs to accommodate the modelling results.

The worst-case scenarios were determined to be:

- a 11,570 m^3 surface release of Montara crude over 5 hours from a cargo vessel tank rupture
- a 1,700 m^3 subsea release of Montara crude over 24 hours from a subsea flowline rupture.

No mitigation measures were applied in this modelled scenario.

For information, EMBAs for each of the scenarios are presented in Figure 8-1 and Figure 8-2.

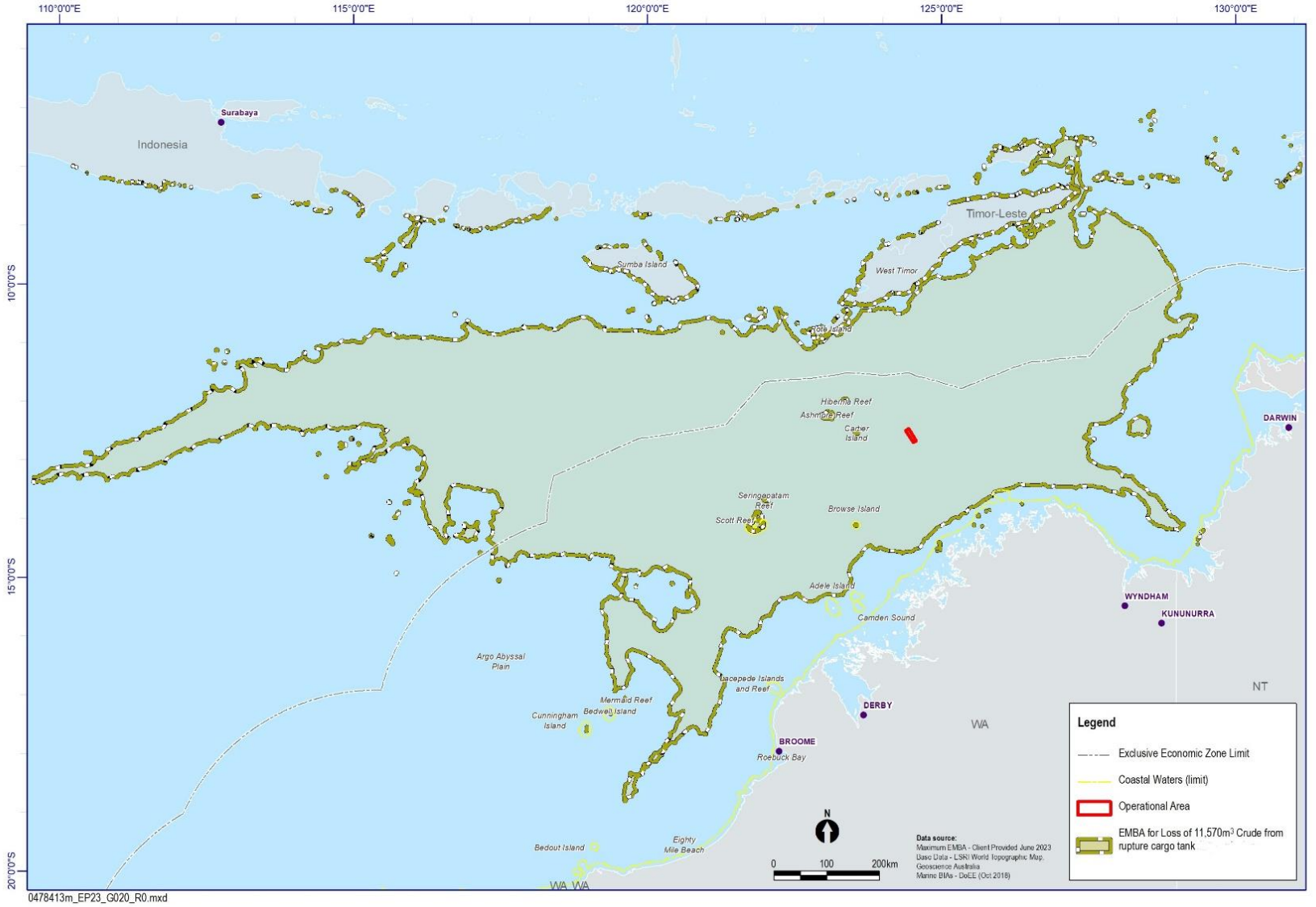


Figure 8-1: EMBA for Scenario 1: Loss of 11,570 m³ at surface from vessel cargo tank rupture

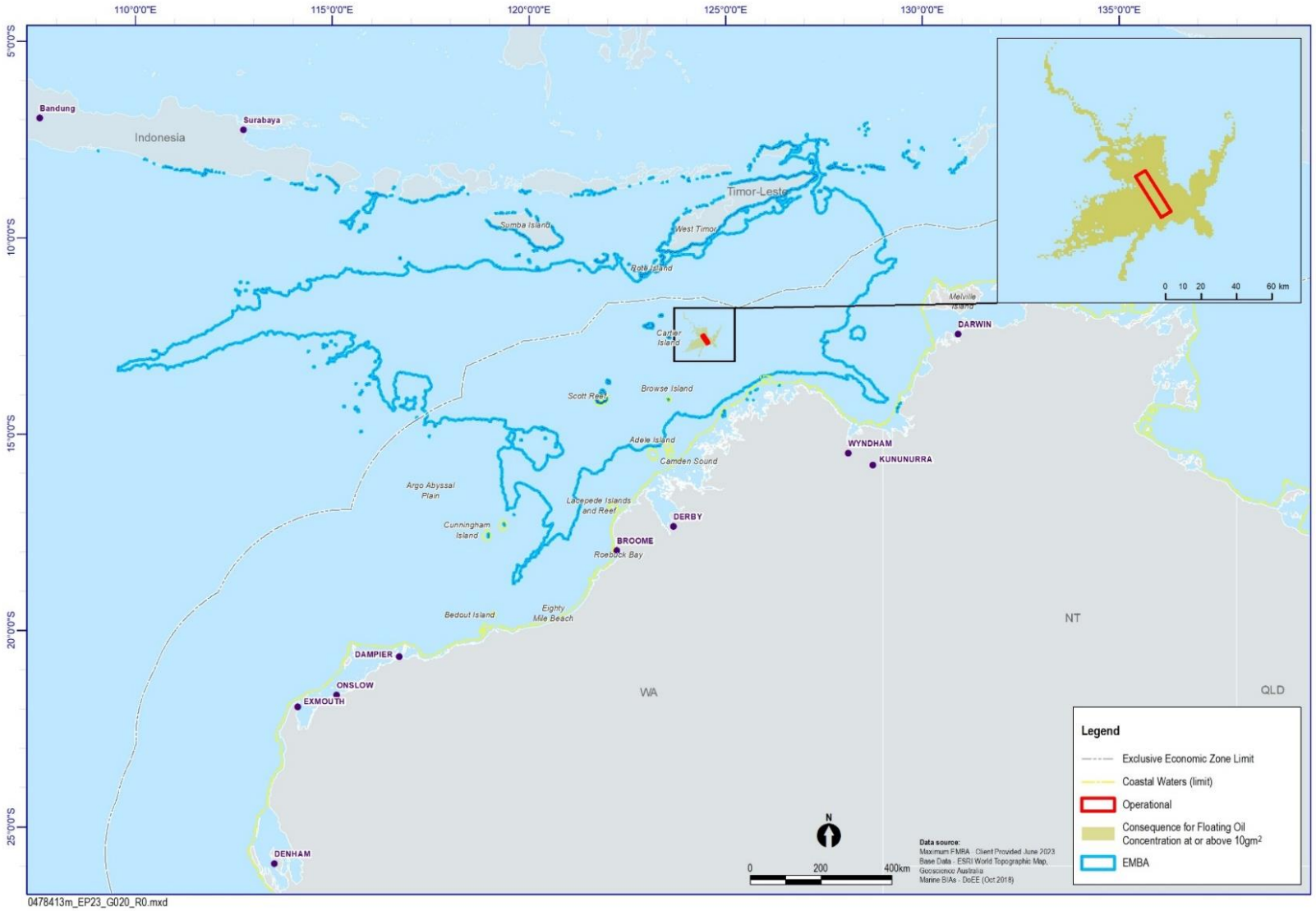


Figure 8-2: EMBA for Scenario 2: Loss of 1,700 m³ of crude subsea from rupture of subsea pipeline

Scenario 1 (11,570 m^3 release from a cargo vessel tank rupture) summary results

Floating Oil Exposure

The maximum distance from the release location to the low (1–10 g/m^2), moderate (10–50 g/m^2) and high (50 g/m^2) exposure zones was 1,073 km (north-northeast) during winter conditions, 245 km (west-northwest) during transitional conditions and 164 km (north-northwest) during transitional conditions, respectively.

The greatest probability of floating oil exposure above the low threshold during summer, transitional and winter conditions was whale shark foraging BIA (100%) Carbonate bank and terrace system of the Sahul Shelf KEF (42%), Lesser Frigatebird – Breeding BIA (66%), and Greater Frigatebird – Breeding BIA (65%), respectively. The minimum times before floating oil exposure above the low threshold during summer, transitional and winter conditions was 2.21 days for Carbonate bank and terrace system of the Sahul Shelf KEF, 1.67 days for Vulcan Shoals RSB, and 1.29 days also for Vulcan Shoals RSB, respectively.

The greatest probability of floating oil exposure above the moderate threshold during summer, transitional and winter conditions was Carbonate bank and terrace system of the Sahul Shelf KEF (16%), Lesser Frigatebird – Breeding BIA (18%), and Greater Frigatebird – Breeding BIA (14%), respectively. The minimum times before floating oil exposure above the moderate threshold during summer, transitional and winter conditions was 2.92 days for Carbonate bank and terrace system of the Sahul Shelf KEF, 2.42 days for Vulcan Shoals RSB, and 2.54 days for Goree Shoals, respectively.

Shoreline Accumulation

The probability of accumulation to any shoreline at, or above, the low level (10 g/m^2) threshold during summer, transitional and winter conditions was 70%, 86% and 95%, respectively. Additionally, the seasonally based minimum times before oil accumulation at, or above, the low threshold was 12.75 days, 7.42 days, and 5.25 days, respectively.

The maximum volume ashore for a single spill trajectory during the summer, transitional and winter conditions was 1,073 m^3, 1,206 m^3, and 1,722 m^3, respectively, whilst the maximum length of shoreline accumulation at the low threshold was 1,028 km, 368 km and 865 km, respectively. Additionally, the seasonally based maximum lengths of shoreline accumulation during summer, transitional and winter was 724 km, 235 km and 549 km for the moderate threshold, and 276 km, 83 km and 98 km for the high threshold, respectively.

Hibernia Reef recorded the highest probability of shoreline accumulation at the low threshold with 22% during summer, whist Cartier Reef recorded the highest probability of shoreline accumulation at the low threshold during both transitional (59%) and summer (61%) conditions. The largest shoreline accumulation during summer, transitional and winter was recorded for the shorelines of Timor-Leste (620.3 m^3 (summer)) and Ashmore Reef (626.8 m^3 (transitional) and 1,147.3 m^3 (winter)).

The minimum time before shoreline accumulation above the low threshold was 12.75 days during summer conditions, and 7.42 days and 5.38 days.

Dissolved hydrocarbons

The highest concentration of dissolved hydrocarbon during summer, transitional and winter conditions in the 0–10 m depth layer was predicted for the Carbonate bank and terrace system of the Sahul Shelf KEF (2,720 ppb), Vulcan Shoal (829 ppb) and Ancient coastline at 125 m depth contour KEF (2,243 ppb), whilst the greatest probability of dissolved hydrocarbon above the low threshold was Carbonate bank and terrace system of the Sahul Shelf KEF (26% and 24%) and Vulcan Shoal (50%), respectively.

Entrained hydrocarbons

The highest concentration of entrained hydrocarbon during summer, transitional and winter conditions in the 0–10 m depth layer was predicted for the Carbonate bank and terrace system of the Sahul Shelf KEF (4,706 ppb) and Vulcan Shoal (3,805 ppb and 14,604 ppb), respectively, whilst the greatest probability of

entrained hydrocarbon above the low threshold was Carbonate bank and terrace system of the Sahul Shelf KEF (59%) and Vulcan Shoal (47% and 75%), respectively.

Scenario 1 (1,700 m^3 release from a subsea flowline) summary results

Floating Oil Results

The maximum distance from the release location to the low (1–10 g/m^2), moderate (10–50 g/m^2) and high (50 g/m^2) exposure zones was 1,345 km (west-northwest) during transitional conditions, 158 km (north-northwest) during transitional conditions and 21 km (west-southwest) during summer conditions, respectively.

The greatest probability of floating oil exposure above the low threshold during summer, transitional and winter conditions was Carbonate bank and terrace system of the Sahul Shelf KEF (18%), Lesser Frigatebird – Breeding BIA (39%), and Greater Frigatebird – Breeding BIA (30%), respectively. The minimum times before floating oil exposure above the low threshold during summer, transitional and winter conditions was predicted for Vulcan Shoal during all seasons with times of 2.42 days, 1.75 days and 1.33 days.

Shoreline Accumulation

The probability of accumulation to any shoreline at, or above, the low level (10 g/m^2) threshold during summer, transitional and winter conditions was 12%, 47% and 80%, respectively. Additionally, the seasonally based minimum times before oil accumulation at, or above, the low threshold was 12.83 days, 7.21 days, and 5.33 days, respectively.

The maximum volume ashore for a single spill trajectory during the summer, transitional and winter conditions was 21 m^3, 113 m^3, and 187 m^3, respectively, whilst the maximum length of shoreline accumulation at the low threshold was 50 km, 66 km and 96 km, respectively. Additionally, the seasonally based maximum lengths of shoreline accumulation during summer, transitional and winter was 50 km, 64 km and 91 km for the moderate threshold, and 3 km, 26 km and 45 km for the high threshold, respectively.

The highest probabilities of shoreline accumulation at the low threshold were recorded for Ashmore Reef and Browse Island with 4% during summer, Ashmore Reef with 22% during transitional conditions and Cartier Island with 58% during winter conditions. The largest shoreline accumulation during summer, transitional and winter was recorded for the shorelines of Ashmore Reef (15.7 m^3 (summer) and 141.4 m^3 (winter)), Hibernia Reef (70.3 m^3 (transitional)).

Dissolved Hydrocarbons

The highest concentration of dissolved hydrocarbon during summer, transitional and winter conditions in the 0–10 m depth layer was predicted for the Carbonate bank and terrace system of the Sahul Shelf KEF (238 ppb), Eugene McDermott Shoal (245 ppb) and Vulcan Shoal (415 ppb), whilst the greatest probability of dissolved hydrocarbon above the low threshold was Carbonate bank and terrace system of the Sahul Shelf KEF (9%), Goeree Shoal (12%) and Vulcan Shoal (28%), respectively.

Entrained Hydrocarbons

The highest concentration of entrained hydrocarbon during summer, transitional and winter conditions in the 0-10 m depth layer was predicted for the Carbonate bank and terrace system of the Sahul Shelf KEF (256 ppb), Vulcan Shoal (292 ppb), and Goeree Shoal (556 ppb, respectively, whilst the greatest probability of entrained hydrocarbon above the low threshold was Carbonate bank and terrace system of the Sahul Shelf KEF (35%), Goeree Shoal (30%) and Vulcan Shoal (55%), respectively.

8.7.6 Impacts and risks

The determination of biologically meaningful impact levels is complex since the degree of impact will depend on the sensitivity of the biota contacted, the duration of the contact (exposure) and the toxicity of

the hydrocarbon mixture making the contact. The toxicity of a hydrocarbon will change over time, due to weathering processes altering the composition of the hydrocarbon.

Impact pathways and impact threshold concentrations are detailed below for surface (floating) oil, entrained oil and dissolved aromatic hydrocarbons (DAHs). Further details on the thresholds selected are provided in Appendix D.

8.7.7 Exposure pathways

Surface Oil

Coating of marine flora, fauna and habitats or ingestion of oil by marine fauna. The degree to which impacts could occur will depend upon the level of coating (concentration of oil and/or loading of oil on shorelines) and how fresh the oil is.

Shoreline habitats have the potential to be coated by stranded oil and shoreline fauna can be exposed to toxic effects from ingestion. There are no thresholds identified at which coating or volume ashore will result in an impact, however those shorelines with the highest load, and those identified as significant threatened or migratory fauna habitat are the most susceptible to impact.

Surface oil occurring in coastal waters (of 1 g/m^2) and accumulating on shorelines may also reduce the visual amenity of an area diminishing the natural, historic and indigenous heritage values of a place. Ecological impact has been estimated to occur at 10 g/m^2 (a film thickness of approximately 10 µm or 0.01 mm) according to French et al. (1996) and French-McCay (2009) as this level of fresh oiling has been observed to mortally impact some birds through adhesion of oil to their feathers, exposing them to secondary effects such as hypothermia. The appearance of oil at this average thickness has been described as a metallic sheen (Bonn Agreement 2009).

Table 8-4 lists key potential impacts to sensitive receptors present in the EMBA.

Entrained oil exposure

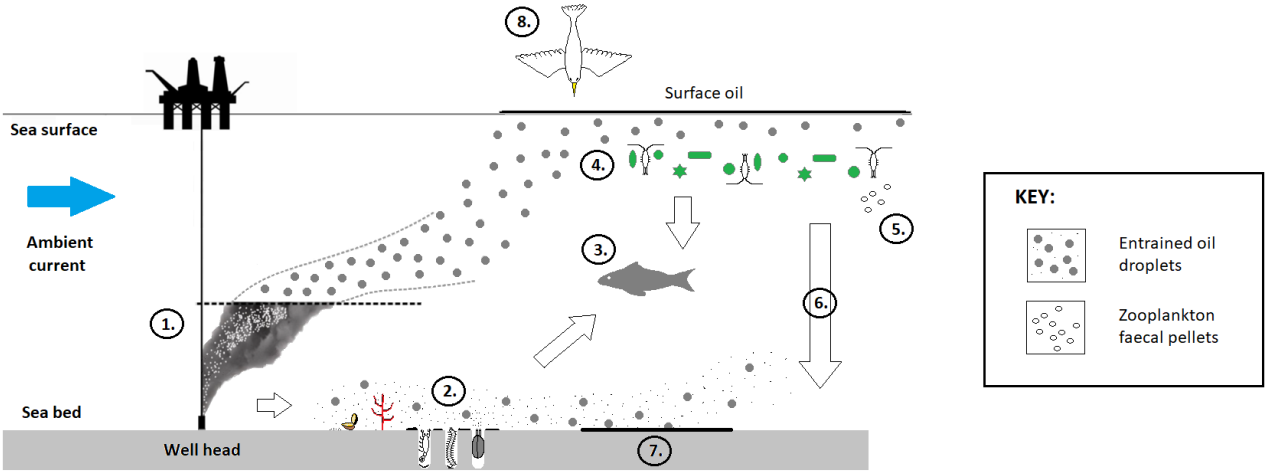
Entrained oil has the potential to impact benthic and shoreline habitats and organisms.

A review of the concentrations of entrained hydrocarbons at which toxic effects have been demonstrated in laboratory studies show wide variation depending on the test organism, duration of exposure, oil type and the initial oil mixture (i.e. nominal loading rates of hydrocarbon versus measured concentrations) (Clark et al. 2001; NOAA 2001; Gulec and Holdway 2000; Gulec et al. 1997; Barron et al. 2004). According to a review by IRC (2011) of Group II (MGO) hydrocarbons toxicity to the marine environment, a contact threshold of 500 ppb was found to be highly conservative for a range of species including crustaceans, molluscs, echinoderms and fish. Therefore the threshold selected for this activity of 100 ppb is considered to be very conservative.

Potential impacts to marine fauna due to exposure to >100 ppb entrained oil include:

- Harm to internal anatomy if ingested
- Irritation or damage to sensitive external features such as eyes and skin
- Damage to feathers of marine birds
- Toxicological effects to invertebrates, including corals, sponges and ascidians.

Potential pathways for biological effects from entrained oil are illustrated in Figure 8-3. It is important to note that the illustration does not directly represent the predicted behaviour of the Montara or Skua crude and is for illustration purposes only as this also represents a loss from a loss of well control subsea which would have a higher velocity plume than a loss from a ruptured flowline.



1. Oil is split into suspended droplets of oil by the energy of the release from the well head.
2. Exposure of benthic biota to entrained oil droplets and oil absorbed onto organic material causes chemical burns to external and respiratory membranes.
3. Entrained oil also causes chemical burns to sensitive membranes in demersal and pelagic biota, which may cause cysts or tumours.
4. Entrained oil is absorbed onto organic material and grazed on by zooplankton (e.g. copepods).
5. Hydrocarbons are then accumulated into faecal pellets, which may be eaten or form part of "marine snow".
6. "Marine snow", comprising dead organic matter and faecal materials gradually sink to the sea floor. Hydrocarbons are accumulated through additional absorbtion of entrained oil droplets. Sedimentation of "marine snow" one of the processes where spill hydrocarbons can accumulate in sea bed sediments.
7. Hydrocarbons will accumulate in marine sediments where plumes of entrained oil droplets come into contact with the sea floor. This was described as the "bathtub ring effect" following the Deepwater Horizon spill. Accumulated hydrocarbons in marine sediments can have ecotoxic effects to biota at and beneath the sediment surface.
8. Avifauna (birds) and marine mammals (e.g. seals and sealions) can get oiled at or near the water surface. Cleaning of oil from external surface can result in ecotoxic effects from ingestion, or hydrocarbons can be passed on to young during feeding. Seabirds may suffer drowning or hypothermia as oil removes the coating that waterproofs the feathers and keeps the bird dry.

(Source: Equinor 2019)

Figure 8-3: Conceptual model of exposure pathways for entrained hydrocarbons from hydrocarbon spill

Dissolved Aromatic Hydrocarbons

Laboratory studies have shown that dissolved hydrocarbons exert most of the toxic effects of oil on aquatic biota (Carls et al. 2008; Nordtug et al. 2011; Redman 2015). The mode of action is a narcotic effect, which is positively related to the concentration of soluble hydrocarbons in the body tissues of organisms (French-McCay 2002). Dissolved hydrocarbons are taken up by organisms directly from the water column by absorption through external surfaces and gills, as well as through the digestive tract. Thus, soluble hydrocarbons are termed “bioavailable”.

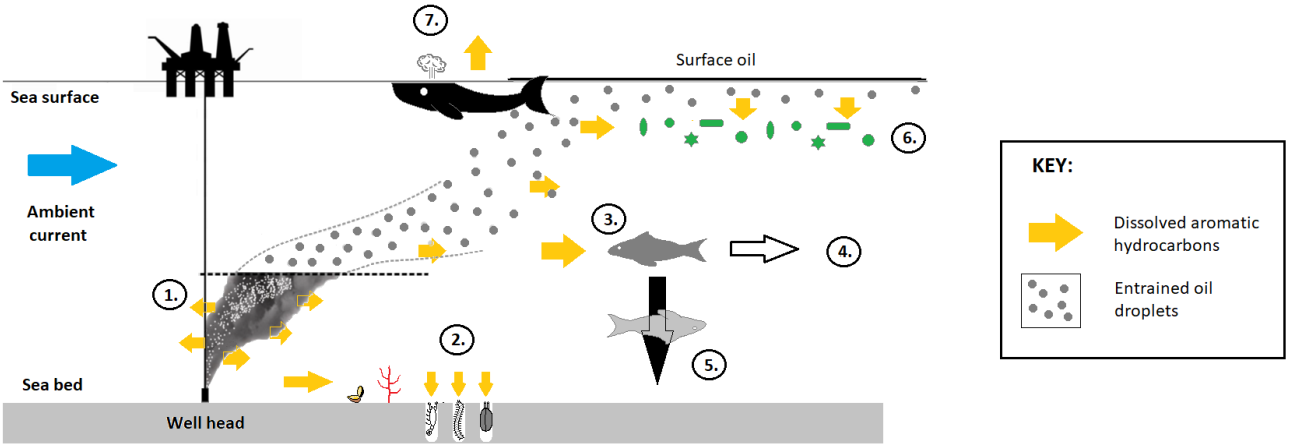
Various studies indicate that the toxic effects of aromatic compounds result from the narcosis caused in biological receptors following exposure to low molecular weight aromatics including compounds from the BTEX group and 2−4 ring PAHs (French 2000). Accumulation of petroleum hydrocarbons by marine organisms is dependent on the bioavailability of the hydrocarbons, the length of exposure, and the organism’s capacity for metabolic transformations of specific compounds. Actual toxicity depends on both concentration and the duration of exposure, being a balance between acute and chronic effects.

Acute toxicity – Toxicity to wildlife increases with increased length of exposure; marine organisms can typically tolerate high concentrations of toxic hydrocarbons over short durations (French 2000; Pace et al. 1995). DAHs have a narcotic effect on organisms, resulting from interference with cell function that occurs as hydrocarbons are absorbed across cell membranes (French-McCay 2002). The narcotic effect varies

among specific hydrocarbon compounds, with these variations thought to be attributable to the lipid solubility of the compounds. Over periods of hours to a few days, the narcotic effect has been found to be additive, both in severity and the number of different soluble hydrocarbons that are present (French 2000; NRC 2005; Di Toro et al. 2007). Because the toxicity of DAH to aquatic organisms increases with time of exposure, organisms may be unaffected by brief exposures to a given concentration but affected at long exposures to the same concentration (French-McCay 2002). This is because the concentrations of hydrocarbons build up in the tissues of biological receptors from either long-term exposure or repeated exposure to sub-lethal concentrations.

Chronic toxicity and accumulation – There is sparse data available on the chronic effects of PAHs in the marine environment. A review of the processes controlling the uptake and persistence of PAH in marine organisms, especially under chronic exposure conditions, highlighted differential mechanisms of uptake, tissue distribution, and elimination (Meador et al. 1995). While vertebrates have a high capacity for metabolising aromatic hydrocarbons including PAHs (through cytochrome P450 1A mediated oxidation), PAHs can accumulate in the body of invertebrates (as they lack a cytochrome P450 1A mediated oxidation system). Organisms that may experience chronic effects include plankton, fish, marine mammals and marine reptiles.

Potential pathways for biological effects from DAH are illustrated in Figure 8-4. It is important to note that the illustration does not directly represent the predicted behaviour of the Montara crude and is for illustration purposes only as this also represents a loss from a loss of well control subsea which would have a higher velocity plume than a loss from a ruptured flowline.



1. Aromatic hydrocarbons dissolve into the water column.
2. Epibiota and infauna are exposed to dissolved aromatics. Direct absorbtion across membranes and respiratory surfaces. Infauna may draw dissolved hydrocarbons into burrows via generation of a respiratory current.
3. Demersal and pelagic biota (e.g. fish, squid) are exposed to dissolved hydrocarbons. Uptake may occur across surface and respiratory membranes.
4. Sublethal effects may include skin systs/tumours, bioaccumulation of hydrocarbon compounds, impacts to fecundity. Fish are capable of processing and excreting some hydrocarbon compounds. Additional predation may increase bioaccumulation up the food web.
5. Ecotoxic effects of dissolved hydrocarbons at sufficient concentrations and durations of exposure may cause mortality. Dead biota may be scavenged or be a vector of hydrocarbons into marine sediments.
6. Dissolved hydrocarbons can also cause ecotoxic effects in plankton, causing mortality or developmental effects in early life stages of macrobiota.
7. Volatile Organic Compounds (VOCs) pass into the atmosphere as part of the wethering process. Air breathing animals, such as cetaceans or marine reptiles, may be exposed and suffer ecotoxic effects.

(Source: Equinor 2019)

Figure 8-4: Conceptual model of exposure pathways for dissolved aromatic hydrocarbons from hydrocarbon spill

8.7.8 Level of Impact on Sensitive Receptors within the EMBAs

Table 8-4 lists key potential impacts to sensitive receptors present in the EMBAs.

Table 8-4: Potential impacts to sensitive receptors present in the EMBAs

Shoreline habitats (excluding Mangroves)	
Sensitivity There are a wide variety of different types of shorelines found along Australia's western and northern coast and offshore islands. The type of shoreline will influence the volume of hydrocarbon that could be stranded ashore and its thickness before the shoreline saturation point occurs. For instance, a sandy beach may allow hydrocarbon to percolate through the sand, and weathered oil may be buried, thus increasing its ability to hold more hydrocarbon ashore over tidal cycles and various wave actions in comparison to a rocky shore; hence hydrocarbon can increase in thickness onshore over time. Shoreline data was obtained from the OzCoasts Smartline data set sourced via Geoscience Australia. **Floating** Shoreline habitats which have the potential to be smothered by stranded oil include intertidal coral reefs, cays, sandy shorelines, mangroves, rocky shorelines and intertidal mud/sandflats. Fauna associated with these can be exposed to toxic effects from ingestion as fauna attempt to clean themselves (e.g. preening of feathers or licking fur), reduced mobility and inability to thermoregulate due to oil coating, contact to eyes, noses and breathing apparatus (invertebrates) from oil coating can result in irritation and/or inability to breathe or see. While oil will likely be deposited at the surface of the beach there is also the possibility that a proportion of the stranded oil will contaminate sand deeper in the beach profile. This may occur through re-suspension of sediments in the surf zone, the oil melting and moving down through the beach sediments or soluble fractions of the stranded oil percolating through to deeper beach sediments. Oiling of tidal zones and rocky shores may cause coating of organisms present possibly leading to suffocation or loss of purchase on the substrate. While oil may stick to platform surfaces, in high energy areas high water movement and energy will remove oil over time; however, in lower energy areas stranded oil may persist and oil may also be 'hidden' under rubble, ledges and in pockets/crevices. Once oil has been removed from platform surfaces, re-colonisation of the hard substrate surfaces by organisms is often rapid (weeks to months) **Entrained and dissolved** Intertidal and subtidal zones may be exposed to entrained and dissolved hydrocarbons with impacts similar to coral reefs. Impacts may occur due to increased hydrocarbon levels in the nearshore waters and in sediments above the low water mark. Concentrations of hydrocarbons in nearshore waters and sediments, will fluctuate over short time scales (days to weeks), due to volatilisation, wave and tidal action, biological processes and potential arrival of more oil. Fauna associated with these habitats may experience sub-lethal effects. However, due to the expected weathering of crude, the accessibility of PAHs to aquatic organisms is decreased.	
Potential impact from modelled event	
Locations of shoreline habitats (sandy shores, rocky shores and intertidal flats are listed in Appendix C, and could be impacted by surface or entrained and dissolved oil throughout the EMBA. Shoreline loading of oil could have significant impacts at these locations as described above.	
Timeframe to recovery	Similar to benthic habitats, recovery of shoreline habitats exposed to entrained hydrocarbons and experiencing impacts would be expected within weeks to months of return to normal water quality conditions.
Consequence	The consequence of a major hydrocarbon spill event on shoreline habitats was assessed as ***Major*** given recovery may take years.
Mangroves and saltmarsh	
Floating Mangrove root systems (including pneumatophores) are sensitive to physical coating by crude oil which may persist for long periods of time given the persistent components of crude oil and the tendency for mangrove root habitat to trap oil. Surface slicks that make their way into a mangrove will make contact with pneumatophores used by mangroves for gas exchange. Crude oil that coats pneumatophores will impede gas exchange that may result in	

yellowed leaves, defoliation and tree death depending on the extent and degree of oiling. Exposure of mangroves to floating oil may also cause toxicity including damage to cellular membranes leading to impairment of salt exchange, disruption of ion transport mechanisms, and growth of branched pneumatophores in response to tissue death of coated pneumatophores. More chronic toxicity impacts include genetic damage have population-scale effects (e.g. reduction/ loss of chlorophyll content in leaves). A high sensitivity of seedlings to oiled sediments would also impact longer term recruitment of the affected population.

This could have prolonged negative effects on the faunal communities within mangroves. Of the emergent habitat types mangroves are likely to be one the most susceptible and slowest recovering habitat types with recovery potentially on a decadal scale if death of trees was to occur.

Salt marshes would likely trap floating crude oil to a certain degree and therefore persistent oil may remain within these areas even after tidal water has receded. This could have prolonged negative effects on the faunal communities within salt marshes. Depending upon the degree of weathering, crude oil may have toxic impacts from physical coating of salt marshes potentially ranging from death to sub lethal stresses such as reduced growth rates and reduced reproductive output/ success. Such impacts would be restricted to the seaward fringes of salt marsh communities.

Entrained and dissolved

Mangrove communities may be impacted through the sediment/ mangrove root interface. Where entrained hydrocarbons include contaminants that may become persistent in the sediments (e.g. trace metals, PAHs), this can lead to effects on mangroves due to uptake, or effects on benthic infauna leading to reduced rates of bioturbation and subsequent oxygen stress on the plants' root systems (Lewis et al. 2011).

Impacts to mangroves include yellowing of leaves, defoliation, reduced reproductive output and success, mutation and increased sensitivity to other stresses (NOAA 2010). This is in addition to impacts to the marine organisms utilised mangrove habitat (invertebrates, fish, birds).

Potential impact from modelled event

Mangroves could be impacted at the North Kimberley marine park and Timor Leste and Indonesian shorelines . These mangroves are identified as KPI values within many of the respective management plans. Floating crude oil could reach salt marsh areas (North Kimberley marine park), which are often landward of mangrove communities, on high spring tides.

Timeframe to recovery	Depending upon the level of impact, recovery to affected mangrove areas can be on the scale of years to decades (NOAA 2010).
Consequence	The consequence of a major hydrocarbon spill event on mangroves and saltmarshes was assessed as ***Critical*** given recovery may take years.

Plankton

Sensitivity

Floating

Presence of surface oil can affect light qualities and the ability of plankton to photosynthesise. Reduced primary productivity could occur while surface oil is present

Entrained and dissolved

There is potential for localised mortality of plankton due to reduced water quality and toxicity. Effects will be greatest in the upper 10 m of the water column and areas close to the spill source where hydrocarbon concentrations are likely to be highest.

Planktonic communities comprise sensitive receptors to hydrocarbon exposure including single-celled organisms (e.g. phytoplankton) and larval stages of vertebrates and invertebrates. Smaller organisms are more likely to become entrained in a parcel of water; if contaminated with dissolved aromatic hydrocarbons, and organisms are entrained in a parcel of water for 96 hours or more acute/lethal effects may result. Where plankton are exposed to entrained hydrocarbons for a period less than 96 hours and at concentrations that may cause effect, chronic/non-lethal impacts may occur including impaired movement, predatory/avoidance response, respiration.

Numerous studies on the influence of oil on plankton communities have been carried out, including a study conducted by Varela *et al.* (2006), which also compared their results with other published studies. Despite limitations (oil type, environmental conditions and planktonic communities) it was not possible to demonstrate any effects on plankton communities and that any changes are within the range of natural ecosystem variability.

Variations in the temporal scale of oceanographic processes typical of the ecosystem have a greater influence on plankton communities than the direct effect of spilt oil.	
Potential impact from modelled event	
All areas and species	High abundance of phytoplankton typically occurs around topographical features that may result in upwelling or a disruption to the current flow which may be present around banks and shoals and offshore islands within the EMBA. The EMBA has the potential to overlap with spawning of some fish species given the year round spawning of some species and the ongoing operations activity. In the unlikely event of a spill occurring, fish larvae may be impacted by hydrocarbons entrained in the water column with effects greatest in the upper 10 m of the water column where the majority of plankton concentrate and closest to the spill source.
Timeframe to recovery	Reproduction by survivors or dispersion from unaffected areas (via sea surface currents) would be likely to rapidly replenish any losses from permanent zooplankton (Abbriano *et al.* 2011). Plankton have life cycles based on rapid reproduction with levels of high productivity. It is also in the nature of plankton to be dispersive – it is why many benthic taxa have adopted a pelagic early life history stage to increase dispersion via a vector with a consistent food supply. Field observations from oil spills have shown minimal or transient effects on marine plankton (Abbriano *et al*. 2011). Once background water quality conditions have re-established, the plankton community will take weeks to months to recover (ITOPF 2011), allowing for seasonal influences on the assemblage characteristics.
Consequence	The consequence of a major hydrocarbon spill event on plankton was assessed as ***Minor*** given recovery may take weeks to months.
Benthic habitat and communities (including deepwater habitats and shallow shoals, corals, intertidal zones)	
Sensitivity **Floating** Contact of floating crude oil could occur with intertidal corals at low tide. The degree to which impacts such as bleaching, mortality or reduced growth could occur will depend upon the level of coating (concentration of oil and/or loading of oil on shorelines) and how fresh the oil is. Prolonged contact of oil with corals has been observed to lead to tissue death and bleaching to exposed parts of colonies. Impacts to hard corals could be intensified if a spill was to reach shallow coral areas during the peak spawning seasons since floating oil could smother intertidal corals in the process of spawning or could contact floating coral eggs and larvae following spawning events. Dependent on the level of contact, this could diminish coral recruitment, and impact longer term recovery. Other benthic habitats are unlikely to be impacted by surface oil given the water depths of them. **Entrained and dissolved** Intertidal and subtidal zones may be exposed to entrained hydrocarbons with impacts similar to coral reefs. Impacts may occur due to increased hydrocarbon levels in the nearshore waters and in sediments above the low water mark. Concentrations of hydrocarbons in nearshore waters and sediments, will fluctuate over short time scales (days to weeks), due to volatilisation, wave and tidal action, biological processes and potential arrival of more oil. The smothering of submerged benthic habitats and those within tidal zones from water column oil has only been reported where very large oil spill quantities have affected these habitats or very sticky oil slicks have encountered exposed coral surfaces or polyps. Where entrained oil reaches the shoreline habitats of intertidal zones, sub-lethal effects may occur, with mangroves and reef areas being the most sensitive. There is a paucity of information on the long-term impacts on coral reefs of hydrocarbons entrained in the water column although NOAA (2001) indicate that some effects may be transient whilst others are long-lasting depending on the type of corals, reproduction period and health of the reef. Response to hydrocarbon exposure can include impaired feeding, fertilisation, larval settlement and metamorphosis, larval and tissue death and decreased growth rates (Villanueva et al. 2008).	

Entrained hydrocarbon concentrations below parts per million (ppm) concentrations in marine waters have not been associated with any observed stress, degradation or death of corals. Macrophytes, including seagrasses and macroalgae, require light to photosynthesise. Presence of entrained hydrocarbon within the water column can affect light qualities and the ability of macrophytes to photosynthesise. Reduced primary productivity could occur while entrained hydrocarbons are present in the water column.

Waters that contain extensive fringing coral reef may experience impacts from entrained hydrocarbons as described below for benthic habitats. Reefs are often characterised by increased levels of biological productivity, which attracts commercially valuable fish species. Impacts from entrained hydrocarbons will be as described below for reef fish.

Epifauna associated with hard substrates such as ascidians and sponges may experience direct toxicity through ingestion.

Potential impact from modelled event	
All areas and species	Benthic habitats in the EMBA that may be impacted by entrained oil include soft sediments and benthic fauna, coral reef, sponges, macroalgae and seagrasses.
Timeframe to recovery	Recovery of benthic habitats exposed to entrained hydrocarbons and experiencing impacts would be expected within weeks to months of return to normal water quality conditions. Several studies have indicated that rapid recovery rates may occur even in cases of heavy oiling (Burns et al. 1993; Dean et al. 1998).
Consequence	The consequence of a major hydrocarbon spill event on benthic habitats was assessed as ***Moderate*** given recovery may take months to a year depending on the habitat type.

Marine Reptiles

Sensitivity

Marine reptiles (including turtles) are potentially directly affected by the toxicity of in-water and surface hydrocarbons through ingestion, volatile organic compounds through inhalation, as well as potentially suffering from effects of physical contact with surface hydrocarbons.

Floating

Marine turtles and sea snakes when surfacing to breathe may be affected from surface slick hydrocarbons through damage to their airways and eyes. Turtles and sea snakes may be affected by oil through tainted food source or by absorption through the skin. Risk of contact would likely be greatest along intertidal sections of nesting beaches or within shallow waters adjacent to nesting beaches. Contact might also occur within foraging areas.

Depending on species, adult females will lay eggs on the beach above the high tide mark followed by emergence of hatchlings that will make their way to the water. Adult females will often wait in nearshore water before coming up onto the beach, and may revisit the beach a number of times before exiting onto the beach and laying her eggs. Coating (particularly of hatchlings) can lead to reduced mobility and buoyancy-Mortality, drowning, starvation, dehydration, increased predation and behavioural disruption.

Other impacts expected:

- Inhalation of volatile compounds
- Ingestion and internal adsorption
- External contact and adsorption across exposed skin and membranes
- Indirect impact to predators through ingestion of oiled prey
- Mortality, cell damage, lesions, secondary infections, reduced metabolic capacity, reduced immune response, disease, reduced growth, reduced reproductive output, reduced hatchling success, growth abnormalities, behavioural disruption

Entrained

Turtles and seasnakes may be affected by oil through tainted food source or by absorption through the skin. Turtle hatchlings and turtle/seasnake adults may be exposed to hydrocarbon through ingestion of entrained hydrocarbons and tainted food source. These effects may cause physiological effects such as disruption of digestion. As for other megafauna that may be exposed to entrained hydrocarbons, acute impacts due to exposure to adult turtles are not expected. Whilst turtle nesting beaches may be contacted by crude (floating or accumulated), turtles will always nest above the high tide mark and any oil moving through the beach profile

should not come into contact with nests. Entrained and dissolved oil may result in harm to internal anatomy if ingested, irritation or damage to sensitive external features such as eyes and skin and damage to respiratory processes if significant inhalation of volatile fumes occurs at the surface.

Dissolved

The majority of publicly-available information detailing potential impacts to turtles and seasnakes due to exposure to hydrocarbons is based on impacts due to heavy oils. Impacts due to exposure to DAHs are less understood. One information source provides a case study detailing a spill of 440,000 gallons of aviation gasoline nearby to an island supporting approximately 1,000 green turtles that aggregate and nest at the atoll in the west Pacific Ocean annually (NOAA 2010b). Timing of the spill was of concern as it coincided with expected peak hatchling emergence. Population comparisons with a census that had been completed just prior to the spill were undertaken to evaluate impacts; no impacts were reported during the spill response and population effects were not detected.

For marine reptiles that may be exposed to DAHs dosages that exceed the threshold, acute impacts to turtles and seasnakes are not expected. Impacts to turtle hatchlings may occur however due to the risk of them becoming entrained in a parcel of water allowing them to be continuously exposed to toxic hydrocarbons for an extended period

Whilst turtle nesting beaches may be contacted by weathered oil, turtles will always nest above the high tide mark and any oil moving through the beach profile should not come into contact with nests. Entrained and dissolved oil may result in harm to internal anatomy if ingested, irritation or damage to sensitive external features such as eyes and skin and damage to respiratory processes if significant inhalation of volatile fumes occurs at the surface.

Potential impact from modelled event

Threatened and migratory marine reptile species may occur within the spill area EMBA as turtles are widely dispersed at low densities across the NWS and in the unlikely event of a spill occurring, individuals traversing open water may come into contact with water column or surface oil. The spill EMBA overlaps with the BIAs for some turtle species and therefore there is the risk of contact with nesting turtles and hatchlings with surface and dissolved oil. The adult nesting females are at risk from surface slicks as they come into nearshore waters and emerge from the beach through the surf zone, and would also come into contact with any stranded oil on the beach. Once emerged from the nests, hatchlings will move down the beach and into the water migrating away from the beach at surface. Hatchlings also would be exposed to stranded oil on the beach and surface slicks in nearshore and offshore waters.

Timeframe to recovery	Recovery of marine reptiles will depend on the degree of oiling and potential impacts at critical life stages but could result in impacts at a population level resulting in recovery within years e.g. if a spill occurred in turtle hatchling season and significant numbers were affected when leaving turtle nesting beaches.
Consequence	The consequence of a major hydrocarbon spill event on marine reptiles was assessed as ***Major*** given impacts may occur at population level with recovery in 1–2 years.

Fish and Sharks

Sensitivity

Floating

Near the sea surface, fish are able to detect and avoid contact with surface slicks and as a result, fish mortalities rarely occur in open waters from surface spills (Kennish 1997; Scholz et al. 1992). Pelagic fish species are therefore generally not highly susceptible to impacts from hydrocarbon spills.

However, hydrocarbon droplets can physically affect fish and sharks exposed for an extended duration (weeks to months). Smothering through coating of gills can lead to the lethal and sub-lethal effects of reduced oxygen exchange, and coating of body surfaces may lead to increased incidence of irritation and infection. Fish may also ingest hydrocarbon droplets or contaminated food leading to reduced growth.

Entrained

Reef fish with high site fidelity will experience protracted water quality conditions with entrained hydrocarbon concentrations >500 ppb within the EMBA. Hydrocarbon droplets can physically affect fish exposed for an extended duration (weeks to months) by coating of gills. This can lead to lethal and sub-lethal effects from reduced oxygen exchange and coating of body surfaces resulting in increased incidence of irritation and infection. Fish may also ingest hydrocarbon droplets or contaminated food leading to reduced growth (NRC 2005). Lethal effects to reef fish may be observable within days to weeks. Sub-lethal effects of coral reef fish communities will take weeks to

months to become measurable. Pelagic and demersal fish species (including sharks) exposed to entrained hydrocarbons can result in tainting and contamination of fish flesh by insoluble PAHs associated with the weathered hydrocarbon.

Whale sharks feed on plankton, krill and bait fish near or on the water surface and it is possible that they may come into contact with entrained oil, or ingest entrained oil if a large-scale spill occurred when they (and their prey) were present in the region (Woodside 2005).

Dissolved

Tainting by DAHs of commercially targeted pelagic fish species may occur. Tainting can have a range of effects from affecting edible quality of the fish and have economic consequences, to containing toxic levels above recommended human consumption guidelines.

Potential impact from modelled event

Whale sharks could potentially transit through the spill EMBA and the foraging activity occurring in July-November each year. Whale sharks may be vulnerable to surface oil due to their surface feeding nature and may result in coating of gills and ingestion of oil. Entrained and dissolved oil affecting whale sharks, and their food source plankton, can result in impacts as described above. The NWS supports a diverse assemblage of fish and shark species, particularly in shallower water near islands and shoals. Other shark and pelagic fish species may transit the spill trajectory area and be exposed to entrained and dissolved oil. Some fish assemblages within the EMBA are also part of protected areas such as AMPs or KEFs and may also be targeted in the commercial fishing industry.

Timeframe to recovery	Recovery of fish and sharks will depend on the degree of oiling and potential impacts at critical life stages but could result in impacts at a population level resulting in recovery within months given relatively regular spawning activity that occurs in most fish species. While tainted pelagic fish will recover naturally over time (months) once water quality conditions have returned to normal, re-opening of a fishery will require an understanding of when recovery from tainting has occurred for the target species of interest.
Consequence	The consequence of a major hydrocarbon spill event on fish and sharks was assessed as ***Moderate*** given impacts may occur to localised populations with recovery in months to a year.

Marine Mammals

Sensitivity

Floating

Physical and chemical effects of hydrocarbons in sea surface waters have been demonstrated through direct contact with organisms, for example through physical coating, adsorption to body surfaces and ingestion (NRC 2005),lethal or sub-lethal physical and toxic effects such as irritation of eyes/mouth and potential illness can result.

Whales, dolphins and dugongs are smooth skinned, hairless mammals so hydrocarbons tend not to stick to their skin therefore physical impacts from surface oil coating is unlikely.

Physical impacts due to ingestion are applicable to surface slicks; however, the susceptibility of cetacean species varies with feeding habits. Baleen whales are more likely to ingest surface slick hydrocarbon than "gulp feeders" such as toothed whales, and are particularly vulnerable to hydrocarbon ingestion while feeding. Oil may stick to the baleen while the whales "filter feed" near slicks. Humpback whales, whose BIA overlaps the EMBA are more likely to occur in the area during the northern migration period in June/July and southern migration in Sep/Oct so a sea surface plume (>10 g/m2) of oil might contact humpback whales as they migrate. Similarly, blue whales may encounter a sea surface plume (>10 g/m2) as they pass through the area during their northern migration in May–August.

Marine mammals are at risk of inhaling volatile compounds evaporating from a spill if they surface to breathe in an oil slick (Geraci and St Aubin 1990).

Entrained

Impacts to marine mammals from entrained hydrocarbons could result in behavioural (e.g. deviating from migratory routes or commonly frequented feeding grounds) impacts. These impacts may affect individuals within or transiting the spill area during migration.

Whales, dolphins and dugongs are smooth skinned, hairless mammals so hydrocarbons tend not to stick to their skin therefore physical impacts from entrained oil coating is unlikely.

Impacts from ingested hydrocarbon can be lethal or sub-lethal. However, the susceptibility of marine mammal species varies with feeding habits as with surface oil (described previously). Entrained oil attached to seagrass can also be ingested by dugongs.

Oil may foul sensory hairs around the mouth and/or contact eyes while surfacing to breathe which may cause inflammation and infections. Similar to cetaceans, inhalation of volatile compounds evaporating from a spill may also result in physiological impacts to dugongs.

Dissolved

Marine mammals that may occur within the EMBA for DAHs include whales and dolphins in offshore waters. According to Geraci and St Aubin (1990), inhalation of volatile compounds evaporating from a spill at sea surface is the greater risk to cetaceans when surfacing to breathe. For these marine mammals, the potential for chemical effects due to exposure is considered unlikely, particularly for highly mobile species such as dolphins because it is very unlikely that these animals will be constantly exposed to high concentrations for continuous durations (e.g. >96 hours) that would lead to toxic effects.

Potential impact from modelled event

Marine mammals present within the EMBA include threatened and migratory whales and dolphins, and potentially dugongs. The activity is being undertaken all year round and may overlap with blue whale migration and humpback whale migration and calving as well as dugong calving and breeding, therefore crude oil may contact whales and dugongs during these life stages when the fauna are less likely to move away from the area if undertaking critical breeding activity.

Timeframe to recovery	Recovery of marine mammals will depend on the degree of potential impacts at critical life stages but could result in impacts at a population level resulting in recovery within years e.g. if a spill occurred in migration or calving season and significant numbers were affected by preventing normal migration and calving activity from occurring. Recovery of individuals may be more rapid once moved away from the area of potential impact due to their smooth hairless skin.
Consequence	The consequence of a major hydrocarbon spill event on marine mammals was assessed as ***Major*** given impacts may occur at population level with recovery in 1–2 years.

Avifauna

Sensitivity

Floating

Seabirds are highly susceptible to hydrocarbon spills and oiled birds may experience hypothermia due to matted feathers and an inability to fly. These impacts are primarily attributed to oiling of birds at the surface from slicks. Oiled birds may experience decreased foraging success due to a decline in prey populations following a spill (Andres 1997, NRC 2003) or due to increased time preening to remove oil from their feathers (Burger 1997). During both winter and migration, shorebirds spend much of their time feeding and depend on nonbreeding habitats to provide the fuel necessary for migratory flight (Withers 2002).

Oil can reduce invertebrate abundance or alter the intertidal invertebrate community that provides food for nonbreeding shorebirds (Andres 1997, NRC 2003) such as at Ramsar sites. Reduced abundance of a preferred food may cause shorebirds to move and forage in other—potentially lower- quality—habitats. Prey switching has not been documented in shorebirds following an oil spill. However, shorebirds will feed in alternative habitats when the intertidal zone alone cannot fulfil their energy requirements.

A bird's inability to obtain adequate resources delays its pre-migratory fattening and can delay the departure for its breeding grounds. Birds arriving on their breeding grounds earlier realise higher reproductive success through increased clutch size and offspring survival (for a review, see Harrison et al. 2011). If coastal habitats are sufficiently degraded by oil that pre-migratory fattening is slowed and birds delay departure for their breeding grounds, the individual effects could carry over into the breeding season and into distant breeding habitats (Henkel et al. 2012).

Entrained and dissolved

Seabirds may come into contact with entrained oil while searching for food (diving) below the sea surface, exposure times would be very short in this scenario limiting the opportunity for oiling of feathers. Short-term physiological effects due to ingestion of entrained oil or contaminated prey may also occur. Ingested oil can have several sublethal toxicological effects, including hemolytic anemia, reduced reproduction, and immunosuppression.

As most fish survive beneath floating slicks, they will continue to attract foraging seabirds, which typically do not exhibit avoidance behaviour.	
Potential impact from modelled event	
Threatened and migratory seabirds and shorebirds that may occur within the EMBA may have foraging, feeding, breeding and or nesting habitat in the vicinity of the EMBA. The EMBA intercepts with breeding BIAs for several migratory species and therefore foraging and breeding habitat in the area may be impacted by surface and water column oil while foraging (dive and skim feeding). Higher numbers would be expected during breeding periods.	
Risk	
Timeframe to recovery	Recovery of avifauna will depend on the degree of oiling and potential impacts at critical life stages but could result in impacts at a population level resulting in recovery within years e.g. if a spill occurred in turtle nesting season and significant numbers were affected when foraging in the region resulting in impacts carrying over into the breeding season and other breeding habitats.
Consequence	The consequence of a major hydrocarbon spill event on avifauna was assessed as ***Major*** given impacts may occur at population level with recovery in 1–2 years.
Socio economic	
Sensitivity **Floating** Surface oil may impact upon socio-economic receptors including the oil and gas industry, commercial shipping, fisheries/aquaculture, recreation and tourism, resulting in an economic and social impact. Floating and stranded oil can be highly visible and have a resultant negative effect on tourism. A sheen of oil (1g/m^2) may be visible slightly further than the EMBA for biological impacts boundary and impact on the values of a marine park or tourism beach. Many of the protected areas have 'wilderness' and 'seascapes' identified as a value, and these would be compromised by the presence of any oil. **Entrained** Impacts to fish may result in tainted flesh and fishery closure resulting in an economic impact on commercial, recreational and subsistence fishing. Entrained oil can also lead to impacts on aquaculture (e.g. pearls, seaweed) due to a decrease in water quality and reduced stock. Reduced marketability of products (perceived or real) could occur for target species. **Dissolved** Socio-economic receptors will be affected by hydrocarbon exposure in three key ways: Loss of Income (e.g. reduction in catch for commercial fisheries), restriction of access and reduction in aesthetic values. Impacts to fish may result in tainted flesh and fishery closure resulting in an economic impact on commercial fishing. DAH in the water column can also lead to impacts on aquaculture (e.g. pearls, seaweed) due to a decrease in water quality and reduced stock. Reduced marketability of products (perceived or real) could occur for target species.	
Potential impact from modelled event	
Impacts to fisheries could occur due to fish death and tainting of flesh resulting in potential fishery closures and loss of income. The potential area of impact may also be closed to fishers during cleanup for health and safety reason, reducing the area and timeframe for fishing to occur and potentially affecting income. Perceived and actual impacts to areas popular for tourism can result in a loss of income to the local region through reduced numbers of visitors.	
Timeframe to recovery	Recovery will depend on the degree of oiling along shorelines and that which is perceived by the public. Recovery of fish is likely to occur within months to years of water quality returning to normal given the regular spawning events that occur. Timeframes for fish tainting to disappear may be similar.
Consequence	The consequence of a major hydrocarbon spill event on socio-economic receptors was assessed as ***Major*** given impacts on the values of tourism may take 1–2 years to recover and have a national reputational impact.

Protected Areas	
Sensitivity **Floating** Surface oil and/or shoreline loading may be expected at some AMPs affecting shoreline habitats and intertidal zones. **Entrained and dissolved** Entrained hydrocarbons will or may impact the coral and seagrass habitats, as well as other marine park values fauna including dugongs, sea snakes (protected), fish and other marine mammals. Impacts to these receptors are described above.	
Potential impact from modelled event	
AMPs	The following AMPs are present within the EMBA: Cartier Island AMP, Kimberley AMP, Ashmore Reef AMP, Oceanic Shoals AMP, Christmas Island AMP, Joseph Bonaparte Gulf AMP, Argo-Rowley Terrace AMP,. Surface oil could be expected to accumulate at some locations including Ashmore Reef, however entrained hydrocarbons are predicted to contact all of these AMPs except Christmas Island. The highest entrained oil concentrations are expected at Ashmore Reef and Kimberley AMPs, with lesser concentrations at other AMPs. Entrained hydrocarbons could therefore impact on the potential values outlined within Appendix C and includes all marine fauna as described within this table, marine habitats and socio-economic receptors. With the deeper AMP features the geomorphological features are unlikely to be affected by entrained hydrocarbons, but the receptors will be affected by the change in water quality and impacts to the food chain. However, shallower features within AMPs such as coral reefs around Ashmore Reef and Cartier Island would potentially have long term impacts to the habitats supporting receptors as described within this table for coral reefs and other habitats. Impacts on the values associated with Protected Areas may result in loss of fauna/ habitat diversity and/ or abundance, reduction in commercial/recreational/ subsistence fishing, loss of livelihood and loss of income from reduced tourism and commercial productivity. Several of the AMPs have conservation values associated with biological attributes including migratory seabirds, flatback turtles, humpback whales, freshwater, green and dwarf sawfish, Australian Snubfin, Indo-Pacific Humpback and Indo-Pacific bottlenose dolphins. Tourism may be impacted by real or perceived reduction in health or mortality of habitats that support tourism activities.
State and Territory Marine Parks and nature reserves	There are three parks and reserves within the EMBA: Rowley Shoals Marine Park (WA), Scott Reef Nature Reserve (WA) and North Kimberley Marine Park (WA). Values associated with these marine parks include marine fauna and coral reefs, mangroves, saltmarshes and sandy beaches. These values may be contacted by entrained and dissolved oil which would potentially impact the receptors as described in this table. The values of these marine parks are described in Appendix C.
World, National and Commonwealth Heritage Places	There are no World Heritage properties in the EMBA. There is one National Heritage area located within the EMBA; The West Kimberley has numerous values which contribute to the significance of the property, including indigenous, historic, aesthetic, cultural and natural heritage values (DoE 2014d). Of these values, the most relevant to the marine environment is Roebuck Bay as a migratory hub for shorebirds.
Threatened Ecological Communities	There are no threatened ecological communities in the EMBA.
Wetlands of International Importance	Wetlands identified within the EMBA include Ashmore Reef National Nature Reserve, The Dales and Hosnies Spring. Some of these wetlands represent wetland types near natural condition within the region and may be contacted by surface or entrained oil. Impacts to wetlands, tidal marshes and associated receptors are described within this table.

KEFs	There are no KEFS that would be impacted by surface oil as the KEFs relate to geomorphologic features which are not expected to be impacted by hydrocarbons. Values and sensitivities associated with the KEFs include marine fauna due to the higher diversity of fish species associated with the higher diversity in fish communities or nutrients such as Continental Slope Demersal Fish Communities; or benthic habitats at Ashmore Reef and Cartier Island and surrounding Commonwealth waters. Impacts to marine fauna are discussed above. There are 7 KEFs that are overlapped by the EMBA: including Continental Slope Demersal Fish Communities, Ashmore Reef and Cartier Island and Surrounding Commonwealth Waters, Seringapatam Reef and Commonwealth Waters in the Scott Reef Complex, Canyons Linking the Argo Abyssal Plain with the Scott Plateau, Pinnacles of the Bonaparte Basin, Ancient Coastline at 125 m Depth Contour, Carbonate Bank and Terrace System of the Sahul Shelf,. Mermaid Reef and Commonwealth Waters Surrounding Rowley Shoals lie just outside the EMBA. Potential impacts from entrained and dissolved oil may occur at these KEFs as they are below the sea surface. Impacts to features (such as canyons or pinnacles) in deep waters are not expected to be affected by entrained or dissolved oil due to the nature of these features. However, values associated with shallower KEFs such as reefs and islands and the surrounding waters will be affected by changes in water quality and impacts to receptors within the water as described in this table.	
Timeframe to recovery	Recovery of benthic habitats exposed to entrained hydrocarbons and experiencing impacts would be expected within weeks to months of return to normal water quality conditions. Several studies have indicated that rapid recovery rates may occur even in cases of heavy oiling (Burns et al. 1993; Dean et al. 1998). The timeframe for recovery of receptors within these areas are described within this table.	
Consequence	The consequence of a loss of major hydrocarbon spill event on protected areas was assessed as ***Critical*** given recovery to some habitats within these protected areas may take decades to recover.	
Consequence	**Likelihood**	**Ranking**
Critical (worst case of all above receptors)	Unlikely	Medium

8.7.9 Protection Priorities

Defining protection priorities helps to determine the scale and needs of the oil spill response and are used for spill response planning purposes.. In a real event, the IAP, NEBA and planning process takes over; utilising real time operational data and focusing operations on locations to be contacted (which will be a subset of what is planned for). This allows for preparedness and planning for the most credible scenarios whilst retaining flexibility in response to manage an event.

Ashmore Reef and Cartier Island have been determined as a Protection Priority (refer Section 4.7.4) for spill response based on the modelling results for both crude and diesel spills. For additional information on protection prioritisation, refer to Section 4.7.4, and Section 4.4 of the Montara Operations OPEP (MV-70-PLN-G-00001).

8.7.10 Environmental performance

Environmental Risk		**Unplanned release of crude oil**		
Performance Outcome		**No spill of hydrocarbon to the marine environment.**		
I.D	**Management controls**	**Performance Standards**	**Measurement Criteria**	**Responsibility**
	Unplanned release during offtake			
98	Montara Marine Facility Manual (MV-90-PR-H-00001)	All hoses are fitted with dry-break couplings and are buoyant or fitted with floats	Start-up checklist for offtake	OIM
99		Visual inspection of dry break couplings and hoses prior to crude transfer		
100		Permit-to-work documentation is complete and signed off to ensure offtake is undertaken		
101		Static tow in place	Vessel log	Marine Superintendent
102		Monitoring of hawser	Hawser log	OIM
103	Training and Competency Management (JS-60-PR-Q-00015)[13]	Vessel crew qualified in accordance with competency system	Records of crew certificates or third-party inspection document	Marine Superintendent
	Unplanned release due to equipment failure			
104	Tests and maintenance completed in accordance with Performance Standards Report (MV-70-REP-F-00002) to ensure emergency shutdown can occur	The SIS are tested according to the assurance plan which is planned and managed using CMMS	Inspection and testing records	OIM
105		Emergency Shutdown (ESD) push buttons located in the central control room and throughout the FPSO/WHP tested and fit for purpose	Audit records confirm standard	
106		ESDVs are regularly tested and fit for purpose	ESDV testing records	OIM

[13] The Training and Competency Management document outlines the framework and requirements for maintaining staff competency and training specifications for Jadestone. It provides an overview of the requirements for staff and contractors to meet their training obligations and the context within which the system operates.

Environmental Risk		Unplanned release of crude oil		
Performance Outcome		**No spill of hydrocarbon to the marine environment.**		
I.D	**Management controls**	**Performance Standards**	**Measurement Criteria**	**Responsibility**
107		Hydrocarbon containing equipment is inspected and maintained and found fit for purpose	Inspection and maintenance records	OIM
108		PSVs undergo external inspection annually and internally inspected	Inspection and testing records	OIM
109	Permit to Work Procedure implemented	A Permit to Work (PTW) system is implemented to assure competent personnel and implementation of relevant procedures during maintenance.	PTW Documentation demonstrates compliance	OIM
110	Wellhead valves maintained and tested as per Performance Standards Report (MV-70-REP-F-00002)	Wellhead Valves are maintained/ tested and found fit for purpose	Maintenance and testing records in CMMS	OIM
111	Subsea equipment inspected in accordance with Subsea Inspection Strategy (JS-16-PR-U-00001)	Subsea equipment shall be inspected in accordance with the schedule, applicable standards, regulatory requirements and procedures described referenced in Performance Standards Reports (MV-70-REP-F-00002)	Inspection records in CMMS	OIM
112	Montara Facility Berthing Handbook (MV-90-PR-G-00002) details designated anchoring locations	AMSA designated anchoring locations is listed as a 3nM radius around facility and marked on Aus Charts	AHS Chart	Marine Superintendent
113	Montara Lifting Operations Procedure (MV-00-PR-F-00006) prevents dropped loads	Lifting with associated risk to topside and subsea infrastructure undertaken as per Montara Lifting Operations Procedure	Completed permit to work with job hazard analysis appended	OIM
	Well Integrity			
114	Wells maintained as per Montara Well Operations Management Plan (mv-00-PLN-D-00001)	Well integrity and maintenance undertaken according to in force Well Operations Management Plan	Completed maintenance and inspection records in CMMS	Operations Manager

Environmental Risk		Unplanned release of crude oil		
Performance Outcome		**No spill of hydrocarbon to the marine environment.**		
I.D	**Management controls**	**Performance Standards**	**Measurement Criteria**	**Responsibility**
115	Asset integrity maintenance and inspections undertaken as per Performance Standards Report (MV-70-REP-F-00002)	Asset integrity and maintenance inspections of facilities and critical equipment undertaken as planned	Completed maintenance and inspection records in CMMS	Engineering Manager
–	Refer Section 7.7 for additional controls and performance standards related to vessel operations			
	Oil spill response			
116	Implement Montara Oil Pollution Emergency Plan (MV-70-PLN-G-00001)	In the event of a tier 2 or tier 3 oil spill implement the Montara OPEP to reduce environmental impacts due to spill	Incident Log	IMT Lead
117	Incident Management Team Response Plan (JS-70-PLN-F-00008)	Implement the Incident Management Team Response Plan in the event of a spill of hydrocarbons to the marine environment	Incident Log	IMT Lead

8.7.11 ALARP assessment

Strategy tasks and resources arrangement improvements considered	Environmental/social/economic consequences of additional resources from those described in the OPEP	Practicality of additional resources	ALARP assessment	Adopted?
Source Control – increase oil spill response capability of FPSO and support vessel beyond a Level 1 response	Reduce volume or speed of spill entering marine environment	Significant cost would be incurred for Jadestone to alter the contractual arrangements with the Montara Venture and support vessel to increase capability with consideration for equipment, storage, maintenance, crew training	It is consistent with the National Plan that the FPSO and vessels have a level 1 capability. For Jadestone to increase the FPSO or vessel response capability above a Level 1 would be a disproportionate benefit for the effort. In addition, the worst-case spill results from a vessel collision and the priority of the vessel master is to safeguard the crew and remove all non-essential personnel.	No

Strategy tasks and resources arrangement improvements considered	Environmental/social/economic consequences of additional resources from those described in the OPEP	Practicality of additional resources	ALARP assessment	Adopted?
		and safety of crew when deploying gear.	Therefore, there is no value in supplementing the vessel SOPEP capability, and therefore the arrangements described in the OPEP are considered ALARP.	
Aerial surveillance – additional dedicated aircraft and observers	No environmental benefit for additional dedicated resources	Additional charter costs would be incurred by Jadestone to increase aerial surveillance. There may be a need for additional resources if determined through the IMT based on the amount of available information and potential data gaps. These can be arranged without need for further upfront costs or planning.	Aerial surveillance is not the only dedicated surveillance tactic. Opportunity for surveillance will also occur from satellite surveillance, vessel surveillance, responder movements and opportunistic aerial surveillance through the shared use of aircraft deployed for other purposes e.g. aerial dispersant spraying, C&R and shoreline strategies).. The two-dedicated aerial surveillance is sufficient to validate and inform the IAP process to ensure overall response is commensurate with nature and scale of incident. Therefore, there is no value in increasing dedicated overpasses and therefore the arrangements described in the OPEP are considered ALARP.	No
Vessel surveillance – additional dedicated vessels and observers	No environmental benefit for additional dedicated resources	In the event that additional dedicated vessels are required due to data gaps, resources are available. The cost of the additional vessels will be added to the cost of the response.	There is no benefit in having additional dedicated surveillance vessels given surveillance can be performed from any vessel and these duties will be shared amongst spill response vessels. Increasing vessel surveillance would increase the safety risk. Aerial surveillance, tracker buoys and UAVs are more efficient and effective at determining extent of oil movement, vessel surveillance is a secondary tactic. Therefore, there is no value in increasing dedicated vessel numbers and therefore the arrangements described in the OPEP are considered ALARP.	No
Tracking buoys – additional tracking buoys	No environmental benefit for additional dedicated resources	Additional buoys are available through AMSA and AMOSC within days. There is no additional upfront cost	Tracking buoys are one tactic in the operational monitoring strategy. The number of buoys immediately available is sufficient to cover tracking of oil given the other response activities that will be undertaken.	No

Strategy tasks and resources arrangement improvements considered	Environmental/social/economic consequences of additional resources from those described in the OPEP	Practicality of additional resources	ALARP assessment	Adopted?
		for accessing these secondary buoys.	Therefore, there is no value in increasing tracker buoy numbers and therefore the arrangements in the OPEP are considered ALARP.	
Ongoing real time collection of data prior to any spill event.	Greater awareness of the environment	An ongoing surveillance program would be at considerable cost to the project. Depending on the measured parameters this could involve ongoing costs in the order of hundreds of thousands each year.	Ongoing collection of real time environmental data would provide immediate inputs into decision making however this would require the use of aerial resources, satellite resources, ground surveys and marine surveys. The existing contracts in place for aerial surveillance, satellite imagery, trajectory modelling, and shoreline surveys can be activated in a timeframe that provides short, medium, and long-term access to data.	No
SCAT – additional resources to increase number of SCAT	SCAT continues during the response to verify shoreline oiling, clean-up effectiveness, and eventually, to conduct final evaluations of shorelines to ensure they meet clean-up endpoints.	The cost of additional resources is not considered the limiting factor; the limiting factor is the availability to use resources at the physical location. Additional people from described in the OPEP could cause unnecessary environmental impacts. If required, additional equipment will be sourced and the additional cost borne by Jadestone.	Jadestone undertook an evaluation to determine the most effective resource capability to reduce the environmental risk from a worst-case spill event (refer OPEP). Not all of the shoreline in the EMBA will be contacted. The potentially oiled shoreline is remote and the majority is made up of mangroves, tidal wetlands and no access via land. Aerial and marine deployment of teams and surveys can be done efficiently for those areas able to be accessed. The limiting factor is being able to access those areas. Current capability requirement is 2 teams which can be deployed to the required locations. The minimum time for shoreline accumulation is 5.5 days at Cartier Island. However, SCAT assessment for this location will need to be performed by UAVs deployed from vessels, as Unexploded Ordnances exist on Cartier Island, presenting a safety risk to SCAT teams. Other locations are predicted to be contacted after 13 days, which is enough time for Jadestone to determine the direction of the spill, deploy SCAT and gather information for the IMT.	No

Strategy tasks and resources arrangement improvements considered	Environmental/social/economic consequences of additional resources from those described in the OPEP	Practicality of additional resources	ALARP assessment	Adopted?
			The existing arrangements are considered sufficient to meet SCAT purpose. Additional personnel can be sourced and deployed should the need arise; this is not considered time critical and the additional benefit is considered low. Therefore, there is no value in increasing SCAT numbers and therefore the arrangements described in the OPEP are considered ALARP.	
Chemical dispersant application – additional resources to that in the OPEP	Potential for further reduction of floating oil and shoreline loading (reducing/eliminating further environmental impacts – clean-up and protection and deflection intrusions, oiled wildlife) and an increased ability of the environment to biodegrade the oil more rapidly to below threshold levels; thus, reducing the severity and duration of the spill and subsequent economic and social impacts. A negative consequence is the further increase in localised entrained and dissolved oil concentrations with subsequent risk of additional environmental impacts to organisms in the water column. This could have negative flow-on social and economic consequences e.g. recreational and commercial fishing, diving.	Additional resources include: • Dispersant costs of $10,000 per m^3 • FWADC aircraft $15,000 per aircraft per day. • Vessels $15,000 per day plus fuel costs of $1,600 per day. • Additional expert personnel. Chemical dispersant operations are to be conducted in daylight hours only. Indicative costs: • Cost of suitable aircraft (e.g. crop duster) USD$350,000 • Standby for Jadestone specialist personnel $150,000 p.a.	Jadestone undertook an evaluation to determine the most effective resource requirements to reduce the environmental risk from a worst-case spill event to ALARP. Aspects considered were weathering of oil, volume of floating oil, timeframe and spread of spill, best case target area (i.e. thickness of oil), location of sensitive receptors, geographic location of application, location and type of dispersant stocks, volume of dispersant required, number of vessels and aircraft and ancillary resources. Evidence from the Montara oil spill in 2009 from AMSA reported that 'based on experienced personnel during the response the use of dispersant was highly effective in assisting the natural process of biodegradation and minimising the risk of oil impacts on reefs and shorelines' (Refer Appendix A3 of the OPEP). If there is a weather condition that prevents the application of dispersant (which is unusual for the environment around the Montara facility), this in itself, creates dispersion. The results of the capability evaluation for dispersant application is described in the Chemical Dispersant Plan as detailed in the OPEP Sections 10 and 16 shows that Jadestone has access to more than enough dispersant through national stockpiles alone (without the requirement for Global Dispersant Stockpiles) to exceed the required need.	No

Strategy tasks and resources arrangement improvements considered	Environmental/social/economic consequences of additional resources from those described in the OPEP	Practicality of additional resources	ALARP assessment	Adopted?
		• Purchasing dispersant stock and maintenance in Darwin $400,000 p.a. • Purchasing dispersant vessel and application equipment $300,000.	In addition, Jadestone is able to begin dispersant spraying on Day 2, which will enable dispersant application prior to the crude weathering considerably. **Application of Chemical Dispersant from the FPSO**. Storing sufficient resources for dispersant application on the FPSO to spray on the spill at source could result in faster dispersant application at source, until the Chemical Dispersant Plan resources are deployed. In the event of the worst-case spill, the priority is to ensure safety of people, manage the integrity of the vessels and enact source control. Once these aspects are managed, then spill response at site can be implemented. A collision capable of causing a spill to the marine environment would result in the FPSO being evacuated except for personnel essential to undertake damage repairs and tasks described in the SOPEP which, from a safety and operational perspective, would be significantly hindered if dispersant spraying was undertaken from the FPSO. The FPSO does not have the capacity to appropriately store/maintain sufficient dispersant stocks and application equipment, the skilled personnel to undertake the spraying, nor the resources to solely allocate to dispersant spraying in the event of a collision. This option is not feasible. Therefore, Jadestone consider that the Chemical Dispersant Strategy described in the OPEP is ALARP. **Dedicated dispersant vessels stationed in the field.** Specially adapted vessels (leased or owned) with dispersant, trained crew and dispersant application equipment permanently stationed at the Montara operations could begin spraying dispersant within 12 hours at the spill site. Although the amount of dispersant able to be stored on deck is limited, it would enable dispersion to start until the Chemical Dispersant Plan resources are deployed. In the	

Strategy tasks and resources arrangement improvements considered	Environmental/social/economic consequences of additional resources from those described in the OPEP	Practicality of additional resources	ALARP assessment	Adopted?
			event of the worst-case spill, the priority is to ensure safety of people, manage the integrity of the vessels and enact source control. Once these aspects are managed, then spill response at site can be implemented. To have vessels spraying dispersant near the incident within 12 hours would hinder the emergency actions and present a safety risk for personnel. The FPSO and WHP have a 500 m exclusion zone within which vessels are not allowed to egress without approval and cannot be permanently moored within for legal and safety reasons. Any vessel is required to moor outside the exclusion zone. To have a vessel dedicated to dispersant application moored permanently near the Montara operations 24/7/365 creates an unnecessary safety risk to vessel crew and is grossly disproportionate to the environmental risk. . Therefore, Jadestone consider that the Chemical Dispersant Strategy described in the OPEP is ALARP. **Aircraft or vessels on 24/7 standby.** Aircraft or vessels (leased or owned) on 24/7 standby with dedicated crew would result in a faster chemical dispersant implementation time (application could begin within 1 day). Aircraft and vessels used for spill response and dispersant application are normally employed in activities such as crop dusting, firefighting and marine services, and adapted for dispersant application when required. Jadestone would require 2 equipped vessels and supporting resources (crew, maintenance, berthing etc) and 5 suitably equipped aircraft and supporting resources (pilots, hangars, maintenance, registration etc). It is not practicable to have dedicated crews, aircraft or vessels in 24/7 state of readiness in Darwin because the frequency of use would result in cost being grossly disproportionate to the environmental risk. In essence, Jadestone would be replicating the FWADC which	

Strategy tasks and resources arrangement improvements considered	Environmental/social/economic consequences of additional resources from those described in the OPEP	Practicality of additional resources	ALARP assessment	Adopted?
			has been established for industry as a cost effective and fit for purpose preparedness measure. Therefore, Jadestone consider that the Chemical Dispersant Strategy described in the OPEP is ALARP.	
Containment and recovery – additional resources to that in the OPEP	By increasing the recovery of oil off the water, less is able to contact shorelines thereby reducing potential environmental impacts. Additionally, shoreline waste volumes and associated environmental impacts on shorelines is reduced.	Approximate costs: • Vessels $15000 each per day plus $1,600 per day for fuel • Boom hire $12,000 per day for 6 teams. • 6 skimmers $6000. • Additional personnel $1500 per day	Containment and recovery operations will be focussed near the source, outside the dispersant application zone, and near priority receptors in the trajectory of the spill. Jadestone undertook an evaluation to determine the most effective resource capability to reduce the environmental risk from a worst-case spill event (refer Section 11 of OPEP). Jadestone has the ability to mobilise 8 containment and recovery systems (16 vessels) based on the spill release volume and duration of floating oil present at the sea surface at >50 g/m^2 (minimum thickness for effective containment and recovery) being up to 13 days. In addition, C&R activities will be undertaken in areas outside those that have allowed for natural evaporation of the oil and been subject to chemical dispersant operations. For Jadestone to purchase and maintain suitable vessels and equipment to be on standby 24/7/365 is cost prohibitive and disproportionate to the risk. Access to supplies via AMOSC, DoT, AMSA, OSRL, contracted marine providers and marine brokers will provide adequate capability to support containment and recovery operations. Jadestone monitors the availability of larger vessels through existing marine brokers to meet specifications for containment and recovery operations. The current level of resources meets for the need as it allows for flexibility in response operations as not all locations will be contacted in a single spill event. In addition, the capability exceeds the need from Week 2 due to the	No

Strategy tasks and resources arrangement improvements considered	Environmental/social/economic consequences of additional resources from those described in the OPEP	Practicality of additional resources	ALARP assessment	Adopted?
			instantaneous nature of the release and the absence of floating concentrations of hydrocarbons >50 g/m2 after day 13, as predicted by spill modelling. Containment and recovery arrangements described in the OPEP are considered ALARP.	
Protection and Deflection – additional resources to that in the OPEP	Additional Protection and Deflection resources reduces shoreline contact and accumulation of oil, and subsequent impacts to shorelines. However, additional resources on shorelines will increase potential environmental contact and intrusion opportunities and increase safety risks of responders.	Boom hire costs are variable depending on the configuration and type used however they are estimated to be approximately $5000 per day. The cost of additional resources is not considered the limiting factor; the limiting factor is considered to be the availability to use resources at the physical location. If required, additional equipment will be sourced and the additional cost borne by Jadestone.	Protection and deflection has limited application for most of the locations due to very high tidal influences, nature of shorelines, remoteness and lack of anchoring points for boom. Oil doesn't contact all shorelines instantaneously but reaches various locations over a period, dependant on oceanic currents and wind directions. As such, implementing a greater initial response is not appropriate, however resources are ramped up as they are required. Jadestone undertook an evaluation to determine the most effective resource capability to reduce the environmental risk from a worst-case spill event (refer OPEP Section 12). Jadestone determined the resources required based upon the priority receptors estimated worst-case shoreline volumes and timeframes to contact. Jadestone has access to resources via AMOSC, AMSA, OSRL and DoT, and has the ability to move resources across locations if this strategy is determined to be feasible and safe to implement in consultation with the relevant Control Agency (where applicable). Mobilising additional resources too early, may result in excess resources being on-location that are not required. Consequently, this has the potential to cause additional environmental impacts if larger than required storage areas and increased personnel presence result in further sensitising coastal habitats without providing significant benefit.	No

Strategy tasks and resources arrangement improvements considered	Environmental/social/economic consequences of additional resources from those described in the OPEP	Practicality of additional resources	ALARP assessment	Adopted?
			For Jadestone to purchase equipment, store and maintain is cost prohibitive when access via existing stockpiles will meet the need. It is cost prohibitive and disproportional to the risk for Jadestone to hire and maintain resources to be on standby 24/7/365 when access to vessels and equipment is granted through contracts and AMSOC/OSRL/DoT/AMSA. Vessels and people will be utilised as determined through the IAP and NEBA. Development of tactical response plans was considered and Jadestone has access to the INPEX Browse Island Oil Spill Incident Management Guide, which guides response for remote shorelines and islands. The shortest time to contact is 5.5 days at Cartier Island, where resources cannot deploy on to shorelines or anchor in nearshore waters due to the presence of Unexploded Ordnances. Shoreline contact for the remaining priority receptors is predicted beyond day 13 and Jadestone has time to utilise the Browse Island Guidance document to help prepare a response for the remaining receptors. Given the remoteness of the locations with shoreline contact modelled there is considered limited benefit for pre-deployment of resources as this would create unnecessary long-term environmental disturbance (both for placement of resources and continuing maintenance) and unnecessary safety risks. In addition, the cost of doing this is disproportionate to the benefit. The current level of resources meets the need as it allows flexibility in response operations; as not all locations will be contacted in a single spill event. Therefore, the arrangements described in the OPEP are considered ALARP.	

Strategy tasks and resources arrangement improvements considered	Environmental/social/economic consequences of additional resources from those described in the OPEP	Practicality of additional resources	ALARP assessment	Adopted?
Shoreline Clean-up – additional resources to that in the OPEP	While oil is arriving, there is limited benefit from additional resources that might remove oil more quickly and any additional resources may be counterproductive in that additional impacts may outweigh benefits. After the oil has finished arriving, there may be an additional benefit in having increased resources at particular locations dependent upon environmental considerations. For example, a turtle nesting beach during the nesting/hatching season may benefit in having additional resources deployed to clean the beach before nesting/hatching events. There may be benefit in deploying additional machinery in the event of greater opportunities for use, given machinery has the capacity to remove far greater volumes of bulk oil in the right circumstances. The numerous factors and consideration in determining the best approach for shoreline clean-up, the benefit of additional resources will be determined for each Operational Period. However, additional resources on shorelines will increase potential environmental contact and intrusion opportunities, increase safety risks of	The cost of additional resources is not considered the limiting factor; the limiting factor is considered to be the ability to use resources at the physical location. If required, additional personnel and machinery will be sourced and the additional cost borne by Jadestone.	Jadestone undertook an evaluation to determine the most effective resource capability to reduce the environmental risk from a worst-case spill event. Section 13 of the OPEP describes how Jadestone's plan is to focus resources on the priority receptors based upon the worst-case maximum average daily oil ashore, the nature of the shoreline and the recoverable ability of the clean-up teams. The remoteness and character of potentially affected shorelines raises significant logistical challenges associated with mounting a shoreline response and the potential health and safety risks to personnel. The combination of machinery for mechanical and manual removal of oil and personnel requirements have been considered based on opportunities for use and characteristic of shoreline (i.e. may not be appropriate for small offshore islands, tidal flats, remote rocky or mangrove lined shorelines). It is the opportunity for use rather than the availability of machinery and personnel which is considered the limiting factor. For Jadestone to purchase equipment, store and maintain it is cost prohibitive when access via AMOSC Mutual Aid/DoT/OSRL and mainstream suppliers will meet the need, and the limiting factor is people (who have to be accessed from outside Darwin), health and safety issues for shoreline work and suitable vessels. The shortest time to contact a location which Jadestone can safely access for shoreline clean-up is 11 days (Ashmore Island), which is sufficient time to mobilise people and equipment. Given the remoteness of the locations with shoreline contact modelled, there is considered no benefit for pre-deployment of resources as this would create unnecessary	No

Strategy tasks and resources arrangement improvements considered	Environmental/social/economic consequences of additional resources from those described in the OPEP	Practicality of additional resources	ALARP assessment	Adopted?
	responders, cause physical damage and could be a negative impact.		environmental disturbance (both for placement of resources and continuing maintenance) and unnecessary safety risks. Allocating shoreline clean-up resources relies on understanding the trajectory of the oil and timeframe for expected contact. It is not practical to pre-position teams ready for rapid deployment to reduce the timeframe for shoreline response. In addition, the cost of doing this is grossly disproportionate to the benefit. Jadestone considered increasing the number of resources to support shoreline response, however, the stated number is based upon the nature of the shorelines and the option of natural attenuation if to conduct operations there would be too environmental damaging. Real time modelling and assessment will determine if extra resources are required. If this is the case, then the resources required are able to be obtained within the shortest time to contact timeframes. The current level of resources meets for the need as it allows flexibility in response operations and surge capacity; as not all locations will be contacted in a single spill event. The arrangements described in the OPEP are considered ALARP.	
OWR – additional resources to that described in the OPEP	OWR aims to prevent/reduce the impact to marine fauna (in particular birds and turtles) and any long-term effects.	Significant additional cost would be incurred if Jadestone were to purchase or hire a facility to base at a staging site, or have OWR expert personnel on standby. Significant additional cost would be incurred if Jadestone provided its own oiled wildlife response	Jadestone undertook an evaluation to determine the most effective resource capability to reduce the environmental risk from a worst-case spill event (refer OPEP). Additional strategies that have been considered include: • Additional arrangements to improve mobilisation times of international OWR resources (e.g. additional contracts/arrangements with OWR organisations or pre-mobilisation of international OWR personnel) • Jadestone to have OWR expert personnel on standby to improve response	No

Strategy tasks and resources arrangement improvements considered	Environmental/social/economic consequences of additional resources from those described in the OPEP	Practicality of additional resources	ALARP assessment	Adopted?
		(personnel, experts, facilities, plans etc).	• Jadestone to commission additional training of Australian based OWR personnel to increase numbers of competent OWR personnel • OWR resources purchased and based at Darwin and Broome to increase OWR facilities and process timeframes. Given the local (AMOSC and DBCA) and global (OSRL/Sea Alarm) response capability through existing arrangements could be mobilised within required timeframes, the response arrangements are considered ALARP as these plans are contextualised for WA and NT. The NTOWRP, WAOWRP and the WA OWR Manual were developed by the Territory and State environmental agency in conjunction with industry, AMSA, AMOSC, Perth Zoo and academia. Therefore, represents the best-oiled wildlife response plans that NT, WA and Jadestone can utilise. The cost for Jadestone to: • purchase/hire OWR equipment and pre-set up facilities at Darwin and/or Broome • have OWR expert personnel on standby • commission additional OWR training in WA is grossly disproportionate to the risk and significant costs would be incurred to undertake these options. The equipment can be purchased/hired easily. The arrangements of OWR outlined within the OPEP are considered sufficient for a controlled escalation of response prior to the worst-case minimum contact times for oil at the sites of highest abundance and sensitivity. The arrangements described in the OPEP are considered ALARP.	

Strategy tasks and resources arrangement improvements considered	Environmental/social/economic consequences of additional resources from those described in the OPEP	Practicality of additional resources	ALARP assessment	Adopted?
Waste Management – additional resources to that described in the OPEP	While oil is arriving on shorelines, there is limited benefit from additional resources that might remove waste more quickly as the waste is still being collected. After the oil has finished arriving, there may be an additional benefit in having increased resources at particular locations dependent upon environmental considerations. For example, a turtle nesting beach during the nesting/hatching season may benefit in having additional resources deployed to clean the beach before nesting/hatching events.	The cost of additional resources is not considered the limiting factor; the limiting factor is considered to be the ability to utilise resources at the physical location. If required, additional resources will be sourced and the additional cost borne by Jadestone.	Jadestone undertook an evaluation to determine the most effective resource capability to reduce the environmental risk from a worst-case spill event (refer OPEP). The limiting factor for waste collection (which is a support service for Jadestone) is the collection of oily waste. As the arrangements in the OPEP are ALARP, the waste contractor is able to resource a plan that meets the nature and scale of the event within realistic timeframes. The arrangements described in the OPEP are considered ALARP.	No

8.7.12 Acceptability assessment

The potential impacts of an unplanned crude release to the marine environment are considered 'Acceptable' in accordance with the Environment Regulations, based on the acceptability criteria outlined below. The control measures proposed are consistent with relevant legislation, standards and codes.	
Policy and management system compliance	Jadestone's HSE Policy objectives are met. Section 9 demonstrates that Jadestone's HSE Management System is capable of continuously reviewing and updating activities and practices during the operation, including spill response arrangements.
Stakeholder and reputation	Stakeholder consultation has been undertaken (see Section 6), including engagement with the Director of Parks, State and National response agencies of DoT and AMSA, Northern Territory government, commercial and recreational fishing industry bodies and fishers. No concerns have been raised with regards to impacts of a crude spill by Relevant Persons. During any spill response, a close working relationship with key regulatory bodies (e.g. DoT, DBCA, AMSA, DER) will occur and thus there will be ongoing consultation with Relevant Persons during response operations.
Environmental context and ESD	The worst case surface spill is from a loss of 11,570 m^3 of crude from a cargo tank rupture, and the worst case subsea spill is 1,700 m^3 of crude from a ruptured flowline released from within the Operational Area. The potential impact is considered acceptable after consideration of: • Potential impact pathways • Preservation of critical habitats • Assessment of key threats as described in species and Area Management /Recovery plans • Consideration of North-West Bioregional Plan • Principles of ecologically sustainable development ESD.
Conservation and management advice	Jadestone will have regard to the representative values of the reserves and other conservation advice published and endeavour to ensure that priority is given to the social and ecological objectives and values, of any AMPs, or state marine parks impacted by unplanned crude release to ensure that the objectives of the management plans are not contravened (Appendix C). Noting 'Emergency response' is permitted in all AMPs and state marine parks. Actions required to respond to oil pollution incidents, including environmental monitoring and remediation, in connection with activities authorised under the OPGGS Act may be conducted in all zones. The Director will be notified in the event of an oil pollution incident that occurs within, or may impact upon, an Australian Marine Park and, so far as reasonably practicable, prior to a response action being taken within a marine park. Protected areas within the EMBA predicted to potentially be impacted by crude above threshold levels have been identified as Priority Priorities (Section 8.7.9). The 'Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species' will be applied/used as guidance in the event of an oil spill.
Recovery Plan for Marine Turtles in Australia 2017-2027	The Recovery plan for marine turtles in Australia (DoEE 2017) identifies **Marine pollution as a risk.** The Plan requires that the risk of oil spill impact to marine turtles is evaluated and, if required, appropriate mitigation measures are implemented. This section and the proposed controls are consistent with this advice.
Approved Conservation Advice for *Anous tenuirostrus melanops* (Australian Lesser Noddy)	The Conservation advice for the Lesser noddy identifies **Marine pollution as a risk:** The advice requires the risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented This section and the proposed controls are consistent with this advice.

Approved Conservation Advice for *Calidris ferruginea* (Curlew Sandpiper)	The Conservation advice for the curlew sandpiper identifies **Marine pollution as a risk:** The advice requires the risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented. Cartier Island has been identified as important bird nesting location. This section and the proposed controls are consistent with this advice.
Approved Conservation Advice for *Calidris canutus* (Red Knot)	The Conservation advice for the Red Knot identifies **Marine pollution as a risk:** The advice requires the risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented. Cartier Island has been identified as important bird nesting location This section and the proposed controls are consistent with this advice.
Approved Conservation Advice for *Calidris tenuirostis* (Great Knot)	The Conservation advice for the Great Knot identifies **Marine pollution as a risk:** The advice includes the risk of habitat loss and degradation.. The advice recommends protecting important habitat. This section and the proposed controls are consistent with this advice
Approved Conservation Advice for Advice for *Charadrius leschenaultii* (Greater sand plover)	The Conservation advice for the Greater Sand Plover identifies **Marine pollution as a risk:** The advice incudes the risk of oil spill impact to the build up in the substrate in impacts on the benthic prey fauna it feeds on. The advice recommends protecting important habitat. This section and the proposed controls are consistent with this advice
Approved Conservation Advice for *Numenius madagascariensis* (Eastern Curlew)	The Conservation advice for Eastern Curlew identifies **Marine pollution as a risk:** The advice requires the risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented. Cartier Island has been identified as important bird nesting location. This section and the proposed controls are consistent with this advice.
Approved conservation advice for green sawfish (Threatened Species Scientific Committee 2008b)	The Conservation advice for Green sawfish identifies **Marine pollution as a risk:** The advice requires measures to reduce adverse impacts due to pollution to be considered; and to reduce likely impact on green sawfish.
Approved Conservation Advice for *Limosa lapponica bauer*a (Bar-tailed Godwit	The Conservation advice for Bar-tailed Godwit identifies **Marine pollution as a risk:** The advice requires the risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented. Cartier Island has been identified as important bird nesting location. This section and the proposed controls are consistent with this advice.
Approved Conservation Advice for *Limosa lapponica menzbieri* (Northern Siberian Bar-tailed Godwit)	The Conservation advice for Northern Siberian Bar-tailed Godwit identifies **Marine pollution as a risk:** The advice requires the risk of oil spill impact to nest locations and, if required, appropriate mitigation measures are implemented. Cartier Island has been identified as important bird nesting location. This section and the proposed controls are consistent with this advice.
Approved Conservation Advice for *Pristis pristis* (largetooth sawfish)	The Conservation advice for largetooth sawfish identifies **Habitat degradation** and **Marine debris as risks**: The advice requires measures to reduce adverse impacts of habitat degradation and/or modification to be considered; and to reduce marine debris likely to impact on largetooth sawfish.
Approved Conservation Advice for *Glyphis*	In a loss of crude oil scenario, habitat important for the large tooth sawfish would be identified and given high priority for protection. Any spill response activities (Section 7.10)

***garricki* (northern river shark)**	that generate marine debris are also managed to reduce further potential environmental impacts. This is consistent with the conservation advice.
Wildlife conservation plan seabirds (Commonwealth of Australia 2020)	In a loss of crude oil scenario, habitat important for the migratory birds would be identified and given high priority for protection. Any spill response activities (Section 7.10) are also managed to reduce further potential environmental impacts to migratory habitats. This is consistent with the conservation advice for Common Sandpiper (Actitis hypoleucos) and Sharp-tailed Sandpiper (Calidris acuminata) and the wildlife conservation plan for seabirds (2020).
Australian Marine Parks	Australian Marine Parks are established by proclamation under the EPBC Act for the purpose of protecting and maintaining biological diversity in the parks. Environment plan (EP) must be consistent with the Australian Marine Park Management plans. In all cases where an activity has potential to impact or present risk to AMPs, regardless of whether the activity is inside or outside a park, the EP should evaluate how these impacts and risks will be of an acceptable level and reduced to as low as reasonably practicable (ALARP). There are 6 AMPs within the EMBAs, including: • Cartier Island AMP • Kimberley AMP • Ashmore Reef AMP • Oceanic Shoals AMP • Joseph Bonaparte Gulf AMP • Argo-Rowley Terrace AMP Actions required to respond to oil pollution incidents, including environmental monitoring and remediation, in connection with mining operations authorised under the OPGGS Act may be conducted in all zones. The requirement is that The Director should be notified in the event of an oil pollution incident that occurs within, or may impact upon, an Australian Marine Park and, so far as reasonably practicable, prior to a response action being taken within a marine park. Consultation to notify the Director of the proposed Activity was completed as part of the Consultation process (Section 6). The Director notification in the event of a spill that would impact one of the AMPs is included in the OPEP and Implementation section of this EP (Section 9). As such this EP is consistent with the Australian Marine Park Management plans.

8.8 Worst Case Diesel Spill

8.8.1 Description of hazard

Diesel spill	Release of diesel may occur from a support vessel due to vessel collision within the Operational Area or from a dropped object event. The worst-case diesel spill scenario is due to collision with the FPSO resulting in damage to a fuel oil tank resulting in release to sea. The maximum worst-case credible spill volume of diesel has been calculated as 906 m^3 based on the largest fuel oil tank on the FPSO.

A HAZID was undertaken for the Montara operations and the below credible scenarios resulting in a diesel spill were identified.

8.8.2 Spill volume

The volume of diesel that could be released to the marine environment from vessel collision and subsequent rupture of fuel tank is largely dependent upon fuel tank position on the vessel, and the degree and location of tank damage. The AMSA (2015) guideline: *Technical guidelines for preparing contingency plans for marine and coastal* facilities has been used in determining the potential release volume of the credible scenarios. These calculations provide a spill volume of 80 m^3 for operations support vessels, 906 m^3 for largest FPSO fuel tank, and 5 m^3 during transfer of diesel between support vessels. For the purposes of determining potential impacts, the larger volume of 906 m^3 has been used as it is considered to be representative of a typical maintenance vessel and subsumes both the 5 m^3 and 80 m^3 scenarios outlined above.

Table 8-5: Credible diesel releases to the marine environment

Scenario	Maximum Credible Spill	Credibility justification
Scenario 5 – Release of diesel from FPSO or vessel due to vessel collision/ dropped object	Based on AMSA (2015) 'other vessel collision' – volume of largest fuel tank = **80 m^3** (based on a typical operations support vessel) **906 m^3** (based on FPSO fuel tank)	A maintenance support vessel would typically carry a maximum total fuel cargo of 495 m^3 in tanks and the largest fuel tank containing diesel on the FPSO is 906 m^3.
Scenario 11– Leak or rupture of bunkering hose during support vessel to diesel transfer	Based on AMSA (2015) 'Production platform refuelling – continuous supervision' Transfer rate x 15 minutes (continuous supervision) = 20 m^3/hr for 15 minutes = **5 m^3**	AMSA (2015) Indicative maximum credible spill volumes table is directly applicable for production platform refuelling. Continuous supervision is the appropriate credible level of supervision given that transfers are of short duration and refuelling procedures stipulate continuous supervision.

8.8.3 Diesel characteristics

Characteristics for marine diesel were extracted from the ASA oil database for similar operational temperatures. Marine diesel is a mixture of volatile and persistent hydrocarbons with a low percentage of volatiles (6%) and with the greater proportion having moderate to very low volatility (89%). The aromatic content is approximately 3%.

For further information, the Montara Operations OPEP and relevant appendices as referenced therein.

In the marine environment diesel will behave as follows:

- Diesel will spread rapidly in the direction of the prevailing wind and waves
- Evaporation is the dominant process contributing to the fate of spilled diesel from the sea surface and will account for >50% reduction of net hydrocarbon balance

- Diesel will entrain under the water surface particularly when wind speed and resultant wave action increase
- The evaporation rate of diesel will increase in warmer air and sea temperatures such as those at the Operations location
- Diesel residues usually consist of heavy compounds that may persist longer and will tend to disperse as oil droplets into the upper layers of the water column.

8.8.4 Modelling Approach

A diesel spill scenario of 906 m^3 was modelled by RPS for the Montara operations field to determine the dispersion behaviour of the released hydrocarbon within the marine environment.

The modelling considered the release of 906 m^3 within the Montara Operations Area over all seasons of the year and has been reviewed to ascertain the spatial extent of floating and entrained oil above impact thresholds.

A summary of the stochastic modelling methods used to evaluate the weathering and distribution of the 906 m^3 diesel spill are as per those described in Section 8.8.3.

Provided below are details specific to the diesel spill modelling scenario:

- Stochastic approach: stochastic modelling was carried out with 60 replicate simulations each modelled for six locations within the permit area.
- Probability contours: the results were presented in terms of statistical probability maps based on 360 simulations.
- Completion of modelling: each of the 360 simulations was run for a period of two to three weeks allowing for the fate of dispersed hydrocarbons to be evaluated.

8.8.5 Diesel Modelling results

Floating oil results

Results of the stochastic modelling indicated that surface sheens of floating oil (<1 g/m^2) may pass over the following sensitive areas, with a probability of <1% of reaching these locations:

- Vulcan Shoal after 35 hours
- Goeree Shoal after 62 hours
- Carbonate Bank and Terrace System of the Sahul Shelf after 68 hours
- Eugene McDermott Shoal after 74 hours.

Floating oil at concentrations of 10 g/m^2 were only predicted to reach Vulcan Shoals within 36 hours of commencement of release (at a probability of <1%). Oil was predicted to accumulate at Browse Island at a loading rate of 0.4 g/m^2.

Entrained Oil results

Results of the stochastic modelling indicated that entrained oil concentrations greater than 100 ppb were predicted to reach the following locations (with the highest concentrations):

- Vulcan Shoals (1,772 ppb)
- Carbonate Bank and Terrace System of the Sahul Shelf (1,344 ppb)
- Barracouta Shoals (733 ppb)
- Goeree Shoal after (846 ppb).

The AMPs predicted to be impacted by entrained diesel >100 ppb include:

- Oceanic Shoals AMP
- Ashmore Reef AMP
- Cartier Island AMP.

The KEFs predicted to be impacted by entrained diesel >100 ppb include:

- Continental Slope Demersal Fish Communities
- Ashmore Reef and Cartier Island and surrounding Commonwealth waters
- Ancient coastline at 125 m depth contour.

Dissolved aromatic results

Dissolved aromatic hydrocarbons at concentrations of 50 ppb or greater were not predicted to contact sensitive receptors evaluated. In fact, the highest dissolved aromatic hydrocarbon concentration predicted to contact a sensitive receptor location was 23 ppb at Vulcan Shoals. Refer to Figure 8-6 for the environment that may be affected due to a diesel spill of 906 m^3.

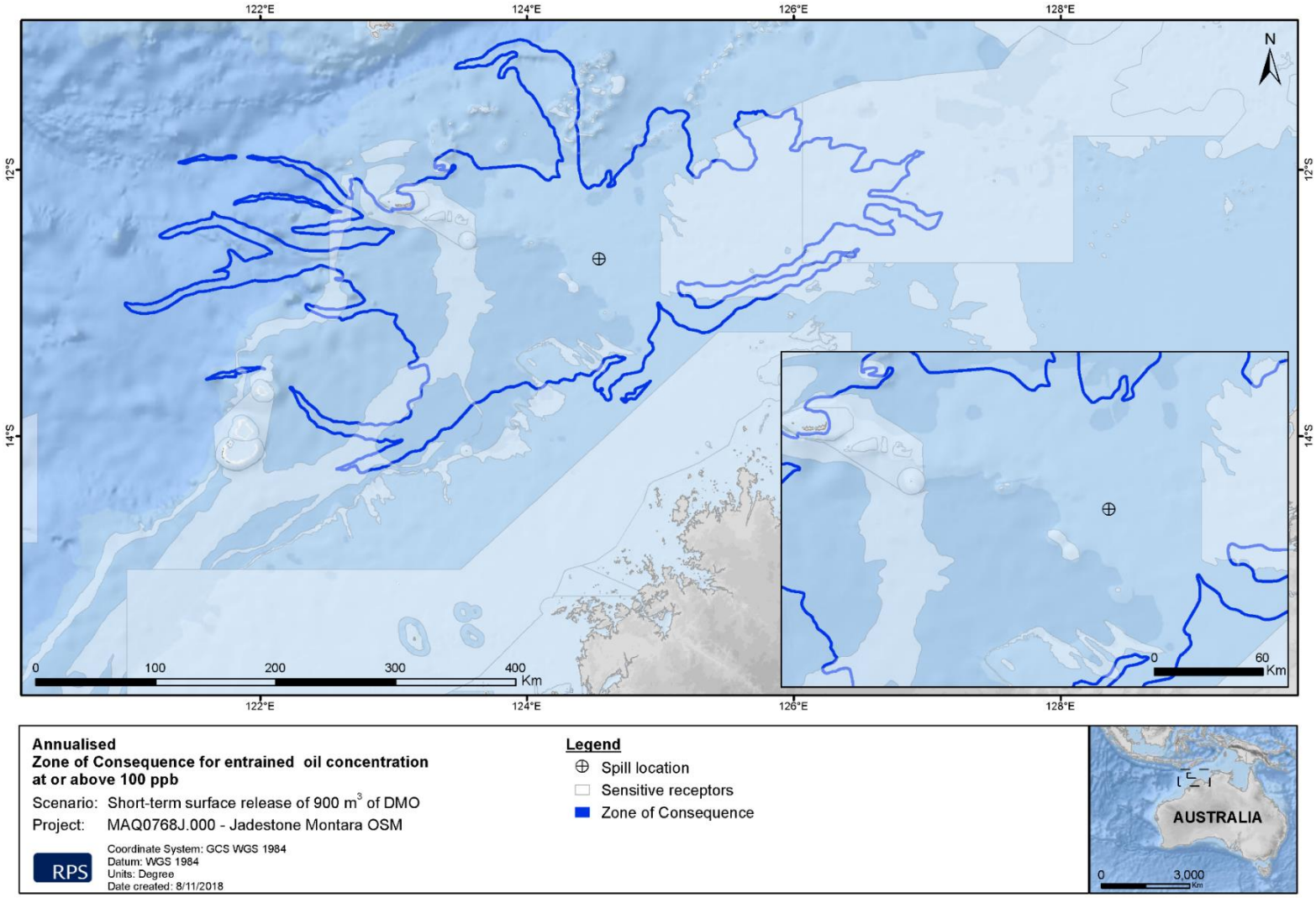


Figure 8-5: Modelled spill trajectories for all seasons for entrained oil concentrations >100 ppb resulting from surface release of 906 m³ diesel at the Montara field

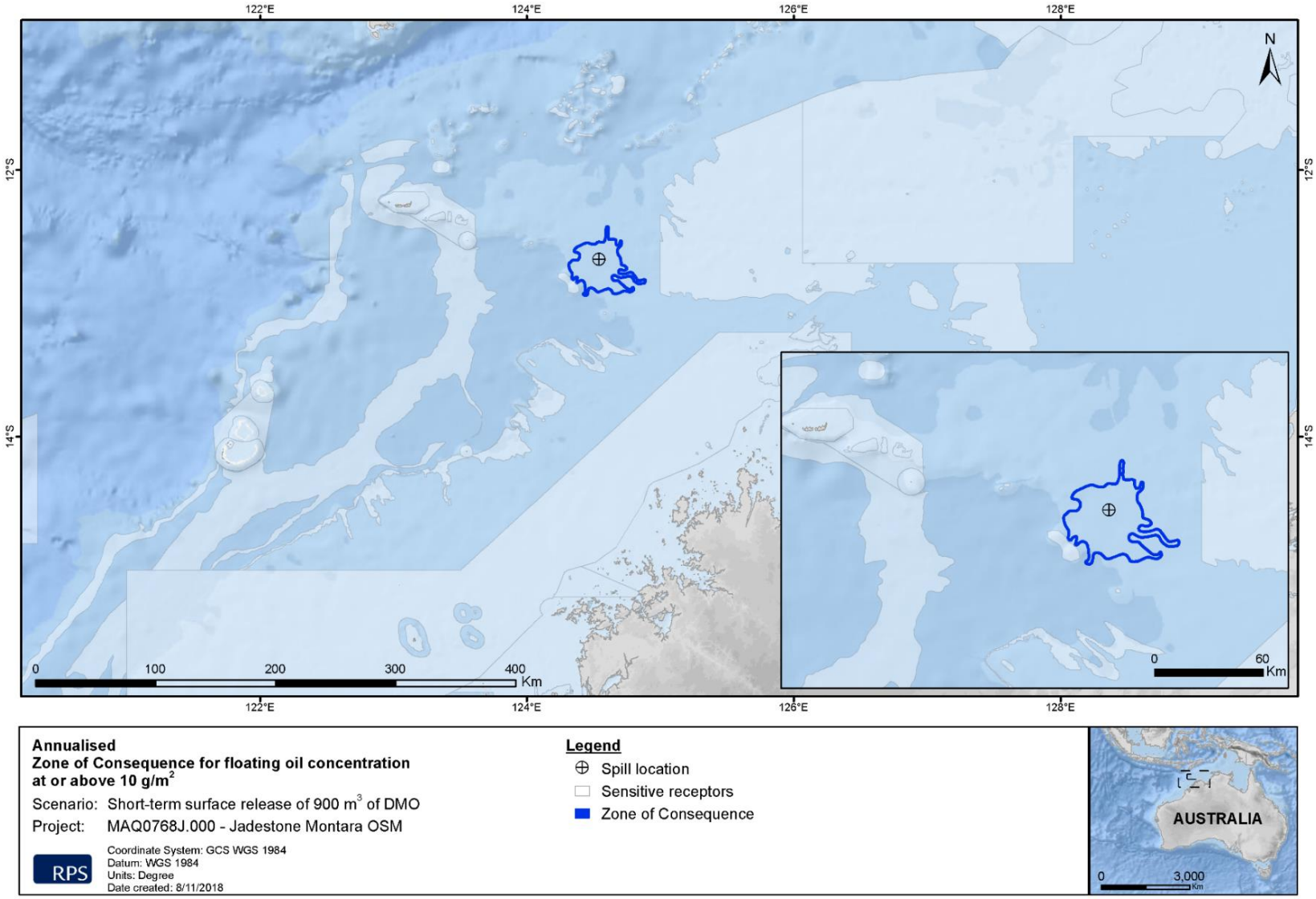


Figure 8-6: Modelled spill trajectories for all seasons for floating oil concentrations >10 g/m² resulting from surface release of 906 m³ diesel at the Montara field

8.8.6 Impacts and risks

Marine diesel oil is a highly volatile hydrocarbon with a high proportion of toxic monocyclic aromatic hydrocarbons (MAHs) that are harmful in varying degrees to marine fauna. Diesel contains some heavy components (or low volatility components) that have a strong tendency to physically entrain into the upper water column in the presence of moderate winds (i.e. >12 knots) and breaking waves and can resurface if these energies abate.

In the event of a substantial diesel spill, the heavier components of diesel can remain entrained or at sea surface for an extended period. Given the properties of diesel, it is expected that marine fauna, marine habitats, protected and significant areas and socio-economic receptors, have the potential to be impacted by surface and entrained thresholds.

A summary of impacts and risks to sensitivities and values within the marine environment is provided in Table 8-6. For further information on the habitats, marine organisms and socio-economic receptors refer to Appendix C.

Table 8-6: Potential Impacts to sensitive receptors from diesel spill

Receptors	Potential impacts from a diesel spill		
	Floating and/or shoreline	**Entrained**	**Dissolved**
Plankton	*Potential impacts from diesel spill* There is potential for localised mortality of plankton due to reduced water quality and toxicity. Effects will be greatest in the upper 10 m of the water column and areas close to the spill source where hydrocarbon concentrations are likely to be highest.		
	Impact assessment to receptors within the EMBA High abundance of phytoplankton typically occurs around topographical features that may result in upwelling or a disruption to the current flow which may be present around banks and shoals. The EMBA has the potential to overlap with spawning of some fish species given the year round spawning of some species. In the unlikely event of a spill occurring, fish larvae may be impacted by hydrocarbons entrained in the water column with effects greatest in the upper 10 m of the water column where the majority of plankton concentrate and closest to the spill source. However, following release, the diesel will rapidly evaporate, disperse and degrade in the offshore environment, reducing the concentration and toxicity of the spill. Given duration of fish spawning periods, lack of suitable habitat for aggregating fish populations near the surface, combined with the quick evaporation and dispersion of diesel, impacts to overall fish populations are not expected to be significant.		
Benthic habitat and communities **(Including deepwater habitats and shallow shoals)**	n/a – benthic habitats not present at surface	*Potential impacts from dissolved and entrained oil* Benthic habitats at shoals may be affected by marine diesel. This may result in toxic effects to both the habitat (in the case where the habitat is biological such as coral reefs) and associated flora and fauna. The degree of impact will depend on several variables, including the duration of exposure to DAHs and other diesel components. Sea grasses and macroalgae may experience a phytotoxic effect caused by absorption of DAHs from the water column. The hydrocarbon molecules can concentrate in membranes of aquatic plants, inhibiting photosynthetic efficiency (Runcie *et al.* 2004). Recovery of habitats experiencing chronic effects are expected within weeks to months of return to ambient water quality. Direct contact to shallow hard corals by entrained diesel could lead to impacts such as short or long-term sub-lethal effects including reduced feeding capacity and growth, reduced reproductive output and increased mucous production (IPIECA 1992). In the worst case instance irreversible tissue necrosis and death could occur. Epifauna associated with hard substrates such as ascidians and sponges may experience direct toxicity through ingestion.	

Receptors	Potential impacts from a diesel spill		
	Floating and/or shoreline	**Entrained**	**Dissolved**
	Impact assessment to receptors within the EMBA There are a number of shoals within the EMBA for the worst-case diesel spill: Goeree Shoal, Eugene McDermott Shoal, Barracouta Shoals and Vulcan Shoal. These shoals have a diversity of benthic habitats and associated fish and invertebrate assemblages which could be affected by entrained or dissolved oil. The shoals have a number of representative habitats including corals, sponges, seagrass		
Marine mammals	*Potential impacts from surface oil* Physical and chemical effects of diesel in sea surface waters have been demonstrated through direct contact with organisms, for example through physical coating, adsorption to body surfaces and ingestion (NRC 2005). Lethal or sub-lethal physical and toxic effects such as irritation of eyes/mouth and potential illness. Whales and dolphins are smooth skinned, hairless mammals, so hydrocarbons tend not to adhere to their skin and the potential impacts of oiling on them is limited.	*Potential impacts from dissolved and entrained oil* The high volatility of the diesel will result in the rapid evaporation and loss of the more toxic aromatic components of the diesel, resulting in a reducing toxicity threat to marine fauna with time. Surface respiration could lead to accidental ingestion of hydrocarbons or result in the coating of sensitive epidermal surfaces. For marine mammals that may be exposed to the more toxic aromatic components of the marine diesel, chemical effects are considered unlikely since these species are mobile and therefore not be constantly exposed for extended durations that would be required to cause any major toxic effects. Clogging of baleen structures and toxicological effects from ingestion, although recorded, is sparse in the literature (Geraci and St. Aubin 1985). The susceptibility of marine mammal species to physiological effects through ingestion of surface and water column hydrocarbon varies with the feeding mechanism of each species: • Whales with a baleen mechanism filter nutrient-rich waters containing food such as plankton and small fish over the baleen (a sieve type structure) before subsequently moving the food to the oesophagus using the tongue • Baleen whales that skim surface waters and the water column (e.g. southern right whales) are more likely to be affected by surface hydrocarbons than other whales that 'gulp' feed such as the humpback whale • Toothed whales are also less susceptible to impacts owing to gulp feeding behaviour (Geraci and St. Aubin 1985).	
	Impact assessment to receptors within the EMBA Marine mammals present within the diesel EMBA include threatened and migratory whales and dolphins, and potentially dugongs. The activity is being undertaken all year round and may overlap with blue whale migration and humpback whale migration and calving, therefore diesel may contact whales during these life stages. However, given the rapid evaporation of diesel it is unlikely that significant numbers would be impacted. The absence		

Receptors	Potential impacts from a diesel spill		
	Floating and/or shoreline	**Entrained**	**Dissolved**
	of key feeding, resting or breeding areas for other threatened and migratory species and rapid evaporation and dissipation of diesel means significant numbers are unlikely to be impacted.		
Marine Reptiles	*Potential impacts from surface oil* Marine turtles may be impacted by surface hydrocarbons through exposure during surface respiration, particularly where volatiles are being emitted in areas where fresher oil is weathering. Surface respiration could lead to accidental ingestion of hydrocarbons or result in the coating of sensitive epidermal surfaces.	*Potential impacts from dissolved and entrained oil* Whilst turtle nesting beaches may be contacted by weathered marine diesel, turtles will always nest above the high tide mark and any diesel moving through the beach profile should not come into contact with nests. Entrained and dissolved oil may result in harm to internal anatomy if ingested, irritation or damage to sensitive external features such as eyes and skin and damage to respiratory processes if significant inhalation of volatile fumes occurs at the surface	
	Impact assessment to receptors within the EMBA Threatened and migratory marine reptile species may occur within the diesel spill area EMBA as turtles are widely dispersed at low densities across the NWS and in the unlikely event of a diesel spill occurring, individuals traversing open water may come into contact with water column or surface diesel. The diesel spill EMBA overlaps with the BIAs for some turtle species and therefore there is the risk of contact with nesting turtles and hatchlings with surface and dissolved oil.		
Fish, Sharks, Rays	*Potential impacts from surface oil* Near the sea surface, fish are able to detect and avoid contact with surface slicks and as a result, fish mortalities rarely occur in open waters from surface spills (Kennish 1997; Scholz et al. 1992). Pelagic fish species are therefore generally not highly susceptible to impacts from hydrocarbon spills. However, hydrocarbon droplets can physically affect fish and sharks exposed for an extended duration (weeks to months). Smothering through coating of gills can lead to the lethal and sub-lethal effects of reduced oxygen exchange, and coating of body surfaces may lead to increased incidence of irritation and infection. Fish may also ingest hydrocarbon droplets or contaminated food leading to reduced growth.	*Potential impacts from dissolved and entrained oil* In offshore waters near to the release point, pelagic fish are at risk of exposure to the more toxic aromatic components of the marine diesel. Pelagic fish in offshore waters are highly mobile and comprise species such as tunas, sharks and mackerel. Due to their mobility, it is unlikely that pelagic fish would be exposed to toxic components for long periods in this spill scenario. The more toxic components would also rapidly evaporate and concentrations would significantly diminish with distance from the spill site, limiting the potential area of impact. Rays are typically found on benthic habitats and may be present around shoals in the area and likely below the area of water column affected by a diesel spill.	

<table>
<tr><th rowspan="2">Receptors</th><th colspan="3">Potential impacts from a diesel spill</th></tr>
<tr><th>Floating and/or shoreline</th><th>Entrained</th><th>Dissolved</th></tr>
<tr><td></td><td colspan="3">Impact assessment to receptors within the EMBA
Whale sharks could potentially transit through the spill trajectory area, however this is considered unlikely given the small area affected by the diesel spill and its distance from known aggregation areas. Owing to the rapid evaporation expected and dispersion, impacts to the whale shark would be expected to be minimal.
The NWS supports a diverse assemblage of fish and shark species, particularly in shallower water near islands and shoals. Other shark and pelagic fish species may transit the spill trajectory area but impacts would be anticipated to be negligible as most species will be well below the affected area of the water column.</td></tr>
<tr><td rowspan="2">Avifauna</td><td>Potential impacts from surface oil
Estimates for the minimum thickness of floating oil that will harm seabirds (through ingestion from preening of contaminated feathers or loss of thermal protection of their feathers) range from 10 g/m^2 (O'Hara and Morandin 2010) to 25 g/m^2 (Koops et al. 2004). Seabirds have the potential to become oiled through interactions with surface waters in the spill area or through secondary ingestion of toxins as a result of feeding on affected prey. Potential impacts to seabirds are from contact, ingestion and/ or oiling of feathers. In addition, diesel can erode feathers causing chemical damage to the feather structure that subsequently affects ability to thermo regulate and maintain buoyancy on water.
Seabirds may also come into contact with marine diesel around shorelines as it percolates through the beach profile during feeding, breeding and roosting activities. This may result in chemical impacts to feathers and exposed skin from the diesel.</td><td colspan="2">Potential impacts from dissolved and entrained oil
As most fish survive beneath floating slicks, they will continue to attract foraging seabirds, which typically do not exhibit avoidance behaviour.
Potential impacts to avifauna due to entrained oil include:
Harm to internal anatomy if ingested
Irritation or damage to sensitive external features such as eyes and skin
Damage to feathers of marine birds
Damage to respiratory processes of air breathing marine fauna if significant inhalation of volatile fumes occurs at the surface.</td></tr>
<tr><td colspan="3">Impact assessment to receptors within the EMBA
Threatened and migratory seabirds and shorebirds that may occur within the EMBA may have foraging, feeding, breeding and or nesting habitat in the vicinity of the EMBA.
The EMBA intercepts with breeding BIAs for several migratory species and therefore foraging and breeding habitat in the area may be impacted by surface and water column while foraging (dive and skim feeding). Higher numbers would be expected during breeding periods. Due to the quick evaporation and dispersion of diesel, significant impacts are not anticipated.</td></tr>
</table>

Receptors	Potential impacts from a diesel spill		
	Floating and/or shoreline	**Entrained**	**Dissolved**
AMPs	*Potential impacts from surface oil* Surface oil is not expected to occur at shorelines of AMPs.	*Potential impacts from dissolved and entrained oil* Entrained and dissolved hydrocarbons will or may impact the coral and seagrass habitats, as well as other marine park values fauna including dugongs, sea snakes (protected), fish and other marine mammals. Impacts to these receptors are described above.	
	Three AMPS are present within the diesel EMBA: Oceanic Shoals AMP, Ashmore Reef AMP and Cartier Island AMP.		
State Marine Parks	There are no State marine parks within the diesel EMBA.		
World, National and Commonwealth Heritage Places	There are no World, National and Commonwealth Heritage Places within the diesel EMBA.		
Threatened Ecological Communities	There are no threatened ecological communities within the diesel EMBA.		
Wetlands of International Importance	There are no wetlands of international importance within the diesel EMBA.		
KEFs	*Potential impacts from surface oil* There are no KEFS that would be impacted by surface oil as the KEFs relate to geomorphologic features which are not expected to be impacted by hydrocarbons.	*Potential impacts from dissolved and entrained oil* Values and sensitivities associated with the KEFs include marine fauna due to the higher diversity of fish species associated with the higher diversity in fish communities or nutrients such as Continental Slope Demersal Fish Communities; or benthic habitats at Ashmore Reef and Cartier Island and surrounding Commonwealth waters. Impacts to marine fauna are discussed above.	
	Impact assessment to receptors within the EMBA There are three KEFs which are overlapped by the diesel EMBA, these include: • Continental Slope Demersal Fish Communities • Ashmore Reef and Cartier Island and surrounding Commonwealth waters • Ancient coastline at 125 m depth contour		

8.8.7 Environmental performance

Environmental Risk		**Unplanned release of diesel**		
Performance Outcome		**No spill of hydrocarbon to the marine environment.**		
I.D	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
118	Montara Marine Facility Manual (MV-90-PR-H-00001)	All hoses are fitted with dry-break couplings and are buoyant or fitted with floats	Bunkering checklist	Operations Supervisor
119		Visual inspection of dry break couplings and hoses prior to diesel transfer to ensure they are in good condition		
120		Permit-to-work documentation is complete and signed off to ensure refuelling is undertaken in accordance with the refuelling procedure		
121		Bunding, sumps and drains are inspected prior to bunkering or transfer		
122		Bunding/ drip trays under all skids and potential leak sources on WHP and FPSO are inspected prior to bunkering or transfer		
123		Testing of emergency shutdown mechanism on the transfer pumps prior to bunkering or transfer		
124		No night time bunkering or transfer is permitted, unless a risk assessment is undertaken and additional mitigation measures are implemented (as identified as being necessary), and signed off by the Operations Supervisor		
125		Maintain radio contact with vessel during bunkering or transfer operations		
126	Shipboard Oil Pollution Emergency Plan	Compliance with MARPOL 73/78 Annex I (Prevention of pollution by oil) and Marine Order 91 (Marine pollution prevention – oil) (as appropriate to vessel class), including valid SOPEP for managing spills	Records demonstrate vessels have valid SOPEP	Marine Superintendent
127		Vessels to have stocks of spill response kits/bins available and accessible onboard to respond to a spill as per their SOPEP	Records demonstrate spill response bins/kits are readily available and stocked	Operations Supervisor Marine Superintendent (all other vessels)
128	Implement Montara Oil Pollution Emergency	In the event of a tier 2 or tier 3 oil spill implement the Montara OPEP to reduce environmental impacts due to spill	Incident Log	IMT Leader

Environmental Risk		Unplanned release of diesel		
Performance Outcome		**No spill of hydrocarbon to the marine environment.**		
I.D	**Management controls**	**Performance standards**	**Measurement criteria**	**Responsibility**
	Plan (MV-70-PLN-G-00001)			
129	Training and Competency Management (JS-60-PR-Q-00015) *	Personnel trained and assessed competent in accordance with their role requirements	Records of competency	HR Manager
–	Refer Sections 7.7 and 0 for additional controls and performance standards related to vessel operations			

**The Training and Competency Management document outlines the framework and requirements for maintaining staff competency and training specifications for Jadestone. It provides an overview of the requirements for staff and contractors to meet their training obligations and the context within which the system operates.*

8.8.8 ALARP assessment

On the basis of the impact and risk assessment completed, Jadestone considers the control measures described above are appropriate to manage the risk of an unplanned release of diesel to the marine environment. The residual risk ranking for this potential impact is considered Low, and therefore ALARP has been demonstrated. Additional controls considered but rejected are detailed below.

Rejected control	Hierarchy	Practicable	Cost effective	Justification
N/A	Eliminate	N/A	N/A	The use of diesel for fuel for vessels and machinery cannot be eliminated, vessels and machinery are required for the operations and diesel is therefore required. Other energy sources are not readily available to power all equipment and vessels.
Substitute diesel for another hydrocarbon type	Engineering	N/A	N/A	Machinery is designed for using diesel as the fuel oil which reduces the potential impact from an unplanned release to as low as possible. As no other hydrocarbon has been identified that is more environmentally friendly that could still fulfil the equipment requirements, no engineering controls have been identified.
N/A	Isolation	N/A	N/A	The Activity is located at distance from sensitive receptors and the coastline.
N/A	Administrative	N/A	N/A	Through the application of specific controls and procedures, and maintenance of machinery, no further administrative controls were identified.

8.8.9 Acceptability Assessment

The potential impacts of an unplanned diesel release to the marine environment are considered 'Acceptable' in accordance with the Environment Regulations, based on the acceptability criteria outlined below. The control measures proposed are consistent with relevant legislation, standards and codes.

Policy and management system compliance	Jadestone's HSE Policy objectives are met. Section 9 demonstrates that Jadestone's HSE Management System is capable of continuously reviewing and updating activities and practices during the operation, including spill response arrangements.
Stakeholder and reputation	Stakeholder consultation has been undertaken (see Section 6), including engagement with the State and National response agencies of DoT and AMSA, commercial and recreational fishing industry bodies and fishers. No concerns have been raised with regards to impacts of a diesel spill by Relevant Persons. During any spill response, a close working relationship with key regulatory bodies (e.g. DoT, DBCA, AMSA, DER) will occur and thus there will be ongoing consultation with Relevant Persons during response operations.
Environmental context and ESD	The worst-case credible diesel spill scenario for the Montara operations is a result of a vessel collision within the Operational Area. The release of oil occurs over five hours and floating oil may contact Browse Island. Entrained oil is predicted to contact the KEF Carbonate Bank and Terrace System of the Sahul Shelf and a number of shoals. Sensitive receptors at risk include seabirds, shorebirds, marine fauna, intertidal and shoreline habitats. The potential impact is considered acceptable after consideration of: • Potential impact pathways

	• Preservation of critical habitats • Assessment of key threats described in species and Area Management /Recovery plans • Consideration of North-West Bioregional Plan • Principles of ecologically sustainable development ESD.
Conservation and management advice	Jadestone will have regard to the representative values of protected areas and other published information or conservation advice and endeavour to ensure that priority is given to the social and ecological values, of any AMPs, or State Marine Parks impacted by diesel. Noting 'Emergency response' is permitted in all AMPs and state marine parks. Actions required to respond to oil pollution incidents, including environmental monitoring and remediation, in connection with activities authorised under the OPGGS Act may be conducted in all zones. The Director will be notified in the event of an oil pollution incident that occurs within, or may impact upon, an Australian Marine Park and, so far as reasonably practicable, prior to a response action being taken within a marine park. The 'Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species' will be applied/ used as guidance in the event of an oil spill.

9. IMPLEMENTATION STRATEGY

As required under Regulation 22(1) of the OPGGS 2023 (Environment) Regulations, Jadestone must provide an implementation strategy that will ensure:

- All environmental impacts and risks of the activity will be continually identified and reduced to a level that is ALARP
- Control measures identified in the EP are effective in reducing the environmental impacts and risks of the activity to ALARP and acceptable levels
- That environmental performance outcomes and environmental performance standards are met
- Arrangements are in place to respond to, and monitor impacts of, oil pollution emergencies
- Stakeholder consultation is maintained through the activity as appropriate.

To meet these requirements the implementation strategy outlined in this EP includes the following:

- Details on the systems, practices and procedures to be implemented (Section 9.1)
- Key roles and responsibilities (Section 9.2)
- Training, competencies and ongoing awareness (Section 9.2.3)
- Monitoring, auditing, management of non-conformance and review (Section 9.3)
- Incident response including Oil Pollution Emergency Plan (Section 7.10 and OPEP)
- Record keeping (Section 9.4.4)
- Stakeholder consultation (Section 6).

Jadestone is responsible for ensuring that activities within the Operational Area are managed in accordance with the EP, the implementation strategy and the Jadestone Health, Safety and Environment Policy and Business Management System. To ensure Jadestone's environmental management standards and performance outcomes are achieved, all personnel will be required to comply with all relevant requirements of Jadestone's systems and, policies and standards.

9.1 Jadestone Business Management System

Jadestone applies an integrated Business Management System that is aligned with ISO 55000: Asset Management. This covers all activities and includes provision for the systematic management of environment and safety and all other business functions. The Jadestone Business Management System ensures alignment between company objectives and the activities associated with operation of the Montara facilities in a structure that is illustrated by Figure 9-1.

The management system sets a structured framework that provides governance across company processes for all organisational activities, with defined accountabilities and performance requirements for employees and contractors to deliver activities aligned to the vision and requirements of Jadestone Energy, including those identified in this EP. At the highest level, environmental performance expectations are communicated by the Jadestone HSE Policy.

The structure of the management system is organised to describe the business activities by objective functions (Figure 9-2).

Figure 9-1: Business management system structure

Figure 9-2: Business activities and objective functions

The objective functions are organised into 'Lead', 'Core' and 'Help', which describe how the intent of the business is delivered. The Lead functions are the activities that provide direction to the Core functions, which represent the life cycle of oil and gas activities. The purpose of the Lead functions is to enact and inform strategy and to guide the Core functions in the delivery of their activities.

Delivery of HSE management and performance is fully integrated (including implementation of the EP) throughout the objective functions relevant to operation of the activity. The relevant functions are:

- Operational excellence
- Value discipline
- People
- Stakeholder management

- Risk management
- Develop
- Produce
- Provide goods and services.

Below is a summary of the mechanisms by which these functional areas contribute to HSE management and performance during the activity.

9.1.1 Operational Excellence

'Operational Excellence' provides the systems, tools and processes which ensure that all learning experiences that have the potential to improve operational safety, integrity and efficiency, and reduce negative impacts to the environment, to be captured, evaluated and disseminated for future implementation.

The Operational Excellence function is a continuous process and is summarised in Figure 9-3.

The Operational Excellence function addresses the key points of:

- Capturing of lessons learnt
- Review of lessons learnt
- Incorporation of knowledge in future work.

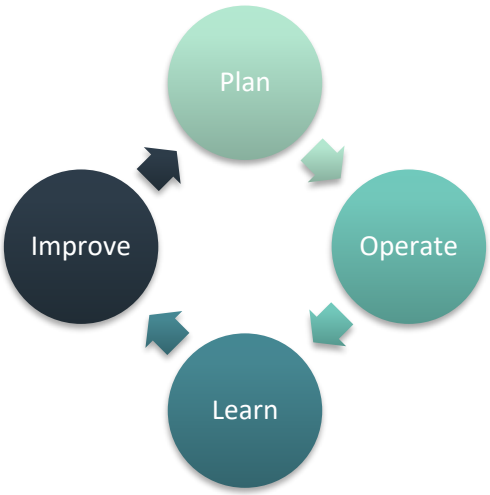


Figure 9-3: Operational and excellence business functions

Knowledge and best practices can be captured from many sources including internal and external, such as:

- Audits and inspections
- Emergency response drills
- Incident reviews
- Technical papers, legislation and journals
- Prior experience.

Any actions arising from the assessment of information are incorporated into CMMS. Processes, procedures and systems are improved based on the historical lessons learnt and applied in subsequent phases.

9.1.2 Value Discipline

The 'Value discipline' function represents the processes – including annual budgeting, capital funding – that ensure value and capital requirements are met and support the management system functions delivering their business objectives including HSE performance. Commonly HSE performance is a proxy for business performance and therefore HSE management is of interest to the Value discipline function of the management system.

9.1.3 People

The Jadestone Energy Competency Assurance Framework provides the formal systems, tools and processes which ensure that personnel are appropriately trained and competent to complete assigned tasks to an expected standard. Competency assurance is a necessary component of any approach to reduce safety, integrity and environmental risks to a level that is ALARP.

The Competency Assurance Framework addresses the key points of:

- Competency requirements (qualification, experience and training) are maintained for all Jadestone Energy positions where the incumbent is required to undertake, supervise, review or verify critical tasks or where the incumbent has the technical authority to approve critical documents
- Competent persons are members of the workforce who meet the competency requirements for the respective positions to perform critical tasks without direct supervision
- Candidates being considered for appointment in a critical position are assessed against the applicable competency requirements before being formally appointed
- Incumbents must be reassessed against the competency requirements as per the required frequency stipulated in the competency matrix
- All contractors with personnel in the field are prequalified in accordance with the Contractor Management Framework.

Jadestone Energy personnel are subject to the provisions of the Jadestone Competency Assurance Framework which outlines the training, development and assessment requirements necessary to ensure that all employees have the relevant knowledge and skills required to conduct their activities in a safe and environmentally responsible manner.

A training and skills matrix has been developed for all positions which identifies responsibilities, training and competency requirements. Personnel will complete relevant training and hold qualifications and certificates for their specific role (e.g. well control certificates, rigging and crane operator certificates etc.). Training records will be retained.

9.1.4 Risk Management

Jadestone has an integrated approach to risk management to cover all its business activities.

The Risk Management function provides a view of risk that is independent of production delivery. This includes strategic, commercial, and control and compliance risks. In addition, it manages Health Safety and Environment activities, including the preparation and approval of regulatory approvals (including this EP) and the management of change process, which addresses all change activities regardless of type – technical, organisational, software or procedural. Further information on the management of change process is provided in Section 9.4.3.

At the activity level, the risk management function includes all the planned activities and accidental events. Risk identification and assessment is a continuous process that identifies all the physical control measures necessary to manage the risks. Control measures are subjected to regular assurance activities. In a similar way, audits of the management system are conducted according to review cycle with timing agreed in the annual planning process. Findings from assurance activities, audits and ongoing review of performance are

considered in the Operational Excellence process, which considers opportunities for continuous improvement (refer Section 9.1.1).

The Risk Management function is accountable for approval of facility level risk assessments and risk reduction measures; and by so doing, providing a view of risk that is independent from production delivery.

9.1.5 Produce

The Produce function delivers safe and reliable operations as well as environmental performance.

The Produce function works closely with the Operational Excellence and Risk Management functions to evaluate operational performance, including environmental performance, and reduce risk through delivery of continuous improvement activities. Produce is responsible for asset optimisation, reliability, integrity and maintaining compliance. It thus interacts with most functions.

The Produce function delivers environmental management at the activity level via the Computerised Maintenance Management System (CMMS) including detailed work instructions and tasks allowing the activity to meet the environmental performance requirements of this EP. These instructions and tasks are monitored and reviewed to ensure appropriate close out of tasks is achieved as well as ensuring the required outcomes/ performance have been achieved.

9.1.6 Provide Goods and Services

HSE performance in all activities associated with operation is achieved either through management of personnel involved, or via management of contracted works.

The Jadestone Competency Management Framework provides personnel with a systematic and uniform approach for managing and improving Health, Safety and Environmental (HSE) performance throughout the life cycle of an individual's appointment, from their selection through to post-completion performance evaluation. The Personnel Management Framework addresses the key points of selection, competency, development requirements and management.

HSE performance is also achieved through Jadestone's Contractor Management Framework. The contract management life-cycle follows four steps: pre-qualification; selection; engagement; and contract completion review process. Through each of these steps Jadestone and service provider/ supplier is evaluated for previous HSE performance and engaged in the mechanisms by which HSE performance will be achieved in the contract to be established.

9.2 Key Roles and Responsibilities

As per Regulations 14(4) and 14(5), a clear chain of command setting out the roles and responsibilities of personnel involved in operation is required as well as detail on what measures are in place to ensure personnel are aware of their role requirements and how Jadestone evaluates their competency and training needs in these roles. In response to these regulatory requirements, provided in this sub-section is information on:

- **Section 9.2.1 Organisational Chart**: outlines the key roles involved in operation of the Montara facilities
- **Section 9.2 Role responsibilities**: summarises the responsibilities of each key role involved in operation of Montara facilities
- **Section 9.2.2 Communication requirements**: outlines how personnel fulfilling key roles are made aware of their responsibilities as described in the EP
- **Section 9.2.3 Assessment of Competency and Training**: outlines how Jadestone assesses and evaluate the competencies and training requirements of personnel responsible for achieving the commitments with this EP.

9.2.1 Organisational Structure and Responsibilities

The Montara operation is governed by the hierarchy of positions on the FPSO. The organisational structure is presented in Figure 9-4.

Each position has a position description outlining their HSE role and responsibilities, accountabilities and reporting lines (Table 9-1). It is the responsibility of all Jadestone personnel to ensure that the requirements of the HSE Policy are applied in their area of responsibility and that personnel are suitably trained and competent in their respective roles. Mandatory training requirements are mapped out in a competency matrix. Further information is provided in the Training and Competency Management policy (JS-60-PR-Q-00015). The purpose of the Facility Training and Competency Management policy is to outline the requirements for maintaining facility staff competency and training. This document provides an overview of the requirements for facility company personnel to meet their training obligations and the context within which this framework operates.

It is the responsibility of all Jadestone personnel to ensure that they have read and understood the requirements of the HSE Policy. All personnel are suitably trained and competent in their respective roles.

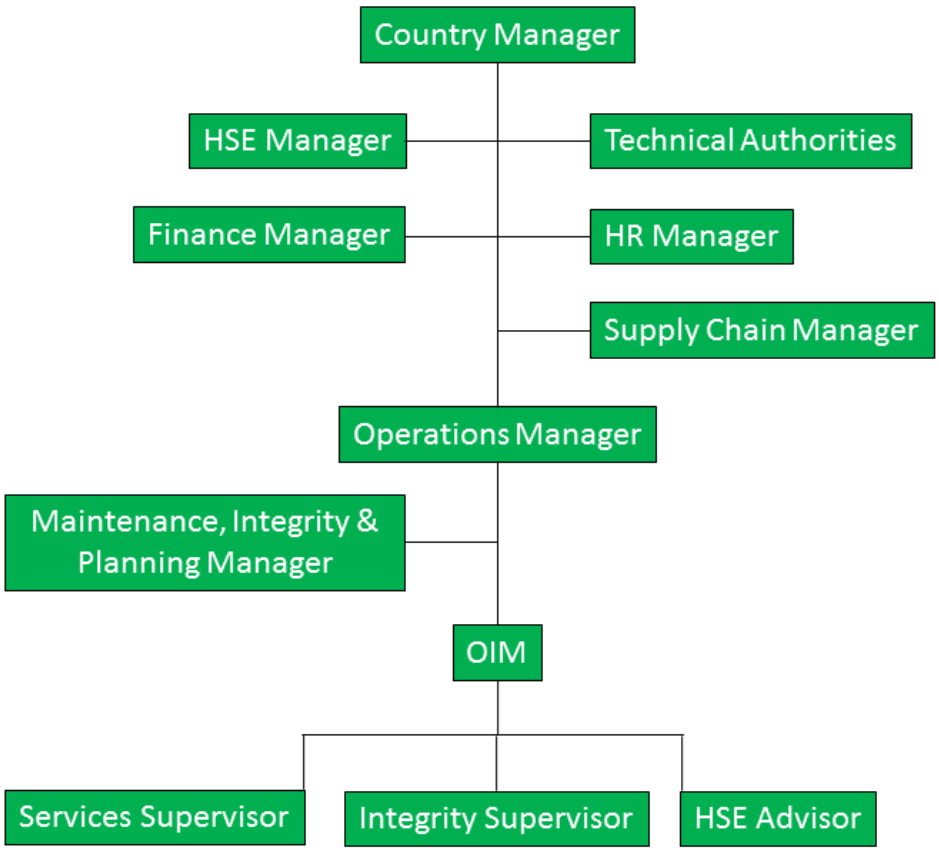


Figure 9-4: Montara operations organisation chart

Table 9-1: Responsibilities of key roles

Role	Key responsibilities
Country Manager	• Ensures that activities are conducted in accordance with the Jadestone's HSE Policy.

Role	Key responsibilities
	• Primary responsibility for Jadestone Australia operations and for meeting or exceeding corporate targets for all aspects of performance, including conducting activities in accordance with Jadestone's HSE Policy and this Environment Plan. • Responsible for providing adequate resources for environmental management. • Accountable for Operational Excellence. • Ensures the incident response strategy is implemented in the case of an incident. • Responsible for compliance with the BMS. • Maintains communication with company personnel, government agencies and the media, where appropriate.
Operations Manager	• Primary responsibility for offshore operations and for meeting environmental performance and compliance requirements, including provision of adequate operations resources for delivery of EP commitments. • Liaises with regulatory authorities as required. • Responsible for ensuring that audits and reviews of the Environment Plan are conducted.
Maintenance, Integrity and Planning Manager	• Responsible for coordinating all maintenance and integrity works and maintaining the technical integrity of the facilities. • Manage HSE hazards and risks related to maintenance activities by ensuring procedures and risk reduction processes have been employed for all activities under their control. • Ensure that regular planned maintenance is carried out to meet the requirements embodied within the CMMS. • Ensures maintenance personnel are competent in their respective tasks.
Supply Chain Manager	• Overall responsibility for implementation of the contractor management framework, including communication of EP requirements to contractors at the appropriate stages of contract management cycle.
Offshore Installation Manager (OIM)	• Responsible for day to day operations at the facility. • Ensures completion of routine performance reporting for the activities. • Responsibility for the implementation and compliance with the requirements of the EP and the Jadestone HSE Policy. • Ensures that risk management processes are employed to manage HSE hazards and risks at the facility. • Communicates the importance of appropriate levels of training, competency and environmental awareness to all personnel. • Ensures the importance of appropriate levels of training, competency and environmental awareness are communicated to facility personnel and that the training matrix is fully implemented. • Ensures all personnel undertake appropriate Montara inductions and are aware of their HSE responsibilities. • Ensures sufficient resources are made available for offshore environmental management to meet the requirements of the Environment Plan. • Ensures all relevant HSE incidents are reported in accordance with internal incident reporting and investigation procedures. • Conducts regular workplace inspections. • Implements corrective and preventative actions arising environmental inspections, audits, incidents and hazard reports. • Overall responsibility for HSE and emergency response management at the facilities. • Ensure that adequate skills are maintained for effective incident response.

Role	Key responsibilities
	• Ensure regular drills and exercises are conducted and all personnel actively participate. • Ensure Facility HSE meetings are conducted as required by the BMS. • Communicates HSE hazards and risks to the workforce and the importance of following good work practices.
Integrity Supervisor	• Manage HSE hazards and risks related to maintenance activities by ensuring procedures and risk reduction processes have been employed for all activities under their control. • Authorises work permits in accordance with BMS and PTW procedures. • Ensures persons appointed to roles in PTW have undergone the required training. • Identify risks associated with maintenance tasks and ensure control measures are established and implemented. • During an incident forms part of the Incident Response Team.
HSE Manager	• Ensures review of daily, weekly and monthly reporting, as applicable, from the FPSO and support vessels. • Ensures environmental department liaison with the OIM to deliver compliance with all aspects of this EP. • Plans and schedules environmental audits of the activities. • Ensures regulatory documents are prepared and meet regulatory requirements. • Ensures emergency response plans are in place. • Develops and participates in oil spill response activities. • Ensures reporting of all relevant environmental incidents to NOPSEMA within the required timeframes. • Ensure environmental incident reporting meets regulatory requirements (as outlined in the EP) and incident reporting and investigation procedure. • Ensures that proposed changes to environmental management activities are subject to Management of Change and approved prior to application.
HSE Advisor	• Works with the HSE Manager and OIM to support environmental management and delivery of EP commitments. • Contributes to inspections, audits and reviews of the Environment Plan.
Facility personnel and contractors	• Adhere to work systems and procedures defined for the activities being undertaken. • Follow good housekeeping work practices. • Report HSE incidents, hazards or non-conformances to supervisors in a timely manner. • Identify HSE improvement opportunities wherever possible.

9.2.2 Communication of Responsibilities

All personnel (contractors and employees) are required to complete an online induction that contains environmental components prior to arrival at the facility. Travel to the facility cannot be booked until personnel have completed the relevant mandatory inductions. Inductions are updated to account for site-specific factors or activities, or EP management improvements. Induction attendance records for all personnel are maintained. At a minimum, inductions include:

- The Jadestone HSE Policy
- Description of the environmental sensitivities within the operational area and surrounding waters
- Identification of environmental risks and mitigation measures
- Permit to work

- Procedures for reporting of any environmental incidents or hazards
- Waste management requirements
- Overview of incident response and spill management procedures, including roles and responsibilities
- Roles and environmental responsibilities of key personnel
- Direction on where to find copies of the EP and OPEP.

An additional HSE induction for vessels is mandatory for all personnel on board a vessel travelling out to the Montara field which includes vessel specific HSE requirements relating to the EP.

Personnel working onshore but not visiting the facility are required to complete mandatory inductions which cover the Jadestone Business Management System.

The primary mechanism for ensuring all personnel involved in the operation of the Montara facilities are aware of the environmental commitments as listed in this EP are via: provision of environmental performance commitments lists via the CMMS (for those with identified responsibilities in the EP);document familiarisation checklist; management of service providers and suppliers; and online induction prior to attending the Montara field where applicable.

9.2.3 Competencies and Training

Competency assurance is a critical aspect of risk management in the offshore petroleum industry. Competency assurance processes, when implemented, contribute to the management of safety and environmental risk. Furthermore, a competent workforce is a necessary component of any approach to reduce occupational health and safety and environmental risks to a level that is ALARP.

Jadestone's Training and Competency Management policy (JS-60-PR-Q-00015) provides a process for ensuring all company personnel are trained and competent for the role they fulfil. The policy ensures that Jadestone has valid and reliable controls in place to ensure all people are competent to function in their respective roles. The Competency Assurance and Management (CAM) process detailed in the policy enables Jadestone to verify that its facilities are operated by a workforce who have the required competence to safely perform in their positions and any assigned roles.

Jadestone Energy's Contractor Management Framework (JS-90-PR-G-00002) provides a process for ensuring that Contractors and Services Providers have the appropriate level of HSE capability. The assessment of Contractors and Service Providers competency provides a sound level of assurance that all key third-party personnel involved in operations have the necessary skills, knowledge, experience, and ability to perform their work in accordance with their company's training and competency systems.

Contractors and service personnel are assessed against their company's criteria and any additional criteria required by Jadestone Energy. Records of competent people are maintained in EDMS.

Competencies and training arrangements for personnel involved in oil pollution response are detailed in the OPEP and records maintained in EDMS. Personnel will also be provided annual training through drills and/or exercises as per the Incident Management Team Response Plan (JS-70-PLN-F-00008).

To ensure workforce competence is maintained during the life of the facilities, Jadestone will ensure that all required training and inductions are completed in a timely manner and tracked using a learning management system.

Jadestone has a series of inductions and E-learning modules that must be completed by staff, contractors and visitors as detailed in Company Competency Matrices.

9.3 Monitoring, Auditing, Management of Non-conformance and Review

As required under sub-regulation 22(5), Jadestone must provide for sufficient monitoring, recording, audits, management of non-conformance and review of Jadestone's environmental performance and

implementation strategy to ensure that environmental performance outcomes and standards in the EP are being met and continue to minimise impacts to the environment.

Environmental performance outcomes and standards as well as management controls as detailed in this EP (Sections 7 and 8 and the OPEP) are monitored and recorded as described. Ongoing monitoring activities to determine if environmental commitments as required in this EP are being met include the CMMS, inspection program, auditing and exercising of response arrangements. In particular, routine commitments in the EP have been loaded into the CMMS that directs work activities for onshore and offshore personnel. Work activities include review of monitoring checklists, audits, inspections, maintenance and continuous improvement reviews, allowing environmental performance of the activity to be monitored. Non-conformances of EP commitments are reported, tracked and closed-out in accordance with Section 9.3.3.

The collection of data from environmental performance monitoring activities forms the basis of demonstration that the commitments as listed are being met, that specified mitigation measures are in place to manage environmental risks, and that they remain working, and contribute to continually reducing risks and impacts to ALARP and acceptable levels.

9.3.1 Routine Monitoring

The purpose of assurance and audits is to record performance data and routinely check conformance with environmental performance standards and achievement of environmental performance outcomes defined by the EP. Routine assurance and audit activities are scheduled, and records kept in the CMMS.

Emissions and discharges to the environment are monitored to assess the environmental performance of the operation on an ongoing basis. Table 9-2 details the quantitative records that are maintained for all emissions and discharges during routine operations or emergencies within the Operational Area as per Regulation 22(6) of the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023*.

Table 9-2: Quantitative records to be maintained for monitoring of birds and management strategies for birds discharges and emissions

Measurement	Frequency	Monitoring strategy	Record
Oily sludge is disposed of at shore	Weekly	Oily sludge is monitored as per MARPOL	Oil record book
Dosing of production chemicals is recorded	Daily	Chemicals in production system are recorded	Laboratory report
Volume of chemical used	Monthly	Volumes used determined from change in inventory	Monthly report
Food waste from the FPSO will be recorded	Weekly	Putrescible waste as monitored per MARPOL	Garbage record book
Produced water OIW concentration and discharge volume	Every discharge	Monitoring designed to accommodate batch discharge operations	P2 Daily report
Characterisation of PW finds contaminant concentrations meet 99% species protection concentration after applying a dilution rate of 1:322	Annual	NATA accredited lab analyses PW samples a range of parameters.	Independent laboratory report
Whole effluent toxicity testing confirms area of impact not exceeded	Every 3 years (last test in 2023)	WET testing results less than 2017 results used to determine mixing zone (i.e. 1:322 dilution)	Independent laboratory report
Weekly OIW inline spec service	Weekly	OIW inline spec serviced weekly by Production Technician	Maintenance report
OIW inline spec calibration	Biannual	Calibration of inline spec according to manufacturer's recommendations	Calibration report
Quantity GHG emissions	Continuous	Flaring, fuel gas and diesel emissions are recorded monthly and reported as required by the NGER Act 2007 and National Pollutant Inventory	P2 GHG Dashboard Daily report
Continuous measurement of diesel consumption on Montara	Monthly	Review of consumption data to determine emissions and efficiency to report as required by the NGER Act 2007	Fuel and ullage records P2 Daily reports
Diesel consumption on vessels	Post vessel charter	Review of consumption data to determine emissions and efficiency to report as required by the NGER Act 2007	Fuel records

Measurement	Frequency	Monitoring strategy	Record
Fugitive emissions on the FPSO	Annually	Fugitive emissions surveys are undertaken annually	Fugitive emissions survey
Monitoring of localised bird population on FPSO and WHP	Bi Annual	Bi-annual observer-based monitoring of seabirds on the FPSO and WHP by appropriately qualified ornithologist during peak presence times. Monitoring to cover species-specific abundance, distribution, nesting/roosting behaviour, distribution of nests, recording of tagged seabirds Tagging trackers to seabirds will be undertaken opportunistically during bi-annual monitoring visits (6d) Banding of seabirds will be undertaken opportunistically during bi-annual monitoring visits (6d)	Bird monitoring report by ornithologist
Monitoring of bird numbers on FPSO	Weekly	Weekly photographs at established photo points on the FPSO as the same time of day each week. Monitoring to cover species-specific abundance, distribution, nesting/roosting behaviour, and number of tagged individuals	Bird record sheet Assembly of time stamped and time-integrated empirical data that allow review of risks and impacts of the activity, including quantification of factors that promote bird attraction to platform and inform investigation

Measurement	Frequency	Monitoring strategy	Record
			of mitigative options to minimise bird presence.
Monitoring of bird numbers on WHP	Prior to commencing major campaigns on WHP	• Bird abundance and location will be recorded on WHP during staff visits to WHP at beginning of any major campaign as required in *First on*, last off WHP Checklist (MW-02-WP-G-00002).	Bird record sheet
Annual review of scientific literature relating to seabird monitoring	Annual	Annual review and assessment of technical or scientific information that has become available that may contribute as empirical data that allow quantitative or qualitative assessment of factors that promote bird attraction to facility and inform investigation of mitigative options to minimise bird presence	Time stamped register of search and review of new technical and scientific information. Documentation of assessment of risks and impacts informed by new information.
Volumes of the following waste types are recorded: • General and putrescible waste • Hazardous waste • Timber/ wood • Recyclables • Cardboard/ paper • Scrap metal • Metal drums and containers • Batteries (lead acid)	Logged on facility when transferred via vessel to shore then to licensed waste facility. This is done fortnightly (supply run). Vessel also records volumes on manifest	Invoicing process checks vessel manifest against waste disposal records of service provider, and evidence of disposal	Monthly waste reports Annual EP compliance report Manifests are records of garbage wastes, recyclables and dangerous goods disposed.

Measurement	Frequency	Monitoring strategy	Record
• Plastic drums and containers			
All waste associated with oil spill response tracked to disposal	Weekly	Disposal monitored as per Controlled Waste Regulations	Waste consignment records

9.3.2 Audits

An audit is a systematic examination and evaluation against defined criteria and performance indicators to determine whether activities/ processes and related results conform to planned arrangements, whether these arrangements are implemented effectively, and if they are suitable to achieve Jadestone's performance outcomes and requirements.

Audits will performed in accordance with Jadestone's Audit Manual (JS-90-PR-G-00003). Auditing is Jadestone management's primary tool for:

- Determining whether management systems are suitable, available where required, implemented and effective in accomplishing the documented policies and objectives of the organisation
- Verifying conformance with legal and contractual requirements
- Obtaining and maintaining confidence in the capability of suppliers
- Contributing to the improvement of the Business Management System (BMS).

Environmental audits provide assurance that the systems and processes in place to deliver the EP (i.e. the implementation strategy) are suitable and effective. The Jadestone Audit Manual (JS-90-PR-G-00003) describes the planning and conduct of audit activities. External parties may be invited to participate as team members on audits.

The EMS Audit Program (JS-70-PR-I-00039) identifies the scope of annual audits over five years to ensure that all of the environmental performance outcomes and environmental performance standards have been evaluated for compliance during the lifetime of the in force operational EP. The EMS Audit Program is referred to in developing the annual HSE Audit Plan. As well as regular, planned audits of the EMS, unplanned audits may also be added to the audit program. Checklist templates (i.e. scopes) for environmental audits that may be undertaken are provided in the Audit Manual (JS-90-PR-G-00003), including for quality (in line with ISO 9001 requirements) and the environmental management system (which makes provision for deeper dives on the EP).

An outline of Jadestone's auditing schedule is provided in Table 9-3.

Table 9-3: Annual audit schedule

Type	Scope	Minimum per year
Planned	Compliance with EPOs and EPSs	One
	Drill down on close-out of corrective actions and/or areas of compliance focus (e.g. produced water, oil spill response)	One
	Contractor management	One
	Independent audit by third-party (Independent Competent Person, ICP)	One
Reactive	As determined by performance / non-compliances identified during internal/ external inspections, reviews, audits and incident investigations	One to two

9.3.3 Non-compliances and Corrective Actions

Non-conformances from audits, inspections, incidents, regular monitoring or response testing are communicated immediately to the OIM and tracked and monitored by the HSE Manager until closed

Opportunities for improvement and corrective actions from daily operations, reviews, audits, inspections, monitoring and testing activities are documented and tracked to closure by Jadestone's action tracking system.

9.3.4 Reporting

Table 9-4 details the approach to routine environmental performance reporting to the Regulator. Reporting activities relating to reportable and recordable incidents will be as per Regulations 26, 26A, 26AA and 26B.

9.4 Continuous Improvement (Operational Excellence)

9.4.1 Review of environmental performance

The owner of the Operational Excellence business function, with input from other business functions with responsibilities relating to the EP (e.g. operations, maintenance, supply chain), conducts an annual review of environmental performance and the effectiveness of the EP implementation strategy (i.e. BMS). This includes a review of the effectiveness of control measures in reducing impacts and risks to ALARP and acceptable levels, and may result in improvements being identified, evaluated and implemented.

Outcomes of the Annual Performance Review are recorded and contribute to the EP Annual Performance Report (Section 10.1).

The review of environmental performance includes an assessment of:

- Review of compliance with environmental performance outcomes and performance standards, and adequacy of measurement criteria
- Function of environmental management controls relevant to reportable and/or recordable incidents
- Monitoring data and trends including emissions performance when comparing forecasted vs actual emissions
- Results of audits and incident investigations
- Inspection and checklist approaches
- Adequacy of monitoring, inspections and audits.

The Annual Review is also an opportunity to ensure new information is incorporated into the EP and will consider the following:

- Existing information in relation to any component of the receiving environment described in this EP including, but not limited to, biologically important areas, KEFs, and threatened species
- Available scientific literature
- Changes in legislation, policy and or industry relevant guidance
- New issues raised by stakeholders
- Relevance of existing and identification of new stakeholders
- Australian Marine Park status (including any changes in status or management) and relevant IUCN principles
- Lessons learned from Annual Performance Review
- Outcomes from NOPSEMA inspection findings;
- Review of the existing activity description to ensure it still reflects current practice, this will involve members of the onshore and offshore team to ensure accuracy.

The results of the review and any identified improvements or recommendations will be incorporated into processes and procedures used for the operation, or the EP, to facilitate continuous improvement in environmental performance.

In the event that new information (audits, inspections, reviews etc.) suggests risks and impacts are no longer reduced to acceptable levels, or controls are no longer effective in reducing the risks and impacts to

ALARP and acceptable levels, then the process for identification of further controls through a risk assessment will follow that of the risk assessment methodology for this EP (refer Section 4).

In the event that any new information relevant to the EP is identified outside of the annual review process, such as a change in legislation or outcomes from inspections and audits, these changes may trigger a Management of Change process that can result in a minor revision to the EP or a resubmission to NOPSEMA (refer Section 9.4.3).

Any opportunities for improvements identified through the risk assessment (i.e. new controls adopted) will be evaluated via a Management of Change process prior to the EP, procedures or processes being modified (Section 9.4.3).

9.4.2 GHG reporting and Disclosures

We commit to transparency on our Net Zero target performance as well as climate risk and business resiliency. This means that:

- We align climate change-related disclosures with the Task Force on Climate-related Financial Disclosures (“TCFD”) principles.
- We continuously improve and expand on the Group’s GHG Scope 1 and 2 reporting, in line with the leading standards and methodologies such as the Greenhouse Gas Protocol. With time, we will increase our understanding of Scope 3 indirect value chain emissions and seek opportunities to reduce them where the Company has direct control and/or influence.

Table 9-4: Summary of reporting requirements

Regulation	Requirement	Required information	Timing	Type	Recipient
Before the Activity					
Regulation 54(1) and 55 – Notifications	NOPSEMA must be notified that the Activity is to commence.	Complete NOPSEMA's Regulation 29 Start or End of Activity Notification form for both notifications. **Activities that require notification include any new infill wells.**	At least 10 days before the Activity commences	Written	NOPSEMA
During the Activity					
Regulation 24(c), 47 and 48 – Reportable Incident	NOPSEMA must be notified of any reportable incidents For the purposes of Regulation 24(c), a reportable incident is defined as: • An incident relating to the Activity that has caused, or has the potential to cause, moderate to significant environmental damage • Types of reportable incidents are described in Table 10-1.	The oral notification must contain: • All material facts and circumstances concerning the reportable incident known or by reasonable search or enquiry could be found out • Any action taken to avoid or mitigate an adverse environmental impact due to the reportable incident • The corrective action that has been taken, or is proposed to be taken, to stop, control or remedy the reportable incident.	As soon as practicable, and in any case not later than 2 hours after the first occurrence of a reportable incident, or if the incident was not detected at the time of the first occurrence, at the time of becoming aware of the reportable incident	Verbal	NOPSEMA
		A written record of the verbal notification must be submitted. The written record is not required to include anything that was not included in the verbal notification	As soon as practicable after the verbal notification	Written	NOPSEMA
		A written report must contain: • All material facts and circumstances concerning the reportable incident known or by reasonable search or enquiry could be found out • Any action taken to avoid or mitigate adverse environmental impact due to the reportable incident • The corrective action that has been taken, or is proposed to be taken, to stop, control or remedy the reportable incident	Must be submitted as soon as practicable, and in any case not later than 3 days after the first occurrence of the reportable incident unless NOPSEMA specifies otherwise.	Written	NOPSEMA

Regulation	Requirement	Required information	Timing	Type	Recipient
		• The action that has been taken, or is proposed to be taken, to prevent a similar incident occurring in the future.			
Regulation 50 – Recordable Incidents	NOPSEMA must be notified of a breach of an EPO or EPS, in the environment plan that applies to the Activity that is not a reportable incident	Complete NOPSEMA's Recordable Environmental Incident Monthly Report form via submissions@nopsema.gov.au	The report must be submitted as soon as practicable after the end of the calendar month, and in any case, not later than 15 days after the end of the calendar month. If no recordable environmental incidents have occurred during a particular month, a Nil Incident report must be submitted	Written	NOPSEMA
Regulation 22(7) Regulation 51 Environmental Performance	Regulation 22(7) requires that "*the titleholder report to NOPSEMA in relation to the titleholder's environmental performance for the activity, and provide that the interval between reports will not be more than one (1) year*". This is known as the Annual Report. Regulation 51 requires "*a titleholder undertaking an activity must submit a report to NOPSEMA in relation to the titleholder's environmental performance for the activity, at intervals provided for in the environment plan.*"	Annual reports will contain sufficient information to determine whether or not environmental performance outcomes and standards in the EP have been met. At a minimum, reports shall include: • An overview of the operations and activities undertaken at the Facility • Summary of environmental incidents (recordable and reportable) • Summary of any Management of Change (MOC), if applicable • Summary of audits • An assessment of adherence to requirements of the EP, including the EPO and EPS • Environmental performance (adequacy of environmental management tools against number of reportable and/or recordable incidents)	The annual reporting period for the activity is a 12 month period commencing on the 1st day of the month that the EP is accepted. Jadestone will submit annual performance reports within 3-months of the end of the reporting period.	Written	NOPSEMA

Regulation	Requirement	Required information	Timing	Type	Recipient
		• Continued relevance of performance outcomes and performance standards • Monitoring data and trends • Any additional consultation required • Lessons learnt. The annual report shall be submitted to satisfy the requirement of Regulation 51.			
End of Activity					
Regulation 54(2) – Notifications	NOPSEMA must be notified that the Activity is completed	Complete NOPSEMA's Regulation 54 Start or End of Activity Notification form for both notifications	Within 10 days after finishing	Written	NOPSEMA
Regulation 22 (7) and 51 – Environmental Performance	NOPSEMA must be notified of the environmental performance of the Activity	Report must contain sufficient information to determine whether or not environmental performance outcomes and standards in the EP have been met	Annual report submitted within 3 months after the anniversary of the reporting period, with the period commencing on the dated Regulation 54 notification form	Written	NOPSEMA
Regulation 46 Plan ends when titleholder notifies completion	NOSPEMA must be notified that the Activity has ended, and all EP obligations have been completed	Notification advising NOPSEMA of end of the Activity	Within six months of the final Regulation 54 (2) notification	Written	NOPSEMA

9.4.3 Management of Change and Revisions of the Environment Plan

Regulation 39 of the *Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations 2023* makes clear the following requirements in respect of a number of circumstances that may lead to the deviation of an activity from the EP, or a new activity requiring an EP.

39 Revision because of a change, or proposed change, of circumstances or operations	
New activity	
38	A titleholder may, with the Regulator's approval, submit to the Regulator a proposed revision of an environment plan before the commencement of a new activity.
Significant modification or new stage of an activity	
39(1)	A titleholder must submit to the Regulator a proposed revision of the environment plan for an activity before the commencement of any significant modification or new stage of the activity that is not provided for in the environment plan as currently in force.
New or increased environmental impact or risk	
39(2)	A titleholder must submit a revised environment plan for an activity before, or as soon as practicable after:
(a)	The occurrence of any significant new environmental impact or risk, or significant increase in an existing environmental impact or risk, not provided for in the environment plan in force for an activity; or
(b)	The occurrence of a series of new environmental impacts or risks, or a series of increases in existing environmental impacts or risks, which, taken together, amount to the occurrence of:
(i)	A significant new environmental impact or risk; or
(ii)	A significant increase in an existing environmental impact or risk;
	That is not provided for in the environment in force for the activity.

Jadestone's Management of Change process will determine whether a proposed change to activities trigger the requirements of Regulation 39, which may result in a revision and resubmission of an EP to NOPSEMA. This process is described in the Jadestone's Change Management Procedure (MoC) (JS-90-PR-G-00017). The procedure describes a system for identifying, tracking, responding, progressing and closing out change requests or queries raised by any party involved in Jadestone Energy activities. It also directs and instructs activity owners on the environmental regulatory requirements relating to a change in operations.

The procedure provides for proper consideration of temporary or permanent changes to activities, including an impact and risk assessment, approved and communicated to all appropriate stakeholders together with providing a record of the change. In particular, the system ensures the following:

- All changes required to critical outputs will be identified, recorded, risk assessed and approved – internally and externally as required – before being implemented
- Processes and procedures are in place to ensure requirements for change are identified and unauthorised changes are prevented
- All changes must be assessed to determine if the change introduces a new risk or impact or increases an existing impact or risk, as required by Regulation 39
- The MoC is prepared internally by Jadestone personnel which includes consultation with relevant parties as necessary such as technical/ subject matter experts and external stakeholders as required
- Only authorised and competent members of the workforce can approve changes, including relevant Technical Authorities. Technical Authorities are deemed as authorised and competent via the Technical Authority Framework (JS-60-STD-Q-00001)

- Approval of a change internal to Jadestone requires confirmation that impacts and risks have been assessed and appropriate reduction measures implemented (if required) to manage risk to ALARP and impacts to acceptable levels
- All approved changes that affect the Environment Plan are properly documented and communicated to all relevant internal and external members of the workforce, e.g. via toolbox talk or HSE meetings and JSA
- An audit trail is kept of all changes and documents and drawings are updated accordingly.

MOC must be designed to meet the particular requirements of the type of change required and will include:

- Risk assessment to assess potential impacts to the receiving environment as detailed in this EP, including matters of NES and those protected under the EPBC Act
- Strategies and actions to mitigate any adverse effects; identify opportunities offered by the change; and determine how impacted interfaces shall be managed
- Timeframes for implementation
- Documents (e.g. drawing, plan, program, procedure) against which change is monitored
- Outline drawings or controlled documents affected
- Responsibilities for execution, review and approval of the:
    - Justification for the change,
    - Assessment of the impact and risk to environment,
    - Detailed implementation requirements,
    - Dissemination of the change, training personnel and updating of documentation.

All alterations and updates to controlled documents, including regulatory approvals, procedures or drawings must be in accordance with Document Control requirements. If the change meets any of the criteria detailed by Regulation 39, a revision/resubmission of the EP to NOPSEMA will occur.

Maintenance work, which covers the replacement of parts or equipment with identical (or equivalent specification) parts or equipment, and with no change to operating arrangements, is not subject to change control.

9.4.4 Record Keeping

This section of the EP meets Regulation 52(2) by detailing a systematic, auditable record of the results of monitoring and auditing of the environmental performance of the activities. The records retained are linked to the performance outcomes, standards and measurement criteria, and monitoring and reporting requirements.

As a minimum, Jadestone will store and maintain the records for five years, where records include:

- Written reports including monitoring, audit and review regarding environmental performance or the business management system
- Environmental performance reports and associated documentation
- Documentation generated through stakeholder consultation
- Records of emissions and discharges
- Records of calibration and maintenance
- Reportable and recordable incident reports.

9.5 Emergency Preparedness and Response

Under the Environment Regulations 22(8) the Implementation Strategy must contain an oil pollution emergency plan and provide for the updating of the plan containing adequate arrangements for responding to and monitoring oil pollution. These details are contained within the OPEP which is part of this EP and details incident response arrangements in the event of an oil spill and should be referred to for all details.

Emergency response procedures and manuals are in place to describe how controls and consequences are mitigated. These documents are available on the *Montara Venture* FPSO and are made accessible to all personnel. The relevant incident response procedures and manuals are detailed in the OPEP.

The incident response procedures and manuals are regularly updated with the revised contact details of relevant organisations and individuals included. They are also frequently tested to determine where they can be improved. The OPEP details the schedule for testing the preparedness of response organisations in the OPEP.

The Incident Management Exercise & Testing Program (JS-70-PR-F-00001) provides more information on planning and testing cycles. As a minimum, Jadestone conducts quarterly IMT drills, an annual major oil spill exercise, six-monthly oil spill response functional workshops, as well as ad-hoc exercises to coincide with specific project campaigns. The HSE (Emergency Response) Lead maintains an IMT exercise program.

Wherever practical, the IMT exercises, including oil spill responses, may involve support from other agencies, contractors and oil & gas operators as part of resource sharing initiatives. Records of emergency exercises, including OPEP commitments are assessed against measurement criteria and recorded in Jadestone's CMMS.

The Contractor Management Framework (JS-90-PR-G-00002) describes the process whereby Jadestone ensures that a Contractor HSE Plan conforms with Jadestone HSE policy and procedures, addresses response arrangements, addresses communications systems and protocols in normal and emergency scenarios, includes roles and responsibilities in both normal and emergency situations, identifies how a Contractor shall comply with legislative requirements, has an adequate process for addressing risk, identifies compliance mechanisms with its HSE obligations, includes an inspection/ audit schedule, and provides for competent workers when required. The Framework also outlines a Capability Assessment Process to ensure contractors are screened for technical, HSE and quality management.

In addition, assurance actions to meet OPEP requirements such as review of Scientific Monitoring capabilities, Waste Contractors compliance and availability of oil spill response vessels and aircraft are scheduled in CMMS or contractual obligations.

Emergency response, including oil spill arrangements, as part of the implementation strategy are reviewed every 12 months. The scope of the review will be determined by the associated trigger for review. The triggers for the review are:

- document control notification
- any significant change in the OPEP
- any change in the risk assessment
- significant findings or any requirements from after-action review of drills or incidents.

10. REPORTING

10.1 Routine Reporting

Table 10-1 details the approach to routine environmental performance reporting to the regulator. Reports will be of sufficient detail to demonstrate whether specific environmental performance outcomes and standards have been met.

10.2 Incident Reporting

Table 10-1 defines the differences between a reportable and recordable incident. It also defines reporting protocols for initial notification of a reportable incident, written reportable incident reporting and monthly recordable incident reporting. The Incident Reporting Procedure (JS-60-PR-F-00016) which incorporates reporting timeframes for incidents depending on their environmental impacts is provided to the FPSO and reviewed on an annual basis.

Table 10-1: Routine and incident reporting requirements

Requirements	Timing
Routine Reporting	
Annual Environmental Performance Report The Annual Performance Report for Montara Facility Operations will assess compliance with the EP performance objectives, standards and procedures and performance criteria and will include: • An overview of the operations and activities undertaken at the Facility • Summary of environmental incidents • Summary of any Management of Change (MOC), if applicable • Summary of audits conducted • Summary of bird management measures implemented • Available population monitoring data (including monthly, and any annual data available, noting the breeding/nesting season is nominally April-September)	Annual Performance report is to be submitted to NOPSEMA within 3 months of end of annual reporting period.
Annual Review of Environment Plan. The review will include an assessment of: • Environmental performance (adequacy of environmental management tools against number of reportable and/or recordable incidents). • Continued relevance of performance outcomes and performance standards. • Review of existing performance standards and measurement criteria (giving consideration to updated or new standards). • Inspection and checklist approaches. • Monitoring data and trends • Any additional consultation required • Lesson learnt • Results of audits • Adequacy of auditing and monitoring	Annual review of the Environment Plan triggered by the annual environment performance report process. If the Environment Plan needs revising, Jadestone's Management of Change process will determine whether a proposed change triggers the requirements of Regulation 17, which may result in a revision and resubmission of an EP to NOPSEMA. .
Recordable Environmental Incident Monthly Report A written report will be provided to NOPSEMA of any breaches of a performance outcome or performance standard identified in the EP, and is not classed as a reportable incident (refer above). The monthly report will include the following: • Circumstances and material facts concerning the incident	Not later than 15 days after the end of each calendar month.

Requirements	Timing
• Actions taken to avoid or mitigate any adverse environmental impacts • Corrective action taken to prevent recurrence.	
Reportable Incidents: Notifications	
NOPSEMA NOPSEMA will be notified of reportable environmental incidents: i.e. any unplanned event identified as having caused, or having the potential to cause moderate to significant environmental damage. The following is a list of reportable environmental incidents that could occur: • Uncontrolled release of hazardous chemicals or hydrocarbons more than 80 L to the marine environment • Introduction of an IMS • Harm or mortality to an EPBC listed marine fauna (except for eggs euthanised through implementation of bird management measures, if adopted, this will be reported through the Annual Performance Report • Gaseous releases of more than 300 kg (~255 m^3 at Standard Ambient Temperature and Pressure) • Any unforeseen event that has caused or has the potential to cause an impact with moderate or greater environmental consequence as outlined within this EP.	Verbal report to NOPSEMA as soon as practicable but not later than two hours of incident having been identified. As soon as practicable a written record of the verbal notification will be provided to NOPSEMA. Notifications to other regulators are described in Jadestone Energy Incident Management Team Response Plan (JS-70-PLN-F-00008) and the OPEP
AMSA Oil pollution incidents in Commonwealth waters must be reported to AMSA.	Within 2 hours of incident having been identified: Tel: 1800-641-792
DPIRD Notification of potential detection of IMS in WA waters is made to DPIRD and Jadestone will follow subsequent advice provided by Aquatic Biosecurity	Within 24 via Fishwatch (ph 1800 815 507) or by email to Aquatic.Biosecurity@dpird.wa.gov.au
DCCEEW) DCCEEW will be notified of the following incidents: • Harm or mortality to EPBC listed marine fauna attributable to the activity as provided for in: https://www.dcceew.gov.au/environment/biodiversity/threatened/listed-species-and-ecological-communities-notification • Spills of hydrocarbons or environmentally hazardous chemicals more than 80 L to the marine environment. • Any unplanned event identified as having caused or having the potential to cause moderate to significant impact to a matter of NES.	Within 2 hours of incident having been identified: Tel: 1800-110-395 Tel: 02-6274-1372 compliance@environment.gov.au
NOPSEMA A written report of a reportable environmental incident will be provided to NOPSEMA and will contain: • Immediate action taken to prevent further environmental damage and contain the source of the release • Arrangements for internal investigation • All material facts and circumstances concerning the reportable incident that the operator knows or is able, by reasonable search or enquiry, to find out • Immediate cause analysis • Corrective actions taken or proposed to prevent recurrence of similar incidents with responsible party and completion date.	Written report (Part 1) to NOPSEMA is required within three (3) days. Within 7 days of submitting the written report (Part 1) to NOPSEMA, a copy of the written report will be provided to NOPTA and DMIRS.

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APPENDIX A EPBC MINISTERIAL STATEMENT

Australian Government
Department of the Environment and Energy

CONSOLIDATED APPROVAL NOTICE

Montara 4, 5 and 6 Oil Production Wells and Gas Re-injection Well, Timor Sea (EPBC 2002/755)

The attached notice (Attachment A) is provided to consolidate the approval conditions for the above project, approved on 3 September 2003. The approval conditions were subject to variation at various times during the post approval phase. These decisions are publicly available on the Department's website at http://epbcnotices.environment.gov.au/referralslist/.

The publication of this notice does not alter the dates of: effect for the approval; the variations to conditions; the expiry date of the approval; or any other dates mentioned in conditions. The consolidated approval notice is for ease of reference only.

Name and position	Greg Manning Assistant Secretary Assessments (WA, SA, NT) & Post Approvals Branch
Date of Consolidated Approval Notice	12 June 2018

Attachment A

Australian Government
Department of the Environment and Energy

Montara 4, 5 and 6 Oil Production Wells and Gas Re-injection Well, Timor Sea (EPBC 2002/755)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted	PTTEP Australasia (Ashmore Cartier) Pty Ltd (formerly Newfield Australia (Ashmore Cartier) Pty Ltd)
proponent's ABN	27 004 210 164
proposed action	To drill and operate Montara 4, Montara 5 and Montara 6 Wells for the purpose of oil production and to re-complete and operate Montara 3 for use as a gas re-injection well in Permit Area AC/RL3, in the Timor Sea approximately 200 km from the coast of Western Australia [See EPBC Act referral (EPBC 2002/755)].

Approval

Controlling Provision	Decision
Commonwealth marine areas (sections 23 & 24A)	Approved

conditions of approval

This **approval** is subject to the conditions specified below.

expiry date of approval

This approval has effect until 1 September 2028.

Decision-maker

name and position	Gerard Patrick Early First Assistant Secretary Approvals and Wildlife Division
signature	**SIGNED**
date of decision	3 September 2003

Conditions attached to the approval

1. The person taking the action must submit for the **Minister's** approval, an Oil Spill Contingency Plan (OSCP) that demonstrates the response preparedness of the person taking the action for any spills, including hydrocarbons from offshore wells and infrastructure, pipelines, construction and operation vessels. This must include the capacity to respond to a spill and mitigate the environmental impacts on the Commonwealth marine area and species listed as threatened or migratory under the EPBC Act. The OSCP must include, but is not limited to:

    a) identification of sensitive areas, species or habitats that may be impacted by a potential spill, as determined by site-specific modelling of worst case scenario spills;

    b) specific response measures for those sensitive areas, species or habitats and prioritisation of those areas during a spill response, including a **net environmental benefit analysis** of the response options;

    c) a description of resources available for use in containing and minimising impacts in the event of a spill and arrangements for accessing them;

    d) a demonstrated capacity to respond to a spill at the site and measures that can feasibly be applied within the first 48 hours of a spill occurring;

    e) training of staff in spill response measures and identifying roles and responsibilities of personnel during a spill response;

    f) procedures for reporting spill incidents within 48 hours of a spill occurring; and

    g) a demonstrated procedure or a plan for testing, maintenance and review of the OSCP.

    The OSCP must be submitted and approved by the **Minister** prior to the **recommencement of operations**, or as otherwise agreed to in writing by the **Minister**. The person taking the action must not **recommence the operations** unless the **Minister** has approved the OSCP. The approved OSCP must be implemented.

2. The person taking the action must submit for the **Minister's** approval a Decommissioning Plan at least one (1) year prior to commencement of decommissioning of any components of the floating production, storage and offtake vessel, subsea wells, flowlines, or any associated infrastructure. The Decommissioning Plan must address the removal of all structures and components above the sea floor. The person taking the action must not commence decommissioning until the Decommissioning Plan has been approved by the **Minister**. The approved Decommissioning Plan must be implemented.

3. The person taking the action must monitor produced formation water in accordance with a **NOPSEMA** accepted **Environment Plan** for the activity, including aspects of quality, quantity and effects on the receiving environment.

Note: Condition 4, 5 and 6 were revoked on the date of this consolidated notice.

7. The person taking the action must submit for the **Minister's** approval, an Operational and Scientific Monitoring Program (OSMP) that will be implemented in the event of a spill to determine the potential extent and ecosystem consequences of such a spill, including, but not limited to:

a) triggers for the initiation and termination of the OSMP, including, but not limited to, spill volume, composition, extent, duration and detection of impacts;

b) a description of the studies that will be undertaken to determine the operational response, potential extent of impacts, ecosystem consequences and potential environmental reparations required as a result of the spill;

c) inclusion of sufficient baseline information on the biota and the environment that may be impacted by a potential spill, to enable an assessment of the impacts of such a spill;

d) a strategy to implement the scientific monitoring plan, including timelines for delivery of results and mechanisms for the timely peer review of studies; and

e) provision for periodic review of the program.

The OSMP must be submitted and approved by the **Minister** within three (3) months following the **recommencement of operations,** or as otherwise agreed to in writing by the **Minister**. The approved OSMP must be implemented.

Note: Condition 8 was revoked on the date of this consolidated notice.

9. Within 30 days after the **recommencement of operations**, the person taking the action must advise the **Department** in writing of the actual date of **recommencement of operations**.

10. The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plans/monitoring programs required by this approval, and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **Department's** website. The results of audits may also be publicised through the general media.

11. Upon the direction of the **Minister**, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the **Minister**. The independent auditor must be approved by the **Minister** prior to the commencement of the audit. Audit criteria must be agreed to by the **Minister** and the audit report must address the criteria to the satisfaction of the **Minister**.

Note: Condition 12 was revoked on the date of this consolidated notice.

13. A plan, program or strategy required by condition 1, 2 or 7 is automatically deemed to have been submitted to, and approved by, the **Minister** if the measures (as specified in the relevant condition) are included in an **environment plan** (or **environment plans**) relating to the taking of the action that:

a) was submitted to **NOPSEMA** after 27 February 2014; and

b) either:

i. is **in force** under the **OPGGS Environment Regulations**; or

ii. has ended in accordance with regulation 25A of the **OPGGS Environment Regulations**.

13A. Where a plan, program or strategy required by condition 1 or 7 has been approved by the **Minister** and the measures (as specified in the relevant condition) are included in an **environment plan** (or **environment plans**) that:

a) was submitted to **NOPSEMA** after 27 February 2014; and

b) either:

i. is **in force** under the **OPGGS Environment Regulations**; or

ii. has ended in accordance with regulation 25A of the **OPGGS Environment Regulations**,

the plan, program or strategy approved by the **Minister** no longer needs to be implemented.

13B. Where an **environment plan**, which includes measures specified in the conditions referred to in conditions 13 and 13A above, is **in force** under the **OPGGS Environment Regulations** that relates to the taking of the action, the person taking the action must comply with those measures as specified in that **environment plan**.

Definitions

Department: The Australian Government Department or any other agency administering the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) from time to time.

Environment Plan: an environment plan as existing from time to time which has the meaning given in the **OPGGS Environment Regulations**.

In force: in relation to an **environment plan**, has the meaning given in the **OPGGS Environment Regulations**.

Minister: The Minister administering the *Environment Protection and Biodiversity Conservation Act 1999* and includes a delegate of the Minister.

Net Environmental Benefit Analysis: a methodology of comparing and ranking the net environmental benefit of alternative management options.

NOPSEMA: the National Offshore Petroleum Safety and Environmental Management Authority or any other agency that administers the **OPGGS Environment Regulations** from time to time.

OPGGS Environment Regulations: Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth) as in force or existing from time to time.

Recommencement of operations/recommence the operations: the recommencement of oil production following suspension of production of oil on 21 August 2009.

APPENDIX B HSE POLICY

Health, Safety and Environmental Policy

JADESTONE ENERGY PLC

Controlled Document

Document Owner : Corporate Human Resources
Last Updated : 3 April, 2023
Document Number : JSE014/2021

HSE Policy

JADESTONE ENERGY PLC ("COMPANY")
HEALTH, SAFETY AND ENVIRONMENTAL POLICY
("POLICY")

High quality performance is essential to the success of our business. To achieve this, we are committed to comply with all regulatory requirements and continuously improve our performance. Health, safety end environmental incidents, including near misses, can be prevented, and in a way that does not damage the environment.

The Chief Executive Officer is responsible for the implementation of this Policy and will make the necessary resources available to realise our corporate responsibilities. The responsibility for our performance against this policy rests with all employees throughout the Company.

The Company's policy is:

- No incidents.
- No injury to personnel.
- No damage to the environment.
- No damage to equipment.

To achieve this, the Company shall:

- Maintain a healthy, safe and environmentally friendly workplace.
- Use its operational experience to improve health, safety and environmental performance.
- Actively access all operational and business risks to ensure that mitigations are implemented that reduce risks to a level that is as low as reasonably practical.
- Require all contractors to have a management system that either equals or exceeds the Company's.
- Maintain high standards in design & work practice and audit operations for compliance with high standards and work practice in a formal and structured manner.
- Put health, safety and environmental considerations into every operational decision.
- Continually review industry and government codes, guidelines, rules and regulations.
- Minimise discharges, emissions and waste and their environmental effects.
- Take all necessary actions to prevent incidents and have response procedures in place for any incidents that may occur.
- Set performance targets to achieve our aims and communicate to all relevant bodies.
- Openly monitor, evaluate and report HSE performance.
- Continuously improve training programmes.
- Make this policy available to all relevant bodies.

HSE Policy

All employees and contractors of the Company are expected to:

- Be proactive in the identification of, and acting upon, potential risks.
- Where HSE concerns are an issue, undertake a safe and controlled shutting down of operations concern.
- Respect and cooperate with all safeguards to the health, safety and security of themselves and others.
- Take all necessary precautions to protect themselves, their colleagues and the environment.
- Immediately act upon and report any HSE concerns they may have.
- Provide comments and feedback on HSE process and systems.

A. Paul Blakeley

Director, President and Chief Executive Officer

APPENDIX C EXISTING ENVIRONMENT SUPPORTING INFORMATION (INCL. EMBA EPBC PMST SEARCH REPORT)

Appendix C
Montara Existing Environment

Jadestone Energy (Australia) Pty Ltd
The Atrium Building, Level 2, 168 St Georges Terrace
Perth, Western Australia, 6000 I PO Box 7060 Perth WA 6850
PH: +61 8 9486 6600 | www.jadestone-energy.com | ACN: 613 671 819

CONTENTS

TABLES

FIGURES

1. INTRODUCTION

The Montara operations activity is in the production licenses AC/L7 (Montara field) and AC/L8 (Skua, Swift and Swallow fields) in the Timor Sea.

Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, Regulation 21(2) requires the proponent to:

'(a) describe the existing environment that may be affected by the activity; and

(b) include details of the relevant values and sensitivities (if any) of that environment.'

This document describes the combined existing environment that may be affected (EMBA) by the Montara operations petroleum activities and includes details of the relevant values and sensitivities of that environment. The maximum extent of an oil spill due to a loss of crude from a ruptured cargo tank on the FPSO or a loss if integrity from the subsea flowline has been used to inform the oil spill response planning and oil spill risk assessment.

The combined EMBA encompasses the full range of environmental receptors that might be contacted by surface and subsurface hydrocarbons in the highly unlikely event of any worst case oil spill from Montara's activities.

1.1 Defining the area

To assist in the impact assessment, four sub-categories of EMBA were defined:

1. Surface hydrocarbons EMBA– hydrocarbons that are 'on' the water surface (1 and 10 g/m^2);
2. Entrained hydrocarbons EMBA– hydrocarbon that is entrained 'in' the water; (100 ppb);
3. Dissolved hydrocarbons EMBA– the dissolved component of hydrocarbon in' the water (50 ppb); and
4. Shoreline loading EMBA - hydrocarbons that have accumulated on shorelines (10 g/m^2);

Collectively the total area of impact they intersect with is referred to as the "EMBAs".

Section 8.6 of the EP contains more details on how the thresholds were defined and the modelling underpinning the EMBAs delineation.

This description of the environment within the EMBAs addresses OPGGS(E) Regulation 21(2), which requires an Environment Plan to include a description of the environment that may be affected by the petroleum activity (EMBA) and to detail particular relevant values and sensitivities of that EMBA. This document together with the *Montara Environmental Plan* addresses this requirement.

Specific to the EP, the DCCEEW PMST associated with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was used to determine potential receptors such as Matters of National Environmental Significance (MNES) within the operational area and the EMBA. The results of these searches are provided at the end of document.

2. MARINE REGIONAL SETTING

Australia's offshore waters have been divided into six marine regions in order to facilitate their management by the Australian Government under the EPBC Act. The Montara operations activity is located within the North West Marine Region (NWMR). The EMBAs are located within the North West Marine Region (NWMR) and the North Marine Region (SEWPaC 2012a and 2012b). The objectives of the North and North-west Marine Parks Management Plan 2018 are to provide for:

a. the protection and conservation of biodiversity and other natural, cultural and heritage values of marine parks in the North-west Network; and
b. ecologically sustainable use and enjoyment of the natural resources within marine parks in the Northwest Network, where this is consistent with objective (a).

The values are broadly defined as:

- Natural values — habitats, species and ecological communities within marine parks, and the processes that support their connectivity, productivity and function;
- Cultural values — living and cultural heritage recognising Indigenous beliefs, practices and obligations for country, places of cultural significance and cultural heritage sites;
- Heritage values — non-Indigenous heritage that has aesthetic, historic, scientific or social significance; and
- Socio-economic values — the benefit of marine parks for people, businesses and the

economy. A summary of each region is provided below.

2.1.1 North West Marine Region

The NWMR encompasses Commonwealth waters from the Western Australia/ Northern Territory border in the north, to Kalbarri in the south. A number of regionally important marine communities and habitats have been identified as part of the NWMR bioregional plan and WA State planning processes. These include Ashmore Reef, Cartier Island, Seringapatam Reef and Scott Reef, which have been identified as regionally important areas supporting a high biodiversity of marine life and supporting foraging and breeding aggregations. Ashmore Reef and Cartier Island are located approximately 160 km and 100 km north-west, respectively, from the Operational area. A number of key ecological features (KEFs) have been identified in the region (Section 5.2.6). The Continental Slope Demersal Fish Community has been identified as an important marine community, due to its high species diversity and endemism. The Carbonate Bank and Terrace System of the Sahul Shelf has also been identified as regionally important as it is a unique sea floor feature; contributing to the biodiversity and productivity of the local area. Other priority areas in the NWMR include Rowley Shoals and Ningaloo Reef. However, these areas are at least 700 km from the Operational Area.

2.1.2 North Marine Region

The NMR comprises Commonwealth waters from the west Cape York Peninsula to the Northern Territory– Western Australia border, covering approximately 625,689 km2 of tropical waters in the Gulf of Carpentaria and Arafura and Timor seas. This region is highly influenced by tidal flows and less by ocean currents. The marine environment of the NMR is known for its high diversity of tropical species but relatively low endemism, in contrast to other bioregions. A number of regionally important marine communities and habitats have been identified as part of the NMR bioregional plan. These include the Gulf of Carpentaria coastal zone, plateaux and saddle north-west of the Wellesley Islands, and the submerged coral reefs of the Gulf of Carpentaria. Additional to these, KEFs in the region within the EMBA include the Pinnacles of the Bonaparte Basin, the Carbonate Bank and Terrace System of the Van Diemen Rise, the Shelf Break of the Arafura Shelf, the tributary canyons of the Arafura Depression and the Gulf of Carpentaria Basin (**Figure 2-1**).

2.1.3 Provinces of the NWMR and NMR

These marine regions are further divided into provincial bioregions, with those occurring within the EMBA shown in and summarised in **Table 2-1** and shown in **Figure 2-1.**

Table 2-1: Description of the IMCRA Provincial Bioregions within the OA and EMBA

Provincial Bioregion	Description
Timor Province	The Timor Province covers an area of 24,040 km^2 and predominantly covers shelf terrace and the continental slope, extending into waters 200 – 300 m deep in the Arafura Depression. The oceanographic environment is mainly influenced by tides, with some influence from the Indonesian Throughflow current. These open waters support pelagic species, including whale sharks, an unusual array of threadfin fish species and distinct genetic stocks of red snapper.
Northwest Shelf Transition	The Northwest Shelf Transition covers the mostly shallow waters (<100 m) between Cape Leveque (WA) and the Tiwi Islands (NT). This transition has a diverse seafloor topography including submerged terraces, carbonate banks, pinnacles, reefs and sand banks.
Northwest Shelf Province	The Northwest Shelf Province is located primarily on the continental shelf between North West Cape and Cape Bougainville, varying in width from 50 m at Exmouth Gulf to more than 250 km off Cape Leveque. Around half of the bioregion has water depths of only 50 – 100 m. It is characterised by a dynamic oceanographic environment, influenced by strong tides, cyclonic storms, long-period swells and internal tides.
Northwest Transition	The Northwest Transition includes the shelf break, continental slope and the majority of the Argo Abyssal Plain of the NMWR. Mermaid Reef is a key topographical feature of the bioregion; a biodiversity hotspot where the steep change in slope around the reef attracts a range of pelagic migratory species including billfish, sharks, tuna and cetaceans.
Northern Shelf Province	This bioregion is the largest of all the IMCRA shelf bioregions. It includes units defined by the distribution and abundance of pinnacles, banks, and sand banks. This bioregion contains the largest area of Class 1 units for all of the IMCRA shelf bioregions. This bioregion contains the largest area of Class 7 units of all IMCRA shelf bioregions, dominated by the low-gradient basin located in the Gulf of Carpentaria.
Christmas Island Province	The Christmas Island bioregion covers 277,180 km^2 of the marine area surrounding Christmas Island, specifically capturing the endemic fish species and other fauna associated with Christmas Island.

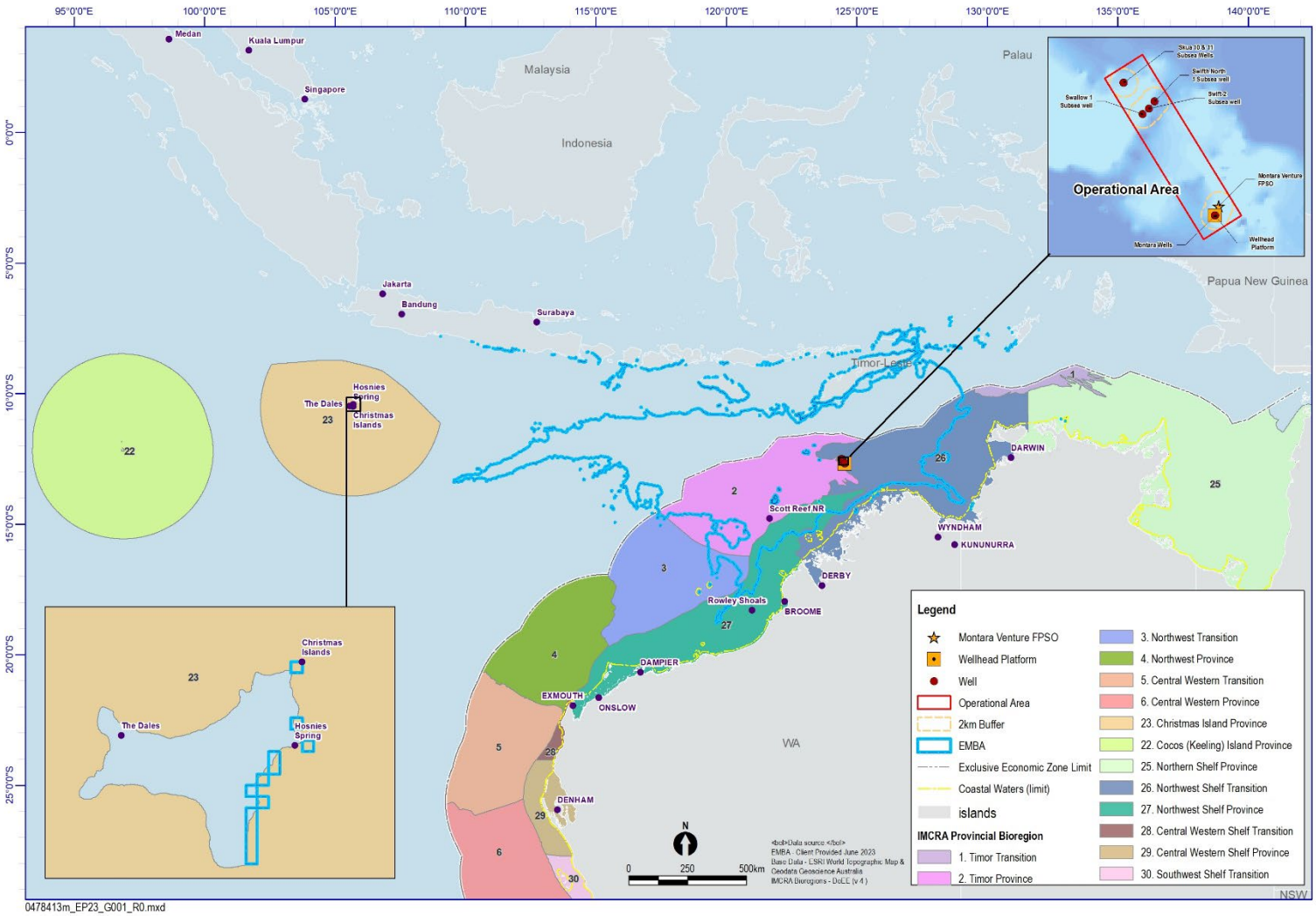


Figure 2-1: Provincial Bioregions relevant to the OA and EMBA

3. PHYSICAL ENVIRONMENT

3.1 Climate

The Operational Area experiences a monsoonal climate with two predominant seasons including a hot wet summer season, October to March and a cool dry winter season April to September, which are referred to as the northwest and southeast monsoons, respectively. The climate is influenced by two major atmospheric pressure systems: the subtropical ridge of high pressure cells referred to as highs or anticyclones, and a broad tropical low pressure region called the monsoon trough (RPS Metocean 2008). These two major systems create three discrete weather phenomena that influence conditions within the Operational area and wider EMBA:

- The north-west monsoon season occurs from October to March, or wet season, and is characterised by north-west to south-west winds. The monsoon season is generally associated with broad areas of cloud and rain including periods of widespread heavy rainfall;
- Steady north-east to south-east winds (south-east trade winds) from April to September (dry season) caused by development and intensification of anticyclones over south-western Australia, bring predominantly fine conditions with low rainfall in most areas; and
- Cyclonic activity occurs between November to April and the area will experience on average three cyclones a year. Cyclones can bring very large amounts of rain, with strong swell and rough seas common during these events.

In general, January to February and May to July are the windiest months however, peak wind velocities are associated with tropical cyclones that occur during the wet season. Cyclone probability is estimated to be one per annum within 180 km of the site and four per annum within 1,100 km of the site.

Mean annual rainfall in the region is 1,770 mm. Mean air temperature ranges from 24.9ºC in July and 29.6ºC in December. The closest meteorological station to the Montara field is located at Troughton Island approximately 630 km south-west of the Operational area (Bureau of Meteorology (BoM) 2012) (**Table 3-1**).

Table 3-1: Meteorological conditions representative of the Montara Field (Troughton Island)

Month	Mean Monthly Maximum Temperature (Cº)	Mean Monthly Minimum Temperature (Cº)	Mean Rainfall (mm)	Mean Relative Humidity (%)
January	31.8	26.3	273.0	77
February	31.4	26.1	137.9	78
March	31.9	26.4	145.3	74
April	32.7	26.8	31.2	64
May	31.1	25.3	40.5	58
June	28.9	23.2	7.6	56
July	28.1	22.1	2.8	58
August	28.8	22.5	0.6	62
September	30.2	24.5	0.3	69
October	31.7	26.3	2.9	69
November	32.9	27.4	9.4	69
December	32.9	27.3	120.1	69
Annual	31.0	25.3	828.9	67

3.2 Oceanography (Tides and Currents)

Broad scale oceanography in the north-west Australian offshore area is complex, with major surface currents influencing the Region, including the Indonesian Throughflow, the Leeuwin Current, the South Equatorial Current and the Eastern Gyral Current (**Figure 3-1**).

The oceanographic regime of the north west Australian offshore area is strongly influenced by the Indonesian Through Flow (ITF) which transports warm, low salinity, oligotrophic waters through a complex system of currents, linking the Pacific and Indian Ocean via the Indonesian Archipelago (Department of State Development (DSD) 2010) (**Figure 3-1**). The strength of the ITF fluctuates seasonally and reaches maximum strength during the south-east monsoon (May to September) and weakens during the north-west monsoon.

Currents in the Kimberley region are also generated by several more localised factors, including tidal forcing, local wind forcing, inertial oscillations, shelf waves, seiche and trapped waves. Studies undertaken in the vicinity of Scott Reef and Seringapatam Reef suggest that the ITF does not directly influence these systems, but it is the eddies that peel off the min ITF current and travel along the shelf-break that have a greater influence on the reefs. In general, the tidal regime and wind forcing are the major contributors to local currents in the area. The currents in the Operational area and wider EMBA are influenced by the semi-diurnal tides that have four direction reversals per day. Both the semidiurnal and diurnal tides appear to travel north-eastwards in the deep water leading to the Timor Trough prior to propagation eastwards and southwards across the wide continental shelf. The NWMR experiences some of the largest tides along a coastline adjoining an open ocean in the world.

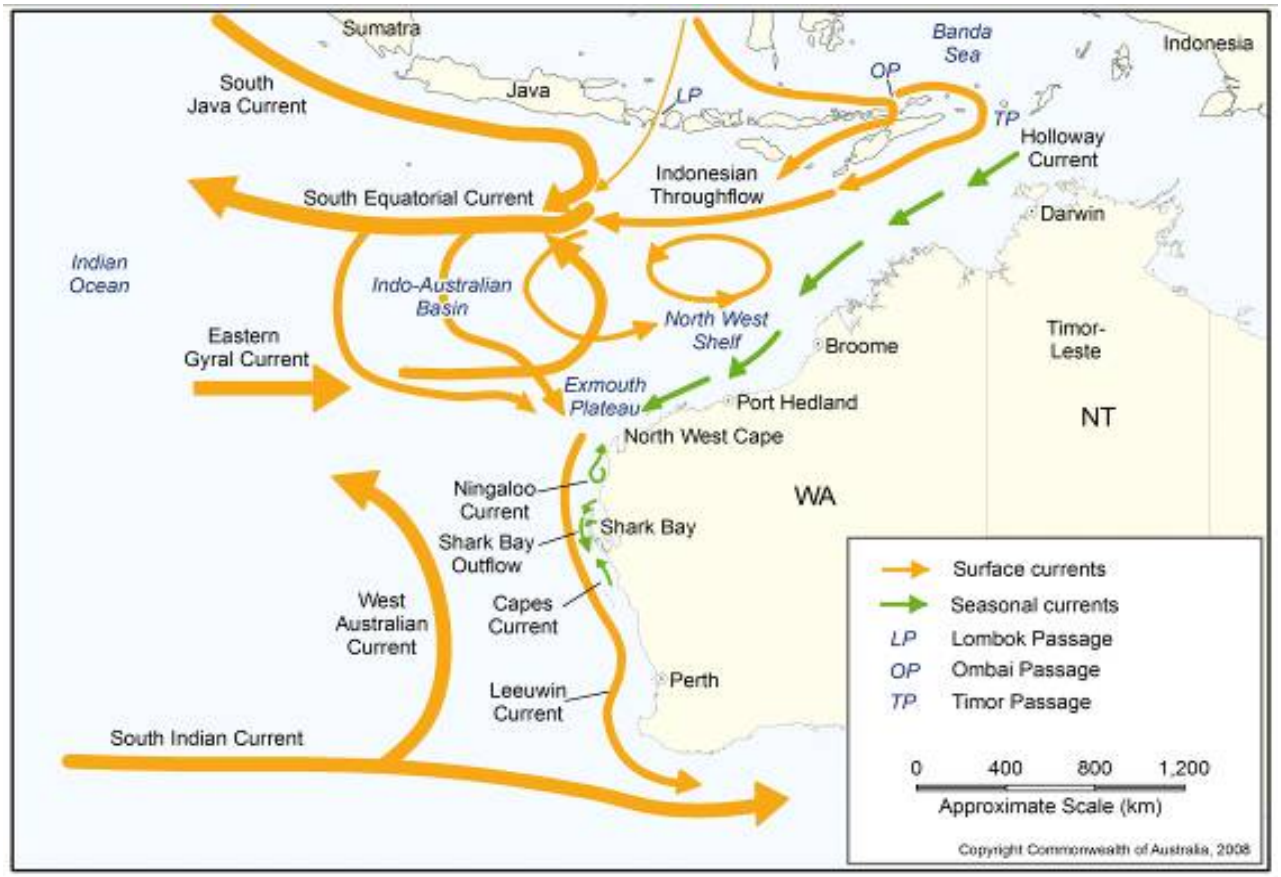
In the eastern section of the EMBA, the area is influenced primarily by strong diurnal tidal flows and less by ocean currents. The Joseph Bonaparte Gulf is subject to the highest tidal range in the region (up to 7–8 m).

Wind driven currents from monsoons and cyclones and drift currents (ITF) are likely to prevail during neap tides or during periods of strong influence when one of the current reversals may be suppressed. Maximum tidal range is 5.7 m and tidal currents flood to the southeast and ebb to the northwest and under normal conditions (i.e. no storms), maximum recorded current speed at the surface is 0.95 m/s, mainly due to the

tide. Current speeds decrease with depth below the surface. The strength and direction of tidal current flow is also strongly influenced by local bathymetry.

Wind induced currents result from local wind forcing at the surface and are most pronounced during cyclones with development of transient oscillations known as inertial currents following the passage of cyclones. Wind driven surface currents and their direction are generated by prevailing seasonal winds from the west in summer and from the east and south east during winter. The following current data has been estimated for one in 50-year storm conditions:

- Surface currents = 2 m/s;
- Mid depth currents = 1 m/s; and
- Seafloor currents = 0.67 m/s.



Source: DEWHA (2008)

Figure 3-1: Key Ocean currents influencing Western Australia

3.3 Waves

Surface waves and sea swell in the region can vary widely in direction depending on wind direction, locations of major storms and local bathymetric effects such as the shelf break or proximity to islands such as Ashmore Reef. Waves are subject to the following key influences:

- Locally generated wind waves, seas: generally, from west during wet season and from the east during the dry season; and

- Remotely generated swells: South to south westerly swells persist from storms in the southern Indian Ocean and occasional, low amplitude waves up to 1 m originate from earthquakes in the Sunda Trench, between Australia and Indonesia.

In general, the maximum and mean sea swells are larger in winter than summer as a result of the strong easterly wind-generated seas and larger winter swell from the Southern and Indian Oceans. Occasional monsoonal storms and cyclones can result in much larger waves and swell. Extreme winds associated with cyclones can generate waves up to 21 m in height from any direction (RPS Metocean 2008).

Significant wave heights are experienced in the Montara field are as follows:

- Greater than 2 m, 7.7% of the time; and
- Greater than 4 m, 0.4% of the time.

The following wave data has been estimated for one in 50-year storm conditions as:

- Maximum wave height = 16.1 m;
- Significant wave height = 8.6 m; and
- Peak wave period = 11.4 seconds.

3.4 Temperature, Salinity and Turbidity

Seawater temperature in the region generally ranges from 25ºC to 31ºC at the surface and 22ºC to 25ºC at the seafloor. The sub-tropical water temperatures are largely influenced by the ITF and a highly-pronounced thermocline, which is controlled by the ITF (Brewer et al. 2007).

Water quality monitoring at the Montara Venture found surface water temperatures ranged from 28.0ºC to 28.7ºC, with a slight reduction of <1ºC at 20 m depth. Salinity of surface waters was consistently around 33.9 PSU, with low variability (Jacobs 2017).

Turbidity in the surface waters (0.5 m to 23 m depth) near the Montara Venture are typically low (<0.2 NTU; Jacobs 2017).

3.5 Bathymetry and Seafloor Geology

Bathymetry of the region is broadly categorised into three distinct zones based on water depth and geometric features. The three zones are (Baker et al. 2008, Heap and Harris 2008):

- Continental shelf;
- Continental slope; and
- Abyssal plain.

The inner continental shelf in the northwest region extends from the coast to approximately 30 m water depth and the middle continental shelf lies between 30 m and 200 m. The outer continental shelf and slope region descends from approximately 200 m water depth. The slope continues to descend over hundreds of kilometres until reaching the almost flat i.e. a less than 1:1,000 gradient, abyssal plain at water depths of approximately 4,000 m. The continental slope is steepest along the western flank of Scott Reef where a steep drop occurs. These steep slopes are incised by erosional gullies and canyons.

The Operational area is located on the continental shelf and the Montara field (within the Operational area) slopes from the east (76 m) to west (86.5 m) and is characterised by a north-south trending gentle scarp. To the south of the area a slight mound rises to 78 m water depth.

The shallow geology of the Operational area is interpreted as a thin, discontinuous layer of unconsolidated surficial sediment overlying a variably consolidated calcarenite sequence. The thickness of unconsolidated sediment varies across the site and ranges from being very thin or absent up to a local maximum of 3.7 m within the Montara survey corridor.

Geophysical interpretation and results from seabed sampling indicate that the unconsolidated sediments are fine to coarse carbonate sands. The sediments appear to be coarser closer to areas of significant relief and at the base of shallow depressions. Sub-bottom profilers did not achieve significant penetration into the calcarenite material, indicating that the upper surface of the calcarenite is relatively hard.

3.5.1 Sediment Quality

Sediment quality sampling undertaken near the Montara Venture found that concentrations of metals, metalloids, hydrocarbons and phenolic compounds in sediment samples were either below the laboratory limit of reporting (LOR) and/or the ANZECC/ARMCANZ Sediment Quality Guidelines detailed in Simpson et al. (2013) (Jacobs 2017).

3.5.2 Sediment Particle Size Distribution

The particle size distributions (PSD) of sediments sampled near the Montara Venture were dominated by fine and coarse sands, with very little clay (Jacobs 2017).

4. BIOLOGICAL ENVIRONMENT

4.1 Benthic Habitat and Communities

Regionally, the seabed generally comprises a relatively flat and featureless habitat, although numerous seamount or banks can be found along the perimeter of the Australian continental shelf. The shoals and banks in the NWMR share a tropical marine biota consistent with that found on emergent reef systems of the Indo West Pacific region, such as Ashmore Reef, Cartier Island, Seringapatam Reef and Scott Reef. These support a diverse range of benthic communities; algae, soft corals, hard corals and filter feeders. Bare sand and consolidated reef supporting turfing algae are features of all shoals and banks in the Timor Sea. Hard corals and macroalgae tend to be variable in abundance, while soft corals and sponges are often present. All banks and shoals in the region support comparable levels of biodiversity but vary in the abundance and diversity of dominant species (Heyward et al. 1997; Moore et al. 2017).

A benthic habitat assessment was undertaken in the area of Petroleum Production Licence AC/L7 during the 2010 wet season, which included the Montara field and surrounding areas (ERM 2011). Surveys were carried out using a towed video system and seabed sediment samples were also collected for sediment and macrobenthic fauna analysis. Benthic habitats surveyed were characterised by homogenous, flat, featureless soft sediment; predominately comprised of sand with small rubble/shell fragments and marked by low relief ripples with evidence of bioturbation. Sparse patches of epifauna were recorded and included hydroids, octocorals (soft corals, gorgonians and seapens), black corals and ascidians.

Macrobenthic faunal assemblages surveyed had a generally low and highly patchy abundance of individuals. Polychaete bristleworms from the Phylum Annelida contributed the highest relative abundance of macrobenthic assemblages across the surveyed area, ranging from approximately 40 to 60% followed by Malacostracan crustaceans (shrimps, crabs etc.; approximately 13 to 19%). Gastropoda was represented by 33 taxa across the surveyed area with abundance ranging from approximately 0.5 to 5% (ERM 2011).

Hydrozoa and Bryozoa were the other common groups encountered in samples. All other taxa identified across the surveyed areas were minor contributors to macrobenthic assemblages (relative abundance <5%) (ERM 2011).

Deep water soft sediment habitats are expected to be broadly similar in the wider EMBA to the surveyed locations in the Montara field and surrounding areas. In a study of benthic habitats on the continental shelf near the Big Bank Shoals (approximately 200 km to the northeast of the Operational area) by Heyward et al. (1997), the predominant benthic infaunal species were polychaetes (burrowing worms) and crustaceans (prawns, shrimp, crabs, etc.). These two groups made up 84% of the total species in sediment samples with a high diversity of species but a low abundance of each individual species. The remaining 16% of species included echinoderms, such as sea stars, sea urchins, feather stars, molluscs, both gastropods and bivalves, nemerteans (ribbon worms), sponges and fish. Epibenthic communities were sparse and species commonly associated with soft sediment habitats included sponges, gorgonians such as sea whips and sea fans, ascidians such as sea squirts, echinoderms, crustaceans, bryozoans such as lace corals, and soft corals (Heyward et al. 1997). The absence of light and hard substrate is considered a limiting factor for recruitment of epibenthic organisms.

The benthic habitats in the Operational area generally dominated by soft sediments, sand and mud, with occasional patches of coarser sediments. Spatial and temporal distribution of benthic fauna depends on factors such as sediment characteristics, depth and season.

Deep water soft sediment habitats are expected to be broadly similar in the wider EMBA to the surveyed locations in the Montara field and surrounding areas. In a study of benthic habitats on the continental shelf near the Big Bank Shoals (approximately 200 km to the northeast of the Operational area) by Heyward et al. (1997), the predominant benthic infaunal species were polychaetes (burrowing worms) and crustaceans (prawns, shrimp, crabs, etc.). These two groups made up 84% of the total species in sediment samples with a high diversity of species but a low abundance of each individual species. The remaining 16% of species included echinoderms, such as sea stars, sea urchins, feather stars, molluscs, both gastropods and bivalves,

nemerteans (ribbon worms), sponges and fish. Epibenthic communities were sparse and species commonly associated with soft sediment habitats included sponges, gorgonians such as sea whips and sea fans, ascidians such as sea squirts, echinoderms, crustaceans, bryozoans such as lace corals, and soft corals (Heyward et al. 1997). The absence of light and hard substrate is considered a limiting factor for recruitment of epibenthic organisms.

Windows of sensitivity are shown in **Table 4-1**. Key locations for types of benthic communities are shown in **Table 4-2**.

Table 4-1: Benthic habitat windows of sensitivities

Key	Peak times											
	January	February	March	April	May	June	July	August	September	October	November	December
Key Ecosystems and Biological Resources												
Coral: Spawning												
Seagrass: Flowering and Fruiting												

4.2 Banks and Shoals

There are around 150 shoal/bank features across the Sahul Shelf and a high level of interconnectivity exists between them. They are often 5 – 20 km apart, creating an extensive series of 'stepping stone' habitats for larval recruitment. The larval development rates of the species present, current speeds (20–30 km/d in mild weather) and the relatively short distance between the shoals, banks and reefs maintains this connectivity. As such, neighbouring shoals and banks (i.e. within 100s of kms) share ~>80% benthic community composition (Moore et al. 2017). The associated fish fauna is highly diverse but variable between shoals and banks but sharing of many species, which is influenced by depth, substrate, exposure to prevailing weather. Fish species richness tends to increase with reef structure and size of shoal/bank (Moore et al. 2017).

By analysing local bathymetry, Heyward et al. (2010) identified more than 20 possible shoal features within a 100 km radius of the Operational area and greater than 100 similar bathymetric features within 200 km. The nearest shoals to the Operational area, which are likely to experience the highest concentrations of entrained and dissolved hydrocarbons in the event of a LOWC are Goeree and Vulcan Shoals, located approximately 30 km to the southwest. Other shoals in close proximity include Eugene McDermott Shoal (approximately 45 km south) and Barracouta Shoal (approximately 60 km northwest).

Barracouta and Vulcan Shoals

Extensive surveys to characterise the habitats and ecosystems of the Barracouta and Vulcan Shoals were undertaken between 2010 and 2013 (Heyward et al. 2010, 2011a, 2013). These shoals rise steeply from 100 to 200 m depths on the outer continental shelf and are elliptical in shape with the long axis running approximately east-west (Heyward et al. 2010). The shoals begin to plateau at approximately 40 to 50 m depth with the plateau area of each shoal covering several square kilometers (10 to 15 km^2) at depths of 20 to 30 m (Heyward et al. 2011a). Occasional higher ground rises to within approximately 10 m of the sea surface.

The surveys observed that Barracouta and Vulcan Shoals support diverse biological communities across their shallow plateau areas, with many organisms typical of shallow water coral reefs (Heyward et al. 2010, 2011a, 2013). Benthic environments were composed of ~25-42% living macro- epibenthic organisms, including diverse algae, sponge, and hard and soft coral communities, interspersed with rubble, sand and

consolidated reef (Heyward et al. 2013). Extensive rubble and rock fields were observed to support reef building corals, seagrass, algae and filter feeders, particularly the calcareous green algae Halimeda species.

Significant differences were observed between the Barracouta and Vulcan Shoals in the relative abundance of dominant groups, particularly the algae, seagrass, hard corals and soft corals. The western margin of the Barracouta Shoal supported abundant soft corals and calcareous red andgreen algae with only a limited area of seagrass. Vulcan Shoal supported extensive seagrass fields at the eastern end as well as hard corals, algae and some filter feeders. The surveys also indicated that Barracouta Shoal had more bare sand and consolidated low, reef-like substrate in comparison to Vulcan Shoal. These consolidated areas were dominated by light dependent organisms and supported a rich coral community and macroscopic invertebrates or encrusting red algae. Filter feeders such as sponges and soft corals, generally had a lower representation although they were widely distributed (Heyward et al. 2010, 2011a, 2013).

4.3 Shoreline Habitats

A wide variety of shoreline habitats are present within the EMBAs. Key locations for shoreline habitats is shown in **Table 4-2**.

Table 4-2: Key locations of benthic and coastal/shoreline habitat

Benthic Habitat Type	Timor Province	Northwest Province	Northwest Transition	Northwest Shelf Province	Northwest Shelf Transition	Northern Shelf Province	Timor Transition	Christmas Island Province	Other (Indonesia, Timor Leste)
Coral	Ashmore Reef, Cartier Island, Hibernia, Scott and Seringapatam Reef, shoals and banks of the Sahul Shelf	Montebello Islands, Dampier Archipelago	Rowley Shoals	Browse Island	Big Bank Shoals			Christmas Island	Indonesia (west) Rote Island Timor-Leste (east - Coral Triangle)
Seagrasses	Ashmore Reef, Cartier Island, Scott Reef, Seringapatam reefs	Eighty Mile Beach, Montebello Islands	Rowley Shoals		Darwin Coast, Tiwi Islands	Arnhem Coast		Present but no significant areas	Indonesia (west) Kepulauan Seribu National Park, Timor-Leste
Macroalgae	Ashmore Reef, Cartier Island, Scott Reef, Seringapatam Reef, shoals and banks of the Sahul Shelf, Barracouta Shoal	Dampier Archipelago, Shallow coastal and offshore waters of the Pilbara, Montebello Islands		Present but no significant areas	Big Bank Shoals			Present but no significant areas	Present but no significant areas
Non-coral benthic Invertebrates	Ashmore Reef, Cartier Island, Scott Reef, Seringapatam Reef, shoals and banks of the Sahul Shelf, Vulcan Shoal, Barracouta Shoal, Goeree Shoal	Present but no significant areas	Rowley Shoals	Dampier to Port Hedland	Big Bank Shoals, Van Diemen Rise	Present but no significant areas	Present but no significant areas	Present but no significant areas	Present but no significant areas

Benthic Habitat Type	Timor Province	Northwest Province	Northwest Transition	Northwest Shelf Province	Northwest Shelf Transition	Northern Shelf Province	Timor Transition	Christmas Island Province	Other (Indonesia, Timor Leste)
Mangroves	Not present	Not present	Not present	North Kimberley Marine Park, Port Hedland, Karratha	Darwin Coast, Tiwi Islands, Joseph Bonaparte Gulf, Kakadu	Cobourg Peninsula, Kakadu	Not present	Present but no significant areas	Indonesia (west)
Intertidal sand/mud flats	Ashmore Reef	Not present	Not present	Eighty Mile Beach, Roebuck Bay	Darwin Coast, Joseph Bonaparte Gulf, Kakadu	Cobourg Peninsula, Arnhem Coast, Kakadu	Not present	Present but no significant areas	
Intertidal platforms	Ashmore Reef, Scott Reef, Cartier Island	Not present	Not present	Eight Mile Beach	Darwin Coast, Joseph Bonaparte Gulf	Cobourg Peninsula, Arnhem Coast	Not present	Present but no significant areas	Present but no significant areas
Sandy beaches	Ashmore Reef, Sandy Islet (Scott Reef)	Not present	Not present	Eight Mile Beach	Darwin Coast	Arnhem Coast, Cobourg Peninsula	Not present	Present but no significant areas	
Rocky shorelines	Not present	Not present	Not present	North Kimberley Marine Park, Dampier to Point Samson	Present but no significant areas		Not present		Present but no significant areas

4.4 Plankton and Invertebrates

Plankton is divided into two categories: phytoplankton and zooplankton. Phytoplanktonic algae are important primary producers and range in size from 0.2 to 200 mm. Zooplankton are small, mostly microscopic animals that drift with the ocean currents, and it has been estimated that 80% of the zooplankton in waters off Australian continental shelf and shelf margin are the larval stages of fauna that normally live on the seabed (Raymont, 1983). A common feature of plankton populations is the high degree of temporal and spatial variability. Phytoplankton in tropical regions have marked seasonal cycles with higher concentrations occurring during the winter months (June–August) and low in summer months (December–March) (Hayes et al. 2005; Schroeder et al. 2009). Zooplankton rely on phytoplankton as food and are subject to similar seasonality. Key windows of sensitivity for plankton is shown in **Table 4-3**.

Table 4-3: Plankton windows of sensitivity

Key	Peak times											
	January	February	March	April	May	June	July	August	September	October	November	December
Plankton: Concentrations												

4.5 Fish, Sharks and Rays

Within the EMBA, potential spawning grounds exist for southern bluefin tuna, goldband snapper and red emperor. The spatial occurrence of spawning is variable and poorly understood; however, temporally it appears that southern bluefin tuna spawn from August to April (peak October to February), goldband snapper from January to April (peak March), and red emperor from October to March (peak October) (Table 14). None of these species are listed as threatened; however, they are commercially valuable.

More information on EPBC protected fish, shark and ray species is provided in **Section 5.1.1**.

4.6 Indonesia and Timor Leste

The Indonesian coastline is rich in tropical marine ecosystems such as sandy beaches, mangroves, coral reefs and seagrasses ecosystems (Hutomo and Moosa 2005). These are home to a wide variety of living communities and a high species diversity and richness.

The best environment for growth of seagrass is considered to be the sandy reef flats that occur in sheltered areas in the low tidal ranges. Wide areas of the Indonesian coastal waters are covered by dense beds of seagrass. Pioneering vegetation in the intertidal zone is dominated by Halophila ovalis and Halodule pinifolia, while Thalassodendron ciliatum dominate the lower subtidal zones.

Indonesia has an estimated 75,000 km^2 coral reef ecosystem distributed throughout the archipelago (Tomascik et al. 1997 cited in Hutumo and Moosa 2005). Fringing reefs are the most common reef types with scleractinian corals being the most dominant and important group. It is estimated that Indonesian waters are home to 452 species of hermatypic scleractinian coral and 590 species of scleractinian corals (Tomascik et al. 1997, cited in Hutumo and Moosa 2005; Suharsono 2004, cited in Hutumo and Moosa 2005).

The Java and Bali Province is rich in tropical marine ecosystems such as mangroves, coral reefs, seagrasses and seaweeds, sand beaches on the east coast of Java and rocky coasts on the south-eastern coast of Bali.

The mangrove forests provide a valuable physical habitat for a variety of

important coastal species such as crabs, shrimps, fishes, and commercial fishes. Turtles are commonly seen at Crystal Bay, Nusa Penida.

Maluku Province's inshore waters are rich in mangroves, seagrass beds and coral reef habitats for dugongs, green turtle, reef fish, shark, giant clam and trochus (Moss and Van Der Wal 1998)

West Nusa Tengarra Province consists of two islands: Lombok Island and Sumbawa Island. Mangroves, seagrass beds and coral reefs exist in the surrounding waters of Lombok (Tomascik et al. 1997 cited in Hutumo and Moosa 2005). It has been noted that fishermen in the west coast of Lombok collect seagrass from mixed seagrass meadows (Tomascik et al. 1997 cited in Hutumo and Moosa 2005). Green turtles and dugong likely feed on the seagrass beds located on the west coast of Lombok and north coast of Sumbawa.

Mangrove forests in Indonesia account for 76% of the total mangroves found in the southeast Asian region. The Timor Leste coastline features mangrove communities surrounding entrance to rivers primarily on the south coast, whilst the north and eastern coast feature a higher degree of coral reef communities.

Below lists out the shoreline habitats that are present in the East Nusa Tengarra Province and Timor Leste:

- Rote Island features mangrove communities with sparse patches of seagrass habitats and high abundance of coral reef communities.
- The Savu sea region has an abundance of coral reef habitats that act as nurseries and feeding grounds for whales and dolphins. In particular, Savu and Raidjua Islands are surrounded by a fringing coral reef community. Savu Island features a small area of seagrass located in the north east corner of the Island.
- Sumba Island is surrounded by a fringing coral reef community, with sparse patches of seagrass and mangrove communities around the island.
- The majority of the West Timor coastline features a narrow fringing coral reef community with four dense areas of mangrove communities occurring primarily along the south coast.
- Pulau Dana the southernmost island of Indonesia is surrounded by exposed reefs and is known to be inhabited by a large number of bird species and nesting turtles.
- Alor is an island located at the border between Indonesia and Timor Leste with mangroves, coral reefs and seagrasses.
- The majority of the Pulau Semau coastline features a narrow fringing coral reef community with areas of mangrove and seagrass communities occurring primarily along the east coast.

5. CONSERVATION VALUES AND SENSITIVITIES

Conservation values and sensitivities listed and protected under the EPBC Act include Matters of Environmental Significance (MNES) and Other Protected Matters. MNES occurring, or potentially occurring, in the EMBAs are described below in **Section 5.1** and **Section 5.2**. The full EPBC Act Protected Matters report is provided in Appendix D.

5.1 Protected Species

5.1.1 Fish, Sharks and Rays

Numerous marine species occur in the region and have wide distributions that are associated with feeding and migration patterns linked to reproductive cycles. While the distance offshore, depth and lack of suitable foraging benthic habitat may preclude a number of these species, many are likely to occur within the Operational area in transit to and from key mating and foraging grounds. Pelagic foragers are also likely to be feeding within the area.

Three offshore banks assessment surveys (2010, 2011 and 2013) were undertaken to identify and assess the level of impact, if any, to the submerged marine banks in the region of the 2009 Montara oil spill (Heyward et al. 2010, 2011a, 2013). The surveys used Baited Remote Underwater Video Stations (BRUVS) to characterise fish assemblages and included the following shoals/banks in the region: Vulcan Shoal, Barracouta Shoals, Echuca Shoal, Eugene McDermott Shoal, Goeree Shoal, Heywood Shoal, Shoal 25 and Wave Governor Bank. BRUVS were deployed on the seafloor from the shallowest areas of the shoals to depths of approximately 60 m for at least 60 minutes (Heyward et al. 2011a). No individuals from the Syngnathidae family were reported (Heyward et al. 2010, 2011a, 2013).

Whale Shark (Vulnerable/Migratory)

Whale sharks (*Rhincodon typus*) have a broad distribution in tropical and warm temperate seas. The whale shark is a highly migratory fish and only visits Australian waters seasonally (DoEE 2017b). They are known to aggregate at Ningaloo Reef (approximately 1,500 km south-west of the Operational area) between May and June, and in the Queensland Coral Sea (approximately 2,400 km east of the Operational area) between November and December (DoEE 2017b). Neither of these locations are within the EMBA.

The whale shark foraging BIA intersects with the EMBA (**Figure 5-1**).

Whale sharks are not known to feed or breed in the Operational area, however, whale sharks may occur in the Operational area due to their widespread distribution and highly migratory nature, albeit in very low numbers. The Operational area is located in the migratory BIA for the whale shark (**Figure 5-1**). The species migrates south to Ningaloo reef to feed during coral spawning, occurring in March/ April. It is unlikely that whale sharks will be encountered in significant numbers at the Operational area.

Great White Shark (Vulnerable/Migratory)

The Great White Shark (*Carcharodon carcharias*) is widely, but sparsely, distributed in all seas, including cold temperate waters, having been recorded from central Queensland around the south coast to north-west WA, with movements occurring between the mainland coast and the 100 m isobath (DoEE 2017b). The species is known to undertake migrations along the WA coast, with individuals occasionally travelling as far north as North West Cape during spring, before returning south for summer (DoEE 2017b). Given a preference for cooler, southern waters inhabited by seals and sea lions, great white sharks are considered unlikely to be encountered in either the Operational area or EMBA. No great white shark BIAs are intersected by the Operational area or EMBAs (**Figure 5-1**).

Northern River Shark (Endangered)

The Northern River Shark (*Glyphis garricki*) is known to inhabit rivers, tidal sections of large tropical estuarine systems, macrotidal embayments, as well as inshore and offshore marine habitats, although adults have only been recorded in marine environments (DoEE 2017b). Limited data suggests that the species displays a preference for highly turbid, tidally influenced waters with fine muddy substrate.

However, the presence of individuals in offshore areas suggests that northern river sharks undertake movements away from rivers and estuaries, and are therefore likely to move between river systems (DoEE 2017b). Given the offshore location of the Operational area and the species' preference for turbid, inshore waters, it is unlikely that the species will be encountered in the Operational area, although their preferred habitat occurs within the EMBA.

Grey Nurse Shark (Vulnerable)

The grey nurse shark (*Carcharias taurus*) is listed as vulnerable under the EPBC Act and the Biodiversity Conservation Act 2016 and may be found within the EMBA. In Australia, the grey nurse shark is now restricted to two populations, one on the east coast from southern Queensland to southern NSW and the other is predominantly found around the southwest coast of WA, but has been recorded on the North West Shelf (DoE 2014, Pogonoski et al. 2002). It is believed that the east and west coast populations do not interact and ongoing research will probably confirm that the populations are genetically different (Last and Stevens 2009).

While it is thought that grey nurse sharks have a high degree of site fidelity, some studies (McCauley 2004) suggest that grey nurse sharks move between different habitats and localities, exhibiting some migratory characteristics. In certain areas grey nurse sharks are vulnerable to localised pressure due to high endemism. The status of the west coast population is poorly understood although they are reported to remain widely distributed along the WA coast and are still regularly encountered, albeit with low and indeterminate frequency (Chidlow *et al.* 2006).

Grey nurse sharks are often observed hovering motionless just above the seabed, in or near deep sandy-bottomed gutters or rocky caves, and in the vicinity of inshore rocky reefs and islands (Pollard et al. 1996). The species has been recorded at varying depths, but is generally found between 15–40 m (Otway & Parker 2000). Grey nurse sharks have also been recorded in the surf zone, around coral reefs, and to depths of around 200 m on the continental shelf (Pollard et al. 1996). Grey nurse sharks feed primarily on a variety of teleost and elasmobranch fishes and some cephalopods (Gelsleichter et al. 1999, Smale 2005).

Dwarf Sawfish (Vulnerable/Migratory)

The dwarf sawfish (*Pristis clavata*) is listed as vulnerable under the EPBC Act and thought to be restricted to Australia (DoE 2014b). It is also listed as a Priority 1 conservation species in WA. The Australian distribution of the dwarf sawfish is considered to extend across northern Australia and along the Kimberley and Pilbara coasts (Last and Stevens 2009, Stevens *et al.* 2005). However, the majority of records of dwarf sawfish in WA have come from shallow estuarine waters of the Kimberley region which are believed to be nursery (pupping) areas, with immature juveniles remaining in these areas up until three years of age (Thorburn et al. 2003). Adults are known to seasonally migrate back into inshore waters (Peverell 2008); although it is unclear how far offshore the adults travel as captures in offshore surveys are very uncommon. The species' range is restricted to brackish and salt water (Thorburn *et al.* 2008).

The recovery plan identifies pupping as known to occur in the King Sound, the Cambridge Gulf and 80 Mile Beach, with pupping likely to occur identified at a number of locations along the Pilbara and Kimberly Plan. Under the associated recovery plan all areas where aggregations of individuals have been recorded displaying biologically important behaviours such as breeding, foraging, resting or migrating are considered critical to the survival of the species unless population data suggests otherwise.

Freshwater/Largetooth Sawfish (Vulnerable/Migratory)

The freshwater, or largetooth, sawfish (*Pristis pristis*) may occur in all large rivers of northern Australia from the Fitzroy River in WA, to the western side of Cape York Peninsula, Queensland, although is mainly confined to the primary channels of large rivers (DoEE 2017b). In northern Australia, this species is thought to be confined to freshwater drainages and the upper reaches of estuaries, occasionally being found as far as 400 km inland. Few records exist of adults at sea, occurring in fresh or weakly saline water (DoEE 2017b).

Based on the distribution, and preferred habitat of the species, it is considered unlikely that freshwater sawfishes will be found at the Operational area. Given the species' known distribution individuals are likely to be found within the EMBA.

Green Sawfish (Vulnerable/Migratory)

In Australian waters, green sawfishes (*Pristis zijsron*) have been recorded in the coastal waters off Broome in WA, around northern Australia to Jervis Bay, NSW (DoEE 2017b). It is unknown whether green sawfish migrate into Australian waters as adults or juveniles from populations outside Australia (DoEE 2017b). This species inhabits muddy bottom habitats and enters estuaries, although it has also been recorded in inshore marine waters, estuaries, river mouths, embankments and along sandy and muddy beaches, usually in shallow waters (DoEE 2017b).
Based on the offshore, deeper-water activity location, and the species' preference for turbid, inshore water, it is unlikely green sawfishes will be encountered in the Operational area. Based on the known distribution of the species, individuals are known to exist within the EMBA (Lear et al. 2023).

Scalloped Hammerhead (Conservation Dependant)

The scalloped hammerhead has a circum-global distribution in tropical and sub-tropical waters. Within Australian waters the scalloped hammerhead extends from New South Wales (approximately from Wollongong, where it is less abundant), around the north of the continent and then south into Western Australia to approximately Geographe Bay, though it is rarely recorded south of the Houtman Abrolhos Islands. (TSSC, 2018)

Southern Bluefin Tuna (Conservation Dependant)

SBT is a highly migratory species that occurs globally in waters between 30°S and 50°S, though is mainly found in the eastern Indian Ocean and in the south western Pacific Ocean (CCSBT, 2009). In Australian waters, SBT ranges from northern Western Australia, around the southern region of the continent, to northern New South Wales. SBT forms a single widely distributed population in the southern, temperate oceans, but with a single known spawning ground in the Indian Ocean, between Java and northern Western Australia. Individuals reach sexual maturity at around 12 years and live for 40+ years (Phillips et al, 2009).

Shortfin and Longfin Mako Sharks (Migratory)
The shortfin mako (*Isurus oxyrinchus*) and the longfin mako (*Isurus paucus*) are both offshore epipelagic species found in tropical and warm-temperate waters (DoEE 2017b). Both species occur in Australia in coastal waters off WA, NT, QLD and NSW at depths ranging from shallow coastal waters to at least 500 m (DoEE 2017b). These species may migrate through the Operational area and may be found within the wider EMBA.

Reef Manta Ray (Migratory)

The reef manta ray (*Manta alfredi*) is commonly sighted inshore, but also found around offshore coral reefs, rocky reefs and seamounts, tending to inhabit warm tropical or sub-tropical waters (Marshall et. al. 2011b). Long-term sighting records of the reef manta ray at established aggregation sites suggest that this species is more resident to tropical waters and may exhibit smaller home ranges, philopatric movement patterns and shorter seasonal migrations than the giant manta ray (Marshall et al. 2011b).

Based on the species' habitat preferences it is unlikely that the reef manta ray will be encountered in the Operational area. Given the EMBA overlaps with a number of coral and rocky reefs in the region, it is possible the species may be encountered within the EMBA.

Giant Manta Ray (Migratory)

The giant manta ray (*Manta birostris*) inhabits tropical, marine waters worldwide. In Australia, the species is recorded from south-western WA, around the north coast to the southern coast of New South Wales (McGrouther 2022). The species is commonly sighted along productive coastlines with regular upwelling,

oceanic island groups, particularly offshore pinnacles and seamounts. Nearer to shore the giant manta ray is commonly encountered on shallow reefs, while being cleaned, or is sighted feeding at the surface inshore and offshore. It is also occasionally observed in sandy bottom areas and seagrass beds (Marshall et al. 2011a).

Based on the species' habitat preferences it is unlikely that the giant manta ray will be encountered in the Operational area. Given the EMBA overlaps with a number of coral and rocky reefs in the region, it is possible that the species may be encountered within the EMBA.

Narrow Sawfish (Migratory)

Narrow sawfishes (*Anoxypristis cuspidate*) are bentho-pelagic inhabiting estuarine, inshore and offshore waters to at least 40 m depth (IUCN 2017). Inshore and estuarine waters are critical habitats for juveniles and pupping females, while adults occur predominantly offshore (D'Anastasi et al. 2013). Based on the species' habitat preference it is highly unlikely to be found within the Operational area, although may be encountered within certain areas of the EMBA.

Oceanic Whitetip Shark (Migratory)

Oceanic whitetip sharks (*Carcharhinus longimanus*) are widespread throughout tropical and subtropical waters of the world (30° N to 35° S) (IUCN 2019). They are an oceanic and pelagic species that regularly occurs in waters of 18 to 28°C, usually >20°C (IUCN 2019). Within Australian waters, they are found from Cape Leeuwin (Western Australia) through parts of the Northern Territory, down the east coast of Queensland and New South Wales to Sydney (Last and Stevens 2009). They are usually found in surface waters, though can reach depths of >180 m (Castro et al. 1999). They have occasionally been recorded inshore but are more typically found offshore or around oceanic islands and areas with narrow continental shelves (Last and Stevens 2009). Based on the species' habitat preference and distribution it is highly unlikely to be found within the Operational area, although may be encountered within certain areas of the EMBA.

Sygnathids

Three offshore banks assessment surveys (2010, 2011 and 2013) were undertaken to identify and assess the level of impact, if any, to the submerged marine banks in the region of the 2009 Montara oil spill (Heyward et al. 2010, 2011a, 2013). The surveys used Baited Remote Underwater Video Stations (BRUVS) to characterise fish assemblages and included the following shoals/banks in the region: Vulcan Shoal, Barracouta Shoals, Echuca Shoal, Eugene McDermott Shoal, Goeree Shoal, Heywood Shoal, Shoal 25 and Wave Governor Bank. BRUVS were deployed on the seafloor from the shallowest areas of the shoals to depths of approximately 60 m for at least 60 minutes (Heyward et al. 2011a). No individuals from the Syngnathidae family were reported (Heyward et al. 2010, 2011a, 2013).

Table 5-1: Fish, Shark and Ray windows of sensitivity

Key	Peak times											
	January	February	March	April	May	June	July	August	September	October	November	December
Fish Spawning												
Southern Bluefin Tuna: Spawning												
Goldband Snapper: Spawning												
Red Emperor: Spawning												
Elasmobranchs												
Whale Shark: Foraging												

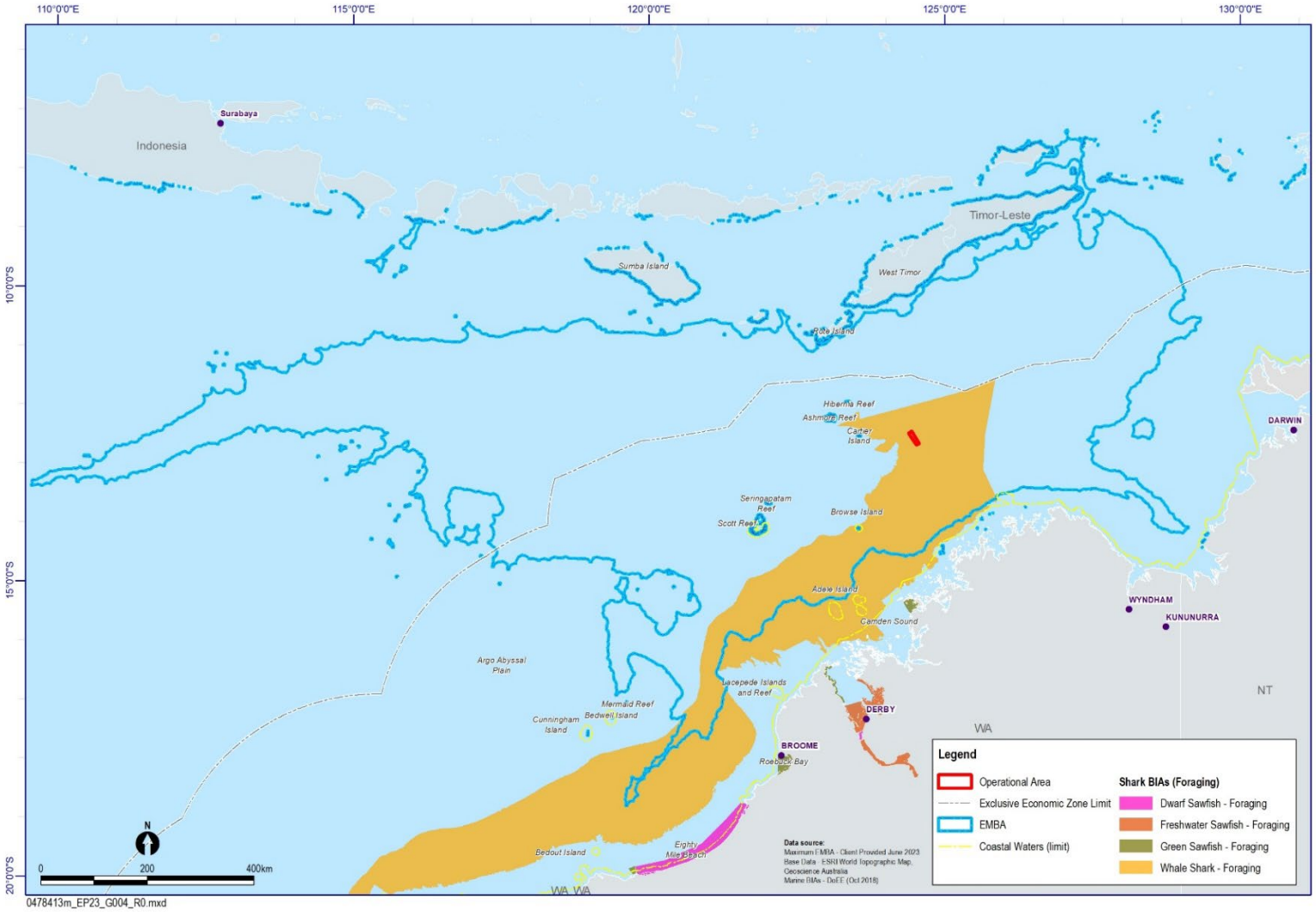


Figure 5-1: Fish, Sharks and Rays BIAs

5.1.2 Marine Mammals

The region is thought to be an important migratory pathway between feeding grounds in the Southern Ocean and breeding grounds in tropical waters for several cetacean species. Pygmy blue whales (*Balaenoptera musculus*), fin whales (*Balaenoptera physalus*), dwarf minke whales (*Balaenoptera acutorostrata*) and Antarctic minke whales (*Balaenoptera bonaerensis*) may travel through the region on their way to breeding grounds, which are thought to be in deep oceanic waters around the Indonesian Archipelago.

During ambient noise monitoring at the southern (AC/L7) permit area in June–December 2011, numerous cetacean vocalisations were recorded (McPherson et al. 2012). Two species of odontocetes (toothed whales and dolphins) were identified during the first six-months of deployment, false killer whales and common bottlenose dolphins.

Pygmy blue whales (*B. m. brevicauda*) were detected at the nearby Cash-Maple (AC/RL7 block) permit area, which coincided with the timing of the northern and southern migrations (McCauley 2011). Humpback whales were only recorded during two periods in July and August 2011 at the Southern station. The vocalisations of bryde's whales were also detected at the southern permit area at the time of survey. Based on the most recent scientific literature (Cerchio et al. 2015) and re-analysis of data, some of the Bryde's whales (*Balaenoptera edeni*) reported are now believed to be the calls of Omura's whale (*Balaenoptera omurai*) (McPherson et al. 2017). Omura's whales therefore appear to be present year-round along the region's continental shelf, but showed seasonal differences in occurrence at specific sites (McPherson et al. 2017). Overall, they are most commonly detected in the Timor Sea in winter.

Table 5-2: Marine Mammal windows of sensitivity

Key	Peak times											
	January	February	March	April	May	June	July	August	September	October	November	December
Marine Mammals												
Dugong: Calving / breeding												
Pygmy Blue Whale: Northern migration												
Pygmy Blue Whale: Southern migration												
Humpback Whale: Calving / breeding												

Blue Whale (Endangered/Migratory)

Blue whales (*Balaenoptera musculus*) are widely distributed throughout the worlds' oceans. There are two subspecies in the Southern Hemisphere: the southern blue whale (*Balaenoptera musculus intermedia*) and the pygmy blue whale (*Balaenoptera musculus brevicauda*) (DEWHA 2008). In general, the southern blue whale is found south of 60° S and pygmy blue whales are found north of 55° S (DEWHA 2008), making it likely that any blue whales frequenting the waters of the Operational area would be pygmy blue whales.

Blue whale migration is thought to follow deep oceanic routes, although little is known about their precise migration routes (DoEE 2017b). Sea noise loggers set at various locations along the coast of Western Australia have detected a seasonal presence indicating a pattern of annual northbound and southbound migration of pygmy blue whales past Exmouth and the Montebello Islands and locations to the north (McCauley and Jenner 2010). Pygmy Blue whales appear to migrate south from Indonesian waters passing Exmouth through November to late December each year. Observations suggest most Pygmy Blue whales pass along the shelf edge out to water depths of 1,000 m depth contour. The northern migration passes Exmouth over an extended period ranging from April to August (McCauley and Jenner 2010). They are believed to calve in tropical waters in winter and births peak in May to June, however the exact breeding grounds of this species are unknown (Bannister et al. 1996).

The Operational area does not include any recognised blue whale migratory routes or known feeding, breeding or resting areas. However, low numbers of blue whales migrating to and from Indonesian waters may occasionally pass through the Operational area, most likely during the southern migration (October to November) (DoEE 2017b). Ambient noise monitoring conducted for PTTEP AA in and around the Montara field documented the presence of cetacean species over a full 12 month period between December 2010 and December 2011. The data support the well documented seasonal timings of pygmy blue whales in the region, and the low numbers recorded are consistent with the field area being outside the recognised BIAs for this species.

The EMBA overlaps with the pygmy blue whale migratory route BIA off the Kimberley Coast (Figure 5-2). The pygmy blue whale migratory BIA extends from approximately the south-westernmost point of WA to the northernmost edge of Australian commonwealth waters, north of Scott Reef. Blue whale activities occurring within the area of the BIA overlapping with the EMBA include migration, foraging, and 'distribution'. Possible foraging habitat has been identified in the area around Scott and Seringapatam Reefs.

Sei Whale (Vulnerable/Migratory)

Sei whales (*Balaenoptera borealis*) are a cosmopolitan species, found in the waters off all Australian states (DoEE 2017b). The Australian Antarctic waters are important feeding grounds for sei whales, as are temperate, cool waters (DoEE 2017b). The species has also been observed feeding in the Bonney Upwelling area in South Australia, indicating the area as potentially being an important feeding ground.

Breeding in this species is known to occur in tropical and subtropical waters (DoEE 2017b). Currently, the movements and distributions of sei whales are unpredictable and not well documented. However, information suggests that sei whales have the same general pattern of migration as most other baleen whales, although timing is later in the season and such high latitudes are not reached (DoEE 2017b).

Based on the cosmopolitan distribution of the species, sei whales may be encountered in low numbers within the Operational area. Individuals of the species may be encountered within the EMBA, although large numbers are unlikely.

Fin Whale (Vulnerable/Migratory)

Fin Whales (*Balaenoptera physalus*) are found in the waters all around Australia and the Australia Antarctic Territory (DoEE 2017b). The Australian Antarctic waters are also thought to be important feeding grounds for fin whales, while feeding has been observed in the Bonney Upwelling area indicating the area to be of importance as a feeding ground for the species (Morrice et al. 2004). No known mating or calving areas are

known from Australian waters. Currently, the migration routes and locations of winter breeding grounds for this species are uncertain (DoEE 2017b).

Based on the cosmopolitan distribution of the species, fin whales may be encountered in low numbers within the Operational area. Individuals of the species may be encountered within the EMBA, although large numbers are unlikely.

Bryde's Whale (Migratory)

Bryde's Whales (*Balaenoptera edeni*) are a cosmopolitan species, found in the waters of all Australian states, including both Christmas and the Cocos Islands (DoEE 2017b). Two forms of Bryde's whale are known: the coastal and offshore form. The coastal from appears to be limited to habitat within the 200 m depth isobar, moving along the coast in response to availability of suitable prey (Best et al. 1984); the offshore form is known in deeper water (500 m to 1,000 m).

Ambient noise monitoring conducted in the Southern, Cash-Maple and Oliver permits by JASCO (2012) over a 12-month period between December 2010 and December 2011 recorded whale calls that were attributed to Bryde's whales year-round at all three permits, with no seasonal cycle observed. These data demonstrate that individuals may be encountered within the Operational area and are also likely to occur within the EMBA.

Humpback Whale (Migratory)

Humpback whales (*Megaptera novaeangliae*) have a wide distribution, having been recorded from the coastal areas off all Australian states other than the Northern Territory (Bannister et al. 1996). Humpback whales migrate north and south along the eastern and western coasts of Australia from calving grounds in the tropical north to feeding grounds in the Southern Ocean (DoEE 2017b). Peak migration off the north-western coast of Australia occurs from late July to early September. From June to mid-September the inshore waters (landward of the 100 m isobath) between the Lacepede Islands and Camden Sound (approximately 400 km south-west of the Operational area) are used as a calving area for this species (Jenner et al. 2001).

The Operational area is located outside of the recognised north and south humpback whale migratory routes, which are usually within 30 km of the coastline. The EMBA overlaps, however with the humpback whale BIA identified for nursing, resting and calving and migration at Camden Sound Marine Park, adjacent to the Kimberley coast (Figure 5-3).

Given the Operational area is situated north of the northernmost point of the humpback whale migration it is considered unlikely that the species will be encountered. Individuals may be encountered within the wider EMBA.

Orca/Killer Whale (Migratory)

Orcas, or Killer Whales (*Orcinus orca*), are a cosmopolitan species, found in the waters off all Australian states in oceanic, pelagic and neritic regions, in both warm and cold waters. Killer whales are known to make seasonal movements, and are likely to follow regular migratory routes, however little is known about either local or seasonal movement patterns of the species (DoEE 2017b).

Given the lack of known migration routes or areas of significance in the region, the species is not expected to be encountered in either the Operational area or EMBA in significant numbers.

Sperm Whale (Migratory)

Sperm whales typically occur in WA along the southern coastline between Cape Leeuwin and Esperance (Bannister *et al.* 1996). Sperm whales are distributed worldwide in deep waters (greater than 200 m) off continental shelves and sometimes near shelf edges, averaging 20 to 30 nautical miles offshore (Bannister *et al.* 1996). The sperm whale is known to migrate northwards in winter and southwards in summer, however, detailed information on the distribution of sperm whales is not available for the timing of migrations. Sperm whales have been recorded in deep water off the North West Cape on the west coast of Western Australia (RPS 2010) and appear to occasionally venture into shallower waters in other areas (RPS 2010).

Spotted Bottlenose Dolphin (Migratory)

The spotted bottlenose dolphin (*Tursiops aduncus*) is generally considered to be a warm water subspecies of the common bottlenose dolphin (*Tursiops truncates*) and known to exist in waters off all Australian states. The spotted bottlenose dolphin appears to be restricted to inshore areas such as bays and estuaries, nearshore waters, open coast environments, and shallow offshore waters including coastal areas around oceanic islands (DoEE 2017b).

Due to the distance from the coast and deeper waters of the Operational area, spotted bottlenose dolphins are not expected to occur, particularly given the preference for shallower, coastal waters. Given their cosmopolitan distribution, the species may be encountered within the EMBA.

Dugong (Migratory)

Dugongs (Dugong dugon) are large herbivorous marine mammals (up to 3 metres) that feed off seagrass and generally inhabit coastal areas in shallow waters (less than 5 m). Dugong distribution and movement is based on the abundance, size and species of seagrass meadow. Key populations along the WA coast are principally located at: Shark Bay (the largest resident population in Australia), Ningaloo Marine Park, the Pilbara coast and offshore areas including Montebello/Barrow/Lowendal Islands, and further north at Eighty Mile Beach and off the Kimberley Coast, particularly Roebuck Bay and Dampier Peninsula (Marsh et al. 2002; DSEWPaC 2012).
A high density foraging BIA (seagrass beds) and a Breeding/ Calving / Nursing BIA is located in the waters around Ningaloo Reef and Exmouth Gulf. A foraging and migration BIA, is also located in Roebuck Bay. All dugong BIAs are located outside the EMBA and Operational Area (Figure 5-2).

Australian Snubfin Dolphin (Migratory)

The snubfin dolphin (*Orcaella heinsohni*) is known to occur within the waters off northern Australia, extending north from Broome in Western Australia to the Brisbane River in Queensland (DoEE 2016c). Surveys have indicated that the species is typically found in protected shallow nearshore waters, generally less than 20 m deep, adjacent to river and creek mouths close to seagrass beds (DoEE 2016c). The snubfin dolphin was not recorded during any of the aerial surveys undertaken along the Dampier Peninsula coastline in the vicinity of James Price Point but were observed in Roebuck Bay from vessels on several occasions (RPS, 2010b). Based on the extensive survey effort and amenable conditions within the James Price Point coastal area during the survey, it is concluded that this species is seldom found outside of shallow and sheltered bays and inlets (DSD 2010). No BIA for the Australian snubnose dolphin is located within the Operational Area. A resting, calving, breeding and foraging BIAs overlap the EMBA in the shallower waters off Broome (Figure 5-4).

Australian Humpback Dolphin (Migratory)

The Australian humpback dolphin (*Sousa sahulensis*) is typically found in water less than 20 m deep but has been recorded in waters up to 40 m deep. This species is generally found in association with river mouths, mangroves, tidal channels and inshore reefs (DoE 2023c). This species of dolphin is known to have resident groups that forage, feed, breed and calve in the state waters of Roebuck Bay, Dampier Peninsula, King Sound north, Talbot Bay, Anjo Peninsula, Vansittart Bay, Napier Broome Bay and Deception Bay (DoE 2023c). A Breeding, Significant habitat, foraging and calving BIA overlaps the EMBA (**Figure 5-5**)

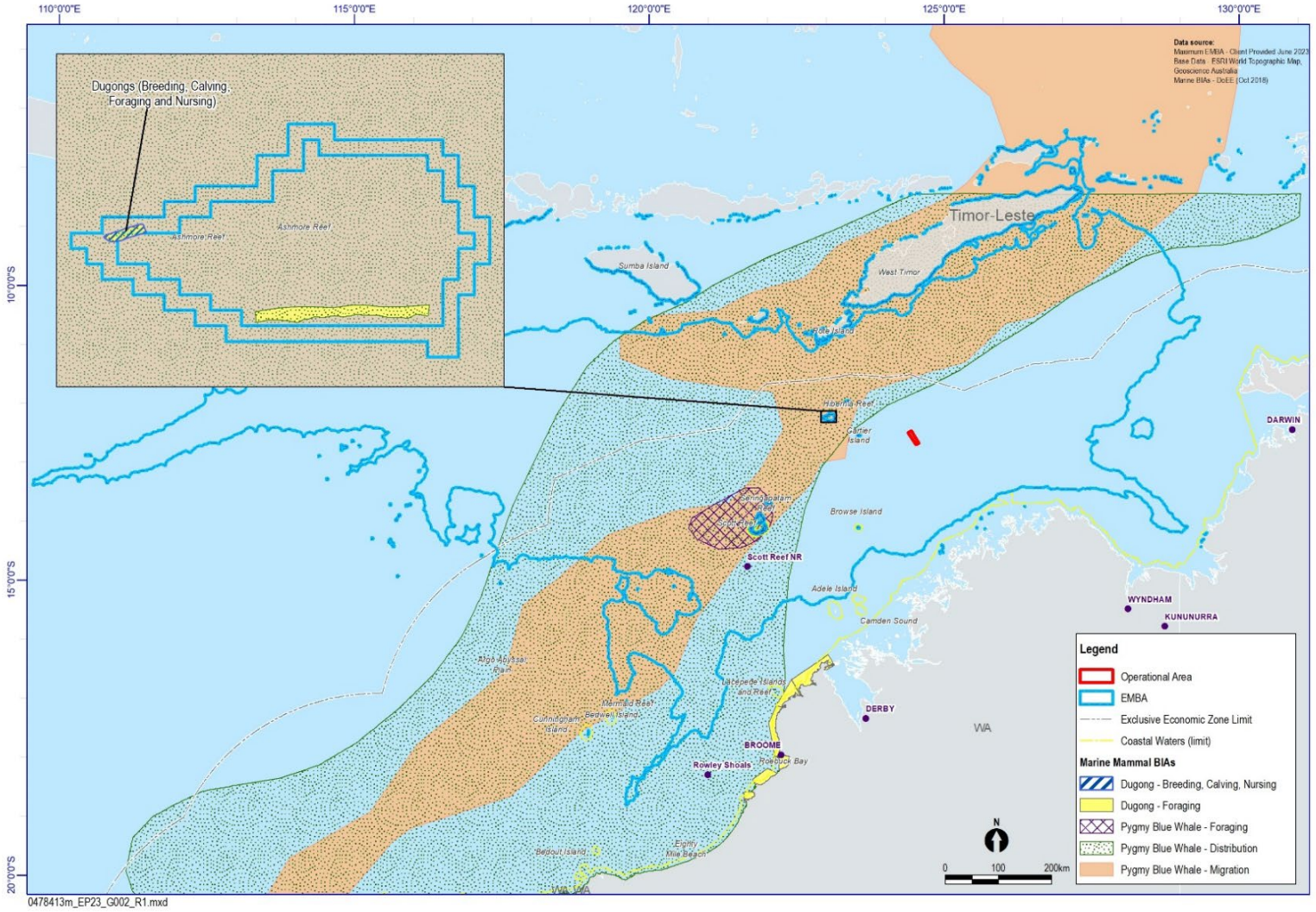


Figure 5-2: Biologically important areas for Pygmy whales and Dugongs

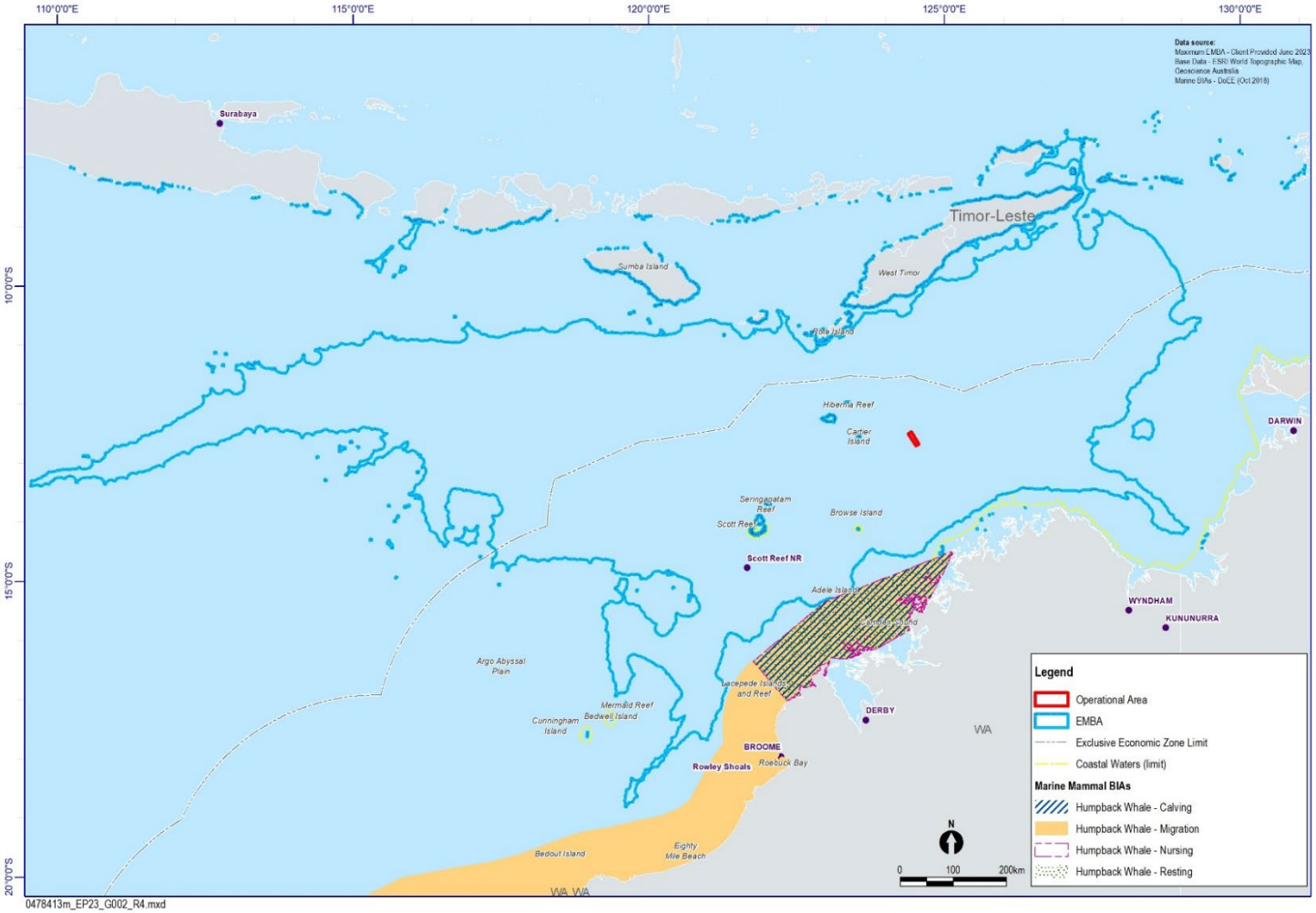


Figure 5-3: Biologically important areas for Humpback whales

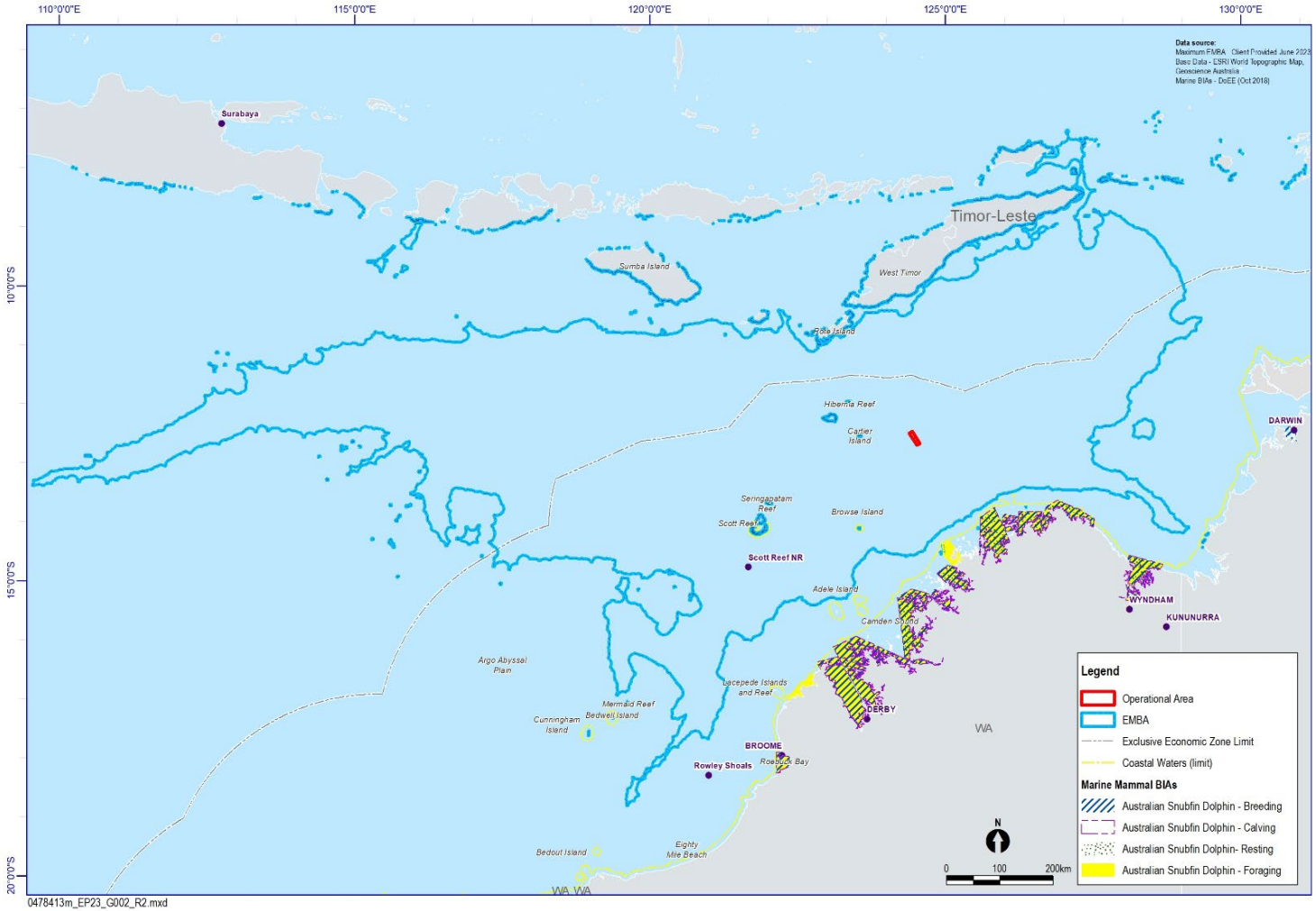


Figure 5-4: Biologically important areas for Australian Snubfin Dolphin

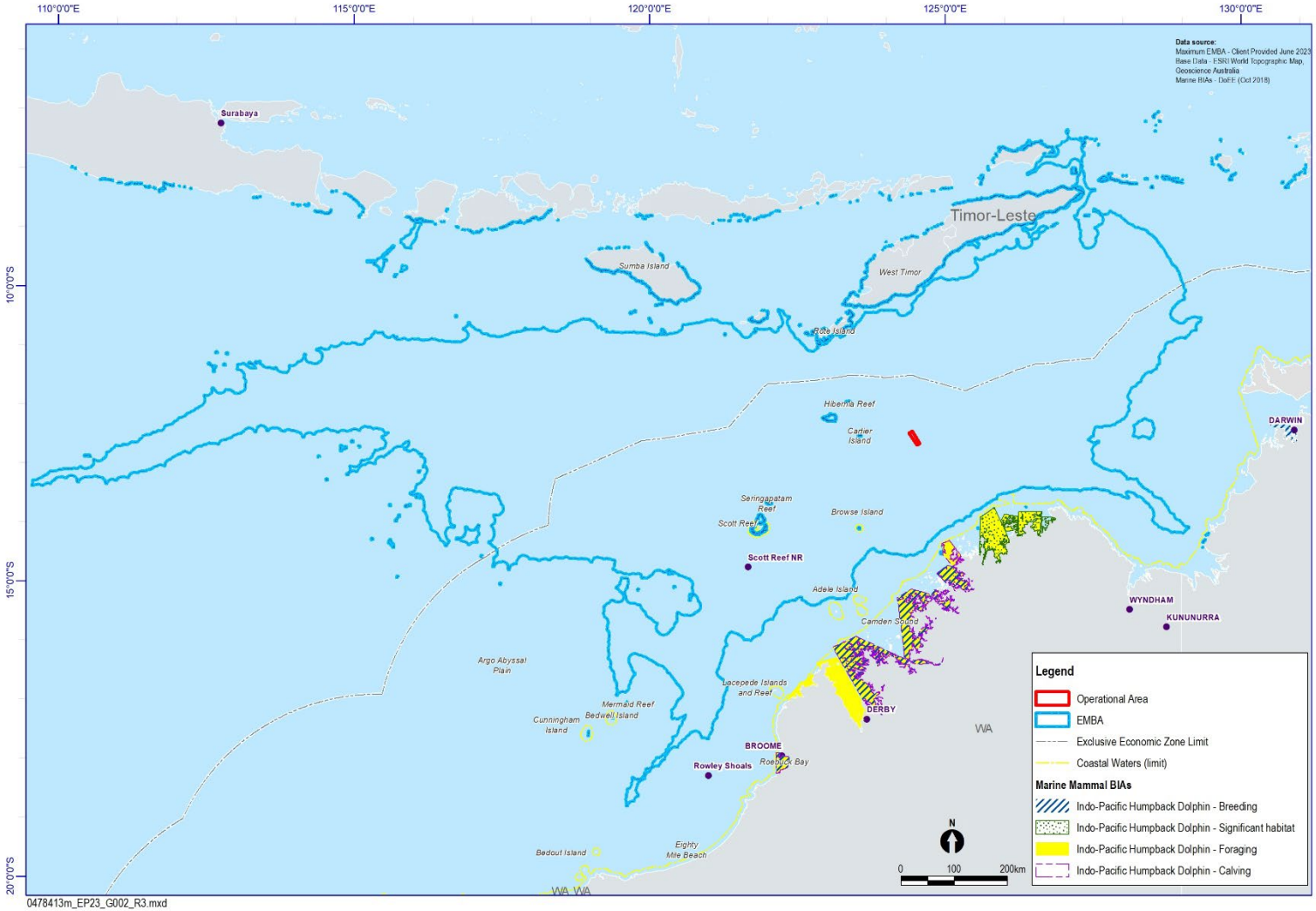


Figure 5-5: Biologically important areas for Indo-pacific Humpback dolphins

5.1.3 Marine Reptiles

Turtles

A search of the EPBC Act Protected Matters database identified six threatened/ migratory marine turtles are present in the Operational Area and EMBA. Marine turtles are oceanic species, except during nesting seasons where they come ashore to lay eggs. Marine turtles utilise reefs, soft-sediment habitats, seagrass and algal meadows as feeding areas, depending on species, and nest above the high-water mark on sandy beaches and islets within their geographical ranges. The nesting periods are species-dependent, although generally occur between September and March, peaking in December (Pendoley 2005). Hatchlings appear between January and May and immediately leave the shore, moving into open ocean environments for a number of years before returning to inshore areas.

Marine turtles have been observed in the vicinity of the Operational area. Surveys conducted in response to the Montara oil spill in 2009 recorded a total of 25 individual turtles in open water. Two species were confidently identified; loggerhead and green turtles (Watson et al. 2009). Land based surveys recorded green and hawksbill turtle tracks on the islands associated with Ashmore Reef (Watson et al. 2009).

The Operational area does not intersect with any marine turtle BIAs or habitat critical to the survival of marine turtles. The Operational Area is approximately 80km to the nearest nesting site at Cartier Island. The EMBA intersects with a number of BIAs in the region (**Figure 5-6** to **Figure 5-10**). These are discussed in further detail below for each species. BIAs for turtle species in the EMBA include the following locations: Browse Island, Ashmore Reef, Cartier Island, Cassini Island, Joseph Bonaparte Gulf, Joseph Bonaparte Depression, Sahul Shelf, and Sandy Islet (Scott Reef). These locations support marine turtle foraging, nesting and internesting areas with the windows of sensitivity shown in **Table 5-3**.

The EMBA overlaps habitat critical for survival of marine turtles for nesting. These include Olive Ridley, Hawskbill and Green (**Figure 5-10**).

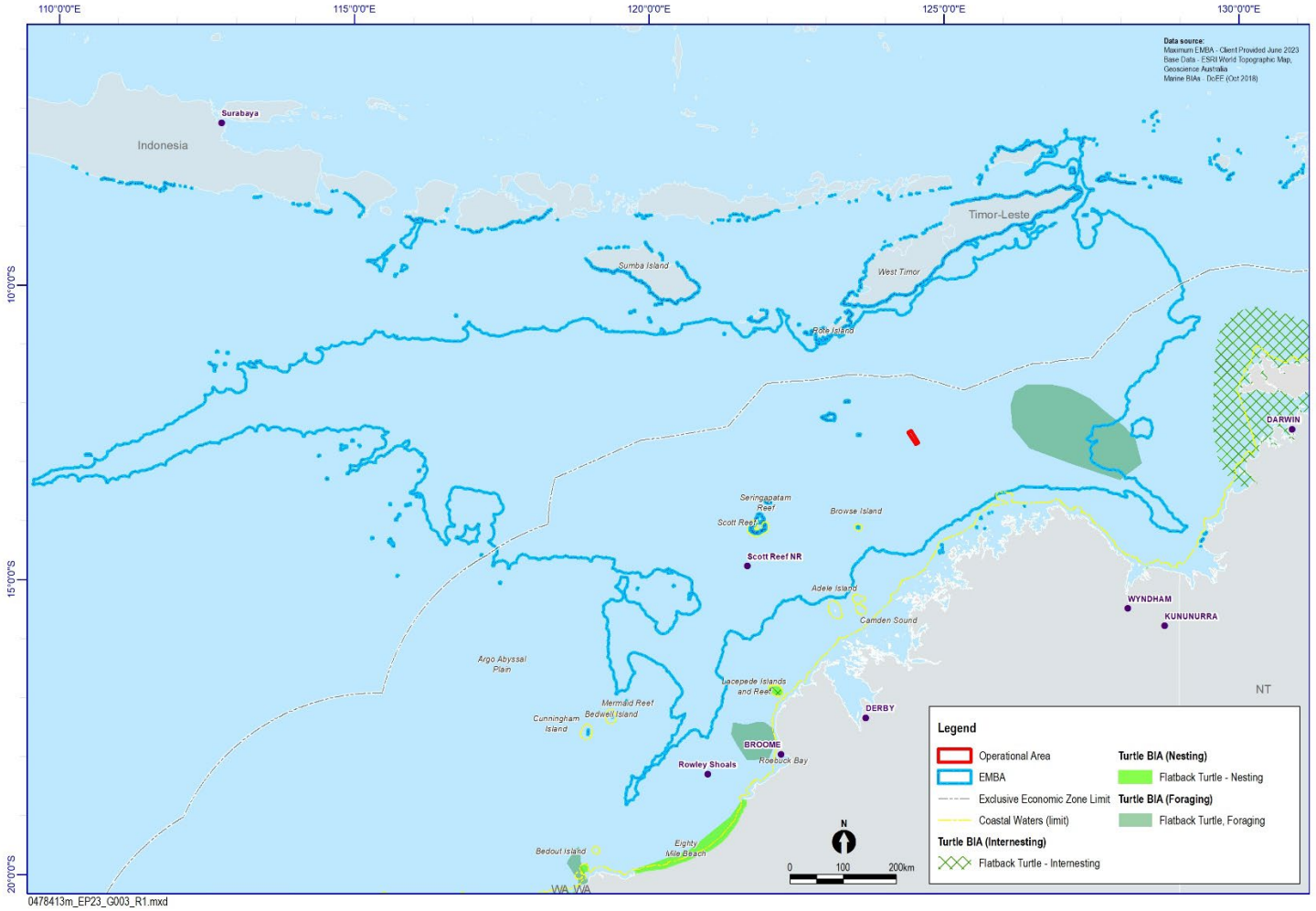


Figure 5-6: Biologically important areas for Flatback Turtle

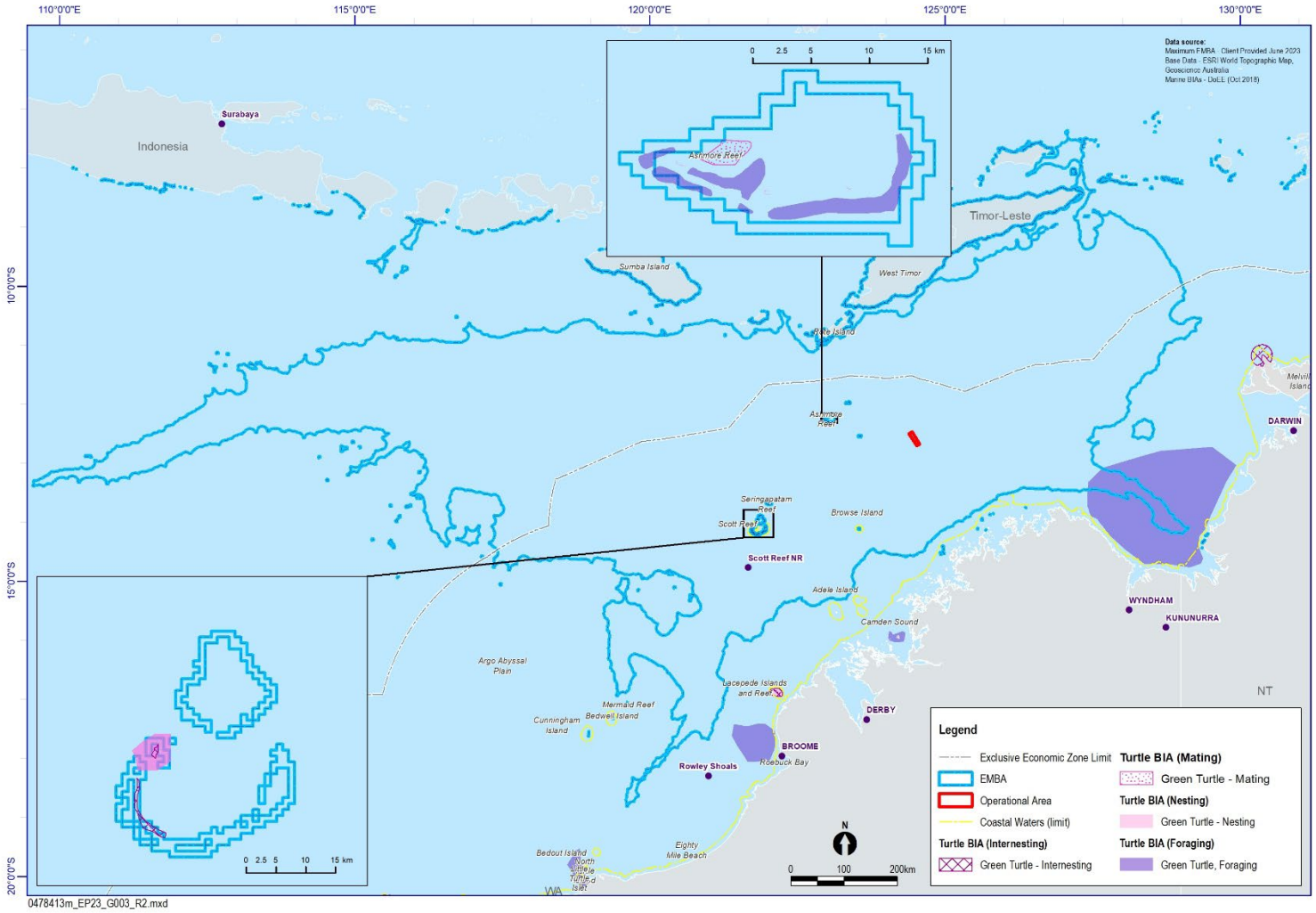


Figure 5-7: Biologically important areas for Green Turtle

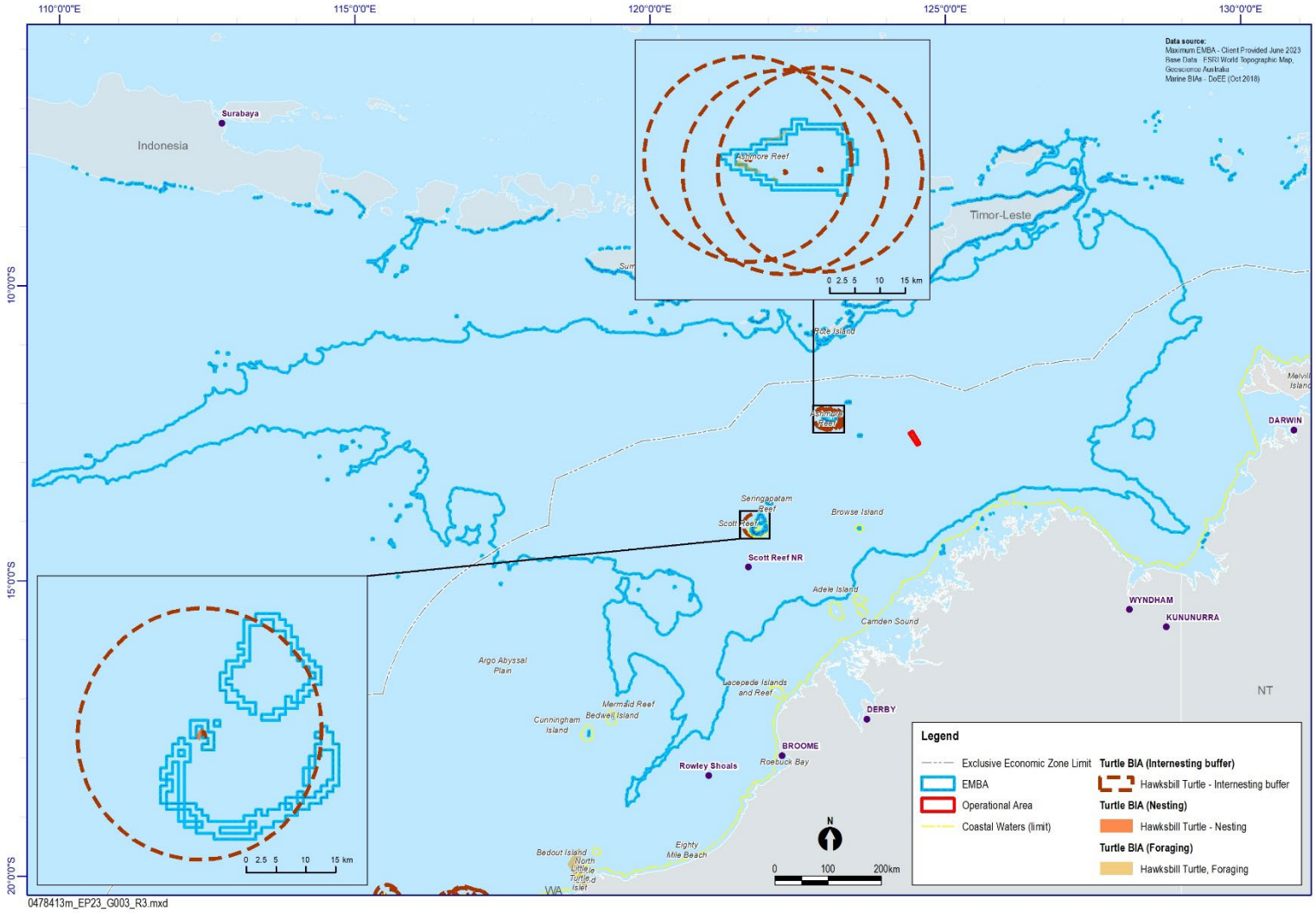


Figure 5-8: Biologically important areas for Hawksbill Turtle

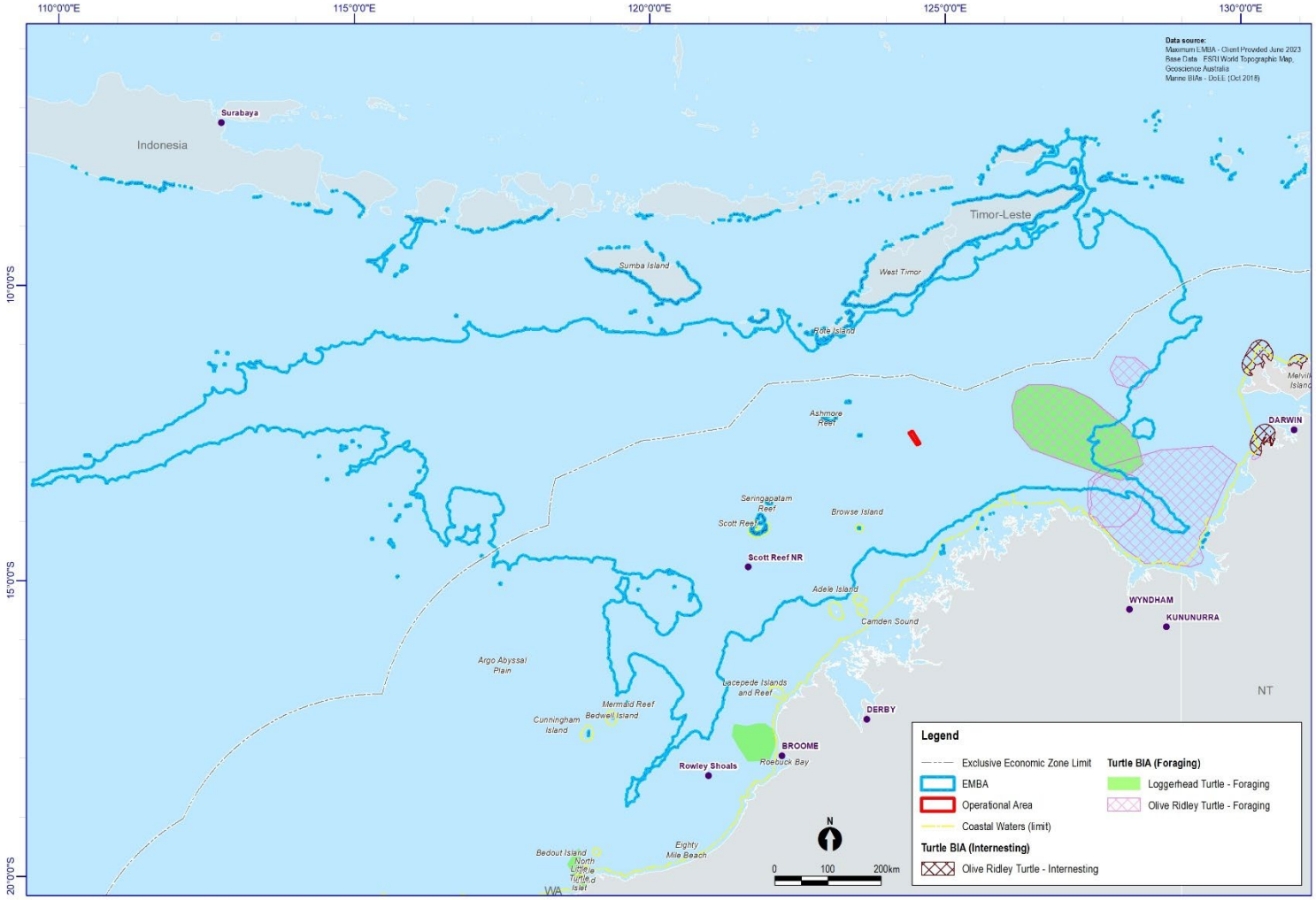


Figure 5-9: Biologically important areas for Loggerhead and Olive Ridley Turtle

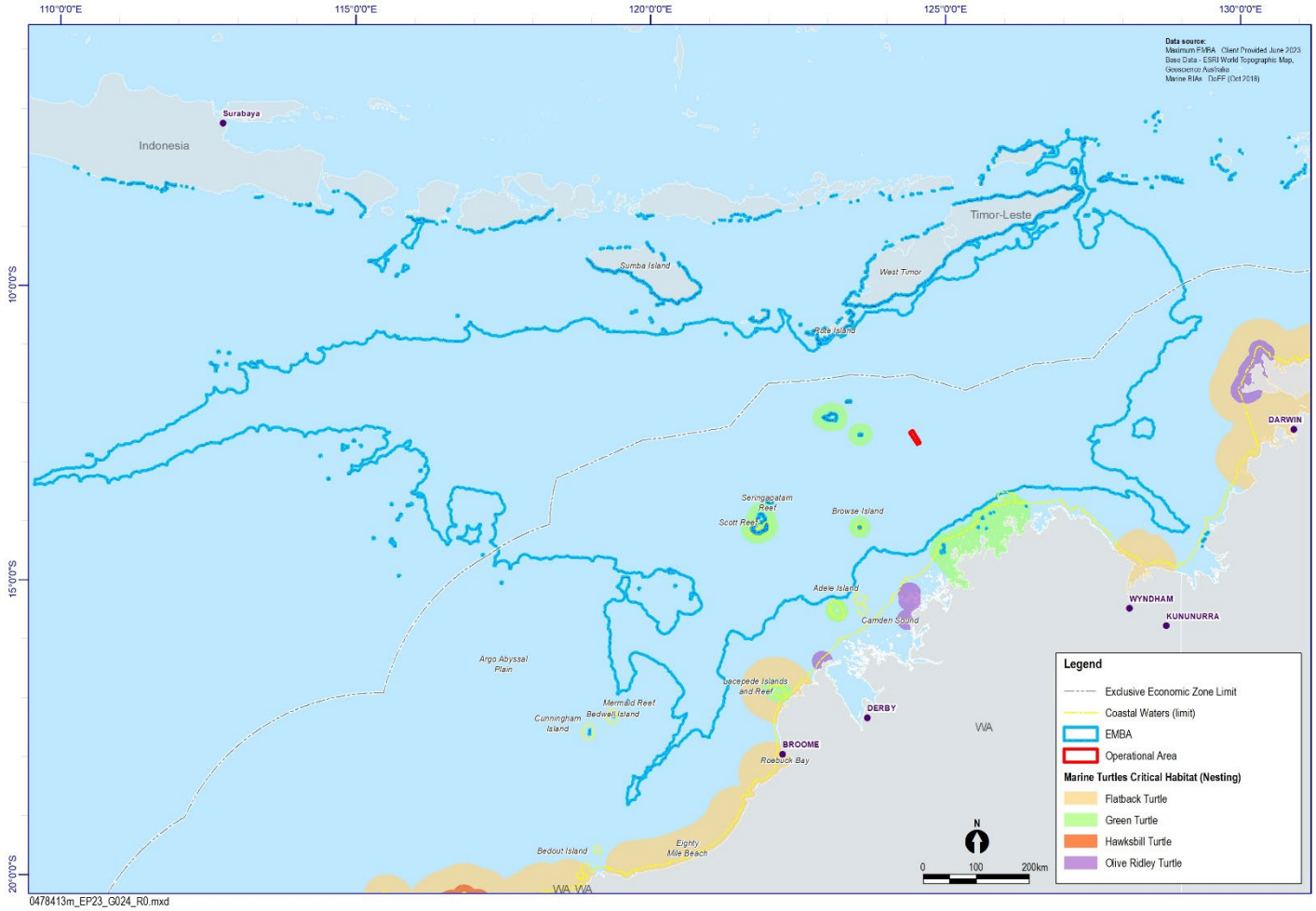


Figure 5-10: Habitat Critical for the Survival of Marine turtles

Table 5-3: Marine Reptile windows of sensitivity

Key	Peak times											
	January	February	March	April	May	June	July	August	September	October	November	December
Marine Reptiles												
Flatback Turtle: Nesting												
Green Turtle: Nesting (Ashmore and Cartier)												
Hawksbill Turtle: Nesting												
Leatherback Turtle: Nesting												
Loggerhead Turtle: Nesting												
Olive Ridley Turtle: Nesting												

Green Turtle (Vulnerable/Migratory)

Green turtles (*Chelonia mydas*) are found in tropical and subtropical waters throughout the world (Marquez 1990; Bowen et al. 1992). The closest known significant breeding/nesting grounds to the Operational area are the Ashmore Reef and Cartier Island CMRs, approximately 125 and 84 km to the northwest of the Operational area, respectively (Figure 5). Green turtle nesting has also been observed at Cassini Island (RPS 2010a) and the island is recognised as a significant green turtle rookery (Conservation Commission 2010). In WA, the major nesting sites include the Dampier Archipelago, along the Ningaloo and Jurabi Coasts, Thevenard Island and the Barrow-Lowendal-Montebello island complex (DoEE 2017b). In the NT, nesting occurs at Coburg Peninsula and between Nhulunbuy and northern Blue Mud Bay (East Arnhem Land) (DoEE 2017b).

Green turtles may occasionally pass through the Operational area, as satellite tracking studies have shown that green turtles migrate between breeding grounds and feeding grounds off the northwest coast (Pendoley 2005). However, due to the water depths the area does not provide foraging habitat.

The EMBA intersects green turtle BIAs at Scott, Ashmore and Cartier Reefs, in the Joseph Bonaparte Gulf, and around Melville Island, with the areas used for mating, foraging, internesting, and nesting. Green turtle BIAs in the region are illustrated in **Figure 5-7**.

Sandy Islet at Scott Reef is a green turtle nesting site, with summer months from November through to February being the preferred nesting period (Guinea 2006). While no published literature is available relating to turtle activities around Seringapatam Reef, it can be assumed that no nesting occurs due to the lack of permanent land (e.g. a sandy islet or island). However, turtles are likely to visit the reef system as part of transitory foraging behaviour. It has also been noted that green turtles may feed around Barracouta Shoal based on the proximity of the shoal to Cartier Island (Fugro 2009).

Flatback Turtle (Vulnerable/Migratory)

The flatback turtle (*Natator depressus*) is found in the tropical waters of northern Australia, Papua New Guinea and Irian Jaya. It is the most widely distributed nesting marine turtle species in the Northern Territory (Chatto and Baker 2008), nesting on a wide variety of beach types around the entire coastline. The flatback turtle also nests in the Kimberley Region of Western Australia, with Cape Dommett (Bowlay and Whiting 2007) and Lacrosse Island being important nesting areas for the species. The closest nesting sites to the Operational area are approximately 500 km to the south- east (Lacepede Islands).

While flatback turtles make lengthy reproductive migrations, up to 1,300 km from nesting beaches (Limpus et al. 1983), movements are generally restricted to the continental shelf (DoEE 2017b). Flatback turtles nesting within the Pilbara region migrate to their foraging grounds in the Kimberley region along the continental shelf at the end of the nesting season (RPS 2010). Due to their migrations between the Pilbara and the Kimberley regions of WA, individual flatback turtles may transit the Operational area during migration. However, given the distance from known aggregation areas, it is unlikely that significant numbers of flatback turtles will be encountered within the Operational area. Due to the water depths the area does not provide foraging habitat. This species will also be present within the wider EMBA.

The EMBA intersects with flatback turtle BIAs, at the Sahul Shelf, used for foraging, off the West Australia coast, and the internesting BIA, in the coastal waters off Arnhem Land in the Northern Territory (**Figure 5-6**).

Hawksbill Turtle (Vulnerable/Migratory)

Hawksbill turtles (*Eretmochelys imbricata*) are found in tropical, subtropical and temperate waters in all oceans of the world. There are no known nesting or breeding areas in or near to the Operational area. In WA, the Dampier Archipelago is an important part of the migration route for hawksbill turtles, as are Scott Reef and the Joseph Bonaparte Gulf. Hawksbill turtles nest all year round in WA, with a peak in October and January (DoEE 2017b).

In WA, the major nesting sites include the Dampier Archipelago, along the Ningaloo and Jurabi Coasts, Thevenard Island and the Barrow-Lowendal-Montebello Island complex (DoEE 2017b). In the NT, nesting occurs at Coburg Peninsula and between Nhulunbuy and northern Blue Mud Bay (East Arnhem Land) (DoEE 2017b). Hawksbill turtles are also found in the reserves of Ashmore Reef and Cartier Island where they feed throughout the year (Guinea 1995). Due to the distance from nesting sites and the lack of foraging habitats in the Operational area, only low numbers of hawksbill turtles are expected to be observed, in transit from WA to the NT.

In WA, the Dampier Archipelago is an important part of the migration route for hawksbill turtles, as are Scott Reef and the Joseph Bonaparte Gulf. Hawksbill turtles nest all year round in WA, with a peak in October and January (DoEE 2017b).

The EMBA intersects with hawksbill turtle BIAs at Scott Reef, Ashmore Reef and Cartier Island with the areas used for internesting, and nesting (**Figure 5-8**).

Leatherback Turtle (Endangered/Migratory)

The Leatherback turtle (*Dermochelys coriacea*) has the widest distribution of any marine turtle, and can be found in tropical, subtropical and temperate waters throughout the world (Marquez 1990). No major centres of nesting activity have been recorded in Australia, although scattered isolated nesting (1-3 nests per annum) occurs in southern Queensland and Northern Territory (Limpus and McLachlin 1994). As such, it is expected that very few leatherback turtles will be encountered in the Operational area. The species is likely to be present within the wider EMBA.

The EMBA does not intersects with any BIAs for the leatherback turtle.

Loggerhead Turtle (Endangered/Migratory)

The loggerhead turtle (*Caretta caretta*) has a global distribution throughout tropical, sub-tropical and temperate waters (Marquez 1990). The closest known breeding/nesting grounds to the Operational area are found at Muiron Island and the beaches of the Northwest Cape (Baldwin et al. 2003), approximately 1,500 km south-west of the Operational area and outside the EMBA. Loggerhead turtles have been recorded in the reserves of Ashmore Reef (125 km) and Cartier Island (84 km), west- northwest of the Operational area (Guinea 1995). Loggerhead turtles are unlikely to be encountered within the Operational area in significant numbers. This species is likely to be present, in limited numbers, within the wider EMBA.

The EMBA intersects with one loggerhead turtle BIA, a foraging area, on the Sahul Bank, off NT waters (**Figure 5-9**).

Olive Ridley Turtle (Endangered/Migratory)

The olive ridley turtle (*Lepidochelys olivacea*) has a circum-tropical distribution, with nesting occurring throughout tropical waters. No concentrated nesting has been found in Australia, although low density nesting occurs along the Arnhem Land coast of the Northern Territory, including the Crocodile, McCluer and Wessel Islands, Grant Island and Cobourg Peninsula (Chatto and Baker 2008). Therefore, Olive Ridley turtles are unlikely to be encountered within the Operational area in significant numbers. This species may be encountered, in limited numbers within the wider EMBA.

The EMBA intersects with a number of olive-ridley turtle BIAs (foraging and internesting areas), the Sahul Bank in the Joseph Bonaparte Gulf, and in NT waters off the Arnhem Land coast (**Figure 5-9**).

Sea snakes

Short-nosed Seasnake (Critically Endangered)

The short-nosed seasnake (*Aipysurus apraefrontalis*) is listed as critically endangered under the EPBC Act and the Biodiversity Conservation Act 2016. It is a fully aquatic, small snake and is endemic to WA. It has been recorded from Exmouth Gulf, WA to the reefs of the Sahul Shelf, in the eastern Indian Ocean. This species is believed to show strong site fidelity to shallow coral reef habitats in less than 10 m of water, with most specimens having been collected from Ashmore and Hibernia reefs (Minton & Heatwole 1975, Guinea and Whiting 2005).

The species prefers the reef flats or shallow waters along the outer reef edge in water depths to 10 m (McCosker 1975, Cogger 2000). The species has been observed during daylight hours, resting beneath small coral overhangs or coral heads in 1–2 m of water (McCosker 1975). Guinea and Whiting (2005) reported that very few short-nosed seasnakes moved even as far as 50 m away from the reef flat and are therefore unlikely to be expected in high numbers in offshore, deeper waters.

It is expected that few short-nosed seasnakes will be encountered in the Operational area due to the distance from the nearest reefs and shallow waters.

Leaf-scaled Seasnake (Critically Endangered)

The leaf-scaled seasnake (*Aprasia rostrate rostrata*) is listed as critically endangered under the EPBC Act and the Biodiversity Conservation Act 2016. It occurs in shallow water (less than 10 m in depth), in the protected parts of the reef flat, adjacent to living coral and on coral substrates (McCosker 1975). The species is found only on the reefs of the Sahul Shelf in Western Australia, especially on Ashmore and Hibernia Reefs (Minton and Heatwole 1975). The leaf-scaled seasnake forages by searching in fish burrows on the reef flat (Guinea & Whiting 2005).

It is expected that few leaf-scaled seasnakes will be encountered in the Operational area due to the distance from the nearest reefs and shallow waters.

5.1.4 Avifauna

Numerous species of seabirds frequent the Timor Sea area or fly through the area on annual migrations. Seabird feeding grounds, roosting and nesting areas are found at the offshore atolls in the wider region, particularly Ashmore Reef. Many species are listed under the Japan-Australia Migratory Bird Agreement (JAMBA), China-Australia Migratory Bird Agreement (CAMBA) or Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA). Most seabirds breed at offshore sites, such as Ashmore Reef, Cartier Island and Browse Island, from mid-April to mid-May (Clarke 2010). Peak migration time of migratory shorebirds is between October and December (Clarke 2010). It is expected that some individuals of these species may pass through the Operational Area and EMBA during their annual migrations (**Table 5-4**).

A detailed description of EPBC-listed birds that are found in the EMBA and operational area are provided in **Section 5.1.4.3** and **Section 5.1.4.1**.

No designated avifauna migration, resting, foraging or breeding BIAs are present within the Operational area (Figure 5-11). The nearest breeding/roosting site to the Operational Area is Cartier Island approximately 80 km away. However, the floating production storage and offtake facility (FPSO) and wellhead platform (WHP) attract a number of foraging and breeding listed migratory species in large numbers. This is described further below in **Section 5.1.4.2**.

Table 5-4: Windows of sensitivity for avifauna

Key	Peak times											
	January	February	March	April	May	June	July	August	September	October	November	December
Avifauna												
Seabirds: Breeding												
Shorebirds: Migrating												

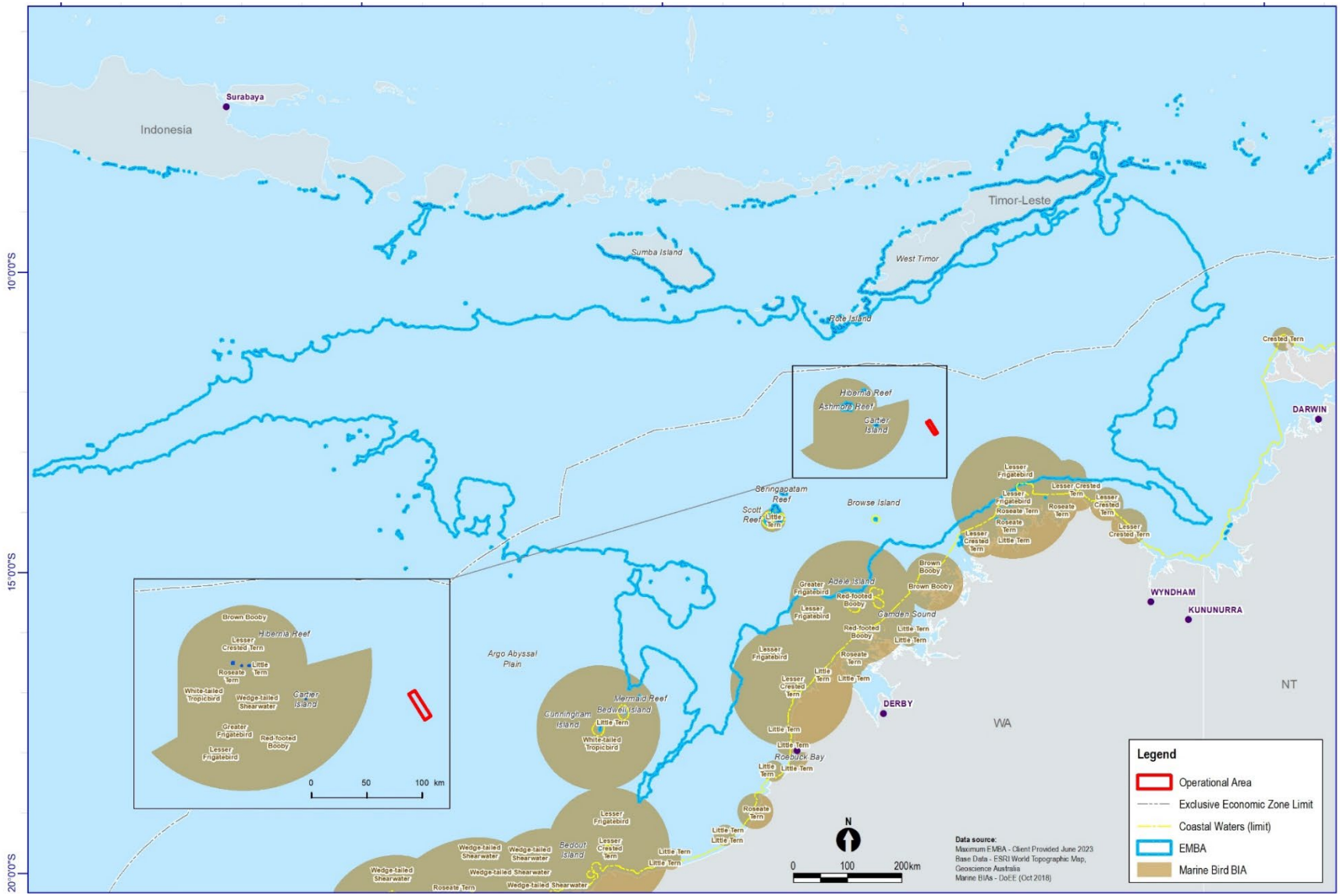


Figure 5-11: Avifauna BIAs

5.1.4.1 EPBC Listed Species in the Operational Area (PMST and direct observation at FPSO and WHP)

Australian Lesser Noddy (Vulnerable)

The Australian lesser noddy (*Anous tenuirostris melanops*) is usually only found around its breeding islands including the Houtman Abrolhos Islands and on Ashmore Reef and Barrow Island in WA (DoEE 2017b). This species may forage out at sea or in seas close to breeding islands and fringing reefs (Johnstone and Storr 1998; Storr et al. 1986; Whittell 1942). Given the distribution of the species and the breeding population at nearby Ashmore Reef and Cartier Island, this species may be present in the Operational Area, although only in low numbers. Based on known distribution and the location of rookeries the species is known to occur within the EMBA.

Red Knot (Vulnerable/Migratory)

The red knot is a migratory shorebird and the species includes five subspecies, including two found in Australia; *Calidris canutus piersmai* and *Calidris canutus rogersi*. It undertakes long distance migrations from breeding grounds in Siberia, where it breeds during the boreal summer, to the southern hemisphere during the austral summer. Both Australia and New Zealand host significant numbers of red knots during their non-breeding period (Bamford et al. 2008). As with other migratory shorebirds, the species occurs in coastal wetland and intertidal sand or mudflats, where they feed on intertidal invertebrates, especially shellfish (Garnet et al. 2011).

They are likely to be found in these habitats throughout the EMBA, but is unlikely to occur frequently in the Operational Area, aside from individuals occasionally transiting through during migrations, due to the lack of emergent habitat.

Curlew Sandpiper (Critically Endangered/Migratory)

In Australia, curlew sandpipers (*Calidris ferruginea*) occur around the coasts and are also quite widespread inland. In WA, they are widespread around coastal and subcoastal plains from Cape Arid to south-west Kimberley, albeit rarely encountered in the north-west of the Kimberley region (DoEE 2017b). Curlew sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, as well as around non-tidal swamps, lakes and lagoons near the coast, occurring in both fresh and brackish waters (DoEE 2017b).

Given the offshore location of activities and habitat preferences, the species is unlikely to be encountered within the Operational Area other than occasional numbers during migration, although may be present within the EMBA.

Eastern Curlew (Critically Endangered/Migratory)

Within Australia, the eastern curlew (*Numenius madagascariensis*) has a primarily coastal distribution. They have a continuous distribution from Barrow Island and Dampier Archipelago in WA, through the Kimberley and along the NT, Queensland, and NSW coasts and the islands of Torres Strait. They are patchily distributed elsewhere.

The species nests in the northern hemisphere, from early May to late June and does not breed in Australia. During the non-breeding season in Australia, the eastern curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats (TSSC 2015). Given the offshore location of activities and habitat preferences, the species is unlikely to be encountered within the Operational Area other than occasional numbers during migration, although may be present within the EMBA.

Abbott's Booby (Endangered/Migratory)

In Australia, Abbott's booby (*Papasula abbotti*) is only found on Christmas Island, where it nests in tall rainforest trees. It is a pelagic feeding species, spending long periods at sea and often foraging hundreds of

kilometres from land (Becking 1976). Given the offshore location of activities and habitat preferences, the species may be present foraging within the Operational Area and EMBA.

Common Sandpiper (Migratory)

The common sandpiper (*Actitis hypoleucos*) is a small, migratory species with a very large range through which it undertakes annual migrations between breeding grounds in the northern hemisphere (Europe and Asia) and non-breeding areas in the Asia-Pacific region (Bamford et al. 2008). The species congregates in large flocks and forages in shallow waters and tidal flats between spring and autumn. Specific critical habitat in Australia has not been identified due to the species' broad distribution (Bamford et al. 2008).

The common sandpiper may be present in coastal wetland and intertidal sand or mudflats throughout the wider EMBA, but is unlikely to occur in the Operational Area, aside from individuals occasionally transiting through during migrations, due to the lack of emergent habitat.

Common/ Brown Noddy (Migratory)

The common noddy (*Anous stolidus*) is a pelagic migratory species. The species is considered one of the five most numerous breeding species in the Eastern Indian Ocean (Surman et al. 2018). One of the most significant colonies is at Ashmore Reef Marine Park where the species is considered to be the second most abundant with over 40,000 individuals recorded (Cannell and Surman 2020). The species is also encountered off the coast of the NT, albeit at relatively low number. A single breeding location of approximately 100-130 birds is documented (DoEE 2017b).

During the breeding season, the species usually occurs on, or near islands, on rocky islets and stacks with precipitous cliffs, or on shoals or cays of coral or sand. During the non-breeding period, the species occurs in groups throughout the pelagic zone (DoEE 2017b). A tagging study from the Lacepede Islands showed, that brown noddies foraging would travel up to 611 km per trip at a maximum distance from the breeding colonies of 210 km (Surman, pers comms 2023).

This species is the seabird species most commonly encountered on the FPSO, and also occurs within the EMBA. The population on the FPSO, where philopatric behaviour occurs, has been estimated to make up ~0.4% of WA population and ~0.3% of global population.

Sharp-tailed Sandpiper (Vulnerable/Migratory)

The sharp-tailed sandpiper (*Calidris acuminata*) is a migratory wading shorebird and undertakes long distance seasonal migrations between breeding grounds in the northern hemisphere and over-wintering areas in the southern hemisphere (Bamford et al. 2008). The species may occur in Australia between spring and autumn. The species is unlikely to occur within the Operational Area due to the lack of suitable habitat, but may occur seasonally in coastal wetland and intertidal sand or mudflats throughout the wider EMBA.

Pectoral Sandpiper (Migratory)

The pectoral sandpiper (*Calidris melanotos*) breeds in the northern hemisphere during the boreal summer, before undertaking long distance migrations to feeding grounds in the southern hemisphere (Bamford et al. 2008). The species occurs throughout mainland Australia between spring and autumn. The pectoral sandpiper prefers coastal and near-coastal environments such as wetlands, estuaries and mudflats.

Given the species' preferred habitat the pectoral sand piper is not expected to occur within the Operational Aarea, but is expected to occur in suitable habitats within the wider EMBA.

Streaked Shearwater (Migratory)

The streaked shearwater (*Calonectris leucomelas*) is usually found over pelagic waters, and is known to breed on the coast and offshore islands mainly around Japan and Korea (Ochi et al 2010). The streaked shearwater migrates south during winter to Australia (Birdlife International 2015). The species does not breed in Australia. Streaked shearwaters are known to forage in areas of high concentrations of subsurface predators (e.g. tuna and dolphins) in tropical oceans during non-breeding periods (Yamamoto et al 2010).

Given the distribution of streaked shearwaters, this species may be present in the Operational Area, albeit in low numbers, and will occur within the EMBA.

Lesser Frigatebird (Migratory)

The lesser frigatebird (*Fregata ariel*) is considered the most common and widespread frigatebird over Australian seas (Lindsey 1986). They are commonly found in tropical seas, breeding on remote islands (Marchant and Higgins 1990). A BIA has been identified for this species at Ashmore Reef and Cartier Island to highlight breeding and foraging behaviours in the area (DoEE 2017b). The Operational area does not overlap with this BIA, however the BIA overlaps with the wider EMBA (Figure 7). Breeding is known to occur between March and September.

Given its distribution and the large breeding population at nearby Ashmore Reef and Cartier Island, this species may be encountered within the Operational Area and will be present within the EMBA.

Great Frigatebird (Migratory)

Great frigatebirds (*Fregata minor*) are found in tropical waters globally. A BIA has been identified at Ashmore Reef and Cartier Island for the species to highlight breeding and foraging behaviours in the area (DoEE 2017b). The Operational area does not overlap with this BIA, however the BIA overlaps with the EMBA (Figure 7). Breeding is known to occur between May to June and in August (DoEE 2017b). Given the distribution of the species and its low population in nearby Ashmore Reef and Cartier Island, this species may be present in the Operational Area in low numbers, and will be present within the EMBA.

White-tailed Tropicbird (Migratory)

The white-tailed tropicbird (*Phaethon lepturus*) is primarily oceanic in tropical waters, rarely inshore, and only is near land when breeding. Nests are located on islands and atolls utilising a variety of habitats from closed canopy rainforest to bare sandy ground and rugged rocky terrain (Marchant & Higgins 1990).

Given the species' preferred habitat the pectoral sand piper is not expected to occur within the Operational Area but is expected to occur in suitable habitats within the wider EMBA.

Brown Booby (Migratory)

In Australia, the brown booby (*Sula leucogaster*) uses both marine and terrestrial habitat. They often stay close to their breeding islands and generally feed inshore, in both shallow and deep waters (DoEE 2019). They are relatively short-range foragers when breeding (<80km) (Clarke and Herrod 2016).

The species is known to be resident and partly nomadic (i.e. birds dispersing widely between breeding seasons) and is known to readily roost on artificial structures (such as, navigation beacons, buoys, piles, railings, shipwrecks). They are known to be present along coastal waters, harbours and estuaries; however, they seldom fly over land. Breeding is known to occur at Ashmore Island, Adele Island, White Island, Lacepede Islands and Bedout Island and they nest on rugged rocky terrain such as cliffs and steep slopes, on larger islands, beaches, coral rubble and guano flats on cays (DoEE 2019).

The species is commonly encountered on the WHP and also occurs within the EMBA. The population on the WHP has been estimated to make up ~1.8% of WA population and ~0.2% of global population.

Bridled Tern (Migratory)

In Australia, the bridled tern (*Onychoprion anaethetus*) is widespread, breeding on offshore islands in western, northern and north-eastern Australia, extending from Cape Leeuwin in the south-west, around northern Australia to north-eastern and mid-eastern Queensland, extending through the Great Barrier Reef and Coral Sea as far south as Lady Elliott Island (approximately 24° S).

In Western Australia, breeding is widespread from islands off Cape Leeuwin (extending round the southern coast to Seal Rocks) north to Shark Bay and in Pilbara region and Kimberley Division. At sea, distribution extends from Cape Leeuwin north to Dirk Hartog Island, with isolated mainland coastal records at Point Maud and Ningaloo, and from Barrow Island to the Dampier Archipelago, and at sea off the Kimberley coast

from waters west of the Dampier Peninsula to Ashmore Reef and Joseph Bonaparte Gulf (Barrett et al. 2003; Blakers et al. 1984; Higgins & Davies 1996; Johnstone & Storr 1998). In 2019, surveys reported 400 adults across islands and cays of Ashmore Reef Marine Park (Cannell and Surman 2020). The species is considered one of the five most numerous breeding species in the Eastern Indian Ocean (Surman et al. 2018).

This species is commonly encountered on the FPSO. The population on the FPSO has been estimated to make up ~0.5% of WA population and ~0.1% of global population.

5.1.4.2 Seabird presence on the FPSO and WHP

The FPSO and WHP are surrounded by waters with typically low seabird densities. Waters across tropical seas are typically low productivity (Dunlop et al. 2001), however the presence of offshore platforms act as artificial hard substrate enhancing biological communities (Macreadie et al. 2011) and may act to increase local productivity (Fowler et al. 2018), and provide for a resting place for migrating seabirds. The FPSO and WHP also provides artificial nesting habitat that is free from natural predators and located adjacent to a reliable food source with the potential for less intra- and interspecific competition for resources that otherwise occurs at Ashmore Island.

Seabird presence have been systematically monitored at the FPSO and WHP since 2019 (when operations were transferred to Jadestone) with the three most commonly observed species being Common/Brown noddies (*Anous stolidus*), Brown boobies (*Sula leucogaster*) and Bridled terns (*Onychoprion anaethetus)* **Figure 5-12** and **Figure 5-13**). In 2023, brown boobies were the only species observed on the WHP. Brown noddies are the dominant species occupying the FPSO, with bridled terms also commonly observed. Seabirds congregate on the FPSO and WHP at predictable times for roosting and nesting. More than 1000+ individuals are commonly observed during peak times of presence. The EPBC and (non-statutory IUCN) status of these three seabird species most commonly observed on the FPSO and WHP is provided in **Table 5-5** below.

Table 5-5: EPBC status and (non statutory) IUCN of species occurring on the FPSO and WHP

Common name	Latin Name	EPBC and IUCN status and breeding behaviour
Brown noddy (Common noddy)	*Anous stolidus*	Listed migratory & listed marine IUCN: Listed as Least Concern* Breeding known to occur in the area
Brown booby	*Sula leucogaster*	EPBC: Listed migratory & listed marine IUCN: Listed as Least Concern* Breeding known to occur in the area
Bridled tern	*Onychoprion anaethetus*	Listed migratory & listed marine IUCN: Listed as Least Concern* Breeding known to occur in the area

*A least-concern species is a species that has been categorised by the IUCN as evaluated as not being a focus of species conservation because the specific species is still plentiful in the wild. They do not qualify as threatened, near threatened, or (before 2001) conservation dependent.

Seabirds may have transited to the FPSO and WHP from seabird colonies elsewhere in the region. To the west, Ashmore Island and Reef (148 km away) contains over 100,000 breeding seabirds across 16 species, including significant breeding populations of Brown Boobies and Brown Noddies (Clarke and Herrod 2016). Clarke and Herrod (2016) report that the Brown Booby population at Ashmore Reef has shown remarkable recovery since the days of harvesting by Indonesian fishers. Recent survey data suggests Ashmore Reef Marine Park accounts for ≥1 per cent of the global population (Cannell and Surman 2020). To the south, both Adele Island (368 km SSW) and the Lacepede Islands (554km SSW) also contain significant breeding seabird populations.

Monitoring at FPSO and WHP

Annual seabird surveys at the FPSO and WHO have shown that brown noddies are the most abundant species and are roosting, feeding and nesting on the FPSO. Bridled terns are also roosting on the FPSO in between feeding, whilst brown boobies appear to have a preference for the WHP where they are observed to roost. The scale of occurrence of seabirds at the FPSO and WHP is dependent of the timing of breeding. The timing of breeding in the Operational Area is analogous to well-known breeding times of seabirds at Ashmore Reef 148 km away. Here, Brown noddies and Brown boobies nest between January and November of each year, with a peak in nesting of Brown noddies between April to September.

The total numbers of Brown noddy nests on the FPSO has increased from 87 in July 2020, to 228 in May 2022, 266 in August 2022 to 294 in July 2023. Nest site locations had changed noticeably between the 2022 and 2023 breeding seasons with far fewer active nests in 2023, and an increase in nest sites towards the aft of the vessel (Figure 5-12 and Table 5-6). This is thought to be due to installation of netting on the FPSO deterring nesting at installation locations.

At the time of the July 2023 visit, few Brown Noddies were found to be incubating eggs and only a single chick was observed. Anecdotal information from staff indicates that prior to the survey, there were more Brown Noddies present and a higher proportion of active nest sites up until about the 25 May 2023, when the arrival of an unidentified corvid (raven/crow) caused most Brown Noddies to abandon their nest sites. Brown noddies had returned to recommence breeding by 7 July, however by the time of the survey (14-17 July 2023) there were few occupied nest sites (20.3%, Figure 5-12) and low numbers of birds rebuilding nests in preparation for a second wave of nesting. Post visit observations indicate that breeding did not recommence at the FPSO.

The numbers of roosting seabirds on the FPSO and WHP observed during surveys is provided in Table 5-6. It is clear that roosting seabirds is variable among years.

Table 5-6 Total numbers of roosting seabirds at the FPSO and WHP 2020-23

Bird Species	July 2020	May 2022	August 2022	July 2023
Brown noddy	640	1186	457	1038
Bridled tern	494	250	454	222
Brown booby (WHP)	190	93	262	365

A summary of the estimated population of the three species at the FPSO and WHP and their estimated relative contribution to WA and global populations is provided in **Table 5-7**. The estimated Montara population is derived from the maximum observed individuals from any survey campaign since 2019 to ensure a conservative estimate. Calculation of relative proportion of populations are based on a conservative assumption that draw on the lowest figure in the estimated range of global and WA/AUS populations.

Table 5-7: Estimated global, WA and Montara population numbers

Species	Estimated Global Population	Estimated WA Population (breeding)	Estimated Montara Population
Common/brown noddy (*Anous stolidus*)	~800,000-14,000,000 (Birdlife International 2023)	~350,000 (AUS) Ross et al. 1996a Max 44% of global population	1200 ~0.3% of AUS population ~0.2% of global population
Brown booby (*Sula leucogaster*)	~200,000 (Birdlife International 2010d)	~73,000 (WA) 37% of global population (Birdlife International 2010d)	400 ~0.5% of WA population ~0.2% of global population
Bridled Tern (*Onychoprion anaethetus*)	~615,00-1,500,000 (Delany and Scott 2006)	~60,000-80,000 (WA) (Dunlop and Johnstone 1994) Max 13% of global population	500 ~0.8% of WA population ~0.1% of global population

Brown noddies utilise elevated areas forward of the FPSO, including heat shield covered cable trays, rooftops of module 13 and the Turret, as well as any horizontal surfaces created by I-beam superstructures. It also

appears that the thermoregulatory benefits from the elevated flare create a preference for this area over areas aft of the vessel. Approximately 96.8 % of the identified nests were forward of the flare hazard zone.

Brown noddies build their nests from whatever nesting materials are available, but mostly *Sargassum sp*. seaweed, feathers, dried fish and materials collected from the deck including twine, plastic tags and rubbish (for which there is a management strategy in place to minimise).

In 2023, 9 stationary photo points were installed intended to provide weekly data points of observations. This will complement the annual surveys that have taken place since 2019.

Flight ranges and interconnectivity

Seabirds have transited to the FPSO and WHP from seabird colonies elsewhere. The nearest landfall is Cartier Island ~80 km away where all three seabird species present at the FPSO and WHP have also been observed (Clarke and Herrod 2016). At Ashmore Island and Reef (148 km away from the FPSO and WHP) contains over 100,000 breeding seabirds across 16 species, including significant breeding populations of Brown Boobies and Brown Noddies (Clarke and Herrod 2016). Clarke and Herrod (2016) report that the Brown Booby population at Ashmore Reef has shown remarkable recovery since the days of harvesting by Indonesian fishers. Recent survey data suggests Ashmore Reef Marine Park accounts for ≥1 per cent of the global population (Cannell and Surman 2020). To the south, both Adele Island (368 km SSW) and the Lacepede Islands (554km SSW, 22,000 pairs of Brown Boobies) also contain significant breeding seabird populations.

Successful breeding at the FPSO in 2022 of Brown noddies banded there as chicks in 2020 has proven the philopatric behaviour of the species and that the artificial habitat is able to sustain a population across life history stages of the species. A tagging study from the Lacepede Islands showed, that brown noddies foraging would travel up to 611 km per trip at a maximum distance from the breeding colonies of 210 km (Surman, pers comms, 2023).

Brown boobies utilise the FPSO and WHP as a roosting site predominately during the non-breeding period, as they are relatively short-range foragers when breeding (<80km) (Clarke and Herrod 2016). However, the FPSO may also be used as a roost by non-breeding or juvenile birds during the breeding season. Bridled terns (*Onychoprion anaethetus*) are likely to be passage migrants, as they pass through the area to and from their breeding sites (most coastal islands between the Montebello Islands and Cape Leeuwin) further south from overwintering areas in the Celebes Sea (Surman et al. 2018). Tracked individuals have shown that transits occur through the general area of the facilities in late August and September during their southward migration, and again in late April to May on their northward migration (Surman et al. 2018).

Table 5-8 shows expected temporal presence of Brown noddies, Brown boobies and Bridled terns at the FPSO and/or WHP (Pers. Comms. Dr. Chris Surman, 2022). Figure 5-12 shows nesting and roosting on the FPSO and Figure 5-13 shows roosting at the WHP.

Table 5-8 Presence of Brown noddies, Brown boobies and Bridled terns at the FPSO and/or WHP

Species	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Brown noddies						Peak						
Brown boobies							Peak					
Bridled terns				Peak					Peak			

Key:

	Anticipated peak period of roosting / nesting
	Presence at Montara Venture FPSO and/or WHP

Figure 5-12: Brown noddy nesting sites on the Montara Venture

A: Heat shield mesh port side, B: Banded adult on cable tray M9, C: Nest in cable tray port side M11, D: Nest in cable tray lined with rust and plastic, E: Banded bird and nest on steel beam above central walkway, F: Bird on egg in nest with sargassum and deck materials, G: Rooftop colony M13 with 33 nests, H: Two nests atop beam aft of turret, I: Four 92 obscured) nests adjacent lift point M13.

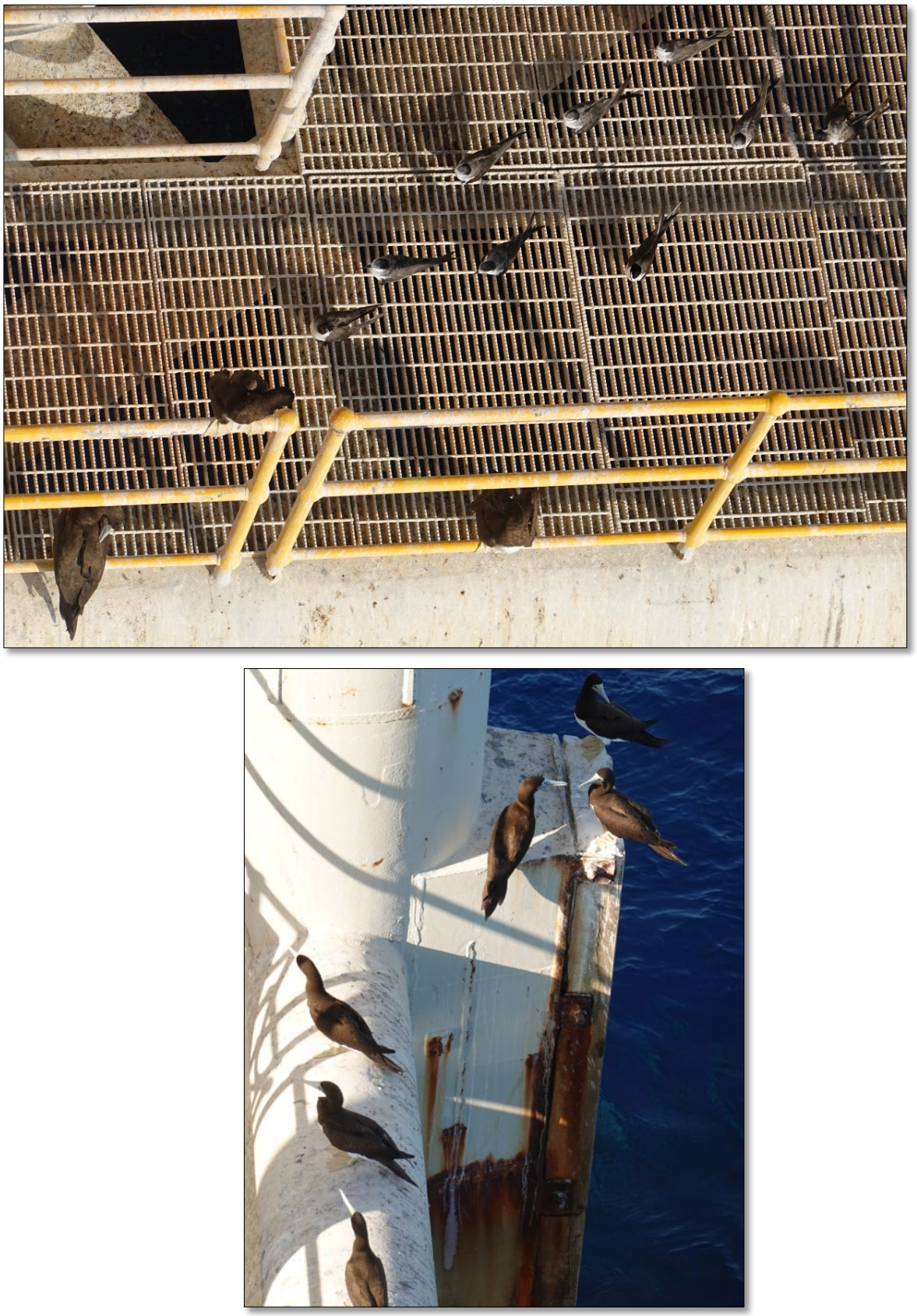


Figure 5-13: Roosting seabirds at the WHP

5.1.4.3 EPBC Listed Species in the EMBA

Christmas Island Goshawk (Endangered)

The Christmas Island goshawk is confined to the Australian territory of Christmas Island (Marchant & Higgins 1993) While the goshawk may be a generalist, capable of foraging in most available habitats, it almost certainly nests only in suitable tall trees in native rainforest (Hill 2004). The Christmas Island Goshawk is considered to be the rarest endemic bird on Christmas Island, where it occurs in all habitats from primary and marginal rainforests to suitable areas of secondary regrowth vegetation. The total population size is thought to be very small, perhaps as few as 100 adults, and is probably limited by the availability of suitable rainforest habitat.

Crazy Ants pose an unknown but potentially critical threat to the survival of this bird. The National recovery plan for the Christmas Island Goshawk (*Accipiter fasciatus natalis*) aims to downgrade the Christmas Island Goshawk from Endangered to Conservation Dependent, primarily through successful implementation of the Invasive Ants on Christmas Island Action Plan and protection of habitat critical to the survival of the species from clearance. An assessment of goshawk population dynamics is the most essential requirement of this recovery plan, and community awareness and participation in the conservation of this endemic raptor are also important actions.

Christmas Island Emerald Dove (Endangered)

The Christmas Island emerald dove is endemic to Christmas Island where it is widespread and common in areas of rainforest (James & Retallick, 2007). There is a single population, restricted to Christmas Island and no reliable estimates of population size. The population was estimated to contain 5000 breeding birds and be declining in 2000 (Garnett & Crowley, 2000). The Christmas Island emerald dove occurs in most forested habitats. It is most common in tall closed evergreen rainforest and open semi-deciduous rainforest, especially on the terraces that surround the central plateau of the island.

Greater Sand Plover (Vulnerable, Migratory)

The greater sand plover (Mongolian) are cogeners that breed in China, Mongolia and Russia. The greater sand plover spends the non-breeding season along coasts from Japan through southeast Asia to Australasia (Banford et al. 2008). Non-breeding birds occur along all Australian coasts, especially in the north for the greater sand plover (DoE 2014b).
Non-breeding birds forage on beaches, saltmarshes, coastal bays and estuaries, and feed on marine invertebrates including molluscs, worms, crustaceans and insects (Marchant & Higgins 1993 in Garnet et al. 2011).

Red Goshawk (Endangered)

Red goshawks are currently known to breed from the Kimberley, east to Cape York Peninsula, and on the Tiwi Islands (MacColl et al. 2021). They may still breed at very low densities in the Wet Tropics and Einasleigh Uplands though record data are scarce (MacColl et al. 2021). The species inhabits coastal and sub-coastal tall open forests and woodlands, tropical savannas traversed by wooded or forested rivers, and the edges of rainforests (Marchant & Higgins 1993).

Gouldian Finch (Endangered)

Sparsely distributed across northern Australia between the Kimberley and north-central Queensland, the Gouldian finch was historically observed in flocks of thousands, its total population is now estimated at less than 2500. It is vividly multi-coloured and seen singly or in flocks of up to a couple of hundred. It inhabits open woodlands that are dominated by Eucalyptus trees and support a ground cover of Sorghum and other grasses. The critical components of suitable core habitat for the Gouldian finch appear to be the presence of favoured annual and perennial grasses (especially Sorghum), a nearby source of surface water and, in the breeding season, unburnt hollow-bearing Eucalyptus trees.

Grey Falcon (Vulnerable)

The Grey Falcon occurs at low densities across inland Australia (BirdLife International 2019).

The species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses (Garnett et al. 2011; Watson 2011; Schoenjahn 2013, 2018; Janse et al. 2015; Ley and Tynan 2016). The species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter (Olsen and Olsen 1986; Schoenjahn 2018).

Crested Shrike-tit (Vulnerable)

The species is endemic to north-west Australia in the Kimberley region of Western Australia and in the north of the Northern Territory (Higgins & Peter 2002). It is thought to forage for invertebrates, mostly in foliage, branches, and the trunk and bark across a range of eucalypt and other tree species, this is quite different to the south-eastern subspecies, which forages under decorticating bark of eucalypt trees (Higgins & Peter 2002).

Christmas Island Frigatebird (Endangered, Migratory)

The Christmas Island frigatebird is a very large seabird. Breeding colonies of the Christmas Island frigatebird is currently confined to Christmas Island in the Indian Ocean (Birdlife International 2019) but forages and roosts widely in south-east Asia and Indian Ocean No breeding colonies have ever been found away from Christmas Island. The Christmas Island Frigatebird predominantly nests in forests on shore terraces that are protected from prevailing south-east trade winds (TSSC 2020a). All forest containing nesting and roosting sites, including currently known nesting and roosting colonies and any other smaller groups of nests and roosts on Christmas Island is considered critical habitat (TSSC 2020a).

Western Alaskan Bar tailed Godwit (Endangered) and Northern Siberian Bar tailed Godwit (Endangered)

Two subspecies of the bar-tailed godwit exist, as determined by their breeding locations in Siberia and Alaska (Bamford et al. 2008). Non-breeding birds migrate to the coasts of Australia. The western Alaskan subspecies *Limosa lapponica baueri*) occurs especially on the north and east coasts of Australia whilst the northern Siberian subspecies (*Limosa lapponica menzbieri*) occurs especially along the coasts of north Western Australia (DoEE 2017b).

Non breeding birds are found on muddy coastlines, estuaries, inlets, man¬grove-fringed lagoons and sheltered bays, feeding on annelids, bivalves and crustaceans (Higgins and Davies 1996 in Garnet *et al.* 2011).

Christmas Island Hawk-Owl (Vulnerable)

This species is confined to Christmas Island in the Indian Ocean. Christmas Island hawk-owls live in all of the island's forest types but prefer dense rainforests on both plateau and coastal terraces (Higgins 1999).
They nest in tree hollows in closed forest 30 – 40 m high with emergent trees up to 45 m tall, predominantly with *Syzygium nervosum*, *Planchonella nitida*, and *Hernandia ovigera* as canopy trees. They mainly feed on large insects, but also on small vertebrates including black rats (*Rattus rattus*), geckos (*Lepidodactylus spp*.) and Christmas Island white-eyes (*Zosterops natalis*) (Hill 2004).

Christmas Island White-tailed Tropicbird (Endangered)

The Christmas Island white-tailed tropicbird is endemic to Christmas Island and leaves the island to forage in the warm waters of the Indian Ocean (Garnett 2011). The white-tailed tropicbird roots at sea; only incubating or brooding adults remain on nests on the island at night (Stokes 1988).

Australian Painted Snipe (Endangered)

The Australian painted snipe has been recorded at wetlands in all states of Australia (DoE 2014). The Australian painted snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps of lignum Muehlenbeckia or canegrass or sometimes tea-tree (Melaleuca). The Australian painted snipe

sometimes utilises areas that are lined with trees, or that have some scattered fallen or washed-up timber (DoE 2014).

Christmas Island Thrush (Endangered)

The Christmas Island thrush subspecies (*Turdus poliocephalus erythropleurus*) is endemic to Christmas Island. It is found in most habitats on Christmas Island, including tall closed evergreen rainforest, open semi-deciduous rainforest, secondary regrowth, thickets of weeds and semi-deciduous vines, settled areas (where it forages on lawns and nests on buildings) and on the Christmas Island golf course. It is most common in tall closed evergreen rainforest and open semi-deciduous rainforest on the coastal and higher terraces and plateau of Christmas Island. It is least common in disturbed habitats (such as regrowth and post-mining wasteland) and in suboptimal endemic vegetation such as Pandanus thickets and patches of low vegetation in coastal areas (Stokes, 1988; DNP, 2008).

Masked Owl (northern) (Vulnerable)

The distribution of the masked owl (northern) is very poorly known (Woinarski 2004). Three subpopulations have been suggested: Kimberley, Northern Territory and Cape York (Garnett et al., 2011).In northern Australia, the Masked Owl has been recorded from riparian forest, rainforest, open forest, Melaleuca swamps and the edges of mangroves, as well as along the margins of sugar cane fields (Higgins 1999; Nielsen 1996; Storr 1977, 1980).

Oriental Reed-Warbler (Migratory)

The Oriental Reed-Warbler is an Asiatic species that is a rare late Spring and Summer vagrant in Australia. It breeds mainly in reedbeds and can also be found in marshes, paddy fields, grassland and scrub where it forages for insects and other invertebrates (BirdLife Australia, 2016).

Fork-tailed Swift

In WA, there are sparsely scattered records of the fork-tailed swift along the south coast, ranging from near the Eyre Bird Observatory and west to Denmark. They are widespread in coastal and subcoastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. They are scattered along the coast from south-west Pilbara to the north and east Kimberley region, near Wyndham. There are sparsely scattered inland records, especially in the Wheatbelt, from Lake Annean and Wittenoom. They are found in the north and north-west Gascoyne Region, north through much of the Pilbara Region, and the south and east Kimberley (Higgins 1999). In the NT scattered records exist around some offshore islands, mostly south to Victoria River Downs.

Wedge-tailed Shearwater (Migratory)

The Wedge-tailed Shearwater breeds on the east and west coasts of Australia and on off-shore islands. The species is common in the Indian Ocean, the Coral Sea and the Tasman Sea. Areas where breeding within Western Australia occurs include offshore islands and Cocos-Keeling Islands (Lindsey 1986).

In 2016/17, areas of potential wedge-tailed shearwater nesting habitat were recorded on Varanus Island (5.53 ha) and Airlie Island (12.47 ha) and surrounding islands of Bridled (2.94 ha), Serrurier (130.89 ha), Abutilon (2.02 ha) and Parakeelya (1.66 ha) (Astron 2017b). The number of wedge-tailed shearwater breeding pairs was also estimated for each of Varanus (1,492 +/- 702), Airlie (600 +/- 124), Bridled (1,039 +/- 342), Serrurier (23,240 +/- 4,341), Abutilon (317 +/- 210) and Parakeelya (172 +/- 138) islands (Astron 2017b).

Red-rumped Swallow (Migratory)

The Red-rumped Swallow breeds in Europe and Asia and tropical Africa. In Australia the bird is a vagrant to Christmas Island and northern Australia during the non-breeding season. The majority of Australian records and reports of Red-rumped Swallow are from north-eastern Queensland (particularly the Mossman-Daintree River area) and around Broome and Kununurra in north-western Western Australia (Higgins et al. 2006)

Oriental Plover (Migratory)

The Oriental Plover is a non-breeding visitor to Australia, where the species occurs in both coastal and inland areas, mostly in northern Australia. Most records are along the north-western coast, between Exmouth Gulf and Derby in Western Australia, and there are records at a few scattered sites elsewhere, mainly along the northern coast, such as in the Top End, the Gulf of Carpentaria and on Cape York Peninsula. (Barrett et al. 2003; Blakers et al. 1984; Garnett 1989; Lane 1987; Marchant & Higgins 1993; Stewart et al. 2007). Internationally important marine sites close to and within EMBA include Eighty Mile Beach and Roebuck Bay, WA where there is maximum counts of approximately 57, 619 and 8,750 individuals recorded (Jaensch 1994; Lane 1987; Minton et al. 2003; Watkins 1993).

Oriental Cuckoo (Migratory)

The Oriental Cuckoo (Cuculus optatus) has a large breeding range in northern Eurasia. It breeds across much of Russia west to the Komi Republic with occasional records as far west as Saint Petersburg. It also breeds in northern Kazakhstan, Mongolia, northern China, Korea and Japan. The exact extent of its wintering range is uncertain due to its secretive habits and the difficulty of separating it from the Himalayan cuckoo and other similar species. It is believed to include the Malay Peninsula, Indonesia, the Philippines, New Guinea, western Micronesia, the Solomon Islands and northern and eastern Australia with occasional birds reaching New Zealand. There has been sightings reported in areas of Northen Australia including islands near Ashmore Reef (Birdlife Australia 2015).

It mainly inhabits forests, occurring in coniferous, deciduous and mixed forest. It feeds mainly on insects and their larvae, foraging for them in trees and bushes as well as on the ground. It is usually secretive and hard to see.

Oriental Pratincole (Migratory)

Within Australia the Oriental Pratincole is widespread in northern areas, especially along the coasts of the Pilbara Region and the Kimberley Division in Western Australia, the Top End of the Northern Territory, and parts of the Gulf of Carpentaria. It is also widespread but scattered inland, mostly north of 20° S. (Barrett et al. 2003; Blakers et al. 1984; Higgins & Davies 1996; Stewart et al. 2007)

Internationally important sites in Western Australia and maximum counts (in brackets) include Eighty Mile Beach, Western Australia (2.88 million birds) and Roebuck Plains, Western Australia, (50 000). Nationally important sites include Port Hedland Saltworks, Western Australia, (10 000) (DoE 2023b).

Barn Swallow (Migratory)

The Barn Swallow usually occurs in northern Australia, on Cocos-Keeling Island, Christmas Island (Stokes et al. 1984; Stokes 1988), Ashmore Reef (Higgins et al. 2006), and patchily along the north coast of the mainland from the Pilbara region, Western Australia, to Fraser Island in Queensland.

In Australia, the Barn Swallow is recorded in open country in coastal lowlands, often near water, towns and cities. Birds are often sighted perched on overhead wires (Pizzey 1980; Blakers et al. 1984), and also in or over freshwater wetlands, paperbark *Melaleuca* woodland, mesophyll shrub thickets and tussock grassland (Schodde & Mason 1999).

Caspian Tern (Migratory)

The Caspian Tern is found in North America, Europe, Africa, Asia, Australia and New Zealand (Higgins & Davies 1996) and it is generally found most often at large lakes and ocean coasts (Birdlife International 2010)

In WA the Caspian tern is found on most coasts, mainly islands (as far offshore as Adele, Bedout, Trimouille and the Houtman Abrolhos) and at Lake Argyle, Lake Gregory and Lake MacLeod; accidental elsewhere in the interior.

Asian Dowitcher (Vulnerable, Migratory)

The Asian dowitcher is a regular visitor to the north-west between Port Hedland and Broome. Elsewhere they are sporadic and rare. In the NT, the Asian dowitcher is found in Darwin and Arnhem Land. In WA, the species

has been recorded at Albany, Lake McLarty, Lake McLeod, north-east Pilbara and the south-west Kimberley division. It has also been recorded at the Port Hedland Saltworks, Roebuck Bay, Ashmore Reed and Eighty Mile Beach. The Australian population is approximately 500 (Bamford et al. 2008).

Grey Wagtail (Migratory)

The bird is widely distributed across the Palearctic region with several well marked populations. The grey wagtail is a scarce but regular visitor to northern mainland Australia in late October and April. It prefers habitat that includes waterfalls and fast flowing rocky waterways (Menkhorst et al. 2019)

Yellow Wagtail (Migratory)

Yellow Wagtails (Motacilla flava) has an extremely large range, extending from Europe, east through Siberia to west Asia and northwestern China; and south through the Arabian Peninsula to Egypt. They have been sighted at Cocos Keeling Islands, Christmas Island, Ashmore Reef and northern Australia (Birdlife Australia 2015).

Bridled Tern (Migratory)

In Australia, Bridled Terns are widespread, breeding on offshore islands in western, northern and north-eastern Australia, extending from Cape Leeuwin in the south-west, around northern Australia to north-eastern and mid-eastern Queensland, extending through the Great Barrier Reef and Coral Sea as far south as Lady Elliott Island (approximately 24° S).

In Western Australia, breeding is widespread from islands off Cape Leeuwin (extending round the southern coast to Seal Rocks) north to Shark Bay and in Pilbara region and Kimberley Division. At sea, distribution extends from Cape Leeuwin north to Dirk Hartog Island, with isolated mainland coastal records at Point Maud and Ningaloo, and from Barrow Island to the Dampier Archipelago, and at sea off the Kimberley coast from waters west of the Dampier Peninsula to Ashmore Reef and Joseph Bonaparte Gulf (Barrett et al. 2003; Blakers et al. 1984; Higgins & Davies 1996; Johnstone & Storr 1998)

Red-tailed Tropicbird (Migratory)

The Red-tailed Tropicbird breeds in tropical and subtropical areas of the Indian and Pacific ocean (Schreiber and Schreiber 2020). It typically breeds on islands, but can also be found on the south-west coast of Australia.

This species feeds mostly on fish, especially flying-fish, large quantities of squid and occasionally crustaceans. Prey is caught by plunge-diving, but flying-fish can be taken in flight. Breeding occurs seasonally in loose colonies on small, remote oceanic islands mostly on inaccessible cliffs. No regular migrations are known; adults can be found in the vicinity of colonies all year round (del Hoyo et al. 1992).

Roseate Tern (Migratory)

The Roseate tern occurs in both coastal and marine subtropical/tropical areas. The species inhabits rocky and sandy beaches, coral reefs, sand cays and offshore islands (DAWE 2021). In Western Australia, the Roseate terns are regularly recorded north from Mandurah to Eighty Mile Beach, in the Pilbara Region (DAWE 2021). Around the Kimberley coastline, the species occurs at scattered sites, north to the Bonaparte Archipelago and potentially further (DAWE 2021). The movements of the Roseate tern are poorly known. Breeding in Western Australia occurs in two quite distinct periods, with peak months for laying April to November. At some sites including the Montebello Islands breeding occurs during both late spring-summer and late autumn-winter (DAWE 2021).

Little Tern (Migratory)

The species is widespread in Australia, with breeding sites widely distributed from north-western Western Australia, around the northern and eastern Australian coasts to south-eastern Australia. In a summary of known Australian breeding sites, Garnett and Crowley (2000) indicate: several colonies exist in Western Australia and at least 37 colonies in the Northern Territory (possibly as many as 62+). In Australia, Little Terns inhabit sheltered coastal environments, including lagoons, estuaries, river mouths and deltas, lakes,

bays, harbours and inlets, especially those with exposed sandbanks or sand-spits, and also on exposed ocean beaches.

Masked Booby (Migratory)

In Australia, the Masked Booby ranges from the Dampier Archipelago in Western Australia (WA), along the entire north coast and east coast to Brisbane. Individuals have also been recorded in Newcastle (NSW), the NSW north coast and Barrow Island (WA). Few records have been made in the Northern Territory (Marchant & Higgins 1990). Individuals regularly occur on islands off Australia, including Lord Howe, Norfolk, Kermadec and the Cocos-Keeling Islands (Marchant & Higgins 1990)
In Western Australia there is said to be breeding pairs (maximum in brackets) on Bedout Island (400), Adele Island (320) and the Ashmore Reef Group (1-2) (Burbidge & Fuller 1996; Marchant & Higgins 1990).

Brown Booby (Migratory)

The Brown booby occurs in, but is not restricted to, tropical waters of all major oceans. They often stay close to their breeding islands. The species is also known to be present along coastal waters, harbours and estuaries; however, they seldom fly over land. The Brown booby generally feeds in inshore water, in both shallow and deep waters (DoEE 2019). The Brown booby nests on rugged rocky terrain such as cliffs and steep slopes, on larger islands, beaches, coral rubble and guano flats on cays (DoEE 2019). The species is known to be resident and partly nomadic (i.e. birds dispersing widely between breeding seasons). Breeding occurs on Ashmore Reef, Adele Island, White Island, Lacepede Islands and Bedout Island.

Red Footed Booby (Migratory)

The Red-footed Booby is essentially confined to tropical waters between 30° N and 30° S in the Atlantic, Indian and Pacific Oceans. The species is found world-wide, though is considered a vagrant to the west African coast. Distribution may be determined by the presence of important prey, especially flying fish, and vegetated islands for nesting (Marchant & Higgins 1990).
In Western Australia at least 14 pairs have been recorded breeding on Adele Island (Coate 1997) and breeding has also been recorded on Ashmore Reef (Burbidge & Fuller 1996).

Greater Crested Tern (Migratory)

The species can be found on islands and coastlines of tropical and subtropical areas, ranging from the Atlantic Coast of South Africa, south around the Cape and continuing along the coast of Africa and Asia almost without break to south-east Asia and Australia. About 1500 pairs of Crested Terns nest on small offshore islands and salt lake islets in the Fremantle area.

5.1.5 Threatened Ecological Communities

There are no Threatened Ecological Communities within the Operational area and EMBA. The closest is the Monsoon Vine Thicket on the Coastal Sand Dunes of Dampier Peninsula, and is 432km from Montara Operations. (**Figure 5-14**).

Monsoon vine thicket occurs as semi-deciduous and evergreen vine thicket communities of coastal Holocene sand dunes on the Dampier Peninsula in the Kimberley Region, covering an area of ~2,500 ha from Broome in the south to One Arm Point in the north, and on the northeastern coast of the Peninsula from One Arm Point to Goodenough Bay (DSEWPaC 2013). The community is predominantly restricted to the leeward slopes and swales of coastal sand dunes but occasionally found on dune crests and other coastal landforms such as beaches, sand-spit hedlands and storm ridges with intertidal flats (Black et al. 2010).

It represents the most southern occurrences of rainforest type vegetation in WA. The most common canopy forming species are *Bauhinia cunninghammi* (jigal, joomoo), *Celtis philippensis* (goolnji), *Diospyros humilis* (ebony wood), *Exocarpos latifolius* (jarnba, mistletoe tree), *Grewia breviflora* (goolmi, currant/coffee fruit), *Mallotus nesophilus* (yellow ball flower), *Mimusops elengi* (joongoon, mamajen),

Sersalisia sericea (mangarr), *Terminalia ferdinandiana* (gabiny, gubinge, kabiny) and *Terminalia petiolaris* (blackberry tree, marool, narwulu) (DESWPaC 2013).

The extent of the ecological community corresponds to the traditional lands of the Bardi Jawi, Djabera Djabera, Goolarabaloo, Jabirr Jabirr, Nyul Nyul and Yawuru Indigenous people and is of cultural significance. It is listed as Endangered under the EPBC Act (Government of Western Australia 2010; DoEE 2016b) and described in the Approved Conservation Advice for the monsoon vine thickets on the coastal sand dunes of Dampier Peninsula (DSEWPaC 2013). This community is also subject to the Threat abatement plan for disease in natural ecosystems caused by *Phytophthora uspidate* (DoE 2014c).

5.1.6 Listed Marine Species

A total of 62 Listed Marine Species are either likely to, or may, occur within the Operational Area, including 13 bird species and 19 reptile species. Twelve of these species are also Listed Threatened Species. These are described in more detail in earlier sections.

5.1.7 Whales and other cetaceans

The Protected Matters search determined that 23 cetacean species or their habitat, may occur within the Operations Area. These are described in more detail in earlier sections.

5.1.8 Recovery Plans

Recovery plans set out a series of management actions and any essential research required to prevent the decline of listed Threatened species and support their recovery. **Table 5-9** summarises the actions relevant to the activity, with more information about the requirements of the relevant plans of management (including recovery plans, conservation advice and wildlife conservation plans for marine fauna), and demonstrates where the EP considers those management requirements.

Table 5-9: Relevant recovery plans, conservation advice and wildlife conservation plans relevant to the activity

Receptor	Species	Recovery plan/conservation advice/wildlife conservation plan	Threats/strategies identified as relevant to the activity
All	All vertebrate fauna	Threat Abatement Plan for Impacts of Marine Debris on Vertebrate wildlife of Australia's coasts and oceans (2018)	Marine debris
Fish and Sharks	All sawfish and river sharks	Sawfish and River Sharks Multispecies Recovery Plan (2015b)	Habitat degradation or modification
			Marine debris
	Dwarf sawfish	Approved Conservation Advice for *Pristis clavata* (Dwarf Sawfish) (2009)	Habitat degradation and modification
	Green sawfish	Approved Conservation Advice for Green Sawfish (2008)	Habitat degradation and modification
	Freshwater sawfish	Approved Conservation Advice for *Pristis pristis* (largetooth sawfish) (2014)	Habitat degradation and modification
			Marine debris
	Northern river shark	Approved Conservation Advice for *Glyphis garricki* (northern river shark) (2014)	Habitat degradation and modification
	Great white shark	Recovery Plan for the White Shark (*Carcharodon carcharias*) (2013)	Ecosystem effects as a result of habitat modification and climate change

Receptor	Species	Recovery plan/conservation advice/wildlife conservation plan	Threats/strategies identified as relevant to the activity
	Speartooth shark	Approved Conservation Advice for *Glyphis glyphis* (speartooth shark) (2015)	Habitat degradation and modification
	Whale shark	Approved Conservation Advice for *Rhincodon typus* (whale shark) (2015)	Vessel disturbance
			Habitat degradation or modification
			Climate change
			Marine debris
Mammals	Blue whale (includes pygmy blue whale)	Conservation Management Plan for the Blue Whale 2015–2025 (2015)	Noise interference
			Climate variability and change
			Vessel disturbance
	Fin whale	Approved Conservation Advice for *Balaenoptera physalus* (fin whale) (2015)	Pollution (persistent toxic pollutants)
			Climate and oceanographic variability and change
			Anthropogenic noise and acoustic disturbance
			Vessel disturbance
	Sei whale	Approved Conservation Advice for *Balaenoptera borealis* (sei whale) (2015)	Pollution (persistent toxic pollutants)
			Climate and oceanographic variability and change
			Vessel strike
			Anthropogenic noise and acoustic disturbance
Reptiles	All marine turtles	National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (2020)	Light pollution
			Climate change and variability
		Recovery Plan for Marine Turtles in Australia 2017–2027 (2017)	Marine debris
			Chemical and terrestrial discharge
			Climate change and variability
			Light pollution
			Vessel disturbance
	Leatherback turtle	Commonwealth Conservation Advice on *Dermochelys coriacea* (2008)	Vessel disturbance
			Marine debris
			Climate change
	Leaf-scaled seasnake	Approved Conservation Advice on *Aipysurus foliosquama* (Leaf-scaled seasnake) (2011)	Degradation of reef habitat, primarily as a result of coral bleaching (primary threat)

Receptor	Species	Recovery plan/conservation advice/wildlife conservation plan	Threats/strategies identified as relevant to the activity
Birds	All seabirds and shorebirds	National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (2020)	Light pollution
			Climate change and variability
	Seabirds	Wildlife Conservation Plan for Seabirds (2020)	Habitat loss or modification
			Anthropogenic disturbance
			Climate change
			Invasive species
			Pollution (marine debris, light, water)
	Migratory shorebirds	Wildlife Conservation Plan for Migratory Shorebirds (2015)	Habitat loss and degradation
			Anthropogenic disturbance
			Climate change and variability
	Curlew sandpiper	Approved Conservation Advice for *Calidris ferruginea* (Curlew Sandpiper) (2015)	Habitat degradation or modification (oil pollution)
	Eastern curlew	Approved Conservation Advice for *Numenius madagascariensis* (Eastern Curlew) (2015)	Habitat loss, disturbance and modification
	Red knot	Approved Conservation Advice for *Calidris canutus* (Red knot) (2024)	Habitat degradation or modification
			Climate change
	Northern Siberian bar-tailed godwit	Conservation Advice *Limosa lapponica menzbieri* (Bar-tailed godwit (northern Siberian)) (2024)	Habitat degradation or modification
	Western Alaskan Bar-tailed Godwit	Conservation Advice Limosa lapponica baueri Bar-tailed godwit (western Alaskan) (2024)	Habitat degradation or modification
	Abbott's booby	Conservation Advice for the Abbott's Booby *Papasula abbotti* (2020)	Habitat degradation or modification
			Climate change – severe storm events and prey depletion
	Christmas Island frigatebird	Conservation Advice for the Christmas Island Frigatebird *Fregata andrewsi* (2020) National recovery plan for the Christmas Island Frigatebird (Fregata andrewsi) (2004)	Habitat degradation or modification
	Christmas Island Goshawk	Conservation *advice Accipiter hiogaster natalis* Christmas Island Goshawk (2016) National Recovery Plan for Christmas Island Goshawk *Accipiter fasciatus natali* (2004)	Habitat degradation or modification
	Christmas Island emerald dove	Conservation advice *Chalcophaps indica natalis* Christmas Island emerald dove	Habitat degradation or modification
	Australian\lesser noddy	Conservation Advice for *Anous tenuirostris melanops* (Australian lesser noddy) (2015)	Habitat degradation or modification

Receptor	Species	Recovery plan/conservation advice/wildlife conservation plan	Threats/strategies identified as relevant to the activity
	Christmas Island white-tailed tropicbird	Conservation Advice for *Phaethon lepturus fulvus* (white-tailed tropicbird) (2014)	Habitat degradation or modification
	Australian painted snipe	Approved Conservation Advice for *Rostratula australis* (2013) National Recovery Plan for the Australian Painted Snipe (*Rostratula australis*) (2022)	Habitat degradation or modification Climate change
	Grey Falcon (*Falco hypoleucos*)	Conservation Advice *Falco hypoleucos* Grey Falcon (2020)	Climate change Habitat loss
	Crested Shrike-tit (northern) (*Falcunculus frontatus whitei*)	Conservation Advice *Falcunculus frontatus whitei* crested shrike-tit (northern) (2016)	Habitat degradation or modification Climate change (fires)
	Greater sand plover	Conservation Advice Charadrius *leschenaultii* Greater sand plover (2023)	Habitat degradation or modification
	Red goshawk	Conservation Advice for *Erythrotriorchis radiatus* (red goshawk) (2023) National recovery plan for the red goshawk *Erythrotriorchis radiatus* (2012)	Habitat degradation or modification Climate change
	Gouldian Finch	Conservation Advice *Erythrura gouldiae* Gouldian finch (2016) National Recovery Plan for the Gouldian Finch (*Erythrura gouldiae*) (2006)	Climate change (fire)
	Christmas Island Thrush (*Turdus poliocephalus erythropleurus)*	Approved Conservation Advice for *Turdus poliocephalus erythropleurus* (Christmas Island thrush) (2014)	none
	Masked Owl (northern) (*Tyto novaehollandiae kimberli)*	Conservation Advice *Tyto novaehollandiae kimberli* masked owl (northern) (2015)	Climate change (fires)
	Sharp-tailed Sandpiper (*Calidris acuminata*)	Conservation Advice *Calidris acuminata* sharp-tailed sandpiper (2024)	Chronic and acute pollution Climate change
	Asian Dowitcher (*Limnodromus semipalmatus)*	Conservation Advice *Limnodromus semipalmatus* Asian dowitcher (2024)	Chronic and acute pollution Climate change

5.2 Protected and Significant Areas

There are limited numbers of protected and significant areas located within the Operational Area.

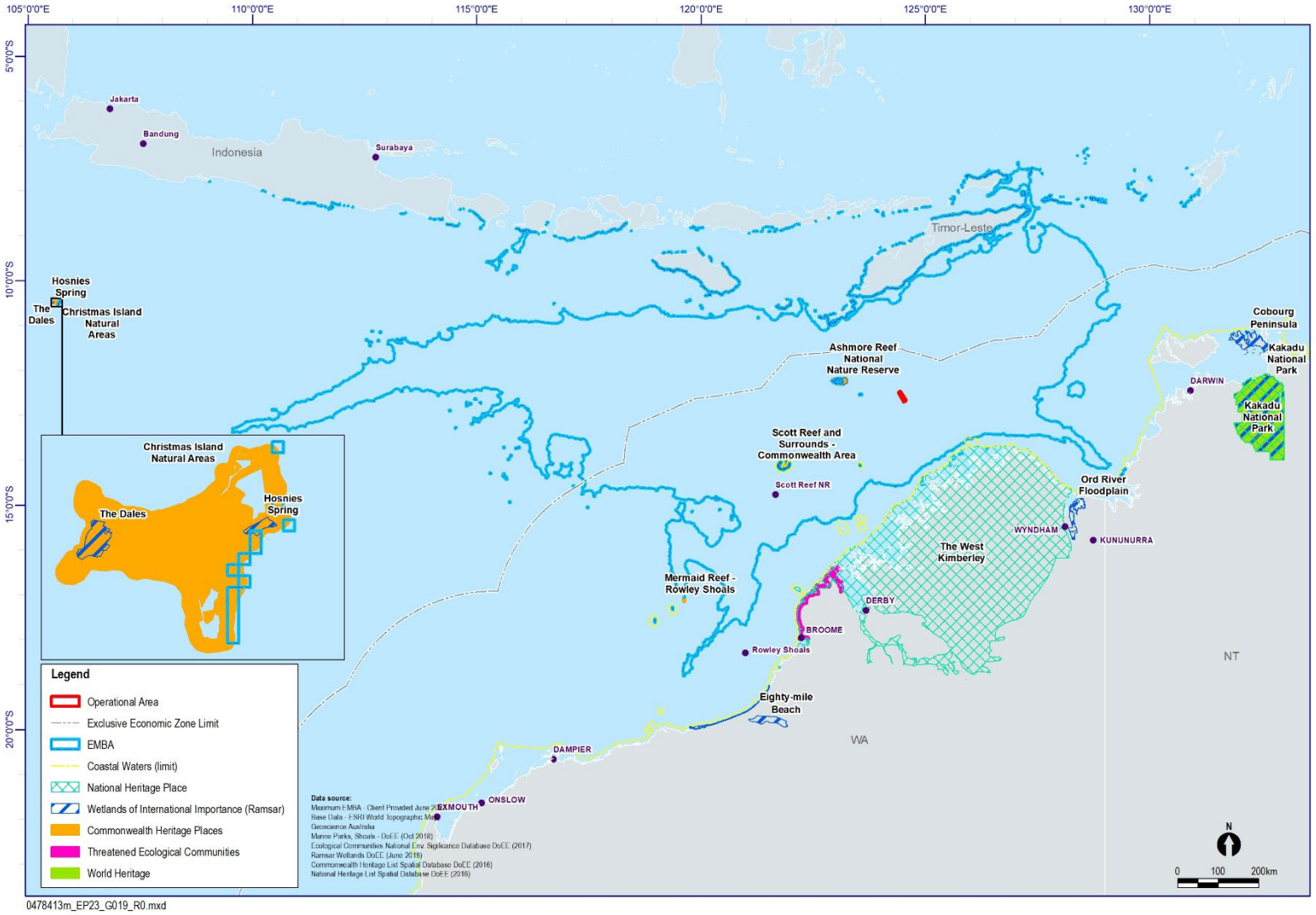


Figure 5-14: Conservation values and sensitivities in EMBA

5.2.1 World Heritage Properties

There are no World Heritage properties in the Operational Area or EMBA.

The closest World Heritage place to Montara Operational Area is Kakadu National Park at approximately 798km distance away.

Kakadu National Park

Covering almost 20,000 km^2, Kakadu National Park is located at the convergence of four distinct bioregions; the Arnhem Plateau, Arnhem Coast, Darwin Coast and Pine Creek bioregions. Kakadu includes mangrove-fringed tidal plains in the north, vast woodplains, lowlands and the sandstone cliffs of the Arnhem Land escarpment. Kakadu National Park was first inscribed on the World Heritage list in 1981 and was subsequently expanded and re-inscribed in 1987 and again in 1992. The Koongarra area was added to the World Heritage Area in June 2011. The park meets five criteria of outstanding universal values as set out in the World Heritage Convention and all nine criteria for identifying wetlands of international importance under the Ramsar Convention. Numerous migratory species that occur in Kakadu are protected under international agreements such as the Bonn convention for conserving migratory species, and Australia's migratory bird protection agreements with China (CAMBA), Japan (JAMBA) and the Republic of Korea (ROKAMBA).

5.2.2 National Heritage Places

There is one National Heritage area located within the EMBA; The West Kimberley which is located approximately 173 km away from the operational area.

The West Kimberley was included on the National Heritage List in 2011 and has numerous values which contribute to the significance of the property, including indigenous, historic, aesthetic, cultural and natural heritage values (DoE 2014d). Of these values, the most relevant to the marine environment is Roebuck Bay as a migratory hub for shorebirds. The area is characterised by a diversity of landscapes and biological richness found in its cliffs, headlands, sandy beaches, rivers, waterfalls and islands.

The next closest National Heritage places are provided in **Table 5-10**.

Table 5-10: National Heritage Place Distances

National Heritage Place	**Straight-line distance from Montara**
The West Kimberley	173 km
Kakadu National Park	798 km
Dampier Archipelago (including the Burrup Peninsula)	1,181 km

5.2.3 Wetlands of International Importance (RAMSAR)

There are 3 "wetlands of international importance" under the Convention on Wetlands of International Importance (Ramsar Convention), referred to henceforth as Ramsar wetlands, within the EMBAs (**Figure 5-14**). The particular values for those sites that could be affected by marine impacts are outlined in **Table 5-12**.

Table 5-11: Wetlands of International Importance and their proximity to Montara operations

Wetland of International Importance (RAMSAR)	**Straight-line distance from Montara**
Ashmore Reef National Nature Reserve	125 km
Hosnies Spring	2,078 km
The Dales	2,093 km

There are a number of key management principles applicable to Ramsar wetlands. Contracting parties of the Ramsar Convention are expected to manage their Ramsar Sites so as to maintain their ecological character and retain their essential functions and values for future generations. Preventing, stopping and reversing the loss and degradation is one of the priority areas of focus for the Ramsar Convention over 2016–2025.

The most significant threats to the ecological character of these sites are identified to be from seismic surveys, drilling activities, oil spills, mineral resource recovery and exploration. However, the majority of these impacts are recognised to be localised and short-term, and would therefore only be relevant if development occurs in close proximity to the reserve.

Management goals include protecting the reserves from extractive commercial activity and minimising potential impact on the natural features of the reserve from exploration and extraction activities in the region. Relevant management strategies include prohibition of mining operations (including mineral and petroleum exploration and development) within the reserve and continuing to liaise with relevant departments and agencies in relation to proposals for exploration and extraction in the vicinity of the reserve.

Table 5-12: Description of Ramsar Wetlands of International Importance within the EMBAs

Ramsar Wetland	Ecological Characteristics	Relevant Management Documents
Ashmore Reef Marine Park Ramsar site	- All wetland types present are in near natural condition - Supports 64 internationally and nationally threatened species - Supports 47 waterbird species listed as migratory under international treaties, plus breeding of 20 waterbird species - Important feeding site for 3 turtle species and critical nesting and inter-nesting habitats for 2 turtle species - Regularly supports more than 20,000 waterbirds and has been known to support more than 65,000 waterbirds - Regularly supports > 1% of at least 6 species of waterbird	Environment Australia (2002) DoNP (2018a) Hale and Butcher (2013)
The Dales	- Located on Christmas Island the Dales Ramsar site is located within the Christmas Island National Park, with the western boundary of the site extending to 50 m seaward from the low water mark (including a narrow, shallow reef) - System of seven watercourses that contain a number of wetland types - Exhibits unusual water-related limestone deposition features, including a 'flowstone' formation that is usually found underground - supports a wide diversity of endemic and threatened species (Director of National Parks 2014) - Migrating red crabs pass through the area on their annual breeding - Provides critical habitat for blue crabs that are dependent upon the freshwater streams for their reproductive cycle - Supports endemic fauna species including the Abbott's booby, blue crabs and forest birds (Director of National Parks 2014)	Director of National Parks (2014) Director of National Parks (2002) DoEE (2019)
Hosnies Spring	- Located on Christmas Island within the Christtmas Island National Park - small area of shallow freshwater streams and seepages, 20–45 metres above sea-level on the shore terrace of the east coast of the island covering an area of approximately 199 ha - site includes surrounding terrestrial areas with rainforest grading to coastal scrub and includes an area of shoreline and coral reef - unique wetland of Christmas Island with the mangrove forest present at the site unique within the bioregion and possibly worldwide - two species of mangroves that make up the stand, which normally grow intertidally, grow to a height of 24–37 m above sea level that have been estimated to have persisted for 120,000 years - the site is important to blue crabs which rely on the freshwater provided by the spring and as a likely migratory route for the endemic red crab during breeding migrations	Director of National Parks (2002) DoEE (2019

5.2.4 Commonwealth Marine Areas

The EMBA is located within the EEZ and Territorial Sea and the Extended Continental Shelf Commonwealth Marine Areas. The Commonwealth marine area is any part of the sea, including the waters, seabed, and airspace, within Australia's exclusive economic zone and/or over the continental shelf of Australia, that is not State or Northern Territory waters. Commonwealth marine areas are matters of national environmental significance under the EPBC Act.

An action is likely to have a significant impact on the environment in a Commonwealth marine area if there is a real chance or possibility that the action will:

- Result in a known or potential pest species becoming established in the Commonwealth marine area;
- Modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in a Commonwealth marine area results;
- Have a substantial adverse effect on a population of a marine species or cetacean including its life cycle (for example, breeding, feeding, migration behaviour, life expectancy) and spatial distribution;
- Result in a substantial change in air quality or water quality (including temperature) which may adversely impact on biodiversity, ecological integrity; social amenity or human health;
- Result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment such that biodiversity, ecological integrity, social amenity or human health may be adversely affected; or
- Have a substantial adverse impact on heritage values of the Commonwealth marine area, including damage or destruction of an historic shipwreck.

5.2.5 Commonwealth Heritage Places

Three natural Commonwealth Heritage Places are found in the EMBAs (Table 5-13). These locations are Marine Parks and their associated values are discussed in **Section 5.2.7**. Mermaid Reef- Rowley Shoals is located just outside the EMBA and included for close proximity.

Table 5-13: Commonwealth Heritage Place distance

Commonwealth Heritage Place	Straight-line distance from Montara
Ashmore Reef National Nature Reserve	125 km
Scott Reef and Surrounds – Commonwealth Area	321 km
Christmas Island Natural Areas	2,077 km
Mermaid Reef – Rowley Shoals (Note: Located just outside EMBA)	712 km

5.2.6 Key Ecological Features

The KEFs that intersect the EMBAs are described in **Table 5-14** and their location is shown in Figure 5-15.

Table 5-14: Descriptions of Key Ecological Features within the EMBA

Key Ecological Feature	Straight-line distance from Montara	Description and Values
Carbonate Bank and Terrace System of the Sahul Shelf	46 km	- Regionally important because of its likely ecological role in enhancing biodiversity and local productivity relative to its surrounds - Forms a unique seafloor feature, with banks that rise to at least 45 m, and to within 30 m water depth, allow light dependent organisms to thrive and support more biodiversity (Nichol et al. 2013; NERP 2014) - Supports a high diversity of organisms including reef fish, sponges, soft and hard corals, gorgonians, bryozoans, ascidians and other sessile filter feeders - The banks are known to be foraging areas for loggerhead, olive ridley and flatback turtles - Cetaceans and green and largetooth sawfish are likely to occur in the area
Ancient Coastline at 125 m Depth Contour	57 km	- A unique seafloor feature with ecological properties of regional significance - Migratory pelagic species (e.g. humpback whales and whale sharks) may use this escarpment as a guide - The topographic complexity of escarpments associated with this feature may facilitate vertical mixing of the water column, providing nutrient-rich environments -A recent study by Wakeford et al 2023 reported that the distinct ancient coastline is now largely buried and as such does not provide a unique hard substrate. The study reported that 98% of the seabed surveyed was comprised of unconsolidated soft sediment habitat (mud/sand/silt) supporting negligible epibenthic biota.
Continental Slope Demersal Fish Communities	82 km	- Valued for its high degree of endemism as the diversity of demersal fish assemblages is high compared to elsewhere along the continental slope
Ashmore Reef and Cartier Island and Surrounding Commonwealth Waters	84 km	- Regionally important for feeding and breeding aggregations of birds and other marine life - Areas of enhanced primary productivity in an otherwise low-nutrient environment - Ashmore Reef supports the highest number of coral species of any reef off the WA coast

Key Ecological Feature	Straight-line distance from Montara	Description and Values
Seringapatam Reef and Commonwealth Waters in the Scott Reef Complex	279 km	- Coral communities occur across shallow (<30 m) and deep (>30 m) habitats - 306 hard coral species from 60 genera and 14 families having been identified; all were predominantly widespread Indo–Pacific species (Gilmour et al. 2009) - Coral species diversity comparable to other reefs in the region, such as Ashmore, Seringapatam and Mermaid Reef/Rowley Shoals - Green turtle nesting at Sandy Islet (Guinea 2006) - Shallow atoll reef forms an intertidal platform at low tide High primary productivity relative to other parts of the region and coral communities are largely self-seeded and rely on the reproductive output of resident corals - Relatively pristine and has a high species richness, which apply to both the benthic and pelagic habitats, attracting aggregations of marine life including whale and dolphin species
Pinnacles of the Bonaparte Basin (North and North West)	284 km	- The Pinnacles rise steeply from depths of ~80 m to within 30 m of the water surface. Supported communities include sessile benthic invertebrates, including hard and soft corals, sponges, whips, fans, bryozoans and aggregations of demersal fish species such as snappers, emperors and groupers - Recognised as a unique seafloor feature and a biodiversity hotspot for sponges
Carbonate Bank and Terrace System of the Van Diemen Rise	408 km	- Unique seafloor feature with ecological properties of regional significance - While reef-forming corals are sparse throughout the region, some locally dense hard corals can be found on the banks of the Van Diemen Rise. These include near threatened, vulnerable and endangered species on the IUCN Red List. Coral communities on the Van Diemen rise are believed to be genetically distinct from those elsewhere in northern Australia. - Pelagic fish such as mackerel, red snapper and a distinct gene pool of gold band snapper are also found on the Van Diemen rise

Key Ecological Feature	Straight-line distance from Montara	Description and Values
Canyons Linking the Argo Abyssal Plain with the Scott Plateau	540 km	- Scott Plateau connects with the Argo Abyssal Plain via a series of canyons, the largest of which are the Bowers and Oates canyons (DSEWPaC 2012) - High productivity of the region is believed to be led by topographically induced water movements through the canyons and the action of internal waves in these canyons as well as around islands and reefs - The canyons are thought to be linked to small and periodic upwellings that enhance this biological productivity (DEWHA 2008) - The canyons are likely to be important features due to their historical association with sperm whale aggregations (DSEWPaC 2012). Historical records indicate that the number of sperm whales was high. Although current numbers are unknown, it is possible that they congregate around the canyon heads, encouraged by the high biological productivity, supporting stocks of their prey (DEWHA 2008) - Anecdotal evidence that the Scott Plateau may be a breeding ground for sperm and beaked whales - Likely that important demersal communities occur in the canyons, as they do in the Scott Plateau supported by the 70uspidate upwelling (DEWHA 2008)
Mermaid Reef and Commonwealth Waters Surrounding Rowley Shoals NOTE: This is just outside EMBA but included for close proximity.	700 km	- The Rowley Shoals are a group of three atoll reefs—Clerke, Imperieuse and Mermaid reefs—located ~300 km north-west of Broome - Mermaid Reef lies 29 km north of Clerke and Imperieuse reefs and is totally submerged at high tide - Regionally important in supporting high species richness, higher productivity and aggregations of marine life associated with the adjoining reefs themselves (Done et al. 1994) - Contains 214 coral species and approximately 530 species of fishes (Gilmour et al. 2007), 264 species of molluscs and 82 species of echinoderms (Done et al. 1994; Gilmour et al. 2007) - Both coral communities and fish assemblages differ from similar habitats in eastern Australia (Done et al. 1994)

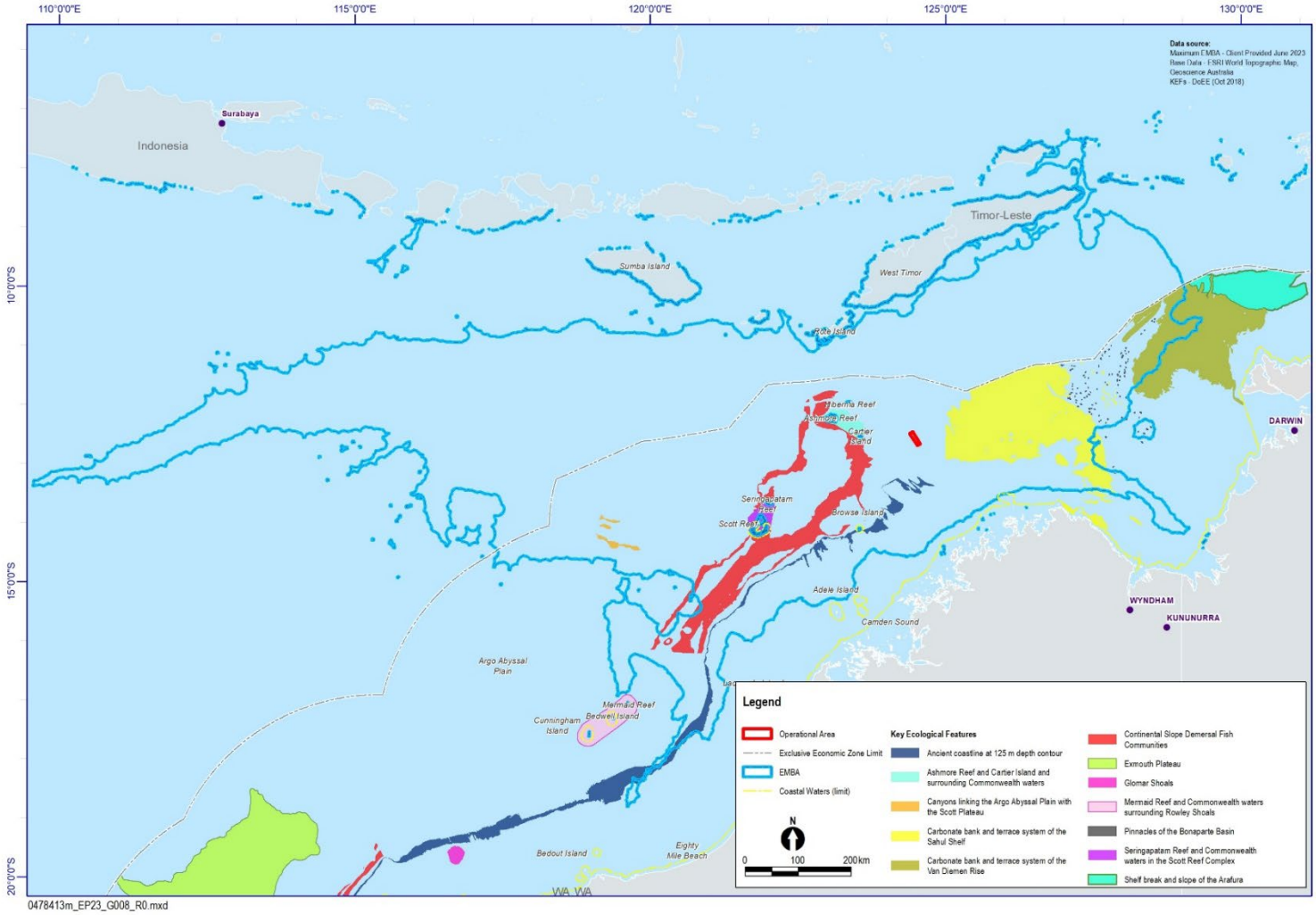


Figure 5-15: Key Ecological Features within the EMBAs

5.2.7 Australian Marine Parks

Seven Australian Marine Parks (AMPs) exist within the EMBAs (**Table 5-15** and **Figure 5-16**).

Marine parks are managed under management plans which provide the rules about what activities can and cannot occur within marine park zones. Petroleum titleholders must ensure that their offshore environment plans are consistent with the zoning and rules that apply to mining operations in marine parks, as described in the management plans. They must also ensure that impacts on the representative values of the parks will be of an acceptable level and managed to as low as reasonably practicable (ALARP) (NOPSEMA 2020). A summary of conservation values and management principles for marine parks found within the EMBAs is provided in Table 5-15**Table 5-16**. Mermaid Reef National Park, although is not within the EMBA is located just outside and is described below.

Table 5-15: Australian Marine Parks within the EMBAs

Name	Straight-line distance from Montara
Cartier Island AMP	84 km
Kimberley National Park	110 km
Ashmore Reef AMP	125 km
Oceanic Shoals AMP	162 km
Joseph Bonaparte Gulf AMP	409 km
Argo-Rowley Terrace AMP	464 km
Christmas Island (Indian Ocean Territories)	1673 km

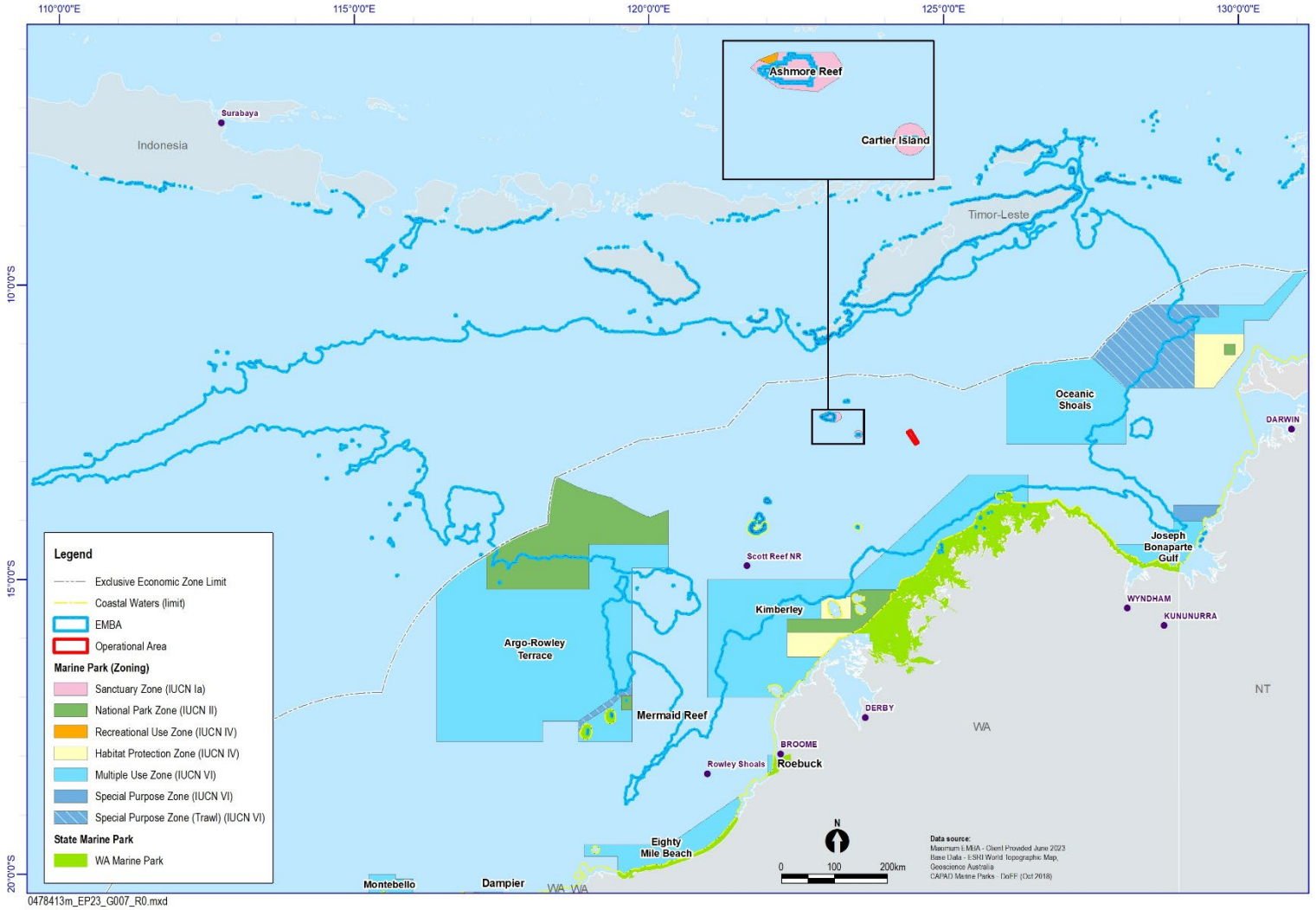


Figure 5-16: Australian and State Marine Parks

Table 5-16: Description of Australian Marine Parks within the EMBAs

Australian Marine Park	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
Ashmore Reef	- Atoll-like structure with three low vegetated islands, sandbanks, lagoon areas, and surrounding reef - largest of only three emergent oceanic reefs present in the north-eastern Indian Ocean - Only oceanic reef in the region with vegetated islands - The Ashmore Reef Ramsar site is located within the boundary of the Marine Park. The site was listed under the Ramsar Convention in 2002 (site 1220) and is a wetland of international importance under the EPBC Act - Reef covers an area of 227 km^2 - Encompasses ecosystems, habitats and communities associated with the North-West Shelf, Timor Province, and emergent oceanic reefs - World's highest recorded abundance and diversity of sea snakes (DSEWPaC 2012c) - Important biological stepping stone facilitating transport of biological material to the reef systems along the WA coast - Critical nesting and inter-nesting habitat for green turtles on all three islands (DoE 2015a) - Moderate nesting habitat for hawksbill turtles (Whiting and Guinea 2005; Guinea 2013) - Low nesting activity by loggerhead turtles (single report of nesting on West Island; Whiting and Guinea 2005) - Large and significant feeding populations of green, hawksbill and loggerhead turtles occur around the reefs - Supports a range of pelagic and benthic marine species - Seagrass supports a small dugong population of less than 50 individuals that breeds and feeds around the reef (Whiting and Guinea 2005) - Reef is highly diverse, particularly for corals and molluscs, supporting the highest number of coral species of any reef off the west Australian	Sanctuary (1a) Recreational (IV)	North-west Marine Parks Network Management Plan (DoNP 2018a) Sanctuary Zone (IUCN category Ia)—managed to conserve ecosystems, habitats and native species in as natural and undisturbed a state as possible The zone allows only scientific research and monitoring Emergency response permitted

Australian Marine Park	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
	coast (DSEWPaC 2012) - Migratory pathway for pygmy blue whales - Islands support some of the most important seabird rookeries on the North West Shelf, including colonies of bridled terns, common noddies, brown boobies, eastern reef egrets, frigatebirds, tropicbirds, red-footed boobies, roseate terns, crested terns and lesser crested terns (DoEE 2018c) - Important seabird rookery and staging/feeding areas for many migratory seabirds, including 43 species listed on one or both of the China– Australia Migratory Bird Agreement (CAMBA) and the Japan– Australia Migratory Bird Agreement (JAMBA) - Cultural and heritage sites including Indonesian artefacts and grave sites - Two KEFs: Ashmore Reef and Cartier Island and surrounding Commonwealth waters and Continental Slope Demersal Fish Communities - Subject to the Memorandum of Understanding between Australia and Indonesia (MoU Box) - Indigenous Australians: Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. At the commencement of this plan there is limited information about the cultural significance of this Marine Park - Indonesian The Marine Park contains Indonesian artefacts and grave sites and Ashmore lagoon is still accessed as a rest or staging area for traditional Indonesian fishers travelling to and from fishing grounds within the MoU Box No international or national heritage listings apply to the Marine Park at commencement of the management plan (DoNP 2018a) - Commonwealth heritage Ashmore Reef was listed on the Commonwealth Heritage List in 2004, meeting Commonwealth heritage listing criteria A, B and C Tourism, recreation and scientific research are important activities in the Marine		

Australian Marine Park	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
	Park. These activities contribute to the wellbeing of regional communities and the prosperity of the nation.		
Cartier Island	- The Marine Park includes an unvegetated sand island (Cartier Island), mature reef flat, a small, submerged pinnacle (Wave Governor Bank), and two shallow pools to the north-east of the island - Covers an area of 172 km^2 - Encompasses ecosystems, habitats and communities associated with the Timor Province (Director of National Parks 2018a) - Internationally significant for its abundance and diversity of sea snakes (DSEWPaC 2012c) - Important biological stepping stone facilitating the transport of biological material to the reef systems along the WA coast - Large and significant populations of green, hawksbill and loggerhead turtles occur around the reefs (interesting and feeding habitat), with a significant population of nesting green turtles (DSEWPaC 2012c) - Important seabird rookery and staging/feeding areas for many migratory seabirds - Supports colonies of bridled terns, common noddies, brown boobies, eastern reef egrets, frigatebirds, tropicbirds, red-footed boobies, roseate terns, crested terns and lesser crested terns (DoE 2015c) - Supports a range of pelagic and benthic marine species - High diversity and abundance of hard and soft corals, gorgonians (sea fans), sponges and a range of encrusting organisms	Sanctuary Zone (1a)	Sanctuary Zone (IUCN category Ia)—managed to conserve ecosystems, habitats and native species in as natural and undisturbed a state as possible. The zone allows only 76uspidate76 scientific research and monitoring. DoNP (2018a)

Australian Marine Park	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
	- Reef crests are generally algal dominated - Reef flats feature ridges of coral rubble and large areas of seagrass (Director of National Parks 2018a) - Foraging habitat for whale sharks - Two KEFs: Ashmore Reef and Cartier Island and surrounding Commonwealth waters and Continental Slope Demersal Fish Communities - Cultural and heritage site of the *Ann Millicent* historic shipwreck - Subject to the Memorandum of Understanding between Australia and Indonesia (MoU Box) - Sea country is valued for Indigenous cultural identity, health and wellbeing. - Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. At the commencement of the management plan (DoNP 2018 a), there is limited information about the cultural significance of this Marine Park. - Scientific research is an important activity in the Marine Park		
Oceanic Shoals	- Covers and area of 72,000 km^2 - Examples of the ecosystems of the Northwest Shelf Transition Province and the Timor Transition Province - Important 77uspidate77g area for flatback and olive ridley turtles - Important foraging area for loggerhead and olive ridley turtles (DoEE 2018c) - BIAs include foraging and 77uspidate77g habitat for marine turtles, particularly the threatened flatback turtle and olive ridley turtle - Four KEFs: carbonate bank and terrace system of the Van Diemen Rise; carbonate banks of the Joseph Bonaparte Gulf; pinnacles of the Bonaparte Basin; and shelf break and slope of the Arafura Shelf	National Park (II) Multiple Use (VI) Special Purpose [Trawl] (VI)	The objective of the National Park Zone (II) is to provide for the protection and conservation of ecosystems, habitats and native species in as natural a state as possible The objective of the Multiple Use Zone (VI) is to provide for ecologically sustainable use and the conservation of ecosystems, habitats and native species DoNP (2018a) The objective of the Special Purpose Zone (Trawl) (VI) is to provide for ecologically sustainable use and the conservation of ecosystems, habitats and native species, while applying special purpose management arrangements for specific activities.

Australian Marine Park	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
Argo-Rowley Shoals	- Covers an area of 146,099 km^2 - Important foraging areas for migratory seabirds and the endangered loggerhead turtle (DoE 2016a) - Important area for sharks, which are found in abundance around the Rowley Shoals relative to other areas in the region (DoE 2016a) - Provides protection for the communities and habitats of the deeper offshore waters of the region in depth ranges from 220 m to over 5,000 m - Provides connectivity between the existing Mermaid Reef Marine National Nature Reserve and reefs of the WA Rowley Shoals Marine Park and the deeper waters of the region - 2 KEFs: The canyons linking the Argo Abyssal Plain with the Scott Plateau and Mermaid Reef and the Commonwealth waters surrounding Rowley Shoals - Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their sea country for tens of thousands of years. At the commencement of the management plan (DoNP 2018a) there is limited information about the cultural significance of this Marine Park - Commercial fishing and mining are important activities in the Marine Park. These activities contribute to the wellbeing of regional communities and the prosperity of the nation - No international, Commonwealth or national listings apply to the Marine Park - Historic shipwrecks: The Marine Park contains two known shipwrecks listed under the *Historic Shipwrecks Act 1976*: *Alfred* (wrecked in 1908) and *Pelsart* (wrecked in 1908)	Multiple Use (VI)	Multiple Use Zone (IUCN category VI)—managed to allow ecologically sustainable use while conserving ecosystems, habitats and native species. The zone allows for a range of sustainable uses, including commercial fishing and mining where they are consistent with park value. The objective of the National Park Zone (II) is to provide for the protection and conservation of ecosystems, habitats and native species in as natural a state as possible. DoNP (2018a)
Kimberley	- Covers an area of 74,500 km^2 - The Wunambal Gaambera, Dambimangari, Bardi Jawi and the Nyul Nyul people's sea country extends into the Kimberley Marine Park and supports key cultural values and future socio-economic opportunities - Provides connectivity between deeper offshore waters, and the inshore waters of the adjacent WA North Kimberley Marine Park and Lalang-garram/Camden	Multiple Use (VI) National Park (II)	Multiple Use Zone (IUCN category VI)—managed to allow ecologically sustainable use while conserving ecosystems, habitats and native species. The zone allows for a range of sustainable uses, including commercial fishing and mining where they are consistent with park value

Australian Marine Park	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
	Sound Marine Park - Breeding and foraging habitat for seabirds - Internesting and nesting habitat for marine turtles - Breeding, calving and foraging habitat for inshore dolphins - Calving, migratory pathway and nursing habitat for humpback whales - Migratory pathway for pygmy blue whales - Foraging habitat for dugong - Foraging habitat for whale sharks - Adjacent to important foraging and pupping areas for sawfish and important nesting sites for green turtles (DoE 2016a) - 2 KEFs: the ancient coastline at the 125-m depth contour and continental slope demersal fish communities - No international, Commonwealth or national heritage listings apply to the Marine Park at commencement of the management plan (DoNP 2018a), however the Marine Park is adjacent to the national heritage place of The West Kimberley - Historic shipwrecks The Marine Park contains more than 40 known shipwrecks listed under the *Historic Shipwrecks Act 1976* - Tourism, commercial fishing, mining, recreation, including fishing, and traditional use are important activities in the Marine Park. These activities contribute to the wellbeing of regional communities and the prosperity of the nation		The objective of the National Park Zone (II) is to provide for the protection and conservation of ecosystems, habitats and native species in as natural a state as possible DoNP (2018a)
Mermaid Reef	- Covers an area of 540 km^2 - National and international significance due to its pristine character, coral formations, geomorphic features and diverse marine life - Key area for over 200 species of hard corals and 12 classes of soft corals with coral formations in pristine condition - Important areas for sharks including the grey reef shark, the whitetip reef shark and the silvertip whaler - Important foraging area for marine turtles	National Park (II)	The objective of the National Park Zone (II) is to provide for the protection and conservation of ecosystems, habitats and native species in as natural a state as possible Environment Australia (2002) DoNP (2018a)

Australian Marine Park	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
	- Important area for toothed whales, dolphins, tuna and billfish - Important resting and feeding sites for migratory seabirds		
Joseph Bonaparte Gulf	- Covers an area of 8,600 km2 - Examples of the shallow water ecosystems and communities of the Northwest Shelf Transition Province - Contains a number of prominent shallow seafloor features, including an emergent reef system, shoals and sand banks - Provides connectivity between the sea and nearshore environments, such as the Ord River floodplain, as well as the adjacent North Kimberley Marine Park - Important foraging area for threatened and migratory marine turtles (green and olive ridley) (DoNP 2018b) - Significant year-round flatback turtle nesting at Turtle Point (Chatto and Baker 2008) - Important foraging area for Australian snubfin dolphin - One KEF: Carbonate banks of the Sahul Shelf	Multiple Use (IV) Special Purpose (VI)	Multiple Use Zone (IUCN category VI)—managed to allow ecologically sustainable use while conserving ecosystems, habitats and native species. The zone allows for a range of sustainable uses, including commercial fishing and mining where they are consistent with park value The objective of the Special Purpose Zone (IUCN VI) is to protect the area with sustainable use of its natural resources and managed mainly for the sustainable use of natural ecosystems Environment Australia (2002) DoNP (2018)
Christmas Island	- An isolated oceanic island, approximately 135 km^2 in area - Rises steeply from the sea floor from depths of 5,000 m - National Park covers approximately 85 km2 (63%) of the island's land area (Director of National Parks 2014). - High level of endemism - 254 endemic species and 165 species occurring nowhere else in Australia (including 50 fish species) - Whale sharks generally migrate through the island's waters between November and April - Waters surrounding the island are critical for the survival of the island's land crabs, including tens of millions of red crabs, as they release their eggs into the sea as part of their breeding life cycle - Two marine turtles listed as vulnerable under the EPBC Act, the green and hawksbill turtles, are found in the park's waters and green turtles occasionally nest on Dolly Beach	Habitat Protection Zone (IV)	Christmas Island National Park Management Plan (2014-2024)

Australian Marine Park	Description and Key Features of Conservation Significance	IUCN Zone within EMBA	Rules/Requirements
	- One of the world's significant seabird islands - More than 100 migrant and vagrant species have been recorded, including nine resident breeding seabird species (with three of these being endemic or endemic subspecies) and 23 vagrant/non-breeding seabirds - Abbott's booby and the Christmas Island frigatebird have their only extant nesting habitat in the world on Christmas Island - Fringing coral reefs and significant geomorphological features such as the island's terraces and cave systems, including anchialine cave systems (caves containing a subterranean water body with connections to the ocean) which provide animal habitat - The Dales and Hosnies Spring Ramsar wetlands - High recreational value		

5.2.8 State and External Territory Reserves

Six State and Territory reserves are located within the EMBAs, three of which are marine or coastal and relevant to potential impact assessment (**Table 5-17** and **Figure 5-16**).

Table 5-17: Description of State and Territory Marine Parks with the EMBA

State or External Territory Marine Parks	Straight-line distance from Montara	Key Features of Conservation Significance	Rules/ Requirements
North Kimberley Marine Park (WA)	172 km	- Covers an area of ~1,845,000 ha - Comprises four separate management areas including, Uunguu, Balanggarra, Miriuwung Gajerrong and Wilinggin - Recognised for its Aboriginal cultural and heritage values - Natural values include coral reefs, marine turtle species, dugongs, seagrass and macroalgal communities, mangroves and saltmarshes, finfish, and water and sediment quality - Social values include recreation, tourism and community values) and commercial values and resource use (e.g. commercial fishing) (DpaW 2016a)	North Kimberley Marine Park Joint Management Plan 2016 Uunguu, Balanggarra, Miriuwung Gajerrong, and Wilinggin management areas (Department of Parks and Wildlife 2016)
Scott Reef Nature Reserve	314 km	Scott Reef is a large, emergent shelf atoll located on the edge of the broad continental shelf, about 300 km from mainland north-western Australia. The listing comprises the areas of Scott Reef that are within Commonwealth waters to the 50 m BSL bathymetric contour. This includes North Reef, an annular reef, 16.3 km long and 14.4 km wide; and parts of the lagoon of South Reef, a crescent shaped reef 17 km across (DoE 2014d). The place is regionally significant both because of its high representation of species not found in coastal waters off Western Australia and for the unusual nature of its fauna which has affinities with the oceanic reef habitats of the Indo-West Pacific as well as the reefs of the Indonesian region (DoE 2014d).	KEF and Commonwealth Marine
Rowley Shoals	744 km	- ~300 km north-north-west of Broome - Comprise three oceanic reef systems approximately 30–40 km apart (Mermaid Reef, Clerke Reef and Imperieuse Reef - Intertidal and subtidal coral reefs, exceptionally rich and diverse marine fauna and high water quality - Lying in the headwaters of the Leeuwin Current, the Shoals are thought to provide a source of invertebrate and fish recruits for reefs further south and as such are regionally significant	Rowley Shoals Management Plan (DEC 2007b)

5.3 Social Values

5.3.1 Commercial Fishing

The geographical extent of State and Territory fisheries were mapped to determine which licence holders were permitted to operate in the fishery. A number of Fisheries are licensed to operate within the EMBA (noting that some may not currently operate or target species may not exist within the EMBA, but state-wide licensing extends the licence area to cover the EMBA). In addition to the fisheries listed in **Table 5-18**, other fisheries in the EMBA are listed below:

Commonwealth

- Northern Prawn Fishery; and
- North-West Slope Trawl Fishery.

Western Australia

- Abalone;
- Beche de Mer;
- Broome Prawn Managed Fishery;
- Marine Aquarium Fish Managed Fishery;
- Pilbara Line;
- Pilbara Trap;
- Pilbara Trawl;
- Trochus;
- West Coast Deep Sea Crustacean.

Northern Territory

- Aquarium Fishery;
- Coastal Line Fishery;
- Demersal Fishery;
- Off-shore Net and Lines Fisheries;
- Spanish Mackerel Fishery; and
- Timor Reef Fishery.

A number of fisheries are permitted to operate in the Operational Area but it is either not an appropriate area for the collection method/ gear or habitat for the species targeted. **Table 5-18** identifies the relevant Commonwealth, State and Territory fisheries that overlap the Operational Area (**Figure 5-17** and **Figure 5-18**).

Table 5-18: State and Commonwealth commercial fisheries within the Operational Area

Value/Sensitivity	Description
Commonwealth Managed Fisheries	
Western Tuna and Billfish Fishery	• Extends westward from Cape York Peninsula (142°30' E) off Queensland to 34° S off the WA west coast. It also extends eastward from 34° S off the west coast of WA across the Great Australian Bight to 141° E at the South Australian–Victorian border. • The Western Tuna and Billfish Fishery targets bigeye tuna (*Thunnus obesus*), yellowfin tuna (*Thunnus albacares*), broadbill swordfish (*Xiphias gladius*) and striped marlin (*Tetrapturus audax*). • Since 2005, there has been fewer than five vessels active in the Western Tuna and Billfish Fishery each year, down from 50 active vessels in 2000 (ABARES Fishery Status Reports, 2022). • The fishery targets areas of reef which are present within the EMBA. Research into catch and effort data has confirmed that no fishing effort has occurred in the Operational Area in recent years.
Southern Bluefin Tuna	No fishing within Operational Area but spawning grounds/migration route of Southern Bluefin Tuna overlaps with Operational Area.
Western Skipjack Tuna Fishery	Not currently operational. There has been no fishing effort in the Skipjack Tuna Fishery since the 2009 season, and in that season, activity concentrated off South Australia (ABARES Fishery Status Report, 2022).
State and Territory Managed Fisheries	
Mackerel Managed Fishery (WA)	• Near-surface trolling gear from vessels in coastal areas around reefs, shoals and headlands. • Targets a range of tropical and temperate pelagic species, including Spanish mackerel (*Scomberomorus commerson*) and grey mackerel (*Scomberomorus semifasciatus*). • According to the FishCube data for 2017-2022 (DPIRD, 2022), the data indicates that the fishery has been active with less than three vessels active within the Operational Area, therefore no catch effort recorded.
Northern Demersal Scalefish Managed Fishery (WA)	• Since 2002 a trap based fishery. • The NDSMF principally targets the higher-value species such as the goldband snapper and red emperor resulting in an economic value of $5-10 million. • High local social amenity value and a key target of charter operations. Isolated geographic location limits interaction and no disruption to fishing activities would be expected. • According to the FishCube Data for 2017-2021 (DPIRD, 2022), the data indicates that the fishery had catch effort recorded and a vessel count of between 3-6 vessels within the Operational Area.
Northern Shark Fishery (NSF) Joint Managed Fishery Area (JMFA) Fletcher *et al.* (2017)	• Comprises the State-managed WA North Coast Shark Fishery in the Pilbara and western Kimberley, and the Joint Authority Northern Shark Fishery in the eastern Kimberley • Extends from 123°45' E (Koolan Island) to the WA/NT border • No activity has been recorded in this fishery since 2009
Pearl Oyster (WA)	Licenced but water depth at Operational Area too deep for collection method

Kimberley Prawn (WA)	Licenced but habitat and water depth unsuitable.
Kimberley Crab Managed Fishery (WA)	Area of the fishery that overlaps the Operational Area is closed and habitat and water depth unsuitable.
Specimen Shell (WA)	Licenced but water depth at Operational Area too deep for collection method unless ROV used (given remoteness of site this is unlikely).

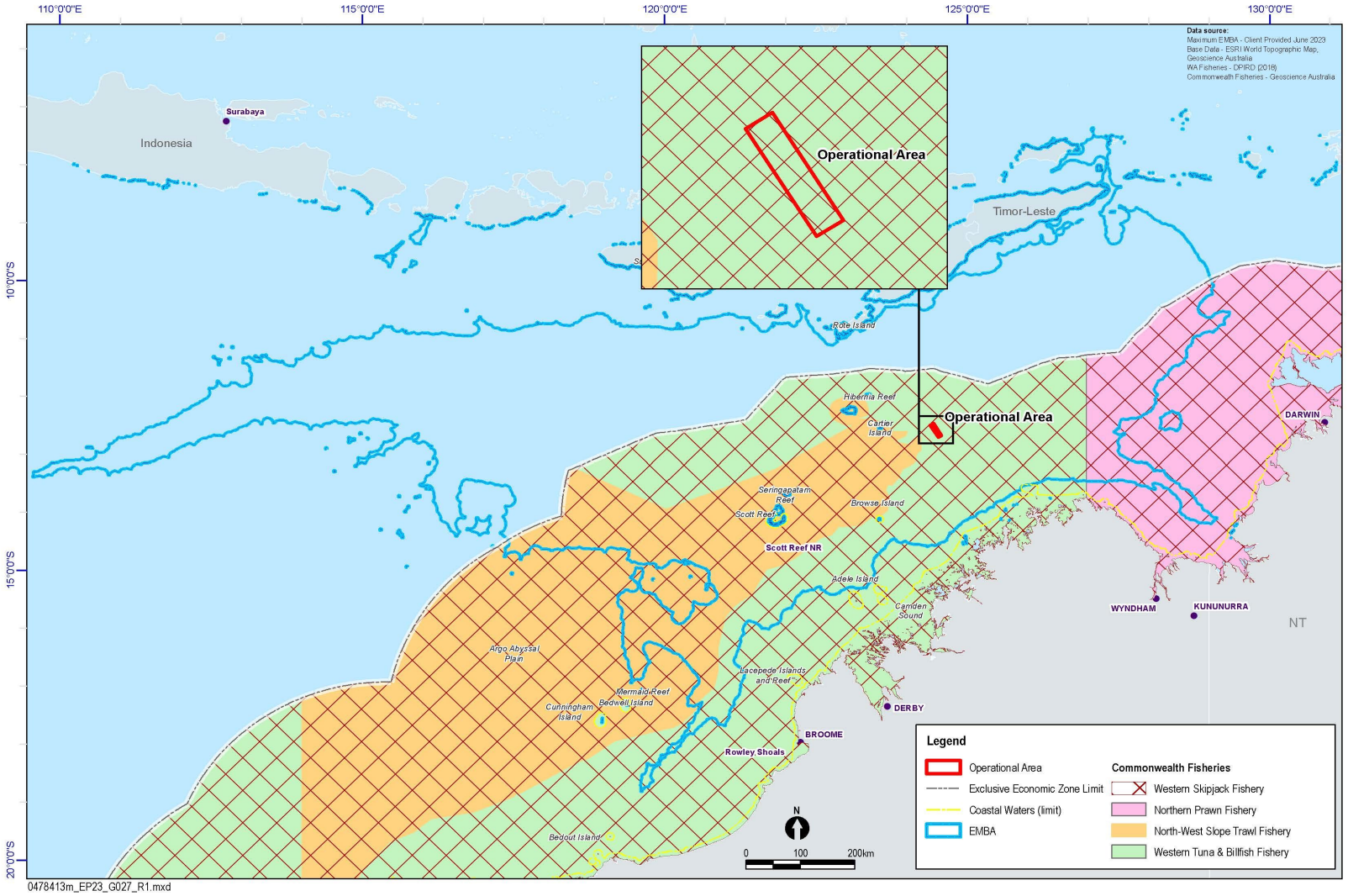


Figure 5-17: Commonwealth commercial fishing zones within the EMBA

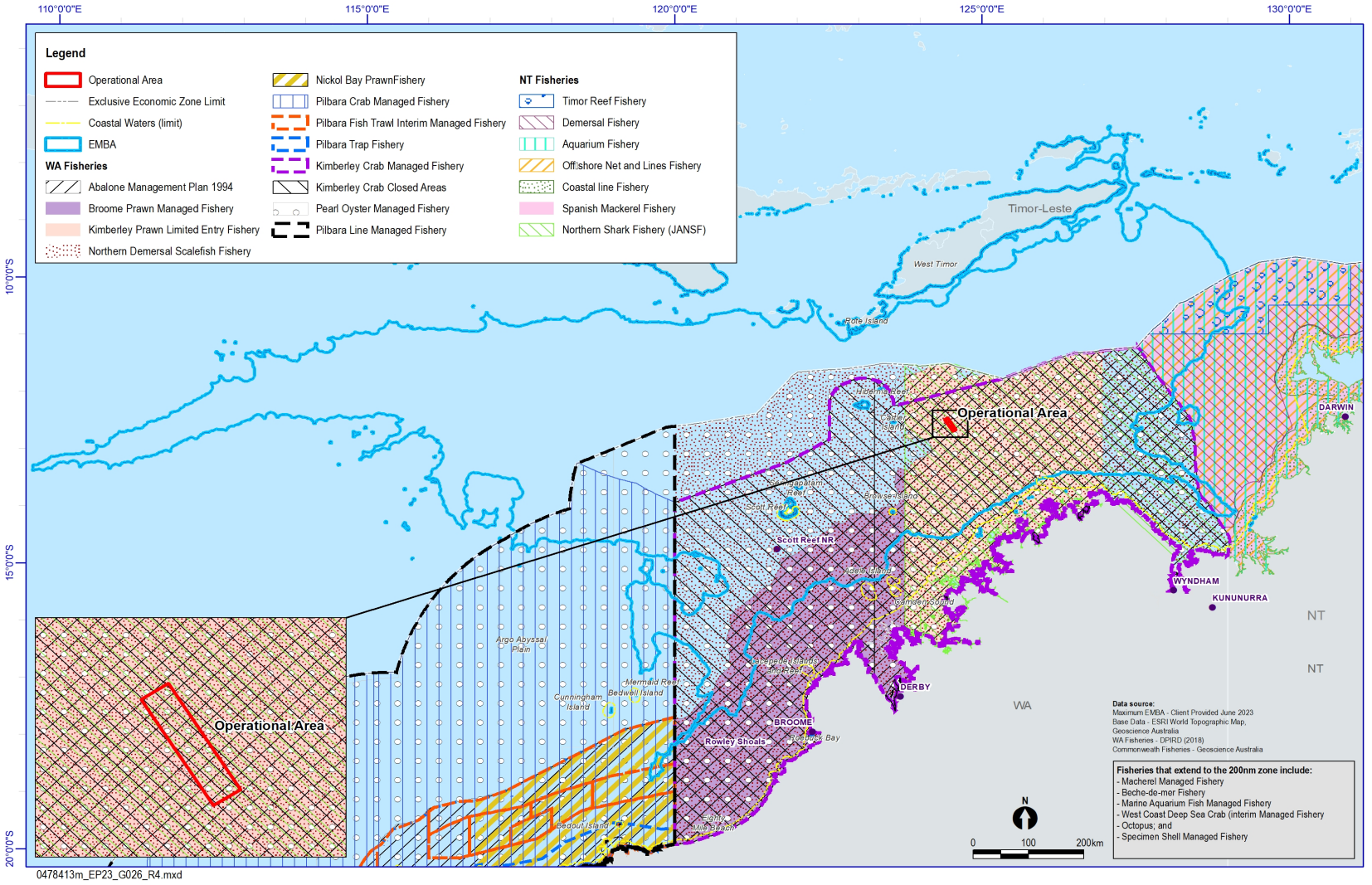


Figure 5-18: Commonwealth and Territory commercial fishing zones within the EMBA

5.3.2 Recreational and Charter Fishing

Recreational fishing is a popular activity in the Kimberley region, however effort is concentrated around regional centres due to the remoteness. Transiting recreational vessels passing through the EMBA region will often undertake recreational fishing activities for sustenance and leisure. A small group of recreational fishing and charter vessels do occasionally visit the Ashmore Reef and surrounds and other reefs in the EMBA.

5.3.3 Customary Fishing

Customary fishing occurs in the Dambimangari IPA, Djelk IPA and Uunguu IPA. The importance of customary fishing in WA and NT is to recognise Aboriginal cultural heritage and needs. Customary fishing is fishing for personal, domestic, ceremonial, educational or non-commercial needs. Fishers use modern fishing methods such as aluminium boats and outboard motors.

5.3.4 International Subsistence

As the world's largest archipelagic State with approximately 17,500 islands, fisheries form a significant socio-economic sector in Indonesia. As in Timor-Leste, the vast majority of fishery production (up to 95%) comes from artisanal fishing practices (FAO 2017). The fisheries management area 573 (South of Java – East Nusa Tenggara), encompasses the Lesser Sunda Ecoregion and is a particular productive area with a variety of target demersal and pelagic fisheries, including, lobster, tuna, sardines and shark fisheries. Many of these fisheries are under pressure from overexploitation, unsustainable fishing practices, under regulation and poor management/monitoring, nevertheless they significantly contribute to the economy and social fabric within coastal communities in the region (FAO 2017).

Coral reefs are vital sources of food and income for coastal communities. More than one-third of the Indonesian population living in coastal areas depends on nearshore fisheries for livelihood (ADB 2014). More than 60% of the animal protein consumed by the population in 2000 was derived from fisheries.

Discussions with Indonesian fishermen in Kupang and the Australian Fishery Management Authority (Sinclair Knight Merz 1993) and with fishermen at Suai, Timor Leste, Pepela and East Rote (Ataupah) (BHPP 1996) indicated that two types of fisheries occur in the region that is likely to intersect the EMBA; trawl and longline. Trawl fishing is commonly undertaken in shallower, inshore areas, targeting scarlet and saddletail perch, snapper and emperor fish. Trawling is also concentrated in the vicinity of Sahul Bank and Echo Shoals and boats may pass through the Operational Area to reach these fishing grounds (BHP 2007).

Within the northern and north-eastern extent of the EMBA is a defined area where a Memorandum of Understanding (MoU) exists between the Government of the Republic of Indonesia Relating to Cooperation in Fisheries (1992 Fisheries Cooperation Agreement) provides the framework for fisheries and marine cooperation between Australia and Indonesia, and facilitates information exchange on research, management and technological developments, complementary management of share stocks, training and technical exchanges, aquaculture development, trade promotion and cooperation to deter illegal fishing.

The MoU Box is an area of Australian water in the Timor Sea where Indonesian traditional fishers, using traditional fishing methods only, are permitted to operate. Officially it is known as the Australia-Indonesia Memorandum of Understanding regarding the Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf – 1974.

As part of negotiations to delineate seabed boundaries, Australia and Indonesia entered into the MoU which recognises the rights of access for traditional Indonesian fishers in shared waters to the north of Australia. This access was granted in recognition of the long history of traditional Indonesian fishing in the area. The MoU provides Australia with a tool to manage access to its waters while for

Indonesia, it enables Indonesian traditional fishers to continue their customary practices and target species such as trepang, trochus, abalone and sponges. Guidelines under the MoU were agreed in 1989 in order to clarify access boundaries for traditional fishers and take into account the declaration of the 200 nautical mile fishing zones. Because of its approximate shape the MoU area became known as the MoU Box.

The fishers focus their activities in and around the shallow water lagoons of Scott Reef primarily targeting trepang; and opportunistically gather trochus shells. They also catch fish largely for subsistence purposes although the average fish catch per lete-lete (traditional Indonesian fishing vessel) in 2008 increased to commercial volumes. Although deeper waters are more plentiful in trepang, deep diving is generally not undertaken by the fishers due to the MoU stipulation on the exclusive use of traditional equipment only (Woodside Energy Limited 2011).

The Ashmore Reef Reserves have historical and cultural significance. In particular, traditional Indonesian fishers have an historic and ongoing cultural and economic association with islands and reefs in the region. Resources of the Reserves have been harvested by Indonesian fishers for hundreds of years. Traditional Indonesian fishers continue to regularly visit Ashmore Reef National Nature Reserve for fresh water, shelter and to visit grave sites (CoA, 2002).

5.3.5 Aquaculture

Aquaculture within the region is undertaken within estuarine and marine waters focusing on a variety of species and methods, including prawns, fish and seaweed. Trochus at Cape Leveque and Barramundi at Cone Bay are two larger scale operations along the Australian coastline. In Indonesia and Timor Leste, aquaculture activities often contribute significantly to local employment and food production within the region (FAO 2017). Almost 50% of Indonesia's fisheries are produced from aquaculture (worth $4.3 billion USD).

Aquaculture development in this region is dominated by the production of pearls from the species *Pinctada maxima*. Each year, approximately 500,000 wild individuals are harvested, with the majority being from Eighty Mile Bean in Broome, Western Australia (sourced from Fisheries Research and Development Cooperation in Thomas and Miller 2022). A large number of pearl oysters for seeding is obtained from wild stocks and supplemented by hatchery-produced oysters with major hatcheries operating at Broome and the Dampier Peninsular. Pearl farm sites are located mainly along the Kimberley coast, particularly in the Buccaneer Archipelago, in Roebuck Bay and at the Montebello Islands. Developing marine aquaculture initiatives in this region include growing trochus and barramundi.

Further aquaculture in this region mainly focuses on barramundi farming within Cone Bay and further aquaculture operations have expanded in the region with the establishment of the Kimberley Aquaculture Development zone, which encompasses almost 2,000 ha of coastal waters within Cone Bay supporting the production of up to 20,000 t of finfish annually (Newman *et al.* 2023).

5.3.6 Shipping and Vessel Movements

Heavy vessels following the charted Osborn Passage will pass through both permits to the north of the Montara Venture FPSO (**Figure 5-19**). The area may also be utilised by support vessels from oil and gas operations in the Timor Sea Area.

Occasional interaction with Australian Commercial Fishing vessels, illegal foreign fishing vessels or other illegal vessels is also possible.

To monitor for illegal passage of immigrants and illegal fishing activity the Australian Border Force (ABF) and Royal Australian Navy (RAN) vessels undertake surveillance within an area extending roughly 200 nm from the mainland (Jones 2013). Due to the large geographic extent of these operations and the documenting of the Montara Operations on Maritime Notices, direct interaction with ABF or RAN vessels is not expected to occur.

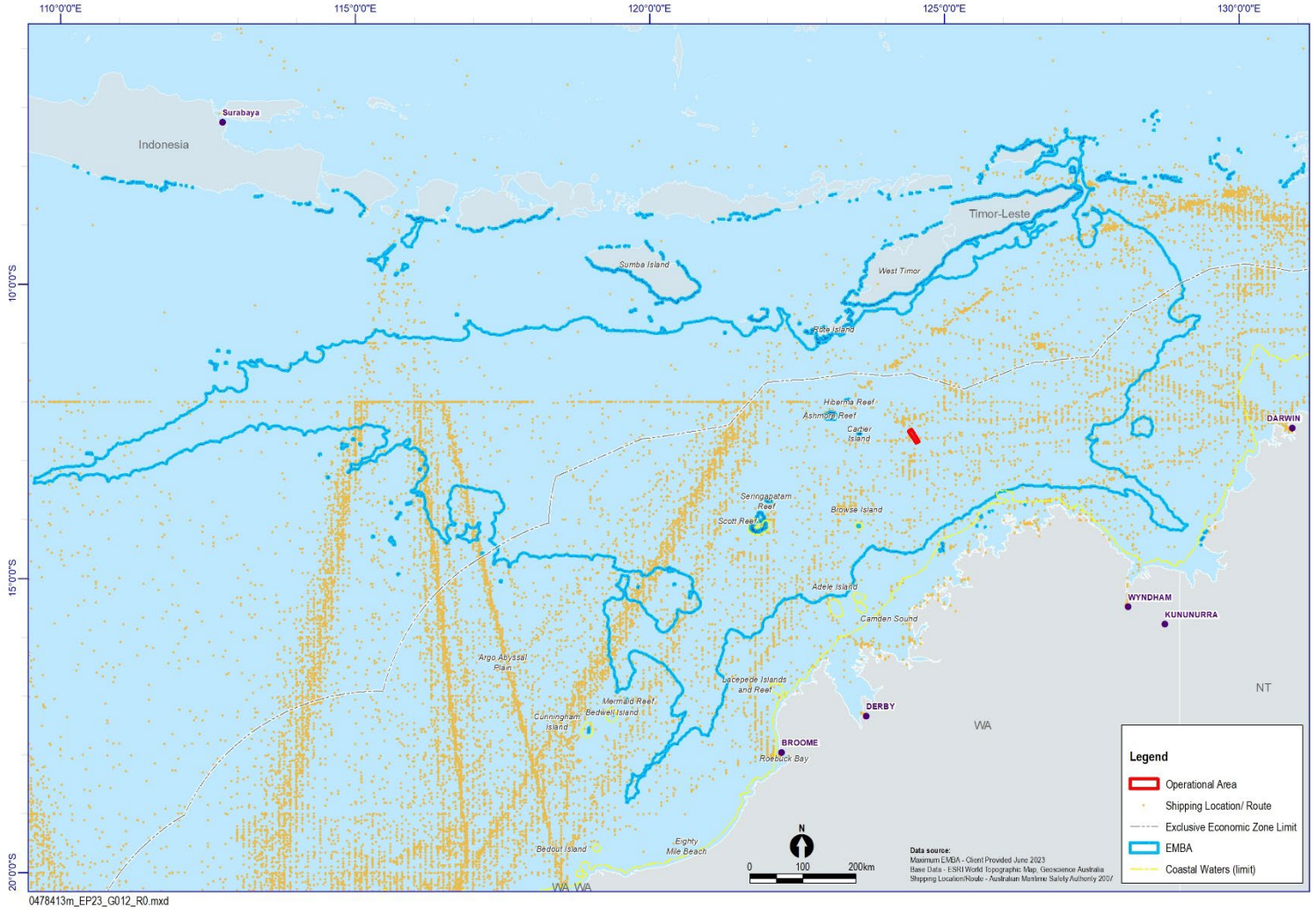


Figure 5-19: Shipping activity within the region

5.3.7 Oil and Gas Industry

There are numerous exploration and production of oil and gas operators in the region. The closest to the Operational Area include Auriga West 1 (Shell) and the Maple wells (PTTEP which are 34 and 59 km away respectively. See **Table 5-19** and **Figure 5-20**.

Table 5-19: Titleholders in vicinity of EMBA

Titleholder	Title blocks
Bounty Oil & Gas NL	AC/P32
Carnarvon Petroleum Limited	WA-523-P, AC/P62, AC/P63
Cornea Resources Pty Ltd	WA-54-R
ConocoPhillips Pty Ltd	WA-398-P, WA-315-P
Eni Australia Limited	AC/P21
Finder Exploration Pty Ltd	AC/P61, AC/P56, AC/P55, AC/P45
INPEX	AC/P36, WA-343-P, WA-56-R, WA-285-P
IPB Petroleum Limited	WA-471-P, WA-485-P
Murphy Australia Pty Ltd	AC/P57, AC/P59
Octanex Bonaparte Pty Ltd	WA-420-P
Santos Limited	WA-74-R, WA-274-P, WA-513-P
SGH Energy Pty Ltd	WA-377-P
Shell Australia	AC/P52, AC/P41, WA-44-L, AC/RL9, WA-371-P
Sinopec O&G Pty Ltd	AC/RL1
Timor Sea Oil & Gas Australia Pty Ltd	AC/L5
Total E&P Australia Exploration Pty Ltd	AC/P60
Vulcan Exploration Pty Ltd	AC/P50

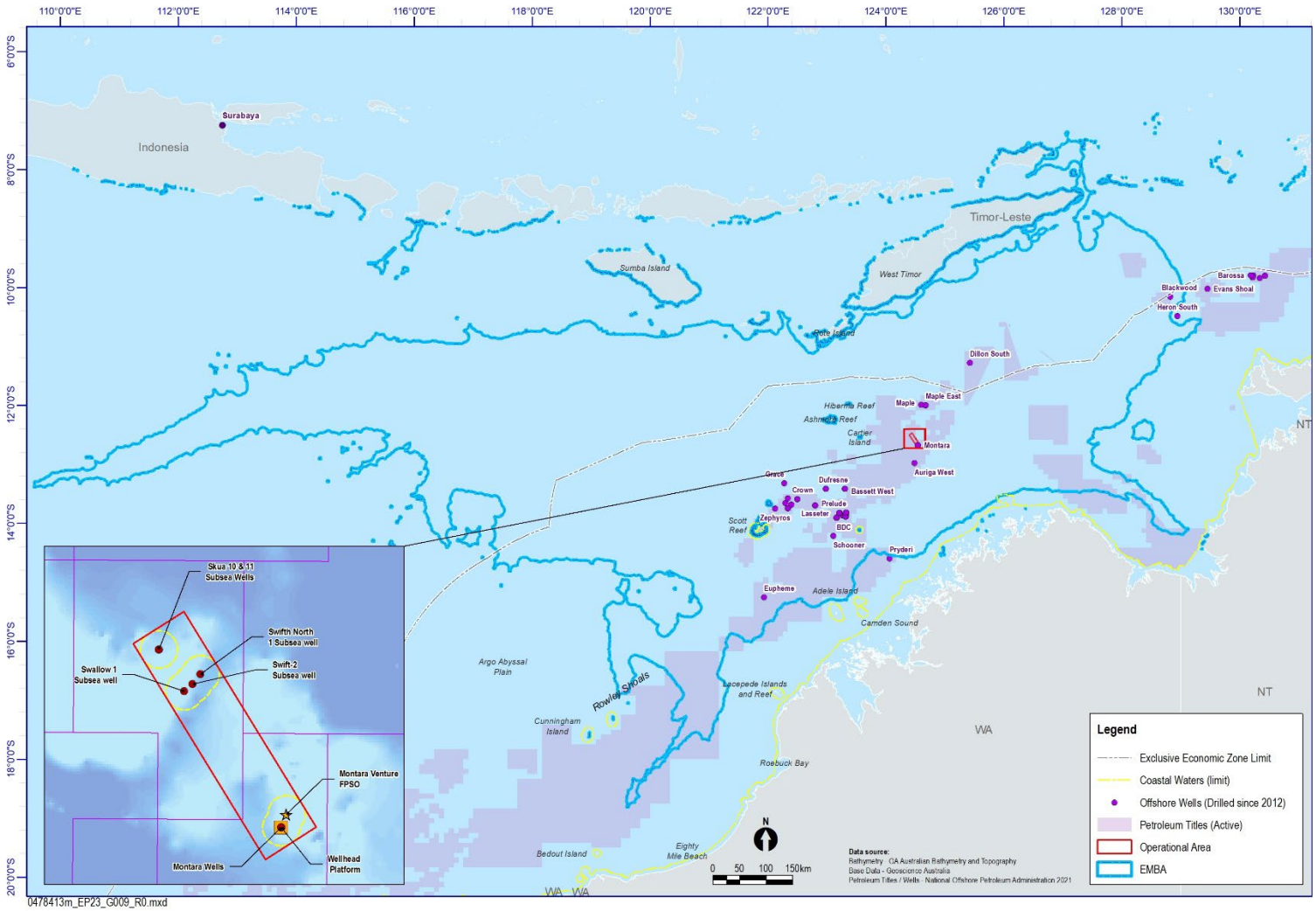


Figure 5-20: Petroleum Infrastructure in the region

5.3.8 Defence

The two closest defence training areas to the Operations Area are the North Australian Exercise Area (NAXA) (approximately 370 km to the east outside of the EMBA) and the Curtin Air-to-Air Air Weapons Range near Derby (approximately 280 km south west). Defence estate also exists through the Kimberley shoreline (**Figure 5-21**).

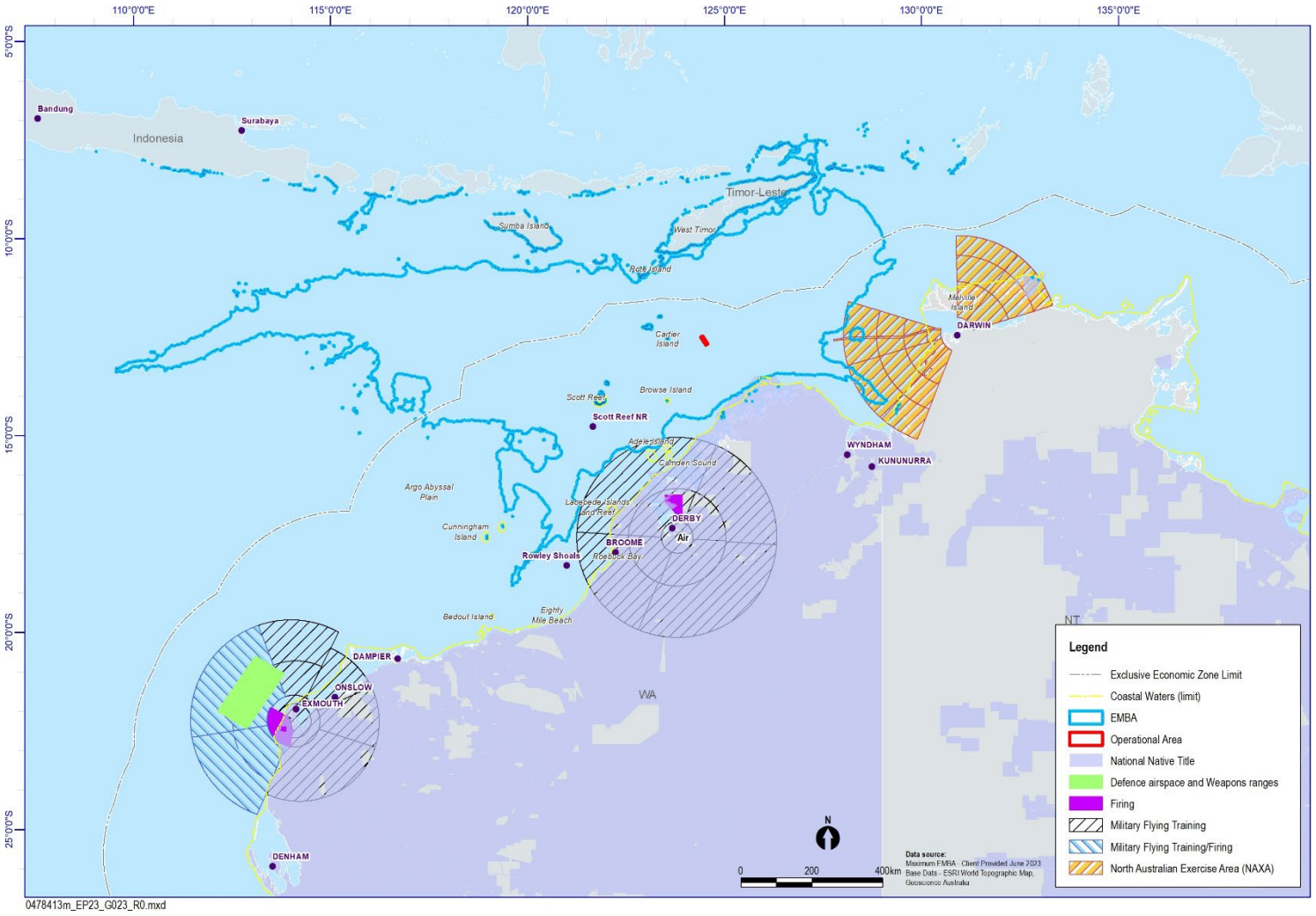


Figure 5-21: Defence locations near or within the EMBA

5.3.9 Tourism

The remoteness and water depth (~80m) of the Operational Area means it is not likely to be accessed for tourism activities (e.g. recreational fishing and boating and charter boats operations). Such activities tend to be focussed around nearshore waters, islands and coastal areas. . Some charter operations do access some of the nearby islands and reefs (including Scott Reef, Ashmore Reef and Cartier Island) as part of regular itineraries.

Tourism is important to the economy and livelihood of Indonesia (ADB 2014) with particular tourist centres in Bali, Flores, Lombok, Komodo and the Gili Islands. Bali is one of the most popular holiday destinations for Western Australians, with the value estimated to be 30% of GDP. Tourists visit Bali and other Indonesian locations such as West Java and Jakarta to appreciate the culture, but also to enjoy the natural biodiversity found within them. The marine environment within these centres is a major attraction, with beach and coastal activities (snorkelling, surfing, diving and fishing) are common (ADB 2014).

Scuba diving is very popular in National Parks like Bali Barat and Komodo National Park because of the park's high marine biodiversity. The development of, largely marine-based, ecotourism is the main strategy to make the park self-financing and generate sufficient revenue through entrance fees and tourism licenses to cover operational and managerial costs.

Tourism in Timor-Leste represents a small percentage of the country's economy at present but the Government regards growth in tourism as critical to future economic development.

5.3.10 Population Centres

Australia

The nearest major population centres to the Operational Area are Broome and Darwin. The closest coastline to the Operational Area on the Australian mainland is the Kimberley Coast, which is sparsely populated.

Indonesia and Timor Leste

The city of Kupang, the capital of the Indonesian province East Nusa Tenggara, is the closest major population centre to the Operational Area (~295 km). The city has a population of approximately 250,000 and supports a diverse range of industries including fishing, cement production and aquaculture. It is also an important focal point for the tourism industry.

Timor-Leste comprises the eastern half of the island of Timor, the nearby islands of Atauro and Jaco, and Oecusse, an exclave on the northwestern side of the island surrounded by Indonesian West Timor. The city of Suai is the closest major population area in Timor-Leste to the Operational Area.

5.3.11 Native Title

Aboriginal peoples continuing connection to country is recognised in Australia under both State/ Territory and Commonwealth legislation. The Native Title Act 1993 (Commonwealth) is legislation passed by the Australian Parliament that recognises the rights and interests of Aboriginal and Torres Strait Islander people in land and waters according to their traditional laws and customs (CoA 2023). Any sheen or impact on environmental values may impact the associated cultural values or use. The National Native Title Tribunal *Native Title Vision* (NTV) search identified that there is no registered native title within the Operational Area. Within the EMBA the Uunguu Part A Native title determination overlaps the EMBA. The registered native title body corporate for this native title is the Wanjina- Wunggurr Aboriginal Corporation and more details is provided in Section 5.3.12.2 below. There are no registered or notified Indigenous Land Use agreements that overlap the EMBA.

5.3.12 Cultural Heritage

5.3.12.1 Underwater Cultural Heritage

Underwater cultural heritage sites are recognised as a part of the marine environment ecosystem. Under the Underwater Cultural Heritage Act 2018 (Cwlth) any shipwrecks, sunken aircraft or other types of cultural heritage over 75 years old are automatically afforded protection. Under this Act, there is also a provision to provide protection zones, that can range from 200 m to 3,200 m radius, surrounding the wrecks. These zones are in place to limit disturbance of the cultural heritage and also the surrounding environment.

There are no recorded historic shipwrecks or shipwreck protection zones within the Operational Area. It has been recorded that Ashmore Reef Marine Park contains Indonesian artefacts and grave sites, and Ashmore lagoon is still accessed as a rest or staging area for traditional Indonesian fishers travelling to and from fishing grounds. The closest shipwreck is the *Ann Millicent*, approximately 110 km north-west of the Operations area (SEWPaC 2013).

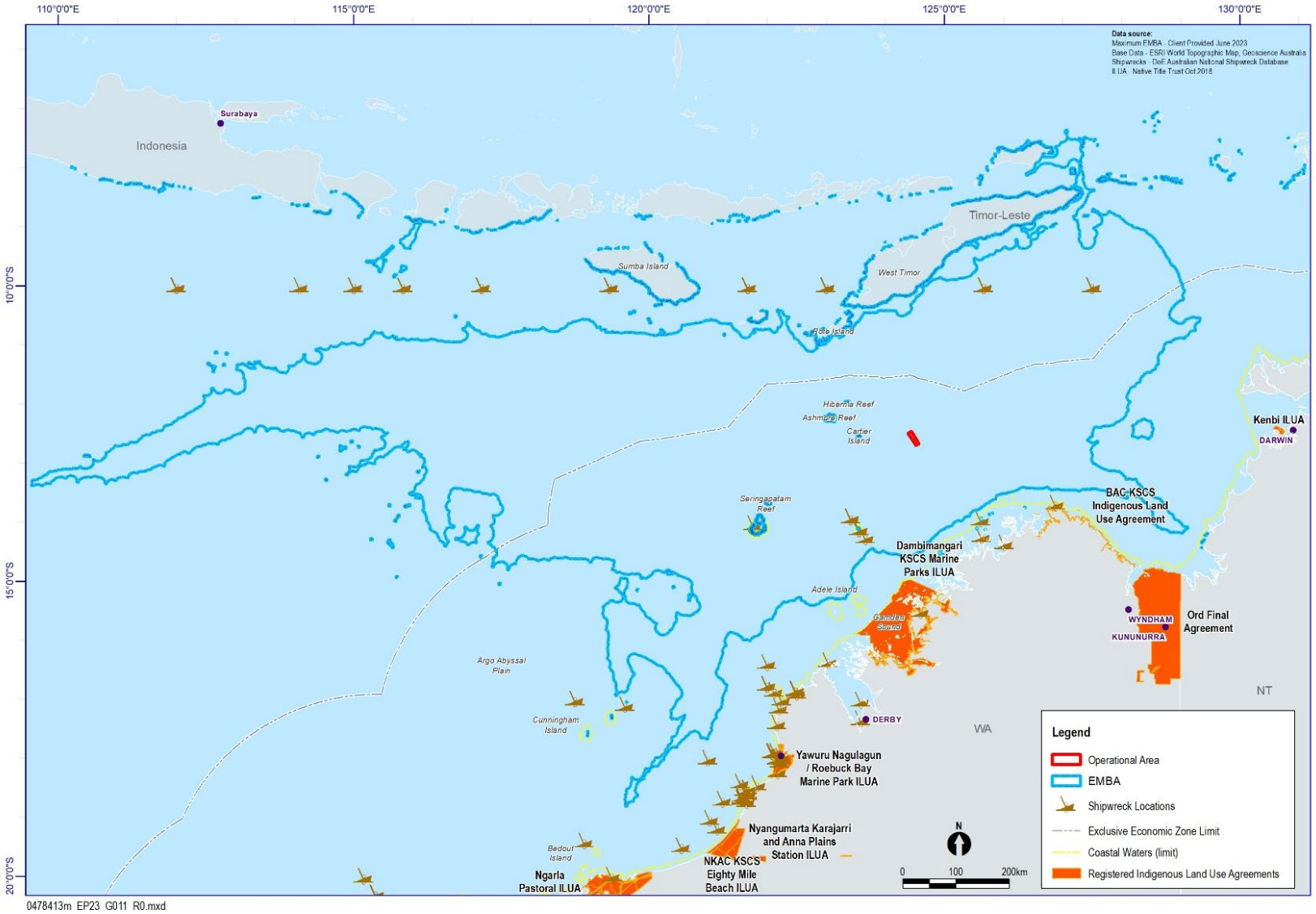


Figure 5-22: Cultural heritage sites within the EMBA

5.3.12.2 Cultural Heritage

Australian Aboriginal and Torres Strait Islander heritage is recognised as the oldest continuing culture in the world and is central to Australia's national heritage (DCCEEW 2023).

A search of the Department of Planning, Lands and Heritage Aboriginal Heritage Inquiry System (AHIS) within the EMBA reported there are 7 Registered and 5 Lodged Aboriginal Cultural Heritage sites, and 1 Heritage surveys. None of these sites or places fall within the operational area. They are predominantly located along the coastline or on islands. Through ongoing engagement with First Nations people, Jadestone continues to seek further information on relevant cultural values for this activity. In the absence of specific details from the First Nations People, Jadestone have completed their own research into potential areas of importance.

Sixteen registered native title bodies corporate (RNTBC) hold, protect and manage determined native title for many of the islands and the coastal country located in the vicinity of the Montara EMBA with only one overlapping; *Wanjina-Wunggurr* Aboriginal Corporation (Figure 5-23).

Miriuwung and Gajerrong #1 Aboriginal Corporation

The Miriuwung and Gajerrong #1 Aboriginal Corporation represents, protects and supports the interests of the Miriuwung-Gajerrong people. The Miriuwung-Gajerrong people are the traditional owners of the Ord River Irrigation Area, Lake Argyle, Lake Kununurra, the Glen Hill pastoral lease, mining tenements, part of the Argyle diamond mine and the Keep River national park. They have responsibilities for sea country in the Joseph Bonaparte Gulf Marine Park.

Miriuwung and Gajerrong country is criss-crossed by pathways or Dreaming tracks that the ancestral beings created in their journeys across the land during the ancestral epoch or Dreaming. Other places of cultural heritage significance include middens, fish traps, stone arrangements, hearths, grinding hollows, paintings, engravings, burials, artefact scatters, stone quarries, ochre quarries and scarred trees.

Balanggarra Aboriginal Corporation

The Balanggarra Aboriginal Corporation represents, protects and supports the interests of the Balanggarra people. They are the traditional owners of 2.9 m ha of land and waters across the northeast Kimberley. The northern boundary runs through sea country and encompasses several islands near the coast, including the Sir Graham Moore Islands, Adolphus Island and Reveley Island.

There are strong traditions to collect and harvest saltwater fish and other sea-foods from the open sea and reefs. Mullet, silver bream, coral trout and stingrays are all caught along rocky coast or shallow water. Other seafoods collected includes oysters, cockle shells and Baler shells.

Wanjina-Wunggurr Aboriginal Corporation

The Wanjina-Wunggurr Aboriginal Corporation represents, protects and supports the interests of the Wunambal Gaambera , Wororra and Ngarinyin people. The Wunambal Gaambera people are the traditional owners of the coast and sea country in the north Kimberley region. There are strong customary practices for collecting and harvesting fish and other seafoods from reefs and mangroves.

Wororra people own the Dambimangari Country in the northeast Kimberley, which includes extensive sea country. Ngarinyin people own the Willinggin Country located inland of the other two title claims.

Mayala Inninalang Aboriginal Corporation

The Mayala Inninalang Aboriginal Corporation represents, protects and supports the interests of the Mayala people. The Mayala people are the traditional owners of hundreds of islands, interconnecting seas and reefs in the Kimberley's Buccaneer Archipelago and King Sound. The Mayala people are

saltwater people with a unique island culture and deep knowledge of the complex currents and tides in their Sea Country.

Warrwa People Aboriginal Corporation

The Warrwa People Aboriginal Corporation represents, protects and supports the interests of the Warrwa people. The Warrwa people are the traditional owners of land to the east of Derby, extending along the eastern shores of King Sound.

Walalakoo Aboriginal Corporation

The Walalakoo Aboriginal Corporation represents, protects and supports the interests of the Nyikina Mangala people. The Nyikina and Mangala people are the traditional owners of land to the east of Broome, extending along the east and western shores of King Sound through the Fitzroy Valley to the Great Sandy Desert.

Nimanburr Aboriginal Corporation

The Nimanburr Aboriginal Corporation represents, protects and supports the interests of the Jabirr Jabirr/Ngumbarl, Nyul Nyul people, and Nimanburr people. The Nimanburr PBC is the trustee of their native title claim to the land located on the western shores of King Sound.

Bardi Jawi Niimidiman Aboriginal Corporation

The Bardi Jawi Niimidiman Aboriginal Corporation represents, protects and supports the interests of the Bardi and Jawi peoples. The Bardi and Jawi peoples are the traditional owners of Dampier Peninsula, including ownership of the island chain located to the east of its tip.

The heartland of Bardi and Jawi religious thought and practice lies in an area some 5 km southwest of Cape Leveque, called Ngamagun. It is there that many of the key moments of the primordial creation of their world, in what they call būar or the dreaming, are grounded.

The Bardi and Jawi people depend upon the sea. Reefs are important food-gathering places and fish is their most important food. Green turtle and dugong also play a major role in culture. Turtle is hunted all year round while dugong is typically targeted from May to July.

Nyul Nyul Aboriginal Corporation

The Nyul Nyul Aboriginal Corporation represents, protects and supports the interests of the Jabirr Jabirr/Ngumbarl, Nyul Nyul, and Nimanburr people. The Nyul Nyul PBC is the trustee of their native title claim to the land located on the northwestern of Dampier Peninsula, including the Lacepede Islands.

Gogolanyngor Aboriginal Corporation

The Gogolanyngor Aboriginal Corporation represents, protects and supports the interests of the Jabirr Jabirr/Ngumbarl people of the middle Dampier Peninsula. These people are the traditional owners of land and sea country covering more than 11,600 sq km on the middle Dampier Peninsula.

Yawuru Native Title Holders Aboriginal Corporation

The Yawuru Native Title Holders Aboriginal Corporation represents, protects and supports the interests of the Yawuru people. The Yawuru people are the native title holders of approximately 530,000 hectares of traditional Yawuru country around Broome from Bangarangara to Willie Creek.

Karajarri Traditional Owners Aboriginal Corporation

The Karajarri Traditional Owners Aboriginal Corporation represents, protects and supports the interests of the Karajarri people. Karajarri people are the traditional owners of the lands from far into the Great Sandy Desert to the intertidal zone along the southwest Kimberley coast.

For Karajarri people the country, plants, animals and the water are alive. Arising from their spiritual conception, yartangkal, Karajarri people are born with a binding responsibility to keep the country healthy.

Nyangumarta Karajarri Aboriginal Corporation

The Nyangumarta Karajarri Aboriginal Corporation represents, protects and supports the interests of the Nyangumarta and Karajarri people. The Nyangumarta and Karajarri people have native title across 2,000 square kilometres of land and sea country across Anna Plains Station, a portion of Mandora Station and 80 Mile Beach, in the East Pilbara and West Kimberley regions of WA.

Kariyarra Aboriginal Corporation

The Kariyarra people live in and around the town of Port Hedland in the north-west of Western Australia. From Port Hedland west to the Sherlock River, and south to the Yule River. The native title claim Determination Area covers about 17,354 square kilometres of Kariyarra traditional country. Whelk shells and stone shards were used to create engravings in the limestone ridges. These can be seen today, passing down knowledge of the continued inhabitants of tribe lands, and often depicting hunting methods for dugongs, turtles, and fish.

Country holds great significance to Kariyarra people. It is a deep connection to the land, sea, skies, and all living things going beyond physical attachment. Country is a spiritual, scared, and cultural connection which has been passed down through many generations and continues to be a source of identity, shaping beliefs, customs, and practices.

Nyangumarta Warrarn Aboriginal Corporation

Nyangumarta Warrarn Aboriginal Corporation manages the native title rights and interests for the Nyangumarta people. The Nyangumarta people have native title across 31,722 square kilometers of land and includes land from sea (Eighty Mile Beach) to desert (Great Sandy Desert). This corporations is involved with the declaration of the Nyangumarta Warrarn Indigenous Protection Area. Joint Management Agreements exist for Eighty Mile Beach Marine Park and the terrestrial reserves of Kujungurru and Walyarta areas. The *Eighty Mile Beach Marine Park Management Plan (2014-202*4) and the *Parks and Reserves of the South West Kimberley and North West Pilbara Joint Management Plan 201*9 detail the management aspirations and related strategies of Nyangumarta people for these areas.

Nyangumarta people include fresh fish in their diet such as whiskered salmon, blacvk tipped reef shark, sawfish, stingrays and oysters. Nyangumarta people recognise Eighty Mile Beach for significant ecological values such as migratory birds and flatback turtle populations.

Wanparta Aboriginal Corporation

The Wanparta Aboriginal Corporation holds native title rights and interests on trust for the Ngarla People.

The Ngarla People are the traditional owners of an area of land east of Port Hedland that covers the DeGrey and Pardoo pastoral stations, which spans approximately 4,655 sq km. They distinguish themselves from other Aboriginal groups in surrounding areas by the geographical description of ngaru kartipaku, meaning "from the coast side". The Ngarla People are the traditional owners who speak for the spectacular and sacred 80 Mile Beach Marine Park (RAMSAR site) to the west of Pardoo Station and Jarrkurnpang Nature Reserve. The land and waters in the adjacent eastern portion of the 80 Mile Beach Marine Park extends into the traditional lands of the Karajarri and Nyangumarta People.

Thamarrurr Development Corporation (TDC) (Wadeye)

The Thamarrurr Development Corporation Ltd (TDC) is a not-for-profit corporate entity owned by members of the four main ceremonial groups – the Wangka, Lirrga, Wulthirri and Tjanpa peoples – and established by the 20 clans of the Thamarrurr region. TDC represents the interests of these clan groups.

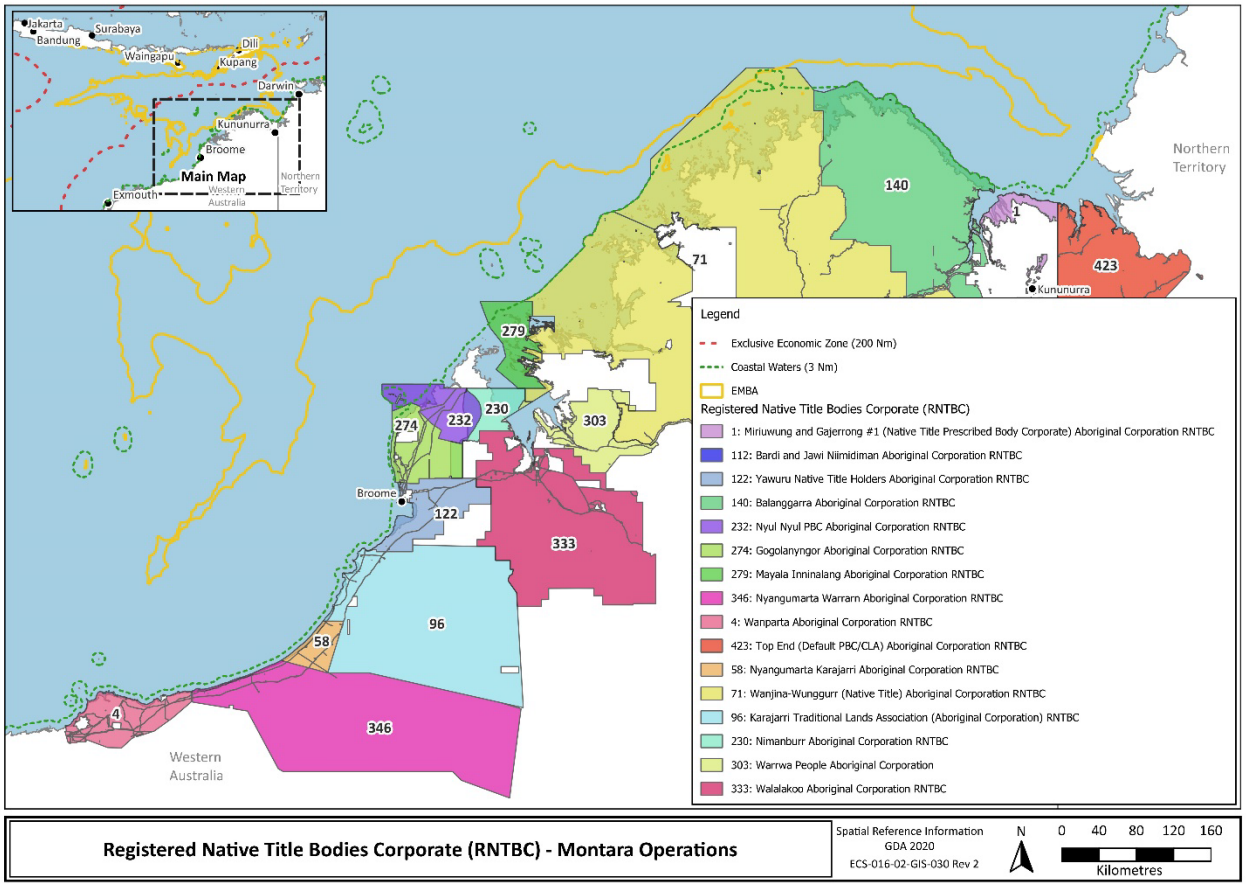


Figure 5-23 Registered Native Title Bodies in the vicinity of the EMBA

5.3.12.3 Sea Country

Many Aboriginal and Torres Strait Islander peoples have a close, long-standing relationship with coastal and marine environments and continue to rely on these environments and resources for their cultural identity, health and wellbeing, as well as their domestic and commercial economies (CoA, 2012). Sea country refers to the areas of the sea that Aboriginal people are particularly affiliated with through their traditional lore and customs. It is recognised that spiritual corridors extend from terrestrial areas into nearshore and offshore waters, a number of marine animals are totems for Indigenous people, and that songlines pass through marine parks.

Sea Country is an important part of First Nations peoples culture and whilst the many coastal and island First Nations groups around Australia have different languages and their own unique belief systems, ceremonies and relationships with Country, they all regard the estuaries, beaches, bays and marine areas, or Sea Country, as essential parts of their traditional estates.

First Nations groups who reside along the coasts or on islands believe that Sea Country contains the evidence of creation stories, about animals, plants and people, as well as the creation of landscape features such as islands and reefs. Coastal and island communities held cultural responsibilities to ensure Sea Country is cared for and Sea Country was managed very carefully, and they are playing an increasingly important role in the management of their Sea Country, through formalised roles and programs that work alongside various State and Commonwealth government structures.

Values and sensitivities regarding Sea Country may include different features such as:

- Historic and contemporary cultural harvesting of marine fauna and flora
- Sea and landscape features that hold dreamtime and creation stories, such as offshore islands; and
- Different marine and avian species that hold deep connections to lore and represent spiritual emblems.

Within Australian waters and coastline that may be affected in the broader EMBAs, there are many values of cultural significance, with numerous shipwrecks and heritage sites (Figure 5-22). Along the Kimberley Coast and the Northern Territory there are many Native Title Determinations and Indigenous Land Use Agreements, including some that include sea country.

It is recognised that spiritual corridors extend from terrestrial areas into nearshore and offshore waters, a number of marine animals are totems for indigenous people, and that songlines pass through marine areas. Aboriginal totems are symbols taken from nature, such as a plant or animal, that are inherited by members of a community as their spiritual emblem. Marine species described as totems therefore possess significant cultural importance to Aboriginal Australians.

5.3.12.4 Indigenous Protected Area (IPA)

Indigenous Protected Area (IPAs) are areas of land and sea that Traditional Owners have agreed to manage for biodiversity conservation. IPAs deliver environmental, cultural, social and economic benefits through implementation of agreed management plans. This includes Sea country IPAs to protect areas with unique marine and coastal environments. There is one Sea Country IPA that is located outside the EMBA, Tukujana pa Karajarri Kura Jurrar and it expands the existing Karajarri IPA into the sea off the south-west Kimberley coast. The area includes a network of coastal habitats, such as intertidal and subtidal reefs, mangrove systems, lagoons and tidal creeks and will connect the Ramsar sites of Roebuck Bay and 80-mile beach. The area is an important dugong sanctuary and provides habitat for around 450,000 birds.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 14-Jun-2023

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	22
Listed Migratory Species:	35

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	62
Whales and Other Cetaceans:	23
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	19
Key Ecological Features (Marine):	None
Biologically Important Areas:	1
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
EEZ and Territorial Sea

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Papasula abbotti		
Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
FISH		
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		

Scientific Name	Threatened Category	Presence Text
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
[Aipysurus foliosquama](#) Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Lepidochelys olivacea](#) Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour likely to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
SHARK		

Scientific Name	Threatened Category	Presence Text
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat may occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus		
White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata		
Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Carcharhinus longimanus		
Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat likely to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat likely to occur within area
Fish		
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Trachyrhamphus longirostris](#) Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Reptile		
[Acalyptophis peronii](#) Horned Seasnake [1114]		Species or species habitat may occur within area
[Aipysurus duboisii](#) Dubois' Seasnake [1116]		Species or species habitat may occur within area
[Aipysurus foliosquama](#) Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
[Aipysurus laevis](#) Olive Seasnake [1120]		Species or species habitat may occur within area
[Astrotia stokesii](#) Stokes' Seasnake [1122]		Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
[Chitulia ornata as Hydrophis ornatus](#) Spotted Seasnake, Ornate Reef Seasnake [87377]		Species or species habitat may occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Enhydrina schistosa Beaked Seasnake [1126]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Leioselasma coggeri as Hydrophis coggeri Black-headed Sea Snake, Slender-necked Seasnake [87373]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		

Current Scientific Name	Status	Type of Presence
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area
[Kogia sima](#) Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Montara 4, 5, and 6 Oil Production Wells, and Montara 3 Gas Re-Injection Well	2002/755	Controlled Action	Post-Approval
PTTEP AA Floating LNG Facility	2011/6025	Controlled Action	Completed
Not controlled action			
AEC International Hydrocarbon Well Puffin 6	2000/36	Not Controlled Action	Completed
Montara-3 Offshore Hydrocarbon Exploration Well Permit Area AC/RL3	2001/489	Not Controlled Action	Completed
Puffin Oil wells 7, 8 & 9 development	2005/2336	Not Controlled Action	Completed
Skua and Swift Oilfields	2006/3195	Not Controlled Action	Completed
Not controlled action (particular manner)			
2 (3D) Marine Seismic Surveys	2009/4994	Not Controlled Action (Particular Manner)	Completed
2D Marine Seismic Survey	2009/4728	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Marine Survey	2001/363	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic survey	2009/5076	Not Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		(Particular Manner)	
3D Marine Seismic Survey	2008/4437	Not Controlled Action (Particular Manner)	Post-Approval
Cartier East and Cartier West 3D Marine Seismic Surveys	2009/5230	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Tow West Atlas wreck from present location to boundary of EEZ	2010/5652	Not Controlled Action (Particular Manner)	Post-Approval
Vampire 2D Non Exclusive Seismic Survey, WA	2010/5543	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Zeppelin 3D Seismic Survey	2011/6148	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
2D Marine Seismic Survey	2008/4623	Referral Decision	Completed
Puffin South-West Development of Oil Reserves	2007/3834	Referral Decision	Completed

Biologically Important Areas		
Scientific Name	Behaviour	Presence
Sharks		
Rhincodon typus		
Whale Shark [66680]	Foraging	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 14-Jun-2023

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	7
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	60
Listed Migratory Species:	64

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	41
Commonwealth Heritage Places:	8
Listed Marine Species:	125
Whales and Other Cetaceans:	29
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	1
Australian Marine Parks:	19
Habitat Critical to the Survival of Marine Turtles:	4

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	6
Regional Forest Agreements:	None
Nationally Important Wetlands:	3
EPBC Act Referrals:	210
Key Ecological Features (Marine):	11
Biologically Important Areas:	55
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places		[Resource Information]
Name	State	Legal Status
Natural		
The West Kimberley	WA	Listed place

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Ashmore reef national nature reserve	Within Ramsar site
Hosnies spring	Within Ramsar site
The dales	Within 10km of Ramsar site

Commonwealth Marine Area	[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
EEZ and Territorial Sea
EEZ and Territorial Sea
Extended Continental Shelf
Extended Continental Shelf
Extended Continental Shelf
Extended Continental Shelf
Extended Continental Shelf

Listed Threatened Species	[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Accipiter hiogaster natalis		
Christmas Island Goshawk [82408]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Breeding known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Chalcophaps indica natalis Christmas Island Emerald Dove, Emerald Dove (Christmas Island) [67030]	Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Fregata andrewsi Christmas Island Frigatebird, Andrew's Frigatebird [1011]	Endangered	Breeding known to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Ninox natalis		
Christmas Island Hawk-Owl, Christmas Boobook [66671]	Vulnerable	Species or species habitat known to occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti		
Abbott's Booby [59297]	Endangered	Species or species habitat known to occur within area
Phaethon lepturus fulvus		
Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat known to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Turdus poliocephalus erythropleurus		
Christmas Island Thrush [67122]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae kimberli		
Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
FISH		
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
Antechinus bellus		
Fawn Antechinus [344]	Vulnerable	Species or species habitat may occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat may occur within area
Crocidura trichura Christmas Island Shrew [86568]	Critically Endangered	Species or species habitat likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Petrogale concinna canescens Nabarlek (Top End) [87606]	Endangered	Species or species habitat may occur within area
Phascogale pirata Northern Brush-tailed Phascogale [82954]	Vulnerable	Species or species habitat may occur within area
Pteropus natalis Christmas Island Flying-fox, Christmas Island Fruit-bat [87611]	Critically Endangered	Species or species habitat known to occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat may occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
PLANT		

Scientific Name	Threatened Category	Presence Text
Asplenium listeri Christmas Island Spleenwort [65865]	Critically Endangered	Species or species habitat known to occur within area
Pneumatopteris truncata fern [68812]	Critically Endangered	Species or species habitat known to occur within area
Tectaria devexa Cave Fern [14767]	Endangered	Species or species habitat likely to occur within area
REPTILE		
Acanthophis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat may occur within area
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Cryptoblepharus egeriae Christmas Island Blue-tailed Skink, Blue-tailed Snake-eyed Skink [1526]	Critically Endangered	Species or species habitat may occur within area
Cryptoblepharus gurrmul Arafura Snake-eyed Skink [83106]	Endangered	Species or species habitat known to occur within area
Cyrtodactylus sadleiri Christmas Island Giant Gecko [86865]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Lepidodactylus listeri Christmas Island Gecko, Lister's Gecko [1711]	Critically Endangered	Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Ramphotyphlops exocoeti Christmas Island Blind Snake, Christmas Island Pink Blind Snake [1262]	Vulnerable	Species or species habitat likely to occur within area
SHARK		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat may occur within area
Glyphis glyphis Speartooth Shark [82453]	Critically Endangered	Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Breeding known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Fregata andrewsi Christmas Island Frigatebird, Andrew's Frigatebird [1011]	Endangered	Breeding known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Sula dactylatra Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Sula sula Red-footed Booby [1023]		Breeding known to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Breeding known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
Cecropis daurica		
Red-rumped Swallow [80610]		Species or species habitat known to occur within area
Cuculus optatus		
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area
Hirundo rustica		
Barn Swallow [662]		Species or species habitat known to occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat known to occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Acrocephalus orientalis		
Oriental Reed-Warbler [59570]		Species or species habitat known to occur within area
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
[Charadrius veredus](#) Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
[Glareola maldivarum](#) Oriental Pratincole [840]		Species or species habitat may occur within area
[Limnodromus semipalmatus](#) Asian Dowitcher [843]		Species or species habitat known to occur within area
[Limosa lapponica](#) Bar-tailed Godwit [844]		Species or species habitat known to occur within area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
[Pandion haliaetus](#) Osprey [952]		Breeding known to occur within area
[Thalasseus bergii](#) Greater Crested Tern [83000]		Breeding known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - MT GOODWIN RADAR SITE [70063]	NT
Environment and Heritage	

Commonwealth Land Name	State
Commonwealth Land - Christmas Island National Park [94101]	CI
Commonwealth Land - Christmas Island National Park [94102]	CI
Commonwealth Land - Christmas Island National Park [94105]	CI
Commonwealth Land - Christmas Island National Park [94103]	CI
Unknown	
Commonwealth Land - [94274]	CI
Commonwealth Land - [94214]	CI
Commonwealth Land - [94276]	CI
Commonwealth Land - [94277]	CI
Commonwealth Land - [94229]	CI
Commonwealth Land - [94225]	CI
Commonwealth Land - [94226]	CI
Commonwealth Land - [94265]	CI
Commonwealth Land - [52276]	ACI
Commonwealth Land - [94211]	CI
Commonwealth Land - [94212]	CI
Commonwealth Land - [94213]	CI
Commonwealth Land - [94280]	CI
Commonwealth Land - [94216]	CI
Commonwealth Land - [94217]	CI
Commonwealth Land - [94210]	CI
Commonwealth Land - [94275]	CI
Commonwealth Land - [94273]	CI
Commonwealth Land - [94272]	CI
Commonwealth Land - [94278]	CI
Commonwealth Land - [94270]	CI
Commonwealth Land - [94230]	CI

Commonwealth Land Name	State
Commonwealth Land - [94279]	CI
Commonwealth Land - [94239]	CI
Commonwealth Land - [94231]	CI
Commonwealth Land - [94268]	CI
Commonwealth Land - [94242]	CI
Commonwealth Land - [94203]	CI
Commonwealth Land - [94204]	CI
Commonwealth Land - [94221]	CI
Commonwealth Land - [94202]	CI
Commonwealth Land - [94205]	CI
Commonwealth Land - [94209]	CI
Commonwealth Land - [94222]	CI
Commonwealth Land - [52277]	ACI
Commonwealth Land - [52278]	ACI

Commonwealth Heritage Places		[Resource Information]
Name	State	Status
Historic		
Phosphate Hill Historic Area	EXT	Listed place
Poon Saan Group	EXT	Listed place
Settlement Christmas Island	EXT	Listed place
South Point Settlement Remains	EXT	Listed place
Natural		
Ashmore Reef National Nature Reserve	EXT	Listed place
Christmas Island Natural Areas	EXT	Listed place
Mermaid Reef - Rowley Shoals	WA	Listed place
Scott Reef and Surrounds - Commonwealth Area	EXT	Listed place

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		

Scientific Name	Threatened Category	Presence Text
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat known to occur within area overfly marine area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous minutus Black Noddy [824]		Breeding known to occur within area
Anous stolidus Common Noddy [825]		Breeding known to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Breeding known to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat known to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area
Fregata andrewsi Christmas Island Frigatebird, Andrew's Frigatebird [1011]	Endangered	Breeding known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]		Species or species habitat known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding known to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Breeding known to occur within area
Sula dactylatra Masked Booby [1021]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Sula sula Red-footed Booby [1023]		Breeding known to occur within area
Thalasseus bengalensis as Sterna bengalensis Lesser Crested Tern [66546]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding known to occur within area
Fish		
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys sculptus Sculptured Pipefish [66197]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys haematopterus Reef-top Pipefish [66201]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Cosmocampus maxweberi Maxweber's Pipefish [66209]		Species or species habitat may occur within area
Doryrhamphus baldwini Redstripe Pipefish [66718]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus macrorhynchus Whiskered Pipefish, Ornate Pipefish [66222]		Species or species habitat may occur within area
Halicampus mataafae Samoan Pipefish [66223]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
Hippichthys parvicarinatus Short-keel Pipefish, Short-keeled Pipefish [66230]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippichthys spicifer Belly-barred Pipefish, Banded Freshwater Pipefish [66232]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Micrognathus brevirostris thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
[Trachyrhamphus longirostris](#) Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
[Dugong dugon](#) Dugong [28]		Breeding known to occur within area
Reptile		
[Acalyptophis peronii](#) Horned Seasnake [1114]		Species or species habitat may occur within area
[Aipysurus apraefrontalis](#) Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
[Aipysurus duboisii](#) Dubois' Seasnake [1116]		Species or species habitat may occur within area
[Aipysurus eydouxii](#) Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
[Aipysurus foliosquama](#) Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat may occur within area
[Aipysurus fuscus](#) Dusky Seasnake [1119]		Species or species habitat known to occur within area
[Aipysurus laevis](#) Olive Seasnake [1120]		Species or species habitat may occur within area
[Aipysurus tenuis](#) Brown-lined Seasnake [1121]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Chitulia inornata as Hydrophis inornatus Plain Seasnake [87379]		Species or species habitat may occur within area
Chitulia ornata as Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [87377]		Species or species habitat may occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Enhydrina schistosa Beaked Seasnake [1126]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Hydrelaps darwiniensis Black-ringed Seasnake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Seasnake [1101]		Species or species habitat may occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli Small-headed Seasnake [75601]		Species or species habitat may occur within area
Lapemis curtus as Lapemis hardwickii Spine-bellied Seasnake [83554]		Species or species habitat may occur within area
Leioselasma coggeri as Hydrophis coggeri Black-headed Sea Snake, Slender-necked Seasnake [87373]		Species or species habitat may occur within area
Leioselasma pacifica as Hydrophis pacificus Large-headed Seasnake, Pacific Seasnake [87378]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Parahydrophis mertoni Northern Mangrove Seasnake [1090]		Species or species habitat may occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Indopacetus pacificus Longman's Beaked Whale [72]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Breeding known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Commonwealth Reserves Terrestrial [Resource Information]

Name	State	Type
Christmas Island	EXT	National Park (Commonwealth)

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories
Christmas Island	Habitat Protection Zone (IUCN IV)
Kimberley	Habitat Protection Zone (IUCN IV)
Oceanic Shoals	Habitat Protection Zone (IUCN IV)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Joseph Bonaparte Gulf	Multiple Use Zone (IUCN VI)
Kimberley	Multiple Use Zone (IUCN VI)
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	National Park Zone (IUCN II)
Kimberley	National Park Zone (IUCN II)
Mermaid Reef	National Park Zone (IUCN II)
Ashmore Reef	Recreational Use Zone (IUCN IV)
Ashmore Reef	Sanctuary Zone (IUCN Ia)
Cartier Island	Sanctuary Zone (IUCN Ia)
Arafura	Special Purpose Zone (IUCN VI)
Joseph Bonaparte Gulf	Special Purpose Zone (IUCN VI)
Argo-Rowley Terrace	Special Purpose Zone (Trawl) (IUCN VI)
Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles		
Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
May - Jul		
Lepidochelys olivacea Olive Ridley Turtle [1767]	Nesting	Known to occur
Nov - May		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Browse Island	Nature Reserve	WA
North Kimberley	Marine Park	WA
Rowley Shoals	Marine Park	WA
Scott Reef	Nature Reserve	WA
Unnamed WA41775	5(1)(h) Reserve	WA
Uunguu	Indigenous Protected Area	WA

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Ashmore Reef	EXT
Hosine's Spring, Christmas Island	EXT
Mermaid Reef	EXT

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
Northern Endeavour Phase 1 Decommissioning	2022/09327		Approval
Project Crux Cable Lay and Operation	2022/09441		Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
275 km gas pipeline from Wadeye to existing Darwin gas pipeline	2006/2930	Controlled Action	Post-Approval
2-D seismic survey Scott Reef	2000/125	Controlled Action	Post-Approval
Audacious Oil Field Standalone Development	2001/407	Controlled Action	Completed
Blacktip Project - Wharf Construction	2007/3293	Controlled Action	Completed
Bonaparte Liquified Natural Gas Project	2011/6141	Controlled Action	Post-Approval
Browse FLNG Development, Commonwealth Waters	2013/7079	Controlled Action	Post-Approval
Christmas Island Airport Expansion	2001/434	Controlled Action	Post-Approval
Christmas Island Port Facility	2001/435	Controlled Action	Post-Approval
Conduct an exploration drilling campaign	2010/5718	Controlled Action	Completed
Construction of mobile phone tower	2002/694	Controlled Action	Completed
Decommissioning of Buffalo Oil Field	2003/984	Controlled Action	Post-Approval
Decommissioning of Challis Oilfield	2003/942	Controlled Action	Post-Approval
Develop Ichthys gas-condensate field permit area W	2006/2767	Controlled Action	Completed
Development of Blacktip Gas Field	2003/1180	Controlled Action	Post-Approval
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
East Christmas Island Phosphate Mines (9 sites)	2001/487	Controlled Action	Completed
Exploration for Mineable Phosphate, Christmas Island	2000/43	Controlled Action	Completed
Floating Liquefied Natural Gas facility	2001/533	Controlled Action	Completed
Ichthys Gas Field, Offshore and onshore processing facilities and subsea pipeline	2008/4208	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Lily Beach Recreational Facilities	2001/395	Controlled Action	Post-Approval
Lily Beach Rock Pool Development	2001/400	Controlled Action	Completed
Montara 4, 5, and 6 Oil Production Wells, and Montara 3 Gas Re-Injection Well	2002/755	Controlled Action	Post-Approval
Phosphate Mining in South Point Christmas Island	2012/6653	Controlled Action	Post-Approval
Prelude Floating Liquefied Natural Gas Facility and Gas Field Development	2008/4146	Controlled Action	Post-Approval
Proposed exploration drilling programme for Christmas Island	2016/7779	Controlled Action	Completed
PTTEP AA Floating LNG Facility	2011/6025	Controlled Action	Completed
Road Upgrade/Construction between Lily Beach Road and Port Faci	2001/436	Controlled Action	Post-Approval
Salvage, transport and processing of phosphate resource with extended airport si	2003/1217	Controlled Action	Post-Approval
Torosa South Initial Appraisal Drilling	2007/3500	Controlled Action	Completed
Trans-territory Gas Pipeline	2003/1186	Controlled Action	Completed
Yellow Crazy Ant Biological Control	2013/6836	Controlled Action	Post-Approval
Not controlled action			
2D seismic survey, exploration permit NT/P67	2004/1587	Not Controlled Action	Completed
2D Seismic Survey in Permit Areas WA-318-P & WA-319-P, near Cape Londonderry	2004/1687	Not Controlled Action	Completed
3D marine seismic survey in WA 314P and WA 315P	2004/1927	Not Controlled Action	Completed
96-108 Gaze Road - Residential upgrade	2006/2632	Not Controlled Action	Completed
Adele Trend TQ3D Seismic Survey	2001/252	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
AEC International Hydrocarbon Well Puffin 6	2000/36	Not Controlled Action	Completed
Aerial Baiting, Yellow Crazy Ant Supercolonies, Christmas Island, WA	2019/8492	Not Controlled Action	Completed
Audacious-3 oil drilling well	2003/1042	Not Controlled Action	Completed
Backpacker-1 Offshore Hydrocarbon Exploration Well	2001/300	Not Controlled Action	Completed
Boat Ramp Construction	2001/237	Not Controlled Action	Completed
Buffalo In-Fill Production Wells	2001/475	Not Controlled Action	Completed
Building of a carport adjacent to residential house	2004/1538	Not Controlled Action	Completed
Christmas Island/Construction of a double storey shed/carport at MQ387 Gaze Road	2004/1561	Not Controlled Action	Completed
Community Recreation Centre	2003/1279	Not Controlled Action	Completed
Controlled Source Electromagnetic 2D Survey	2009/4980	Not Controlled Action	Completed
Controlled Source Electromagnetic Survey	2010/5434	Not Controlled Action	Completed
Coot-1 hydrocarbon exploration well, Permit Area AC/L2 or AC/L3	2001/296	Not Controlled Action	Completed
courtyard shower & handbasin facilities	2006/2803	Not Controlled Action	Completed
Crux-A and Crux-B appraisal wells, Petroleum Permit Area AC/P23	2006/2748	Not Controlled Action	Completed
Crux gas-liquids development in permit AC/P23	2006/3154	Not Controlled Action	Completed
Drilling of 12 Hydrocarbon Exploration Wells, Permit Area WA-371-P	2006/3005	Not Controlled Action	Completed
Drilling of exploration well Audacious-1 in AC/P17	2000/5	Not Controlled Action	Completed
Drilling of exploration wells, Permit areas WA-301-P to WA-305-P	2002/769	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Dwelling demolition, maintenance and carpark/carport/storage shed works	2004/1837	Not Controlled Action	Completed
Echuca Shoals-2 Exploration of Appraisal Well	2006/3020	Not Controlled Action	Completed
Exploration Drilling in AC/P17, AC/P18 and AC/P24	2001/359	Not Controlled Action	Completed
Exploration Well AC/P23	2001/234	Not Controlled Action	Completed
Extension of a Masonary Brick Wall adjacent to the Poon Saan Club by 500 mm	2004/1564	Not Controlled Action	Completed
Garage and Office Facilities	2004/1919	Not Controlled Action	Completed
Housing and Garden Maintenance Works	2004/1487	Not Controlled Action	Completed
Identification of unmarked grave, exhumation/identification of remains which may belong to a sailor	2006/2992	Not Controlled Action	Completed
Internal and external modifications Lot 1014 Gaze Road	2004/1807	Not Controlled Action	Completed
Kaleidoscope exploration well	2001/182	Not Controlled Action	Completed
Light Industrial Subdivision Development	2004/1799	Not Controlled Action	Completed
Lot 1056 Extensions and Alterations	2004/1801	Not Controlled Action	Completed
Marine Seismic Survey in WA-239-P	2000/24	Not Controlled Action	Completed
Marine Survey for the Australia-ASEAN Power Link AAPL	2020/8714	Not Controlled Action	Completed
Montara-3 Offshore Hydrocarbon Exploration Well Permit Area AC/RL3	2001/489	Not Controlled Action	Completed
Nexus Drilling Program NT-P66	2007/3745	Not Controlled Action	Completed
NT/P68 2007 Two Well Drilling Program	2007/3569	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
P30 Hydrocarbon Exploration Well	2001/293	Not Controlled Action	Completed
Placement of bitumen/ concrete on rail sections of heritage listed incline, Christmas Island	2013/7009	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Proposed sale or lease of Crown land, 11 lots, Christmas Island	2018/8220	Not Controlled Action	Completed
Puffin Oil wells 7, 8 & 9 development	2005/2336	Not Controlled Action	Completed
Realignment of Gaze Road Service Road and Gaze Road Junction	2004/1735	Not Controlled Action	Completed
Refurbishment and Extension of Seaview Lodge	2012/6353	Not Controlled Action	Completed
renovate free-standing servant's quarters	2006/2811	Not Controlled Action	Completed
Residential upgrade, 2 Coconut Grove	2007/3295	Not Controlled Action	Completed
Saucepan 1 Exploration Well ACP23	2000/2	Not Controlled Action	Completed
Skua and Swift Oilfields	2006/3195	Not Controlled Action	Completed
Strumbo-1 Gas Exploration Well Permit Area WA-288-P	2002/884	Not Controlled Action	Completed
Supermarket Extensions	2006/2515	Not Controlled Action	Completed
Upgrade of Residence, Coconut Grove	2006/2728	Not Controlled Action	Completed
Verandah Extension to Existing Breezeway Unit, Gaze Road	2005/1970	Not Controlled Action	Completed
Woodside Geotechnical Investigation Sunrise Bank	2000/13	Not Controlled Action	Completed
Not controlled action (particular manner)			
2 (3D) Marine Seismic Surveys	2009/4994	Not Controlled Action (Particular Manner)	Completed
2D and 3D Seismic Survey	2011/6197	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
2D and 3D Seismic Survey WA-405-P	2008/4133	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D Seismic Survey WA-405-P	2009/5104	Not Controlled Action (Particular Manner)	Post-Approval
2D Marine Seismic Survey	2009/4728	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey of Braveheart,Kurrajong,Sunshine and Crocodile	2006/2917	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey within permit area WA-318-P	2007/3879	Not Controlled Action (Particular Manner)	Post-Approval
2D or 3D Marine Seismic Survey in Petroleum Permit Area AC/P35	2009/4864	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Marine Survey	2001/363	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic survey	2009/5076	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey in permit areas WA-274P and WA-281P	2004/1521	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey in WA Permit Area TP/22 and Commonwealth Permit Area WA-280-P	2005/2100	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey - Petroleum Exploration Area NT/P68, Eastern Bonaparte Basin	2006/2922	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2 geotechnical surveys - preliminary and final	2006/2886	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey	2008/4437	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey	2009/4681	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey, Permit AC/P 23	2005/2364	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic Survey - Maxima 3D MSS	2006/2945	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey	2006/2729	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, Browse Basin, WA	2009/5048	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, near Scott Reef, Browse Basin	2005/2126	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, petroleum exploration permit AC/P33	2006/2918	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey (NT/P68)	2008/4121	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey (NT/P68)	2006/2980	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey of AC/P4, AC/P17 and AC/P24	2006/2857	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
3D Seismic Survey WA-406-P Bonaparte Basin	2007/3904	Not Controlled Action (Particular Manner)	Post-Approval
AC/P37 3D Seismic Survey Ashmore Cartier	2007/3774	Not Controlled Action (Particular Manner)	Post-Approval
Aerial Baiting of Yellow Crazy Ants	2012/6438	Not Controlled Action (Particular Manner)	Post-Approval
Asbestos Removal from Commonwealth Owned Assests including Commonwealth Heritage	2009/4873	Not Controlled Action (Particular Manner)	Post-Approval
Auralandia 3D marine seismic survey	2011/5961	Not Controlled Action (Particular Manner)	Post-Approval
Aurora MC3D Marine Seismic Survey	2010/5510	Not Controlled Action (Particular Manner)	Post-Approval
Baiting Efficacy Trial of Feral Cat Bait and PAPP Toxicant	2008/4383	Not Controlled Action (Particular Manner)	Post-Approval
Bassett 3D Marine Seismic Survey	2010/5538	Not Controlled Action (Particular Manner)	Post-Approval
Blacktip Gas Project Yelcherr Beach Wharf Construction	2007/3537	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte 2D & 3D marine seismic survey	2011/5962	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte 3D & 2D Seismic Survey, in NT/P82, Timor Sea	2012/6398	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Bonaparte Basin Seabed Mapping Survey	2009/4951	Not Controlled Action (Particular Manner)	Post-Approval
Bonaparte Seismic and Bathymetric Survey	2012/6295	Not Controlled Action (Particular Manner)	Post-Approval
Braveheart 2D Infill Marine Seismic Survey 100km offshore	2008/4442	Not Controlled Action (Particular Manner)	Post-Approval
Braveheart 2D Marine Seismic Survey	2005/2322	Not Controlled Action (Particular Manner)	Post-Approval
Canis 3D Marine Seismic Survey	2008/4492	Not Controlled Action (Particular Manner)	Post-Approval
Cartier East and Cartier West 3D Marine Seismic Surveys	2009/5230	Not Controlled Action (Particular Manner)	Post-Approval
Caswell MC3D Marine Seismic Survey	2012/6594	Not Controlled Action (Particular Manner)	Post-Approval
Conduct an exploration drilling campaign	2011/5964	Not Controlled Action (Particular Manner)	Post-Approval
Crazy Ant Aerial Baiting Control Program	2002/722	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Dillon South-1 Exploration Well Drilling - AC/P4, Territory of Ashmore/Cartier	2013/6849	Not Controlled Action (Particular Manner)	Post-Approval
Drilling of Audacious-5 appraisal well	2008/4327	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Drilling of Exploration & Appraisal Wells Braveheart-1 & Cornea-3	2009/5160	Not Controlled Action (Particular Manner)	Post-Approval
Drilling of two appraisal wells	2011/5840	Not Controlled Action (Particular Manner)	Post-Approval
Endurance 3D Marine Seismic Data Acquisition Survey	2007/3667	Not Controlled Action (Particular Manner)	Post-Approval
Eni Bathurst 3D Seismic Survey	2011/6118	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling Campaign	2011/6047	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling Campaign, Browse Basin, WA-341-P, AC-P36 and WA-343-P	2013/6898	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling in Permit Areas WA-402-P & WA-403-P	2010/5297	Not Controlled Action (Particular Manner)	Post-Approval
Exploration Drilling Program - Permit areas - WA-314-P, WA-315-P, WA-398-P.	2008/4064	Not Controlled Action (Particular Manner)	Post-Approval
Fishburn2D Marine Seismic Survey	2012/6659	Not Controlled Action (Particular Manner)	Post-Approval
Floyd 3D and Chisel 3D Seismic Surveys	2011/6220	Not Controlled Action (Particular Manner)	Post-Approval
Geoscience Australia - Marine survey in Browse Basin to acquire data to assist assessment of CO2 sto	2013/6747	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Gicea 3D Marine Seismic Survey	2008/4389	Not Controlled Action (Particular Manner)	Post-Approval
Gigas 2D Pilot Ocean Bottom Cable Marine Seismic Survey	2007/3839	Not Controlled Action (Particular Manner)	Post-Approval
Gold 2D Marine Seismic Survey Permit Areas WA375P and WA376P	2009/4698	Not Controlled Action (Particular Manner)	Post-Approval
Helicopter baiting of exotic yellow crazy ant supercolonies, Christmas Island, Indian Ocean	2009/5016	Not Controlled Action (Particular Manner)	Post-Approval
Ichthys 3D Marine Seismic Survey	2010/5550	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Joseph Bonaparte Gulf Seabed mapping survey	2010/5517	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Koolama 2D Seismic Survey Dampier Basin	2010/5420	Not Controlled Action (Particular Manner)	Post-Approval
Kraken, Lusca & Asperus 3D Marine Seismic Survey	2013/6730	Not Controlled Action (Particular Manner)	Post-Approval
Malita West 3D Seismic Survey WA-402-P and WA-403-P	2007/3936	Not Controlled Action (Particular Manner)	Post-Approval
Marine Environmental Survey 2012	2012/6310	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Mariner Non-Exclusive 2D Seismic Survey	2011/6172	Not Controlled Action (Particular Manner)	Post-Approval
Nova 3D Seismic Survey	2013/6825	Not Controlled Action (Particular Manner)	Post-Approval
NT/P80 2010 2D Marine Seismic Survey	2010/5487	Not Controlled Action (Particular Manner)	Post-Approval
Octantis 3D Marine Seismic Survey, Permit Area AC/P41 off northern Western Australia	2007/3369	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Canning Multi Client 2D Marine Seismic Survey	2010/5393	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Exploration Drilling Campaign	2011/6222	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Gas Exploration Drilling Campaign	2012/6384	Not Controlled Action (Particular Manner)	Post-Approval
Outer Canning exploration drilling program off NW coast of WA	2012/6618	Not Controlled Action (Particular Manner)	Post-Approval
Panda NT/P76 3D Seismic Acquisition Survey Program	2009/4992	Not Controlled Action (Particular Manner)	Post-Approval
Petrel MC2D Marine Seismic Survey	2010/5368	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Pilot Appraisal Well - Torosa South 1	2008/3991	Not Controlled Action (Particular Manner)	Post-Approval
Rosebud 3D Marine Seismic Survey in WA-30-R and TR/5	2012/6493	Not Controlled Action (Particular Manner)	Post-Approval
Sandalford 3D Seismic Survey	2012/6261	Not Controlled Action (Particular Manner)	Post-Approval
Santos Petrel-7 Offshore Appraisal Drilling Programme (Bonaparte Basin)	2011/5934	Not Controlled Action (Particular Manner)	Post-Approval
Schild MC3D Marine Seismic Survey	2012/6373	Not Controlled Action (Particular Manner)	Post-Approval
Schild Phase 11 MC3D Marine Seismic Survey, Browse Basin	2013/6894	Not Controlled Action (Particular Manner)	Post-Approval
Scott Reef Seismic Research	2006/2647	Not Controlled Action (Particular Manner)	Post-Approval
Searcher bathymetry & geochemical seismic survey, Brawse Basin,Timor Sea,WA	2013/6980	Not Controlled Action (Particular Manner)	Post-Approval
Sonar and Acoustic Trials	2001/345	Not Controlled Action (Particular Manner)	Post-Approval
Songa Venus Drilling and Testing Operations	2009/5122	Not Controlled Action (Particular Manner)	Post-Approval
Songa Venus Drilling Programme, Bonaparte Basin	2009/4990	Not Controlled Action (Particular Manner)	Post-Approval
Sunshine Infill 2D and Mimosa 2D Marine Seismic Surveys	2009/4699	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Swimming Pool modification	2007/3312	Not Controlled Action (Particular Manner)	Post-Approval
Thoar 3D Marine Seismic Survey	2010/5668	Not Controlled Action (Particular Manner)	Post-Approval
Tiffany 3D Seismic Survey	2010/5339	Not Controlled Action (Particular Manner)	Post-Approval
Torosa-5 Apraisal Well, WA-30-R	2008/4430	Not Controlled Action (Particular Manner)	Post-Approval
Tow West Atlas wreck from present location to boundary of EEZ	2010/5652	Not Controlled Action (Particular Manner)	Post-Approval
Trials of a bait delivery system for the control of Yellow Crazy Ants	2009/4763	Not Controlled Action (Particular Manner)	Post-Approval
Tridacna 3D Ocean Bottom Cable Marine Seismic Survey	2011/5959	Not Controlled Action (Particular Manner)	Post-Approval
Ursa 3D Marine Seismic Survey	2008/4634	Not Controlled Action (Particular Manner)	Post-Approval
Vampire 2D Non Exclusive Seismic Survey, WA	2010/5543	Not Controlled Action (Particular Manner)	Post-Approval
Veritas Voyager 2D Marine Seismic Survey	2009/5151	Not Controlled Action (Particular Manner)	Post-Approval
Water supply upgrade	2005/2269	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Woodside Southern Browse 3D Seismic Survey, WA	2007/3534	Not Controlled Action (Particular Manner)	Post-Approval
Zeemeermin MC3D seismic survey, Browse Basin, Offshore WA	2009/5023	Not Controlled Action (Particular Manner)	Post-Approval
Zeppelin 3D Seismic Survey	2011/6148	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
2D Marine Seismic Survey	2008/4623	Referral Decision	Completed
3D Seismic Survey (NT/P68)	2006/2949	Referral Decision	Completed
Alterations and Improvements to existing residence at Lot 3015 Gaze Rd, Christmas Island	2009/5039	Referral Decision	Completed
Aurora extension MC3D Marine Seismic Survey	2011/5887	Referral Decision	Completed
BRSN08 3D Marine Seismic Survey	2008/4582	Referral Decision	Completed
Experimental Study of Behavioural and Physiological Impact on Fish of Seismic Ex	2006/2625	Referral Decision	Completed
Nova 3D Seismic Survey, WA 442-NT/P81, Joseph Bonaparte Gulf	2013/6820	Referral Decision	Completed
Pilot Appraisal Well - Torosa South-1	2008/3985	Referral Decision	Completed
Puffin South-West Development of Oil Reserves	2007/3834	Referral Decision	Completed
Rocky Point Dwelling Redevelopment	2005/2203	Referral Decision	Referral Decision
Seismic Data Acquisition, Browse Basin	2010/5475	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Ashmore Reef and Cartier Island and surrounding Commonwealth waters	North-west
Canyons linking the Argo Abyssal Plain with the Scott Plateau	North-west
Carbonate bank and terrace system of the Sahul Shelf	North-west
Carbonate bank and terrace system of the Van Diemen Rise	North
Continental Slope Demersal Fish Communities	North-west
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	North-west
Pinnacles of the Bonaparte Basin	North-west
Pinnacles of the Bonaparte Basin	North
Seringapatam Reef and Commonwealth waters in the Scott Reef Complex	North-west
Shelf break and slope of the Arafura Shelf	North

Biologically Important Areas

Scientific Name	Behaviour	Presence
Dolphins		
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Breeding	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Calving	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging	Known to occur
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Foraging (high density prey)	Known to occur

Scientific Name	Behaviour	Presence
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Resting	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Calving	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Likely to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Foraging	Known to occur
Sousa chinensis Indo-Pacific Humpback Dolphin [50]	Significant habitat - unknown behaviour	Likely to occur
Dugong		
Dugong dugon Dugong [28]	Breeding	Known to occur
Dugong dugon Dugong [28]	Calving	Known to occur
Dugong dugon Dugong [28]	Foraging	Known to occur
Dugong dugon Dugong [28]	Foraging (high density seagrass beds)	Known to occur
Dugong dugon Dugong [28]	Nursing	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Likely to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting	Likely to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Likely to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Mating	Likely to occur
Chelonia mydas Green Turtle [1765]	Nesting	Likely to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Likely to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Foraging	Known to occur
Lepidochelys olivacea Olive Ridley Turtle [1767]	Internesting	Likely to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Natator depressus Flatback Turtle [59257]	Internesting	Likely to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	Known to occur
Fregata minor Greater Frigatebird [1013]	Breeding	Known to occur
Phaethon lepturus White-tailed Tropicbird [1014]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding (high numbers)	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Breeding	Known to occur
Sternula albifrons sinensis Little Tern [82850]	Resting	Known to occur
Sula leucogaster Brown Booby [1022]	Breeding	Known to occur
Sula sula Red-footed Booby [1023]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur

Scientific Name	Behaviour	Presence
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Calving	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Nursing	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Resting	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Directory

Search Criteria

12 Aboriginal Cultural Heritage (ACH) Directory in Shapefile - CARGOTANK_11570M3_ANN_EMBA_SHORE_ONLY_SIMPLIFIED_EAST, CARGOTANK_11570M3_ANN_EMBA_SHORE_ONLY_SIMPLIFIED_WEST, CARGOTANK_11570M3_ANN_EMBA_WATER_ONLY_SIMPLIFIED

Disclaimer

The *Aboriginal Cultural Heritage Act 2021 (Act)* recognises, protects, conserves, and preserves Aboriginal cultural heritage (ACH), and recognises the fundamental importance of ACH to Aboriginal people and its role in Aboriginal communities past, present and future. The Act recognises the value of ACH to Aboriginal people as well as to the wider Western Australian community.

Aboriginal cultural heritage in Western Australia is protected, whether or not the ACH has been reported to the ACH Council or exists on the Directory.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you email the details to the Department at AboriginalHeritage@dplh.wa.gov.au and we will make every effort to rectify it as soon as possible.

Copyright

Terminology

ID: Reported ACH is assigned a unique ID by the Department of Planning, Lands and Heritage using the format: ACH-00000001. For ACH places on the former Register the ID numbers remain unchanged and use the new format. For example the ACH ID of the place Swan River was previously '3536' and is now 'ACH-00003536'.

Access and Restrictions:

- **Boundary Reliable (Yes/No):** Indicates whether the location and extent of the ACH boundary is considered reliable.
- **Boundary Restricted = No:** ACH location is shown as accurately as the information submitted allows.
- **Boundary Restricted = Yes:** To preserve confidentiality the exact location and extent of the place is not displayed on the map. However, the shaded region (generally with an area of at least 4km²) provides a general indication of where the ACH is located. If you are a landowner and wish to find out more about the exact location of the place, please contact the Department of Planning, Lands and Heritage.
- **Culturally Sensitive = No:** Availability of information that the Department of Planning, Lands and Heritage holds in relation to the ACH is not restricted in any way.
- **Culturally Sensitive = Yes:** Some of the information that the Department of Planning, Lands and Heritage holds in relation to the ACH is restricted if it is considered culturally sensitive information. This information will only be made available if the Department of Planning, Lands and Heritage receives written approval from the people who provided the information. To request access please contact AboriginalHeritage@dplh.wa.gov.au.
- **Culturally Sensitive Nature:**
  - **No Gender / Initiation Restrictions:** *Anyone* can view the information.
  - **Men only:** Only *males* can view restricted information.
  - **Women only:** Only *females* can view restricted information.

Status:

- **ACH Directory**: Aboriginal cultural heritage place or cultural landscape.
- **Pending**: Aboriginal cultural heritage place or cultural landscape with information in a verification stage.
- **Historic**: Aboriginal heritage places determined to not meet the criteria of Section 5 of the Aboriginal Heritage Act 1972. Includes places that no longer exist as a result of land use activities with existing approvals.

ACH Type:

- **Cultural Landscape:** a group of areas interconnected through the tangible elements of Aboriginal culture heritage present.
- **Place**: an area in which tangible elements of Aboriginal cultural heritage are present.

Place Type: The type of Aboriginal cultural heritage place. For example an artefact scatter place or engravings place.

Legacy Place Status: A status determined under the previous *Aboriginal Heritage Act 1972*:

- **Registered Site:** the place was assessed as meeting Section 5 of the *Aboriginal Heritage Act 1972.*
- **Lodged:** Information was received in relation to the place, but an assessment was not completed to determine if it met section 5 of the *Aboriginal Heritage Act 1972.*
- **Stored Data/Not a Site:** The place was assessed as not meeting Section 5 of the *Aboriginal Heritage Act 1972.*

Legacy ID: This is the former unique number that the former Department of Aboriginal Sites assigned to the place.

Coordinates

Map coordinates are based on the GDA 94 Datum.

Basemap Copyright

Aboriginal Cultural Heritage Inquiry System

List of Aboriginal Cultural Heritage (ACH) Directory

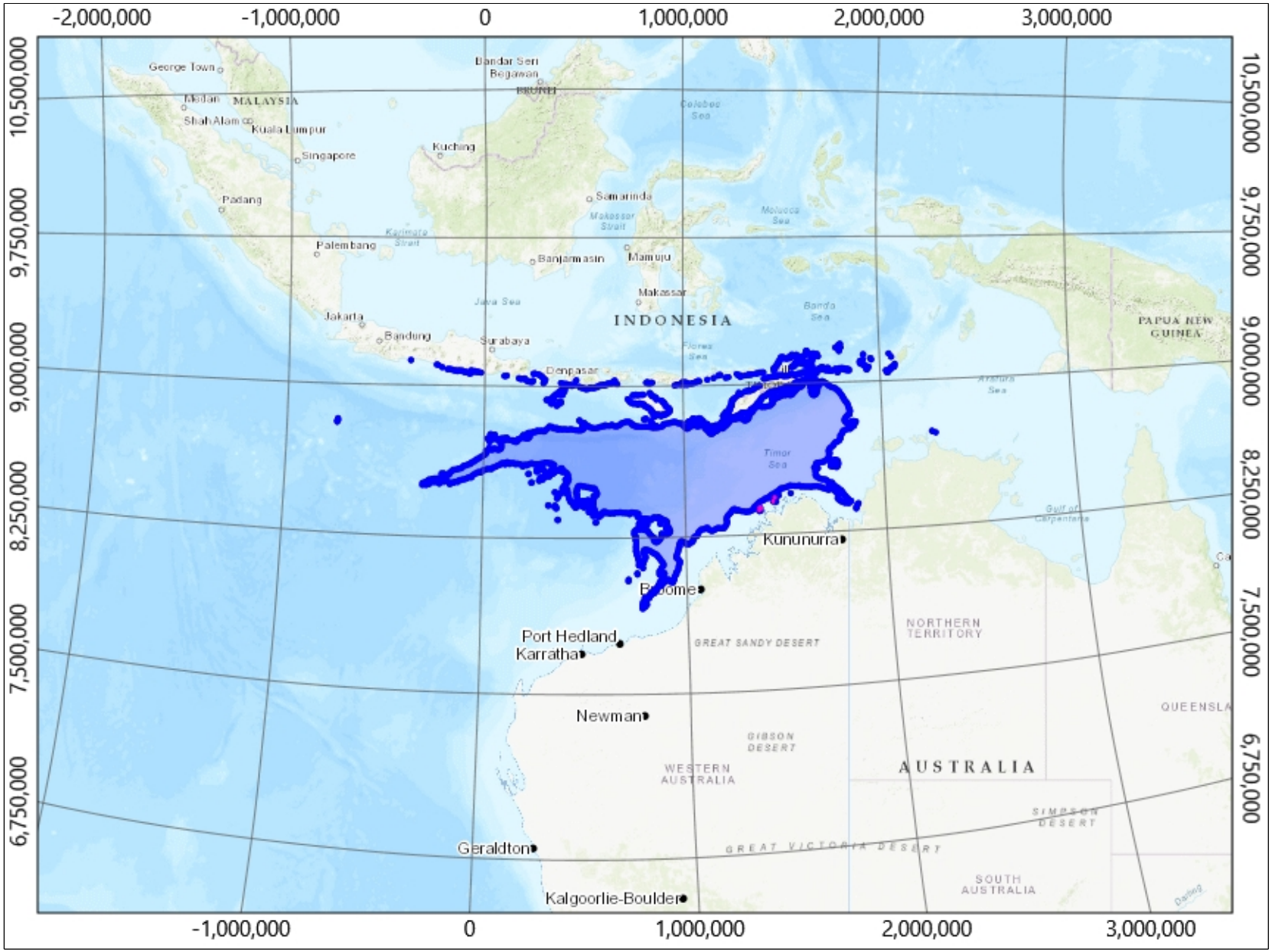
ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	ACH Type	Place Type	Knowledge Holders	Legacy Place Status	Legacy ID
12719	DULI COVE CAVES.	No	No	No	No Gender / Initiation Restrictions	ACH Directory	Place	Sub surface cultural material; Artefacts / Scatter; Other	*Registered Knowledge Holder names available from DPLH	Lodged	K02502
12720	DULI CAVE.	No	No	No	No Gender / Initiation Restrictions	ACH Directory	Place	Camp; Ritual / Ceremonial; Creation / Dreaming Narrative; Rock Shelter	*Registered Knowledge Holder names available from DPLH	Registered Site	K02503
12722	DIDJI POINT.	No	No	No	No Gender / Initiation Restrictions	ACH Directory	Place	Creation / Dreaming Narrative; Traditional Structure	*Registered Knowledge Holder names available from DPLH	Registered Site	K02505
12725	DIDJI WELLS.	No	No	No	No Gender / Initiation Restrictions	ACH Directory	Place	Creation / Dreaming Narrative; Water Source	*Registered Knowledge Holder names available from DPLH	Registered Site	K02508
12726	CASSINI STONE LINE	No	Yes	No	No Gender / Initiation Restrictions	ACH Directory	Place	Creation / Dreaming Narrative; Traditional Structure	*Registered Knowledge Holder names available from DPLH	Registered Site	K02509
12727	CASSINI STONE CIRCLES	No	No	No	No Gender / Initiation Restrictions	ACH Directory	Place	Creation / Dreaming Narrative; Traditional Structure	*Registered Knowledge Holder names available from DPLH	Registered Site	K02510
14504	CONDILLAC MIDDEN.	No	No	No	No Gender / Initiation Restrictions	ACH Directory	Place	Camp; Midden	*Registered Knowledge Holder names available from DPLH	Lodged	K00550
14556	NGAMILI, CONDILLAC ISLAND	Yes	No	Yes	No Gender / Initiation Restrictions	ACH Directory	Place	Creation / Dreaming Narrative	*Registered Knowledge Holder names available from DPLH	Registered Site	K00549
14929	ALBERT ISLAND	No	No	No	No Gender / Initiation Restrictions	ACH Directory	Place	Engraving	*Registered Knowledge Holder names available from DPLH	Registered Site	K00131
14952	CASSINI ISLAND	No	Yes	No	No Gender / Initiation Restrictions	ACH Directory	Place	Traditional Structure	*Registered Knowledge Holder names available from DPLH	Lodged	K00154
24152	Saltwater Country - reef sites and fish traps (Maret Island)	Yes	Yes	Yes	No Gender / Initiation Restrictions	ACH Directory	Place	Sub surface cultural material; Camp; Ritual / Ceremonial; Creation / Dreaming Narrative; Fish Trap; Historical; Hunting Place; Meeting Place; Landscape / Seascape Feature; Ochre; Plant	*Registered Knowledge Holder names available from DPLH	Lodged	

ID	Name	Boundary Restricted	Boundary Reliable	Culturally Sensitive	Culturally Sensitive Nature	Status	ACH Type	Place Type	Knowledge Holders	Legacy Place Status	Legacy ID
								Resource; Rock Shelter; Shell; Water Source			
24153	Jaradanyingga - Jaajaal	Yes	Yes	Yes	No Gender / Initiation Restrictions	ACH Directory	Place	Sub surface cultural material; Camp; Ritual / Ceremonial; Historical; Hunting Place; Meeting Place; Landscape / Seascape Feature; Ochre; Plant Resource; Quarry; Rock Shelter; Shell; Water Source	*Registered Knowledge Holder names available from DPLH	Lodged	

Department of Planning, Lands and Heritage

Aboriginal Cultural Heritage Inquiry System

Map of Aboriginal Cultural Heritage (ACH) Directory



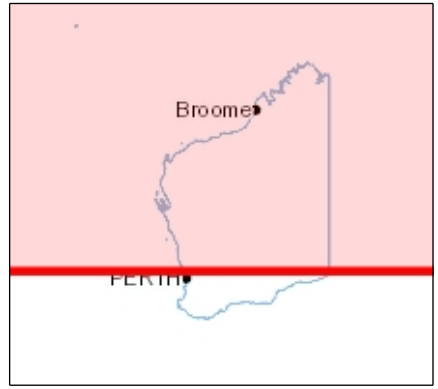
Legend

- Aboriginal Cultural Heritage (ACH) Directory
- Search Area
- Aboriginal Community
  - *Permanent*
  - *Seasonal*
  - *Town Based*
- Town
- Road
- River
- Local Government Authority

970.72 kilometres

Map Scale 1 : 29,420,000

MGA Zone 50 (GDA94)



Aboriginal Cultural Heritage Inquiry System

List of Heritage Surveys

Search Criteria

1 Heritage Surveys containing 1 Survey Areas in Shapefile - CARGOTANK_11570M3_ANN_EMBA_SHORE_ONLY_SIMPLIFIED_EAST, CARGOTANK_11570M3_ANN_EMBA_SHORE_ONLY_SIMPLIFIED_WEST, CARGOTANK_11570M3_ANN_EMBA_WATER_ONLY_SIMPLIFIED

Disclaimer

Heritage Surveys have been mapped using information from the reports and / or other relevant data sources. Heritage Surveys consisting of small discrete areas may not be visible except at large scales. Reports shown may not be held at the Department of Planning, Lands and Heritage (DPLH). Please consult report holder for more information. Refer to https://www.wa.gov.au/organisation/department-of-planning-lands-and-heritage/aboriginal-heritage for information on requesting reports held by DPLH.

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Copyright

Access

Some reports are restricted.

Spatial Accuracy

The following legend strictly applies to the spatial accuracy of heritage survey boundaries as captured by DPLH.

Very Good	Boundaries captured from surveyed titles, GPS (2001 onwards) submitted maps georeferenced to within 20m accuracy.
Good / Moderate	Boundaries captured from GPS (pre 2001) submitted maps georeferenced to within 250m accuracy.
Unreliable	Boundaries captured from submitted maps georeferenced to an accuracy exceeding 250m.
Indeterminate	Surveys submitted with insufficient information to allow boundary capture.

Basemap Copyright

Aboriginal Cultural Heritage Inquiry System

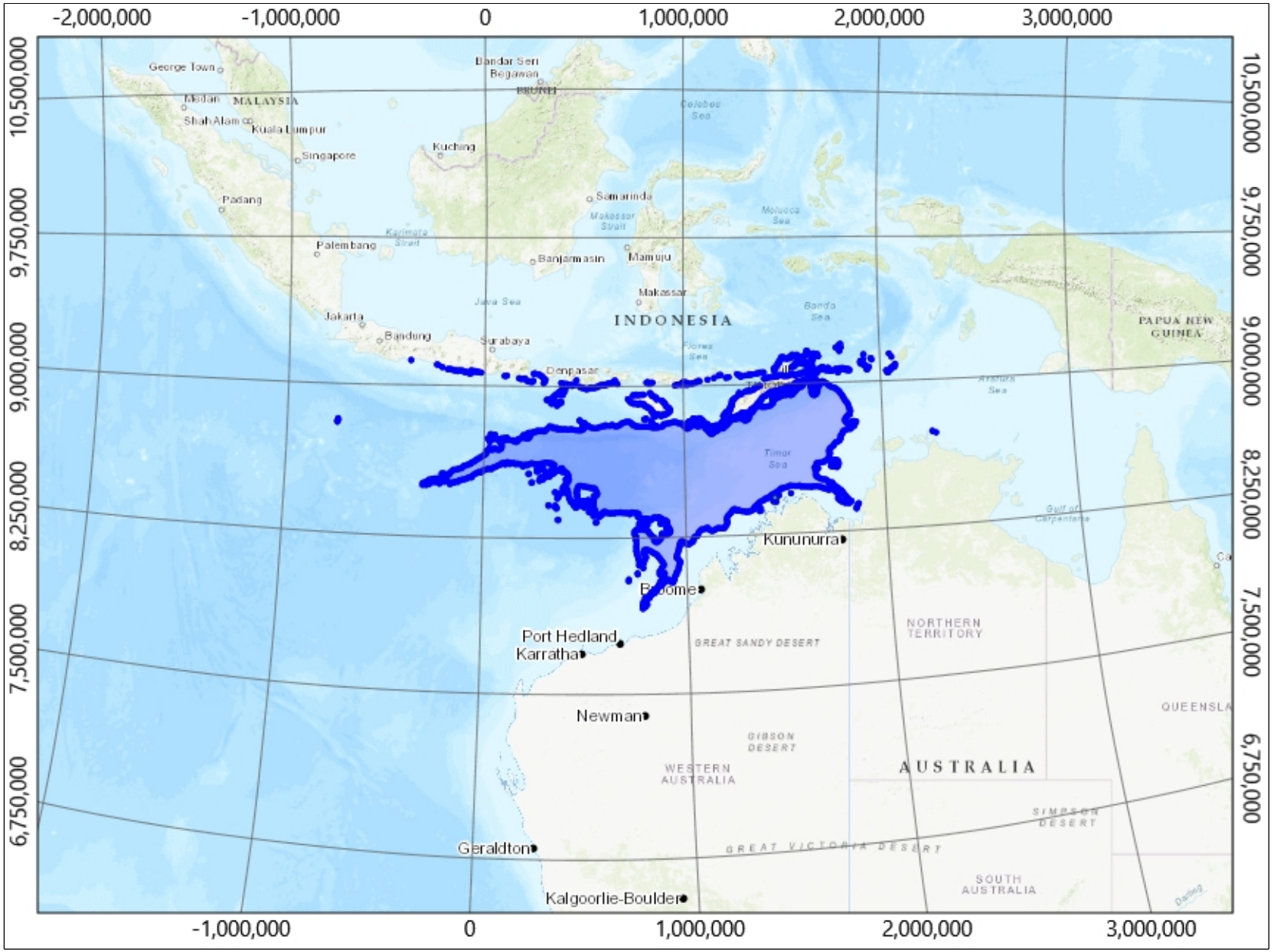
List of Heritage Surveys

Survey Report ID	Survey Area ID	Report Title	Report Authors	Survey Type	Area Description	Spatial Accuracy	Field / Desktop
18181	13024	Cassini Island Survey Report. Draft 4 Oct 1988.	Crawford, I.	Archaeological/ Ethnographic	The survey area consists of Cassini Island.	Good	Field and Desktop

Department of Planning, Lands and Heritage

Aboriginal Cultural Heritage Inquiry System

Map of Heritage Survey Areas



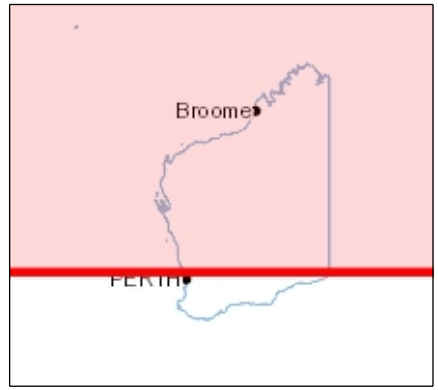
Legend

- Heritage Survey Area
- Search Area
- Aboriginal Community
  - *Permanent*
  - *Seasonal*
  - *Town Based*
- Town
- Road
- River
- Local Government Authority

970.72 kilometres

Map Scale 1 : 29,420,000

MGA Zone 50 (GDA94)



APPENDIX D HYDROCARBON THRESHOLDS JUSTIFICATION

Appendix H Hydrocarbon thresholds

Hydrocarbon impact pathways and thresholds

The modelling method described is able to track hydrocarbon concentrations of floating oil, entrained oil and dissolved aromatic hydrocarbons below biologically significant impact levels. Consequently, threshold concentrations are specified for the model to control what contact is recorded for surface (floating oil and shoreline accumulation) and subsurface locations (entrained oil and dissolved aromatic hydrocarbons) to ensure that recorded contacts are for biologically meaningful concentrations.

The determination of biologically meaningful impact levels is complex since the degree of impact will depend on the sensitivity of the biota contacted, the duration of the contact (exposure) and the toxicity of the hydrocarbon mixture making the contact. The toxicity of a hydrocarbon will change over time, due to weathering processes altering the composition of the hydrocarbon. To ensure conservatism in the environmental impact assessment process, the threshold concentrations applied to the model are selected to adopt the most sensitive receptors that may be exposed, the longest likely exposure times and the more toxic hydrocarbons.

Impact pathways and impact threshold concentrations are detailed below for surface (floating and shoreline accumulation) oil, entrained oil and dissolved aromatic hydrocarbons (DAHs). The thresholds discussed and used in modelling are provided in Table 1.

Table 1: Low, moderate and high exposure thresholds used for spill modelling

Threshold Level	Floating oil (g/m^2)	Shoreline loading (g/m^3)	Entrained oil (ppb)	Dissolved aromatic hydrocarbons (ppb)
Low	1	10	10	10
Moderate	10	100	-	50
High	50	>1,000	100	400

Surface (floating) oil

The impact threshold concentration for exposure to surface (floating) oil is derived from levels likely to cause adverse impacts to marine/ coastal fauna and habitats. Marine/ coastal fauna, habitats and socio-economic receptors may be impacted by floating oil in the following way:

- Marine mammals, reptiles and birds can be exposed to oil when at the water surface. For marine mammals and reptiles this can occur when surfacing within a slick to breathe while for birds this includes contact from diving into a slick or floating on the sea surface while feeding or resting. For marine fauna surfacing in floating oil contact to sensitive areas may occur (e.g. eyes, mouth and respiratory system) creating irritation and potentially cell damage. Volatile compounds evaporating form surface oil may be inhaled by marine mammals and reptiles, particularly when the oil is fresh and relatively unweathered. Inhalation of these compounds may cause damage to internal respiratory structures. It is generally considered that marine mammals with smooth skin (e.g. cetaceans) are less susceptible to coating of oil than those covered with hair given hair has a greater potential to trap and retain oil causing longer exposure times. Birds are

particularly susceptible to impact from floating oil in that feathers retain oil, particularly when the oil is 'sticky' (e.g. heavy crudes). The coating of oil on birds may hinder flight and feeding, reduce the ability of the bird to thermoregulate (control body temperature) and irritate/damage sensitive surfaces such as eyes, ears and nasal structures. Secondary impacts can occur through the ingestion of oil as birds attempt to preen contaminated feathers. Ingestion may lead to oil absorption and further toxic impacts;

- Surface oil can coat emergent habitats such as coral or rocky reefs and intertidal and shoreline areas around islands or along coastlines. Habitats that can be affected include rocky shorelines, sandy beaches, mangrove communities and intertidal areas which may support seagrass, algae and coral reef communities. The physical coating of mangroves, in particular their root system, can prevent gas exchange and/or cause toxicity at the cellular level. Mangrove response to oil contact includes deforestation, yellowing of leaves and mortality. Other chronic responses include reduced growth, reduced reproductive output and success and genetic mutation. Intertidal areas may be contacted at low tides where emergent habitat is coated by oil. Seagrass, algae and sessile fauna such as hard corals, soft corals and sponges may be smothered as well as small low mobility fauna that live in close association with these and other benthic habitats or within/on sediments. Smothering of intertidal photosynthetic organisms such as seagrass, algae and hard coral may reduce their capacity for photosynthesis (energy production) or lead to a toxic response at the cellular level. For seagrass and algae this could lead to plant death, shedding of leaves/thalli, reduced growth, reduced reproductive output/success and genetic mutation. Similarly, for hard corals, bleaching, colony death, reduced growth and reduced reproductive capacity may occur. Such impacts may be exacerbated if these organisms are already under stress from marginal environmental conditions or if impacts occur during critical life-history stages (e.g. spawning periods). Small fauna smothered by oil may be hindered in their ability to move and feed or may suffer a toxic response from mortality to reduced growth rate or reproductive success. The coating of habitats can lead to secondary impacts to marine/coastal fauna. For example, marine turtles and shorebirds may be contacted by oil when using nesting beaches or when roosting/feeding along shorelines, respectively. Marine/coastal fauna may also ingest oil when feeding on coated habitats, e.g. dugongs or turtles ingesting coated seagrass/algae and shorebirds ingesting coated intertidal organisms such as molluscs and crabs; and
- Surface oil may impact on socio-economic receptors such as the oil and gas industry, commercial shipping, fisheries/aquaculture and tourism. The presence of floating oil may pose a human health risk from volatile compounds depending on the nature and freshness of the oil (i.e. fresh light oils and condensates posing the greatest risk) while oil spill response activities targeting floating oil may preclude or disrupt activities by other users in the area both offshore and at oil affected shorelines. This could have an economic impact on affected industries. In addition, floating and stranded oil may be highly visible to the general public and have a resultant negative effect on tourism in affected areas. Real or perceived deterioration of nearshore and coastal habitats may also have long lasting effect on the tourism value of an area and of fisheries activities that may rely on those areas to support healthy fish stocks.

The low threshold to assess the potential for floating oil exposure, was 1 g/m^2, which equates approximately to an average thickness of 1 µm, referred to as visible oil. Oil of this thickness is described as rainbow sheen in appearance, according to the Bonn Agreement Oil Appearance Code (Bonn Agreement, 2009; AMSA, 2014). This threshold is considered below levels which would cause environmental harm and it is more indicative of the areas perceived to be affected due to its visibility on the sea surface and potential to trigger temporary closures of areas (i.e. fishing grounds) as a precautionary measure.

Ecological impact has been estimated to occur at 10 g/m^2 (a film thickness of approximately 10 µm or 0.01 mm) according to French et al. (1996) and French-McCay (2009) as this level of fresh oiling has been observed to mortally impact some birds through adhesion of oil to their feathers, exposing them to secondary effects such as hypothermia. The appearance of oil at this average thickness has been described as a metallic sheen (Bonn Agreement, 2009).

Scholten et al. (1996) and Koops et al. (2004) indicated that at oil concentrations on the sea surface of 25 g/m^2 (or greater), would be harmful for all birds that have landed in an oil film due to potential contamination of their feathers, with secondary effects such as loss of temperature regulation and ingestion of oil through preening. The appearance of oil at this thickness is also described as metallic sheen (Bonn Agreement, 2009). For this study the high exposure threshold was set to 50 g/m2 and above based on NOPSEMA (2019). This threshold can also be used to inform response planning (RPS APASA, 2023).

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Shoreline Accumulation

There are many different types of shorelines, ranging from cliffs, rocky beaches, sandy beaches, mud flats and mangroves, and each of these influences the volume of oil that can remain stranded ashore and its thickness before the shoreline saturation point occurs. For instance, a sandy beach may allow oil to percolate through the sand, thus increasing its ability to hold more oil ashore over tidal cycles and various wave actions than an equivalent area of water; hence oil can increase in thickness onshore over time. A sandy beach shoreline was assumed as the default shoreline type for the modelling for this activity, as it allows for the highest carrying capacity of oil (of the available open/exposed shoreline types). Hence the results would be indicative of a worst-case scenario, where the highest volume of oil may be stranded on the shoreline (when compared to other shoreline types, such as exposed rocky shores).

In previous risk assessment studies, French-McCay et al. (2005a; 2005b) used a threshold of 10 g/m^2 to assess the potential for shoreline accumulation. This is a conservative threshold used to define regions of socio-economic impact, such as triggering temporary closures of adjoining fisheries or the need for shore clean-up on beaches or man-made features/amenities (breakwaters, jetties, marinas, etc.). It would equate to approximately 2 teaspoons of hydrocarbon per square meter of shoreline accumulation. The appearance is described as a stain/film. On that basis, the 10 g/m^2 shoreline accumulation threshold has been selected to define the zone of potential “low shoreline accumulation” (RPS, 2023).

French et al. (1996) and French-McCay (2009) define a shoreline oil accumulation threshold of 100 g/m^2, or above, would potentially harm shorebirds and wildlife (furbearing aquatic mammals and marine reptiles on or along the shore) based on studies for sub-lethal and lethal impacts. This threshold has been used in previous environmental risk assessment studies (see French-McCay, 2003; French-McCay et al., 2004, French-McCay et al., 2011; 2012; NOAA, 2013). Additionally, a shoreline concentration of 100 g/m^2, or above, is the minimum limit that the oil can be effectively cleaned according to the AMSA (2015) guideline. This threshold equates to approximately ½ a cup of oil per square meter of shoreline accumulation. The appearance is described as a thin oil coat. Therefore, 100 g/m^2 has been selected to define the zone of potential “moderate shoreline accumulation” (RPS, 2023).

Observations by Lin & Mendelssohn (1996) demonstrated that loadings of more than 1,000 g/m^2 of hydrocarbon during the growing season would be required to impact marsh plants significantly. Similar thresholds have been found in studies assessing hydrocarbon impacts on mangroves (Grant et al., 1993; Suprayogi & Murray, 1999). Hence, 1,000 g/m^2 has been

selected to define the zone of potential "high shoreline accumulation". It equates to approximately 1 litre of hydrocarbon per square meter of shoreline accumulation. The appearance is described as a hydrocarbon cover.

It is worth noting that the shoreline accumulation thresholds derived from extensive literature review (RPS, 2023) agree with the commonly used threshold values for oil spill modelling specified in NOPSEMA (2019)

Entrained oil

Entrained oil is oil that is dispersed within the water column as oil droplets. As such, insoluble compounds in oil cannot be absorbed from the water column by aquatic organisms, hence are not bioavailable through absorption of compounds from the water. Exposure to these compounds would require routes of uptake other than absorption of soluble compounds. The route of exposure of organisms to whole oil alone include direct contact with tissues of organisms and uptake of oil by direct consumption, with potential for biomagnification through the food chain (NRC, 2005). For oil spills released at surface, entrained oil is created in the top few meters of the water column through mixing of surface oil by wave action. For oil spills released subsea (e.g. pipelines leaks, well blowouts) entrained oil may be distributed deeper within the water column.

The concentrations of entrained droplets output by SIMAP represent hydrocarbons that are not bioavailable. The soluble and semi-soluble fractions dissolve from the droplets over time, and a potential effects analysis based on the dissolved hydrocarbons characterizes their risk.The 10 ppb threshold represents the very lowest concentration and corresponds generally with the lowest trigger levels for chronic exposure for entrained hydrocarbons in the ANZECC & ARMCANZ (2000) water quality guidelines. Due to the requirement for relatively long exposure times (> 24 hours) for these concentrations to be significant, they are likely to be more meaningful for juvenile fish, larvae and planktonic organisms that might be entrained (or otherwise moving) within the entrained plumes, or when entrained hydrocarbons adhere to organisms or trapped against a shoreline for periods of several days or more.

This exposure zone is not considered to be of significant biological impact and is therefore outside the adverse exposure zone. This exposure zone represents the area contacted by the spill. This area does not define the area of influence as it is considered that the environment will not be affected by the entrained hydrocarbon at this level.

Thresholds of 10 ppb and 100 ppb were applied over a 1-hour time exposure (RPS, 2023), to cover the range of thresholds outlined in ANZECC & ARMCANZ (2000) water quality guidelines, the incremental change for greater potential effect and is per NOPSEMA (2019).

A complicating factor that should be considered when assessing the consequence of dissolved and entrained oil distributions is that there will be some areas where both physically entrained oil droplets and dissolved hydrocarbons co-exist. Higher concentrations of each will tend to occur close to the source where sea conditions can force mixing of relatively unweathered oil into the water column, resulting in more rapid dissolution of soluble compounds.

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Dissolved Aromatic Hydrocarbons

Dissolved hydrocarbons are taken up into organisms directly through external surfaces and gills, as well as through the digestive tract. Thus, soluble and semi-soluble hydrocarbons are bioavailable, whereas insoluble compounds in oil are not bioavailable to aquatic organisms. Laboratory studies have shown that the dissolved hydrocarbons exert the most effects on

aquatic biota (Carls et al. 2008; Nordtug et al. 2011; Redman 2015). The mode of action is a narcotic effect, which is positively related to the concentration of soluble hydrocarbons in the body tissues of organisms (French-McCay, 2002). The volatilization rates of hydrocarbons from surface slicks are faster than the dissolution rates. Thus, dissolution from oil droplets in the water column is the main source of concentrations dissolved in the water.

Hydrocarbon compounds vary in water-solubility and the toxicity exerted by individual compounds is inversely related to solubility, however bioavailability will be modified by the volatility of individual compounds (Nirmalakhandan & Speece, 1988; Blum & Speece, 1990; McCarty, 1986; McCarty et al., 1992a, 1992b; Mackay et al., 1992; McCarty & Mackay, 1993; Verhaar et al., 1992, 1999; Swartz et al., 1995; French-McCay, 2002; McGrath and Di Toro, 2009). Of the soluble compounds, the greatest contributor to toxicity for water-column and benthic organisms are the lower-molecular-weight aromatic compounds, which are both volatile and soluble in water. Although they are not the most water-soluble hydrocarbons within most oil types, the polynuclear aromatic hydrocarbons (PAHs) containing 2-3 aromatic ring structures typically exert the largest narcotic effects because they are semi-soluble and not highly volatile, so they persist in the environment long enough for significant accumulation to occur (Anderson et al., 1974, 1987; Neff & Anderson, 1981; Malins & Hodgins, 1981; McAuliffe, 1987; NRC, 2003). The monoaromatic hydrocarbons (MAHs), including the BTEX compounds (benzene, toluene, ethylbenzene, and xylenes), and the soluble alkanes (straight chain hydrocarbons) also contribute to toxicity, but these compounds are highly volatile, so that their contribution will be low when oil is exposed to evaporation and higher when oil is discharged at depth where volatilisation does not occur (French-McCay, 2002).

French-McCay (2002) reviewed available toxicity data, where marine biota was exposed to dissolved hydrocarbons prepared from oil mixtures, finding that 95% of species and life stages exhibited 50% population mortality (LC50) between 6 and 400 ppb total PAH concentration after 96 hrs exposure, with an average of 50 ppb. Hence, concentrations lower than 6 ppb total PAH value should be protective of 97.5% of species and life stages even with exposure periods of days (at least 96 hours). Early life-history stages of fish appear to be more sensitive than older fish stages and invertebrates.

Exceedances of 10, 50 or 400 ppb over a 1-hour timestep was applied in the modelling (RPS, 2023) to indicate increasing potential for sub-lethal to lethal toxic effects (or low to high), based on NOPSEMA (2019).

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APPENDIX E PTTEP STAKEHOLDER CONSULTATION

Appendix E

Table 1: Jadestone consideration of PTTEP consultation issues

Issue raised with PTTEP	PTTEP Response	How Jadestone have considered
(No) recreational fishing from support/commercial vessels.	PTTEP AA employees and contractors are required to complete an 'Environmental Awareness' induction prepared by PTTEP AA prior to mobilisation. The induction provides and EP overview including stakeholder concerns. Contractors and sub-contractors will be made aware of commercial fishing sensitivities regarding fishing from support/commercial vessels.	Sensitivities regarding recreational fishing from support vessels will be included in compulsory inductions for Jadestone employees and contractors.
Potential conflict with PTTEP AA staff, contractors and sub-contractors regarding the difference between exclusion zones and cautionary zones.	There are no cautionary zones in the 5-year Operations EP scope. A Notice to Mariners will be issued and the safety exclusion zones will be noted on the Admiralty Chart covering the region.	Fishing license holders have been provided a Jadestone information pack that includes clarification on the PSZ that precludes entry by other users unless OIM approves, and a cautionary area (2.5 NM around FPSO) that allows other users in this area. The function of the cautionary area is simply to notify other users of a risk to use, in this instance FPSO, WHP and possible presence of a tanker.
Concern regarding communication between PTTEP AA, their staff, contractors and sub-contractors regarding interacting and protecting the rights of active commercial fishers on the water (concern that support vessels may not divert around active fishing activity).	The 'Environmental Awareness' induction will be used to communicate the rights of commercial fishers to access ocean resources to all employees and contractors. If a vessel is engaged in fishing (with nets, lines, trawls or other fishing apparatus which restrict manoeuvrability), the fishing vessel is restricted in its ability to manoeuvre. Therefore, it is the responsibility of other vessels (not restricted in their ability to manoeuvre) to ensure they take the appropriate actions to avoid a vessel collision.	Safe operation of support vessels in the vicinity of commercial fishing operations be included in compulsory inductions for Jadestone employees and contractors.
Legal protection should there be another spill event.	PTTEP AA is required by the regulator (NOPSEMA) to hold sufficient financial resources to ensure it can meet any likely clean-up costs.	Under the same legislative requirement, Jadestone is required by the regulator (NOPSEMA) to hold sufficient financial resources to ensure it can meet any likely clean-up costs.

Issue raised with PTTEP	PTTEP Response	How Jadestone have considered
Capabilities to respond in the event of a hydrocarbon release, especially given isolated location.	As part of PTTEP AA's commitment to continuous improvement, PTTEP AA's management culture, operational capabilities, safety processes, and environmental systems are routinely evaluated and strengthened to align with industry good practice. PTTEP AA is committed to operate safely, responsibly and sustainably to deliver maximum benefit while minimising impact on the environment. PTTEP AA has recently increased its commitment to refresher training of the PTTEP AA emergency response team. PTTEP AA has also increased the level of external resources to support PTTEP AA's response (including environmental specialists) in the event that an unplanned release of hydrocarbons occurs. In addition, PTTEP has increased the response team to allow 24-hour coverage for an extended time frame. PTTEP AA has developed an Oil Pollution Emergency Plans (OPEP) for Montara Operations. The purpose of the OPEP is to detail the procedures and resources through which PTTEP AA will minimise the effect of a marine oil spill. The OPEP provides background on the appropriate response strategies and available oil spill response resources. The Department of Transport (DoT), Australian Marine Safety Authority (AMSA) and Australian Marine Oil Spill Centre (AMOSC) will have an opportunity to review and provide feedback on the OPEP.	As part of the development of this EP Jadestone has developed an Oil Pollution Emergency Plan (OPEP) for Montara Operations. The OPEP ensures rapid resourcing and response to any unplanned event. The Department of Transport (DoT), Australian Marine Safety Authority (AMSA) and Australian Marine Oil Spill Centre (AMOSC) will have an opportunity to review and provide feedback on the OPEP and it must meet regulators requirements.

Appendix G

Relevant Persons Report

JADESTONE ENERGY

1. INPUTS TO IDENTIFICATION OF RELEVANT PERSONS PROCESS

The following inputs were internally defined as per the EP to assist with identifying relevant persons:

- Operational Area (Section 2.3 of EP)
- EMBAs (Section 5.1 and Section 8.7.4 of EP)
- Activity Description (Section 3 of EP).

2. GUIDING SEARCH CRITERIA FOR IDENTIFICATION OF RELEVANT PERSONS

To assist in identifying relevant persons, guiding search criteria were used to act as prompts and to ensure lessons learnt from previous approvals processes (including PTEPPs) were captured (Table 1). This also indicates relevant data sources used in the identification process.

The results of the guiding search criteria can be used to inform the development of a matrix for the Montara EP mapping relevant stakeholders against risks/values. This information allows appropriate identification/classification of stakeholders and also for a more rapid response in the event of an unplanned event.

It should be noted that at present, International Stakeholders are predominantly communicated with through DFAT as guided by NOSPEMA.

Table 1: Guiding search criteria

Entities whose FUNCTIONS make them a relevant person	Guiding search criteria	Information sources	Ongoing concerns/action required from previous consultation

A person or organisation's power, duty, authority or responsibilities,
 	
An activity that is natural to or the purpose of a person or thing
	What State and Federal government agencies have jurisdiction within the Operations Area/EMBA? Including jurisdiction over values.		Australian Hydrographic Office
			• Ensure confirmation received regarding update to maps
			
			DPIRD - Fisheries
			• Request for notification of any oil spill or discharge of any other pollutant within 24 hours.
			• Request that when developing OPEP JSE collects baseline marine data to compare against post spill monitoring. Baseline data should be made available to the Department.
			• Consideration of spawning grounds and nursery areas should be included in OPEP.
			• Biosecurity: Two ways to demonstrate commitment:
			  ○ Utilise the Departments Vessel Check tool and complete actions to manage any activity related to vessels to a low/acceptable risk rating.
			  ○ Actively use a biofouling management plan and record book that meets requirements under International Organisation's Guidelines for the Control and Management of Ships' biofouling to minimise the Transfer of Invasive Aquatic Species.
			• Recommendation that residual risk after using above measures is managed. Recommended this could be achieved by follow-up marine pest inspection around 75 days after arrival if the vessel is still in WA waters.
			• Request that any suspected marine pest or disease be reported within 24 hours.

	Will WA or Commonwealth Marine Park/Reserve values be potentially affected or have implications for endangered, threatened or otherwise protected species/communities?		https://parksaustralia.gov.au/marine/
	What government and non-government organisations have an interest in cultural affairs in the region?	Shipwrecks/Maritime heritage http://environment.gov.au/heritage/historic-shipwrecks/australian-national-shipwreck-database	
Entities whose INTERESTS make them a relevant person	Guiding search criteria	Information sources	Ongoing concerns
A person or organisation's rights, advantages, duties, and liabilities A group or organisation having a common concern	What NGO's are active in the Operations/EMBA area?		
	What commercial fishers, pearlers or aquaculture venture operators operate in the Operations Area/EMBA area?	WA - DPIRD (Fisheries Division) http://www.fish.wa.gov.au/Sustainability-and-Environment/Fisheries-Science/Stock-assessment-and-data-analysis/Pages/Making-a-data-request.aspx	• Clarity around restricted area definitions • Interaction with oil and gas operators – operators to avoid active fishing even if inconvenient • Sensitivity around commercial fishers (who are not allowed to recreationally fish) seeing oil and gas staff recreationally fishing
	What charter fishing operators are licensed to operate within the Operations Area/EMBA area?	WA - DPIRD (Fisheries Division) http://www.fish.wa.gov.au/Sustainability-and-Environment/Fisheries-Science/Stock-assessment-and-data-analysis/Pages/Making-a-data-request.aspx	
	What representative bodies act on behalf of individuals identified as	Fishing Representative bodies and Associations	WAFIC – see above regarding commercial fishing

	having a commercial interest in the operations or EMBA areas?	Tourism representative bodies	
	What Traditional owner interests and rights of exist within the operational area or EMBA including: • Native Title Determination Applications • Native Title Claims • Native Title Determinations • Indigenous Land Use Agreements	Native Title Tribunal http://www.nntt.gov.au/searchRegApps/Pages/default.aspx	Contact through land councils
	Who are the Federal and State MPs/government representatives for the areas adjacent to the EMBA?	Commonwealth https://www.aph.gov.au/Senators_and_Members/Members WA http://www.parliament.wa.gov.au/Parliament%5CMemblist.nsf/WAllMembers	
	What ports occur within or adjacent to the EMBA?	http://www.portsaustralia.com.au/	
Entities whose ACTIVITIES make them a relevant person	Guiding search criteria	Information sources	Ongoing concerns
A thing that a person or group does or has done	Will the project affect, or potentially affect, recreational fishers?		
	What recreational pursuits could or do take place within the Operations		

	Area/EMBA?		
	What interest groups represent recreational pursuits that are identified within the EMBA?		
	What other oil and gas operations occur within the EMBA?		

2.1 Fisheries assessment

A separate assessment of relevant fisheries was undertaken to identify which fisheries should be considered relevant parties (Table 2).

Table 2: Fisheries Relevant Person Assessment

Fishery	Area description	Fishing activity	Relevant party assessment	References
Joint Authority Northern Shark Fishery	This fishery extends from longitude 123°45' E to the WA/NT border.	Species targeted in this fishery include sandbar (Carcharhinus plumbeus), blacktip (Carcharhinus), tiger (Galeocerdo cuvier), hammerhead (Family: Sphyrnidae) and lemon sharks (Negaprion acutidens). The primary fishing methods are demersal longlining and pelagic gillnetting. There has been no reported fishing activity in the northern shark fisheries since 2008/09. However, confirmed at the Department of Fisheries Northern Shark Workshop of 16 February 2017, joint authority licence holders will be re-commencing fishing via one vessel in 2017.	This fishery overlaps the Montara Operations (Five Year Review) specific location. Commercial fishers will be potentially active in this region.	Maloney, B., McAuley, R., Rowland, F., Northern Shark Fisheries Status Report: Statistics Only. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2012/13: The State of the Fisheries* eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 216-217.
Mackerel Managed Fishery Area 1	The fishery extends from near Augusta in the south to the WA/NT border. Area 1 – Kimberley is located from 121º E to the WA/NT border).	The Mackerel Fishery targets Spanish mackerel (via surface trolling) and grey mackerel (via jig fishing). Uses near-surface trolling gear from vessels to target mackerel in coastal areas around reefs, shoals and headlands. Jig fishing is also used (2015).	This fishery overlaps the Montara Operations (Five Year Review) specific location. Commercial fishers will be potentially active in this region.	Maloney, B., Lai, E., Jones, R., (2015). Mackerel Managed Fishery Report Statistics Only. In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of*

		The commercial catch of Spanish mackerel by the MMF was 302 t in 2015 and has been 270-330 t since quotas were introduced in 2006. Spanish mackerel in WA are likely a shared biological stock with the Northern Territory (2017). Fishers operate from shallow water depths up to approximately 70 metres (licence holder feedback). There are 6 licences owned by 4 operators in Area 1.		*the Fisheries* eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 207-210. Lewis P. and Jones R. (2017). Statewide Large Pelagic Finfish Resource Status Report 2016 In: *Status Reports of the Fisheries and Aquatic Resources of Western Australia 2015/16*: *The State of the Fisheries* eds. WJ Fletcher, MD Mumme and FJ Webster Department of Fisheries, Western Australia. pp. 153-156.
Northern Demersal Scalefish Managed Fishery Area 2	The Northern Demersal Scalefish Managed Fishery operates off the northwest coast of Western Australia in the waters east of 120° E longitude. These waters extend out to the edge of the Australian Fishing Zone (200 nautical miles). The fishery is further divided into two fishing areas; an inshore sector (Area 1) and an offshore sector (Area 2).	This fishery can handline, dropline and fish traps, but since 2002 it has essentially been a trap based fishery which uses gear time access and spatial zones as the primary management measures. The main species landed by this fishery are red emperor and goldband snapper. There are two companies operating multiple licences in this fishery (licence holder feedback).	This fishery overlaps the Montara Operations (Five Year Review) specific location. Commercial fishers will be potentially active in this region.	Newman, A., Wakefield, C., Skepper, C., Boddington, D., Blay, N., Jones, R., Dobson, P. (2015). North Coast Demersal Fisheries Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 189-206.
Pearl Oyster Managed Fishery Zone 3	The Western Australian pearl oyster fishery is the only remaining significant wild-stock fishery for pearl oysters in the world (2017). The fishery is separated into 4 zones, the Montara Operations (Five Year Review) site is in Zone 3 (2015).	It is a dive fishery, operating in shallow coastal waters along the North-West Shelf. The harvest method is drift diving, six to eight divers are attached to large outrigger booms on a vessel and towed slowly over the pearl oyster beds, harvesting legal sized oysters by hand as they are seen (2015).	This fishery overlaps the Montara Operations (Five Year Review) specific location, the Pearl Producers Association represents WA pearl oyster quota owners and notes all areas of all fisheries are of interest.	Hart, A., Murphy, D., Jones, R. (2015). Pearl Oyster Managed Fishery Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 211-215. Hart A., Murphy D. and Jones R. (2017). North Coast Pearl Oyster Resource Status Report 2016 In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2015/16: The State of the Fisheries eds. WJ Fletcher, MD Mumme and FJ Webster Department of

				Fisheries, Western Australia. pp. 158-161.
Western Tuna and Billfish Fishery	The Western Tuna and Billfish Fishery covers the sea area west from the tip of Cape York in Queensland, around Western Australia, to the border between Victoria and South Australia. Fishing occurs in both the Australian Fishing Zone and adjacent high seas.	Bigeye tuna, yellowfin tuna, broadbill swordfish and striped marlin are caught via long line and minor line fishing gear. Baited hooks are attached tothe longline by short lines called snoods that hang off the mainline. There is one active licence holder in Western Australia (licence holder feedback).	This fishery overlaps the Montara Operations (Five Year Review) specific location. Commercial fishers will be potentially active in this region.	AFMA web site viewed 20/02/2018
Kimberley Prawn	The KPMF operates off the north of the state between Koolan Island and Cape Londonderry covering all Western Australian waters of the Indian Ocean lying east of 123°45´ east longitude and west of 126°58´ east longitude and extends to the 200nm limit. It abuts the western boundary of the Commonwealth-managed Northern Prawn Fishery (NPF).	This is an otter trawl fishery targeting banana prawns (Penaeus merguiensis) but also catching tiger prawns (Penaeus esculentus), endeavour prawns (Metapenaeus endeavouri) and western king prawns (Penaeus latisulcatus). There are two fishing periods for the complete season April and May, then from August to December. There are 121 boats licenced to fish, 45 of these also held an NPF licence. WAFIC estimates there are less than 20 active licences.	This fisher overlaps the Montara Operations (Five Year Review) specific locations, however all Kimberley prawn trawling takes place in inner coastal areas and does not overlap these activities and therefore is not a potentially affected party to this activity. Accordingly, consultation is not required. This fishery is a relevant party (the resource) for EMBA acknowledgement and consideration in the event of a significant spill event.	Sporer, E., Kangas, M., Shanks, M., Blay, N. (2015). North Coast Prawn Managed Fisheries Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 173-179. (2015)
Specimen Shell	The fishing area includes all Western Australian waters between the high-water mark and the 200 metre isobath (2015). There is some concentration of effort in areas adjacent to population centres such as Broome, Karratha, Shark Bay, metropolitan Perth, Mandurah, the Capes area and Albany (2015).	Over 200 different Specimen Shell species were collected in 2014. The main methods are hand harvest by a small group of divers operating from small boats in shallow coastal waters or by wading along coastal beaches below the high-water mark. A current exemption method being employed by the fishery is using a remote controlled underwater vehicle at depths between 60 and 300 metres and a new exemption method using baited habitat structures at depths is being trialled (2015). Statewide, there are 32 licences in the	This fisher overlaps the Montara Operations (Five Year Review) specific location, however, this is primarily a hand-harvested dive fishery, not possible to harvest at this water depth range, therefore not a potentially affected party to this activity. Accordingly, consultation is not required. Remote vehicle operators confirm they do not collect shell	Hart, A., Crowe, K., (2015). Specimen Shell Managed Fishery Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 306-308.

		fishery, with 18 of the licences being active.	in the Montara Operations (Five Year Review) area and water depth (see Appendix 6:13). This fishery is a relevant party (the resource) for EMBA acknowledgement and consideration in the event of a significant spill event.	
Southern Bluefin Tuna Fishery	The Southern Bluefin Tuna Fishery covers the entire sea area around Australia, out to 200 nm from the coast.	Pelagic longline and purse seine fishing gear is used in this fishery. SBT are caught in southern and eastern Australia, not targeted in WA. The WA coast is the migratory and spawning pathway for this specie.	There is no SBT fishing in Western Australia. This fishery is a relevant party (the resource) for EMBA acknowledgement and consideration in the event of a significant spill event esp due to migration paths.	AFMA web site viewed 20/02/2018
Western Skipjack Tuna Fishery	Covers the entire sea area of the WA out to 200 nm from the coast.	Purse seine fishing for skipjack. Skipjack tuna in Australia was historically supplied to the cannery in Port Lincoln, however this cannery closed in 2010.	No Australian boats are currently fishing for skipjack tuna. AFMA has noted as there are no boats fishing in this fishery the management arrangements are under review. This fishery is a relevant party (the resource) for EMBA acknowledgement and consideration in the event of a significant spill	AFMA web site viewed 20/02/2018
Abalone Area 4 and 8	The Abalone Management Plan covers all Western Australian coastal waters, which are divided into 8 management areas. Area 4 – Busselton Jetty to the NT Border. Area 8 – Northern region	The commercial fishery harvest method is a single diver working off a 'hookah' (surface-supplied breathing apparatus) using an abalone 'iron' to prise the abalone off rocks. It is a dive and wade fishery, operating in shallow coastal waters targeting Roe's abalone (Haliotis roei) This fishery is closed in Area 8 due to catastrophic mortalities	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA	Hart, A., Brown, J., O'Malley, J., (2015). Roe's Abalone Fishery Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 39-48.

		resulting from exceptionally high-water temperatures in early 2011 associated with the marine heat wave.	area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	
Beche de Mer	The Western Australian beche-de-mer fishery is primarily based in the northern half of the State, from Exmouth Gulf to the Northern Territory border. Fishers have access to all Western Australian waters not specifically closed to fishing.	Beche-de-mer, also known as sea cucumbers or trepang, are in the Phylum Echinodermata, Class Holothuroidea. They are soft-bodied, elongated animals that usually live with their ventral surface in contact with the benthic substrate or buried in the substrate. It is a hand-harvest fishery, with animals caught principally by diving and a smaller amount by wading in shallower waters.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Hart, A., Murphy, D., Green, K. (2015). Beche-de-mer Fishery Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 216-220.
Broome Prawn Managed Fishery	The Broome Prawn Managed Fishery operates in a designated trawl zone off Broome. The boundaries of the BPMF are 'all Western Australian waters of the Indian Ocean lying east of 120° east longitude and west of 123°45' east longitude on the landward side of the 200 m isobath'. The actual trawl area is contained within a delineated small area north west of Broome.	This otter trawl fishery targets western king prawns (Penaeus latisulcatus) and coral prawns (a combined category of small penaeid species). There are currently no active fishers in this fishery.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Sporer, E., Kangas, M., Shanks, M., Blay, N. (2015). North Coast Prawn Managed Fisheries Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 173-179.
Kimberley Developing Mud Crab	Fishers operate between King Sound and the WA and Northern Territory border with fishing effort concentrated around Cambridge Gulf, Admiralty Gulf, York Sound and King Sound.	Target green mud crab (Scylla serrata) and brown mud crab (Scylla olivacea) via the use of crab traps in mangrove estuaries. There are five licences – three commercial and two for Aboriginal Corporations.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA	Johnston, D., Evans, R., Marsh, C., Blay, N., Wallis, D. (2015). North Coast Crab Fishery Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 220-227.

			area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	
Kimberley Gillnet and Barramundi	The waters of the KGBF are defined as 'all Western Australian waters north of 19° south latitude and west of 129° east longitude and within three nautical miles of the high-water mark of the mainland of Western Australia and the waters of King Sound south of 16°21.47′ south latitude'. There are three principal fishing areas: Cambridge Gulf (including Ord River), Kimberley coast (six small river systems) and King Sound.	This fishery is permitted to take any fish by means of gillnet in inshore waters and the taking of barramundi (Lates calcarifer) by any means. Other main species taken by the fishery are king threadfin (Polydactylus macrochir) and blue threadfin (Eleutheronema tetradactylum). There are five licences in this fishery.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Brown, J.I., Newman, S.J., Mitsopoulos, G., Skepper, C., Thomson, A., Wallis, D. (2015). North Coast Nearshore and Estuarine Fishery Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 182-188.
Mackerel Managed Fishery Area 2	The fishery extends from near Augusta in the south to the WA/NT border. Area 2 – Pilbara is located from 114º E to 121º E.	The Mackerel Fishery targets Spanish mackerel (via surface trolling) and grey mackerel (via jig fishing). Uses near-surface trolling gear from vessels to target mackerel in coastal areas around reefs, shoals and headlands. Jig fishing is also used. Fishers operate from shallow water depths up to approximately 70 metres (licence holder feedback). There are 16 licences in Area 2.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Maloney, B., Lai, E., Jones, R., (2015). Mackerel Managed Fishery Report Statistics Only. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 207-210.
Marine Aquarium Fish Managed Fishery	Operates in Western Australia's state waters spanning the coastline from the Northern Territory border in the north to the South Australian border in the south.	Shallow wading but primarily a dive-based fishery that uses hand-held nets to capture the desired target species. This fishery has the capacity to target more than 950 species of marine aquarium fish and is also permitted to take coral, live rock, algae, seagrass and invertebrates. In past years the fishery has been active in waters from	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required.	Newman, S.J. Crowe, K., Bruce, C., Syers, C., Green, K., (2015). Marine Aquarium Fish Managed Fishery Report Statistics Only. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K.

		Esperance to Broome. There are 12 licences in this fishery.		Santoro, Department of Fisheries, Western Australia, pp. 301-305.
Northern Demersal Scalefish Managed Fishery Area 1	The Northern Demersal Scalefish Managed Fishery operates off the northwest coast of Western Australia in the waters east of 120° E longitude. These waters extend out to the edge of the Australian Fishing Zone (200 nautical miles). The fishery is further divided into two fishing areas; an inshore sector (Area 1) and an offshore sector (Area 2 – see Table 4.1. The inshore waters near Broome are closed to Area 1 commercial fishing.	Area 1 of this fishery fishes by handline (no fish traps).	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Newman, A., Wakefield, C., Skepper, C., Boddington, D., Blay, N., Jones, R., Dobson, P. (2015). North Coast Demersal Fisheries Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 189-206.
Nickol Bay Prawn	This fishery encompasses all the waters of the Indian Ocean and Nickol Bay between 116°45' east longitude and 120° east longitude on the landward side of the 200 m isobath.	This is an otter trawl fishery primarily targeting banana prawns (Penaeus merguiensis). There are 13 licences in this fishery with 11 of these licences held by two operators.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Sporer, E., Kangas, M., Shanks, M., Blay, N. (2015). North Coast Prawn Managed Fisheries Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 173-179.
Onslow Prawn	The Onslow Prawn boundaries are 'all the Western Australian waters between the Exmouth Prawn Fishery and the Nickol Bay prawn fishery east of 114º39.9' on the landward side of the 200 metre depth isobath'.	This is an otter trawl fishery targeting western king prawns (Penaeus latisulcatus), brown tiger prawns (Penaeus esculentus), endeavour prawns (Metapenaeus spp.) Fishing in recent years has been restricted due to construction and dredging activities associated with the Chevron Wheatstone project. There are eight licences in this fishery, three owned by one operator.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has	Sporer, E., Kangas, M., Shanks, M., Blay, N. (2015). North Coast Prawn Managed Fisheries Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 173-179.

			been provided for environment plan purposes in the event of a significant spill event.	
Pearl Oyster Managed Fishery Zone 4	The Western Australian pearl oyster fishery is the only remaining significant wild-stock fishery for pearl oysters in the world (2017). The fishery is separated into 4 zones, the Montara Operations (Five Year Review) site is in Zone 3, the EMBA potential impact also affects Zone 4 of this fishery (2015).	It is a dive fishery, operating in shallow coastal waters along the North-West Shelf. The harvest method is drift diving, six to eight divers are attached to large outrigger booms on a vessel and towed slowly over the pearl oyster beds, harvesting legal sized oysters by hand as they are seen (2015). Licensees in Zones 1 to 3 all have access to Zone 4 which is predominantly exploratory (for shell harvest) although pearl farming does occur in this region (2015).	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Hart, A., Murphy, D., Jones, R. (2015). Pearl Oyster Managed Fishery Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 211-215. Hart A., Murphy D. and Jones R. (2017). North Coast Pearl Oyster Resource Status Report 2016 In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2015/16: The State of the Fisheries eds. WJ Fletcher, MD Mumme and FJ Webster Department of Fisheries, Western Australia. pp. 158-161.
Pilbara Line	Fishers are permitted to operate anywhere within "Pilbara waters" which includes all waters bounded by a line commencing at the intersection of 21°56'S latitude and the high-water mark on the western side of the North West Cape on the mainland of Western Australia; thence west along the parallel to the intersection of 21°56'S latitude and the boundary of the Australian Fishing Zone and north to longitude 120°E.	Drop line fishing method for fish. Catches around 45 to 50 scalefish species and some deeper offshore species, e.g. ruby snapper (Etelis carbunculus) and eightbar grouper (Hyporthodus octofasciatus). In recent years the Line fishery catches have been dominated by ruby snapper and goldband snapper. Nine Fishing Boat Licences are exempted from this prohibition for any nominated 5 month block period within the year.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Newman, A., Wakefield, C., Skepper, C., Boddington, D., Blay, N., Jones, R., Dobson, P. (2015). North Coast Demersal Fisheries Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 189-206.
Pilbara Trap	The Pilbara Trap Managed Fishery lies north of latitude 21°44'S and between longitudes 114°9.6'E and 120°00'E on the landward side of a	Trapping for fish. The trap fishery retains a subset of about 45 to 50 scalefish species with the majority of catch consisting of red emperor, bluespotted, Rankin cod,	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a	Newman, A., Wakefield, C., Skepper, C., Boddington, D., Blay, N., Jones, R., Dobson, P. (2015). North Coast Demersal Fisheries Status Report. In: Status Reports

	boundary approximating the 200 metre isobath and seaward of a line generally following the 30 m isobath.	goldband snapper and crimson snapper. There are six licences in the fishery, with the allocation consolidated onto three vessels.	potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 189-206.
Pilbara Fish Trawl	The Pilbara Fish Trawl Fishery is situated in the Pilbara region in the northwest of Australia. It occupies the waters north of latitude 21°35'S and between longitudes 114°9'36" E and 120°E. The Fishery is seaward of the 50 metre isobath and landward of the 200 metre isobath. The fishery consists of two zones; Zone 1 in the south west (which is closed to trawling since 1998) and Zone 2 in the North, which consists of six management areas. Areas 3 and 6 are closed leaving ~46% of Zone 2 currently open to trawling.	Trawling for fish. The catch comprises of more than 50 scalefish species. Major species caught include crimson snapper, bluespotted emperor, rosy threadfin bream, goldband snapper, brownstripe snapper, saddletail snapper, red emperor, spangled emperor and Rankin cod. The trawl fleet had the equivalent of three full-time vessels in the 2014/15 season. There are 11 licences with two companies holding eight of these licences.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Newman, A., Wakefield, C., Skepper, C., Boddington, D., Blay, N., Jones, R., Dobson, P. (2015). North Coast Demersal Fisheries Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 189-206.
Trochus	Located in King Sound and the Buccaneer Archipelago	The Trochus Fishery is a small fishery based on the collection of a single target species, Tectus niloticus and fishery is operated by the Bardi Jawi and Mayala Aboriginal Communities, who have been collecting trochus in this area since the 1960's.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Fletcher, W.J. and Santoro, K. (eds). (2015). Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries. Department of Fisheries, Western Australia, pp. 158.
WA North Coast Shark	The WA fishery extends from	Species targeted in this fishery include sandbar (Carcharhinus plumbeus),	The WA North Coast Shark	Maloney, B., McAuley, R., Rowland, F.,

Fishery	longitude 114°06’ E (North West Cape) to 123°45’ E (Koolan Island) (2013).	blacktip (Carcharhinus), tiger (Galeocerdo cuvier), hammerhead (Family: Sphyrnidae) and lemon sharks (Negaprion acutidens) (2013). The primary fishing methods are demersal longlining and pelagic gillnetting (2013). There has been no reported fishing activity in the northern shark fisheries since 2008/09 (2013). The Department of Fisheries Northern Shark Workshop of 16 February 2017 confirmed this fishery will remain closed (shark breeding area).	Fishery is closed, the extension of this closure was confirmed at the DPIRD (Fisheries) Northern Shark Workshop of 16 February 2017 (shark breeding area) accordingly not a relevant party to the Montara Operations (Five Year Review) activity. This fishery is a relevant party (the resource) for EMBA acknowledgement and consideration in the event of a significant spill event.	Northern Shark Fisheries Status Report: Statistics Only. (2013) In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2012/13: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 216-217.
West Coast Deep Sea Crustacean	The boundaries of this fishery include all the waters lying north of latitude 34° 24' S (Cape Leeuwin) and west of the Northern Territory border on the seaward side of the 150 metre isobath out to the extent of the Australian Fishing Zone (2015). The fishery operates in water depths greater than 300 metres (2017).	Crab fishing via baited pots. Operate baited pots in the shelf edge waters greater than 150 metre water depth (2015). Targets crystal (snow) crabs (Chaceon albus), giant (king) crabs (Pseudocarcinus gigas) and champagne (spiny) crabs (Hypothalassia acerba) using baited pots operated in a long-line formation (2017).	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	How J., and Nardi K. (2015). West Coast Deep Sea Crustacean Managed Fishery Status Report. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014/15: The State of the Fisheries eds. W.J. Fletcher and K. Santoro, Department of Fisheries, Western Australia, pp. 130-134. How J. and Yerman M. (2017) West Coast Deep Sea Crab Resource Status Report 2016.In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2015/16: The State of the Fisheries eds. WJ Fletcher, MD Mumme and FJ Webster Department of Fisheries, Western Australia. pp. 105-108
Aquarium Fishery (NT)	It includes freshwater, estuarine and marine habitats to the outer boundary of the Australian fishing zone, 200 nautical miles offshore. Freshwater and estuarine species are generally collected between the Adelaide and Daly rivers, while most	It is a small-scale, multi-species fishery suppling the local, interstate and international pet retailers and wholesalers market including aquarium fishes (mostly rainbowfish, catfish and scats), invertebrates (hermit crabs, snails, whelks and hard and soft corals) and plants.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required.	Northern Territory government web site viewed 26/02/2018

	marine species are collected within 100km of Nhulunbuy and Darwin.		This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	
Bait Net Fishery (NT)	Commercial fishing for bait is allowed from the high water mark to three nautical miles seaward of the low water mark but does not include Darwin Harbour and Shoal Bay.	Commercial fishers are allowed to take all fish for use as bait except barramundi, threadfin salmon, Spanish mackerel or mud crab. The fishery is restricted to two licences.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Northern Territory government web site viewed 26/02/2018
Barramundi Fishery (NT)	Commercial fishing for barramundi is allowed from the high water mark to three nautical miles seaward of the low water mark. The fishing area is restricted to waters seaward from the coast, river mouths and legislated closed lines. Commercial fishers must not fish between the Little Finnis River and the Wildman River, including Bynoe Harbour, Darwin Harbour and Shoal Bay.	The commercial barramundi fishing season in the Northern Territory (NT) is from 1 February to 30 September. The fishery is restricted to 14 licences.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Northern Territory government web site viewed 26/02/2018
Coastal Line Fishery (NT)	Commercial fishing is permitted along the NT coast between the high water mark and 15 nautical miles out from the low water mark. Special restrictions apply in the western zone. The western zone extends from the Western Australian border to	Black jewfish and golden snapper are the key target species with bycatch species including emperors, cods and other snapper species. This fishery has 52 licences.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required.	Northern Territory government web site viewed 26/02/2018

	Vashon Head on Cobourg Peninsula, in the NT.		This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	
Coastal Net Fishery (NT)	The fishery extends from the high water mark to three nautical miles out from the low water mark and is divided into three regions - Darwin (from Cape Hotham to Native Point and Cape Ford to Cape Dooley), Gove (between Cape Arnhem and Cape Wilberforce) and Borroloola (from Bing Bong Creek and Pelican Spit.)	Mullet is the primary target species with byproduct including blue threadfin, sharks, queenfish, garfish, snapper and whiting. This fishery has 5 licences.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Northern Territory government web site viewed 26/02/2018
Mollusc Fishery (NT)	Commercial mollusc fishing is a hand-collecting fishing method allowed in intertidal waters from the high water mark out to the low water mark.	Permitted to take shellfish but must not collect pearl oysters and cephalapods such as squid, octopus, cuttlefish and nautilus. This fishery has 1 licence.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Northern Territory government web site viewed 26/02/2018
Pearl Oyster Fishery (NT)	The commercial pearl fishery extends from the high water mark to the outer boundary of the Australian fishing zone, 200 nautical miles offshore.	The licence permits the take of pearl oysters by hand. There are five licences in the NT Pearl oyster fishery.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required.	Northern Territory government web site viewed 26/02/2018

			This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	
Mud Crab Fishery (NT)	Crabbing is generally confined to coastal mudflats and estuaries with most commercial activity concentrated in the Gulf of Carpentaria. Some fishers also operate along the north Arnhem Land coast, Van Diemen Gulf, Chambers Bay and west to Anson Bay.	More than 99% of the commercial catch is the giant mud crab, with the rest being the orange mud crab. There are 49 licences for crab fishing in the NT.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Northern Territory government web site viewed 26/02/2018
Trepang Fishery (More commonly known as sea cucumber in the NT)	Commercial fishing for sea cucumber is allowed from the high water mark to three nautical miles seaward from the territorial sea baseline. Most sea cucumbers are collected along the Arnhem Land coast, mainly around the Cobourg Peninsula and Groote Eylandt.	Sandfish are the primary species of sea cucumber. They are harvested by hand either on foot or by diving, usually on neap tides during the dry season when the water is clearer. This fishery has 6 licences.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Northern Territory government web site viewed 26/02/2018
Demersal Fishery (NT)	Commercial fishing is allowed from 15 nautical miles from the low water mark to the outer boundary of the Australian fishing zone, excluding the area of the Timor Reef fishery.	This is a trap, trawl and line fishery landing goldband snapper, red snapper, saddletail snapper, crimson snapper with by-product species including red emperor, cods, painted sweetlip and redspot emperor. There are 18 licences in this quota-controlled fishery.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required.	Northern Territory government web site viewed 26/02/2018

			This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	
Off-shore Net and Line Fisheries (NT)	This fishery operates in all NT waters from the high water mark to the boundary of the Australian fishing zone (AFZ) 200 nautical miles offshore - an area of more than 522,000km. Most fishing is done in the coastal zone within 12 nautical miles of the coast and immediately offshore in the Gulf of Carpentaria.	This is a demersal longline, pelagic longline, longline and pelagic net methodology fishery landing black-tip sharks, grey mackerel, other shark species (hammerhead, bull, tiger, pigeye, lemon, winghead sharks and dusky whalers) with byproduct including Spanish mackerel, longtail tuna, black pomfret and other finfish. This fishery has 17 licences.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Northern Territory government web site viewed 26/02/2018
Spanish Mackerel Fishery	Commercial fishing for Spanish mackerel is allowed from the high water mark to the outer boundary of the Australian fishing zone, which is 200 nautical miles offshore. Most Spanish mackerel are caught off the western and eastern mainland coasts and near islands including Bathurst Island, Groote Eylandt and the Wessel Islands. Fishing generally takes place around reefs, headlands and shoals.	Spanish mackerel is the primary species taken with a small number of other mackerels landed as bycatch. Spanish mackerel are caught via troll lines, floating hand lines or rods. This fishery has 15 licences.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	Northern Territory government web site viewed 26/02/2018
Timor Reef Fishery	This fishery is in a remote region known as the Timor Box. It extends north-west of Darwin to the Western Australia/NT border and to the outer boundary of the Australian fishing zone 200 nautical miles offshore. The area is approximately 8,400 square	Goldband snapper is the primary target species, other key species include saddle-tail snapper, crimson snapper, red emperor and cods. Byproduct species include small snapper (moses snapper and darktail snapper), rock cods, redspot emperor and Robinsons seabream. There are 15 licences in this fishery.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required.	Northern Territory government web site viewed 26/02/2018

	nautical miles.		This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	
Christmas Island and Cocos (Keeling) Island fisheries	This Australian territory is located south-west of the Indonesian archipelago.	Since November 2002, day-to-day management of the fishery within 12 nm is through the Department of Infrastructure and Regional Development. Fishing in waters outside the 12 nm from the islands is managed under the Western T8ina and Billfish Fishery Management Plan 2005. Fish for tuna and tuna-like species.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	AFMA web site viewed 20/02/2018
Northern Prawn Fishery	This fishery is located off Australia's northern coast from Cape York in Queensland to Cape Londonderry in Western Australia	Main target species are Banana prawns (Fenneropenaeus merguiensis), Tiger prawns (Penaeus esculentus) and Endeavour prawns (Metapenaeus endeavouri). Bottom trawl fishing gear is used in this fishery. The value of the catch in 2015 was S106.8 million.	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required. This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	AFMA web site viewed 20/02/2018
North-West Slope Trawl Fishery	The North-West Slope Trawl Fishery is in deep water from the coast of the Prince Regent National Park to Exmouth between the 200 metre depth contour to the outer limit of the Australian Fishing Zone.	Bottom trawling for deepwater prawn and scampi. This is a deepwater fishery, vessels operate in water depths between 200 and 750 metres (licence holder feedback). There are three companies operating in this fishery (licence holder feedback).	This fishery does not overlap the Montara Operations (Five Year Review) specific location and therefore is not a potentially affected party to this activity, accordingly, consultation is not required.	AFMA web site viewed 20/02/2018

			This fishery overlaps the EMBA area, fishery information has been provided for environment plan purposes in the event of a significant spill event.	

Source: WAFIC Consultation Report undertaken for PTEPP commencing Montara 5 year review

3. CLASSIFICATION OF RELEVANT PERSONS

In undertaking an assessment of the relevant persons, and to inform what constitutes sufficient information under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009, each relevant person was classified according to the categories in Table 3 based on the combination of potential for impact and the level of interest of the person or group. A summary table of all relevant stakeholders and their classification is found in Table 4.

Table 3: Classifications and associated levels of engagement

Classification	Level of engagement	Description
RP1	Monitor	This category applies to people or groups who have no or low potential risk of impact or low interest. Generally have no activity/function in Operations Area and hence no risk from Planned Operations - but may have be at risk of impact in event of unplanned event.
RP2	Involve – action required	This category applies to people or groups who have a potential risk of impact, interest or from whom a follow up action is requried eg. Update maps, marine notices
RP3	Engage	Relevant person who have a high potential risk of impact, high interest or high influence. Often have an interest, activity, function in Operations Area with potential risk from Planned activities
RP4	Regulator	Relevant person with regulatory function in potentially affected
RP5	Response Organisation	Primary interest in activity is commercial to assist in response should an unplanned spill occur

Table 4: List of relevant persons and classification

Relevant Stakeholders	Classification
Australian Fisheries Management Authority	RP4
Australian Maritime Safety Authority	RP4
Department of Industry, Innovation and Science	RP4
Department of Defence	RP4
Department of Immigration and Border Protection	RP4
Geoscience Australia	RP4
Director of National Parks	RP4
Department of Foreign Affairs and Trade	RP4
National Native Title Tribunal	RP4
Department of Agriculture and Water Resources	RP4
Australian Hydrographic Service	RP4
Department of Environment and Energy	RP4
Department of Biodiversity, Conservation and Attractions	RP4
Department of Primary Industries and Regional Development (Fisheries)	RP4
Western Australian Museum	RP4
Shire of West Kimberley	RP4
Department of Water and Environmental Regulation	RP4

Relevant Stakeholders	Classification
Department of Mines, Industry Regulation and Safety	RP4
Department of Jobs, Tourism, Science and Innovation	RP4
Department of Transport	RP4
Shire of Wyndham East Kimberley	RP4
Department of Primary Industries and Resources (Primary Industries and Fisheries, Mines and Energy)	RP4
Northern Territory Environmental Protection Authority	RP4
Department of Tourism and Culture (Parks and Wildlife Commission of the Northern Territory, Tourism NT)	RP4
Department of Environment and Natural Resources	RP4
Department of the Chief Minister	RP4
Department of Infrastructure, Planning and Logistics	RP4
Commonwealth Fisheries Association	RP3
Northern Territory Seafood Council	RP3
Pearl Producers Association	RP1
Western Australian Fishing Industry Council	RP3
Australian Southern Bluefin Tuna Industry Association	RP1
Northern Prawn Fishing Industry Pty Ltd	RP1
Australian Fisheries Trade Association	RP1
Western Tuna and Billfish Fishery licence holders	RP3
Joint Authority Northern Shark Fishery licence holders	RP3
Mackerel Managed Fishery (Area 1) licence holders	RP3
Northern Demersal Scalefish Fishery (Area 2) licence holders	RP3
Recfishwest	RP1
Amateur Fisherman's Association of the NT	RP1
Kimberley Bird Watching	RP1
Australian Northwest Tourism	RP1
Kimberley Expeditions	RP1
Tourism Western Australia	RP1
Tourism Top end	RP1
Australian Petroleum Production and Exploration Association	RP1
Melbana Energy Limited	RP1
Bounty Oil & Gas NL	RP1
Eni Australia Limited	RP1
Murphy Australia Oil Pty Ltd	RP1
Finder Pty Limited	RP1
NOGA	RP5
OSRL (Oil Spill Response)	RP5
Aerotech	RP5
AIP	RP5
AMOSC	RP5
WA Conservation Council	RP1
World Wildlife Fund	RP1
Environs Kimberley	RP1
Greenpeace	RP1

Relevant Stakeholders	Classification
The Wilderness Society	RP1
International Fund for Animal Welfare	RP1
Save the Kimberley	RP1
Australian Marine Conservation Society	RP1
Australian Institute of Marine Science	RP1
Western Australian Marine Science Institute	RP1
Commonwealth Scientific and Industrial Research Organisation	RP1
North Australian Indigenous Land & Sea Management Alliance	RP1
Northern Land Council	RP1
Tiwi Land Council	RP1
Kimberley Land Council	RP1
Darwin Port Authority	RP1
Kimberley Port Authority	RP1
Pilbara Port Authority	RP1
Hon Josh Frydenberg - Minister for Environment & Energy	RP1
Senator the Hon Matt Canavan - Minister for Resources and Northern Australia	RP1
Hon Greg Hunt - Minister for Industry, Innovation & Science	RP1
Other	
IMS consultant	RP2
Jacobs	RP5

Sufficiency of Information

A copy of the information sheets developed are attached:

- General Information Sheet – Attachment G1
- Fisheries Information Sheet – Attachment G2

Relevant person communication log

The Sensitive Information Report (SIR) submitted to NOPSEMA summarises relevant person feedback and our response. For each relevant person the following information is provided:

- dates and methods of all consultation events with that relevant person
- a summary of the feedback received from that relevant person for each event
- a statement of our response, or proposed response, as a result of the consultation (where appropriate)
- a summary of the arrangement for ongoing consultation with that relevant person.

Table 5: Relevant persons' engagement log

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
Australian Fisheries Management Authority	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Australian Maritime Safety Authority	16 Oct 2018	SENT	How: Email	AMSA:1	Chemical dispersant Supply Advice - confirmation of AMSA stock and location	N/A
	8 Nov 2018	RECEIVED	How: Email	AMSA:1	Confirmation 8/11/18 of AMSA availability of stockpiles. AMSA will not hold back stock of dispersants. Depending on the circumstances, e.g. concurrent incidents, the entirety of the AMSA stockpile would be available. Supply of dispersant can be transported to arrive in time for application, that is, while it might not all be transported overnight there will always be enough delivered to maintain dispersant spraying operations.	OPEP information updated
	8 Nov 2018	SENT	How: Phone call	AMSA:2	Updates to the current JSOP - JSOP is due for update however changes are minor and would not impact the development of the Air Ops Plan. b. Airport services - Airport arrangements, AMSA have no standing arrangements and would seek to organise these at time of mobilisation depending on what was required (means JSE probably need to engage airport operator separately) c. Air Attack Supervisors (AAS) - still no formal arrangement in place. States were supposed to make arrangements, such as MOU but this has not been completed either (potential need for JSE to engage directly with WA DFES and discuss MOU – WL to follow up)	WL to address separately in support of developing the JSE Air Ops Plan for Stag/Montara response operations.

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	19 Nov 2019	RECEIVED	How: Email	AMSA:3	Containing updated vessel traffic plot, noting heavy vessels passing through permit area to the north of Montara Venture FPSO in Osborn Passage. Notification requirements	Refer to Assessment of Merits Table. Notification requirements incorporated into triggered consultation in EP.
	22 Feb 2019	SENT	How: Call/email	AMSA:4	AMSA MOU – confirmation of correct signing Response personnel – Confirmation of wording regarding number of personnel" "Under the provisions of the AMSA MOU, Jadestone Energy will be able to request support from the NRT (63 personnel based on the current arrangements in place between AMSA and the State/Territory Governments) to assist with spill response operations. The provision of NRT will be at the discretion of AMSA and based on best endeavours associated with the sourcing of NRT from their respective State and Territory organisations."	Awaiting response with regard to accessing the National Response Team
Department of Industry, Innovation and Science	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Department of Defence	12 Nov 2018	SENT	How: Email	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
			Supplementary: General Information sheet		with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Department of Immigration and Border Protection	12 Nov 2019	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	Email bounced
	12 Nov 2019	SENT	Hardcopy of general information sheet sent to Canberra address	N/A	Copy of information sheet sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
Geoscience Australia	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Director of National Parks	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet and additional MP addendum	DNP:1	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
	25 Feb	RECEIVED		DNP:2	Consider NW Marine Parks network MP	Refer to

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
	2018		How: Email		Consider NOPSEMA guidance note esp. ensure identify and manage impacts and risks to AMPs and reduce to ALARP, demonstrate not inconsistent with MP and notify DNP if EP approved by NOPSEMA. Notification of DNP in event of an Emergency Response within or likely to impact a AMP (noting details	Assessment of Merit Table
Department of Foreign Affairs and Trade	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
National Native Title Tribunal	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Department of Agriculture and Water Resources	12 Nov 2018	SENT	How: Email What: Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	23 Nov 2018	SENT	How: Phone call/Email	Agric:1	Confirmation regarding FSO (Stag) and general contact for other JSE IMS	N/A
	6 Dec 2018	RECEIVED	How: Phone call/Email	Agric: 2	Response 6 Dec 2018- Provided references and contact details.	Contact details noted and references used to

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
						inform IMS plan
Australian Hydrographic Service	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	12 Nov 2018	RECEIVED	How: Email	AHO:1	Email acknowledgement that information has been received by the AHO and will be actioned.	N/A
Department of Environment and Energy	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	12 Nov 2018	RECEIVED	How: Email Supplementary: General Information sheet	DoEE:1	Response 12/11 noting DoEE not a relevant person as NOPSEMA authorisation will encompass DoEE	DoEE removed from relevant person list
Department of Biodiversity, Conservation and Attractions	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	14 Nov 2018	RECEIVED	How: email	DBCA:1	No objection or concern has been raised in relation to operating activities as in Commonwealth waters.	Stakeholder database updated
Department of Primary Industries and Regional Development (Fisheries)	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Nov 2018	RECEIVED	How: Email	DPRID:1	Consideration of use of vessel check Notification requirements	Refer to Assessment of Merit Table

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
	27 Nov 2018	RECEIVED	How: Email	DPIRD:2	Specific strategies for spawning grounds in OPEP Response received from DPIRD management Notification of commencement of activities Recommend consultation with WAFIC, Recfishwest, PPA and commercial fishers Request for baseline data in OPEP development and make available data to department	Refer to Assessment of Merit Table
	16 Nov 2018	SENT	How: Email/phone	DPIRD:3	Confirmation of telephone conversation regarding vessel interactions, high risk ports	N/A
	22 Nov 2018	RECEIVED	How: Email	DPIRD:4	Response to email DPIRD:3. Dampier is classified as a high risk port due to number of vessel movements not due to the site being high risk. Focus on STAG platform but learnings relevant to Montara	Details noted and IMS plan updated
	4 Dec 2018	SENT	How: Email	DPIRD:5	Clarification of NOPSEMA reference to high risk port (Dampier)	Details noted and IMS plan updated
	6 Dec 2018	RECEIVED	How: Email	DPIRD:6	Pending response once staff back	N/A
	11 Dec 2018	RECEIVED	How: Email	DPIRD:7	Response confirming Didemnum perlucidum established at Dampier and appropriate management	Details noted and IMS plan updated
Western Australian Museum	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
	25 Feb 2019	RECEIVED	How: Email	WAM:1	WA Museum will be providing comment but still being finalised	JSE follow up if no response received by 28 Feb 2019

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
Shire of West Kimberley	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Department of Water and Environmental Regulation	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Department of Mines, Industry Regulation and Safety	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Nov 2018	RECEIVED	How: Email	DMIRS:1	Acknowledgement of change of ownership. Information package reviewed and no further information requested. Suggested including more key distances in information pack. No objection or concern has been raised in relation to operating activities.	Recommendation for change to information pack noted for future consultation and supplementary information sent to Director of NP.
Department of Jobs, Tourism, Science and Innovation	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Department of Transport	1 Nov 2018	SENT	How: Email	DoT:1	Jadestone will submit the OPEP and supporting documents to DoT as per the IGN upon submission of the Montara EP to NOPSEMA Jadestone will set up regular meetings with DoT to provide an update on the transitional process DoT review focus for the OPEP is to ensure that Jadestone has the response arrangements in place to allow DoT to use and is aligned with the IGN	No response required from DoT to email if accurate representation of meeting outcomes.
	6 Nov 2018	SENT	How: Email	DoT:2	IMT Personnel requirements: six positions are generic in nature and that with oversite from the Deputy I/C any specific issues can be managed at the time. From our perspective, Public Information and Finance are roles which must be undertaken by suitable trained and experienced JSE staff only Current contractual arrangements with AMOSC are in place.	N/A
	6 Nov 2018	RECEIVED	How: Email	DoT:2	DoT's expectations as outlined in the IGN, the Deputy Planning Officer and Deputy Logistics Officer, to be provided as part of the initial DoT IMT Personnel Requirements, must have intimate knowledge of the relevant PT OPEP and planning processes, and the PT logistics processes and contracts, respectively. For those reasons, we see these roles belonging to Jadestone personnel rather than AMOSC personnel.	Refer to Assessment of Merit Table where response to this issue provided.
	19 Nov 2018	SENT	How: Email	DoT:3	Notification of provision of EP, OPEP and OSR Arrangements	N/A
	10 Dec	RECEIVED		DoT:3	Page turn review not completed – focus on spill	Refer to

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
	2018		How: Email Attachments		response arrangements Copy of most recent IGN and State Hazard Plan	Assessment of Merit Table for Response
	25 Feb 2019	SENT	How: Email Supplementary information: OPEP review response and IMT response plan	DoT:4	Copy of responses as per Response to Merit Table provided to DoT along with supporting information in the IMT response plan	N/A
Shire of Wyndham East Kimberley	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Department of Primary Industries and Resources (Primary Industries and Fisheries, Mines and Energy)	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	23 Nov 2018	SENT	How: Email	DPIR:1	Request for point of contact and guidance	N/A
	12 Nov 2018	RECEIVED	How: Email/Phone	DPIR:1	Recommend following national guidelines Support the use of WA vessel check system References provided	National guidelines references in the development of the IMS strategy WA Vessel check system will be used

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
Northern Territory Environmental Protection Authority	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Department of Tourism and Culture (Parks and Wildlife Commission of the Northern Territory, Tourism NT)	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Department of Environment and Natural Resources	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Department of the Chief Minister	12 Nov 2018	SENT	How: Mail Supplementary: General Information sheet	G3:1	Hardcopy sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	20 Nov 2018	RECEIVED	How: Email		Advising forwarded on to Hon Ken Vowles MLA responsible for Primary Industry and Resources. No objection or concern has been raised in relation to operating activities.	Informed and updated. Consideration of whether a relevant stakeholder for

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
						ongoing consultation.
Department of Infrastructure, Planning and Logistics	12 Nov 2018	SENT	How: Mail Supplementary: General Information sheet	G3:1	Mail sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	6 Feb 2018	SENT	How: Email	DIPL:1	Invitation to engage	N/A
	7 Feb 2018	RECEIVED	How: Email	DIPL:1	NT Oil spill contingency plan (2014) currently under review Industry plans should follow National Plan for Maritime Env Emergencies and AMSA and NOPSEMA guidance NT pollution hotline contact details provided Contact details for harbour master for advice regarding capacity for offshore response to spill	Refer to Assessment of Merit Table
	7 Feb 2019	SENT	How: Email	DIPL:1	Arrangement for phone call regarding confirmation of NT arrangements	
	8 Feb 2019	RECEIVED	How: Email	DIPL:1	Provision of harbour master details NT limited resourcing to respond to a spill – quickly escalates to NRT. AMSA stockpile in Darwin.	WL to arrange contact
	14 Feb 2019	SENT	How: Email	DIPL:1	Arrange phone call to discuss NT arrangements specifically preference for multiple IMT cf. combined IMT	WL to call contact provided
	21 Feb 2019	SENT	How: Email	DIPL:2	Proposed draft NT response arrangements based on discussion with contact. Please consult other stakeholders. Want to include in OSRA document	N/A
	21 Feb 2019	RECEIVED	How: Email	DIPL:2	Need to discuss with Peter Vasel (Director). Confirmation of timing for feedback	
	21 Feb	SENT		DIPL:2	End of next week fine for comments	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
	2019		How: Email			
	21 Feb 2019	RECEIVED	How: Email	DIPL:2	Confirmation comments will be provided by 28/02/19	WL to follow up for comments if not received
Commonwealth Fisheries Association	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	Email bounce: hardcopy sent via mail
	12 Nov 2018	SENT	How: Mail Supplementary: General Information sheet		Hardcopy sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
Northern Territory Seafood Council	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Pearl Producers Association	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Western Australian Fishing	10 Nov 2018	SENT	How: Email	WAFIC:1	Distribution of JSE Information sheet to fishers	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
Industry Council	12 Nov 2018	RECEIVED	How: Email	WAFIC:2	Requesting consideration of more detailed response to previous queries raised with PTEPP.	Refer to Assessment of Merit Table. Response to PTEPP issues included in package sent to previous responders.
	14 Nov 2018	SENT	How: Email	WAFIC:3	Reply noting that response to PTEPP issues will be included in package sent to previous responders	Include Reponse to PTEPP issues doc in package sent to previous responders
	19 Nov 2018	RECEIVED	How: Email	WAFIC:4	Response in relation to PTEPP article in paper seeking clarification of safety, maintenance and risk reduction and existing issues leading to ceasing of production.	Reply drafted.
	Nov 2018	SENT	How: Email	WAFIC:5	Response to WAFIC outlining JSE position and commitments. This was forwarded by WAFIC to fishers on 20.11.18	No change to EP required
Australian Southern Bluefin Tuna Industry Association	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Northern Prawn Fishing Industry Pty Ltd	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:3	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
	25 Feb 2018	RECEIVED	How: Email	NPL:1	No further comment on previous consultation with PTEPP. Continue to include as relevant person	No action required
Australian Fisheries Trade Association	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Western Tuna and Billfish Fishery licence holders	12 Nov 2018	SENT	How: Email Supplementary: Fisheries Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	Due to previous PTEPP consultation through WAFIC on this EP and WAFICs comments on stakeholder fatigue no further follow up was undertaken.
Joint Authority Northern Shark Fishery licence holders	12 Nov 2018	SENT	Who: All licence holders West Coast Fishery (based on list obtained DPIRD Nov 18) How: Mail Supplementary: Fisheries Information sheet	N/A	Mail sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	Due to previous PTEPP consultation through WAFIC on this EP and WAFICs comments on stakeholder fatigue no further follow up was undertaken.

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
Mackerel Managed Fishery (Area 1) licence holders	12 Nov 2018	SENT	Who: All licence holders Area 1 of Fishery (based on list obtained DPIRD Nov 18) How: Mail What: Information sheet	G3:3	Mail sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	19 Nov 2018	RECEIVED	How: Email	Mack:1	Response received. Issues with email. Given nature of fishery difficult to see gear conflict. Asked to be kept informed	Email address tested. Additional name added to contact list
	22 Nov 2018	SENT	How: Email	Mack:1	Reply from JSE to contact. Stakeholder kept on stakeholder contact list and additional name added.	N/A
Northern Demersal Scalefish Fishery (Area 2) licence holders	12 Nov 2018	SENT	Who: All licence holders Area 2 Fishery (based on list obtained DPIRD Nov 18) When: 12 Nov 2018 How: Mail What: Information sheet	G3:3	Mail sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	Due to previous PTEPP consultation through WAFIC on this EP and WAFICs comments on stakeholder fatigue no further follow up was undertaken.
Recfishwest	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Amateur Fisherman's Association of	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
the NT					impacts and risks (and associated management controls). Feedback requested.	
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Kimberley Bird Watching	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Australian Northwest Tourism	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Kimberley Expeditions	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Tourism Western Australia	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
					impacts and risks (and associated management controls). Feedback requested.	
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Tourism Top end	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Australian Petroleum Production and Exploration Association	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Melbana Energy Limited	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Bounty Oil & Gas NL	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Eni Australia Limited	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Murphy Australia Oil Pty Ltd	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Finder Pty Limited	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
NOGA	9 Nov 2018	SENT	How: Phone call/Email	NOGA:1	Confirmation of phone call regarding spill response waste reprocessing by NOGA	No response and this management action was not pursued.
OSRL (Oil Spill Response)	29 Aug 2018	RECEIVED	How: Meeting/Email	OSRL:1	Copy of presentation and technical sheet provided	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
	9 Oct 2018	SENT	How: Emails	OSRL:2	Questions regarding aerial dispersants and OSRL capabilities	Information provided by OSRL
	9 Oct 2018	RECEIVED	How: Email	OSRL:2	Forwarded to aviation team	Information provided by OSRL
	12 Oct 2018	RECEIVED	How: Email	OSRL:2	Response from aviation team confirming: Large aircraft mobilisation time Dispersant load capacity per sortie Number of sorties per day Response from OSRL on 16 Oct providing initial flight times and dispersant availability	Information provided by OSRL
	12 Oct 2018	SENT	How: Email	OSRL:2	Amount of dispersant can we get from OSRL to Darwin and in what timeframe	N/A
	15 Oct 2018	SENT	How: Email	OSRL:3	Dispersant schedule: How much dispersant can we expect on Day 7 and at what rate of delivery please? When could we expect the GDS to kick in and at what rate of delivery please?	N/A
	15 Oct 2018	RECEIVED	How: Email	OSRL:3	Detailed overview of dispersant schedule and availability provided	Noted and considered in the development of the OPEP
	26 Feb 2019	SENT	How: Email	OSRL:4	Possibility of contracting additional OSRL Ops staff – additional 20	N/A
	26 Feb 2019	RECEIVED	How: Email	OSRL:4	Additional pool of 70 training responders subject to availability. Not guaranteed	Noted and considered in the development of the OPEP
	2 Oct 2018	RECEIVED	How: Email	OSRL:5	Indicative pricing for OSRL membership	N/A
	13 Nov 2018	RECEIVED	How: Email	OSRL:5	Follow up	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
	14 Nov 2018	SENT	How: Email	OSRL:5	Likely JSE join Q1/2 2019 Request for membership application form	N/A
	14 Nov 2018	RECEIVED	How: Email	OSRL:5	Copy of membership form provided	N/A
	14 Nov 2018	RECEIVED	How: Email	OSRL:5	GDS service information	N/A
	16 Nov 2018	SENT	How: Email	OSRL:5	Thank you	N/A
	5 and 10 Dec 2018	RECEIVED	How: Email	OSRL:5	Follow up	N/A
	6 Dec 2018	SENT	How: Email	OSRL:5	Noted still reviewing documents	N/A
Aerotech	11 Oct 2018	SENT	How: Email/Phone Conversation	AERO:1	Questions regarding aerial dispersants	No response received until future correspondence below. Dispersant advice received from OSRL
	8 Nov 2018		How: Phone Conversation What: Questions regarding Darwin operations	AERO:2	Provided clarification that AFR have only stand up capability (on direction from AMSA) and that their responsibilities remain with the provision of the aircraft/crew/ground personnel. All airport arrangements remain with AMSA	Noted and considered in the development of the OPEP
AMOSC	1 Nov 2018	SENT	How: Email What: Request for AMOCS and CG support		Confirmation of AMOSC support	Ongoing
WA Conservation Council	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
World Wildlife Fund	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Environs Kimberley	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Greenpeace	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
	25 Feb 2019	RECEIVED	How: Email	GREEN:1	Request to be removed as a relevant person	Stakeholder database updated
The Wilderness Society	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
International Fund for Animal Welfare	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Save the Kimberley	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Australian Marine Conservation Society	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Australian Institute of Marine Science	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
			Supplementary: General Information		before the close of business on 25 February 2019	
Western Australian Marine Science Institute	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Commonwealth Scientific and Industrial Research Organisation	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	15 Nov 2018	RECEIVED	How: Email	CSIRO:1	Information sheet forwarded to Nerida Horner. No objection or concern has been raised in relation to operating activities.	N/A
North Australian Indigenous Land & Sea Management Alliance	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Northern Land Council	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
Tiwi Land Council	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:3	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Kimberley Land Council	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information sheet	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Darwin Port Authority	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
	25 Feb 2019	RECEIVED	How: Email	DP:1	No comments. Update contact details	Updated stakeholder database
Kimberley Port Authority	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you	N/A

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
			Supplementary: General Information		before the close of business on 25 February 2019	
Pilbara Port Authority	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
	22 Feb 2019	SENT	How: Email Supplementary: General Information	G3:2	Given no response to previous correspondence, will assume no comment unless we hear from you before the close of business on 25 February 2019	N/A
Hon Josh Frydenberg - Minister for Environment & Energy	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
Senator the Hon Matt Canavan - Minister for Resources and Northern Australia	12 Nov 2018	SENT	How: Email Supplementary: General Information sheet	G3:1	Email sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
Hon Greg Hunt - Minister for Industry, Innovation & Science	12 Nov 2018	SENT	How: Mail Supplementary: General Information sheet	G3:1	Mail sent to stakeholder with information on Montara Operations EP. Attached was a factsheet with information on the potential environmental impacts and risks (and associated management controls). Feedback requested.	N/A
Craig Astbury (IMS consultant)	23 Nov 2018	SENT	How: Email	CA:1	Request for guidance on risk estimators	N/A
	10 Dec 2018	RECEIVED	How: Email	CA:1	Advice regarding IMS risk assessment tools	Advice considered in the development of the IMS plan
Oceaneering	24 Feb	SENT		OCEAN:1	provide me with the relevant information pertaining	Pending response

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/status
	2019		How: Email		to setting up the OTA and any additional information that may be available specifically around the SFRT that would be pertinent.	

Attachment G1

General Information Sheet

JADESTONE ENERGY

Invitation for Consultation

Invitation for Consultation

Jadestone Energy has recently purchased the existing Montara Operations Activity from PTTEP. Jadestone is preparing an Environment Plan for operation of the facilities that will be assessed and accepted by the National Offshore Petroleum Regulatory Authority prior to Jadestone taking over operation of the Montara facilities.

We understand that PTTEP, the current Operator, has already been in contact with you regarding their intended review of the Operations Environment Plan. PTTEP has passed on issues and information you provided them directly to us.

Jadestone is considering any referred information, and we welcome any other information or questions you may have about our intended operation of the Montara facilities. Our engagement directly with you is a requirement due to change in operator, and to provide you with information on how best to contact us.

Who is Jadestone Energy?

Jadestone Energy (Jadestone) is an Asia Pacific based oil and gas exploration and production company listed on the TSX Venture Exchange (TSXV: JSE) and on AIM (JSE).

Jadestone Energy is committed to preventing all health, safety and environmental incidents and complying with all regulatory requirements. Incidents of this nature are preventable and we will strive to operate in a way that does not harm the environment.

What is an Environment Plan?

The purpose of an Environment Plan (EP) is to identify the proposed petroleum activity's impacts on and risks to the receiving environment. The EP also sets out measures to reduce the identified environmental impacts and risks of the activity and describe how and to what standard those measures will be implemented throughout the activity; this includes emergency situations.

The Montara Operations EP does this for oil extracted from production wells in each of the Montara, Skua, Swift and Swallow fields and its transportation in flow lines to the Montara Venture Floating, Production, Storage and Offtake facility via the Montara wellhead platform.

Length of EP renewal

Montara production commenced Quarter 2 2013. The operation is expected to extend approximately 12 years. Jadestone is seeking a standard 5 year renewal of the EP.

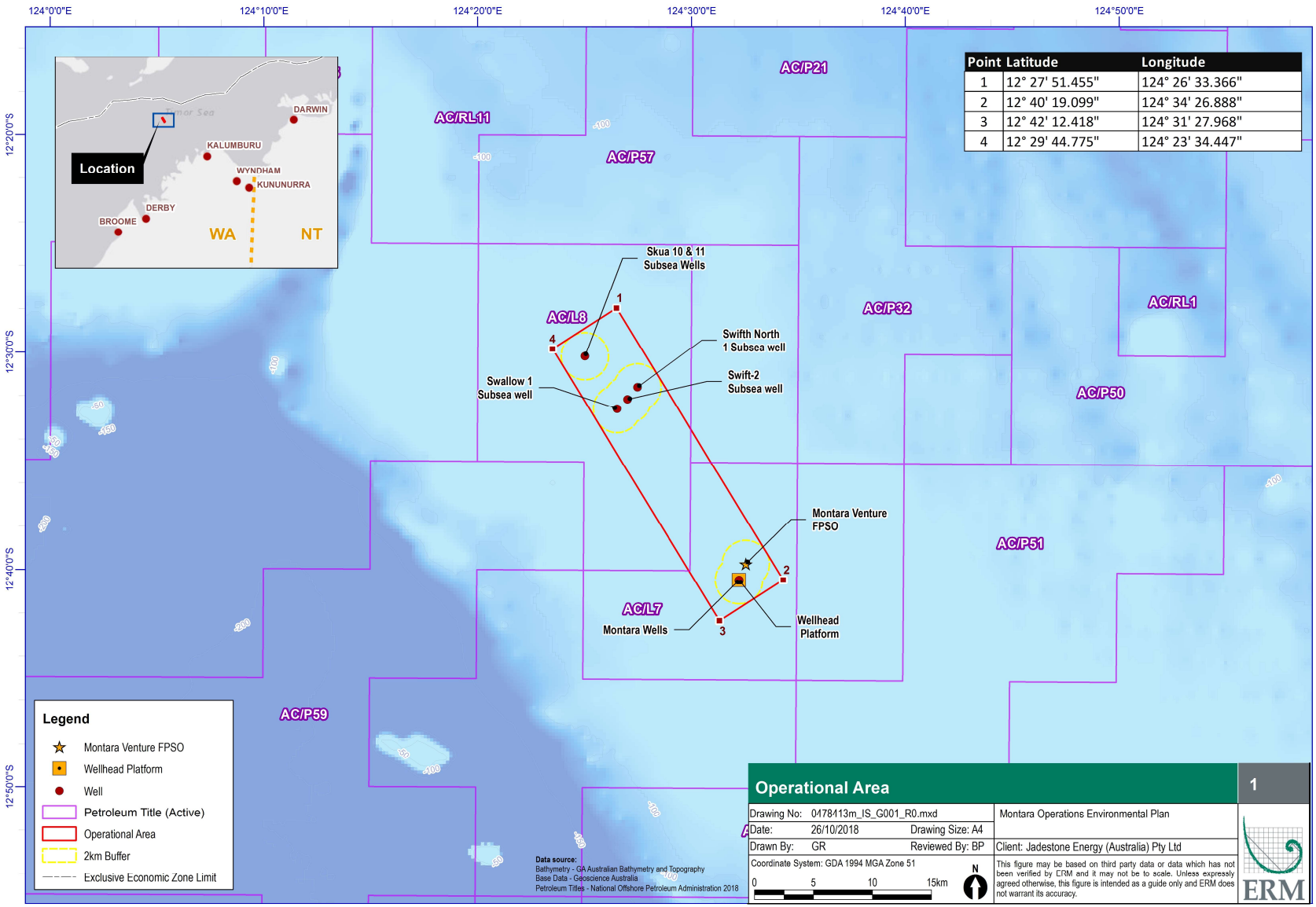
Location

The Montara development is located in the Timor Sea, approximately 690 km west of Darwin (**Figure 1**). The permit areas (AC/L7 Montara field and AC/L8 Skua, Swift and Swallow fields) are in Australian waters.

All planned activities will be contained within the Operational Area. Approximate location details are provided below.

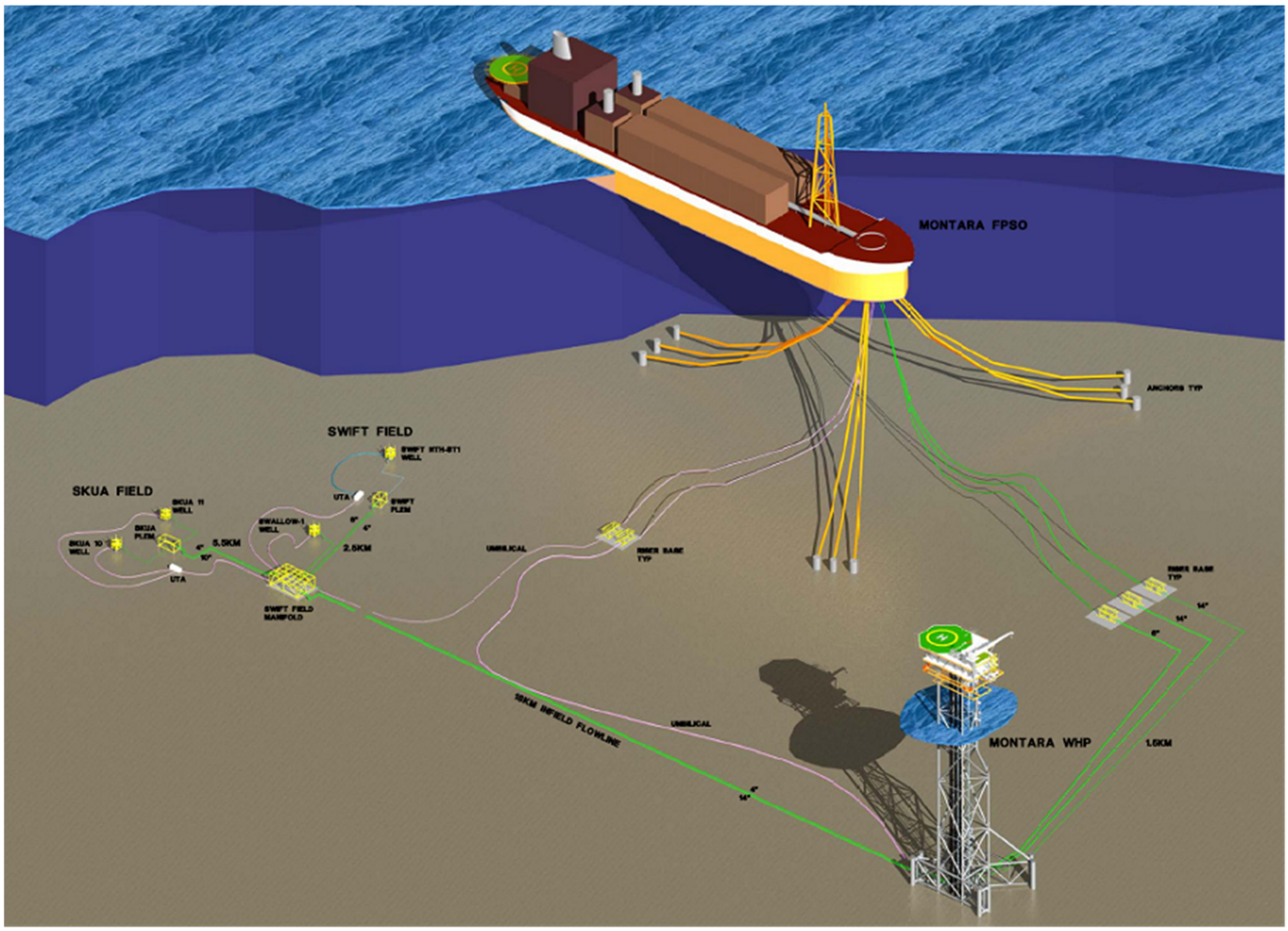
- Lat: 12°39'35.3"S: Long:124°32'41.1"E (GDA 94, Zone 51)
- Approximate water depth ~ 80 m LAT

Figure 1 – Montara Operational Area



Montara Facility

- A floating production, storage and offtake (FPSO) facility and its associated mooring system
- An unmanned well head platform (WHP) at the Montara field
- Five subsea wells at the Skua, Swift and Swallow fields
- Production flowline system
- Gas lift flowline system
- Three infield control umbilicals
- A subsea manifold in the Swift field
- Support/supply vessels, work vessels and tug boats
- Helicopter support



Operational Area Environmental Values

There are 20 *Environment Protection Biodiversity Conservation Act* protected species that have the potential to occur within the Operational area, including whales, turtles, whale sharks and birds. There are no Matters of National Environmental Significance in the Operational Area.

Australian Marine Parks	Not present
World Heritage	Not present
Ramsar Wetlands	Not present
National Heritage Places	Not present
Commonwealth Heritage Places	Not present
Threatened Ecological Communities	Not present
State and Territory Marine Parks	Not present
Key Ecological Features (KEFs)	Not present

The benthic habitat in the Operational area is generally sandy seabed that is well represented in the region.

In the event of an unplanned event (e.g. hydrocarbon spill), the values in a broader Environment that May be Affected (EMBA) have been identified to enable key habitats or locations of particular value in the region to be responded to as protection priorities.

Potential risks

A summary of potential risks and associated management measures is provided below.

Potential Risks	Mitigation and /or Management Measure
Planned activities	
Exclusion zone for marine users	• A 500m petroleum safety zone is in place around the facility for duration of operations. No vessels are to enter this zone. • Notice to Mariners
Noise and Light emissions	• Operational measures will be taken to protect marine fauna and ecosystems from noise and light emissions during the Activity. • Compliance with EPBC legislation
Effluent discharge and waste management	• Routine discharges will meet legal requirements. • Waste Management Plan
Produced water	• Produced water will be modelled and monitored to manage discharges to and acceptable levels of environmental performance

Potential Risks	Mitigation and /or Management Measure
Unplanned risks	
Vessel collision	• Marine notifications will be made to relevant stakeholders, describing the location of the activity and a 500 m exclusion zone to prevent the risk of vessel collisions
Hydrocarbon release	• Oil Pollution Emergency Plan • Appropriate vessel spill response plans, equipment and materials will be in place and maintained • Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment
Introduced Marine Species (IMS)	• IMS Management will meet legal requirements and reduce risks to ALARP and Acceptable levels.

Providing Feedback

If you would like to comment on the proposed activity outlined in this fact sheet or would like additional information, please contact Jadestone before 01 Dec 2018.

Email: consult@jadestone-energy.com.au **Phone: 08 9486 6600**

We have moved… our Perth office is now located at: L8, 1 William Street, Perth 6000, WA

All other contact details remain the same.

JADESTONE ENERGY

Attachment G2

Fisheries Information Sheet

JADESTONE ENERGY

Invitation for Consultation

Fishing sector

Invitation for Consultation

Jadestone Energy has recently purchased the existing Montara Operations Activity from PTTEP. Jadestone is preparing an Environment Plan for operation of the facilities that will be assessed and accepted by the National Offshore Petroleum Regulatory Authority prior to Jadestone taking over operation of the Montara facilities.

We understand that PTTEP, the current Operator, has already been in contact with you through the WA Fisheries Industry Council regarding their intended review of the Operations Environment Plan. PTTEP has passed on issues and information you provided them directly to us.

Jadestone is considering any referred information, and we welcome any other information or questions you may have about our intended operation of the Montara facilities. Our engagement directly with you is a requirement due to change in operator, and to provide you with information on how to best contact us.

Who is Jadestone Energy?

Jadestone Energy (Jadestone) is an Asia Pacific based oil and gas exploration and production company listed on the TSX Venture Exchange (TSXV: JSE) and on AIM (JSE).

Jadestone Energy is committed to preventing all health, safety and environmental incidents and complying with all regulatory requirements. Incidents of this nature are preventable and we will strive to operate in a way that does not harm the environment.

What is an Environment Plan?

The purpose of an Environment Plan (EP) is to identify the proposed petroleum activity's impacts on and risks to the receiving environment. The EP also sets out measures to reduce identified environmental impacts and risks due to the activity and describe how and to what level of performance those measures will be implemented throughout the activity; this includes emergency situations. The Montara Operations EP does this for oil extracted from production wells in each of the Montara, Skua, Swift and Swallow fields and its transportation in flow lines to the Montara Venture Floating, Production, Storage and Offtake facility via the Montara wellhead platform.

Length of EP renewal

Montara production commenced in Quarter 2 2013. The Montara Development is expected to have a project life of approximately 12 years. Jadestone is seeking the standard 5 year renewal of the Environment Plan.

Location

The Montara development is located in the Timor Sea, approximately 690 km west of Darwin (**Figure 1**). The permit areas (AC/L7 Montara field and AC/L8 Skua, Swift and Swallow fields) are in Australian waters.

All operational activities managed under the EP will be contained within the operational area in ~80 m water depth. Approximate location details are:

- Lat: 12°39'35.3"S: Long:124°32'41.1"E (GDA 94, Zone 51)

In the event of an accidental event (e.g. hydrocarbon spill), the values in a broader Environment that May be Affected (EMBA) have been identified to enable key habitats or locations of particular value in the region to be responded to as protection priorities.

What fisheries may be affected?

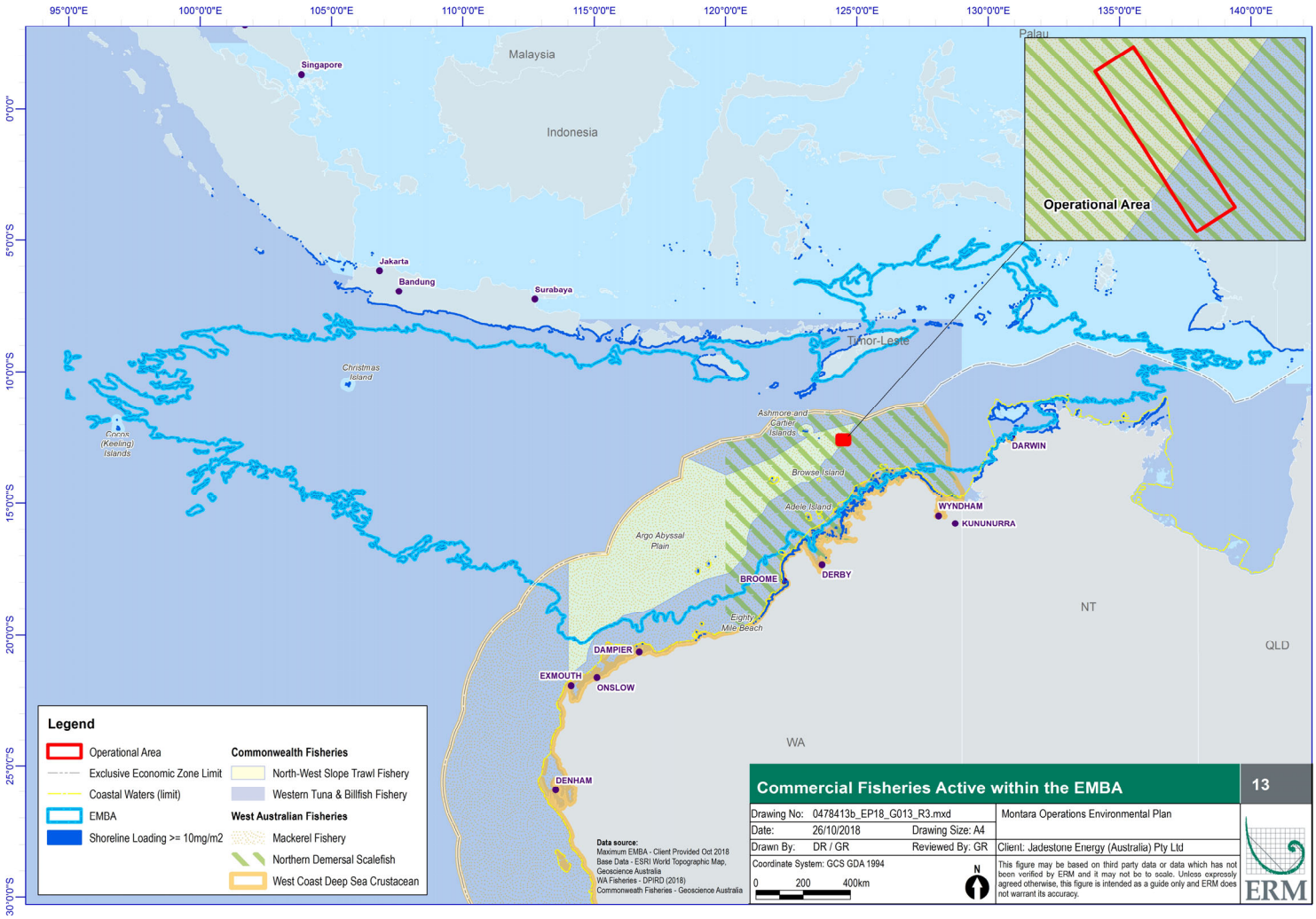
Jadestone understands from the Department of Primary Industry and Resources Department that the **Northern Demersal Scalefish** is the only managed fishery active in the operational area since 2015. Other fisheries that are licensed to operate and may utilise this area in the future include:

- **Western Tuna and Billfish (Commonwealth)**
- **Joint Authority Northern Shark Fishery (WA)**
- **Mackerel Fishery (WA)**

These fisheries will be Jadestone's focus for consultation. Consultation for other fisheries regarding the development of the EP will take place through notification of State and Commonwealth representative bodies.

In the unlikely event of a hydrocarbon spill, Jadestone will conduct extensive and immediate consultation with other fisheries licensed to operate within the broader Environment that May be Affected.

Figure 1 – Location and fisheries that may utilise the Operations Area



Potential risks to fishing sector

A summary of potential risks to the fishery sector and associated management measures is provided below.

Potential Risks	Mitigation and /or Management Measure
Planned activities	
Exclusion zone for marine users	• A 500m petroleum safety zone is in place around the facility for duration of operations. No fishing vessels are to enter this zone. • Notice to Mariners
Noise and Light emissions	• Operational measures will be taken to protect marine fauna and ecosystems from noise and light emissions during the Activity. • Compliance with EPBC legislation
Effluent discharge and waste management	• Routine discharges will meet legal requirements. • Waste Management Plan
Produced water	• Produced water will be modelled and monitored to manage discharges to acceptable levels of environmental performance
Unplanned risks	
Vessel collision	• Marine notifications will be made to relevant stakeholders, describing the location of the activity and a 500 m petroleum safety zone is present to prevent the risk of vessel collisions
Hydrocarbon spill	• Oil Pollution Emergency Plan • Appropriate vessel spill response plans, equipment and materials will be in place and maintained • Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment
Introduced Marine Species (IMS)	• IMS Management will meet legal requirements and reduce risks to ALARP and Acceptable levels.

Providing Feedback

If you would like to comment on the proposed activity outlined in this fact sheet or would like additional information, please contact Jadestone before 01 December 2018.

Email: consult@jadestone-energy.com.au **Phone: 08 9486 6600**

JADESTONE ENERGY

We have moved… our Perth office is now located at: L8, 1 William Street, Perth 6000, Western Australia.
All other contact details remain the same.

APPENDIX F MONTARA WELLHEADS 1,2,3 STAKEHOLDER CONSULTATION

Appendix F

Table 1: Relevant persons' engagement log - Montara 1,2,3, Wellhead Abandonment EP

Relevant Stakeholders	Date	To/From	Engagement Logistics	Reference Number	Summary of content	Action undertaken/Status
Commonwealth government department or agency						
Australian Border Force (ABF)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Australian Fisheries Management Authority (AFMA)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	N/A
	29 Aug 22	RECEIVED	How: Email	AFMA	Acknowledgement of receipt. No specific comment. Noted to consult directly through relevant fishing organisations.	Due to no change in the Operational Area that could have impact on fishers, no follow up consultation with fishers is proposed at this stage.
Australian Hydrographic Office (AHO)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	N/A
	30 Aug 22	RECEIVED	How: Email	AHO	Acknowledgement of receipt.	Noted
Australian Maritime Safety Authority (AMSA)	29 Aug 22	SENT	How: Email	G1a	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird	N/A

					and produced water management, decommissioning and GHG). Feedback requested	
	29 Aug 22	RECEIVED	How: Email	AMSA	Acknowledgement of receipt. Initial advice provided on this project continues to apply.	Noted
Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Department of Agriculture, Fisheries and Forestry (DAFF) – Marine pests	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Department of Climate Change, Energy, the Environment and Water (DCCEEW)	9 Aug 22	SENT	How: Email	DCCEEW_1	Transmittal sent to DCCEEW formally withdrawing the Sea Dumping Permit Application – Abandonment Montara 1,2,3 and subsea wellheads	N/A
	10 Aug 22	RECEIVED	How: Email	DCCEEW_1	Acknowledgment of receipt of withdrawal. No further information required to action withdrawal.	No further action required
	6 Sept 22	SENT	How: Email	DCCEEW_2	Email sent to arrange meeting to discuss issues with bird management at Montara facility and potential permitting that may be required.	N/A
	6 Sept 22	RECEIVED	How: Email	DCCEEW_2	Email sent asking to send through information available to assess.	Jadestone to send presentation with relevant information
	7 Sept 22	SENT	How: Email	DCCEEW_2	Presentation sent.	N/A
	8 Sept 22	SENT	How: Email	DCCEEW_2	Link to presentation sent. Presentation attached to Sensitive Information Report	N/A
	13 Sept 22	RECEIVED	How: Email	DCCEEW_2	Confirmation that a permit under EPBC is not applicable.	Noted

	15 Sept 22	SENT	How: Email	DCCEEW_2	Acknowledgement of receipt. EP will state reporting in relation to bird management.	No further action required.
Department of Defence	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Department of Foreign Affairs and Trade (DFAT)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	N/A
	29 Aug 22	RECEIVED	How: Email	DFAT	Acknowledgement of receipt and provision of new contact details for future correspondence.	Noted
Department of Industry, Science and Resources (DISR)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Director of National Parks (DNP), Parks Australia, part of Department of Climate Change, Energy, the Environment and Water (DCCEEW)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
GeoScience Australia	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	N/A
	29 Aug 22	RECEIVED	How: Email	Geoscience	Acknowledgement of receipt	Noted

National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA)	9 Aug 22	SENT	How: Email	NOPSEMA	Transmittal sent to NOPSEMA formally withdrawing the Montara 1,2,3 Wellhead Abandonment EP	No further action required
Hon Ed Husic MP – Minister for Industry and Science	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	N/A
	29 Aug 22	RECEIVED	How: Email	Husic	Acknowledgement of receipt	Noted
Hon Madeleine King MP – Minister for Resources and Northern Australia	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	N/A
	29 Aug 22	RECEIVED	How: Email	King	Acknowledgement of receipt	Noted
Hon Tanya Plibersek MP – Minister for the Environment and Water	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	N/A
	29 Aug 22	RECEIVED	How: Email	Plibersek	Acknowledgement of receipt	Noted
Senator the Hon Murray Watt – Minister for Agriculture, Fisheries and Forestry	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	N/A
	29 Aug 22	RECEIVED	How: Email	Watt	Acknowledgement of receipt	Noted
WA State government department or agency						
	29 Aug 22	SENT	How: Email	G1a	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP	N/A

Department of Biodiversity, Conservation and Attractions (DBCA)					and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	
	29 Aug 22	RECEIVED	How: Email	DBCA	Acknowledgement of receipt	Noted
Department of Jobs, Tourism, Science and Innovation	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Department of Mines, Industry Regulation and Safety (DMIRS)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Department of Primary Industry and Regional Development (DPIRD) (Fisheries Branch)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Department of Transport (DOT) (Marine Pollution)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	N/A
	6 Sept 22	RECEIVED	How: Email	DoT	Acknowledgement of receipt. Provision of relevant guidance note details.	Noted
Department of Water and Environmental Regulation (DWER)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management,	N/A

					decommissioning and GHG). Feedback requested	
	29 Aug 22	RECEIVED	How: Email	DWER	Acknowledgement of receipt	Noted
NT Government or Agency						
Department of the Chief Minister	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Department of Environment, Parks and Water Security (DEPWS)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Department of Industry, Tourism and Trade (DITT) – Fisheries Division	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	N/A
	29 Aug 22	RECEIVED	How: Email	DITT	Acknowledgement of receipt	Noted
Department of Infrastructure, Planning and Logistics (DIPL)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Northern Territory Environment Protection Authority (EPA)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	N/A

	29 Aug 22	RECEIVED	How: Email	NT EPA	Acknowledgement of receipt	Noted
Commercial fishers and fishing associations: Commonwealth						
Australian Fisheries Trade Association (AFTA)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Commonwealth Fisheries Association (CFA)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Commercial fishers and fishing associations: WA and NT						
Northern Prawn Fishing Industry Pty Ltd	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Northern Territory Seafood Council (NTSC)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected

Pearl Producers Association (PPA)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Western Australian Fishing Industry Council (WAFIC)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	N/A
	2 Sept 22	RECEIVED	How: Email	WAFIC	Acknowledgement of receipt	Noted
	22 July 22	Sent	How: Email	WAFIC_1	Additional consultation to discuss removal of wellheads. Email sent including meeting minutes. Further details in Assessment of Merit table.	N/A
	22 July 22	RECEIVED	How: Email	WAFIC_1	Email with suggested edits to minutes.	Minutes updated
	22 July 22	Sent	How: Email	WAFIC_1	Suggested edits incorporated. Minutes attached to Sensitive Information Report.	No further action required
Recreational fishing						
Recfishwest	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Associations						
Australian Council of Prawn Fisheries	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management,	No further response expected

					decommissioning and GHG). Feedback requested	
Amateur Fisherman's Association of the NT (AFANT)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Northern Territory Guided Fishing Industry Association (NTGFIA)	29 Aug 22	SENT	How: Email	G1a	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Port Authorities						
Darwin Port	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Kimberley Port Authority (Port of Broome)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Oil and Gas						
Australian Petroleum Production and Exploration Association (APPEA)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected

INPEX	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Santos	29 Aug 22	SENT	How: Email	G1a	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Response Partners						
Australian Marine Oil Spill Centre (AMOSC)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Research						
Australian Institute of Marine Science (AIMS)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	No further response expected
Western Australian Marine Science Institute (WAMSI)	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird	No further response expected

					and produced water management, decommissioning and GHG). Feedback requested	
Western Australian Museum	29 Aug 22	SENT	How: Email	G1	Email sent to stakeholder providing update on Montara 1,2,3 Wellhead Abandonment EP and Montara Operations EP (including bird and produced water management, decommissioning and GHG). Feedback requested	N/A
	29 Aug 22	RECEIVED	How: Email	WA Museum	Acknowledgement of receipt	Noted

APPENDIX G CURRENT STAKEHOLDER CONSULTATION

Appendix G

Table 1: Relevant persons' engagement log: Current - Montara Operations EP

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Commonwealth government department or agency						
Australian Communications & Media Authority (ACMA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	22-Feb-23	PLACED	How: Call	N/A	Called ACMA to confirm receipt of information package. Package not received.	Emailed through information package
	22-Feb-23	SENT	How: Email	ACMA	Email sent to ACMA with information package.	Awaiting response
	22-Feb-23	RECEIVED	How: Email	ACMA	Acknowledgement of receipt.	N/A
	22-Feb-23	SENT	How: Email	ACMA	Email sent requesting direct contact details of subject expert email has been sent to.	Awaiting response
	22-Feb-23	RECEIVED	How: Email	ACMA	Email providing link to relevant person contact details.	Relevant contact details recorded. Awaiting response
	27-Feb-23	RECEIVED	How: Email	ACMA_1	Email advising Montara facility doesn't appear to be in vicinity of protection zone. Encourage Jadestone to contact owners of submarine cables in the vicinity.	Response assessed. Refer to Assessment of Merit Table
	22-Mar-23	SENT	How: Email	ACMA_1	Jadestone will contact Vocus and forthcoming submarine cable projects.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	1-Aug-23	RECEIVED	How: Email	ACMA_2	Acknowledgement of receipt and no additional comments to original feedback provided.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Australian Fisheries Management Authority (AFMA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	30-Jan-23	RECEIVED	How: Email	AFMA	Acknowledgement of receipt. Noted to consult directly through relevant fishing organisations.	Refer to Assessment of Merit table – this has been undertaken as part of standard consultation approach
	21-Feb-23	SENT	How: Email	AFMA	Acknowledgement of guidance.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Australian Hydrographic Office (AHO)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	20-Dec-22	RECEIVED	How: Email	AHO	Acknowledgement. Data will be registered and charts updated.	Noted
	21-Feb-23	SENT	How: Email	AHO	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Australian Maritime Safety Authority (AMSA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	21-Dec-22	RECEIVED	How: Email	AMSA	Notification requirements - refer to assessment of merit table for detail.	Response assessed and EP updated to include notifications.
	21-Feb-23	SENT	How: Email	AMSA	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Clean Energy Regulator	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	14-Feb-23	RECEIVED	How: Email	CER	Email advising have passed enquiry to appropriate section for a response.	Awaiting response
	22-Feb-23	PLACED	How: Call	N/A	Left a message asking CER to call Jadestone to confirm if consultation package was received.	Awaiting return phone call
	3-Mar-23	RECEIVED	How: Email	CER_1	Email advising no comment from CER.	Noted
	22-Mar-23	SENT	How: Email	CER_1	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Department of Agriculture, Fisheries & Forestry (DAFF)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	19-Dec-22	RECEIVED	How: Email	DAFF_AutoResponse	Auto Response email received.	N/A
	9-Feb-23	SENT	How: Email	G3	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	9-Feb-23	RECEIVED	How: Email	DAFF_AutoResponse_2	Auto Response email received	Awaiting response
	9-Feb-23	RECEIVED	How: Email	DAFF	Provided biofouling management requirement links.	Noted. Refer to Assessment of Merit Table for where biofouling requirements have been included in the EP
	28-Feb-23	SENT	How: Email	DAFF	Acknowledgment of email and confirming that biofouling management is covered under Jadestone's Marine Biosecurity Manual.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Department of Defence (DOD)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	31-Jan-23	RECEIVED	How: Email	DOD	Acknowledgement of receipt and confirmation that activity area is outside of any Defence Training Areas and restricted airspace. Advised of risk of UXOs. Please provide continued liaison with AHO for Notice to Mariners.	Noted. EP updated to include notifications
	21-Feb-23	SENT	How: Email	DOD	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Department of Foreign Affairs and Trade (DFAT)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	N/A
	8-Feb-23	RECEIVED	How: Email	DFAT_1	Provided alternative contact details.	Noted. Follow up email sent to updated contact details
	9-Feb-23	SENT	How: Email	DFAT_2	Reminder - email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	20-Feb-23	RECEIVED	How: Email	DFAT_2	Acknowledgement of receipt. DFAT has NIL comments.	Noted. No further action
	21-Feb-23	SENT	How: Email	DFAT_2	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Department of Industry, Science & Resources (DISR)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	22-Feb-23	PLACED	How: Call	N/A	Called DISR to confirm receipt of information package. More appropriate email address provided.	Relevant contact details recorded and emailed information package
	22-Feb-23	SENT	How: Email	DISR	Email sent to updated email address with information package.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Director of National Parks (DNP), Parks Australia, part of the Department of Climate Change, Energy, the Environment and Water (DCCEEW)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	4-Jan-23	RECEIVED	How: Email	DNP	Acknowledgement of receipt and confirmation that no objections or claims at this time. Provision of relevant guidance note details and notification requirements.	Refer to Assessment of Merit table. EP updated to include notifications.
	21-Feb-23	SENT	How: Email	DNP	Acknowledgement of email.	No further action.
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Department of Climate Change, Energy, the Environment and Water (DCCEEW) EPBC referral	18-Apr-23	SENT	How: Email	DCCEEW	Email asking for advice on existing consolidated approval notice.	Awaiting response
	18-Apr-23	RECEIVED	How: Email	DCCEEW	Acknowledgement email. Email forwarded to relevant assessment section.	Awaiting response
	3-May-23	SENT	How: Email	DCCEEW	Follow up email.	Awaiting response
	4-May-23	RECEIVED	How: Email	DCCEEW	Further acknowledgment email, follow up forwarded to relevant assessment section. Currently a high volume of requests.	Noted
	24-Jul-23	SENT	How: Email	DCCEEW_1	Email with application to extend the period of the Ministerial Approval for Montara 4,5 and 6 Oil Production wells and Gas Re-injection Well (EPBC Referral 2002/755).	Awaiting response
	24-Jul-23	RECEIVED	How: Email	DCCEEW_1	Acknowledgment of receipt of referral application.	Noted
	5-Sep-23	SENT	How: Email	DCCEEW_1	Follow up email to see if any queries or further details required.	Awaiting response
	28-Sep-23	RECEIVED	How: Email	DCCEEW_1	Email asking availability to go over request.	Awaiting response
	28-Sep-23	SENT	How: Email	DCCEEW_1	Response with alternate dates for meeting.	Alternative date suggested
	28-Sep-23	RECEIVED	How: Email	DCCEEW_1	Teams meeting invite sent.	Noted
	5-Oct-23	MEETING	How: Teams	DCCEEW_1	Meeting to discuss application to extend expiry date.	Refer to email below (05.10.23)
	5-Oct-23	SENT	How: Email	DCCEEW_1	Email following up on meeting today. Understand the Department is very busy and has missed the statutory timeframe to respond to the variation application, but is making best efforts to look at it in next few weeks. Decision has not been made yet by DCCEEW as to whether a variation to extend the approval or cease the conditions is preferred.	Noted
	18-Oct-23	RECEIVED	How: Email	DCCEEW_1	Request for commencement date of action.	Awaiting response
	18-Oct-23	SENT	How: Email	DCCEEW_1	Dates provided. Would like PTTEP commencement date.	N/A
	18-Oct-23	RECEIVED	How: Email	DCCEEW_1	Original date PTTEP commenced approval would be helpful.	Commencement date provided
	24-Oct-23	SENT	How: Email	DCCEEW_1	Commencement date provided.	Awaiting response
	12-Feb-24	SENT	How: Email	DCCEEW_1	Follow up email seeking update on application.	Awaiting response
	13-Feb-24	RECEIVED	How: Email	DCCEEW_1	Acknowledgement email. Delayed in processing request. Will update once delegate has considered the request.	Awaiting update on application
Department of Climate Change, Energy, the Environment and Water (DCCEEW) Bird management	2-Sep-22	SENT	How: Email	DCCEEW_2	Email sent to arrange a meeting to discuss bird management at Montara and regulatory permitting that may be required.	Awaiting response
	6-Sep-22	RECEIVED	How: Email	DCCEEW_2	Acknowledgment of email and phone call, contact details provided to send information for review.	Noted
	7-Sep-22	SENT	How: Email	DCCEEW_2	Email sent with presentation with key information.	Awaiting response
	8-Sep-22	SENT	How: Email	DCCEEW_2	Email sent with link to presentation.	Awaiting response
	13-Sep-22	RECEIVED	How: Email	DCCEEW_2	Response email confirming a Permit is not required.	Noted

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	15-Sep-22	SENT	How: Email	DCCEEW_2	Acknowledgment of email and phone call confirming advice that no permitting required.	Noted
	23-Feb-23	SENT	How: Email	DCCEEW_2	Email seeking advice re bird management.	Awaiting response
	7-Mar-23	RECEIVED	How: Email	DCCEEW_2	Email acknowledging phone call and advising requirements for proposed bird management fall outside regulatory regime and cannot provide advice on the matter.	Noted
	7-Mar-23	SENT	How: Email	DCCEEW_2	Acknowledgment email. Will continue discussions with NOPSEMA.	No further action
	27-Sep-23	SENT	How: Email	DCCEEW_2	Email providing update on bird management and seeking advice or peer review on passive bird management measures.	Awaiting response
	25-Oct-23	SENT	How: Email	DCCEEW_2	Follow up email seeking feedback after NOPSEMA workshop.	Awaiting response
	30-Nov-23	SENT	How: Email	DCCEEW_2	Follow up following call earlier in month with offer to review Montara bird chapter and monitoring and reporting strategy.	Awaiting response
	1-Dec-23	SENT	How: Email	DCCEEW_2	Email notifying that EP has been submitted to NOPSEMA and asking DCCEEW to review and provide comment on Montara bird chapter.	Awaiting response
	1-Dec-23	RECEIVED	How: Email	DCCEEW_2	Acknowledgment email, will review and provide comment in next few weeks.	Awaiting review
	4-Jan-24	SENT	How: Email	DCCEEW_2	Follow up email to see if DCCEEW have any comments on chapter. No further comments from NOPSEMA.	Awaiting response
	9-Feb-24	RECEIVED	How: Email	DCCEEW_2	Email providing advice for Jadestone's consideration.	Awaiting response
	12-Feb-24	SENT	How: Email	DCCEEW_2	Acknowledgement email. Finalising EP chapter and will incorporate comments into EP update.	Jadestone to update EP bird chapter accordingly. No further action
Maritime Border Command (MBC), part of Australian Border Force (ABF), part of the Department of Home Affairs (DHA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	7-Sep-23	PLACED	How: Call	N/A	Called to follow up if emails received. Message passed on and most appropriate person will call back.	Awaiting return phone call
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
National Offshore Petroleum Titles Administrator (NOPTA)	8-Feb-23	SENT	How: Email	G2	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	9-Feb-23	RECEIVED	How: Email	NOPTA	Email advising NIL response from NOPTA as they do not provide comment on EPs.	Noted
	21-Feb-23	SENT	How: Email	NOPTA	Acknowledgement of email.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Office of Northern Australia (ONA), within the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDC)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	22-Feb-23	PLACED	How: Call	N/A	Called ONA to confirm receipt of information package. Transferred to another line, no one answered.	Try to call again
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	SENT	How: Email	ONA	Suitable contact number not known. Email sent following up to see if previous correspondence and information package was received and asking to provide contact details of most appropriate person to contact.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
NT Government department or agency						
Aboriginal Areas Protection Authority (AAPA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	23-Feb-23	PLACED	How: Call	N/A	Called AAPA to confirm receipt of information package. Package received and passed on to appropriate person to respond. Following up response.	Awaiting response
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	Awaiting response
	31-Jul-23	RECEIVED	How: Email	AAPA	Email confirming they would like to self-identify as an Interested Person after receiving mail out that based on updated EMBA no longer considered Relevant Person.	Noted.
	29-Nov-23	SENT	How: Email	AAPA	Email acknowledging receipt and thanking for self-identifying. Will continue to receive information in relation to Montara Facility.	No further action. Include in ongoing consultation

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Department of Chief Minister and Cabinet (NT)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	19-Dec-22	RECEIVED	How: Email	CM_Bounce	Email bounced.	Look for alternative email. Follow up email sent to updated contact details
	9-Feb-23	SENT	How: Email	CM	Reminder - email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	9-Feb-23	RECEIVED	How: Email	CM_AutoResponse	Automatic email response.	Awaiting response
	4-May-23	SENT	How: Email	CM_1	Following phone call email sent providing information package.	Awaiting response
	5-May-23	SENT	How: Email	CM_1	Advised best point of contact is DITT.	Contact details updated. DITT already contacted
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Department of Environment, Parks and Water Security (DEPWS)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	23-Feb-23	PLACED	How: Call	N/A	Called DEPWS to confirm receipt of information package. Package received and now escalated to appropriate person to respond.	Awaiting response
	23-Feb-23	RECEIVED	How: Email	DEPWS	Email advising no comment from DEPWS as activity falls outside their jurisdiction.	Noted
	23-Feb-23	SENT	How: Email	DEPWS	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	28-Jul-23	RECEIVED	How: Email	DEPWS_AutoResponse	Automatic email response.	Noted
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Department of Industry Tourism and Trade (DITT)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	9-Feb-23	RECEIVED	How: Email	DITT	Email advising no comment from DITT as activity falls outside their jurisdiction.	Noted
	21-Feb-23	SENT	How: Email	DITT	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Marine Safety Branch - Department of Transport (DOT) (NT), part of the Department of Infrastructure, Planning and Logistics (DIPL)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	SENT	How: Email	MSB	Email sent following up to see if previous correspondence and information package was received and asking to provide contact details of most appropriate person to contact.	Awaiting response
	17-Nov-23	RECEIVED	How: Email	MSB	Email asking to resend information package.	Resend information package
	17-Nov-23	SENT	How: Email	MSB	Information package resent.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Northern Territory Environment Protection Authority (NTEPA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Called NTEPA to confirm receipt of information package. Information package received. Have passed onto most appropriate person to provide feedback.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Northern Territory Gas Taskforce	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	16-Nov-23	SENT	How: Email	NT Gas Taskforce	Suitable contact number not known. Email sent following up to see if previous correspondence and information package was received and asking to provide contact details of most appropriate person to contact.	Awaiting response
	21-Nov-23	RECEIVED	How: Email	NT Gas Taskforce	Acknowledgment email, appreciate the invitation but do not require consultation at this stage.	Noted. No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Northern Territory Regional Harbourmaster (part of DIPL)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	19-Dec-22	RECEIVED	How: Email	RHM_AutoResponse	Automatic email response.	N/A
	9-Feb-23	SENT	How: Email	G3	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	23-Feb-23	SENT	How: Email	RHM	Email sent to RHM with information package.	Awaiting response. Read receipt received
	27-Feb-23	RECEIVED	How :Email	RHM	Email notes vessel collision doesn't mention compliance with International Regulations for Prevention of Collisions at Sea.	Response assessed. Refer to Assessment of Merit Table
	22-Mar-23	SENT	How: Email	RHM	Section 2.5.1 of the EP details legislative requirements EP will comply with, including the Navigation Act, SOLAS and COLREGS.	No further action
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action.
WA government department or agency						
Department of Biodiversity, Conservation and Attractions (DBCA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	19-Dec-22	RECEIVED	How: Email	DBCA_AutoResponse	Auto Response email received.	N/A
	6-Jan-23	RECEIVED	How: Email	DBCA	Email advising no comment from DBCA.	Noted
	21-Feb-23	SENT	How: Email	DBCA	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	27-Sep-23	SENT	How: Email	DBCA_1	Email seeking advice on training requirements and if a licence is required to handle an injured bird.	Awaiting response
	11-Oct-23	SENT	How: Email	DBCA_1	Follow up email.	Awaiting response
	11-Oct-23	RECEIVED	How: Email	DBCA_1	Email confirming licence not required.	Noted. No further action
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Department of Mines, Industry Regulation and Safety (DMIRS)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	19-Apr-23	PLACED	How: Call	N/A	Called DMIRS to confirm receipt of information package. Unable to confirm if package received. Asked to resend to different email.	Information package sent to updated email

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	19-Apr-23	SENT	How: Email	DMIRS	Email sent to DMIRS with information package.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Department of Planning, Lands & Heritage (DPLH)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	13-Feb-23	RECEIVED	How: Email	DPLH	Email advising no comment from DPLH.	Noted
	21-Feb-23	SENT	How: Email	DPLH	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Department of Primary Industries and Regional Development (DPIRD)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	26-Apr-23	PLACED	How: Call	N/A	Left a message asking DPIRD to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	11-Aug-23	RECEIVED	How: Email	DPIRD	Email thanking for update and advising no comment from DPIRD with regards to the updated EMBA.	Noted. No further action Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Department of Transport (DOT) (WA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	22-Dec-22	RECEIVED	How: Email	DOT	Acknowledgement of receipt. Provision of relevant guidance note details.	Noted. No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	3-Aug-23	RECEIVED	How: Email	DOT_1	Acknowledgement of receipt. Provision of relevant guidance note details.	Noted. No further action Include in ongoing consultation
	4-Dec-23	SENT	How: Email	DOT OPEP	Montara OPEP, EP and OSM transmittal to DOT.	Awaiting comments on OPEP
	8-Jan-24	RECEIVED	How: Email	DOT OPEP_1	Transmittal received from DOT with comments on Montara OPEP.	Jadestone to action and respond to comments
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
	10-Apr-24	SENT	How: Email	DOT OPEP_1	Email advising comments from DOT have been incorporated into OPEP and once EP and OPEP have been resubmitted to NOPSEMA this week documents will be sent to DOT.	Jadestone to send documents to DOT post NOPSEMA submission
	15-Apr-24	RECEIVED	How: Email	DOT OPEP_1	Acknowledgement email.	N/A
	17-Apr-24	SENT	How: Email	DOT OPEP_2	Email sent through doc control with EP, OPEP and OSM-BIP for DOT review.	No further action
Department of Water & Environmental Regulation (DWER)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	19-Dec-22	RECEIVED	How: Email	DWER_AutoResponse	Auto Response email received.	N/A
	9-Feb-23	SENT	How: Email	G3	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	9-Feb-23	RECEIVED	How: Email	DWER_AutoResponse_2	Auto Response email received.	Awaiting response
	14-Feb-23	RECEIVED	How: Email	DWER	Email advising no comment from DWER and suggested DMIRS might be more appropriate department to provide comment.	Noted. DMIRS considered relevant person and already sent information package
	21-Feb-23	SENT	How: Email	DWER	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	28-Jul-23	RECEIVED	How: Email	DWER_AutoResponse_3	Auto Response email received.	No further action Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Local Government Authorities						
Belyuen Community Government Council	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
City of Darwin	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	19-Dec-22	RECEIVED	How: Email	COD_AutoResponse	Automatic email response.	N/A
	9-Feb-23	SENT	How: Email	G3	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	9-Feb-23	RECEIVED	How: Email	COD_AutoResponse_2	Auto Response email received.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	22-Feb-23	PLACED	How: Call	N/A	Called COD to confirm receipt of information package. Package received and escalated to Executive Manager for Environment and Waste Services for comment.	Awaiting response from Executive Manager for Environment and Waste Services for comment
	27-Feb-23	RECEIVED	How: Email	COD	Email received asking to be notified in event of a spill and asking for consultation in advance of waste disposal associated with wellhead removal.	Response assessed and EP updated to include notifications. Refer to Assessment of Merit Table
	22-Mar-23	SENT	How: Email	COD	Email advising COD listed in EP as RP, notifications included and Jadestone will notify them.	No further action
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
City of Palmerston	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	23-Feb-23	PLACED	How: Call	N/A	Called City of Palmerston to confirm receipt of information package. More appropriate email address provided.	Relevant contact details recorded and emailed information package
	23-Feb-23	SENT	How: Email	Palmerston	Email sent to updated email address with information package.	Awaiting response
	23-Feb-23	RECEIVED	How: Email	Palmerston_AutoResponse	Auto Response email received.	Awaiting response
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
Shire of Derby / West Kimberley	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	23-Feb-23	PLACED	How: Call	N/A	Called Shire of Derby to confirm receipt of information package. Package received and now escalated to appropriate person to respond.	Awaiting response
	23-Feb-23	RECEIVED	How: Email	SDWK	Shire has limited capacity to deal with any spill off its coastline.	Response assessed. Refer to Assessment of Merit Table
	22-Mar-23	SENT	How: Email	SDWK	Acknowledgement of email and that there is no requirement for resources from Shire in the unlikely event of a spill. Objectives of OPEP sent to SDWK.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	28-Jul-23	RECEIVED	How: Email	SDWK_AutoResponse	Auto Response email received.	Awaiting response
	17-Aug-23	RECEIVED	How: Email	SDWK_1	Acknowledgment email. Will discuss at next Management Meeting in October.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Shire of Wyndham / East Kimberley	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	23-Feb-23	PLACED	How: Call	N/A	Called Shire of Wyndham to confirm receipt of information package. Package received and now escalated to appropriate person to respond.	Awaiting response
	1-Mar-23	SENT	How: Email	SWEK	Information package sent.	Awaiting response
	8-Mar-23	RECEIVED	How: Email	SWEK	Email advising no comment from SWEK.	Noted
	22-Mar-23	SENT	How: Email	SWEK	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	3-Aug-23	RECEIVED	How: Email	SWEK_1	Email thanking for update and advising no comment from SWEK with regards to the updated EMBA. Would appreciate being advised of any further changes.	Noted. No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Tiwi Islands Regional Council	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
Victoria Daly Regional Council	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	23-Feb-23	PLACED	How: Call	N/A	Called Vic Daly to confirm receipt of information package. Package received and now escalated to appropriate person to respond.	Awaiting response
	23-Feb-23	RECEIVED	How: Email	VicDaly	Email received escalating information package and asking for comment.	Awaiting response
	23-Feb-23	RECEIVED	How: Email	VicDaly	Acknowledgement of receipt. VicDaly has no comment as outside their areas of management.	Noted
	27-Feb-23	SENT	How: Email	VicDaly	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
Wagait Shire Council	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	4-Apr-23	PLACED	How: Call	N/A	Called to confirm receipt of information package. Unable to confirm if package received. Asked to resend to different email.	Follow up email sent to updated contact details
	4-Apr-23	SENT	How: Email	Wagait	Package resent.	Awaiting response
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
West Daly Regional Council	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	4-Apr-23	PLACED	How: Call	N/A	Called West Daly Regional Council to confirm receipt of information package. Package received and now escalated to appropriate person to respond.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Oil and Gas Industry						
Australian Maritime Oil Spill Centre (AMOSC)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Called AMOSC to confirm receipt of information package. Unsure if package received. Asked to send through again.	Information package resent
	16-Nov-23	SENT	How: Email	AMOSC	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	30-Nov-23	RECEIVED	How: Email	AMOSC_1	Email asking Jadestone to verify contents of OPEP are consistent with AMOSC's Service Level Statement.	Email sent requesting Service Level Agreement
	20-Dec-23	SENT	How: Email	AMOSC_1	Email asking for updated Service Level Statement to be sent to ensure OPEP aligns.	Awaiting response
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
	15-Mar-24	RECEIVED	How: Email	AMOSC_2	Acknowledgement of receipt.	No further action
	27-Mar-24	SENT	How: Email	AMOSC_1	Email sent confirming OPEP in line with SLS and attaching most up to date OPEP for review.	Awaiting response
	3-Apr-24	RECEIVED	How: Email	AMOSC_3	Email received in relation to Montara Ops and Skua EP with comments around equipment and personnel numbers.	Comments included in OPEP
	9-Apr-24	PLACED	How: Phone call	N/A	Phone call to AMOSC to see if review of Montara Operations EP is finalised. Still undergoing internal review process.	Noted
	22-Apr-24	RECEIVED	How: Email	AMOSC_4	Email received with letter confirming AMOSC consultation, providing review of OPEP and asking for copy of accepted OPEP.	Noted
	21-May-24	SENT	How: Email	AMOSC_4	Email confirming comments have been incorporated into OPEP and accepted OPEP will be sent to AMOSC.	Jadestone to send accepted OPEP to AMOSC
Carnarvon Energy	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	14-Feb-23	RECEIVED	How: Email	Carnarvon	Email advising Carnarvon have no comments and do not require further information.	Noted
	21-Feb-23	SENT	How: Email	Carnarvon	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Eni Australia	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	4-Apr-23	PLACED	How: Call	N/A	Left a message asking Eni to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Inpex	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	4-Apr-23	PLACED	How: Call	N/A	Called to confirm receipt of information package. Unable to confirm if package received. Asked to resend to different email.	Follow up email sent to updated contact details
	4-Apr-23	SENT	How: Email	INPEX	Package resent.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Melbana Energy	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	4-Apr-23	PLACED	How: Call	N/A	Left a message asking Melbana to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	Awaiting response
	30-Nov-23	RECEIVED	How: Email	Melbana	Acknowledgement email. Melbana have no concerns or objections.	Noted
	30-Nov-23	SENT	How: Email	Melbana	Acknowledgement of receipt.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Oil Spill Response Limited (OSRL)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	13-Feb-23	RECEIVED	How: Email	OSRL	Email advising no comments from OSRL.	Noted
	21-Feb-23	SENT	How: Email	OSRL	Acknowledgement of email.	No further action. Include in ongoing consultation
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Santos	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	4-Apr-23	PLACED	How: Call	N/A	Called to confirm receipt of information package. Package received and passed onto appropriate department for response. Unable to provide details of this department.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	29-Nov-23	RECEIVED	How: Email	Santos	Email received requesting previous email to be resent.	Resend previous email details and information package
	29-Nov-23	SENT	How: Email	Santos	Email sent with details of previous correspondence and information package resent.	No further action
	1-Dec-23	RECEIVED	How: Email	Santos	Request for original emails.	Noted
	4-Dec-23	SENT	How: Email	Santos	Following phone call email sent providing dates of original consultation and information package.	No further action
	21-Dec-23	RECEIVED	How: Email	Santos_1	Apology email for not providing feedback. Provided alternative contact for consultation going forward.	Alternative contact details noted
	21-Dec-23	RECEIVED	How: Email	Santos_2	Acknowledgement email. No comments or objections in relation to the proposed activities.	Noted. No further action
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Shell	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	14-Feb-23	RECEIVED	How: Email	Shell	Email advising no further information required.	Noted

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	21-Feb-23	SENT	How: Email	Shell	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
NT Commercial fishers and fishing associations						
Amateur Fishermens Association of the Northern Territory (AFANT)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	19-Dec-22	RECEIVED	How: Email	AFANT_AutoResponse	Automatic email response.	N/A
	9-Feb-23	SENT	How: Email	G3	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	15-Nov-23	PLACED	How: Call	N/A	Called AFANT to confirm receipt of information package. Unsure if package received. Currently receiving so many stakeholder information packages from Operators under resourced to review and provide feedback.	Noted
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Aquarium Fish/ Display Fishery (NT)	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Letter sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	4-Aug-23	SENT	How: Mail	Refer to SIR *Secondary fisheries licence holder mail out details*	Follow up letter sent to stakeholder with attached information package notifying them that they are still a Relevant Person based on updated EMBA.	No further action
Bait Net Fishery (NT)	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	4-Aug-23	SENT	How: Mail	Refer to SIR *Secondary fisheries licence holder mail out details*	Follow up letter sent to stakeholder notifying them that they are no longer a Relevant Person based on updated EMBA.	No further action
Barramundi Fishery (NT)	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	4-Aug-23	SENT	How: Mail	Refer to SIR *Secondary fisheries licence holder mail out details*	Follow up letter sent to stakeholder notifying them that they are no longer a Relevant Person based on updated EMBA.	No further action
Coastal Line Fishery (NT)	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	4-Aug-23	SENT	How: Mail	Refer to SIR *Secondary fisheries licence holder mail out details*	Follow up letter sent to stakeholder with attached information package notifying them that they are still a Relevant Person based on updated EMBA.	No further action
Coastal Net Fishery (NT)	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	4-Aug-23	SENT	How: Mail	Refer to SIR *Secondary fisheries licence holder mail out details*	Follow up letter sent to stakeholder notifying them that they are no longer a Relevant Person based on updated EMBA.	No further action
Demersal Fishery (NT)	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	4-Aug-23	SENT	How: Mail	Refer to SIR *Secondary fisheries licence holder mail out details*	Follow up letter sent to stakeholder with attached information package notifying them that they are still a Relevant Person based on updated EMBA.	No further action
Mud Crab Fishery (NT)	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	4-Aug-23	SENT	How: Mail	Refer to SIR *Secondary fisheries licence holder mail out details*	Follow up letter sent to stakeholder notifying them that they are no longer a Relevant Person based on updated EMBA.	No further action
Individual response from mud crab fisher	15-Aug-23	RECEIVED	How: Mail	Mud crab	Email confirming they would like to self-identify as a Relevant Person after receiving mail out that based on updated EMBA no longer considered Revelant Person.	Noted. Added to Relevant Person list
	28-Nov-23	SENT	How: Mail	Mud crab	Email acknowledging receipt and thanking for self-identifying as a Relevant Person. Will continue to receive information in relation to Montara Facility.	No further action. Include in ongoing consultation
Northern Prawn Fishing Industry Pty Ltd	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	N/A
	8-Feb-23	RECEIVED	How: Email	NPF	Acknowledgement of receipt. Will review and respond in due time.	Noted. Awaiting response
	13-Feb-23	RECEIVED	How: Email	NPF_1	Reviewed activities and no implications for the NPF.	Noted
	21-Feb-23	SENT	How: Email	NPF_1	Email sent asking NPF to consider the EMBA.	Awaiting response
	21-Feb-23	RECEIVED	How: Email	NPF_1	Email sent asking for EMBA details.	Jadestone looking into request
	28-Feb-23	SENT	How: Email	NPF_1	Email sent advising Jadestone are looking into their information request.	Updated EMBA provided
	27-Jul-23	SENT	How: Email	NPF_1	Email and information package sent providing updated EMBA in relation to NPF.	Awaiting response
	31-Jul-23	RECEIVED	How: Email	NPF_1	Email response requesting shapefiles of revised area.	Response to request
	11-Aug-23	SENT	How: Email	NPF_1	Email requesting confidentiality agreement be signed before shape files are sent.	Awaiting signed agreement
	22-Aug-23	RECEIVED	How: Email	NPF_1	Email sent with signed confidentiality agreement.	Confidentiality agreement filed
	7-Sep-23	SENT	How: Email	NPF_1	Email sent with requested shape files for EMBA and Operational Area.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Northern Territory Guided Fishing Industry Association (NTGFIA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Left a message asking NTGFIA to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	16-Nov-23	RECEIVED	How: Call	N/A	Return phone call. Unsure if information package received. Asked to send through again and will pass onto appropriate person.	Information package resent
	16-Nov-23	SENT	How: Email	NTGFIA	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	17-Nov-23	SENT	How: Email	NTGFIA	Information package sent to updated contact.	Awaiting response
	22-Nov-23	RECEIVED	How: Email	NTGFIA	Acknowledgment of receipt. NTGFIA does not consider proposed activities to be a significant threat. Asked for additional information and images of wellheads to be decommisioned.	Send images of wellheads to be decommissioned
	29-Nov-23	SENT	How: Email	NTGFIA	Email sent with images of wellheads to be decommissioned.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Northern Territory Seafood Council (NTSC)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	21-Apr-23	SENT	How: Email	NTSC	Email following up on meeting request.	Awaiting response
	21-Apr-23	RECEIVED	How: Email	NTSC	Email received detailing possible meeting times.	Response received
	21-Apr-23	SENT	How: Email	NTSC	Meeting confirmed.	Meeting confirmed
	24-Apr-23	N/A	How: Phone	NTSC_1	Discussion of Montara Operations. NTSC indicated that all of the commercial fishery licence holders in the NT fisheries would very likely undertake fishing effort within the EMBA. NTSC unable to provide contact details of its members. Suggested Jadestone advertise in NTSC quarterly magazine.	Noted
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Offshore Net & Line Fishery (NT)	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	4-Aug-23	SENT	How: Mail	Refer to SIR *Secondary fisheries licence holder mail out details*	Follow up letter sent to stakeholder with attached information package notifying them that they are still a Relevant Person based on updated EMBA.	No further action
Pearl Oyster Fishery (NT)	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	4-Aug-23	SENT	How: Mail	Refer to SIR *Secondary fisheries licence holder mail out details*	Follow up letter sent to stakeholder notifying them that they are no longer a Relevant Person based on updated EMBA.	No further action
Spanish Mackerel Fishery (NT)	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	4-Aug-23	SENT	How: Mail	Refer to SIR *Secondary fisheries licence holder mail out details*	Follow up letter sent to stakeholder with attached information package notifying them that they are still a Relevant Person based on updated EMBA.	No further action
Timor Reef Fishery (NT)	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	4-Aug-23	SENT	How: Mail	Refer to SIR *Secondary fisheries licence holder mail out details*	Follow up letter sent to stakeholder with attached information package notifying them that they are still a Relevant Person based on updated EMBA.	No further action
WA Commercial fishers and fishing associations						
Broome Prawn Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Gascoyne Demersal Scalefish Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Kimberley Crab Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Kimberley Gillnet & Barramundi Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Kimberley Prawn Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Mackerel Managed Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Marine Aquarium Fish Managed Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Nickol Bay Prawn Managed Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Northern Demersal Scalefish Managed Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Onslow Prawn Managed Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Pearl Oyster Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Pearl Producers Association (PPA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	19-Dec-22	RECEIVED	How: Email	PPA	Provided alternative contact details.	Noted. Follow up email sent to updated contact details
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	4-Apr-23	SENT	How: Email	PPA_1	More appropriate email address provided, information package sent.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Specimen Shell Managed Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
West Coast Deep Sea Crustacean Managed Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Mail sent to stakeholder providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Western Australian Fishing Industry Council (WAFIC)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	8-Feb-23	PLACED	How: Call	WAFIC	Initial discussion seeking assistance of WAFIC to identify licence holders undertaking fishing effort in EMBA.	N/A
	18-Nov-22	SENT	How: Email	WAFIC_1	Request fee for service schedule.	Awaiting response
	18-Nov-22	RECEIVED	How: Email	WAFIC_1	WAFIC Fee for service sent through along with guidelines for consultation.	Email sent with requested documents
	7-Feb-23	SENT	How: Email	WAFIC_1	Introduction of Consultation Specialist as point of contact for consultation with Jadestone. Recommend corresponding directly with him regarding next phase in consultation with fishing license holders.	Awaiting response
	8-Feb-23	RECEIVED	How: Email	WAFIC_1	Acknowledgement email, suggested times for Consultation Specialist to make contact to discuss matters.	Awaiting response
	8-Feb-23	PLACED	How: Call	WAFIC	Initial discussion seeking assistance of WAFIC to identify license holders undertaking fishing effort in EMBA.	N/A
	8-Feb-23	RECEIVED	How: Email	WAFIC_1	Acknowledgment of phone conversation, WAFIC Fee for service sent through along with guidelines for consultation.	Noted.
	9-Feb-23	SENT	How: Email	WAFIC_1	Email sent asking if WAFIC can undertake review of commercial fishing licence holders as part of their fee for service to help determine which licence holders may undertake fishing effort within the EMBA and require further consultation.	Awaiting response
	13-Feb-23	RECEIVED	How: Email	WAFIC_1	WAFIC are unable to review or comment on list and do not support consultation with all licence holders who intersect a project EMBA, rather will only consult with those directly impacted by planned activities within a projects Operational Area.	Noted.
	15-Feb-23	PLACED	How: Call	WAFIC_2	WAFIC can only provide advice on fishing licence holders within Operational Area.	Noted.

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	17-Feb-23	PLACED	How: Call	WAFIC_3	WAFIC reiterated that they will only provide information based on Operational Area.	Noted.
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Commonwealth Commercial fishers and fishing associations						
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	17-Feb-23	SENT	How: Email	ASBTIA	Email seeking advice in relation to whether there is fishing effort off of NW WA coast and the Timor Sea, and if there is which licence holders undertake that effort.	Awaiting response
	21-Feb-23	PLACED	How: Call	N/A	Called to follow up email.	No response. Call again
	23-Feb-23	PLACED	How: Call	N/A	Called to follow up email.	No response.
	22-Mar-23	PLACED	How: Call	ASBTIA_1	Indirectly indicated that there is no commercial Southern Bluefin Tuna fishing effort undertaken within or adjacent to EMBA.	Noted.
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
Commonwealth Fisheries Association (CFA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	9-Feb-23	RECEIVED	How: Email	CFA	CFA is not resourced to provide feedback, Suggested directing enquiries to associations that represent the directly affected fisheries/fishers.	Noted. The suggested associations representing the fisheries/fishers have been engaged. No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Northern Prawn Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Letter sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	4-Aug-23	SENT	How: Mail	Refer to SIR *Secondary fisheries licence holder mail out details*	Follow up letter sent to stakeholder with attached information package notifying them that they are still a Relevant Person based on updated EMBA.	No further action
North West Slope Trawl Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Letter sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	4-Aug-23	SENT	How: Mail	Refer to SIR *Secondary fisheries licence holder mail out details*	Follow up letter sent to stakeholder with attached information package notifying them that they are still a Relevant Person based on updated EMBA.	No further action
Seafood Industry Australia (SIA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	19-Dec-22	RECEIVED	How: Email	SIA_AutoResponse	Automatic email response.	N/A
	9-Feb-23	SENT	How: Email	G3	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	26-Apr-23	PLACED	How: Call	N/A	Left a message asking SIA to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Southern Bluefin Tuna Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Letter sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Tuna Australia	14-Aug-23	RECEIVED	How: Mail	Tuna Australia	Email received from Tuna Australia in relation to direct approaches to licence holders. Members have requested engage directly with Tuna Australia.	Review industry position statement
	3-Nov-23	PLACED	How: Call	N/A	Call to Tuna Australia Program Manager. Invited Jadestone to email re Tuna Australia's ability to be the conduit for titleholder consultation with all commercial fishing licence holders in the Australian tuna fisheries, including non-members of Tuna Australia.	Noted
	22-Nov-23	SENT	How: Mail	Tuna Australia	Email advising will continue to consult with Tuna Australia as a Relevant Person, but do not regard consultation with the organisation as a legal means of also consulting with the individual commercial fishery licence holders as Relevant Persons.	Awaiting response
	5-Dec-23	RECEIVED	How: Mail	Tuna Australia	Acknowledement email. Reattached copy of industry position statement. Jadestone and Tuna Australia have differing views of consultation guidelines. Recommend seek advice from AFMA.	Awaiting response
	24-Jan-24	SENT	How: Mail	Tuna Australia	Acknowledgement email. Out of abundance of caution in meeting regulatory requirements that Jadestone maintains its position of consulting directly with individual commercial fishery licence holders for Stag and Montara facilities. Jadestone regards Tuna Australia as a Relevant Person in its own right.	No further action. Include in ongoing consultation

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Western Deepwater Trawl Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Letter sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Western Skipjack Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Letter sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Western Tuna and Billfish Fishery	9-Jan-23	SENT	How: Mail	Refer to SIR *Consolidated fisheries licence holder details* table	Letter sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	No further action
Recreational fishing associations						
Recfishwest (WA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	23-Feb-23	PLACED	How: Call	N/A	Called Recfishwest to confirm receipt of information package. More appropriate email address provided.	Relevant contact details recorded and emailed information package
	23-Feb-23	SENT	How: Email	Recfishwest	Email sent to updated email address with information package for comment.	Awaiting response
	23-Feb-23	RECEIVED	How: Email	Recfishwest	Email advising Recfishwest has no concerns based on the information provided.	Noted
	27-Feb-23	SENT	How: Email	Recfishwest	Acknowledgement of email.	No further action. Include in ongoing consultation
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	3-Aug-23	RECEIVED	How: Email	Recfishwest_1	Email thanking for update and advising no comment from RFW with regards to the updated EMBA. Would appreciate being advised of any further changes.	Noted
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
First Nations peoples						
Balanggarra Aboriginal Corporation	11-Aug-23	SENT	How: Email	Balanggarra	Email seeking opportunity to meet with Directors to introduce Montara project and seek advice on the most appropriate means of undertaking consultation. Information package attached providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	23-Oct-23	SENT	How: Email	Balanggarra	Follow up email- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Nov-23	SENT	How: Email	Balanggarra	Further follow up email.	Awaiting response
	11-Jan-24	SENT	How: Email	Balanggarra_1	Further follow up reiterating previous attempts to consult with Balanggarra.	Awaiting response
	31-Jan-24	SENT	How: Email	Balanggarra_1	Further follow up to arrange presentation to Directors.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	14-Feb-24	SENT	How: Email	Balanggarra_2	Email reiterating previous attempts to contact Balanggarra Aboriginal Corporation since August 2023 and seeking opportunity to make a presentation to the Directors. Jadestone continues to seek opportunity to make a presentation to directors.	Awaiting response
	14-Mar-24	SENT	How: Email	Balanggarra_3	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
	8-May-24	SENT	How: Email	Balanggarra_4	Further follow up email.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Bardi Jawi Niimidiman Aboriginal Corporation	11-Aug-23	SENT	How: Email	Bardi Jawi Niimidiman	Email seeking opportunity to meet with Directors to introduce Montara project and seek advice on the most appropriate means of undertaking consultation. Information package attached providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	7-Mar-24	SENT	How: Email	Bardi Jawi Niimidiman_1	Email following on from advice from Walalakoo that need to contact the PBC boards directly for any decision making. Seeking opportunity to present to Directors of Bardi Jawi Niimidiman Aboriginal Corporation, in relation to Montara 5 year Ops EP and Skua-11 Drilling EP. Reattached Invitation for Consultation.	Awaiting response
	14-Mar-24	SENT	How: Email	Bardi Jawi Niimidiman_2	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
	19-Apr-24	RECEIVED	How: Email	Bardi Jawi Niimidiman_3	Email received notifying Brue Reef under Bardi Jawi determination area and providing appropriate contact details.	Awaiting response
	19-Apr-24	SENT	How: Email	Bardi Jawi Niimidiman_3	Follow up email after numerous phone calls requesting call back.	Awaiting response
	8-May-24	SENT	How: Email	Bardi Jawi Niimidiman_4	Further follow up email.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
	Refer to Walalakoo correspondence. Initial offer by Walalakoo to facilitate consultations with cultural block neighbours, Bardi Jawi Niimidian PBC.					
Gogolanyngor Aboriginal Corporation	11-Aug-23	SENT	How: Email	Gogolanyngor	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	15-Aug-23	RECEIVED	How: Email	Gogolanyngor	GAC considers that its members will not be affected by the activity and do not wish to be consulted further.	Noted
	31-Aug-23	PLACED	How: Call	Refer to Gogolanyngor (Internal emails)	Follow up phone call with GAC confirming that they do not regard themselves as Relevant Persons and do not wish to be consulted on the matter.	Noted. No further action
	14-Mar-24	SENT	How: Email	Gogolanyngor_1	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Jikilaruwu Traditional Owner Clan	N/A	N/A	N/A	N/A	While in the process of determining the contact details for the eight Tiwi Island Traditional Owner Clans the Montara EMBA was updated. Based on the updated EMBA the Tiwi Island Traditional Owner Clans are no longer considered Relevant Persons.	N/A

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Karajarri Traditional Lands Association Aboriginal Corporation	11-Aug-23	SENT	How: Email	Karajarri	Email seeking opportunity to meet with Directors to introduce Montara project and seek advice on the most appropriate means of undertaking consultation. Information package attached providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required	Awaiting response
	23-Oct-23	SENT	How: Email	Karajarri	Follow up email- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations	Awaiting response
	30-Nov-23	SENT	How: Email	Karajarri	Further follow up email.	Awaiting response
	11-Jan-24	SENT	How: Email	Karajarri_1	Further follow up reiterating previous attempts to consult with Karajarri.	Awaiting response
	14-Mar-24	SENT	How: Email	Karajarri_2	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
	8-May-24	SENT	How: Email	Karajarri_3	Further follow up email.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Kimberley Land Council (KLC)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	8-Mar-23	MEETING	How: In person meeting in Broome	KLC	Meeting to carry out discussions seeking guidance and parties to contact for fair and meaningful consultation process.	Noted
	8-Mar-23	MEETING	How: In person meeting in Broome	KLC_1	Meeting about the location and capabilities of the Indigenous marine ranger groups around the Kimberley coastline and possible future opportunities for interaction with marine rangers.	Noted
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
Larrakia Nation Aboriginal Corporation	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	26-Apr-23	SENT	How: Email	Larrakia	Email seeking opportunity to make a presentation to Larrakia Nation Directors and seeking assistance facilitating a community meeting in Darwin.	Awaiting response
	9-May-23	RECEIVED	How: Email	Larrakia	Acknowledgement email, will respond shortly to coordinate meeting.	Awaiting response
	9-May-23	SENT	How: Email	Larrakia	Acknowledgement email.	Awaiting response
	27-Sep-23	MEETING	How: In Person	N/A	Meeting to discuss revised EMBA and as a consequence of this Larrakia Nation and people no longer Relevant Persons for Montara Facility.	Noted

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	27-Sep-23	SENT	How: Email	Larrakia_1	Follow up email after meeting in person to discuss revised EMBA. As a consequence Larrakia Nation and Larrakia people are no longer Relevant Persons for the Montara Facility. Request for Larrakia Nation and people to self identify if they continue to regard themselves as Relevant Persons.	No further action
Malawu Traditional Owner Clan	N/A	N/A	N/A	N/A	While in the process of determining the contact details for the eight Tiwi Island Traditional Owner Clans the Montara EMBA was updated. Based on the updated EMBA the Tiwi Island Traditional Owner Clans are no longer considered Relevant Persons.	N/A
Mayala Inninalang Aboriginal Corporation	11-Aug-23	SENT	How: Email	Mayala Inninalang	Email seeking opportunity to meet with Directors to introduce Montara project and seek advice on the most appropriate means of undertaking consultation. Information package attached providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	6-Mar-24	SENT	How: Email	Mayala Inninalang_1	Email following on from advice from Walalakoo that need to contact the PBC boards directly for any decision making. Seeking opportunity to present to Directors of Mayala Inninalang Aboriginal Corporation, in relation to Montara 5 year Ops EP and Skua-11 Drilling EP. Reattached Invitation for Consultation.	Awaiting response
	11-Mar-24	RECEIVED	How: Email	Mayala Inninalang_1	Acknowledgement email. Board meeting tomorrow, email will be tabled and will be in touch with next steps.	Noted
	12-Mar-24	SENT	How: Email	Mayala Inninalang_1	Acknowledgement email.	Awaiting response
	14-Mar-24	SENT	How: Email	Mayala Inninalang_2	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
	8-May-24	SENT	How: Email	Mayala Inninalang_3	Further follow up email.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
	Refer to Walalakoo correspondence. Initial offer by Walalakoo to facilitate consutlations with cultural block neighbours, Mayala Inninalang PBC.					
Mantiyupwi Traditional Owner Clan	N/A	N/A	N/A	N/A	While in the process of determining the contact details for the eight Tiwi Island Traditional Owner Clans the Montara EMBA was updated. Based on the updated EMBA the Tiwi Island Traditional Owner Clans are no longer considered Relevant Persons.	N/A
Marrikawuyanga Traditional Owner Clan	N/A	N/A	N/A	N/A	While in the process of determining the contact details for the eight Tiwi Island Traditional Owner Clans the Montara EMBA was updated. Based on the updated EMBA the Tiwi Island Traditional Owner Clans are no longer considered Relevant Persons.	N/A
Munupi Traditional Owner Clan	N/A	N/A	N/A	N/A	While in the process of determining the contact details for the eight Tiwi Island Traditional Owner Clans the Montara EMBA was updated. Based on the updated EMBA the Tiwi Island Traditional Owner Clans are no longer considered Relevant Persons.	N/A
Nyangumarta Karajarri Aboriginal Corporation	17-May-23	SENT	How: Email	Nyangumarta Karajarri	Correspondence sent in relation to Stag Facility.	N/A
	2-Aug-23	SENT	How: Email	Nyangumarta Karajarri	Correspondence sent in relation to Stag Facility.	N/A
	3-Aug-23	SENT	How: Email	Nyangumarta Karajarri	Correspondence sent in relation to Stag Facility.	N/A

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	3-Aug-23	SENT	How: Email	Nyangumarta Karajarri	Email explaining requirement to consult for Montara as well and information package sent.	Awaiting response
	7-Aug-23	RECEIVED	How: Email	Nyangumarta Karajarri	Confirmation email for Jadestone to present at upcoming Director's meeting.	Noted
	9-Aug-23	SENT	How: Email	Nyangumarta Karajarri	Jadestone to make presentation by Teams meeting. Request for marine capabilities for Indigenous Ranger groups.	Noted
	21-Aug-23	N/A	N/A	Nyangumarta Karajarri	Meeting cancelled morning of meeting.	Awaiting new meeting date
	17-Oct-23	SENT	How: Email	Nyangumarta Karajarri	Follow up email sent requesting next opportunity to present to Directors.	Awaiting response
	19-Oct-23	RECEIVED	How: Email	Nyangumarta Karajarri	Email received advising the board won't be meeting again until early 2024 and to keep in touch for updates.	Noted. Jadestone will continue to follow up and request earliest available meeting in 2024
	28-Nov-23	SENT	How: Email	Nyangumarta Karajarri	Follow up email requesting board meeting dates.	Awaiting response
	12-Jan-24	SENT	How: Email	Nyangumarta Karajarri_1	Further follow up reiterating previous attempts to consult with Nyangumarta Karajarri.	Awaiting response
	14-Feb-24	SENT	How: Email	Nyangumarta Karajarri_2	Email reiterating previous attempts seeking opportunity to make a presentation the tbo Directors. Jadestone continues to seek opportunity to make a presentation in relation to both Stag and Montara.	Awaiting response
	14-Feb-24	RECEIVED	How: Email	Nyangumarta Karajarri_2	Acknowledgement email. Aiming to hold Directors meeting in April.	Noted
	14-Feb-24	SENT	How: Email	Nyangumarta Karajarri_2	Acknowledgement email.	Awaiting date for board meeting
	14-Mar-24	SENT	How: Email	Nyangumarta Karajarri_3	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
	21-Mar-24	RECEIVED	How: Email	Nyangumarta Karajarri_4	Email advising date of Directors meeting in April and asking if Jadestone would like to present and how long is needed.	Awaiting response
	21-Mar-24	SENT	How: Email	Nyangumarta Karajarri_4	Email advising Jadestone would like to attend and length of presentation.	Awaiting meeting confirmation
	25-Mar-24	RECEIVED	How: Email	Nyangumarta Karajarri_4	Email advising meeting is confirmed. Are Jadestone happy for budget estimate for directors time and meeting expenses to be provided.	Awaiting response
	25-Mar-24	SENT	How: Email	Nyangumarta Karajarri_4	Jadestone request budget.	Awaiting budget
	27-Mar-24	RECEIVED	How: Email	Nyangumarta Karajarri_5	Request for agenda items, presentations and print outs.	Awaiting response
	28-Mar-24	RECEIVED	How: Email	Nyangumarta Karajarri_4	Budget provided.	Jadestone to review budget
	3-Apr-24	SENT	How: Email	Nyangumarta Karajarri_5	Email providing names of Jadestone attendees and information packages. Will send through powerpoint presentation closer to the meeting date.	Jadestone to send powerpoint presentation
	3-Apr-24	SENT	How: Email	Nyangumarta Karajarri_4	Budget accepted and invoicing details provided.	Noted
	4-Apr-24	RECEIVED	How: Email	Nyangumarta Karajarri_4	Invoice will be prepared by KLC.	N/A
	4-Apr-24	SENT	How: Email	Nyangumarta Karajarri_4	Please pass on invoicing details to KLC.	N/A
	4-Apr-24	RECEIVED	How: Email	Nyangumarta Karajarri_4	Acknowledgement email.	N/A
	9-Apr-24	SENT	How: Email	Nyangumarta Karajarri_6 PBC Presentation	Email sent with powerpoint slides for tomorrows presentation.	N/A
	10-Apr-24	MEETING	How: In person, Broome	Nyangumarta Karajarri_7 PBC Presentation	Meeting minutes to be finalised and sent to attendees for approval.	Meeting minutes to be issued
	9-May-24	SENT	How: Email	Nyangumarta Karajarri_7	Draft meeting minutes issued.	Meeting minutes issued.
	9-May-24	SENT	How: Email	Nyangumarta Karajarri_7	Updated meeting minutes issued.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Nimanburr Aboriginal Corporation	11-Aug-23	SENT	How: Email	Nimanburr	Email seeking opportunity to meet with Directors to introduce Montara project and seek advice on the most appropriate means of undertaking consultation. Information package attached providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	23-Oct-23	SENT	How: Email	Nimanburr	Follow up email- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Nov-23	SENT	How: Email	Nimanburr	Further follow up email.	Awaiting response
	22-Jan-24	SENT	How: Email	Nimanburr_1	Further follow up reiterating previous attempts to consult with Nimanburr.	Awaiting response
	31-Jan-24	SENT	How: Email	Nimanburr_1	Further follow up to arrange presentation to Directors.	Awaiting response
	14-Mar-24	SENT	How: Email	Nimanburr_2	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
	8-May-24	SENT	How: Email	Nimanburr_3	Further follow up email.	Awaiting response
	9-May-24	RECEIVED	How: Email	Nimanburr_3	Acknowledgement email, email has been forwarded to relevant corporation executives.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Northern Australian Indigenous Land & Sea Management Alliance (NAILSMA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Called NAILSMA to confirm receipt of information package. Unsure if package received. Asked to send through again.	Information package resent
	16-Nov-23	SENT	How: Email	NAILSMA	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	16-Nov-23	RECEIVED	How: Email	NAILSMA	Acknowledgement email. Passed onto appropriate person.	Noted
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Northern Land Council (NLC)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	9-Mar-23	MEETING	How: In person meeting in Darwin	NLC	Meeting to carry out discussions seeking guidance and parties to contact for fair and meaningful consultation process.	Meeting minuted

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
Nyul Nyul PBC Aboriginal Corporation	11-Aug-23	SENT	How: Email	Nyul Nyul	Email seeking opportunity to meet with Directors to introduce Montara project and seek advice on the most appropriate means of undertaking consultation. Information package attached providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	23-Oct-23	SENT	How: Email	Nyul Nyul	Follow up email- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	27-Oct-23	RECEIVED	How: Email	Nyul Nyul	Email received inviting opportunity to present to Directors on Nov 6 in Broome at KLC office.	Awaiting response
	28-Nov-23	SENT	How: Email	Nyul Nyul	Email apologising for Jadestone not being able to make the board meeting at late notice and requesting next available opportunity to present.	Awaiting response
	28-Nov-23	RECEIVED	How: Email	Nyul Nyul	Apologised for late notice, will provide sufficient notice for next meeting in the new year once dates are set at AGM.	Noted
	11-Jan-24	SENT	How: Email	Nyul Nyul_1	Further follow up reiterating previous attempts to consult with Nyul Nyul.	Awaiting response
	31-Jan-24	SENT	How: Email	Nyul Nyul_1	Further follow up to arrange presentation to Directors.	Awaiting response
	2-Feb-24	RECEIVED	How: Email	Nyul Nyul_1	Board meeting in February, will find out dates and get back to Jadestone. Asked how much time required.	Responded with time required for presentation
	2-Feb-24	SENT	How: Email	Nyul Nyul_1	Reply email one hour for presentation.	Awaiting meeting date
	2-Feb-24	RECEIVED	How: Email	Nyul Nyul_1	Email advising potential dates of board meeting and asking for any conflicts.	Checking dates
	9-Feb-24	SENT	How: Email	Nyul Nyul_1	Apology for delay, Jadestone will take up opportunity to present to Directors during February meeting. Please provide suitable dates for availability of directors.	Awaiting response
	9-Feb-24	SENT	How: Email	Nyul Nyul_1	Please indicate location of meeting.	Awaiting response
	14-Feb-24	SENT	How: Email	Nyul Nyul_1	Follow up email re date and location of meeting.	Awaiting response
	14-Feb-24	RECEIVED	How: Email	Nyul Nyul_1	Email providing date and location of meeting.	Noted
	14-Feb-24	RECEIVED	How: Email	Nyul Nyul_2	Email notifying Jadestone of board meeting time and date and providing quote for services.	Noted
	14-Feb-24	SENT	How: Email	Nyul Nyul_2	Email accepting costs and providing invoicing details.	Awaiting response
	14-Feb-24	RECEIVED	How: Email	Nyul Nyul_2	KLC supports Nyul Nyul and will prepare an invoice on return signed budget estimate.	Noted
	15-Feb-24	SENT	How: Email	Nyul Nyul_2	Email seeking confirmation that one representative will attend in person, rest on zoom is appropriate.	Awaiting response
	15-Feb-24	RECEIVED	How: Email	Nyul Nyul_2	Acknowledgment that proposed meeting attendence is fine, will send Teams invite.	Awaiting response
	15-Feb-24	SENT	How: Email	Nyul Nyul_2	Acknowledgement email confirming who in person Jadestone attendee will be. Budget Estimate to be signed and returned. Request for invoice for payment.	Awaiting response
	16-Feb-24	RECEIVED	How: Email	Nyul Nyul_2	Provision of budget attached.	Noted. Budget provided
	19-Feb-24	SENT	How: Email	Nyul Nyul_3	Signed budget estimate sent.	N/A
	19-Feb-24	RECEIVED	How: Email	Nyul Nyul_3	Asked for Jadestone details including ABN.	Awaiting response
	19-Feb-24	SENT	How: Email	Nyul Nyul_3	Email last week provided requested details.	No further action
	21-Feb-24	RECEIVED	How: Email	Nyul Nyul_4	Email with Teams link for the meeting.	N/A
	21-Feb-24	SENT	How: Email	Nyul Nyul_4	Email notifying Jadestone attendance will be on Teams due to airline strikes. Asked names of people attending to meeting.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	21-Feb-24	RECEIVED	How: Email	Nyul Nyul_4	Reply email providing the list of names to attend the meeting.	Noted
	22-Feb-24	MEETING	How: Teams	Nyul Nyul_5 PBC Presentation	Meeting minutes to be finalised and sent to attendees for approval.	Meeting minutes to be issused
	23-Feb-24	SENT	How: Email	Nyul Nyul_6	Email with the presentation in PDF format from the online meeting. Resent Montara Invitation for Consultation. Request for list of attendees.	Awaiting response
	8-Mar-24	SENT	How: Email	Nyul Nyul_5	Draft meeting minutes issued. Request to update attendee list of Directors.	Meeting minutes issued.
	14-Mar-24	SENT	How: Email	Nyul Nyul_7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Tiwi Land Council (TLC)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	19-Dec-22	RECEIVED	How: Email	TLC_AutoResponse	Automatic email response.	N/A
	9-Feb-23	SENT	How: Email	G3	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	9-Mar-23	MEETING	How: In person meeting in Darwin	TLC	Meeting to carry out discussions seeking guidance and parties to contact for fair and meaningful consultation process.	Meeting minuted
	9-Mar-23	MEETING	How: In person meeting in Darwin	TLC_1	Meeting about the capabilities of the Indigenous marine ranger groups.	Meeting minutes to be issued
	5-May-23	SENT	How: Email	TLC_2	Meeting minutes sent.	Meeting minutes issued. Awaiting response
	23-May-23	SENT	How: Email	TLC_2	Follow up email.	Awaiting response
	25-May-23	RECEIVED	How: Email	TLC_2	Email confirming nothing to add to the notes.	Notes considered final. No further action.
Walalakoo Aboriginal Corporation	11-Aug-23	SENT	How: Email	Walalakoo	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required, request meeting with Directors to seek info.	Awaiting response
	14-Aug-23	RECEIVED	How: Email	Walalakoo	Email forwarded to correct contact for WAC's GM.	Noted
	14-Aug-23	SENT	How: Email	Walalakoo	Email requesting possible dates for JSE consultation with directors of WAC.	Awaiting response
	14-Aug-23	RECEIVED	How: Email	Walalakoo	Email requesting original information attachment to be sent directly to them.	Awaiting response
	15-Aug-23	SENT	How: Email	Walalakoo	Invitation for Consultation attachment sent as requested.	Information package sent to updated email
	16-Aug-23	RECEIVED	How: Email	Walalakoo	Letter from Executive Chair sent to JSE for review.	Response received. JSE to review
	28-Aug-23	SENT	How: Email	Walalakoo	Response indicating agreement to proposed arrangement. Requested indication on potential costs. Acknowledgement of acceptance of inclusion of WAC's block neighbours - the Bardi Jawi Niimidiman and Mayala Inninalang PBCs.	Awaiting response
	23-Oct-23	SENT	How: Email	Walalakoo	Follow up email.	Awaiting response
	28-Nov-23	SENT	How: Email	Walalakoo	Further follow up email.	Awaiting response
	18-Dec-23	RECEIVED	How: Email	Walalakoo	Apology for delay, will be in touch shortly.	Awaiting response
	12-Jan-24	SENT	How: Email	Walalakoo_1	Further follow up reiterating previous attempts to consult with Walalakoo.	Awaiting response
	31-Jan-24	SENT	How: Email	Walalakoo_1	Further follow up to arrange presentation to Directors.	Awaiting response
	31-Jan-24	RECEIVED	How: Email	Walalakoo_1	Email notifying of board meeting dates in March and asking Jadestone's availability.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	2-Feb-24	SENT	How: Email	Walalakoo_1	Email notifying still waiting on Jadestone availability for March dates. Asked for confirmation on location of meeting. Asked for confirmation if Walalakoo Aboriginal Corporation block neighbours Bardi Jawi Niimidiman and Mayala Inningalong Aboriginal Corporation would be included in the arrangement to consult with the members of Walalakoo as originally indicated.	Awaiting meeting location
	7-Feb-24	RECEIVED	How: Email	Walalakoo_2	Email from legal providing draft consultation protocol for consideration before attending board meeting.	Awaiting response
	7-Feb-24	SENT	How: Email	Walalakoo_2	Acknowledgment email. Request to amend document to reflect hourly rate for meeting.	Awaiting response
	8-Feb-24	RECEIVED	How: Email	Walalakoo_2	Minimum half day attendance charged for meetings not part of WAC scheduled board meetings.	Awaiting response
	9-Feb-24	SENT	How: Email	Walalakoo_3	Email notifying that Jadestone can attend either dates suggested and asking which one would best suit directors.	Awaiting response
	14-Feb-24	RECEIVED	How: Email	Walalakoo_2	Follow up email.	N/A
	14-Feb-24	SENT	How: Email	Walalakoo_2	Arrangement is satisfactory.	N/A
	14-Feb-24	RECEIVED	How: Email	Walalakoo_2	Amendment to annex reflecting position. Please revert with mark up.	Awaiting response
	14-Feb-24	SENT	How: Email	Walalakoo_3	Follow up email about date and location of the meeting.	Awaiting response
	15-Feb-24	RECEIVED	How: Email	Walalakoo_3	Email asking about the duration of the presentation and providing meeting date.	Awaiting response
	15-Feb-24	SENT	How: Email	Walalakoo_3	Email providing the duration of the presentation.	Awaiting response
	26-Feb-24	RECEIVED	How: Email	Walalakoo_3	Email setting time and location. Also providing a table with meetings costs.	Awaiting response
	26-Feb-24	SENT	How: Email	Walalakoo_3	Will revert with cost acceptance and names of Jadestone attendees.	Jadestone to confirm cost acceptance
	26-Feb-24	RECEIVED	How: Email	Walalakoo_2	Follow up email.	Awaiting response
	27-Feb-24	SENT	How: Email	Walalakoo_2	Waiting on advice from JSE legal adviser. Will respond ASAP.	Noted
	28-Feb-24	SENT	How: Email	Walalakoo_4	Email asking for indication of current understanding regarding Jadestone's consultation with Walalakoo's cultural block PBCs, the Mayala Inninalang Aboriginal Corporation and the Bardi Jawi Niimidiman Aboriginal Corporation.	Awaiting response
	28-Feb-24	RECEIVED	How: Email	Walalakoo_2	Acknowledgement email. WAC expecting finalised agreement prior to meeting in Derby in March.	Noted
	5-Mar-24	RECEIVED	How: Email	Walalakoo	Jadestone will need to contact the PBC boards directly for decision making. Appropriate contacts copied in.	Noted
	6-Mar-24	RECEIVED	How: Email	Walalakoo	Acknowledgment email from contact at Mayala Inninalang PBC.	Noted
	7-Mar-24	RECEIVED	How: Email	Walalakoo_2	Email following up on when Jadestone will revert with agreement.	Awaiting response
	7-Mar-24	SENT	How: Email	Walalakoo_4	Email requesting names of those in attendance at meeting next week and providing Jadestone attendees.	Awaiting response
	8-Mar-24	SENT	How: Email	Walalakoo_2	Email with attached Consultation Resourcing Protocol with tracked changes for consideration.	Awaiting response
	12-Mar-24	RECEIVED	How: Email	Walalakoo_4	Email providing Walalakoo staff names.	Noted
	13-Mar-24	SENT	How: Email	Walalakoo_5	Email requesting details to facilitate payment.	Awaiting response
	14-Mar-24	SENT	How: Email	Walalakoo_6	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	14-Mar-24	RECEIVED	How: Email	Walalakoo_3	Follow up email re meeting contribution.	Awaiting response
	14-Mar-24	SENT	How: Email	Walalakoo_3	Costs confirmed.	Noted
	14-Mar-24	RECEIVED	How: Email	Walalakoo_3	Acknowledgement email.	No further action
	14-Mar-24	MEETING	How: In person, Derby	Walalakoo_8 PBC Presentation	Meeting minutes to be finalised and sent to attendees for approval.	Meeting minutes to be issused
	15-Mar-24	RECEIVED	How: Email	Walalakoo_7	Invoice and payment details attached.	Awaiting response
	20-Mar-24	SENT	How: Email	Walalakoo_4	Email requesting names of Directors and Elders who attended Jadestone presentation.	Awaiting response
	21-Mar-24	SENT	How: Email	Walalakoo_4	Email requesting location of Brue Reef.	Awaiting response
	21-Mar-24	SENT	How: Email	Walalakoo_7	Request for details in order to undertake payment.	Awaiting response
	21-Mar-24	RECEIVED	How: Email	Walalakoo_7	Requested details provided.	Awaiting payment
	28-Mar-24	RECEIVED	How: Email	Walalakoo_2	Further revised draft of Consultation Resourcing Protocol following meeting with WAC board.	Awaiting Jadestone review
	28-Mar-24	RECEIVED	How: Email	Walalakoo_4	Acknowledgement email will try to find information.	Noted
	5-Apr-24	RECEIVED	How: Email	Walalakoo_2	Follow up on Consultation Resourcing Protocol.	Awaiting response
	9-Apr-24	RECEIVED	How: Email	Walalakoo_2	Further follow up email in relation to Consultation Resourcing Protocol.	Awaiting response
	10-Apr-24	SENT	How: Email	Walalakoo_8	Draft meeting minutes issued. Further request to provide location of Brue Reef and names of Directors who attended presentation.	Meeting minutes issued
	14-Apr-24	SENT	How: Email	Walalakoo_2	Email advising Jadestone is still considering the Protocol and following up on a couple of Clauses.	Awaiting response
	18-Apr-24	SENT	How: Email	Walalakoo_8	Follow up email sent requesting comment on the minutes of the meeting, seeking the names of the directors who attended the meeting and location of Brue Reef.	Awaiting response
	19-Apr-24	RECEIVED	How: Email	Walalakoo_9	Email passing on contact to confirm location of Brue Reef.	Awaiting response
	19-Apr-24	SENT	How: Email	Walalakoo_9	Follow up email after numerous phone calls requesting call back.	Awaiting response
	30-Apr-24	RECEIVED	How: Email	Walalakoo_8	Email notifying that need consent to share names of Directors, next meeting at end of May.	Noted
	13-May-24	RECEIVED	How: Email	Walalakoo_2	Email received with further updated resourcing protocol.	Awaiting response
	17-May-24	SENT	How: Email	Walalakoo_2	Jadestone has accepted most recept draft and preparing document for execution. Request for WAC notice details.	Awaiting response
	17-May-24	RECEIVED	How: Email	Walalakoo_2	Details for insertion provided.	Noted
	22-May-24	RECEIVED	How: Email	Walalakoo_2	Following up on execution version.	Awaiting response
	22-May-24	SENT	How: Email	Walalakoo_2	JSE legal sent signed Resourcing Protocol Agreement.	Awaiting countersign.
	22-May-24	RECEIVED	How: Email	Walalakoo_2	Following up with WAC to sign and date tomorrow.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Wanjina-Wunggurr (Native Title) Aboriginal Corporation	11-Aug-23	SENT	How: Email	Wanjina-Wunggurr	Email seeking opportunity to meet with Directors to introduce Montara project and seek advice on the most appropriate means of undertaking consultation. Information package attached providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	23-Oct-23	SENT	How: Email	Wanjina-Wunggurr	Follow up email- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	24-Oct-23	RECEIVED	How: Email	Wanjina-Wunggurr	Email forwarded to correct contact for Wanjina-Wunggurr (Native Title) Aboriginal Corporation.	Awaiting response
	14-Nov-23	SENT	How: Email	Wanjina-Wunggurr	Further follow up email.	Awaiting response
	28-Nov-23	SENT	How: Email	Wanjina-Wunggurr	Further follow up email.	Awaiting response
	8-Jan-24	SENT	How: Email	Wanjina-Wunggurr	Further follow up email.	Awiating response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	11-Jan-24	SENT	How: Email	Wanjina-Wunggurr_1	Further follow up reiterating previous attempts to consult with WW PBC.	Awaiting response
	15-Jan-24	SENT	How: Email	Wanjina-Wunggurr	Follow up with KLC re Wanjina contact details. Request for phone number.	Awaiting response
	15-Jan-24	RECEIVED	How: Email	Wanjina-Wunggurr	Can only provide publicly available information. Continue to use contact email Jadestone already have.	Noted
	31-Jan-24	SENT	How: Email	Wanjina-Wunggurr_1	Further follow up to arrange presentation to Directors.	Awaiting response
	6-Feb-24	RECEIVED	How: Email	Wanjina-Wunggurr_1	WW PBC have board meeting scheduled for March. Will confirm date and get back to Jadestone. Asked how much time needed for presentation.	Responded with time required for presentation
	6-Feb-24	SENT	How: Email	Wanjina-Wunggurr_1	Acknowledgement email. Would appreciate the opportunity of one hour.	Awaiting meeting date
	28-Feb-24	SENT	How: Email	Wanjina-Wunggurr_2	Further follow up email on board meeting date.	Awaiting response
	5-Mar-24	RECEIVED	How: Email	Wanjina-Wunggurr_3	Email in response to voice message. Asked if presentation can fit in 40 minute time slot for March meeting.	Awaiting response
	5-Mar-24	SENT	How: Email	Wanjina-Wunggurr_3	Asked for date of next board meeting.	Awaiting response
	5-Mar-24	RECEIVED	How: Email	Wanjina-Wunggurr_3	Next meeting likely early May.	Noted
	5-Mar-24	SENT	How: Email	Wanjina-Wunggurr_3	Due to time constraint Jadestone will wait for May meeting to present to board of Directors.	Awaiting date of May board meeting.
	14-Mar-24	SENT	How: Email	Wanjina-Wunggurr_4	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
	8-May-24	SENT	How: Email	Wanjina-Wunggurr_5	Further follow up email.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Warrwa Aboriginal Corporation	11-Aug-23	SENT	How: Email	Warrwa	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	14-Aug-23	RECEIVED	How: Email	Warrwa	Acknowledgment of email. Keen to discuss. Will set up a meeting.	Awaiting meeting time
	14-Aug-23	SENT	How: Email	Warrwa	Acknowledgement email.	Awaiting meeting time
	23-Oct-23	SENT	How: Email	Warrwa	Follow up email.	Awaiting response
	28-Nov-23	SENT	How: Email	Warrwa	Further follow up email.	Awaiting response
	11-Jan-24	SENT	How: Email	Warrwa_1	Further follow up reiterating previous attempts to consult with Warrwa.	Awaiting response
	31-Jan-24	SENT	How: Email	Warrwa_1	Further follow up to arrange presentation to Directors.	Awaiting response
	14-Mar-24	SENT	How: Email	Warrwa_2	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
	8-May-24	SENT	How: Email	Warrwa_3	Further follow up email.	Include in ongoing consultation. Confirm contact details remain the same in 6 months time.
Wulirankuwu Traditional Owner Clan	N/A	N/A	N/A	N/A	While in the process of determining the contact details for the eight Tiwi Island Traditional Owner Clans the Montara EMBA was updated. Based on the updated EMBA the Tiwi Island Traditional Owner Clans are no longer considered Relevant Persons.	N/A
Wurankuwu Traditional Owner Clan	N/A	N/A	N/A	N/A	While in the process of determining the contact details for the eight Tiwi Island Traditional Owner Clans the Montara EMBA was updated. Based on the updated EMBA the Tiwi Island Traditional Owner Clans are no longer considered Relevant Persons.	N/A

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Yawuru Native Title Holders Aboriginal Corporation	11-Aug-23	SENT	How: Email	Yawuru	Email seeking opportunity to meet with Directors to introduce Montara project and seek advice on the most appropriate means of undertaking consultation. Information package attached providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	15-Sep-23	RECEIVED	How: Email	Yawuru	Acknowledgement of email. First opportunity to present to Directors February/ March 2024 at next quarterly meeting.	Awaiting meeting time
	18-Sep-23	SENT	How: Email	Yawuru	Acknowledgement of email.	Awaiting meeting time
	23-Oct-23	SENT	How: Email	Yawuru	Follow up email requesting possible dates in February/ March 2024 at earliest opportunity.	Awaiting response
	12-Jan-24	SENT	How: Email	Yawuru_1	Further follow up reiterating previous attempts to consult with Yawuru.	Awaiting response
	31-Jan-24	SENT	How: Email	Yawuru_1	Further follow up to arrange presentation to Directors.	Awaiting response
	1-Feb-24	RECEIVED	How: Email	Yawuru_1	February agenda full, will discuss with Chair and hopefully get Jadestone on April meeting agenda.	Noted
	1-Feb-24	SENT	How: Email	Yawuru_1	Acknowledgment email.	Wait for confirmation re April meeting
	5-Mar-24	SENT	How: Email	Yawuru_2	Email following up on April meeting date and opportunity for Jadestone to present to Directors.	Awaiting response
	5-Mar-24	RECEIVED	How: Email	Yawuru_2	Email received advising contact no longer in governance role, appropriate contact copied in.	Noted
	5-Mar-24	SENT	How: Email	Yawuru_2	Acknowledgment email, look forward to speaking to new contact.	Awaiting response from updated contact
	6-Mar-24	RECEIVED	How: Email	Yawuru_2	Email advising meeting date and duration. Following up on other meeting logisitics including if any material to circulate prior to meeting.	Awaiting response
	6-Mar-24	SENT	How: Email	Yawuru_2	Email accepting opportunity to attend meeting. Inivtation for Consultation attached.	Awaiting response
	14-Mar-24	SENT	How: Email	Yawuru_3	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
	21-Mar-24	SENT	How: Email	Yawuru_4	Follow up re Jadestone presenting at April meeting and requesting meeting time.	Awaiting response
	22-Mar-24	RECEIVED	How: Email	Yawuru_4	Will revert with time for meeting. Opportunity to present on Montara Ops and Skua if timing allows.	Awaiting response
	22-Mar-24	SENT	How: Email	Yawuru_4	Request for an hour to present.	Awaiting response
	2-Apr-24	RECEIVED	How: Email	Yawuru_4	Confirmation of meeting time.	Noted
	9-Apr-24	SENT	How: Email	Yawuru_5 PBC Presentation	Email sent with powerpoint slides for tomorrows presentation.	No further action.
	10-Apr-24	MEETING	How: In person, Broome	Yawuru_8 PBC Presentation	Minutes to be prepared and issued to PBC.	Meeting minutes to be issued
	7-May-24	SENT	How: Email	Yawuru_6	Email following up on names of Yawuru attendees to finalise meeting minutes.	Awaiting response
	9-May-24	SENT	How: Email	Yawuru_7	Draft meeting minutes issued.	N/A
	9-May-24	RECEIVED	How: Email	Yawuru_7	Acknowledgement email providing names of Directors who attended.	Noted
	9-May-24	SENT	How: Email	Yawuru_8	Updated meeting minutes issued.	Meeting minutes issued. Include in ongoing consultation. Confirm contact details remain the same in 6 months time.

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Yimpinari Traditional Owner Clan	N/A	N/A	N/A	N/A	While in the process of determining the contact details for the eight Tiwi Island Traditional Owner Clans the Montara EMBA was updated. Based on the updated EMBA the Tiwi Island Traditional Owner Clans are no longer considered Relevant Persons.	N/A
Port Authorities						
Darwin Port	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	23-Feb-23	PLACED	How: Call	N/A	Called Darwin Port to confirm receipt of information package. No answer	Call again
	4-Apr-23	PLACED	How: Call	N/A	Called Darwin Port to confirm receipt of information package. Package not received.	Package sent through again and passed onto appropriate person
	4-Apr-23	SENT	How: Email	DarwinPort	Information package resent.	Awaiting response
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
Kimberley Ports Authority	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	23-Feb-23	PLACED	How: Call	N/A	Called Kimberley Port Authority to confirm receipt of information package. Package received, now passed onto appropriate person and they will call Jadestone.	Awaiting return phone call
	23-Feb-23	RECEIVED	How: Email	KPA	Email advising KPA has nil response at this time.	Noted
	22-Mar-23	SENT	How: Email	KPA	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Pilbara Ports Authority	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	23-Feb-23	PLACED	How: Call	N/A	Called Pilbara Port Authority to confirm receipt of information package. Unsure if package received, confirming and will have appropriate person call Jadestone.	Awaiting return phone call
	4-Apr-23	PLACED	How: Call	N/A	Called Pilbara Port Authority again to confirm receipt of package. Package received and will respond shortly.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	4-Apr-23	RECEIVED	How: Email	PilbaraPorts	Acknowledgement of receipt. Pilbara Ports has no comment. Confirmation that email address is correct for future engagement.	Noted
	4-Apr-23	SENT	How: Email	PilbaraPorts	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action.
Wyndham Port WA Cambridge Gulf Ltd	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	19-Dec-22	RECEIVED	How: Email	CGLTD_AutoResponse	Automatic email response.	N/A
	31-Jan-23	RECEIVED	How: Email	CGLTD	Acknowledged receipt and do not see any issues to their shipping operations as a result of Montara Operations. Offered logistical support if required.	Noted
	21-Feb-23	SENT	How: Email	CGLTD	Acknowledgement of email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	31-Jul-23	RECEIVED	How: Email	CGLTD_1	Acknowledgement of receipt, no problems or further comment.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Tourism and Business Associations/ Tour Operators						
Absolute Ocean Charters	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	19-Dec-22	RECEIVED	How: Email	AOC_AutoResponse	Automatic email response.	N/A
	9-Feb-23	SENT	How: Email	G3	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	9-Feb-23	RECEIVED	How: Email	AOC_AutoResponse_2	Automatic email response.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	15-Nov-23	PLACED	How: Call	N/A	Left a message asking Absolute Ocean Charters to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Anglers Choice Fishing Safaris	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
APT Kimberley Coast Cruises	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	8-Feb-23	RECEIVED	How: Email	APT_AutoResponse	Automatic email response.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	17-Nov-23	PLACED	How: Call	N/A	Called APT to confirm receipt of information package. Unsure if information package received. Asked to send through again. Alternative contact details provided.	Information package resent to alternative email
	17-Nov-23	SENT	How: Email	APT	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Arafura Bluewater Charters	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
Archipelago Adventures	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	17-Nov-23	PLACED	How: Call	N/A	Left a message asking Archipelago Adventures to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Australia's North West	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	19-Dec-22	RECEIVED	How: Email	ANW_AutoResponse	Automatic email response.	N/A
	9-Feb-23	SENT	How: Email	G3	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	28-Jul-23	SENT	How: Email	ANW_AutoResponse 2	Automatic email response.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Called ANW to confirm receipt of information package. Package received and now passed onto most appropriate person who will review and provide feedback.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Broome Tours	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Left a message asking Broome Tours to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Broome Whale Watching	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Called Broome Whale Watching to confirm receipt of information package. Unsure if information package received. Asked to send through again and will pass onto appropriate person.	Information package resent
	16-Nov-23	SENT	How: Email	BWW	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Cannon Charters	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
	28-Jul-23	RECEIVED	How: Email	CC_AutoResponse	Auto Response notification out of the office till 8 August, will respond on return.	Noted. No further action
Clearwater Island Lodge	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	4-Apr-23	PLACED	How: Call	N/A	Left a message asking Clearwater Lodge to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
Coral Expeditions	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	17-May-23	PLACED	How: Call	N/A	Called Coral Expeditions to confirm receipt of information package. Unsure if package received, not interested in receiving information again.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Darwin Harbour Fishing Charters	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
Dundee Beach Fishing Charters	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
Equinox Fishing Charters	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	4-Apr-23	PLACED	How: Call	N/A	Called Equinox Charters to confirm receipt of information package. Package not received.	Package sent through again and passed onto appropriate person
	4-Apr-23	SENT	How: Email	Equinox	Information package resent.	Awaiting response
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Fish Darwin	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
HeliSpirit Luxury Kimberley Helicopter Safari	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Called Helispirit to confirm receipt of information package. Unsure if information package received. Asked to send through again and will pass onto appropriate person.	Information package resent
	16-Nov-23	SENT	How: Email	HeliSpirit	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Kimberley Cruise Centre	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Left a message asking Kimberley Cruise Centre to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Kimberley Expeditions	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Left a message asking Kimberley Expeditions to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Kimberley Pearl Charters	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	4-Apr-23	PLACED	How: Call	N/A	Called Kimberley Pearl Charters to confirm receipt of information package. Asked for package to be resent.	Package sent through again and passed onto appropriate person
	4-Apr-23	SENT	How: Email	KPC	Information package resent.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Kimberley Quest	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	4-Apr-23	PLACED	How: Call	N/A	Called Kimberley Quest to confirm receipt of information package. Asked for package to be resent.	Package sent through again and passed onto appropriate person
	4-Apr-23	SENT	How: Email	Kimberley Quest	Information package resent.	Awaiting response
	5-Apr-23	RECEIVED	How: Email	Kimberley Quest	Acknowledgment of receipt. Kimberley Quest have no comments or questions.	Noted
	5-Apr-23	SENT	How: Email	Kimberley Quest	Acknowledgement of receipt.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Kuri Bay Sport Fishing & Adventures	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	17-Nov-23	PLACED	How: Call	N/A	Called Kuri Bay to confirm receipt of information package. Unsure if package received. Asked to send through again. Alternative contact details provided.	Information package resent to alternative email
	17-Nov-23	SENT	How: Email	Kuri Bay	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	17-Nov-23	RECEIVED	How: Email	Kuri Bay_1	Requested information on capacity to deal with a spill, response time and where response team are based.	Response being prepared
	29-Nov-23	SENT	How: Email	Kuri Bay_1	Email sent with information on spill response operations.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Lady M Luxury Cruises	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	17-Nov-23	PLACED	How: Call	N/A	Left a message asking Lady M Cruises to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Monsoon Aquatics	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	SENT	How: Email	Monsoon	Suitable contact number not known. Email sent following up to see if previous correspondence and information package was received and asking to provide contact details of most appropriate person to contact.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Ocean Dream Charters	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	17-Nov-23	PLACED	How: Call	N/A	Left a message asking Ocean Dream Charters to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Offshore Boats Fishing Charters	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
One Tide Charters	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	8-Feb-23	SENT	How: Email	G2	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Left a message asking One Tide to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Oolin Sunday Island Cultural Tours	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Called Sunday Island Cultural Tours to confirm receipt of information package. Information package received and passed on to CEO for comment.	Awaiting response from CEO
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Ponant Luxury Expeditions	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	17-Nov-23	PLACED	How: Call	N/A	Called Ponant to confirm receipt of information package. Unsure if package received. Asked to send through again. Alternative contact details provided.	Information package resent to alternative email

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	17-Nov-23	SENT	How: Email	Ponant	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	22-Nov-23	RECEIVED	How: Email	Ponant	Email advising Montara activities will have no impact on Ponant itineraries and operations.	Noted.
	23-Nov-23	SENT	How: Email	Ponant	Acknowledgement of email.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Red Devil Fishing Charters	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	8-Feb-23	RECEIVED	How: Email	Red Devil	Acknowledgement of receipt. Asked Jadestone to call when they get back from overseas.	Jadestone to call Red Devil Charters
	1-Mar-23	PLACED	How: Call	N/A	Red Devil request to be contacted was to find out about any opportunities that might exist for business to be engaged by Jadestone.	Query passed on. No further action
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
Seafarms Group Ltd	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	4-Apr-23	PLACED	How: Call	N/A	Left a message asking Seafarms to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Seaestar Boat Charters	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	8-Feb-23	RECEIVED	How: Email	Seaestar_AutoResponse	Automatic email response.	N/A

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	4-Apr-23	PLACED	How: Call	N/A	Left a message asking Seaestar to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Silversea Cruises	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	23-Feb-23	PLACED	How: Call	N/A	Called Silversea to confirm receipt of information package. Unsure if package received. Asked to send through again.	Emailed through information package
	23-Feb-23	SENT	How: Email	Silversea	Email sent to Silversea with information package.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
The Great Escape Charter Company	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	4-Apr-23	PLACED	How: Call	N/A	Called the Great Escape Charter Company to confirm receipt of information package. Package received and they will provide a response.	Awaiting response
	4-Apr-23	RECEIVED	How: Email	Great Escape	Acknowledgment of receipt. Great Escape Company have no comments or questions.	Noted
	4-Apr-23	SENT	How: Email	Great Escape	Acknowledgement of email.	No further action. Include in ongoing consultation.
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Tiwi Island Adventures	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	4-Apr-23	PLACED	How: Call	N/A	Left a message asking Tiwi Adventures to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
Tourism Top End	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response. Read receipt received
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Called to confirm receipt of information package. No option to leave a message.	Message unable to be left, email again
	16-Nov-23	SENT	How: Email	Tourism Top End	Email sent following up to see if previous correspondence and information package was received and asking to provide contact details of most appropriate person to contact.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
True North	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder- Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Called True North to confirm receipt of information package. Package received and passed on to appropriate person to respond. Following up response.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Willie Pearl Lugger Cruises	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	16-Nov-23	PLACED	How: Call	N/A	Left a message asking Willie Pearl Luggers to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Yknot Fishing Charters	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G5	Email and information package sent to stakeholder providing updated EMBA and notifying them that based on the updated EMBA they no longer considered a relevant person unless they self identify.	No further action
Environmental Conservation Groups/ eNGOs						
Australian Marine Conservation Society (AMCS)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	23-Feb-23	PLACED	How: Call	N/A	Called AMCS to confirm receipt of information package. Unsure if package received, confirming and will have appropriate person contact Jadestone.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	15-Nov-23	SENT	How: Email	AMCS	Email sent following up to see if previous correspondence and information package was received and asking to provide contact details of most appropriate person to contact.	Awaiting response
	23-Nov-23	PLACED	How: Call	N/A	Representative of AMCS confirmed receipt of Stag and Montara Invitiation for Consultation emails and has been forwarded onto the appropriate person to consider and respond as appropriate. Indicated that AMCS does not respond to all of the consultation communications received by the organisation.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Broome Visitor Centre	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	8-Feb-23	RECEIVED	How: Email	BVC	Email asking Jadestone to contact BVC to discuss further what require from BVC.	Jadestone to contact BVC
	21-Feb-23	SENT	How: Email	BVC	Email sent asking if BVC would be available to meet Jadestone in Broome on 8 March to discuss further.	N/A
	22-Feb-23	RECEIVED	How: Email	BVC	BVC happy to discuss further once travel booked.	Noted
	11-May-23	MEETING	How: Meeting in Broome	BVC_1	BVC will assist Jadestone to communicate with the Broome tourism industry through its regular newsletter.	Meeting minuted
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Conservation Council of Western Australia (CCWA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	15-Nov-23	SENT	How: Email	CCWA	Email sent following up to see if previous correspondence and information package was received and asking to provide contact details of most appropriate person to contact.	Awaiting response
	20-Nov-23	RECEIVED	How: Email	CCWA	Email received with contact for future consultation opportunities. CCWA does not have capacity to engage with proponents on all projects, however interested in ongoing consultation opportunities.	Noted
	21-Nov-23	SENT	How: Email	CCWA	Acknowledgment email.	No further action. Include in ongoing consultation

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Environment Centre Northern Territory (ECNT)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	17-Nov-23	PLACED	How: Call	N/A	Left a message asking ECNT to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	17-Nov-23	RECEIVED	How: Call	N/A	Message left asking Jadestone to call back.	Return phone call
	17-Nov-23	PLACED	How: Call	N/A	Called back and left a message asking to call Jadestone.	Awaiting return phone call
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Environs Kimberley	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	17-Nov-23	PLACED	How: Call	N/A	Called Environs Kimberley to confirm receipt of information package. Unsure if package received. Asked to send through again. Alternative contact details provided.	Information package resent to alternative email
	17-Nov-23	SENT	How: Email	Environs	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Greenpeace	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	19-Dec-22	RECEIVED	How: Email	Greenpeace_bounce	Email bounced.	Look for alternative email
	19-Dec-22	RECEIVED	How: Email	Greenpeace_AutoResponse	Automatic email response.	N/A
	9-Feb-23	SENT	How: Email	G3	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	9-Feb-23	RECEIVED	How: Email	Greenpeace_AutoResponse_2	Auto Response email received.	Awaiting response
	24-Feb-23	RECEIVED	How: Email	Greenpeace	Correspondence received in relation to Stag and Montara EPs. Requesting information on emissions, spill modelling and spill response plan as well as information on how Jadestone have identified relevant persons.	Response email sent
	27-Mar-23	SENT	How: Email	Greenpeace_1	Acknowledgement email. Jadestone will respond shortly.	Response to be sent
	31-Mar-23	SENT	How: Email	Greenpeace_1	Response sent to queries raised in email.	No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Save the Kimberley	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	17-Nov-23	PLACED	How: Call	N/A	Left a message asking Save The Kimberley to call Jadestone to confirm if consultation package was received and provide any feedback.	Awaiting return call
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
The Wilderness Society	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	13-Feb-23	RECEIVED	How: Email	TWS	Acknowledgement of receipt. Will make comment by 21.02.2023.	Awaiting response
	15-Feb-23	SENT	How: Email	TWS	Evidence of original email sent to TWS.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	15-Nov-23	PLACED	How: Call	N/A	Called TWS to confirm receipt of information package for Stag and Montara. Asked for information packages to be resent.	Information packages resent

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	15-Nov-23	SENT	How: Email	TWS_1	Information package resent.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
World Wildlife Fund	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	27-Sep-23	PLACED	How: Call	N/A	Called WWF to confirm receipt of information package. Unsure if package received. Asked to send through again.	Information packages resent
	27-Sep-23	SENT	How: Email	WWF	Email resent with attached information package for Stag and Montara Operations EP.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Other Associations						
Australian Council of Prawn Fisheries	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	7-Sep-23	SENT	How: web form	N/A	Unable to find contact number for relevant person. Completed web form asking for most appropriate email to send information package to.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Marine Tourism Association of Western Australia (MTWA)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	23-Feb-23	PLACED	How: Call	N/A	Called MTWA to confirm receipt of information package. Package received. Will review and respond.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	29-Nov-23	SENT	How: Email	G6	Email sent advising of closing date for consultation on Montara Activities prior to re-submitting EP to NOPSEMA, that our records indicate despite past efforts we have not received a response, and this is final attempt to elicit a response before re-submitting EP.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Northern Territory Chamber of Commerce (NTCC)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	23-Feb-23	PLACED	How: Call	N/A	Called NTCC to confirm receipt of information package. Unsure if package received. Asked to send through again.	Emailed through information package
	23-Feb-23	SENT	How: Email	NTCC	Email sent to NTCC with information package.	Awaiting response. Read receipt received
	27-Feb-23	RECEIVED	How: Email	NTCC	Email advising Chamber of Commerce don't have much input.	Noted. No further action
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Thamarrurr Development Corporation (TDC), including the Thamarrurr Rangers	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	21-Apr-23	SENT	How: Email	TDC	Email sent asking for assistance organising a community meeting.	Awaiting response
	2-May-23	SENT	How: Email	TDC_1	Reminder email requesting assistance organising a community meeting.	Awaiting response
	5-May-23	SENT	How: Email	TDC_1	Further reminder email requesting assistance organising a community meeting.	Awaiting response
	10-May-23	RECEIVED	How: Email	TDC_1	Email apologising for delay, asking for further information on presentation.	Emailed through information package
	10-May-23	SENT	How: Email	TDC_1	Stakeholder information package, EMBA and link to explanation of EMBA sent.	Awaiting response

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	23-May-23	SENT	How: Email	TDC_1	Further follow up email.	Awaiting response
	21-Jun-23	SENT	How: Email	TDC_1	Further follow up email.	Awaiting response
	21-Jun-23	SENT	How: Email	TDC_1	Further follow up email.	Awaiting response
	25-Jun-23	RECEIVED	How: Email	TDC_1	Following up email. Suggested contacting West Daly Regional Council.	Noted. West Daly Regional Council already contacted
	26-Jun-23	SENT	How: Email	TDC_1	Clarification around meeting date.	Awaiting response
	19-Jul-23	SENT	How: Email	TDC_1	Follow up email to see if update available.	Awaiting response
	28-Aug-23	SENT	How: Email	TDC_1	Follow up email around in person meeting in Darwin.	Awaiting response
	9-Oct-23	RECEIVED	How: Email	TDC_2	Email received notifying next board meeting October 18, acknowledging very late notice to present.	Awaiting response
	23-Oct-23	SENT	How: Email	TDC_2	Acknowledgment email and apology for delay. Asked date of next opportunity to present to TDC Board.	Awaiting response
	29-Nov-23	SENT	How: Email	TDC_2	Follow up email requesting possible meeting dates for presentation to Directors.	Awaiting response
	20-Dec-23	RECEIVED	How: Email	TDC_2	Will confirm meeting dates for 2024 and let Jadestone know.	Awaiting response
	8-Jan-24	SENT	How: Email	TDC_3	Further follow up email in relation to dates to present to TDC directors.	Awaiting response
	31-Jan-24	SENT	How: Email	TDC_3	Further follow up email.	No further action. Include in ongoing consultation
Academic and Research Organisations						
Australian Institute of Marine Science (AIMS)	19-Dec-22	SENT	How: Email	G1	Email sent to stakeholder with attached information package providing an update on 5 year revision of Montara EP and details on why they have been engaged and what is required.	Awaiting response
	8-Feb-23	SENT	How: Email	G2	Reminder - Given no correspondence, email sent to stakeholder to try and elicit a response as required by the regulations.	Awaiting response
	28-Jul-23	SENT	How: Email	G4	Email and information package sent to stakeholder providing updated EMBA and notifying them that they are still considered a relevant person.	Awaiting response
	26-Sep-23	PLACED	How: Call	N/A	Called AIMS to confirm receipt of information package. Unsure if package received. Updated email provided.	Updated email noted
	26-Sep-23	SENT	How: Email	AIMS	Email sent to updated email with attached information package for Stag and Montara Operations EP.	Awaiting response
	28-Sep-23	RECEIVED	How: Email	AIMS	Acknowledgement of receipt. AIMS confirmed planned activities will not interfere with AIMS operations.	Noted. No further action. Include in ongoing consultation
	14-Mar-24	SENT	How: Email	G7	Email sent to stakeholder notifying them of upcoming community consultation information sessions.	No further action
Other*						
BW Digital	23-Mar-23	SENT	How: Web form	BW Digital	On advice from ACMA contacted BW Digital to inform them of Montara Project.	No further action
Community Consultation_1	8-Apr-24	SENT	How: Email	Community Consultation_1	Email sent confirming contact details passed onto procurement team as requested at community session. Not considered a Relevant Person for Montara Operations going forward.	No further action
Community Consultation_2	8-Apr-24	SENT	How: Email	Community Consultation_2	Email providing information on NETTS Program as requested at community session. Not considered a Relevant Person for Montara Operations going forward.	No further action

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
Community Consultation_3	9-Apr-24	SENT	How: Email	Community Consultation_3	Email sent providing Montara Operations EP and Skua-11 Drilling EP information packages as requested at community session.	No further action
Community Consultation_4	9-Apr-24	SENT	How: Email	Community Consultation_4	Email sent providing Montara Operations EP and Skua-11 Drilling EP information packages as requested at community session.	No further action
Community Consultation_5	9-Apr-24	SENT	How: Email	Community Consultation_5	Email sent providing Montara Operations EP and Skua-11 Drilling EP information packages as requested at community session.	No further action
Dambimangari Aboriginal Corporation	19-Mar-24	RECEIVED	How: Email	Dambimangari	Email received asking Jadestone to meet DAC board and providing meeting date and location.	Awaiting response
	21-Mar-24	SENT	How: Email	Dambimangari	Email following up from phone conversation clarifying the relationship between DAC and Wunjina-Wunggurr Aboriginal Corporation and that Jadestone has been in regular contact with Wunjina-Wunggurr and anticipates a presentation to the directors in May. No requirement for Jadestone to attend and make presentation to DAC.	No further action
Inligo	23-Mar-23	SENT	How: Web form	Inligo	On advice from ACMA contacted Inligo to inform them of Montara Project.	Awaiting reponse
	24-Mar-23	RECEIVED	How: Email	Inligo	Provided contact details.	Noted
	27-Jul-23	SENT	How: Email	Inligo_1	Email and information package sent through.	Awaiting response
	28-Jul-23	RECEIVED	How: Email	Inligo_1	Confirmation that there will be no interference between projects.	Noted
	28-Jul-23	SENT	How: Email	Inligo_1	Acknowledgement of email.	No further action
KRED Enterprises	26-Apr-23	SENT	How: Email	KRED	At March meeting in Broome KLC referred Jadestone to KRED Enterprises to engage for assistance in identifying and contacting the Kimberley coastal PBCs and for assistance in arranging Kimberley community presentations. Email seeking assistance with organising community meetings with Traditional Owner groups along the Kimberley coastline.	Awaiting response
	29-Apr-23	RECEIVED	How: Email	KRED	Email noting discussion about process for consulting with traditional owners required.	Noted
	5-May-23	SENT	How: Email	KRED	Email back and forth to organise meeting to discuss process.	N/A
	9-May-23	RECEIVED	How: Email	KRED	Email back and forth to organise meeting to discuss process.	N/A
	9-May-23	SENT	How: Email	KRED	Email back and forth to organise meeting to discuss process.	N/A
	29-May-23	SENT	How: Email	KRED_1	Email following up on phone call. As per advice Jadestone to present to Directors of each PBC, seeking assistance of KRED in planning and facilitating community presentations.	Awaiting response
	31-May-23	RECEIVED	How: Email	KRED_1	Acknowledgment of email, will review and be in touch.	Awaiting response
	1-Jun-23	SENT	How: Email	KRED_1	Acknowledgement of email.	Awaiting response
	7-Jun-23	RECEIVED	How: Email	KRED_2	Email reviewed, what is time frame for work.	Awaiting response
	8-Jun-23	SENT	How: Email	KRED_2	Jadestone would like to make presentations during July and August.	Awaiting response
	21-Jun-23	SENT	How: Email	KRED_2	Follow up email.	N/A
	28-Jun-23	RECEIVED	How: Email	KRED_2	Apologies for delay, will be in touch shortly.	N/A
	3-Jul-23	RECEIVED	How: Email	KRED_2	Email organising time for phone call to finalise quote for services.	N/A
	3-Jul-23	SENT	How: Email	KRED_2	Email advising availability all day.	Noted
	3-Jul-23	PLACED	How: Phone call	N/A	Phone conversation to go through queries and allow quote to be finalised.	N/A

Relevant person	Date	To/from	Engagement logistics	Reference Number	Summary of content	Action undertaken/Status
	3-Jul-23	RECEIVED	How: Email	KRED_2	Follow up email following phone call. Cost estimate sent.	Jadestone reviewing cost estimate
	14-Jul-23	RECEIVED	How: Email	KRED_2	Following further phone call revised cost estimate sent.	Jadestone reviewing cost estimate
	14-Jul-23	INTERNAL	How: Email	KRED_2	Passing on of new amended quote from KRED, recommending acceptance.	JSE to review and consider acceptance of quote
	19-Jul-23	INTERNAL	How: Email	KRED_2	Request confirmation to proceed with contracting KRED.	Awaiting response
	26-Jul-23	INTERNAL	How: Email	KRED_2	Quote sent interally for review, request on how best to proceed.	Awaiting response
	2-Aug-23	INTERNAL	How: Email	KRED_2	Checking in on progress of KRED request.	Awaiting response
	2-Aug-23	INTERNAL	How: Email	KRED_2	JSE PO Terms for KRED to receive and sign.	JSE to forward to KRED
	3-Aug-23	SENT	How: Email	KRED_2	Apologies for delay, request to provide Supplier details and return acceptance of JSE PO Terms.	Awaiting response
	10-Aug-23	RECEIVED	How: Email	KRED_2	Email acknowledging Jadestone's acceptance of quote, request to revise Jadestone PO terms and conditions.	JSE reviews PO terms
	10-Aug-23	INTERNAL	How: Email	KRED_2	Email passed on for internal discussion and resolution.	Awaiting response
	11-Aug-23	INTERNAL	How: Email	KRED_2	Request to review PO T&Cs for KRED.	Awaiting response
	14-Aug-23	INTERNAL	How: Email	KRED_2	Amended PO Terms.	Noted
	14-Aug-23	SENT	How: Email	KRED_2	Email with attached revised PO terms for review and completion.	Awaiting response
	14-Aug-23	RECEIVED	How: Email	KRED_2	Email with completed form attached.	Noted
	28-Aug-23	SENT	How: Email	KRED_3	Apologies for delay, follow-up regarding delayed community presentation and offering compensation for delay in scheduling.	Awaiting response
	5-Sep-23	RECEIVED	How: Email	KRED_3	Acknowledgement of email, awaiting further instruction for scheduling community presentation.	Awaiting response
	16-Nov-23	SENT	How: Email	KRED_3	Email advising Jadestone still considering timing of community presentations. Asked for KRED's availability.	Awaiting response
	18-Nov-23	RECEIVED	How: Email	KRED_3	Thanks for update. Recommend start community presentations in February depending on wet season, ceremony time and school resuming after holiday season.	Noted
	8-Jan-24	SENT	How: Email	KRED_3	Follow up email, Jadestone keen to lock in dates for community sessions.	Awaiting response
	31-Jan-24	RECEIVED	How: Email	KRED_3	Email following missed phone calls. Trying to arrange time to discuss community sessions.	Awaiting response
	9-Feb-24	SENT	How: Email	KRED_4	Email to organise logistics and personnel requirements for community presentations. Can KRED provide representative to undertake notetaking.	Awaiting response
	14-Feb-24	SENT	How: Email	KRED_4	Follow up email.	Awaiting response
	19-Feb-24	RECEIVED	How: Email	KRED_4	Can help capture attendees, will have to get back to Jadestone re note taking. Redrafting schedule and will get back to Jadestone by COB this week.	Noted
	21-Feb-24	SENT	How: Email	KRED_4	Acknowledgement email.	Waiting for schedule
	7-Mar-24	RECEIVED	How: Email	KRED_5	Email requesting info sheets to share with communities.	Awaiting response
	7-Mar-24	SENT	How: Email	KRED_5	Email sent with Information package attached.	No further action
Vocus	23-Mar-23	SENT	How: Web form	Vocus	On advice from ACMA contacted Vocus to inform them of Montara Project.	No further action

* In the course of consulting with current Relevant Persons and community sessions the following stakeholders were referred or suggested for consultation.

Jadestone Energy

Invitation for Consultation
Montara Field Operations and Future Activities

Invitation for Consultation

Jadestone Energy (Jadestone) is the operator of the existing Montara Field in the Timor Sea. Jadestone is preparing an Operations Environment Plan (EP) for assessment by the Commonwealth regulatory authority, the National Offshore Petroleum Regulatory Authority (NOPSEMA).

The Operations EP is for ongoing production and maintenance at the Montara facility.

Jadestone is also seeking comment on an activity that will be subject to a future EP, for the removal of unused infrastructure (tentatively planned for 2024-2029).

Jadestone invites comments for its consideration during the period of preparation of each EP.

Who is Jadestone Energy?

Jadestone is a leading upstream oil and gas company in the Asia Pacific region, with a focus on production and near-term development assets. The company is listed on the Alternative Investment Market of the London Stock Exchange (JSE). Contact details for Jadestone's Australian Operations are provided at the end of this document.

What is an Environment Plan?

The purpose of an Environment Plan (EP) is to identify the proposed petroleum activity's impacts on and risks to the environment. The EP also sets out measures to reduce identified environmental impacts, potential risks due to the activity, and describe how and to what level of performance those measures will be implemented throughout the activity, including in the unlikely event of a significant unplanned event, e.g., hydrocarbon spill.

NOPSEMA requires that the existing EP in place for Montara operations must be revised and resubmitted every five years, or sooner if required.

The existing Montara EP is now due its five-year revision.

Therefore, the Montara revision EP is currently in preparation, covering activities associated with production; oil loading to a third-party tanker; the inspection maintenance and repair of the wellhead platform (WHP) and the floating production, storage and offtake vessel (FPSO); wells, including workovers; associated subsea infrastructure; and non-routine / unplanned activities and events should they arise.

Activities that will be subject to the future EP

Wellhead Removals – for the removal of three wellheads that are no longer in use. Jadestone plans to remove these wellheads within the 2024-2029 period and will prepare an EP describing the removal activity.

Why are you being engaged?

Jadestone has identified that you or your organisation is a 'relevant person' under the Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2009 because of your functions, activities, or interests within the Environment that Might Be Affected (EMBA) for Montara, defined as the area that might be affected in the unlikely event of a significant unplanned event, e.g., hydrocarbon spill.

What do we do with information provided?

In line with Regulation 9(8) of the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Environment Regulations) 2009, correspondence between Jadestone and you or your organisation must be provided to NOPSEMA. All comments are compiled into a report and are published in the publicly available EP, with names and contact details redacted.

There is, however, the opportunity for you to request that your correspondence not be published. That is, whilst the correspondence is still required to be provided to NOPSEMA, it will be provided in a separate report that is for NOPSEMA only and is not published.

Please notify Jadestone of any correspondence that we receive from you or your organisation that you wish to be confidential. That correspondence will be provided to NOPSEMA in a separate report, and not published on NOPSEMA's website.

All comments received by Jadestone will be carefully assessed to understand the potential impacts of the activity upon you or your organisation as a relevant person, that is your functions, activities, or interests. Jadestone's assessment will be provided to you and documented in the EP.

How do I find out more?

Further information on Jadestone's Montara facility is available on our website: https://www.jadestone-energy.com/assets/australia-portfolio/montara/

Following NOPSEMA's completion of its pre-assessment checks of the EP it will be published, minus any confidential material, on the NOPSEMA website.

https://info.nopsema.gov.au/offshore_projects/20/show_public

What do Jadestone want to know?

Jadestone is committed to ongoing dialogue with all its stakeholders and welcomes your or your organisation's comments at any time.

Please let us know if you:

- have any comments on the activity and the potential impacts on you or your organisation's interests
- require any further information
- have any preference on how we contact you in the future
- need anything further from us to assist you with comments you might wish to make.

Could you also help us make an informed decision about your requirement for ongoing consultation by letting us know if you do not wish to receive further updates for activities associated with the Montara field.

What Happens next?

Jadestone will make reasonable efforts to consult with all parties that have been identified as potentially relevant persons.

Please be aware that it is a requirement of NOPSEMA that Jadestone documents no responses to this Invitation for Consultation, and as a consequence, if no response is received, Jadestone may make follow-up contact with you or your organisation several times to seek a response.

Location

The Montara development is in the Timor Sea, approximately 690 km west of Darwin (Figure 1). The permit areas AC/L7 and AC/L8 are in Australian waters. All activities in these permit areas are in ~72–90 m water depth. Location details are shown on Figure 1, including key features in the area. The distance to Australian Marine Parks is summarised in Table 1.

Table 1: Distance to Australian Marine Parks (AMPs)

Australian Marine Park	Minimum distance from Wellheads
Ashmore AMP	131 km
Cartier AMP	90 km
Kimberley AMP	108 km

The Montara facility has been producing since 2010, with the required restricted zone in place. Petroleum Safety Zones (PSZ) extend 500 m around the following Montara infrastructure:

- FPSO submerged turret production
- Well head platform
- Swallow 1 subsea wellhead and Swift manifold (combined)
- Swift North 1 subsea wellhead
- Swift 2 subsea wellhead
- Skua 10 and Skua 11 subsea wellhead (combined).

Pursuant to Section 616 of the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act) all vessels, other than those under the control of Jadestone or authorised by Jadestone, are prohibited from entering or being present in the PSZ.

A cautionary zone of 2.5 NM radius is maintained around the WHP, FPSO and subsea structures including the pipelines. This information has been notated on Admiralty Charts covering the region (#314), and although vessels are requested to avoid navigating, anchoring and fishing, it is not an exclusion zone.

All planned activities will be contained within the Operational Areas, and future activities such as wellhead removal will be within defined Operational Areas in permit areas AC/L7 and AC/L8).

In the unlikely event of a significant unplanned event, e.g., hydrocarbon spill, the values in the EMBA (habitats and locations), having been identified in the EP, will be prioritised for prompt protection activities.

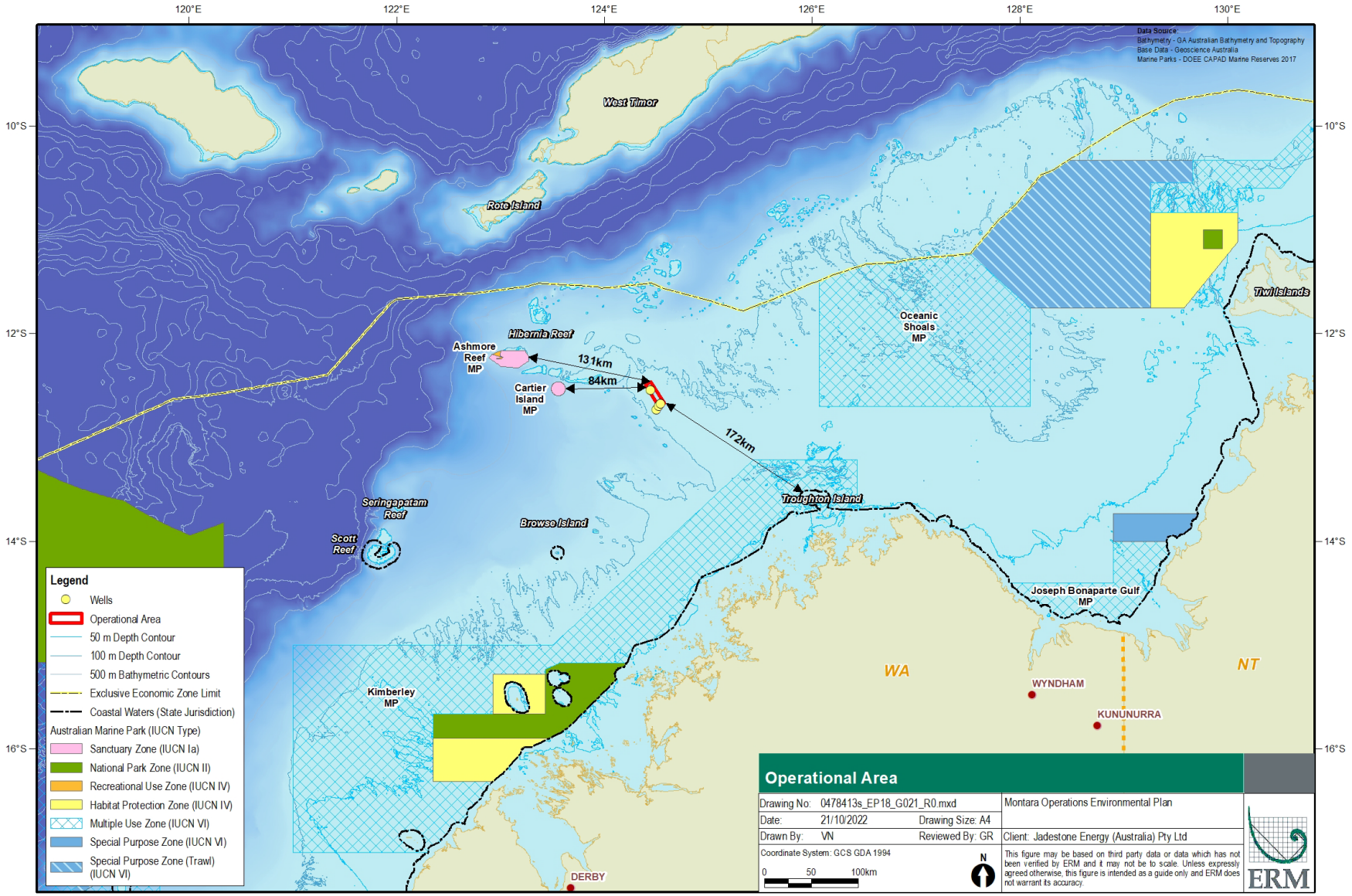


FIGURE 1 – LOCATION MAP

Potential Risks and Management

A summary of potential risks to relevant persons who may have functions, activities or interests within the EMBA, that are common to all planned activities, is provided below. For each risk the associated management measures are summarised in Table 1.

TABLE 1: POTENTIAL RISKS AND MITIGATION/MANAGEMENT MEASURES COMMON TO BOTH ENVIRONMENT PLANS

Potential Risks	Mitigation and /or Management Measures
Light Emissions	- Potential impacts from lighting are assessed as occurring within 20 km of a vessel or facility based on the National Light Pollution Guidelines for Wildlife (Commonwealth of Australia 2019) - Facility and vessel navigation lights are compliant with the Navigation Act 2012.
Noise Emissions	- Vessels and helicopters comply with relevant parts of Environment Protection and Biodiversity Conservation (EPBC) Regulation (2000) Part 8 - Vessel and machinery are maintained in accordance with Flag State certification requirements. - All engines, compressors and machinery on the WHP and FPSO are maintained via a maintenance management system
Atmospheric Emissions	- Flag State Certificate and/or International Air Pollution Prevention (IAPP) certifies measures are in place to manage air emissions - All engines, compressors and machinery on the WHP and FPSO are maintained via a maintenance management system
Operational discharges	- Emissions and discharges of liquid waste to sea are in accordance with legislative requirements, the impact and risk assessment process indicates that discharges will not result in significant effects to marine fauna - Waste Management Plan
Physical Presences	- A pre-existing 500 m restricted zone is in place around the infrastructure and will remain in place for the duration of operations under the proposed EPs - Marine notifications will be made to relevant stakeholders, describing the location of the activity and a 500 m petroleum safety zone is present to prevent the risk of collisions and marked on charts - Commercial fishers are permitted to enter the wider 3Nm cautionary zone and fish, transit or anchor for the duration of operations under the proposed EP, but not the 500m exclusion zone, as long as it is safe to do so - Consultation is undertaken with all relevant persons - Plans are in place for any future decommissioning including inspection and maintenance of all infrastructure - Implementation of the Montara Bird Management Plan to ensure that birds are managed and monitored on the FPSO and WHP to prevent health and safety issues with personnel
Seabed Disturbance	- Surveys of seabed undertaken prior to integrity, maintenance or repair work - Designated anchoring area as marked on AHS charts - Seabed disturbance limited to planned activities and defined locations

In addition to the risks outlined in Table 1, the risk of produced water discharge is specific to the Montara Operations EP activities (Table 2).

TABLE 2: POTENTIAL RISKS AND MITIGATION/MANAGEMENT MEASURES ASSOCIATED ONLY WITH MONTARA OPERATIONS EP

Potential Risks	Mitigation and /or Management Measures
Produced water discharges	- Beyond temporary perturbation to water quality, no environmental impacts due to the discharge of produced water are expected - Produced water discharges are monitored and recorded with adaptive management processes in place if significant changes are identified

Additional risks that are associated with events that are not expected to occur during normal activities are outlined in Table 3.

TABLE 3: POTENTIAL RISKS AND MITIGATION/MANAGEMENT MEASURES ASSOCIATED ONLY WITH UNPLANNED ACTIVITIES

Potential Risks	Mitigation and /or Management Measures
Introduced Marine Species (IMS)	- IMS Management will meet legal requirements and reduce risks to As Low As Reasonably Practicable (ALARP) and Acceptable levels. - Vessels will be required to adhere to ballast water management, quarantine and biofouling requirements if required
Interaction with fauna	- Vessels operating within the restricted zone must not exceed a speed of five (5) knots - Induction includes information on speed limits and requirements for interacting with marine fauna
Unplanned discharges	- No release of non-hazardous / hazardous solid wastes or non-hydrocarbon hazardous liquids to the marine environment - Limitations of flaring volumes - Integrity and maintenance requirements maintained - Dropped object prevention - Waste management plan implemented, and details included in induction materials - Competent and trained personnel are inducted and have appropriate qualifications - Spill kits available and incident response plans in place
Vessel collision	- Marine notifications will be made to relevant stakeholders, describing the location of the activity and a 500 m petroleum safety zone is present to prevent the risk of collisions - Vessels operating within the restricted zone must not exceed a speed of five (5) knots - Navigation lights installed and checked
Hydrocarbon release (not applicable during wellhead removal activity)	- NOPSEMA accepted Oil Pollution Emergency Plan (OPEP) and well operations management plan (WOMP) - Procedures in place on WHP and FPSO to prevent hydrocarbon release to sea during operations - Maintenance and integrity checks and inspections - Appropriate vessel spill response plans, equipment and materials will be in place and maintained - Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment

Providing Feedback

If you would like to comment on the proposed activities outlined in this fact sheet or would like additional information, please contact Jadestone before 31 January 2023.

Email: consult@jadestone-energy.com **Phone: 08 9486 6600**

The Atrium, Level 2, 168 St Georges Terrace, Perth WA 6000

Jadestone Energy

Invitation for Consultation
Montara Field Operations and Future Activities

Invitation for Consultation

Jadestone Energy (Jadestone) is the operator of the existing Montara Field in the Timor Sea. Jadestone has prepared an Operations Environment Plan (EP) for assessment by the Commonwealth regulatory authority, the National Offshore Petroleum Regulatory Authority (NOPSEMA).

The Operations EP is for ongoing production and maintenance at the Montara facility.

Jadestone is also seeking comment on an activity that will be subject to a future EP, for the removal of unused infrastructure (tentatively planned for 2024-2029).

The Invitation for Consultation also provides information about the revised EMBA for the Montara field.

Jadestone invites comments for its consideration during the period of preparation of each EP.

Who is Jadestone Energy?

Jadestone is a leading upstream oil and gas company in the Asia Pacific region, with a focus on production and near-term development assets. The company is listed on the Alternative Investment Market of the London Stock Exchange (JSE). Contact details for Jadestone's Australian Operations are provided at the end of this document.

What is an Environment Plan?

The purpose of an Environment Plan (EP) is to identify the proposed petroleum activity's impacts on and risks to the environment. The EP also sets measures to reduce identified environmental impacts, potential risks due to the activity, and describe how and to what level of performance those measures will be implemented throughout the activity, including in the unlikely event of a significant unplanned event, e.g., hydrocarbon spill.

The NOPSEMA accepted Montara Operations EP must be revised and resubmitted every five years, or sooner if required.

Jadestone has revised and re-submitted the accepted Montara Operations EP in accordance with legislation (administrated by NOSPEMA). Jadestone continually updates the Montara Operations EP including consultation outcomes. The Montara Operations EP will not be accepted by NOPSEMA until they are satisfied that it meets the requirements of the legislation.

Therefore, the Montara Operations revision EP is currently under NOPSEMA assessment, covering activities associated with production; oil loading to a third-party tanker; the inspection, maintenance and repair of the wellhead platform; subsea export pipeline; wells; associated subsea infrastructure; and non-routine / unplanned activities and events should they arise.

Activities that will be subject to the future EP

Wellhead Removals – for the removal of three wellheads that are no longer in use. Jadestone plans to remove these wellheads within the 2024-2029 period and will prepare an EP describing the removal activity.

Location

The Montara development is in the Timor Sea, approximately 690 km west of Darwin (Figure 1). The permit areas AC/L7 and AC/L8 are in Commonwealth waters. The water depth at the Montara field is ~72–90 m. Location details are on Figure 1, including key features in the area. The distance to Australian Marine Parks (AMPs) is indicated in Table 1.

Table 1: Distance to AMPs

Regional Feature	Minimum distance from field
Ashmore AMP	131 km
Cartier AMP	90 km
Kimberley AMP	108 km

The Montara facility has been producing since 2010, with the required restricted zone in place. A Petroleum Safety Zone (PSZ) extends 500 m around the following Montara infrastructure:

- FPSO submerged turret production
- Wellhead platform (WHP)
- Swallow 1 subsea wellhead and Swift manifold (combined)
- Swift North 1 subsea wellhead
- Swift 2 subsea wellhead
- Skua 10 and Skua 11 subsea wellhead (combined)

Pursuant to Section 616 of the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act) all vessels, other than those under the control of Jadestone or authorised by Jadestone, are prohibited from entering or being present in the PSZ.

A cautionary zone of 2.5 NM radius is maintained around the WHP, FPSO and subsea structure including the pipelines. The information has been noted on Admiralty Charts covering the region (#AUS 314), and although vessels are requested to avoid navigating, anchoring and fishing within the cautionary zone, it is not an exclusion zone.

All current activities are contained within the PSZ, although vessel activities and offtakes may occur outside of the defined PSZ, but within the cautionary zone.

All planned activities such as wellhead removal, will be contained within the defined Operational Area in permit areas AC/L7 and AC/L8.

In the unlikely event of a significant unplanned event, e.g., hydrocarbon spill, the values in the EMBA (habitats and locations), having been identified in the EP, will be prioritised for prompt protection activities.

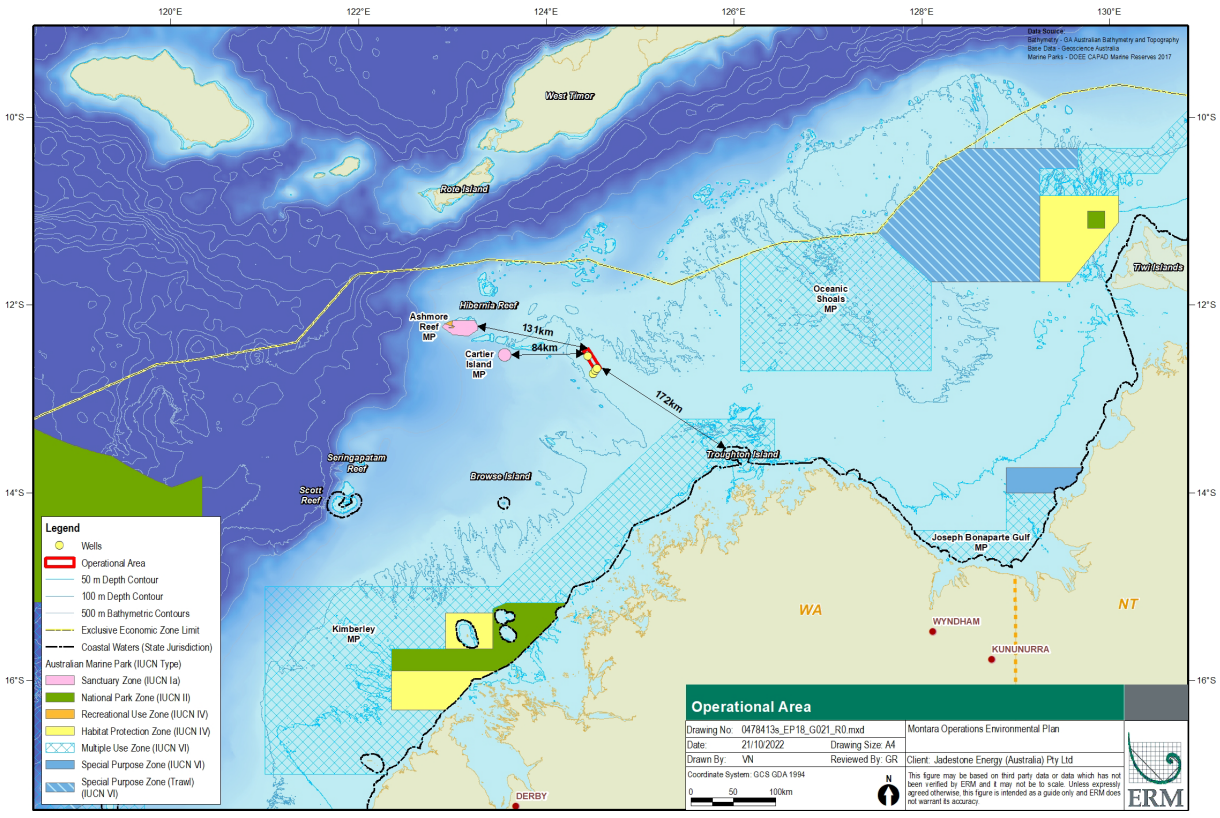


FIGURE 1: MONTARA LOCATION MAP

Why are you being engaged?

Jadestone has identified that you or your organisation is a 'relevant person' under the Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2009 because of your functions, activities, or interests within the Environment that Might Be Affected (EMBA) for Montara. This is defined as the area that might be affected by planned events that will occur within a defined operational area or unplanned events that could extend beyond the defined operational area e.g., in the low likelihood of an unplanned hydrocarbon spill.

The NOPSEMA website includes a video about EMBAs and how they are determined.

www.nopsema.gov.au/news-and-resources/presentations-and-videos#Oil%20Spill%20Modelling

Figure 2 shows two Montara EMBAs, one larger that has been provided previously to stakeholders and in EPs based on a loss of well control during drilling. This scenario is not considered credible during operations. The worst-case scenario considered is a loss of hydrocarbons from a cargo tank due to 3rd party collision, and Jadestone commissioned new modelling to reflect this scenario. Both EMBAs have been presented to inform relevant persons of why they may have been consulted with previously.

What do we do with information provided?

In line with Regulation 9(8) of the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009, correspondence between Jadestone and you or your organisation must be provided to NOPSEMA. All comments are compiled into a report and are published in the publicly available EP, with names and contact details redacted.

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How do I find out more?

Further information on Jadestone's Montara facility is available on our website: https://www.jadestone-energy.com/assets/australia-portfolio/montara/

The EP has been published, minus any confidential material, on the NOPSEMA's website.

https://info.nopsema.gov.au/offshore_projects/20/show_public

What do Jadestone want to know?

Jadestone is committed to ongoing dialogue with all its stakeholders and welcomes your or your organisation's comments at any time.

Please let us know if you:

- have any comments on the activity and the potential impacts on you or your organisation's interests.
- require any further information.
- have any preference on how we contact you in the future.
- need anything further from us to assist you with comments you might wish to make.

Could you also help us make an informed decision about your requirement for ongoing consultation by letting us know if you do not wish to receive further updates for activities associated with the Montara Field.

What Happens next?

Jadestone will make reasonable efforts to consult with all parties that have been identified as potentially relevant persons.

Please be aware that it is a requirement of NOPSEMA that Jadestone documents no responses to this Invitation for Consultation, and consequently, if no response is received, Jadestone may make follow-up contact with you or your organisation several times to seek a response.

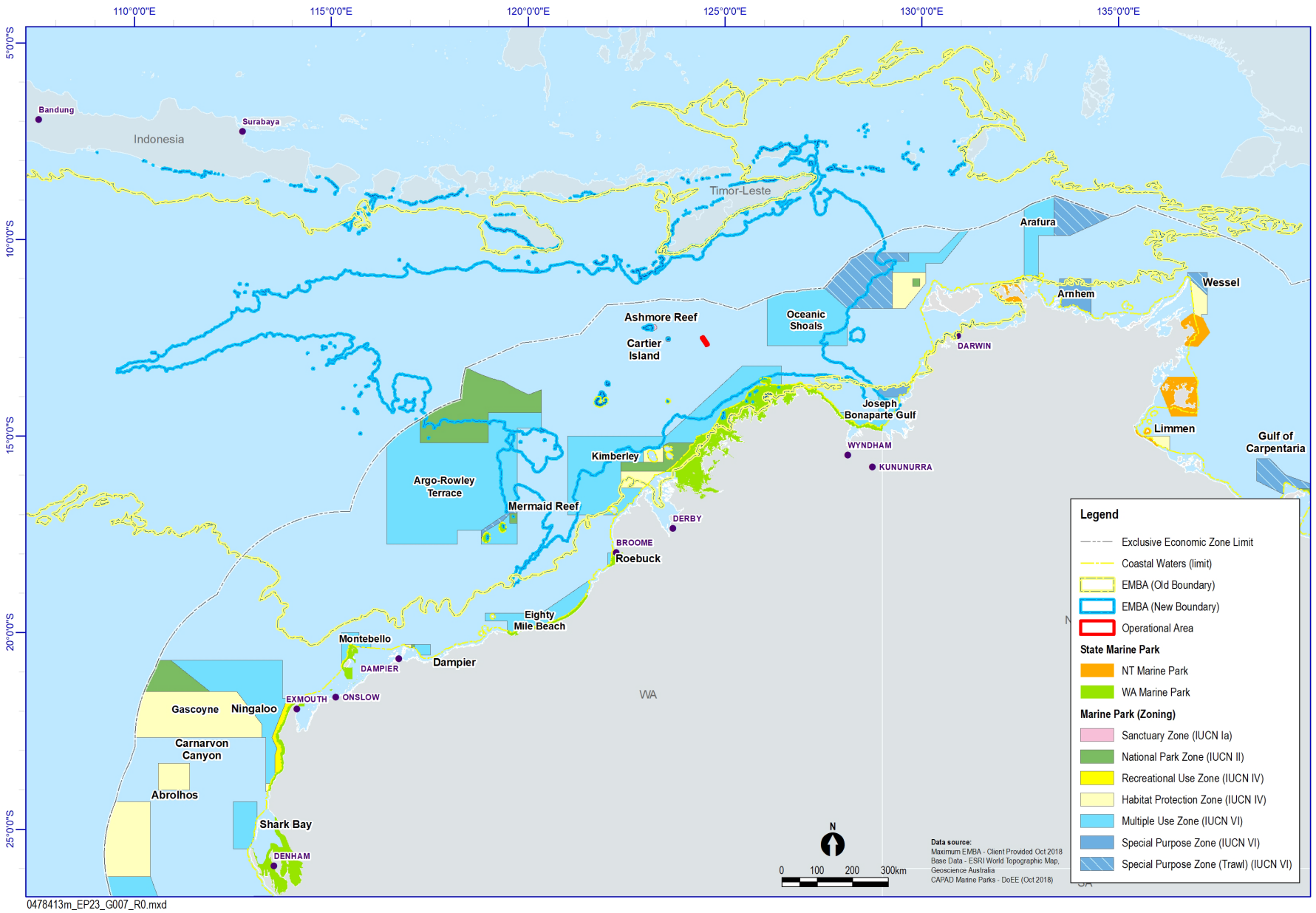

FIGURE 2: MONTARA ENVIRONMENT THAT MAY BE AFFECTED (EMBA) IN THE EVENT OF A LOSS OF HYDROCARBONS INCLUDING A LOSS OF HYDROCARBONS FROM A VESSEL CARGO TANK (NEW BOUNDARY) THAT IS REPRESENTATIVE OF THE CREDIBLE SCENARIO DURING OPERATIONS AND A LOSS OF WELL CONTROL (OLD BOUNDARY) THAT IS NOT CREDIBLE DURING OPERATIONS

Potential Risks and Management

A summary of potential risks to relevant persons who may have functions, activities or interests within the EMBA, that are common to all planned activities, is provided below. For each risk the associated management measures are summarised in Table 1.

TABLE 1: POTENTIAL RISKS AND MITIGATION/MANAGEMENT MEASURES COMMON TO OPERATIONS AND WELLHEAD REMOVAL

Potential Risks	Mitigation and /or Management Measures
Light Emissions	- Potential impacts from lighting are assessed as occurring within 20 km of a vessel or facility based on the National Light Pollution Guidelines for Wildlife (Commonwealth of Australia 2019) - Facility and vessel navigation lights are compliant with the Navigation Act 2012.
Noise Emissions	- Vessels and helicopters comply with relevant parts of Environment Protection and Biodiversity Conservation (EPBC) Regulation (2000) Part 8 - Vessels and machinery are maintained in accordance with Flag State certification requirements. - All engines, compressors and machinery on the WHP and FPSO are maintained via a maintenance management system
Atmospheric Emissions	- Flag State Certificate and/or IAPP certifies measures are in place to manage air emissions. - All engines, compressors and machinery on the WHP and FPSO are maintained via a maintenance management system
Liquid (operational) discharges	- Emissions and discharges of liquid waste to sea are in accordance with legislative requirements, the impact and risk assessment process indicates that discharges will not result in significant effects to marine fauna. - Waste Management Plan
Interaction with other users	- A pre-existing 500 m restricted zone is in place around the infrastructure and will remain in place for the duration of operations under the proposed EPs. No fishing vessels are to enter this zone. - Marine notifications will be made to relevant stakeholders, describing the location of the activity and a 500 m petroleum safety zone is present to prevent the risk of collisions and marked on charts. - Commercial fishers are permitted to enter the wider 2.5 Nm cautionary zone and fish, transit or anchor for the duration of operations under the proposed EP, but not the 500m exclusion zone, as long as it is safe to do so. - Consultation is undertaken with all relevant persons. - Plans are in place for any future decommissioning including inspection and maintenance of all infrastructure. - Implementation of the Montara Bird Management Plan to ensure that birds are managed and monitored on the FPSO and WHP to prevent health and safety issues with personnel and prevent harm to birds
Physical Footprint	- Plans are in place for any future decommissioning including inspection and maintenance of all infrastructure. - Surveys of seabed undertaken prior to integrity, maintenance or repair work - Seabed disturbance limited to planned activities and defined locations

In addition to the risks outlined in Table 1, the risk of produced water discharge is specific to the Montara Operations EP activities (Table 2).

TABLE 2: POTENTIAL RISKS AND MITIGATION/MANAGEMENT MEASURES ASSOCIATED ONLY WITH MONTARA OPERATIONS EP

Potential Risks	Mitigation and /or Management Measures
Produced water discharges	- Beyond temporary perturbation to water quality, no environmental impacts due to the discharge of produced water are expected. - Produced water discharges are monitored and recorded with adaptive management processes in place if significant changes are identified

Additional risks that are associated with events that are not expected to occur during normal activities are outlined in Table 4.

TABLE 3: POTENTIAL RISKS AND MITIGATION/MANAGEMENT MEASURES ASSOCIATED ONLY WITH UNPLANNED EVENTS

Potential Risks	Mitigation and /or Management Measures
Introduced Marine Species (IMS)	- IMS Management will meet legal requirements and reduce risks to As Low as Reasonably Practicable (ALARP) and Acceptable levels. - Vessels will be required to adhere to ballast water management, quarantine and biofouling requirements if required
Interaction with fauna	- Vessels operating within the restricted zone must not exceed a speed of five (5) knots. - Induction includes information on speed limits and requirements for interacting with marine fauna
Unplanned discharges	- No release of non-hazardous / hazardous solid wastes or non-hydrocarbon hazardous liquids to the marine environment - Limitations of flaring volumes - Integrity and maintenance requirements maintained. - Dropped object prevention. - Waste management plan implemented, and details included in induction materials. - Competent and trained personnel are inducted and have appropriate qualifications. - Spill kits available and incident response plans in place
Vessel/MODU collision	- Marine notifications will be made to relevant stakeholders, describing the location of the activity and a 500 m petroleum safety zone is present to prevent the risk of collisions. - Vessels operating within the restricted zone must not exceed a speed of five (5) knots. - Navigation lights installed and checked
Hydrocarbon release	- NOPSEMA accepted Oil Pollution Emergency Plan (OPEP) and well operations management plan (WOMP) - Procedures in place on WHP and FPSO to prevent hydrocarbon release to sea during operations. - Maintenance and integrity checks and inspections - Appropriate vessel/facility spill response plans, equipment and materials will be in place and maintained. - Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment

Providing Feedback

If you would like to comment on the proposed activities outlined in this fact sheet or would like additional information, please contact Jadestone.

Email: consult@jadestone-energy.com **Phone: 08 9486 6600**

The Atrium, Level 2, 168 St Georges Terrace, Perth WA 6000

NOTICES

www.theaustralian.com.au

POSSIBLE BENEFICIARIES

Would any children of **ALFRED LOWE, WILIAM LOWE** and **FREDERICK GEORGE LOWE** or their father **ALFRED LOWE** or any person knowing their whereabouts or claiming to be related to them or **GEORGE ALFRED LOWE** also known as **ALFRED GEORGE LOWE** deceased please contact The Public Trustee of Queensland, G.P.O. Box 2251 Brisbane 4001, Queensland, Australia (or email maria.murphy@pt.qld.gov.au) quoting reference 20126241 and provide full details of their claim.

Notice is hereby given on or after the 25th May 2023 The Public Trustee intends, pursuant to Section 132 of the *Public Trustee Act 1978* to proceed to distribute the assets in the estate of **GEORGE ALFRED LOWE** deceased late of 2082 Wynnum Road, Wynnum West in the State of Queensland having regard only to the persons whose claims have been established to his satisfaction or who then appear to him to have the best claim in law.

SAMAY ZHOUAND
THE PUBLIC TRUSTEE OF QUEENSLAND AND CEO

M8337

POSSIBLE BENEFICIARIES

Would **MARION JOAN HARRINGTON** also known as **MARION JOAN SADER** or **EDWARD FRANCIS HARRINGTON** also known as **EDWARD HARRINGTON** or any children of **MARION JOAN HARRINGTON** also known as **MARION JOAN SADER** or **EDWARD FRANCIS HARRINGTON** also known as **EDWARD HARRINGTON** or any person knowing their whereabouts or claiming to be related to them or **PAMELA FLORENCE SHEAD** deceased please contact The Public Trustee of Queensland, G.P.O. Box 2251 Brisbane 4001, Queensland, Australia (or email maria.murphy@pt.qld.gov.au quoting reference 20567893 and provide full details of their claim.

Notice is hereby given on or after the 1st June 2023 The Public Trustee intends, pursuant to Section 132 of the *Public Trustee Act 1978* to proceed to distribute the assets in the estate of **PAMELA FLORENCE SHEAD** deceased late of 1/26 Alice Street, Mount Isa in the State of Queensland having regard only to the persons whose claims have been established to his satisfaction or who then appear to him to have the best claim in law.

SAMAY ZHOUAND
THE PUBLIC TRUSTEE OF QUEENSLAND AND CEO

M8335

News Limited would like to congratulate the winners of the "Win a Chance to WIN $1 Million!" Promotion:

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CSL gene therapy saving lives, for just $3.5m a dose

JARED LYNCH

As CSL's former chief executive Paul Perreault was packing up his desk in Melbourne last month there was one milestone achieved during his 10 years at the helm that could not escape his attention.

"Who thought CSL would be the first one in the world with gene therapy for haemophilia?" Mr Perreault told this masthead.

"I mean, I can tell you, a decade ago, nobody thought we would."

CSL was originally solely in the plasma business. It was established in World War I as the Commonwealth Serum Laboratories, before branching out into vaccines, floating on the ASX in 1994 and becoming not only one of the biggest companies on the Australian sharemarket but a global pharmaceutical juggernaut.

Last November it took another step in cementing its position in the cutting edge of drug development – an area it spends about $1bn a year on – when the US Food and Drug Administration approved CSL's new treatment Hemgenix.

The drug injects a functioning copy of the blood clotting gene into a patient with haemophilia B, providing a single dose fix to the debilitating illness that plagued the European royalty in the 19th and early 20th centuries and affects about one in 40,000 males today.

Crucially, the one shot replaces a lifetime of fortnightly infusions to control the blood disorder, effectively curing a patient.

European regulators were quick to follow the US FDA in approving Hemgenix. But seemingly miraculous treatment comes at a cost – about $US3.5m ($5.23m) a dose – becoming the world's most expensive drug.

It is one of the handful of approved gene therapies that have sparked a wave of drugs priced in the millions of dollars per patient. The high cost of the drugs – which promise to cure or treat diseases in a single course – has raised eyebrows. After all, big pharma was previously reluctant to charge any more than six figures for a drug.

AARON FRANCIS

Former CSL chief executive Paul Perreault is proud of CSL's accomplishments

But patients say the massive expense is worth it, particularly when amortised over their lifetime. It is this rationale health funders need to face as they potentially baulk at paying the handsome fee for these groundbreaking treatments — which have been approved to not only cure blood disorders such as Haemophilia B, but also muscle wasting conditions and rare childhood neurological diseases.

Steven Yatomi-Clarke, chief executive of ASX-listed biotech Prescient Therapeutics – which has developed a gene therapy to treat a rare and aggressive form of lymphoma – says while the treatments are expensive, they flip the traditional model of big pharma.

To put it in context, current haemophilia treatments cost $US250,000 to $US500,000 per patient, per year, for the rest of their lives.

"It's really flying in the face of the big pharma business model in many ways. They want someone to stay on a drug for a very long time ... that's the big pharma model," Mr Yatomi-Smith says.

"But gene and cell therapy throws that playbook out the window. It's a single infusion.

"In the case of rare childhood diseases, if my child was normally not going to live past the age of eight years old, and you can cure my son, my son or daughter, then they're going to live a long and productive life. They're going to be paying taxes, consuming goods and services. All of a sudden, $2m or $3m looks to be a bargain."

> 'All of a sudden, $2m or $3m looks to be a bargain'
>
> **STEVEN YATOMI-CLARKE**
> PRESCIENT THERAPEUTICS CEO

But government health budgets are under pressure as people live longer with chronic conditions. According to the latest spending data, Australian federal and state governments spent $142.6bn on healthcare in the 2020 financial year, a 5 per cent increase on the previous year. This accounted for 70 per cent of overall health spending, which totalled $202.5bn.

Around the world, health spending accounts for about 10 per cent of global GDP, and the World Health Organisation forecasts that proportion to increase to 13 per cent in coming years.

For CSL, the move into gene therapy was not as dramatic as it sounds. For years the company produced a plasma-derived product that replaced the missing blood clotting factor IX in patients with haemophilia B.

CSL's head of research and development and chief medical officer, Bill Mezzanotte, said that product "helped patients a lot", but it required an intravenous injection about three times a week.

Then last decade it launched Idelvion: a recombinant factor IX product that lengthened the treatment time for patients to once every two weeks. It continues to remain popular, with sales leaping 22 per cent to $US363m in the six months to December 31.

"It's still an IV infusion on a regular basis and we thought we could do better. And because we had deep scientific and commercial expertise, we knew what we were looking for," Dr Mezzanotte said.

The solution was found when it licensed Dutch biotech uniQure's gene therapy technology, which underpins Hemgenix. CSL funded the later stage clinical trials and has the global rights to commercialise the treatment.

Wilsons analyst Shane Storey said the partnership allowed CSL to expand and fortify its "leadership position in haemophilia B".

"The potential to replace more than 10 years of regular prophylactic management for these patients with a single shot of Hemgenix is a powerful driver of sector dominance, which brings with it margin expansion and sales leverage opportunities within the CSL Behring recombinant haemophilia," Dr Wilson said in a note to investors when the FDA granted its approval.

For Dr Mezzanotte, it's about balance. He hopes the company's foray into gene therapy will not cannibalise its existing businesses.

"We won't walk away from plasma therapy, we won't walk away from recombinants. We believe they can all work together for the right patients because even Hemgenix won't be right for every patient," he said, adding it had nothing to do with the gene therapy's price.

"Not every patient would be a good candidate. Either their bleeding is not severe enough, and look, first of all, we still have to do studies in children. And people may be happy with Ildelvion.

"So, we'll still have Ildelvion available for many of those patients where (Hemgenix) is not right for them."

In regard to children, CSL's vice president of research Michael Wilson says the underlying technology has limitations.

TENDERS

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Invitation for Consultation: Montara Project and Stag Field

Montara Project

Jadestone Energy (Jadestone) is the operator of the producing Montara Project in Australian waters, approximately 690 km west of Darwin in the Timor Sea. The Montara Project operations involve oil production using wellhead platform (WHP) wells for the Montara field, and subsea wells for the Swift, Skua and Swallow fields. The oil from the subsea wells is piped via flowlines to the unmanned WHP, and then to the Montara Venture floating production storage and offloading (FPSO) facility, which acts as a hub for the project in production since 2013.

Stag Field

Jadestone is also the operator of the producing Stag field in Australian waters and located approximately 60 km northwest of Dampier in the Indian Ocean. The Stag field was developed using a fixed leg, 12 well-slot, manned central processing facility platform in production since 1998. This is connected, by an eight-inch underwater export pipeline, to a pipeline end manifold where shuttle tankers directly load crude oil via a catenary anchor leg mooring buoy.

Environment Plans (EP)

Jadestone is updating the currently approved EPs, the Montara EP for the Montara Project, and the Stag EP for the Stag field. Each EP will govern production and maintenance activities for the next five years. The revised Montara EP and Stag EP will be assessed by the National Offshore Petroleum Safety and Environmental Management Authority for acceptance.

In addition, Jadestone is preparing an EP for the removal of three subsea wellheads at Montara that are no longer in use (the Wellhead Removal EP). This activity is tentatively planned to occur in 2023/2024.

Jadestone is also preparing an EP for the drilling activities at the Stag platform (the Stag Drilling EP). This will include new production wells from recovered well-slots and may include plugging and abandonment of other wells potentially involving wellhead removal.

The purpose of the EPs is to identify the risks and impact of each proposed petroleum activity on the environment. The EPs will also set out measures to reduce identified environmental impacts and describe how and to what level of performance those measures will be implemented throughout each activity.

Jadestone is inviting comments for consideration during the preparation of each of the EPs discussed above.

Further information on Jadestone's Montara Project is available on the company's website at:

www.jadestone-energy.com/assets/australia-portfolio/montara.

Further information on Jadestone's Stag field is available on the company's website at:

www.jadestone-energy.com/assets/australia-portfolio/stag.

Please let us know if you:

- require any further information; and/or
- have any comments on the activity and the potential impacts on your interests.

Jadestone is committed to ongoing dialogue with all its stakeholders and welcomes their comments at any time.

For further information or to make comment please email: consult@jadestone-energy.com.

Jadestone Energy

ACARP

The Australian Coal Industry's Research Program

ACARP assists the Australian coal industry in developing and adopting technology and mining practice that leads the world. ACARP is seeking research in the following categories driving minimised emissions and environmental impact of industry:

- Underground Mining
- Open Cut Mining
- Environment and Community
- Coal Preparation
- Technical Market Support
- Mine Site Greenhouse Gas Mitigation

This program is entirely funded, owned and managed by the black coal producers.

Additional information including specific research priorities, the proposal format and proposal summary sheet can be obtained from **www.acarp.com.au** or by phoning 07 3225 3600.

The closing date for proposals is Wednesday, 26 April 2023.

DEATH & FUNERAL NOTICES

www.theaustralian.com.au

JOHNSTON AC, Robert Alan (Bob)

Dearly loved and loving Husband of Judith. Dearly loved Husband of Verna (dec). Devoted Father of Ian (dec), Bruce (dec), Helen and Margaret. Father-in-law of Linda, Jenny, Victor and Graeme. Proud Grandfather of Rebeccah, Cameron, Andrew, Stephanie, Melanie, Philippa, Alexander, Alana, Alison and Rachel. Fond Great-Grandfather of their 17 Children.

Always in our Hearts

A Service for Bob will be held on Thursday, 30th March, 2023 commencing 11am, in St Stephen's Uniting Church, Macquarie Street, Sydney. In lieu of flowers, please consider a donation in Bob's memory to The Brain and Mind Centre - https://www.sydney.edu.au/engage/give/how-to-donate.html

For details of how to live stream this service please contact enquiries@waltercarter.com.au

WALTER CARTER
CRAFTING FAREWELLS
02 9389 3499

26-year-old Edward Craven paid more than $80m for 29-31 St Georges Rd, Toorak

Billionaire central: The richest suburbs

Continued from Page 17

Toorak. Many of Melbourne's blue bloods gather around four main streets: Albany Rd, Irving Rd, Clendon Rd and St Georges Rd.

Vaucluse (12)

Billionaire Harry Triguboff is one big name who lives in Sydney's prime waterfront location. He and his wife have one of the largest privately held landholdings on Vaucluse's waterfront, which includes two dwellings.

Arthur Tzaneros, who owns ACFS Port Logistics with father Terry, paid $38m in 2021 for a mansion on Olola Ave, complete with a tennis court and swimming pool.

But the biggest splash of late was fashion mogul Nicky Zimmermann paying $60m last December for a three-storey residence on about 1700sq m of waterfront.

There are formal and informal living and dining rooms, a rumpus and billiard room, darkroom, home office, cellar, six bedrooms, nine bathrooms and garaging for four cars. There's also a boat shed, jetty and sauna.

Meanwhile, Jerry Schwartz is renovating his $67m Phoenix Acres waterfront estate, which could include an ice rink, lap pool and cinema.

But they are all overshadowed by Menulog co-founder Leon Kamenev, who is putting the finishing touches to his lavish mansion that neighbours describe as "the best house in Sydney".

Kamenev paid $80m to amalgamate several sites over 4200sq m of prime waterfront.

Point Piper (12)

Home to Australia's most expensive residential sale, Point Piper is where Australia's technology titans spend their money.

Atlassian co-founder Scott Farquhar has taken possession of his $130m Uig Lodge without the need for a mortgage.

The cash transaction came about five years after Farquhar shelled out $71m for an estate in the same suburb, though his refurbishment plans for that house have been stymied.

Farquhar's $130m buy eclipsed the previous record of $100m by his Atlassian co-founder Mike Cannon-Brookes, who bought the 1.12ha Fairwater in 2018.

Mosman Park (6)

Billionaire mining magnate Chris Ellison is the biggest name in Perth's most wealthy enclave. Ellison set a record in 2009 when he paid $57.5m for Angela Bennett's mansion on Bennett St.

Five years later he snapped up two neighbouring properties for about $12m. Nearby Saunders St is also considered an elite area.

Hunters Hill (6)

Billionaire Lang Walker's Millthorpe estate has been in his family's hands since 1986, when he paid $4.25m for the 7280sq m site on Sydney's lower north shore.

The Gothic Revival residence was built in 1841 by the fourth Surveyor-General Sir Thomas Mitchell. Len Ainsworth is another resident, as is Dick Honan.

TRUSTEES ACT 1962
DECEASED ESTATES
Notice to Creditors and Claimants

Bruce Haulgrave Cullen, late of Castledare Retirement Village, 108 Fern Road, Wilson, Western Australia, deceased.
Creditors and other persons having claims (to which Section 63 of the Trustees Act 1962 relates) in respect of the estate of the deceased, who died on the 14th day of May 2021 are required by the Executors Lawrence James Richards and Gary Francis Glossop of 6 Kent Street Bicton Western Australia 6157, to send particulars of their claims within one month of the date of publication of this notice to them, after which date they may convey or distribute the assets, having regard only to claims of which they then have notice.

Public Notices

GENERAL

SEEKING WHEREABOUTS OF Neil Lambrecht and **Lee Hutchison**, who worked at Nookawarra Station, via Cue WA between 1977 and 1981. Please contact Rodney **0428 881 115** for reunion.

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2000M SUITS CASCADIAN

JAY ROONEY

Trainer James Cummings is confident Cascadian can go one better when he backs up in Saturday's $3 million Group 1 Australian Cup (2000m) at Flemington.

The dual Group 1 winner stormed home to run a close second to Mr Brightside in the $5m All-Star Mile (1600m) at Moonee Valley last Saturday.

Cummings expects the evergeen eight-year-old to relish stepping up in distance at Flemington.

"He pulled up beautifully from the All-Star Mile," Cummings said.

"The Australian Cup looks a really intriguing race for him, third-up from a spell. For his first run at Moonee Valley against a horse who loves the Valley in Mr Brightside, I thought he acquitted himself exceptionally well.

"If he got into the clear a little earlier or had a better gate, what might have been?

"He should be well suited up to 2000m in a solidly run Australian Cup."

Cascadian has been backed from $4.60 into $3 favouritism.

He has drawn barrier 11 with Ben Melham booked to ride. Noncomforist, an impressive first-up winner of the Blamey Stakes (1600m) at Flemington, is the second favourite at $6.50. Cummings and Melham will also combine with consistent sprinter Kallos in the Listed ATA/Bob Hoysted Handicap (1000m) at Flemington.

Kallos is a $6 chance after winning first-up down the Flemington straight on March 4.

"Kallos will need to be a little bit better again, but he puts himself right into the picture from the draw with plenty of natural pace," Cummings said.

"He enjoys the straight at Flemington, he ran beautifully there at his first run as a gelding and I can see him running another good race here.

"He gets a good draw and that sets up pretty well."

Results

MT BARKER

RACE 1: WORK HOME FRONT 10, MOVING ON 1, FIRST CONTACT 9. TAB Nos: 10 1 9. SO: $11.20; pl: $2.60; $4.60; $2.00. Quinella: $58.50. Exacta: $171.40. Trifecta: (10-1-9) $1,089.10. First 4: (10-1-9-6) $5,145.40; Scratched 3 5 13.
RACE 2: MINE HOST 8, ARAMAT 9, WIN TO RETIRE 13. TAB Nos: 8 9 13. SO: $3.10; pl: $1.90; $3.00; $2.90. Quinella: $10.30. Exacta: $15.90. Trifecta: (8-9-13) $113.90. First 4: (8-9-13-14) $2,408.70. Double: (10-8) $40.00; Scratched 12.
RACE 3: DIVINE MERCY 5, DIGITAL MISS 2, ROSE OF DENMARK 8. TAB Nos: 5 2 8. SO: $5.00; pl: $1.40; $1.04; $2.70. Quinella: $4.10. Exacta: $11.60. Trifecta: (5-2-8) $52.70. First 4: (5-2-8-3) $226.30. Double: (8-5) $20.10; Scratched 7.
RACE 4: OXBRIDGE 5, GOD'S MOMENT 2, WINSALOT 6. TAB Nos: 5 2 6. SO: $5.00; pl: $1.90; $1.20; $2.30. Quinella: $8.60. Exacta: $26.80. Trifecta: (5-2-6) $127.80. First 4: (5-2-6-4) $865.80. Double: (5-5) $33.80. Quaddie: (10-8-5-5) $1,553.90; Scratched 9.
RACE 5: BONNIE LAD 4, MILLIVOY 1, SPEEDY PYE 9. TAB Nos: 4 1 9. SO: $4.50; pl: $1.60; $1.04; $2.10. Quinella: $4.50. Exacta: $8.50. Trifecta: (4-1-9) $54.10. First 4: (4-1-9-3) $430.20. Double: (5-4) $15.80; No scratchings.
RACE 6: HIGHFRIAR 10, SNEAKY FOX 6, TREVELLO 7. TAB Nos: 10 6 7. SO: $27.90; pl: $6.50; $1.20; $2.30. Quinella: $38.00. Exacta: $130.70. Trifecta: (10-6-7) $422.40. First 4: (10-6-7-11) $3,152.40. Double: (4-10) $143.20; No scratchings.
RACE 7: SCREAM IN BLUE 7, BENTLEY BEAU 3, BLAISZEN CAZAH 5. TAB Nos: 7 3 5. SO: $18.10; pl: $4.40; $1.50; $1.60. Quinella: $26.30. Exacta: $71.10. Trifecta: (7-3-5) $334.50. First 4: (7-3-5-4) $1,730.10. Double: (10-7) $399.50. Quaddie: (5-4-10-7) $19,445.50; Scratched 11 12 13 14.

GEELONG

RACE 1: CZARACER 3, ANOTHER NEPHEW 1. TAB Nos: 3 1. SO: $3.60; pl: $1.60; $2.10; NTD. Quinella: (1-3) $5.70. Exacta: (3-1) $11.10. Trifecta: (3-1-5) $38.40. First 4: (3-1-5-2) $57.70; No scratchings.
RACE 2: RUSSIAN FRONT 7, NEW HAMPSHIRE 4, HURRICANE THUNDER 2. TAB Nos: 7 4 2. SO: $21.10; pl: $5.20; $5.00; $1.30. Quinella: $158.00. Exacta: $229.90. Trifecta: (7-4-2) $1,220.10. First 4: (7-4-2-11) $4,367.00. Double: (3-7) $85.10; Scratched 3 10 14 15.
RACE 3: FIFTYSEVENYEARS 2, BACKLIT BEAUTY 14, TENACE 5. TAB Nos: 2 14 5. SO: $3.60; pl: $1.50; $10.90; $2.70. Quinella: $127.40. Exacta: $138.60. Trifecta: (2-14-5) $914.60. First 4: (2-14-5-15) $12,661.20. Double: (7-2) $137.70; Scratched 1 4 6 10.
RACE 4: MOOTESSA 9, BLUE CHIP GIRL 5, COUNT NICHOLAS 3. TAB Nos: 9 5 3. SO: $4.30; pl: $1.70; $2.40; $1.70. Quinella: $18.90. Exacta: $36.70. Trifecta: (9-5-3) $132.20. First 4: (9-5-3-7) $960.00. Double: (2-9) $18.20. Quaddie: (3-7-2-9) $2,178.20; Scratched 1.
RACE 5: CRYSTALAA 4, VAGRANT 9, NASDANA 14. TAB Nos: 4 9 14. SO: $4.10; pl: $1.80; $1.20; $4.60. Quinella: $6.30. Exacta: $12.90. Trifecta: (4-9-14) $121.10. First 4: (4-9-14-12) $1,191.20. Double: (9-4) $26.20; Scratched 2 5 8 11 13 15.
RACE 6: SHOW ME CHAMPAGNE 2, MISS LANGTRY 1. TAB Nos: 2 1. SO: $4.00; pl: $1.80; $5.30; NTD. Quinella: (1-2) $18.10. Exacta: (2-1) $47.60. Trifecta: (2-1-4) $114.50. First 4: (2-1-4-7) $667.90. Double: (4-2) $28.90; Scratched 5.
RACE 7: PERITO MORENO 9, KERMY 2. TAB Nos: 9 2. SO: $8.80; pl: $3.40; $1.60; NTD. Quinella: (2-9) $9.60. Exacta: (9-2) $27.90. Trifecta: (9-2-8) $49.30. First 4: (9-2-8-7) $158.30. Double: (2-9) $38.60; Scratched 3 5 6 10.
RACE 8: KAPALUA SUNSET 7, VIVACIOUS AWARD 10, MORRISSETTE 9. TAB Nos: 7 10 9. SO: $4.20; pl: $1.60; $2.10; $2.70. Quinella: $11.70. Exacta: $25.60. Trifecta: (7-10-9) $128.30. First 4: (7-10-9-3) $826.90. Double: (9-7) $33.70. Quaddie: (4-2-9-7) $981.50; Scratched 1 2 5 13 14.

ALBURY

RACE 1: INDIAN SOLDIER 4, NUTBUSH AMBUSH 5, TOO SHARP 7. TAB Nos: 4 5 7. SO: $4.50; pl: $1.80; $1.70; $1.50. Quinella: $8.00. Exacta: $18.60. Trifecta: (4-5-7) $38.40. First 4: (4-5-7-9) $235.40; Scratched 2 3 8.
RACE 2: PERFECT ILLUSION 4, FESTIVUS 5. TAB Nos: 4 5. SO: $9.00; pl: $3.90; $1.20; NTD. Quinella: (4-5) $8.10. Exacta: (4-5) $31.60. Trifecta: (4-5-8) $135.50. First 4: (4-5-8-6) $551.70. Double: (4-4) $48.10; Scratched 7 9 10.
RACE 3: DIESEL 7, FOX APPEAL 6, TAPA CAPALL 4. TAB Nos: 7 6 4. SO: $11.40; pl: $2.70; $3.90; $1.04. Quinella: $66.80. Exacta: $125.40. Trifecta: (7-6-4) $443.60. First 4: (7-6-4-5) $7,668.60. Double: (4-7) $98.50; Scratched 3.
RACE 4: SIZZLING CAT 7, LES GOH 11, CLIFF HOUSE 4. TAB Nos: 7 11 4. SO: $9.20; pl: $2.40; $3.20; $2.20. Quinella: $44.40. Exacta: $107.30. Trifecta: (7-11-4) $320.70. First 4: (7-11-4-2) $2,324.00. Double: (7-7) $135.50. Quaddie: (4-4-7-7) $5,708.80; Scratched 5 13 14 15.
RACE 5: VERY SHAMUS 16, WONDEREACH 3, IMASUPERSTAR 5. TAB Nos: 16 3 5. SO: $64.40; pl: $9.00; $1.04; $3.60. Quinella: $66.40. Exacta: $287.90. Trifecta: (16-3-5) $1,758.20. First 4: (16-3-5-14) $14,097.70. Double: (7-16) $420.70; Scratched 2 6 9 18.
RACE 6: SMILER MARSHALL 2, KAURAVA 11, BLUEGRASS BIJOUX 13. TAB Nos: 2 11 13. SO: $12.00; pl: $3.70; $1.90; $1.50. Quinella: $29.20. Exacta: $69.20. Trifecta: (2-11-13) $318.70. First 4: (2-11-13-5) $1,252.40. Double: (16-2) $1,201.00; Scratched 3 6 7 8 9 12 16 18.
RACE 7: BELTORO 4, MARSABIT 9, MANKAYAN 1. TAB Nos: 4 9 1. SO: $4.90; pl: $2.10; $6.80; $1.20. Quinella: $57.40. Exacta: $97.80. Trifecta: (4-9-1) $330.30. First 4: (4-9-1-14) $3,938.50. Double: (2-4) $65.80; Scratched 2 6 12.

TOWNSVILLE

RACE 1: CAMPIONE 5, MISHANI PATRIOT 3. TAB Nos: 5 3. SO: $1.20; pl: $1.04; $1.90; NTD. Quinella: (3-5) $2.80. Exacta: (5-3) $3.40. Trifecta: (5-3-2) $19.30. First 4: (5-3-2-1) $38.50; Scratched 8.
RACE 2: CASTILE 3. TAB Nos:. SO: $2.20; pl:; NTD. Quinella: (1-3) $2.10. Exacta: (3-1) $3.30. Trifecta: (3-1-5) $5.40. Double: (5-3) $3.20; Scratched 2 4 6.
RACE 3: KING'S HALO 3, EL OF A SENORITA 4, YANKEE BLOSSOM 8. TAB Nos: 3 4 8. SO: $5.70; pl: $1.60; $1.04; $1.70. Quinella: $2.70. Exacta: $9.10. Trifecta: (3-4-8) $17.70. First 4: (3-4-8-1) $45.40. Double: (3-3) $19.00; No scratchings.
RACE 4: INCLUSION 8, SHOW AND GO 6, DONENOTHING 2. TAB Nos: 8 6 2. SO: $5.00; pl: $1.30; $1.30; $1.70. Quinella: $7.30. Exacta: $22.70. Trifecta: (8-6-2) $54.60. First 4: (8-6-2-1) $567.00. Double: (3-8) $42.30. Quaddie: (5-3-3-8) $179.30; No scratchings.
RACE 5: CIAO BICKY 2, MAGNETIC DRIVE 3. TAB Nos: 2 3. SO: $3.50; pl: $2.00; $1.20; NTD. Quinella: (2-3) $2.20. Exacta: (2-3) $5.70. Trifecta: (2-3-8) $18.90. First 4: (2-3-8-6) $59.30. Double: (8-2) $31.60; Scratched 1 4.
RACE 6: TIERRA DEL FUEGO 1, IT'S A PLOY 2, CAT IN THE RAINE 6. TAB Nos: 1 2 6. SO: $3.40; pl: $1.50; $2.70; $1.40. Quinella: $22.50. Exacta: $35.10. Trifecta: (1-2-6) $92.60. First 4: (1-2-6-9) $480.60. Double: (2-1) $21.90; Scratched 3.
RACE 7: DAWN STRIKE 5, NEWITT 1, EAGLE EYE STAR 2. TAB Nos: 5 1 2. SO: $6.10; pl: $2.70; $1.80; $1.90. Quinella: $33.20. Exacta: $63.60. Trifecta: (5-1-2) $274.30. First 4: (5-1-2-3) $1,018.60. Double: (1-5) $35.10; Scratched 6 8.
RACE 8: DAWN TOO GOOD 1, PROXIMATE CAUSE 3, BAY OF BENGAL 8. TAB Nos: 1 3 8. SO: $4.90; pl: $2.00; $1.20; $3.20. Quinella: $11.10. Exacta: $23.10. Trifecta: (1-3-8) $245.10. First 4: (1-3-8-2) $913.10. Double: (5-1) $33.10. Quaddie: (2-1-5-1) $593.20; Scratched 9.

MOONEE VALLEY

RACE 1: CAP DE JOIE 8, ASPEN COLORADO 2, SOARING EAGLE 10. TAB Nos: 8 2 10. SO: $2.70; pl: $1.30; $3.30; $2.50. Quinella: $17.00. Exacta: $24.30. Trifecta: (8-2-10) $140.10. First 4: (8-2-10-5) $999.40; No scratchings.
RACE 2: OUR HEIDI 5, IT'S KIND OF MAGIC 4, ZION 3. TAB Nos: 5 4 3. SO: $4.20; pl: $1.60; $2.00; $2.50. Quinella: $12.40. Exacta: $30.70. Trifecta: (5-4-3) $125.20. First 4: (5-4-3-10) $615.70. Double: (8-5) $7.90; Scratched 1 7.
RACE 3: BRAVE MEAD 1, ANA JAAHZA 6. TAB Nos: 1 6. SO: $1.30; pl: $1.04; $2.20; NTD. Quinella: (1-6) $3.30. Exacta: (1-6) $3.40. Trifecta: (1-6-7) $5.40. First 4: (1-6-7-9) $19.20. Double: (5-1) $7.00; Scratched 2 3 4 5 10.
RACE 4: GOLDEN CRUSADER 1, MIXMULTI 12, TEOFILO STAR 2. TAB Nos: 1 12 2. SO: $3.20; pl: $1.50; $2.90; $2.10. Quinella: $15.90. Exacta: $28.20. Trifecta: (1-12-2) $151.40. First 4: (1-12-2-10) $2,178.10. Double: (1-1) $4.60. Quaddie: (8-5-1-1) $56.90; Scratched 4 6 9.
RACE 5: SIRILEO MISS 2, REVOLUTIONARY MISS 8, DENY KNOWLEDGE 4. TAB Nos: 2 8 4. SO: $3.60; pl: $1.40; $1.30; $3.10. Quinella: $3.70. Exacta: $9.20. Trifecta: (2-8-4) $60.20. First 4: (2-8-4-1) $167.40. Double: (1-2) $10.70; No scratchings.
RACE 6: UNFLINCHING 2, FOXICON 8, HOME RULE 6. TAB Nos: 2 8 6. SO: $3.40; pl: $1.40; $1.10; $2.20. Quinella: $2.20. Exacta: $5.50. Trifecta: (2-8-6) $27.10. First 4: (2-8-6-4) $68.00. Double: (2-2) $15.90; Scratched 1 7 9 10.
RACE 7: IMPERATRIZ 11, BELLA NIPOTINA 8, ROCH 'N' HORSE 9. TAB Nos: 11 8 9. SO: $3.70; pl: $1.70; $2.70; $4.50. Quinella: $18.00. Exacta: $28.90. Trifecta: (11-8-9) $431.20. First 4: (11-8-9-10) $3,693.60. Double: (2-11) $14.30; Scratched 2 14.
RACE 8: PAPILLON CLUB 1, AMATI 4, TASS 6. TAB Nos: 1 4 6. SO: $1.60; pl: $1.04; $2.70; $2.10. Quinella: $12.60. Exacta: $17.20. Trifecta: (1-4-6) $94.20. First 4: (1-4-6-2) $232.50. Double: (11-1) $7.30. Quaddie: (2-2-11-1) $98.20; Scratched 3.

SUNSHINE COAST

RACE 1: TENGUN READY 2, DIBBA DOBBA 6, KING YOSHI 1. TAB Nos: 2 6 1. SO: $9.40; pl: $2.30; $1.04; $2.50. Quinella: $11.30. Exacta: $29.40. Trifecta: (2-6-1) $93.00. First 4: (2-6-1-4) $252.90; No scratchings.
RACE 2: AMERICAN PIONEER 4, LOOSE UNIT 2, CALL ME HILTON 6. TAB Nos: 4 2 6. SO: $4.00; pl: $1.50; $1.20; $1.90. Quinella: $4.30. Exacta: $13.00. Trifecta: (4-2-6) $58.80. First 4: (4-2-6-5) $269.70. Double: (2-4) $44.70; No scratchings.
RACE 3: BURNT BY BERNIE 2, AZURE PRIDE 1, DIFFERENT ROAD 5. TAB Nos: 2 1 5. SO: $2.90; pl: $1.50; $1.30; $1.20. Quinella: $4.30. Exacta: $10.00. Trifecta: (2-1-5) $22.50. First 4: (2-1-5-3) $53.70. Double: (4-2) $11.40; Scratched 4 10 12.

ALBION PARK

TROT 1: MISTER DOMINGO 6, TOMMY BLIGH 3. TAB Nos: 6 3. SO: $2.30; pl: $1.40; $3.10; NTD. Quinella: (3-6) $6.70. Exacta: (6-3) $8.40. Trifecta: (6-3-4) $95.60. First 4: (6-3-4-5) $386.30; No scratchings.
TROT 2: JILLIBY CHAMBERS 7, MAYWYNS LA NINA 6, SHE DAZZLES 8. TAB Nos: 7 6 8. SO: $2.60; pl: $1.40; $1.50; $3.60. Quinella: $3.20. Exacta: $7.40. Trifecta: (7-6-8) $59.00. First 4: (7-6-8-5) $192.00. Double: (6-7) $9.20; No scratchings.
TROT 3: MISS PAU 3, MISTER WOODPORT 7, SPORTY AZZ 9. TAB Nos: 3 7 9. SO: $3.00; pl: $1.80; $2.10; $1.90. Quinella: $16.80. Exacta: $19.50. Trifecta: (3-7-9) $103.90. First 4: (3-7-9-10) $479.70. Double: (7-3) $17.30; No scratchings.
TROT 4: VANITY BAY 10, TORQUE ONETWOTHREE 4, TACTFILLY MIRACLE 1. TAB Nos: 10 4 1. SO: $5.00; pl: $1.40; $3.50; $1.50. Quinella: $27.40. Exacta: $38.60. Trifecta: (10-4-1) $193.30. First 4: (10-4-1-2) $901.50. Double: (3-10) $27.60. Quaddie: (6-7-3-10) $190.20; Scratched 5.
TROT 5: TORQUE LIKE MOTION 4, SUNRISE RUBY 3, ROCK SUPREME 7. TAB Nos: 4 3 7. SO: $2.90; pl: $1.40; $2.80; $3.00. Quinella: $15.20. Exacta: $14.20. Trifecta: (4-3-7) $122.90. First 4: (4-3-7-1) $727.30. Double: (10-4) $27.30; No scratchings.
TROT 6: NO MOTIVE 6, HES SWEET 1, HEY MISTER TAYLOR 3. TAB Nos: 6 1 3. SO: $3.60; pl: $1.80; $6.50; $2.50. Quinella: $39.70. Exacta: $66.10. Trifecta: (6-1-3) $412.00. First 4: (6-1-3-4) $2,845.50. Double: (4-6) $17.10; Scratched 8.
TROT 7: THE GROGFATHER 4, CLASSICMAJOR 3, COMMODORE JUJON 9. TAB Nos: 4 3 9. SO: $10.60; pl: $2.60; $1.70; $2.10. Quinella: $25.70. Exacta: $41.70. Trifecta: (4-3-9) $345.80. First 4: (4-3-9-1) $1,676.60. Double: (6-4) $110.20; No scratchings.
TROT 8: THE WATERBOY 3, LANOCH BOY 4, BOTTLE ROCK 1. TAB Nos: 3 4 1. SO: $3.70; pl: $2.10; $13.30; $1.30. Quinella: $135.50. Exacta: $121.90. Trifecta: (3-4-1) $446.90. First 4: (3-4-1-8) $3,923.10. Double: (4-3) $56.40. Quaddie: (4-6-4-3) $1,050.30; No scratchings.

GLOUCESTER PARK

TROT 1: HECTOR 2, RAVEN BANNER 1, FEELING ACES 10. TAB Nos: 2 1 10. SO: $3.00; pl: $1.20; $1.04; $1.70. Quinella: $1.90. Exacta: $5.50. Trifecta: (2-1-10) $12.50. First 4: (2-1-10-3) $170.00; Scratched 11.
TROT 2: JAMES BUTT 4, MASTER YOSSI 2, GRAN CHICO 3. TAB Nos: 4 2 3. SO: $8.40; pl: $2.10; $2.00; $4.00. Quinella: $15.10. Exacta: $73.50. Trifecta: (4-2-3) $831.90. First 4: (4-2-3-1) $2,335.00. Double: (2-4) $32.40; No scratchings.

NARROGIN

TROT 1: HEZA BEAUTY 1, BATAVIA PLAYBOY 7, GRAPELLIES BOY 2. TAB Nos: 1 7 2. SO: $1.70; pl: $1.30; $1.20; $2.00. Quinella: $5.00. Exacta: $6.30. Trifecta: (1-7-2) $30.20. First 4: (1-7-2-9) $430.20; No scratchings.

Equestrian Notices

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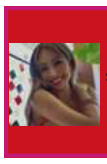
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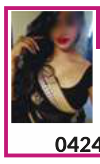
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Notices

Legal Notices

NOTICE IS HEREBY GIVEN that pursuant to **Section 110A** of the *Administration and Probate Act*, the Public Trustee for the Northern Territory intends to administer the estate of **RAMA SAMPSON** late of Hetti Perkins Nursing Home, 9 Percy Court, Alice Springs in the Northern Territory, Artist who died on 5 November 2020, Intestate.
All persons having claims against the estate are requested to submit their claims in writing to the Public Trustee at Nichols Place Cnr Cavenagh & Bennett Streets Darwin, GPO Box 470 Darwin NT 0801, within two calendar months from publication hereto, after which date the Public Trustee will distribute the estate having regard to claims of which it then has notice.
Leonie Smith
Deputy Public Trustee

Meetings

Darwin Community Arts AGM

Darwin Community Arts (DCA) will hold its Annual General Meeting: Saturday, 22nd April 2023, 12:00PM, 3/1 Travers Street (Theatre), Coconut Grove NT 0810, orZoom Meeting (meeting details and password on request)

Agenda:
- Minutes of the 2022 AGM
- Business Arising from the 2022 AGM
- Financial Report
- Annual Report
- Election of Office Bearers
- Appointment of Auditor
- Other Business

Contact 0889457347 or mail@darwincommunityarts.org.au to request a copy of the Financial Report and for enquiries.

Public Notices

LIQUOR ACT NOTICE OF APPLICATION FOR A LIQUOR LICENCE WITH A MAJOR EVENT AUTHORITY

Rodeo Promotions NT Ltd hereby give notice that they have applied to the Director of Liquor Licensing for a liquor licence with a major event authority for an event known as Northern Golden Buckle Rodeo Series for Round 2 and Round 3 for the premises situated at Robbie Robins Reserve, 762 Stuart Highway, Berrimah.
The Liquor Act 2019 requires a notice to be published of the application along with a detailed description of the business proposed to be conducted, and how to lodge an objection, which may be found at the following address:

https://industry.nt.gov.au/publications/business/publications/liquor-licence-applications or by email directorliquorlicensing.ditt@nt.gov.au

Dated this 25 March 2023

Public Notices

Jadestone Energy

Invitation for Consultation: Montara Project

Jadestone Energy (Jadestone) is the operator of the producing Montara Project in Australian waters, approximately 690 km west of Darwin in the Timor Sea. The Montara Project operations involve oil production using wellhead platform (WHP) wells for the Montara field, and subsea wells for the Swift, Skua and Swallow fields. The oil from the subsea wells is piped via flowlines to an unmanned wellhead platform, and then to the Montara Venture floating production storage and offloading (FPSO) facility, which acts as a hub for the project in production since 2013.

Jadestone is updating the currently approved environment plan (the Montara EP) for the Montara Project, which will govern production and maintenance activities for the next five years. The revised Montara EP will be assessed by the National Offshore Petroleum Safety and Environmental Management Authority for acceptance.

Jadestone is also preparing an EP for the removal of three subsea wellheads at Montara that are no longer in use (the Wellhead Removal EP). This activity is tentatively planned to occur in 2023/2024.

The purpose of the EPs is to identify the risks and impact of each proposed petroleum activity on the environment. The EPs will also set out measures to reduce identified environmental impacts and describe how and to what level of performance those measures will be implemented throughout the activity.

Jadestone is inviting comments for consideration during the preparation of the EPs discussed above.
Further information on Jadestone's Montara Project is available on the company's website at:
www.jadestone-energy.com/assets/australia-portfolio/montara

Please let us know if you:
- require any further information; and/or
- have any comments on the activity and the potential impacts on your interests.

Jadestone is committed to ongoing dialogue with all its stakeholders and welcomes their comments at any time.

For further information or to make comment please email:
consult@jadestone-energy.com.

LARRAKIA NATION

Independent Director Nominations

Larrakia Nation Aboriginal Corporation is seeking nominations from interested individuals to fill a casual vacancy on its Board.

To be considered, you need to:

- Demonstrate skills and experience relevant to the role of Director of the Corporation
- Describe your vision for the Corporation
- Provide any additional information to support your nomination.

Please email ceo@larrakia.com to request the nomination documentation.

Nominations close at 4pm, Tuesday 4 April 2023.

Nominations can be submitted by hand at the Larrakia Nation Head Office (76 Dick Ward Drive, Coconut Grove) between 8.30-4.30pm or email to ceo@larrakia.com.

All candidates applying for a position on the Board as a Director will require a Directors Identification Number (DIN) abrs.gov.au/director-identification-number/whoneeds-apply-andwhen

For any further queries, please contact ceo@larrakia.com or 0400 984 875.

LIQUOR ACT NOTICE OF APPLICATION FOR A LIQUOR LICENCE WITH MAJOR EVENT AUTHORITY

Italian Festival Association Incorporated hereby give notice that they have applied to the Director of Liquor Licensing for a liquor licence with a major event authority for an event known as the Italian Festival for the premises situated at Fort Hill Parklands, 1 Anchorage Court, Darwin Waterfront.

The Liquor Act 2019 requires a notice to be published of the application along with a detailed description of the business proposed to be conducted, and how to lodge an objection, which may be found at the following address:

https://industry.nt.gov.au/publications/business/publications/liquor-licenceapplications or by email directorliquorlicensing.ditt@nt.gov.au

Dated this 25 March 2023

LARRAKIA NATION

Member Director Nominations

Larrakia Nation Aboriginal Corporation is seeking nominations from interested Larrakia Nation Members to fill a casual vacancy on its Board.

To be considered, you need to:
- Be a member of the Corporation
- Demonstrate skills and experience relevant to the role of Director of the Corporation
- Describe your vision for the Corporation
- Provide any additional information to support your nomination.

Please email ceo@larrakia.com to request the nomination documentation.

Nominations close at 4pm, Tuesday 4 April 2023.

Nominations can be submitted by hand at the Larrakia Nation Head Office (76 Dick Ward Drive, Coconut Grove) between 8.30-4.30pm or email to ceo@larrakia.com.

All candidates applying for a position on the Board as a Director will require a Directors Identification Number (DIN) abrs.gov.au/director-identification-number/whoneeds-apply-andwhen

For any further queries, please contact ceo@larrakia.com or 0400 984 875.

Patty Shack Burger Bar

LIQUOR ACT 2009 NOTICE OF APPLICATION FOR A LIQUOR LICENCE

Empire Hospitality Pty Ltd, hereby gives notice they have applied to the Director of Liquor Licensing for the grant of liquor licence with a restaurant bar authority for the premises to be known as Patty Shack, located at Shop 1 and 2, 38 Progress Drive, Nightcliff NT 0810

This is the first notice and final notice of the application.

A detailed description of the business proposed to be conducted, along with how to lodge an objection may be found at the following address https://industry.nt.gov.au/publications/business/publications/liquor-licence-applications or by email DirectorLiquorLicensing.DITT@nt.gov.au.

Dated this 25 March 2023

Tenders, Quotes & Contracts

New Tenders Available

Roper Gulf Regional Council
SUSTAINABLE • VIABLE • VIBRANT

New tenders are available for Roper Gulf Regional Council. For details, please go to our website.

https://ropergulf.nt.gov.au/our-business/tenders

NTNE01Z01MA - V1

Invitation for Consultation: Montara Project and Stag Field

Jadestone Energy

Montara Project
Jadestone Energy (Jadestone) is the operator of the producing Montara Project in Australian waters, approximately 690 km west of Darwin in the Timor Sea. The Montara Project operations involve oil production using wellhead platform (WHP) wells for the Montara field, and subsea wells for the Swift, Skua and Swallow fields. The oil from the subsea wells is piped via flowlines to the unmanned WHP, and then to the Montara Venture floating production storage and offloading (FPSO) facility, which acts as a hub for the project in production since 2013.

Stag Field
Jadestone is also the operator of the producing Stag field in Australian waters and located approximately 60 km northwest of Dampier in the Indian Ocean. The Stag field was developed using a fixed leg, 12 well-slot, manned central processing facility platform in production since 1998. This is connected, by an eight-inch underwater export pipeline, to a pipeline end manifold where shuttle tankers directly load crude oil via a catenary anchor leg mooring buoy.

Environment Plans (EP)
Jadestone is updating the currently approved EPs, the Montara EP for the Montara Project, and the Stag EP for the Stag field. Each EP will govern production and maintenance activities for the next five years. The revised Montara EP and Stag EP will be assessed by the National Offshore Petroleum Safety and Environmental Management Authority for acceptance.

In addition, Jadestone is preparing an EP for the removal of three subsea wellheads at Montara that are no longer in use (the Wellhead Removal EP). This activity is tentatively planned to occur in 2023/2024.

Jadestone is also preparing an EP for the drilling activities at the Stag platform (the Stag Drilling EP). This will include new production wells from recovered well-slots and may include plugging and abandonment of other wells potentially involving wellhead removal.

The purpose of the EPs is to identify the risks and impact of each proposed petroleum activity on the environment. The EPs will also set out measures to reduce identified environmental impacts and describe how and to what level of performance those measures will be implemented throughout each activity. Jadestone is inviting comments for consideration during the preparation of each of the EPs discussed above.

Further information on Jadestone's Montara Project is available on the company's website at: www.jadestone-energy.com/assets/australia-portfolio/montara.

Further information on Jadestone's Stag field is available on the company's website at: www.jadestone-energy.com/assets/australia-portfolio/stag.

Please let us know if you:
- require any further information; and/or
- have any comments on the activity and the potential impacts on your interests.

Jadestone is committed to ongoing dialogue with all its stakeholders and welcomes their comments at any time.

For further information or to make comment please email: consult@jadestone-energy.com.

GOVERNMENT OF WESTERN AUSTRALIA

NOTICE TO GRANT MINING TENEMENTS

NATIVE TITLE ACT 1993 (CTH) SECTION 29

The State of Western Australia HEREBY GIVES NOTICE that the Minister for Mines and Petroleum, C/- Department of Mines, Industry Regulation and Safety, 100 Plain Street, East Perth WA 6004 may grant the following tenement applications under the *Mining Act 1978*:

Tenement Type	No.	Applicant	Area*	Locality	Centroid	Shire
Exploration Licence	15/1713	JINDALEE RESOURCES LIMITED	9BL	20.1km SW'ly of Kambalda	Lat: 31° 21' S: Long: 121° 33' E	COOLGARDIE SHIRE
Exploration Licence	16/627	NZE MINING RESOURCES PTY LTD	1BL	40.6km SW'ly of Ora Banda	Lat: 30° 37' S: Long: 120° 45' E	COOLGARDIE SHIRE
Exploration Licence	26/245	JAVELIN MINERALS LIMITED	1BL	23.3km NE'ly of Kambalda	Lat: 31° 2' S: Long: 121° 49' E	KALGOORLIE-BOULDER CITY
Exploration Licence	26/248	JAVELIN MINERALS LIMITED	2BL	28.1km NE'ly of Kambalda	Lat: 31° 5' S: Long: 121° 56' E	KALGOORLIE-BOULDER CITY
Exploration Licence	28/3271	CARAWINE RESOURCES LIMITED	12BL	158.2km N'ly of Balladonia	Lat: 31° 2' S: Long: 123° 58' E	KALGOORLIE-BOULDER CITY
Exploration Licence	29/1210	RIO TINTO EXPLORATION PTY LIMITED	16BL	78.5km S'ly of Leinster	Lat: 28° 35' S: Long: 120° 25' E	MENZIES SHIRE
Exploration Licence	38/3617	DUKETON MINING LIMITED	8BL	125km N'ly of Laverton	Lat: 27° 29' S: Long: 122° 20' E	LAVERTON SHIRE
Exploration Licence	38/3714	JINDALEE RESOURCES LIMITED	6BL	21.5km S'ly of Laverton	Lat: 28° 48' S: Long: 122° 19' E	LAVERTON SHIRE
Exploration Licence	38/3811	ENCOUNTER YENEENA PTY LTD	70BL	66.9km NW'ly of Laverton	Lat: 28° 12' S: Long: 121° 54' E	LAVERTON SHIRE, LEONORA SHIRE
Exploration Licence	40/435	ULYSSES MINING PTY LTD	1BL	57.5km SE'ly of Leonora	Lat: 29° 21' S: Long: 121° 34' E	MENZIES SHIRE
Exploration Licence	45/6432	FMG RESOURCES PTY LTD	1BL	40.5km N'ly of Nullagine	Lat: 21° 31' S: Long: 120° 5' E	EAST PILBARA SHIRE
Exploration Licence	45/6471	HAWKER GEOLOGICAL SERVICES PTY LTD	5BL	51km NW'ly of Nullagine	Lat: 21° 42' S: Long: 119° 39' E	EAST PILBARA SHIRE
Exploration Licence	46/1437	ODETTE TWO PTY LTD	5BL	40.4km NE'ly of Nullagine	Lat: 21° 42' S: Long: 120° 27' E	EAST PILBARA SHIRE
Exploration Licence	51/2135	WARRINGA BLUE PTY LTD	1BL	47.4km SE'ly of Peak Hill	Lat: 25° 55' S: Long: 119° 4' E	MEEKATHARRA SHIRE
Exploration Licence	51/2136	LIL BOYTEETH PTY LTD	1BL	48.7km SE'ly of Peak Hill	Lat: 25° 55' S: Long: 119° 5' E	MEEKATHARRA SHIRE
Exploration Licence	51/2140	MT RESOURCES PTY LTD	10BL	76.9km W'ly of Wiluna	Lat: 26° 29' S: Long: 119° 27' E	MEEKATHARRA SHIRE
Exploration Licence	57/1220	AUSTRALIAN TITANIUM PTY LTD	29BL	31.3km N'ly of Sandstone	Lat: 27° 42' S: Long: 119° 16' E	SANDSTONE SHIRE
Exploration Licence	57/1273	AURUMIN GIDGEE PTY LTD	19BL	54.5km NE'ly of Sandstone	Lat: 27° 32' S: Long: 119° 31' E	SANDSTONE SHIRE
Exploration Licence	70/5788	WEPNER EXPLORATION PTY LTD	172BL	76.8km S'ly of Paynes Find	Lat: 29° 57' S: Long: 117° 43' E	DALWALLINU SHIRE, MOUNT MARSHALL SHIRE
Exploration Licence	70/6352	TERRAIN MINERALS LTD	32BL	24.9km E'ly of Mukinbudin	Lat: 30° 53' S: Long: 118° 27' E	MUKINBUDIN SHIRE, NUNGARIN SHIRE
Exploration Licence	70/6359	EXPLORATION AUSTRALIA PTY LTD	11BL	38.4km NE'ly of Mukinbudin	Lat: 30° 36' S: Long: 118° 24' E	MUKINBUDIN SHIRE
Exploration Licence	70/6379	SYNDICATE MINERALS PTY LTD CURIOSITY EXPLORATION PTY LTD	40BL	29.1km NE'ly of Mukinbudin	Lat: 30° 46' S: Long: 118° 27' E	MUKINBUDIN SHIRE
Exploration Licence	77/2948	POLARIS METALS PTY LTD	1BL	58.1km N'ly of Southern Cross	Lat: 30° 42' S: Long: 119° 24' E	YILGARN SHIRE
Exploration Licence	77/3016	SENTINEL EXPLORATION LTD	1BL	150km E'ly of Paynes Find	Lat: 29° 37' S: Long: 119° 10' E	MENZIES SHIRE
Exploration Licence	77/3017	SENTINEL EXPLORATION LTD	3BL	152.1km E'ly of Paynes Find	Lat: 29° 43' S: Long: 119° 9' E	MENZIES SHIRE
Exploration Licence	77/3018 & 77/3035	SENTINEL EXPLORATION LTD	6BL	147.7km E'ly of Paynes Find	Lat: 29° 39' S: Long: 119° 8' E	MENZIES SHIRE
Exploration Licence	77/3039	LI3 MINERALS PTY LTD	65BL	29.9km SE'ly of Marvel Loch	Lat: 31° 41' S: Long: 119° 40' E	YILGARN SHIRE
Exploration Licence	77/3042	SYNDICATE MINERALS PTY LTD CURIOSITY EXPLORATION PTY LTD	53BL	37km NE'ly of Mukinbudin	Lat: 30° 44' S: Long: 118° 32' E	MUKINBUDIN SHIRE, WESTONIA SHIRE
Exploration Licence	77/3043	TERRAIN MINERALS LTD	62BL	33.5km E'ly of Mukinbudin	Lat: 30° 57' S: Long: 118° 33' E	MUKINBUDIN SHIRE, NUNGARIN SHIRE, WESTONIA SHIRE
Exploration Licence	80/5840	CHANDLER, Ross Berge	25BL	137.9km SW'ly of Halls Creek	Lat: 19° 15' S: Long: 126° 56' E	HALLS CREEK SHIRE
Exploration Licence	80/5889	BARACUS PTY LTD	55BL	83.6km S'ly of Wyndham	Lat: 16° 13' S: Long: 127° 58' E	WYNDHAM-EAST KIMBERLEY SHIRE
Exploration Licence	80/5890	BARACUS PTY LTD	21BL	103.3km S'ly of Wyndham	Lat: 16° 23' S: Long: 127° 54' E	WYNDHAM-EAST KIMBERLEY SHIRE
Prospecting Licence	15/6778	POTTER, Vernan John	9.39HA	19km W'ly of Kambalda	Lat: 31° 14' S: Long: 121° 28' E	COOLGARDIE SHIRE
Prospecting Licence	16/3411	FORTUNA RESOURCES PTY LTD	1.81HA	28.8km S'ly of Ora Banda	Lat: 30° 37' S: Long: 121° 3' E	COOLGARDIE SHIRE
Prospecting Licence	25/2713-S	BRANCH, Ian Robert	4.96HA	39.8km NE'ly of Kambalda	Lat: 30° 58' S: Long: 121° 59' E	KALGOORLIE-BOULDER CITY
Prospecting Licence	25/2744-S	BRANCH, Ian Robert	9.93HA	47.7km NE'ly of Kambalda	Lat: 30° 59' S: Long: 122° 6' E	KALGOORLIE-BOULDER CITY
Prospecting Licence	37/9625	MT MALCOLM GOLD HOLDINGS PTY LTD	113.28HA	21.7km E'ly of Leonora	Lat: 28° 56' S: Long: 121° 32' E	LEONORA SHIRE
Prospecting Licence	38/4562-S	LEBILLON, Lou	9.81HA	40.6km SE'ly of Laverton	Lat: 28° 49' S: Long: 122° 44' E	LAVERTON SHIRE
Prospecting Licence	39/6369	KILKENNY MINERALS PTY LTD	114.05HA	43.2km E'ly of Leonora	Lat: 28° 57' S: Long: 121° 45' E	LEONORA SHIRE
Prospecting Licence	39/6379	14 MILE WELL GOLD PTY LTD	182.00HA	44.6km W'ly of Laverton	Lat: 28° 46' S: Long: 121° 58' E	LAVERTON SHIRE
Prospecting Licence	39/6380 & 39/6382	14 MILE WELL GOLD PTY LTD	392.56HA	46.5km W'ly of Laverton	Lat: 28° 46' S: Long: 121° 57' E	LAVERTON SHIRE
Prospecting Licence	39/6381	14 MILE WELL GOLD PTY LTD	160.48HA	44.1km SW'ly of Laverton	Lat: 28° 47' S: Long: 121° 59' E	LAVERTON SHIRE
Prospecting Licence	77/4629-4631	WEST AUSTRALIAN PROSPECTORS PTY LTD	480.01HA	83km NE'ly of Mukinbudin	Lat: 30° 29' S: Long: 118° 54' E	YILGARN SHIRE
Prospecting Licence	77/4634	WHITE, Andrew Roy	167.45HA	8.5km S'ly of Southern Cross	Lat: 31° 17' S: Long: 119° 17' E	YILGARN SHIRE
Prospecting Licence	80/1885	YNEMA, Marten Hendrick	122.79HA	26.5km SE'ly of Halls Creek	Lat: 18° 26' S: Long: 127° 45' E	HALLS CREEK SHIRE

Nature of the act: Grant of prospecting licences which authorises the applicant to prospect for minerals for a term of 4 years from date of grant. Grant of Special Prospecting Licences, which authorises the applicant to prospect for minerals for a term up to 4 years from the date of grant. Grant of exploration licences, which authorises the applicant to explore for minerals for a term of 5 years from the date of grant.

Notification day: 22 March 2023

Native title parties: Under section 30 of the *Native Title Act 1993 (Cth)*, persons have until 3 months after the notification day to take certain steps to become native title parties in relation to applications. The 3 month period closes on **22 June 2023**. Any person who is, or becomes a native title party, is entitled to the negotiation and/or procedural rights provided in Part 2 Division 3 Subdivision P of *Native Title Act 1993 (Cth)*. Enquiries in relation to filing a native title determination application to become a native title party should be directed to the Federal Court of Australia, 1 Victoria Avenue, Perth WA 6000, telephone (08) 9268 7100.

Expedited procedure: The State of Western Australia considers that these acts are acts attracting the expedited procedure. Each licence may be granted unless, within the period of 4 months after the notification day (i.e. **22 July 2023**), a native title party lodges an objection with the National Native Title Tribunal against the inclusion of the statement that the State considers the grant of the licence is an act attracting the expedited procedure. Enquiries in relation to lodging an objection should be directed to the National Native Title Tribunal, Level 5, 1 Victoria Avenue, Perth, or GPO Box 9973, Perth, WA 6848, telephone (08) 9425 1000.

For further information about the act (including extracts of plans showing the boundaries of the applications), contact the Department of Mines, Industry Regulation and Safety, 100 Plain Street, East Perth WA 6004, or telephone (08) 9222 3518.

* - 1 Graticular Block = 2.8 km^2

DMIRS 14143

Classifieds

9482 2300 Place an ad: regionalclassifieds@wanews.com.au *or go to* kimberleyecho.com.au

PUBLIC NOTICES

Rights in Water and Irrigation Act 1914

4738276

Napier Corporation Pty Ltd has made application for a licence under s5C to take 3,000,000 kilolitres per annum of groundwater for the irrigation of 160 hectares of fodder crops/horticulture on Napier Downs Station. People who are interested in the application, may make a written submission within 15 days of this publication to the Department of Water and Environmental Regulation, 27 Victoria Highway, Kununurra, Western Australia 6743, or kununurra@dwer.wa.gov.au quoting DWERT2019~4. If you object to the proposal, you must in your submission specify what actions, if any, would overcome your objections. General enquiries to Program Manager Kimberley Water Licensing on 9166 4100.

Jadestone Energy

Invitation for Consultation: Montara Project

Jadestone Energy (Jadestone) is the operator of the producing Montara Project in Australian waters, approximately 690 km west of Darwin in the Timor Sea. The Montara Project operations involve oil production using wellhead platform (WHP) wells for the Montara field, and subsea wells for the Swift, Skua and Swallow fields. The oil from the subsea wells is piped via flowlines to an unmanned wellhead platform, and then to the Montara Venture floating production storage and offloading (FPSO) facility, which acts as a hub for the project in production since 2013.

Jadestone is updating the currently approved environment plan (the Montara EP) for the Montara Project, which will govern production and maintenance activities for the next five years. The revised Montara EP will be assessed by the National Offshore Petroleum Safety and Environmental Management Authority for acceptance.

Jadestone is also preparing an EP for the removal of three subsea wellheads at Montara that are no longer in use (the Wellhead Removal EP). This activity is tentatively planned to occur in 2023/2024.

The purpose of the EPs is to identify the risks and impact of each proposed petroleum activity on the environment. The EPs will also set out measures to reduce identified environmental impacts and describe how and to what level of performance those measures will be implemented throughout the activity.

Jadestone is inviting comments for consideration during the preparation of the EPs discussed above.

Further information on Jadestone's Montara Project is available on the company's website at:
www.jadestone-energy.com/assets/australia-portfolio/montara

Please let us know if you:
- require any further information; and/or
- have any comments on the activity and the potential impacts on your interests.

Jadestone is committed to ongoing dialogue with all its stakeholders and welcomes their comments at any time. For further information or to make comment please email: **consult@jadestone-energy.com.**

TENDERS

SHIRE OF WYNDHAM EAST KIMBERLEY

Request for Tender T13-22/23: Black Spot Construction Projects 2023

The Shire of Wyndham East Kimberley is seeking tenders to undertake concrete footpath, parking bay and bus bay construction in Wyndham and Kununurra.

Details of the tender package can be obtained on the Shire's website www.swek.wa.gov.au/tenders

Potential respondents will need to register as a supplier with VendorPanel to access the tender documents.

Clarification of tenders details must be in writing and sought via the respondents VendorPanel account, prior to 2:00pm, Monday 3 April 2023.

Tenders must be submitted via the respondents VendorPanel account www.vendorpanel.com.au

The Deadline for Tenders is 2:00pm (WST), Wednesday 12 April 2023.

Tenders submitted by facsimile, email, mail or hand delivery will not be accepted. Late applications will not be accepted.

The lowest, or any tender may not necessarily be accepted.

Any potential applicant canvassing Shire of Wyndham East Kimberley Officers or Elected Members will be disqualified from the tender process.

ADVERTISING INDEMNITY & WARRANTY

WEST AUSTRALIAN REGIONAL NEWSPAPERS

The advertiser (or agent) indemnifies the Company (and its employees and agents) against all actions, proceedings, claims, demands, losses, damages, costs and expenses arising out of or in connection with the publication of the advertisement (including any relating to defamation, malicious falsehood, infringement of copyright, trademark or design, or breach of the Trade Practices Act 1974, the Consumer Credit Code, or the Fair Trading Act 1987) and warrants that publication of the advertisement will not give rise to any legal, equitable or statutory rights against the Company and will not breach any laws or regulations including the prohibitions relating to advertising in the Trade Practices Act 1974, the Consumer Credit Code, and the Fair Trading Act 1987.

All advertisements are accepted on the following terms and conditions:

RIGHT TO REFUSE: The Company has the right to refuse to publish or republish any advertisement without giving any reason.

ENGAGEMENT AND MARRIAGE NOTICES: Must be signed by one of the people concerned or by one parent of the couple.

ADULT SERVICES, PERSONAL NOTICES AND GARAGE SALES: Must be paid at time of lodgement.

CANCELLATIONS AND ALTERATIONS: Same deadlines as insertions.

DISCLAIMER OF LIABILITY: No liability will be incurred by the Company by reason of any amendment to or error or inaccuracy in, or the partial or total omission of, an advertisement (single or multiple insertion) or by reason of any delay or default or from any other cause whatsoever. If an error occurs which in the opinion of the Company clearly lessens the value of the advertisement and which is in no way the fault of the advertiser and the advertiser notifies the Company of the error prior to the advertisement deadline on the first day the error was published, then a refund will be provided on the cost of the advertisement proportionate to the Company's opinion of its reduced value.

ADJUSTMENT AND CLAIMS: The advertiser must notify the Company of any error in the invoice for an advertisement within 30 days from the end of the month in which the advertisement was published. The Company will not consider claims for an invoice error lodged outside this period.

EMPLOYMENT

Government of **Western Australia**
Department of **Communities**

Residential Care Worker & Senior Residential Care Worker

Level/Salary: Level 2, $67,302 - $72,386/ Level 3, $76,026 - $81,847 pa pro rata + Super - PSCSAA 2022

Location: Kununurra, East Kimberley

Do you want to make a difference? Are you looking for a rewarding job where no day is the same? Do you want to be part of a team that works to help children and young people feel cared for, safe and connected to family and country? If this sounds like you then we have exciting permanent, fixed term and casual opportunities available right now in Kununurra Residential Care! Employees will receive comprehensive training and great benefits, and will be strongly supported by the team in their everyday work.

For More Information: Contact **Brendan Carpenter, Manager Residential Care, 0427 003 578** during business hours.

To Apply:
Visit https://search.jobs.wa.gov.au/ and search **COM9123** or scan the below QR code.

Closing Date: 4:00pm (AWST) Thursday 30 March 2023.

DOC_14113

Government of **Western Australia**
WA Country Health Service

Position Profile: In this role you liaise with multi-disciplinary staff and stakeholders to accurately identify ineligible, compensable and private patients; to maximise hospital revenue via various revenue enhancement initiatives and to ensure customer satisfaction amongst patients admitted utilising their private health cover. You are also responsible for supporting Section 19(2) Exemption activities and participation in development of relevant revenue capture activities in the region.

Area Profile: The WA Country Health Service (WACHS) is the largest country health system in Australia and one of the biggest in the world, providing health services to approximately half a million people, including 45,000 Aboriginal people, over a vast two and a half million square kilometre area. The organisation comprises seven regions, with a strong network of public hospitals, health services and health centres located across rural and remote Western Australia. Our core business is the provision of quality, accessible health services to country WA residents and visitors.

Employee Benefits: In addition to the great salary our employees enjoy an amazing range of benefits which may include (in line with operational requirements):

- 10.5% employer contributed superannuation into a fund of your choice. For further information click here.
- Access to generous salary packaging arrangements
- Professional Development Opportunities and Study Leave/assistance
- Flexible working arrangements
- Flexible leave arrangements
- Other professional and location based allowances

Selection Criteria: Please see the attached Job Description Form (available online at www.jobs.health.wa.gov.au).

For Further Job Related Information: We encourage you to contact Claire English on 08 9166 4212.

If you experience difficulties while applying online, please contact Employee Services on 13 44 77 for immediate assistance during business hours.

Application Instructions: Applicants are requested to apply online (www.jobs.health.wa.gov.au).

It is preferable for your referee to be a current supervisor or manager.

Applicants are advised to write a covering letter outlining their suitability for this position, and attach their current resume or curriculum vitae. These documents should be complete and ready to attach prior to applying online. Please ensure you allow sufficient time to complete the online application process as you will be required to answer various questions and attach your documentation.

Lodgement is system generated. Any submissions on, or after, 4:00pm will not be accepted.

LATE OR EMAIL APPLICATIONS WILL NOT BE CONSIDERED.

DOH_14153

STORAGE

Community Consultation Sessions – Montara Field

Jadestone Energy

19th – 25th March 2024

Goals of the community consultation sessions

- Identify any relevant persons who may not have been contacted through the usual means (fishery licence holders, tour operators etc)
- Ensure Jadestone have shown reasonable efforts to capture any person who wishes to be consulted
- Talk to anyone in the coastal communities where the EMBA overlaps the coastal waters to capture anyone who could be affected by an unplanned event

Jadestone Energy

Advertising ahead of the sessions

- Newspaper adverts placed in the local news (Broome Advertiser and Kimberley Echo) 14th – 21st March.
- Adverts placed on physical noticeboards in Broome, Wyndham and Derby.
- Social media adverts published 12th -21st March that appeared in Facebook and Instagram feeds for the local areas

Jadestone Energy

Locations sessions held

Session location	Date (time)	Visits [1]	Conversations [2]
Mowanjum	19 March 2024 (1000 to 1200)	6	2
Derby	19 March 2024 (1400 to 1600)	38	10
Broome	20 March 2024 (1400 to 1600)	60	8
Bidyadanga	21 March 2024 (1000 to 1200)	10	6
Beagle Bay	22 March 2024 (1000 to 1200)	10	8
Dijarindjin	22 March 2024 (1400 to 1600)	5	1
Wyndham	24 March 2024 (0900 to 1100)	55	9
Kununarra	25 March 2024 (0900 to 1100)	50	11

Jadestone Energy

Mowanjum

NEWSPAPER ADVERT

- Appeared in the Broome Advertiser from 14/03/2024 – 21/03/2024
- Readership: 14,474

Broome Advertiser Thursday, March 14, 2024 — broomead.com.au — NEWS 11

Vital support on path towards heart health

CAIN ANDREWS

Heart Support Australia has expanded its outreach efforts by inaugurating a peer support group in Broome, aimed at expanding crucial post-heart event support to cardiac patients in the region.

Led by Fiona Aamodt, a physiotherapist with more than 20 years experience working with heart disease patients, the group seeks to offer a nurturing environment where individuals can find guidance and solidarity in their journey towards better heart health.

"Working with heart exercise groups I often see the value people get purely from yarning with other people with similar conditions and experiences," Ms Aamodt said.

"This is particularly the case in smaller places like Broome where access to healthcare can be challenging."

The significance of such support programs cannot be overstated with cardiovascular disease rates in Broome nearly double that of major cities, according to statistics from the Australian Institute of Health and Welfare.

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The inaugural session of the Broome peer support group is scheduled for Thursday, March 21 at Broome Circle.

Heart Support Australia chief executive Dr Christian Verdicchio. Picture: Facebook

Union support for better pay & conditions

CAIN ANDREWS

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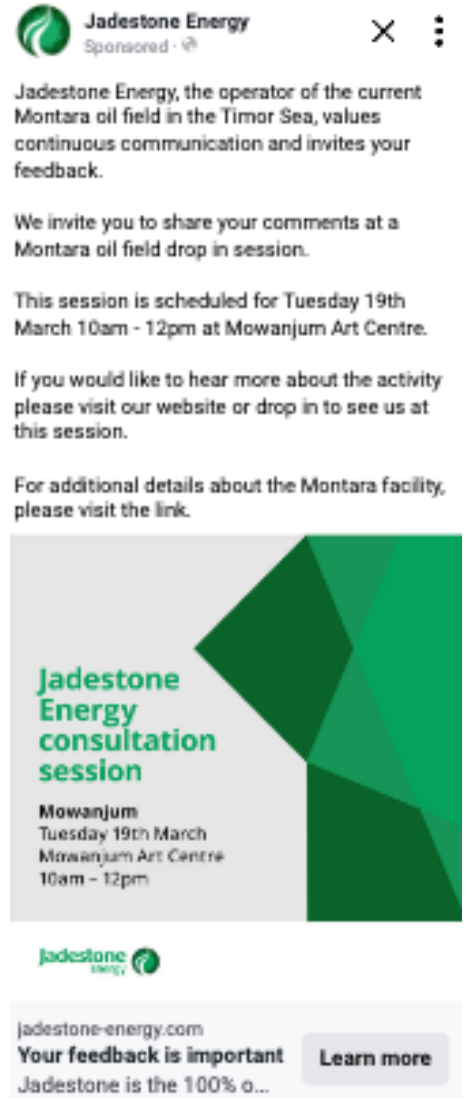
SOCIAL ADVERT

- Advertised from 12/03/2024 – 19/03/2024
- Total reach: 544
- Total impressions: 3,312
- Total link clicks: 18



Community information session held on 19 March 2024

Derby

NEWSPAPER ADVERT

- Appeared in the Broome Advertiser from 14/03/2024 – 21/03/2024
- Readership: 14,474

Vital support on path towards heart health

CAIN ANDREWS

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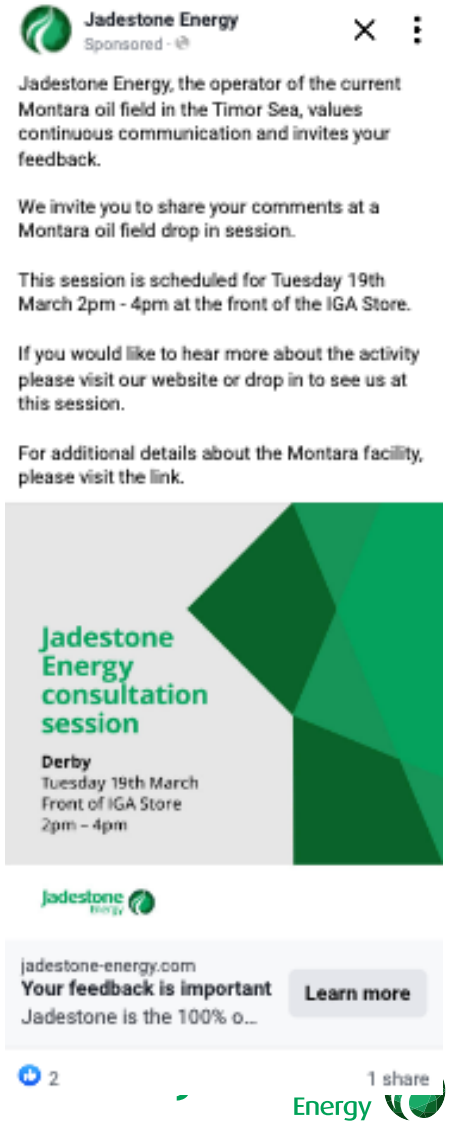
SOCIAL ADVERT

- Advertised from 12/03/2024 – 19/03/2024
- Total reach: 1,006
- Total impressions: 4,856
- Total link clicks: 29



Community information session held on 19 March 2024

Broome

NEWSPAPER ADVERT

- Appeared in the Broome Advertiser from 14/03/2024 – 21/03/2024
- Readership: 14,474

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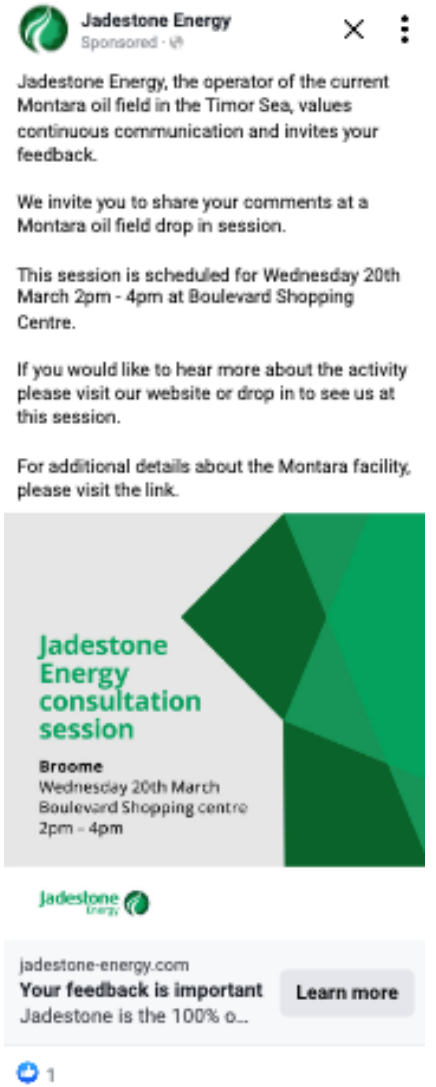
SOCIAL ADVERT

- Advertised from 12/03/2024 – 20/03/2024
- Total reach: 3,796
- Total impressions: 12,530
- Total link clicks: 82



Community information session held on 20 March 2024

Bidyadanga

NEWSPAPER ADVERT

- Appeared in the Broome Advertiser from 14/03/2024 – 21/03/2024
- Readership: 14,474

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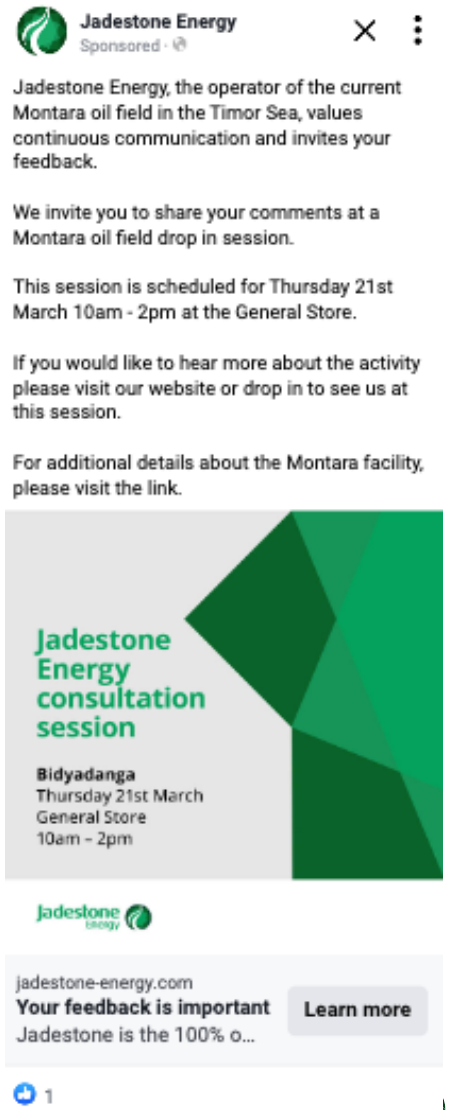
SOCIAL ADVERT

- Advertised from 12/03/2024 – 21/03/2024
- Total reach: 160
- Total impressions: 2,873
- Total link clicks: 9



Community information session held on 21 March 2024

Beagle Bay

NEWSPAPER ADVERT

- Appeared in the Broome Advertiser from 14/03/2024 – 22/03/2024
- Readership: 14,474

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The inaugural session of the Broome peer support group is scheduled for Thursday, March 31 at Broome Circle.

Heart Support Australia chief executive Dr Christian Verdicchio. Picture: Facebook

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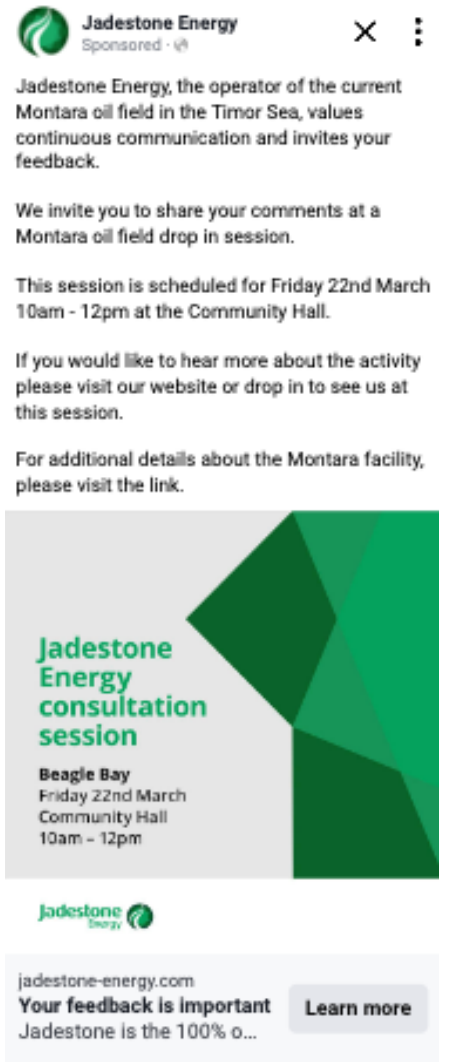
SOCIAL ADVERT

- Advertised from 12/03/2024 – 22/03/2024
- Total reach: 611
- Total impressions: 3,214
- Total link clicks: 17



Community information session held on 22 March 2024

Jadestone Energy

Djarindjin

NEWSPAPER ADVERT

- Appeared in the Broome Advertiser from 14/03/2024 – 21/03/2024
- Readership: 14,474

Broome Advertiser Thursday, March 14, 2024 — broomead.com.au — NEWS 11

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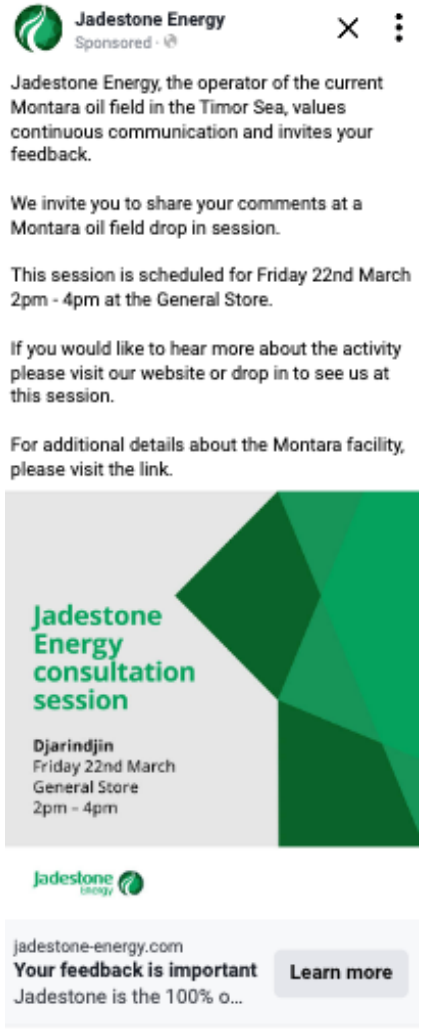
SOCIAL ADVERT

- Advertised from 12/03/2024 – 22/03/2024
- Total reach: 133
- Total impressions: 1,801
- Total link clicks: 8



Community information session held on 22 March 2024

Wyndham

NEWSPAPER ADVERT

- Appeared in the Kimberley Echo from 14/03/2024 – 21/03/2024
- Readership: 1,600

Thursday, March 14, 2024 — kimberleyecho.com.au — NEWS 7

Seizure of illegal grog draws praise

SARAH CRAWFORD

The Liquor Stores Association of WA hopes the police seizure of a large amount of sly grog headed to mostly dry towns will deter others from dealing in the illegal trade.

Forty-two casks of wine, 11 bottles of spirits, and two blocks of beer and pre-mixed drinks were discovered in three separate seizures in the strictly liquor-restricted community of Fitzroy Crossing on Great Northern Highway on February 4 and 28.

In Broome seven casks of wine, seven bottles of wine and a one-litre bottle of bourbon were seized from a liquor-restricted premises on February 19, believed to be bound for the mostly dry town of Halls Creek.

Halls Creek and Fitzroy Crossing have some of the strictest liquor restrictions in the State, with full-strength takeaway alcohol banned.

Selling black market alcohol in these towns can be highly lucrative.

LSA chief executive Peter Peck said it was encouraging authorities were cracking down on the illegal traders of alcohol.

"I have to commend and congratulate the officers from the Kimberley for their work," he said.

"It's the kind of action the industry needs to see and be assured that police on the ground are doing everything in their power to stop sly grogging.

"I hope these seizures serve as a deterrent to those who think they can profit off alcohol-related harm, because this demonstrates that you can't, and that the law clearly catches up with everyone."

So far, four people have been charged over the offences, and police say the investigations are continuing.

Booze seized by police. Picture: WA Police

Residential aged care prices set to soar for wealthiest Australians

KATINA CURTIS

Wealthy older Australians could be asked to pay $5400 a year more for residential aged care and to contribute more for services used in home care under a funding revamp intended to make the growing costs more manageable.

But the Federal Government has ruled out any new Medicare levy-style tax on all Australians to cover the costs. Demand is expected to grow enormously, with the population aged over 80 expected to triple over the next 40 years.

An expert taskforce led by Aged Care Minister Anika Wells spent six months examining funding arrangements and handed its recommendations to the Government at the end of December.

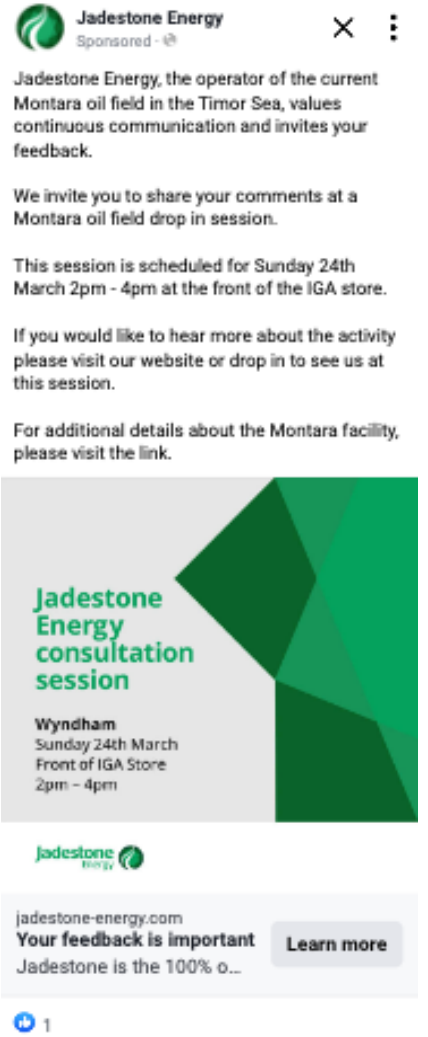
However, the Government is still considering how to act on them and may not have a response ready the May Budget.

Nevertheless, Ms Wells said it was clear that work must start now. "Australia's aged care system is under stress. There is universal acceptance that something must change in order to ensure all Australians can age with the dignity, safety and high-quality care they deserve," she said.

The report identifies four key problems: increased demand, high care expectations, need for extra funding and demographic changes.

SOCIAL ADVERT

- Advertised from 12/03/2024 – 24/03/2024
- Total reach: 541
- Total impressions: 4,511
- Total link clicks: 39



Jadestone Energy
Sponsored ·

Jadestone Energy, the operator of the current Montara oil field in the Timor Sea, values continuous communication and invites your feedback.

We invite you to share your comments at a Montara oil field drop in session.

This session is scheduled for Sunday 24th March 2pm - 4pm at the front of the IGA store.

If you would like to hear more about the activity please visit our website or drop in to see us at this session.

For additional details about the Montara facility, please visit the link.

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Your feedback is important
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Community information session held on 24 March 2024

Jadestone Energy

Kununurra

NEWSPAPER ADVERT

- Appeared in the Kimberley Echo from 14/03/2024 – 21/03/2024
- Readership: 1,600

Thursday, March 14, 2024 — kimberleyecho.com.au — NEWS 7

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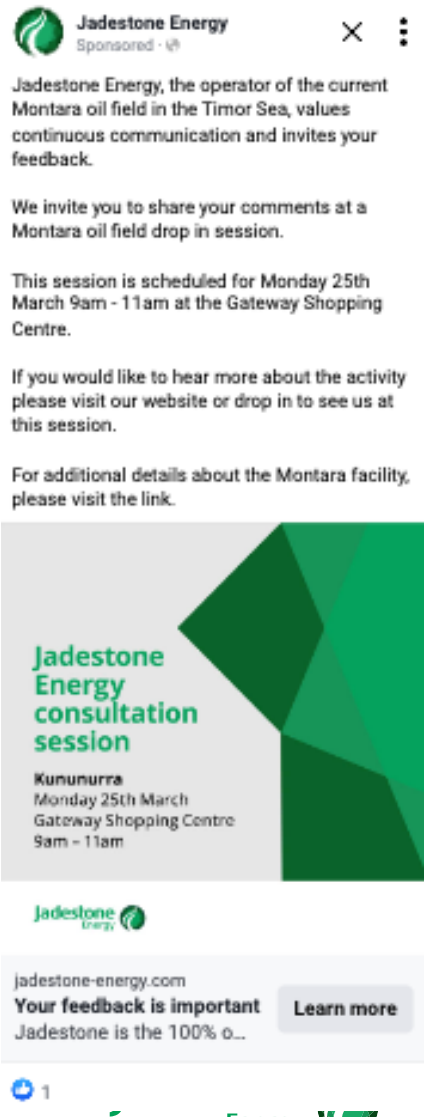
SOCIAL ADVERT

- Advertised from 12/03/2024 – 25/03/2024
- Ad was paused on 18/03/2024 and recommenced on 24/03/2024 due to issues with venue
- Total reach: 2,160
- Total impressions: 7,517
- Total link clicks: 56



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We invite you to share your comments at a Montara oil field drop in session.

This session is scheduled for Monday 25th March 9am - 11am at the Gateway Shopping Centre.

If you would like to hear more about the activity please visit our website or drop in to see us at this session.

For additional details about the Montara facility, please visit the link.

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Jadestone is the 100% o...
Learn more

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Energy

Community information session held on 25 March 2024

Overall

SOCIAL STATISTICS

Location	Reach	Impressions	Clicks	Visits [1]	Conversations [2]
Mowanjum	544	3,312	18	6	2
Derby	1,006	4,856	29	38	10
Broome	3,796	12,530	82	60	8
Bidyadanga	160	2,873	9	10	6
Beagle Bay	611	3,214	17	10	8
Djarindjin	133	1,801	8	5	1
Wyndham	541	4,511	39	55	9
Kununurra	2,160	7,517	56	50	11
Kalumburu*	185	1,680	15	n/a	n/a
TOTAL	**9,136**	**42,294**	**273**	**234**	**55**

QR Scans

11 Mar – 2 April: **79**

*Kalumburu social ads were cancelled in line with visit not proceeding

[1] This refers to the number of people that walked immediately past the information sessions location and either engaged in a conversations or choose to walk past.
[2] This refers to the number of people that engaged in conversations.

Jadestone Energy

Conversation Topics

- The topics of conversation related how the environment would be protected in the event of a spill
- Protection of the natural environment, in particular food sources such as fish, dugong, and turtle habitats
- Receiving timely notification of spill events when such events are predicted to move towards the communities
- Both Bidyadanga and Wyndham noted ranger groups may be interested in the activity and should be consulted in the event of a spill
- Beagle Bay specifically referenced the Lacepede Islands as an area to be protected as it is considered an area of significance to the community, largely due to Green Sea Turtle and Dugong presence. No other sites of significance were identified

Jadestone Energy

Follow-Ups

- In total, five attendees provided their contact details for follow-up information.
- Two requested information regarding employment opportunities
- Three requested the general information pack and have been added to the relevant persons list for ongoing consultation

Jadestone Energy

Jadestone Energy invites you to provide your feedback on the Montara field in the Timor Sea.

Drop in sessions will be held in:

Mowanjum
Tuesday 19th March, 10am - 12pm
Mowanjum Art Centre

Derby
Tuesday 19th March, 2pm - 4pm
Front of IGA Store

Broome
Wednesday 20th March, 2pm - 4pm
Boulevard Shopping Centre

Bidyadanga
Thursday 21st March, 10am - 2pm
General Store

Beagle Bay
Friday 22nd March 10am - 12pm
Community Hall

Djarindjin
Friday 22nd March, 2pm - 4pm
General Store

Jadestone Energy

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Jadestone Energy invites you to provide your feedback on the Montara field in the Timor Sea.

Drop in sessions will be held in:

Kalumburu
Sunday 24th March, 10am — 12pm
Kalumburu Resource Centre

Wyndham
Sunday 24th March, 2pm — 4pm
Front of IGA Store

Kununurra
Monday 25th March, 9am — 11am
Gateway Shopping Centre

Jadestone Energy

If you would like to hear more about the activity please visit our website, or drop in to see us as the session.

Australian Government
Department of Climate Change, Energy, the Environment and Water

EPBC Ref: 2002/755

Legal requirements for decision whether to extend period of approval.

Montara 4, 5 and 6 Oil Production Wells and Gas Re-injection Well, Timor Sea (EPBC 2002/755)

Environment Protection and Biodiversity Conservation Regulations 2000 (EPBC Regulations) r5.05	
Requested timeframe for the proposed extension	Extension requested until the end of 2040
Reasons for the proposed extension	To align with the anticipated end of field life in 2032 plus 8 years of decommissioning activities until 2040
Evidence that conditions have been complied with	Refer to Attachment A
Evidence conditions provide and will continue to provide adequate protection for MNES*	Refer to Attachment B
Evidence impacts will be similar in character and magnitude to those identified during the assessment	Refer to Attachment C
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) s145D(3)	
Matters relevant to any matter protected by a provision of Part 3 for which the approval has effect*	The approval has effect for the following EPBC Act sections: • Commonwealth marine areas (sections 23 & 24A)
Economic and social matters	Refer to Attachment D

MINISTERIAL CONDITION COMPLIANCE

Montara 4, 5 and 6 Oil Production Wells and Gas Re-injection Well, Timor Sea (EPBC 2002/755)			
Condition No.	**Condition**	**Compliant (Y/N)**	**Compliance Evidence**
1.	The person taking the action must submit for the Minister's approval, an Oil Spill Contingency Plan (OSCP) that demonstrates the response preparedness of the person taking the action for any spills, including hydrocarbons from offshore wells and infrastructure, pipelines, construction and operation vessels. This must include the capacity to respond to a spill and mitigate the environmental impacts on the Commonwealth marine area and species listed as threatened or migratory under the EPBC Act. The OSCP must include, but is not limited to: a) identification of sensitive areas, species or habitats that may be impacted by a potential spill, as determined by site-specific modelling of worst case scenario spills; b) specific response measures for those sensitive areas, species or habitats and prioritisation of those areas during a spill response, including a net environmental benefit analysis of the response options; c) a description of resources available for use in containing and minimising impacts in the event of a spill and arrangements for accessing them; d) a demonstrated capacity to respond to a spill at the site and measures that can feasibly be applied within the first 48 hours of a spill occurring; e) training of staff in spill response measures and identifying roles and responsibilities of personnel during a spill response; f) procedures for reporting spill incidents within 48 hours of a spill occurring; and g) a demonstrated procedure or a plan for testing, maintenance and review of the OSCP. The OSCP must be submitted and approved by the Minister prior to the recommencement of operations, or as otherwise agreed to in writing by the Minister. The person taking the action must not recommence the operations unless the Minister has approved the OSCP. The approved OSCP must be implemented.	Y	As per Condition 13, Jadestone Energy has a NOPSEMA accepted OPEP (Revision 5) in place. The OPEP was accepted as part of the EP assessment on 6 August 2019. Refer to NOPSEMA's website: https://info.nopsema.gov.au/activities/50/show_public A revised OPEP has been submitted and is currently under assessment by NOPSEMA: https://info.nopsema.gov.au/environment_plans/619/show_public There has been one spill since 2018 that triggered activation of the OPEP. Incident records, including incident reports to NOPSEMA, are available to confirm the OPEP was implemented. The readiness of implementation of the OPEP can also be demonstrated via the following: • Implementation of Jadestone Energy's Audit Manual (JS-90-PR-G-00003) which describes the auditing system in place to check compliance with the company's management systems, processes and procedures in meeting regulatory requirements. • All aspects of the EP, which includes the OPEP and OSMP, are audited on a rotating cycle over a 5-year period with assurance checks completed on all aspects annually. • Independent, third party audits are conducted as required. • Environmental commitments and any non-conformances identified are tracked via Jadestone Energy's compliance management system BassNet. • The Annual Performance Report (APR) to NOPSEMA describes any non-compliances identified during the reporting period.

Montara 4, 5 and 6 Oil Production Wells and Gas Re-injection Well, Timor Sea (EPBC 2002/755)			
Condition No.	**Condition**	**Compliant (Y/N)**	**Compliance Evidence**
2.	The person taking the action must submit for the Minister's approval a Decommissioning Plan at least one (1) year prior to commencement of decommissioning of any components of the floating production, storage and offtake vessel, subsea wells, flowlines, or any associated infrastructure. The Decommissioning Plan must address the removal of all structures and components above the sea floor. The person taking the action must not commence decommissioning until the Decommissioning Plan has been approved by the Minister. The approved Decommissioning Plan must be implemented.	Y	As per Section 3.9 of the accepted EP, prior to the end of field life (currently estimated as 2032) whilst the title is still in force, a decommissioning plan will be in place that sets out the strategy for removal of property from the permit area. The timeframe allocated to planning for decommissioning allows for the preparation of a Cessation of Production EP and/or decommissioning EP and sufficient time for assessment by NOPSEMA to ensure each EP is accepted prior to activities commencing and prior to end of field life. Jadestone Energy's commitment to having a decommissioning framework is provided in management control 177: *No later than five years prior to the end of field life, Jadestone will have a decommissioning framework that details how JSE will meet the obligations under s.572 of the OPGGS Act. This will include:* • Timeframes for regulatory approval documents; • Inventory of all in-field infrastructure; • Status of all in-field infrastructure; and • Overall decommissioning concept. As per Condition 13, the decommissioning framework and environment plan will be assessed by NOPSEMA on behalf of the DCCEEW.
3.	The person taking the action must monitor produced formation water in accordance with a NOPSEMA accepted Environment Plan for the activity, including aspects of quality, quantity and effects on the receiving environment.	Y	Jadestone Energy provides an Annual Performance Report (APR) to NOPSMEA which reports on compliance with all commitments in the accepted EP, including monitoring of produced formation water (PFW). The APR includes information on PFW quality and volume and every three years whole effluent toxicity and the effects on the receiving environment are tested for and reported in the APR.

Montara 4, 5 and 6 Oil Production Wells and Gas Re-injection Well, Timor Sea (EPBC 2002/755)			
Condition No.	**Condition**	**Compliant (Y/N)**	**Compliance Evidence**
4. 5. 6.	Condition 4, 5 and 6 were revoked on the date of the Consolidated Notice dated 12 June 2018.	N/A	N/A
7.	The person taking the action must submit for the Minister's approval, an Operational and Scientific Monitoring Program (OSMP) that will be implemented in the event of a spill to determine the potential extent and ecosystem consequences of such a spill, including, but not limited to: a) triggers for the initiation and termination of the OSMP, including, but not limited to, spill volume, composition, extent, duration and detection of impacts; b) a description of the studies that will be undertaken to determine the operational response, potential extent of impacts, ecosystem consequences and potential environmental reparations required as a result of the spill; c) inclusion of sufficient baseline information on the biota and the environment that may be impacted by a potential spill, to enable an assessment of the impacts of such a spill; d) a strategy to implement the scientific monitoring plan, including timelines for delivery of results and mechanisms for the timely peer review of studies; and e) provision for periodic review of the program. The OSMP must be submitted and approved by the Minister within three (3) months following the recommencement of operations, or as otherwise agreed to in writing by the Minister. The approved OSMP must be implemented.	Y	As per Condition 13, Jadestone Energy has a NOPSEMA accepted OPEP (Revision 5) in place which includes information on the OSMP. The OPEP was accepted as part of the EP assessment on 6 August 2019. Jadestone Energy has also prepared the Framework for Scientific Monitoring (Revision 0) to guide scientific monitoring activities in an oil spill response. There has been one spill since 2018 that triggered activation of the OPEP but not the OSMP. Incident records, including incident reports to NOPSEMA, are available to confirm the OPEP was implemented. The readiness of implementation of the OSMP can be demonstrated via the following: • Implementation of Jadestone Energy's Audit Manual (JS-90-PR-G-00003) which describes the auditing system in place to check compliance with the company's management systems, processes and procedures in meeting regulatory requirements. • All aspects of the EP, which includes the OPEP and OSMP, are audited on a rotating cycle over a 5-year period with assurance checks completed on all aspects annually. • Independent, third party audits are conducted as required. • Environmental commitments and any non-conformances identified are tracked via Jadestone Energy's compliance management system BassNet.

Montara 4, 5 and 6 Oil Production Wells and Gas Re-injection Well, Timor Sea (EPBC 2002/755)			
Condition No.	**Condition**	**Compliant (Y/N)**	**Compliance Evidence**
			• The Annual Performance Report (APR) to NOPSEMA describes any non-compliances identified during the reporting period.
8.	Condition 8 was revoked on the date of the Consolidated Notice dated 12 June 2018.	N/A	N/A
9.	Within 30 days after the recommencement of operations, the person taking the action must advise the Department in writing of the actual date of recommencement of operations.	N	Records confirming notification of the recommencement date to the Department could not be located during preparation of this document. However, records available do confirm that Jadestone Energy were liaising with the then Department of Environment and Energy in 2018 during the acquisition of the Montara asset while the facility was offline for maintenance.
10.	The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plans/monitoring programs required by this approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	Y	Jadestone Energy applies an integrated Business Management System that is aligned with ISO 55000: Asset Management. This covers all activities and includes provision for the systematic management of environment and safety and all other business functions. The management system sets a structured framework that provides governance across company processes for all organisational activities, including records management, with defined accountabilities and performance requirements for employees and contractors to deliver activities aligned to the vision and requirements of Jadestone Energy, including those identified in the accepted EP. As a minimum, Jadestone Energy will store and maintain records for five years, where records include: • Written reports including monitoring, audit and review regarding environmental performance or the business management system; • Environmental performance reports and associated documentation;

Montara 4, 5 and 6 Oil Production Wells and Gas Re-injection Well, Timor Sea (EPBC 2002/755)			
Condition No.	**Condition**	**Compliant (Y/N)**	**Compliance Evidence**
			• Documentation generated through stakeholder consultation; • Records of emissions and discharges; • Records of calibration and maintenance; and • Reportable and recordable incident reports. Records are available to DCCEEW on request.
11.	Upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.	Y	NOPSEMA conduct annual audits of the Montara Operations since becoming the primary jurisdictional authority. DCCEEW have not requested an independent audit since Jadestone Energy resumed responsibility for the asset, however if requested, Jadestone Energy would ensure that such an audit would meet the criteria outline in this condition.
12.	Condition 12 was revoked on the date of the Consolidated Notice dated 12 June 2018.	N/A	N/A
13.	A plan, program or strategy required by condition 1, 2 or 7 is automatically deemed to have been submitted to, and approved by, the Minister if the measures (as specified in the relevant condition) are included in an environment plan (or environment plans) relating to the taking of the action that: a) was submitted to NOPSEMA after 27 February 2014; and b) either: i. is in force under the OPGGS Environment Regulations; or ii. has ended in accordance with regulation 25A of the OPGGS Environment Regulations.	Y	Jadestone Energy submitted the currently accepted EP (Revision 10) and OPEP (Revision 5, includes OSMP information) on 22 November 2019 to NOPSMEA for assessment. This date is after the 27 February 2014 so was not required to be submitted to DCCEEW for review. The OPEP was accepted as part of the EP assessment on 6 August 2019. Refer to NOPSEMA's website: https://info.nopsema.gov.au/activities/50/show_public Please note that Jadestone Energy have submitted a revised EP to NOPSMEA on 30 September 2022 and it is currently under assessment. A decommissioning plan will be submitted to NOPSMEA no later than five years prior to the end of field life for assessment.

Montara 4, 5 and 6 Oil Production Wells and Gas Re-injection Well, Timor Sea (EPBC 2002/755)			
Condition No.	**Condition**	**Compliant (Y/N)**	**Compliance Evidence**
	13A. Where a plan, program or strategy required by condition 1 or 7 has been approved by the Minister and the measures (as specified in the relevant condition) are included in an environment plan (or environment plans) that: a) was submitted to NOPSEMA after 27 February 2014; and b) either: i. is in force under the OPGGS Environment Regulations; or ii. has ended in accordance with regulation·25A of the OPGGS Environment Regulations, the plan, program or strategy approved by the Minister no longer needs to be implemented.	Y	The Ministerial approved OSCP and OSMP related plans, programs and strategies have been consolidated into the NOPSEMA approved OPEP and OSMP. The latest revision of the OPEP and OSMP was approved by NOPSEMA on 6 August 2019. No further action is required.
	13B. Where an environment plan, which includes measures specified in the conditions referred to in conditions 13 and 13A above, is in force under the OPGGS Environment Regulations that relates to the taking of the action, the person taking the action must comply with those measures as specified in that environment plan.	Y	Jadestone Energy provides an Annual Performance Report (APR) to NOPSMEA which reports on compliance with all commitments in the accepted EP.

MNES REVIEW

Jadestone Energy's Risk Management Framework is implemented to identify and assess risks and impacts from the activity to matters of national environmental significance (MNES) and identify appropriate controls to protect MNES. The Operational Excellence (Continual Improvement) process is implemented to ensure controls remain adequate in protecting MNES.

An overview of Jadestone Energy's Risk Management Framework and Continual Improvement process is outlined below.

1. RISK MANAGEMENT FRAMEWORK

Jadestone Energy implements a Risk Management Framework (JS-70-PR-F-00009) which is consistent with HB 203:2012 and AS/NZS ISO 31000:2018.

Impact is evaluated in terms of the extent, duration, severity and certainty pertaining to the effect that will or may occur in the environment due to a planned or accidental event associated with the activity.

Risk is evaluated in terms of likelihood and consequence, where likelihood is defined as the probability or frequency of the event occurring, while consequence, like impact, is defined as the extent, duration, severity and certainty pertaining to the effect that will or may occur in the environment due to a planned or accidental event associated with the activity.

The assessment methodology provides a framework to demonstrate:

- That the identified impacts and risks are reduced to as low as reasonably practicable (ALARP); and
- The impacts and risks are acceptable.

The impact and risk management process is shown in **Figure 1-1**.

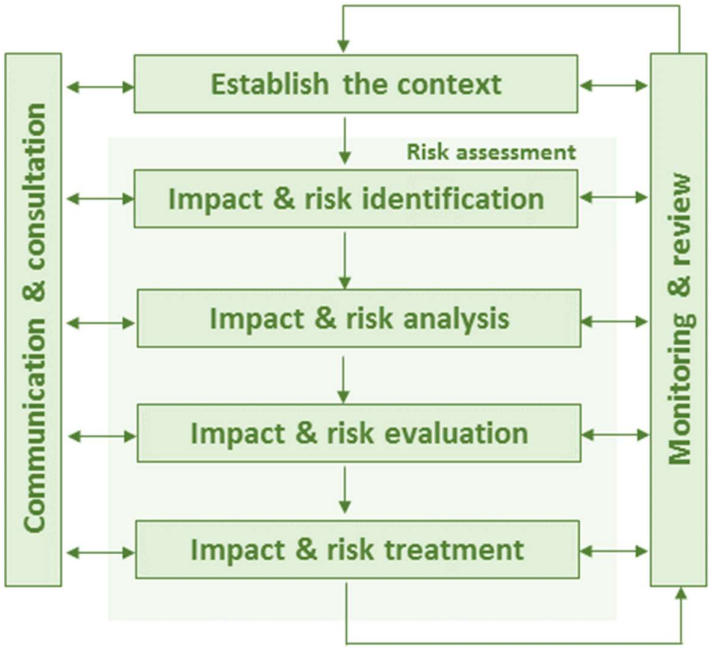

Image source: NOPSEMA (GN0165 Risk Assessment Rev 5 2017)

Figure 1-1: Impact and risk evaluation process

Further detail on the steps involved in the impact and risk evaluation process is provided below.

1.1 Assessment Method

The assessment process evaluates impacts and risks associated with planned and accidental events that will or have the potential to impact the environment. Impacts and risks are identified through a number of activities:

- Workshopping process attended by a team that includes relevant technical knowledge and experience in the activities being assessed;
- Information relating to previous environmental performance relevant to the activity being assessed such as findings of audits and inspections, incident investigations, performance reports;
- Feedback from relevant persons; and
- Industry related information of exploration and production activities relevant to the activity being assessed.

Analysis of the impacts and risks identified for the activity includes a number of steps intended to treat the impacts and risks to levels that are acceptable and as low as reasonably practicable for the business. The steps are:

- Identification of appropriate control measures (preventative and mitigative) to treat likelihood and consequence/ impact (below); and
- Determination of the residual impact/ risk ratings.

1.2 Identification of control measures

The following framework tools are applied, as appropriate, to assist with identifying control measures:

- **Legislation, Codes and Standards** – identifies the requirements of legislation, codes and standards which are to be complied with for the activity;
- **Good Industry Practice** – identifies further engineering control standards and guidelines which may be applied over and above that required to meet the legislation, codes and standards;
- **Professional Judgement** – uses relevant personnel with the knowledge and experience to identify alternative controls. When formulating control measures for each environmental impact or risk, the 'Hierarchy of Controls' philosophy (see below), which is a system used in the industry to minimise or eliminate exposure to impacts or risks, is applied;
- **Risk Based Analysis** – assesses the results of probabilistic analyses such as modelling, quantitative risk assessment and/ or cost benefit analysis to support the selection of control measures identified during the assessment process;
- **Company Values** – identifies values referenced in Jadestone Energy's HSE Policy; and
- **Societal Values** – identifies the views, concerns and perceptions of relevant persons and addresses their concerns as gathered through consultation.

In addition, Jadestone Energy applies a hierarchy of control measures to help evaluate potential management controls to ensure reasonable and practicable solutions have not been overlooked:

- **Elimination –** it is preferable to remove the impact or risk altogether;
- **Substitution –** substitute the impact or risk for a lower one;

- **Engineering control measures** – use engineering solutions to prevent or detect the hazard or control the severity of consequences/ impacts;
- **Administrative control measures** – use of procedures, JHA etc. to assess and minimise the environmental impacts or risks of an activity; and
- **Protective** – use of protective equipment (e.g. the use of appropriate containers).

1.3 Risk ranking process

Risks are ranked using the Jadestone Energy's Qualitative Risk Matrix (**Table 1-1**). Environmental ranking of a measure between **Low** to **Extreme** is determined by evaluating the likelihood of the accidental event occurring, and evaluation the expected severity of the consequence with standard expected control measures in place.

Table 1-1: Jadestone Energy qualitative risk matrix

Rating		Consequence				
		Negligible	**Minor**	**Moderate**	**Major**	**Critical**
Likelihood	**Expected**	Medium	Medium	High	Extreme	Extreme
	Probable	Medium	Medium	Medium	High	Extreme
	Likely	Low	Medium	Medium	Medium	High
	Unlikely	Low	Low	Medium	Medium	Medium
	Rare	Low	Low	Low	Medium	Medium

Consequence levels for accidental events are assigned based on the expected extent of area that may be affected, the duration of effect and the severity of the effect. A consequence level of **Negligible** to **Critical** may be assigned (**Table 1-2**).

Table 1-2: Definition of consequence level

Consequence		**Socio-economic**
5. Critical	Massive effect; recovery in decades; ecosystem collapse	Extensive damage International impact
4. Major	Major effect; recovery in 1 to 2 years; impact to population	Major damage National reputation impact
3. Moderate	Local effect; recovery in months to a year; impact to localised community	Local damage Considerable reputation impact
2. Minor	Minor effect; recovery in weeks to months; death of individuals	Minor damage Limited reputation impact
1. Negligible	Slight effect; recovery in days to weeks; injury to organism	Slight damage Slight reputation impact

Likelihood levels for accidental or unplanned events are assigned on the basis of preceding performance in relation to the specific activity, within the region or in industry. A likelihood level of **Rare** to **Expected** maybe be assigned to accidental events or unplanned events (**Table 1-3**). A likelihood level is not assigned to planned events.

Table 1-3: Definition of likelihood levels

Likelihood	
5. Expected	Happens several times a month in similar exploration and production operations
4. Probable	Happens several times a year in similar exploration and production operations
3. Likely	Event has occurred in similar exploration and production operations
2. Unlikely	Heard of in the exploration and production industry
1. Rare	Never heard of in the exploration and production industry

Once assessed and treated, an assessment as to whether the impacts and risks recorded can be demonstrated as being acceptable and ALARP is made. The processes for determining if risks and impacts have been reduced to ALARP and acceptable levels are described below.

1.4 Impact Assessment

Environmental impacts that will occur as a result of planned activities may cover a wider range of issues, multiple species, persistence, reversibility, resilience, cumulative effects and variability in severity. The degree of environmental impact and the corresponding level of acceptability is assessed against a number of guiding principles:

- Principles of ecologically sustainable development (ESD);
- Conservation and management advice;
- Stakeholder feedback;
- Reputational ramifications;
- Environmental context; and
- Jadestone Energy's HSE Policy and Management System.

The application of the guiding principles within the acceptability matrix are outlined in **Table 1-4**.

The following process has been applied to demonstrate acceptability in the reduction of planned impacts:

- **GREEN** residual impacts are Tolerable, if they meet management requirements, stakeholder requirements, environmental context, and the Jadestone Energy HSE Policy and management system requirements; and
- **ORANGE** residual impacts are Intolerable and therefore unacceptable. Planned impacts with this rating will require further investigation and mitigation to reduce them to a lower and acceptable level. If after further investigation the impact remains in the unacceptable category, the impact requires appropriate business sign-off to accept the impact or risk.

A reduction of impacts to as low as reasonably practicable follows the process as described for the reduction of risks to ALARP in **Section 1.6.**

1.5 Demonstration of Acceptability

An acceptable level of risk of an accidental event occurring must be scored with a low or medium rating. Risks receiving a score of high (orange) or extreme (red) risk ratings are unacceptable. For those risks found to have an unacceptable rating, return to the planning process for the activity is required to determine if an alternative approach to undertaking the activity can be identified.

Table 1-4: Jadestone Energy's acceptability matrix

Guiding principles	Impact level				
	1	2	3	4	5
Principles of ESD	Discharges/ emissions have slight effect – recovery in days to weeks	Discharges/ emissions have minor effect – recovery in weeks to months	Discharges/ emissions have local effect – recovery in months to a year	Discharges emissions have major effect – recovery in multiple years	Discharges emissions have catastrophic effect – recovery in decades
Conservation and management advice	Activity does not contact/ interact with sensitivities protected by conservation and management advice	Activity triggers and adopts conservation and management advice of affected sensitivities	Activity must be modified to uphold conservation and management requirements of affected sensitivities	Activity as planned cannot uphold conservation and management requirements of affected sensitivities	Activity as planned will contravene conservation and management requirements of affected sensitivities
Stakeholders	No issues raised by stakeholders	Concern/ query received by stakeholders due to activity	Delay in commencement of activity due to stakeholder consultation	Modification of planned activity to achieve negotiated outcome	Executive involvement in resolving stakeholder concerns
Reputation	Slight impact – no media coverage	Limited impact – State media coverage	Considerable impact – national coverage	National impact – persistent national coverage	International impact – international coverage
Environmental context	Slight effect – recovery in days to weeks	Minor effect – recovery in weeks to months	Local effect – recovery in months to a year	Major effect – recovery in multiple years	Catastrophic effect – recovery in decades
Policy and Management System compliance	Proposed activity complies with JSE HSE Policy and Management System	Parts of the activity will not align with JSE HSE Policy and Management System	Proposed activity must be modified to align with JSE HSE Policy and Management System	Proposed activity cannot uphold intent of JSE HSE Policy and Management System	Proposed activity does not comply with JSE HSE Policy and Management System

1.6 Demonstration of ALARP

Regulation 10A(b) of the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (OPGGS (E) Regs)* requires a demonstration that risks are reduced to ALARP.

The ALARP principle states that it must be possible to demonstrate that the cost involved in reducing the risk further would be grossly disproportionate to the benefit gained. The ALARP principal arises from the fact that infinite time, effort and money could be spent attempting to reduce a risk to zero. An iterative evaluation process is employed until such time as any further reduction in the residual ranking is not reasonably practicable to implement. Following identification of the residual ranking, the ALARP principle is applied:

- Where the residual rank is **LOW** as:
  - Good industry practice or comparable standards have been applied to control the risk, because any further effort towards reduction is not reasonably practicable without sacrifices grossly disproportionate to the benefit gained.
- Where the residual rank is **MEDIUM**:
  - Good industry practice is applied for the situation or risk; and
  - Alternatives have been identified and the control measures selected to reduce the risks to ALARP. This may require assessment of Company and industry benchmarking, review of local and international codes and standards, consultation with stakeholders, etc. to demonstrate that alternatives have been considered, and reasons for rejection provided.
- Where the residual rank is **HIGH** or **EXTREME** the risk is not considered to be acceptable and the activity cannot continue as described. Further control measures must be applied such that an acceptable risk is demonstrated; and the residual risk is reduced to 'Medium' or lower as described above. The activity should not be carried out if the residual risk remains 'High or Extreme'.

The process of evaluating the reduction of risks to ALARP is illustrated in **Figure 1-2**.

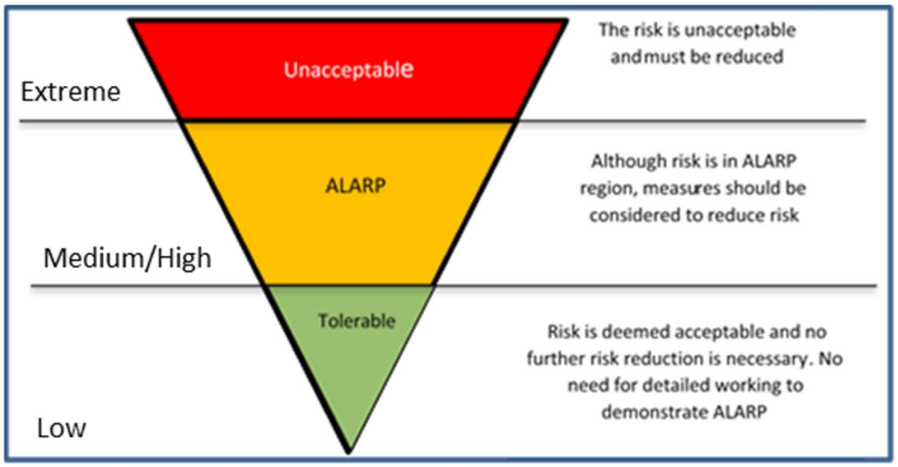

Figure 1-2: ALARP triangle

2. CONTINUOUS IMPROVEMENT (OPERATIONAL EXCELLENCE)

2.1 Review of environmental performance

The owner of the Operational Excellence business function, with input from other business functions with responsibilities relating to the EP (e.g. operations, maintenance, supply chain), conducts an annual review of environmental performance and the effectiveness of the EP implementation strategy (i.e. Business Management System). This includes a review of the effectiveness of control measures in reducing impacts and risks to ALARP and acceptable levels, and may result in improvements being identified, evaluated and implemented.

Outcomes of the Annual Performance Review are recorded and contribute to the EP Annual Performance Report.

The review of environmental performance includes an assessment of:

- Review of compliance with environmental performance outcomes and performance standards, and adequacy of measurement criteria;
- Function of environmental management controls relevant to reportable and/or recordable incidents;
- Monitoring data and trends;
- Results of audits and incident investigations;
- Inspection and checklist approaches; and
- Adequacy of monitoring, inspections and audits.

The Annual Review is also an opportunity to ensure new information is incorporated into the EP and will consider the following:

- Existing information in relation to any component of the receiving environment described in this EP including, but not limited to, biologically important areas, KEFs, and threatened species (a PMST search is re-run annually to confirm if there are any changes to relevant MNES);
- Available scientific literature;
- New issues raised by stakeholders;
- Relevance of existing and identification of new stakeholders; and
- Australian Marine Park status (including any changes in status or management) and relevant IUCN principles.

The results of the review and any identified improvements or recommendations will be incorporated into processes and procedures used for the operation, or the EP, to facilitate continuous improvement in environmental performance.

In the event that new information (audits, inspections, reviews etc.) suggests risks and impacts are no longer reduced to acceptable levels, or controls are no longer effective in reducing the risks and impacts to ALARP and acceptable levels, then the process for identification of further controls through a risk assessment will follow that of the risk assessment methodology for this EP.

Any opportunities for improvements identified through the risk assessment (i.e. new controls adopted) will be evaluated via a Management of Change process prior to the EP, procedures or processes being modified.

IMPACTS REVIEW

Jadestone Energy's Risk Management Framework is implemented to identify and assess risks and impacts, including character and magnitude, from the activity and identify appropriate controls.

The Management of Change processes is implemented to confirm if any proposed changes will trigger an increase in risk or change in controls. If the change meets any of the criteria detailed by *Regulation 17* of the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (OPGGS (E) Regs*), a revision/resubmission of the EP to NOPSEMA will occur and the change will only be implemented if acceptance is received.

An overview of Jadestone Energy's Risk Management Framework and Continual Improvement process is outlined below.

1. RISK MANAGEMENT FRAMEWORK

Jadestone Energy implements a Risk Management Framework (JS-70-PR-F-00009) which is consistent with HB 203:2012 and AS/NZS ISO 31000:2018. Section 4 of the accepted EP details the risk assessment framework as depicted in Figure 1. The assessment methodology provides a framework to demonstrate:

- That the identified impacts and risks are reduced to as low as reasonably practicable (ALARP); and
- The impacts and risks are acceptable.

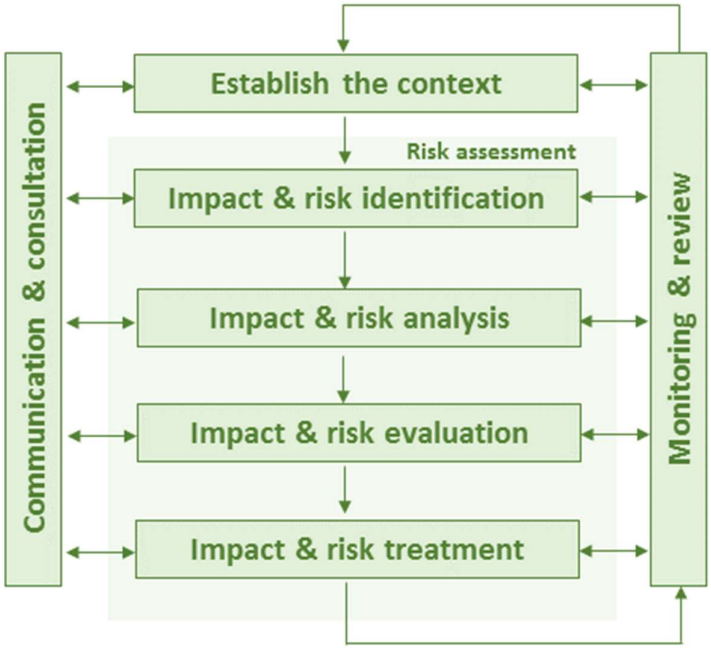

Image source: NOPSEMA (GN0165 Risk Assessment Rev 5 2017)

Figure 1: Impact and risk evaluation process

2. MANAGEMENT OF CHANGE

Jadestone's Management of Change process, as detailed in Section 9.4.2 of the accepted EP, is implemented to determine whether a proposed change to activities triggers the requirements of Regulation 17 of the *OPGGS (E) Regs*, which may result in a revision and resubmission of the EP to NOPSEMA. This process is described in the Jadestone's Change Management Procedure (MoC) (JS-90-PR-G-00017).

The procedure describes a system for identifying, tracking, responding, progressing and closing out change requests or queries raised by any party involved in Jadestone Energy activities. It also directs and instructs activity owners on the environmental regulatory requirements relating to a change in operations.

The procedure provides for proper consideration of temporary or permanent changes to activities, including an impact and risk assessment, approved and communicated to all appropriate stakeholders together with providing a record of the change. In particular, the system ensures the following:

- All changes required to critical outputs will be identified, recorded, risk assessed and approved – internally and externally as required – before being implemented;
- Processes and procedures are in place to ensure requirements for change are identified and unauthorised changes are prevented;
- All changes must be assessed to determine if the change introduces a new risk or impact or increases an existing impact or risk, as required by Regulation 17 of the *OPGGS (E) Regs*;
- The MoC is prepared internally by Jadestone personnel which includes consultation with relevant parties as necessary such as technical/ subject matter experts and external stakeholders as required;
- Only authorised and competent members of the workforce can approve changes, including relevant Technical Authorities. Technical Authorities are deemed as authorised and competent via the Technical Authority Framework (JS-60-STD-Q-00001);
- Approval of a change internal to Jadestone requires confirmation that impacts and risks have been assessed and appropriate reduction measures implemented (if required) to manage risk to ALARP and impacts to acceptable levels;
- All approved changes that affect the Environment Plan are properly documented and communicated to all relevant internal and external members of the workforce, e.g. via toolbox talk or HSE meetings and JSA; and
- An audit trail is kept of all changes and documents and drawings are updated accordingly.

MOC must be designed to meet the particular requirements of the type of change required and will include:

- Risk assessment to assess potential impacts to the receiving environment as detailed in this EP, including matters of NES and those protected under the *EPBC Act*;
- Strategies and actions to mitigate any adverse effects; identify opportunities offered by the change; and determine how impacted interfaces shall be managed;
- Timeframes for implementation;
- Documents (e.g. drawing, plan, program, procedure) against which change is monitored;
- Outline drawings or controlled documents affected; and
- Responsibilities for execution, review and approval of the:
    - Justification for the change,
    - Assessment of the impact and risk to environment,
    - Detailed implementation requirements,
    - Dissemination of the change, training personnel and updating of documentation.

All alterations and updates to controlled documents, including regulatory approvals, procedures or drawings must be in accordance with Jadestone Energy's Document Control requirements. If the change meets any of the criteria detailed by Regulation 17 of the *OPGGS (E) Regs*, a revision/resubmission of the EP to NOPSEMA will occur.

ECONOMIC AND SOCIAL MATTERS REVIEW

The purpose and economic and social benefits are as follows:

The Montara operations activity, management by Jadestone Energy, is expected to have a life of approximately 12 years and to be fully operational within this period. The activity commenced with an indicative production rate of 30,000 bbl/d of crude oil, and current production rate is approximately 16,000 bbl/d which is expected to decline over the life of the activity as is typical for oil field developments. This provides direct economic benefit as well as creation of local employment opportunities for the Australian community.

APPENDIX H BIRD MANAGEMENT HAZID/ENVID WORKSHOP OUTPUT

Montara FPSO and WHP Standalone Risk Assessment for Bird Management Strategies

Risk ID	Risk Prompt	RISK IDENTIFICATION: Risk Description & Potential Cause (s) – Eng/Ops Description	RISK IDENTIFICATION: Risk Description & Potential Cause (s) – HAZID/ENVID Description	RISK IDENTIFICATION: Potential Impact	RISK ASSESSMENT/MITIGATON: Inherent Risk – Consequence	Likelihood	Risk Level	RISK ASSESSMENT/MITIGATON: Risk Treatment & Controls – Preventative	RISK ASSESSMENT/MITIGATON: Risk Treatment & Controls – Detection Protection Mitigation & Recovery Systems	RISK ASSESSMENT/MITIGATON: Managed Risk – Consequence	Likelihood	Risk Level	MONITORING: Responsibility Risk Owner	MONITORING: Action(s)	MONITORING: Target Date	MONITORING: Status	MONITORING: Notes & Assumptions
BIRD MANAGEMENT CONTROLS																	
P-01 - HAZ	Deck cleaning	The FPSO and WHP have extensive decking areas where litter accumulates. Weekly (minimum) deck cleaning will be undertaken. Deck cleaning involves sweeping of all level surfaces and intermittent high pressure cleaning to remove large volumes of guano deposited by seabirds. Any waste-related incidents that occur in between deck cleaning activities will be actioned immediately.	Debris collected may include remnants of ropes, cable ties, ID tags, circlips, PVC tape, denso tape, paints flakes, washers, loose rust. Deck debris also includes fish discards from regurgitates, feathers, dead birds and egg shells. High pressure water-washing of guano deposits may involve localised suspension of guano as aerosol.	Slips, trips and falls, in particular from wet walkways. Inhalation of aerosol guano. Adverse skin and eye irritation due to exposure to guano. Potential for pathogenic bacteria in bird faeces.	2	2	L	Safe Work Procedures - Approved worked practices. Competent staff to undertake maintenance activities. Appropriate Personal Protective Equipment for task. Permit to work required for the activity. Soft barricading and appropriate signage. Communication to personnel at morning toolbox meeting, when high pressure washdown is planned.	Inspection reports and workorders. Incident reporting procedures. First aid facilities/resources. Medics	2	1	L	OIM	Action (MW) - look at info on pathogens CLOSED	8/11/2023		The performance standard related to passive and active management strategies includes zero unintentional harm to seabirds. Any observation of injured or dead birds is subject to an incident report triggering the **OIM** to coordinate an investigation and assessment of the cause of death. The investigation will involve contacting an independent veterinarian or ornithologist via video call for an examination of any injured bird, if it can be retrieved from its location safely. If it is considered that the injury/death of a seabird is due to a passive or active management strategy then an MOC process will be undertaken which reassesses whether the strategy continues to be acceptable. This may result in changing the mode of implementation (e.g. repositioning) of the strategy, or its complete removal. Transporting injured birds from site via helicopter for injury management is impractical and costly. This is exacerbated by a need to return any surviving birds to their nesting site for release. Likelihood of survival is dependent on severity of injury. It is considered that the impracticality of transporting injured birds off site contributes to reducing likelihood of survival. In the event that an injured seabird is observed and can be safely retrieved for on-site examination, the bird will be located and kept in a ventilated cardboard box in a shaded outdoor area away from human traffic. A video call examination with a veterinarian or ornithologist will be arranged and conducted as soon as practicable. Advice provided for ongoing care will be followed and the bird monitored.
P-01 - ENV			Sweeping of all decks and collection of debris that may be used for nests is intended to provide for a workplace free from hazards, including slips, trips and falls and assists in reducing easily available nesting materials for seabirds. Seabirds may get wet and feathers water-logged from high pressure cleaning activity. BT and BB typically only on gunnels or other areas, not on deck. BN most likely affected as they are present on deck. Deck cleaning activities should not affect nesting sites as they are typically elevated. Waste materials on deck that could get washed into unscuppered drainage system.	Instances of nesting on the deck are limited (e.g. 1 report of a nest on the deck during the annual survey in 2022). Nests have been observed below cable trays. Removal of potential nesting materials from the deck is not considered to be a limiting factor. Seabirds will source nesting materials from elsewhere e.g. seaweed in the water column. Seabirds may abandon nest sites due to deck cleaning activities if these occur in close proximity to nests. Deck cleaning will not displace birds from nests as these are typically elevated. Seabirds do not react to increased noise levels associated with high pressure cleaning. They may, however, leave a nest site if water jets/sprays in close proximity. This, however, is unlikely due to areas where birds are nesting. Unlikely to move away from nest if actively egg-sitting (Chris Surman pers comms) . Water-logging of feathers is not considered credible from water spraying due to their natural repellent attributes. Direct hit of individual by HP hose, leading to death, is driving the inherent risk consequence rating. BN is the only species that may potentially be affected.	3	2	M	Weekly housekeeping checklist to inspect passive management strategy. Relocation of any nests on the deck is not recommended or practicable as it would require specialist skill and judgement, and might cause permanent disruption of active nesting behaviour including visual cues. Mark any nests that are on deck in high pressure cleaning area, using bunting or witches hat and inform crew. Any nests can be removed post breeding season. If nests on deck are encountered during breeding season, these will be avoided and not interfered with as long as safe to do so. Water jets are not directed to areas where nesting occurs or at individual seabirds. Inspection processes and protocols.	Maintenance: Inspection reports and workorders. Wildlife handling of any injured or dead birds encountered in the area: Incident reporting procedures Training PPE Wildlife first aid kit including wildlife storage box for care/assessment of injured birds. Advice to be sought within 72 hours from a veterinarian or ornithologists. Two veterinarians and one ornithologist will be identified in procedures for handling of injured seabirds.	1	1	L	OIM	Wildlife First Aid Kit to be established on FPSO following completion of training Training to be completed by medics?	End Q1 2024	incomplete	
P-02 - HAZ	Bird mesh or barrier (netting)	FPSO: Bird mesh (16 mm x 16 mm) is currently installed along significant lengths of both port and starboard gunnel areas. The mesh is fixed to the outer portion of the handrails and weighted with snapper lead weights. Bird mesh is also installed over the outside (starboard) section of M9, as well as covering areas to both port and starboard of the central pipe rack/walkway forward of the flare zone, and covering in particular heat shield mesh areas along the port side. May also be installed along gunwales and pipe racks where required WHP: Bird mesh or cyclone-type fencing (assessed as P-04) can be installed as suspended below the helicopter deck and mezzanine decks to restrict BB from take-off and landing on hand rails, cable trays and other suspended objects frequently used as roosts.	Maintenance of netting is subject to a workorder and risk assessment to reduce HSE risks. Fixings and installation materials must enable safe operations of facility. Resistance to strong weather conditions i.e. cyclone activity, to be monitored. Wildlife handling by trained staff is required if an individual is found to be enclosed or entangled by bird mesh, or upon observation of an injured or dead seabird. May lead to displacement that increases roosting and nesting in other areas. This may introduce increased difficulty in management if seabird activity increases in areas of poor access/egress.	Slips, trips falls and dropped objects due to maintenance and repair of damaged netting. Bird handling, if required, may lead to injury to staff. Bird handling procedures may be inefficient if incidents involving seabirds are increasingly located in areas of poor access/egress due to displacement from this passive management strategy.	1	1	L	Safe Work Procedures - Approved worked practices. Competent staff to undertake maintenance activities. Appropriate Personal Protective Equipment for task. Permit to work required for the activity. Supply chain lead times will be taken into consideration to enable effective maintenance regimes.	Inspection reports and workorders. Incident reporting procedures. First aid facilities/resources. Medics	1	1	L	OIM				The performance standard related to passive and active management strategies includes zero unintentional harm to seabirds. Any observation of injured or dead birds is subject to an incident report triggering the **OIM** to coordinate an investigation and assessment of the cause of death. The investigation will involve contacting an independent veterinarian or ornithologist via video call for an examination of any injured bird, if it can be retrieved from its location safely. If it is considered that the injury/death of a seabird is due to a passive or active management strategy then an MOC process will be undertaken which reassesses whether the strategy continues to be acceptable. This may result in changing the mode of implementation (e.g. repositioning) of the strategy, or its complete removal. Transporting injured birds from site via helicopter for injury management is impractical and costly. This is exacerbated by a need to return any surviving birds to their nesting site for release. Likelihood of survival is dependent on severity of injury. It is considered that the impracticality of transporting injured birds off site contributes to reducing likelihood of survival. In the event that an injured seabird is observed and can be safely retrieved for on-site examination, the bird will be located and kept in a ventilated cardboard box in a shaded outdoor area away from human traffic. A video call examination with a veterinarian or ornithologist will be arranged and conducted as soon as practicable. Advice provided for ongoing care will be followed and the bird monitored."
P-02 - ENV			FPSO (for BN and BT): Bird mesh has the potential to reduce numbers of seabirds roosting on gunnels as well as on heatshields. Has so far successfully reduced nesting on port side heatshields. May lead to increased nesting in other areas. WHP (for BB): Has potential to limit direct access by BB to favoured roosting areas on lower decks. Trapping or entanglement of individuals could occur if installation is not appropriate or integrity of netting is not maintained. Risks are similar for all bird species. Consideration of mesh size to be less than head/wing sizes of any of the three seabird species. BT is the smallest of the three seabirds commonly present. Recommended (by Dr Surman) mesh size is knotless (polyethylene 16mm x 16mm (with a maximal cross sectional size of 25mm).	Bird mesh or barrier is not designed with intent to cause harm to wildlife. Trapping may occur if netting installation provides for a barrier, but not a fully enclosed area or there is damage to the netting. Entanglement may occur if netting is not sufficiently small meshed or if netting becomes damaged, creating knotted or open sections (has not been observed on FPSO to date). Impacts considered to be similar for all bird species.	3	2	M	Weekly housekeeping checklist to inspect passive management strategy. This includes inspection protocols to ensure nesting is not occurring within netting locations which could lead to entrapment. Trapping and entanglement of birds will be subject to an incident report and investigation. Netting mesh size is minimised to a size recommended of 16 mm x 16 mm diamond mesh used in commercial vineyards. Entanglement is reduced with correct installation.	Maintenance: Inspection reports and workorders. Wildlife handling of any injured or dead birds encountered in the area: Incident reporting procedures Training PPE Staff trained in wildlife handling will be called upon immediately upon observation of an incident to release the bird if trapped, or otherwise treat for injuries if entangled. Wildlife first aid kit including wildlife storage box for care/assessment of injured birds. Advice to be sought within 72 hours from a veterinarian or ornithologist. Two veterinarians and one ornithologist will be identified in procedures for handling of injured seabirds.	1	2	L	OIM				
P-03 - HAZ	Bird control spiders	Six devices will be installed initially on heat shields and cable trays on the FPSO. The success of these devices depend on their rigidity.	Maintenance of bird control spiders is subject to a workorder and risk assessment to reduce HSE risks. Installation location must enable safe operations of facility and not impinge on routine human operations. May lead to displacement that increases roosting and nesting in other areas. This may introduce increased difficulty in management seabird activity increases in areas of poor access/egress.	Slips, trips falls and dropped objects due to maintenance activities. Could potentially cause harm to staff if installed at levels where an eye injury could occur. Bird handling, if required, may lead to injury to staff. Bird handling procedures may be inefficient if incidents involving seabirds are increasingly located in areas of poor access/egress due to displacement from this passive management strategy.	1	1	L	Safe Work Procedures - Approved worked practices. Competent staff to undertake maintenance activities. Appropriate Personal Protective Equipment for task. Permit to work required for the activity. Devices will not be installed in areas of routine human traffic.	Inspection reports and workorders. Incident reporting procedures. First aid facilities/resources. Medics	1	1	L	OIM				The performance standard related to passive and active management strategies includes zero unintentional harm to seabirds. Any observation of injured or dead birds is subject to an incident report triggering the **OIM** to coordinate an investigation and assessment of the cause of death. The investigation will involve contacting an independent veterinarian or ornithologist via video call for an examination of any injured bird, if it can be retrieved from its location safely. If it is considered that the injury/death of a seabird is due to a passive or active management strategy then an MOC process will be undertaken which reassesses whether the strategy continues to be acceptable. This may result in changing the mode of implementation (e.g. repositioning) of the strategy, or its complete removal. Transporting injured birds from site via helicopter for injury management is impractical and costly. This is exacerbated by a need to return any surviving birds to their nesting site for release. Likelihood of survival is dependent on severity of injury. It is considered that the impracticality of transporting injured birds off site contributes to reducing likelihood of survival. In the event that an injured seabird is observed and can be safely retrieved for on-site examination, the bird will be located and kept in a ventilated cardboard box in a shaded outdoor area away from human traffic. A video call examination with a veterinarian or ornithologist will be arranged and conducted as soon as practicable. Advice provided for ongoing care will be followed and the bird monitored."
P-03 - ENV			FPSO (for BN and BT): Has potential efficacy in limited areas to deter roosting and nesting. WHP (for BB): BB are too large for deterrence to be effective and devices will not be installed on WHP unless monitoring of seabird distribution suggests that bird species suited to this strategy are present in significant numbers. May lead to increasing roosting and nesting in other areas that may prove more difficult to manage (if required) due to poor access/egress.	Bird control spiders are designed to not cause harm to wildlife. Superficial injury (e.g. skin scratches or poking of eyes) may be possible if device design is compromised This unlikely scenario is what drives the inherent consequence rating. Impacts considered to be similar for BN and BT.	2	1	L	Weekly housekeeping checklist to inspect passive management strategy. Any observation of an injured seabird is subject to an incident report and investigation.	Maintenance: Inspection reports and workorders. Wildlife handling of any injured or dead birds encountered in the area: Incident reporting procedures Training PPE Staff trained in wildlife handling will be called upon immediately upon observation of an incident. Wildlife first aid kit including wildlife storage box for care/assessment of injured birds. Advice to be sought within 72 hours from a veterinarian or ornithologist. Two veterinarians and one ornithologist will be identified in procedures for handling of injured seabirds.	1	1	L	OIM				
P-04 - HAZ	Cyclone wire mesh fencing	Installation on FPSO not considered feasible due to limited suitable areas. To be installed below the mezzanine deck on the WHP. Has proven effective at the Wandoo Platform in WA NWS in reducing BB roosting on decks below helideck. Installation of cyclone fencing will prevent BB from accessing the cable trays and handrail areas below the helideck.	Maintenance of cyclone wire mesh fencing is subject to a workorder and risk assessment to reduce HSE risks. Installation location must enable safe operations of facility and not impinge on routine human operations. Wildlife handling by trained staff is required upon observation of a injured or dead seabird. May lead to displacement that increases roosting and nesting in other areas. This may introduce increased difficulty in management of seabird activity, likely to the helicopter deck and to the lower sea access level.	Slips, trips falls and dropped objects due to maintenance activities. Could hinder ongoing maintenance on the WHP in some areas. Bird handling, if required, may lead to injury to staff. Bird handling procedures may be inefficient if incidents involving seabirds are increasingly located in areas of poor access/egress due to displacement from this passive management strategy.	1	1	L	Safe Work Procedures - Approved worked practices. Competent staff to undertake maintenance activities. Appropriate Personal Protective Equipment for task. Permit to work required for the activity.	Inspection reports and workorders. Incident reporting procedures. First aid facilities/resources. Medics	1	1	L	OIM				The performance standard related to passive and active management strategies includes zero unintentional harm to seabirds. Any observation of injured or dead birds is subject to an incident report triggering the **OIM** to coordinate an investigation and assessment of the cause of death. The investigation will involve contacting an independent veterinarian or ornithologist via video call for an examination of any injured bird, if it can be retrieved from its location safely. If it is considered that the injury/death of a seabird is due to a passive or active management strategy then an MOC process will be undertaken which reassesses whether the strategy continues to be acceptable. This may result in changing the mode of implementation (e.g. repositioning) of the strategy, or its complete removal. Transporting injured birds from site via helicopter for injury management is impractical and costly. This is exacerbated by a need to return any surviving birds to their nesting site for release. Likelihood of survival is dependent on severity of injury. It is considered that the impracticality of transporting injured birds off site contributes to reducing likelihood of survival. In the event that an injured seabird is observed and can be safely retrieved for on-site examination, the bird will be located and kept in a ventilated cardboard box in a shaded outdoor area away from human traffic. A video call examination with a veterinarian or ornithologist will be arranged and conducted as soon as practicable. Advice provided for ongoing care will be followed and the bird monitored."
P-04 - ENV			FPSO (for BN and BT): N/A. WHP (for BB): Has potential efficacy in deterring roosting on areas accessible by BB. May lead to increasing roosting in other areas.	Devices are designed to not cause harm to wildlife. Superficial injury (e.g. skin scratches) of BBs may be possible if accidental collision occurs. This unlikely scenario is what drives the inherent consequence rating.	2	1	L	Weekly housekeeping checklist to inspect passive management strategy. Any observation of an injured seabird is subject to an incident report and investigation.	Maintenance: Inspection reports and workorders. Wildlife handling of any injured or dead birds encountered in the area: Incident reporting procedures Training PPE Staff trained in wildlife handling will be called upon immediately upon observation of an incident. Wildlife first aid kit including wildlife storage box for care/assessment of injured birds. Advice to be sought within 72 hours from a veterinarian or ornithologist. Two veterinarians and one ornithologist will be identified in procedures for handling of injured seabirds.	2	1	L	OIM				

P-05 - HAZ	Rail guards	A series of horizontal stainless-steel wires or dyneema attached to stainless steel posts. Tension is maintained on the wires by a spring at one end. Posts can be fixed in place by drilling into the ledge and using anchor rivets or by using stick on bases and gluing to the ledge.	Maintenance of rail guards is subject to a workorder and risk assessment to reduce HSE risks. Installation location must enable safe operations of facility and not impinge on routine human operations. Must allow for continued use of handrails (usually no roosting on stairs etc.) May lead to displacement that increases roosting and nesting in other areas. This may introduce increased difficulty in management seabird activity increases in areas of poor access/egress.	Slips, trips falls and dropped objects due to maintenance activities. Would not typically be installed on stair handrails to avoid 3 point contact interference. Could potentially cause human harm if device design is compromised. Bird handling, if required, may lead to injury to staff. Bird handling procedures may be inefficient if incidents involving seabirds are increasingly located in areas of poor access/egress due to displacement from this passive management strategy.	3	2	M	Safe Work Procedures - Approved worked practices. Competent staff to undertake maintenance activities. Appropriate Personal Protective Equipment for task. Permit to work required for the activity.	Inspection reports and workorders. Incident reporting procedures. First aid facilities/resources. Medics	2	1	L	OIM				The performance standard related to passive and active management strategies includes zero unintentional harm to seabirds. Any observation of injured or dead birds is subject to an incident report triggering the **OIM** to coordinate an investigation and assessment of the cause of death. The investigation will involve contacting an independent veterinarian or ornithologist via video call for an examination of any injured bird, if it can be retrieved from its location safely. If it is considered that the injury/death of a seabird is due to a passive or active management strategy then an MOC process will be undertaken which reassesses whether the strategy continues to be acceptable. This may result in changing the mode of implementation (e.g. repositioning) of the strategy, or its complete removal.
P-05 - ENV			Has potential efficacy in deterring roosting on handrails on all facilities and for all seabird species. May lead to increasing roosting in other areas.	Devices are designed to not cause harm to wildlife. Superficial injury (e.g. skin scratches) may be possible if device design is compromised. This unlikely scenario is what drives the inherent consequence rating. Impacts considered to be similar for all bird species.	2	1	L	Weekly housekeeping checklist to inspect passive management strategy. Any observation of an injured seabird is subject to an incident report and investigation.	Maintenance: Inspection reports and workorders. Wildlife handling of any injured or dead birds encountered in the area: Incident reporting procedures Training PPE Staff trained in wildlife handling will be called upon immediately upon observation of an incident. Wildlife first aid kit including wildlife storage box for care/assessment of injured birds. Advice to be sought within 72 hours from a veterinarian or ornithologist. Two veterinarians and one ornithologist will be identified in procedures for handling of injured seabirds.	1	1	L	OIM				Transporting injured birds from site via helicopter for injury management is impractical and costly. This is exacerbated by a need to return any surviving birds to their nesting site for release. Likelihood of survival is dependent on severity of injury. It is considered that the impracticality of transporting injured birds off site contributes to reducing likelihood of survival. In the event that an injured seabird is observed and can be safely retrieved for on-site examination, the bird will be located and kept in a ventilated cardboard box in a shaded outdoor area away from human traffic. A video call examination with a veterinarian or ornithologist will be arranged and conducted as soon as practicable. Advice provided for ongoing care will be followed and the bird monitored."
P-06 - HAZ	Aviwire/Birdwire	Suitable for ledges, or above cable trays or heatshields where birds roost or nest. Attachment is either via drilling or stick-on bases. Can be adapted to key areas of superstructure.	Maintenance of aviwire/birdwire is subject to a workorder and risk assessment to reduce HSE risks. Installation location must enable safe operations of facility and not impinge on routine human operations.	Slips, trips, falls and dropped objects due to maintenance activities. Aviwire/Birdwire will be away, at height, from routine human operations. Bird handling, if required, may lead to injury to staff. Bird handling procedures may be inefficient if incidents involving seabirds are increasingly located in areas of poor access/egress due to displacement from this passive management strategy..	2	2	M	Safe Work Procedures - Approved worked practices. Competent staff to undertake maintenance activities. Appropriate Personal Protective Equipment for task. Permit to work required for the activity.	Inspection reports and workorders. Incident reporting procedures. First aid facilities/resources. Medics	1	1	L	OIM				The performance standard related to passive and active management strategies includes zero unintentional harm to seabirds. Any observation of injured or dead birds is subject to an incident report triggering the **OIM** to coordinate an investigation and assessment of the cause of death. The investigation will involve contacting an independent veterinarian or ornithologist via video call for an examination of any injured bird, if it can be retrieved from its location safely. If it is considered that the injury/death of a seabird is due to a passive or active management strategy then an MOC process will be undertaken which reassesses whether the strategy continues to be acceptable. This may result in changing the mode of implementation (e.g. repositioning) of the strategy, or its complete removal.
P-06 - ENV			FPSO (for BN and BT): Has potential efficacy in deterring roosting and nesting of BT and BN. WHP (for BB): May not be sufficiently robust to prevent brown booby roosting (to be trialed). Needs to be installed with sufficient spacing to allow birds to escape entanglement. May lead to increasing roosting in other areas.	Devices are designed to not cause harm to wildlife. Entanglement may occur if wire spacing is not sufficient to allow birds to escape.	2	1	L	Weekly housekeeping checklist to inspect passive management strategy. Wire spacing is wider than adult sizes of any of the three seabird species to reduce risk of entanglement. Any observation of an injured seabird is subject to an incident report and investigation.	Maintenance: Inspection reports and workorders. Wildlife handling of any injured or dead birds encountered in the area: Incident reporting procedures Training PPE Staff trained in wildlife handling will be called upon immediately upon observation of an incident. Wildlife first aid kit including wildlife storage box for care/assessment of injured birds. Advice to be sought within 72 hours from a veterinarian or ornithologist. Two veterinarians and one ornithologist will be identified in procedures for handling of injured seabirds.	1	1	L	OIM				Transporting injured birds from site via helicopter for injury management is impractical and costly. This is exacerbated by a need to return any surviving birds to their nesting site for release. Likelihood of survival is dependent on severity of injury. It is considered that the impracticality of transporting injured birds off site contributes to reducing likelihood of survival. In the event that an injured seabird is observed and can be safely retrieved for on-site examination, the bird will be located and kept in a ventilated cardboard box in a shaded outdoor area away from human traffic. A video call examination with a veterinarian or ornithologist will be arranged and conducted as soon as practicable. Advice provided for ongoing care will be followed and the bird monitored."
P-07 - HAZ	Bird spikes	Bird spikes to be installed on beams overhead of central walk way on FPSO forward of the flare zone where roosting or nesting is known to occur. May be installed in suitable areas on both FPSO and WHP. Target areas will be known nest sites from monitoring maps in previous years.	Maintenance of bird spikes is subject to a workorder and risk assessment to reduce HSE risks. This includes aspects related to working at heights. Installation location must enable safe operations of facility and not impinge on routine human operations. Wildlife handling by staff is required if an individual is injured or dead. May lead to increasing roosting and nesting in other areas that may prove more difficult to manage (if required) due to poor access/egress.	Slips, trips, falls and dropped objects due to maintenance activities. Aviwire/Birdwire will be away, at height, from routine human operations. Bird handling, if required, may lead to injury or harm to staff if not managed. Bird handling procedures may be inefficient if incidents involving seabirds are increasingly located in areas of poor access/egress due to displacement from this passive management strategy..	2	1	L	Safe Work Procedures - Approved worked practices. Competent staff to undertake maintenance activities. Appropriate Personal Protective Equipment for task. Permit to work required for the activity.	Inspection reports and workorders. Incident reporting procedures. First aid facilities/resources. Medics	2	1	L	OIM				The performance standard related to passive and active management strategies includes zero unintentional harm to seabirds. Any observation of injured or dead birds is subject to an incident report triggering the **OIM** to coordinate an investigation and assessment of the cause of death. The investigation will involve contacting an independent veterinarian or ornithologist via video call for an examination of any injured bird, if it can be retrieved from its location safely. If it is considered that the injury/death of a seabird is due to a passive or active management strategy then an MOC process will be undertaken which reassesses whether the strategy continues to be acceptable. This may result in changing the mode of implementation (e.g. repositioning) of the strategy, or its complete removal.
P-07 - ENV			Has potential efficacy in deterring roosting and nesting on all facilities. May not be sufficiently robust to deter BB, however, should be suitable to deter both BN roosting and nesting (Dr. Surman, pigeon mass - 340g, BN mass 200g, BB mass 1200g).	Devices are designed to not cause harm to wildlife. Scratches/injury not considered credible (pers comm Chris Surman)	1	1	L	Weekly housekeeping checklist to inspect passive management strategy. Any observation of an injured seabird is subject to an incident report and investigation.	Maintenance: Inspection reports and workorders. Wildlife handling of any injured or dead birds encountered in the area: Incident reporting procedures Training PPE Staff trained in wildlife handling will be called upon immediately upon observation of an incident. Wildlife first aid kit including wildlife storage box for care/assessment of injured birds. Advice to be sought within 72 hours to seek advice from a veterinarian or ornithologist. Two veterinarians and one ornithologist will be identified in procedures for handling of injured seabirds.	1	1	L	OIM				Transporting injured birds from site via helicopter for injury management is impractical and costly. This is exacerbated by a need to return any surviving birds to their nesting site for release. Likelihood of survival is dependent on severity of injury. It is considered that the impracticality of transporting injured birds off site contributes to reducing likelihood of survival. In the event that an injured seabird is observed and can be safely retrieved for on-site examination, the bird will be located and kept in a ventilated cardboard box in a shaded outdoor area away from human traffic. A video call examination with a veterinarian or ornithologist will be arranged and conducted as soon as practicable. Advice provided for ongoing care will be followed and the bird monitored."
A-08 - HAZ	Laser	Birds (namely BB), on the WHP are a particular concern as they pose a risk to personnel and equipment through bird strike incidents during helicopter operations and the likelihood of heath and dip, trips and fall hazards rising due to increased levels of guano on both the top deck and helideck surfaces. A 5mW Class-III B laser is proposed. Laser projects up to 500m. Lower powered lasers have been tested by other operators and have been found to not be very effective during daylight hours. Devices are fully customisable with regards to power, times, patterns, speed. Installation will be by bolting on to WHP with laser beam exposure to helideck and topdeck. Device will be remotely controlled. Installation may be considered for the FPSO, if device is proven effective at WHP and if a suitable location for installation that is likely to have a beneficial effect can be identified.	Maintenance of lasers is subject to a workorder and risk assessment to reduce HSE risks. This includes aspects related to working at heights. Installations will be on WHP only and limited there to helideck and topdeck. Lasers may cause eye damage through direct viewing. Wildlife handling by staff is required if an individual is injured or dead.	Installation of a laser system is designed to discourage birds from settling on the WHP. Similar systems are known to be used by ENI and Santos for management of seabirds offshore. Injury or harm to staff from maintenance activities and standard operations This includes exposure to laser beam or dropped objects (hand tools) and aspects tied to working at height. Impacts to air travel corridors if laser is directed upwards. Potential to interfere with helicopter operations. Potential to affect personnel on vessels travelling inside the 500m exclusion zone of facilities. Bird handling, if required, may lead to injury or harm to staff if not managed.	3	3	M	A detailed review and risk assessment will identify all options and associated hazards with the bird deterrent installation and will include representatives from the vendor, the helicopter charter company, as well as Jadestone. This will also include testing of efficacy of power output upon installation i.e. ramping up from 25% of max power to test behavioural response in initial trials. Upon every start up, lowest power setting will be used that provides for sufficient deterrence of birds to allow safe operations involving helicopters and on-site personnel. Safe Work Procedures - Approved worked practices. Competent staff to undertake maintenance activities. Appropriate Personal Protective Equipment for task. Permit to work required for the activity. Appropriate signage. Mechanical and software limits of the pan and tilt to ensure beam does not extend beyond the platform perimeters or focus upwards to the surrounding air travel corridors. Ability to disable and enable the lasers remotely. Lasers will not be operational during helicopter ascent or descent activities, if vessels are on approach or the personnel embarks onto the WHP. Any observation of an injured seabird is subject to an incident report and investigation. Live CCTV coverage allowing operators to observe the effectiveness of the laser devices during every start-up/ramp-up. Accreditation of a Laser Safety Officer (LSO) to ensure safe use of the laser. Accreditation will be certified and registered with the Radiological Council of WA.	Inspection reports and workorders. Incident reporting procedures. First aid facilities/resources. Medics	1	1	L	OIM				The performance standard related to passive and active management strategies includes zero unintentional harm to seabirds. Any observation of injured or dead birds is subject to an incident report triggering the **OIM** to coordinate an investigation and assessment of the cause of death. The investigation will involve contacting an independent veterinarian or ornithologist via video call for an examination of any injured bird, if it can be retrieved from its location safely. If it is considered that the injury/death of a seabird is due to a passive or active management strategy then an MOC process will be undertaken which reassesses whether the strategy continues to be acceptable. This may result in changing the mode of implementation (e.g. repositioning) of the strategy, or its complete removal.
A-08 - ENV			The birds perceive the lasers as solid objects and are deterred from landing/roosting by the lasers. The constantly changing path of the beam means the birds have a much harder time adapting to the 'threat'. Eventually they may determine the area is no longer safe for them and go elsewhere. Over 5000 lasers have been deployed by Bird Control group (pers. comms Bird Control Group; vendor) in the field and no evidence to date to show damage to birdlife. Similar devices are used on ENI and Santos facilities offshore. FPSO (for BN and BT): N/A. WHP (for BB): Has potential efficacy in deterring roosting on areas accessible by BB. May lead to increasing roosting in other areas.	A class 3B automated laser has been used to deter unwanted birds from industrial sites both onshore and offshore (Elbers 2021, Glahn et al. 2000). In both contexts, the Class-III B laser has been shown to be highly efficient, reducing unwanted bird visits by more than 90% in some cases and with terrestrial birds. In a field study for deterring cormorants from a catfish industry site, exposure to 1-3 evenings of laser treatment using 5 mW Class-III-B lasers was sufficient in reducing bird presence by more than 90%. Testing eye injury to the cormorants, the laser beam was aimed at hand-held cormorants at various distances (1, 13 and 33 m) at the eyes. The exposure distances chosen were based on the nominal ocular risk distance (NORD) to humans for this specific laser (approximately 13 m) and assuming an eye-blink reaction time of 0.25 s. The cormorant eyes were examined 24- and 48-h post treatment; no ocular damage was apparent. According to the manufacturer the risk of the laser causing injury to the eyes of birds is minimal because they react to the approach of the beam along the ground by flying away immediately. Devices are designed to not cause harm to wildlife. The SBWPG (Juricic 2023) has recommended not using lasers on fishing vessels due to inconclusive evidence that they do not harm seabird eyes. Another study found that level acceptable for Human safety is 20mW output but took 500mW in a study (Lustick 1973) to elicit a response in gulls, and that response indicated eye damage (eye rub, head shake). Use of lasers may cause similar eye injuries to marine birds as found in sparrows and starlings (Harris 2021). (see also Melvin 2016). Studies have shown that the use of lasers can be very effective in managing bird presence (Elbers and Gonzales, 2021) but can induce potential harm to birds, especially when exposed at short ranges (~1m) and subject to exposure time (Harris 2021). Potential impacts to birds include disorientation, repulsion, damage to skin and eyes and disruption to natural behavioural patterns and cycles. To prevent significant impacts from use of laser deterrents, such as eye injuries, burns or skin damage, the inherent design and application must also be considered to ensure the lowest power laser is selected for use to prevent physical impact to the seabirds, and instead to only limit impacts to a behavioural response without eliciting physical injury a startle response to deter the birds.	3	2	M	Weekly housekeeping checklist to inspect active management strategy. Any observation of an injured seabird is subject to an incident report and investigation. A detailed review and risk assessment will identify all options and associated hazards with the bird deterrent installation and will include representatives from the vendor, the helicopter charter company, as well as Jadestone. This will also include testing of efficacy of power output upon installation i.e. ramping up from 25% of max power. Upon every start up, lowest power setting will be used that provides for sufficient deterrence of birds to allow safe operations involving helicopters and on-site personnel. Mechanical and software limits of the pan and tilt to ensure beam does not extend beyond the platform perimeters or focus upwards to the surrounding air travel corridors. Ability to disable and enable the lasers remotely. Any observation of an injured seabird is subject to an incident report and investigation. Live CCTV coverage allowing operators to observe the effectiveness of the laser devices during every start-up/ramp-up.	Maintenance: Inspection reports and workorders. Wildlife handling of any injured or dead birds encountered in the area: Incident reporting procedures Training PPE Staff trained in wildlife handling will be called upon immediately upon observation of an incident. Wildlife first aid kit including wildlife storage box for care/assessment of injured birds. Advice to be sought within 72 hours from a veterinarian or ornithologists. Two veterinarians and one ornithologist will be identified in procedures for handling of injured seabirds. Monitor the camera footage on WHP to see the effects.	3	1	L	OIM				Transporting injured birds from site via helicopter for injury management is impractical and costly. This is exacerbated by a need to return any surviving birds to their nesting site for release. Likelihood of survival is dependent on severity of injury. It is considered that the impracticality of transporting injured birds off site contributes to reducing likelihood of survival. In the event that an injured seabird is observed and can be safely retrieved for on-site examination, the bird will be located and kept in a ventilated cardboard box in a shaded outdoor area away from human traffic. A video call examination with a veterinarian or ornithologist will be arranged and conducted as soon as practicable. Advice provided for ongoing care will be followed and the bird monitored.

A-9 - HAZ	Acoustic	Anecdotal evidence from ENI that this strategy is ineffective within 6 months of use due to acclimatisation of birds to noise. Not recommended on the FPSO due to already high levels of industrial noise and activity on a manned facility. Tests on the WHP during testing of the emergency alarm show the birds are acclimatized to this noise also.	Maintenance of noise devices is subject to a workorder and risk assessment to reduce HSE risks. Installations will be on WHP only. Point of broadcast will be from a high point to maximise area covered. Loudspeakers will cover no more than 100 m distance. Wildlife handling by staff is required if an individual is injured or dead.	Installation of a laser system is designed to discourage birds from settling on the WHP. Similar systems are known to be used by ENI and Santos for management of seabirds offshore, with mixed success. Injury or harm to staff from maintenance activities and standard operations. This includes personnel exposure to noise, dropped objects (hand tools) and aspects tied to working at height. Potential to interfere with helicopter operations. Potential to affect personnel on vessels travelling inside the 500m exclusion zone of facilities. Bird handling, if required, may lead to injury or harm to staff if not managed.	2	2	**M**	A detailed review and risk assessment will identify all options and associated hazards with the bird deterrent installation and will include representatives from the vendor, the helicopter charter company, as well as Jadestone. Impacts assessed will include risks to staff from increased noise levels beyond the 500m exclusion zone Safe Work Procedures - Approved worked practices. Competent staff to undertake maintenance activities. Appropriate Personal Protective Equipment for task. Permit to work required for the activity. Appropriate signage. Noise devices will be shut down upon embarkation of staff to the WHP and during helicopter operations. Noise devices will also be shut down if vessels are on approach within the 500 m exclusion zone. Ability to disable and enable the device remotely. Any observation of an injured seabird is subject to an incident report and investigation. Live CCTV coverage allowing operators to observe the effectiveness of the noise devices during every start-up.	Inspection reports and workorders. Incident reporting procedures. First aid facilities/resources. Medics	1	1	**L**	OIM				Impacts to marine fauna from noise, generated by bird deterrent devices, is dependent on the frequency, intensity and range of the noise produced. Higher frequencies result in rapid loss over distance whilst lower frequencies have a further range. Bird deterrent devices are installed above the water line, and typically emit high frequency noise outside the sensitive range of pelagic marine fauna; such impacts are therefore not predicted. Birds are sensitive to some noises and particular sound frequencies; therefore, the selection of an appropriate acoustic deterrent will be determined following advice from reputable manufacturers of acoustic deterrents. (NOTE: no manufacturer can recommend type or frequency specific to the species of seabirds that we are dealing with, and in general the noises are geared to northern hemisphere gull distress calls, completely inappropriate to scaring brown boobies or brown noddies. Acclimatisation will occur rapidly, brown noddies do not respond much to the tripping of the flare and associated noise, nor to the use of the high pressure water hose) The selection of acoustic deterrents also needs to comply with personnel occupational health and safety. The noise deterrent selected may include a combination of natural sounds such as bird distress and predator calls as well as ultrasonic noises that can be demonstrated to not cause injury to the seabird species offshore. The performance standard related to passive and active management strategies includes zero unintentional harm to seabirds. Any observation of injured or dead birds is subject to an incident report triggering the OIM to coordinate an investigation and assessment of the cause of death. The investigation will involve contacting an independent veterinarian or ornithologist via video call for an examination of any injured bird, if it can be retrieved from its location safely. If it is considered that the injury/death of a seabird is due to a passive or active management strategy then an MOC process will be undertaken which reassesses whether the strategy continues to be acceptable. This may result in changing the mode of implementation (e.g. repositioning) of the strategy, or its complete removal. Transporting injured birds from site via helicopter for injury management is impractical and costly. This is exacerbated by a need to return any surviving birds to their nesting site for release. Likelihood of survival is dependent on severity of injury. It is considered that the impracticality of transporting injured birds off site contributes to reducing likelihood of survival. In the event that an injured seabird is observed and can be safely retrieved for on-site examination, the bird will be located and kept in a ventilated cardboard box in a shaded outdoor area away from human traffic. A video call examination with a veterinarian or ornithologist will be arranged and conducted as soon as practicable. Advice provided for ongoing care will be followed and the bird monitored.
A-9 - ENV			FPSO (for BN and BT): N/A. WHP (for BB): Has potential efficacy in deterring roosting on areas accessible by BB. May lead to increasing roosting in other areas.	Noise devices have been used at other facilities in the region operated by ENI and Santos. Success may be limited due to acclimatisation of seabirds. The inherent design of the noise deterrents must be considered to ensure that potential impacts to hearing can be mitigated. This may include volume control such as using the lower range with short intermittent bursts of noise and variation in noise to aid dispersion, coupled with monitoring of effectiveness. Avian hearing encompasses a narrower range of frequencies than human hearing; within that range, avian hearing is less sensitive than human hearing (Beason 2004). Operating at the lowest effective volume range with short intermittent noise events will further reduce the potential for injury to marine fauna. The high frequency sound level decreases and deteriorates with distance which further reduces the potential impact area and risk of hearing damage to seabirds.	3	2	**M**	Weekly housekeeping checklist to inspect active management strategy. Any observation of an injured seabird is subject to an incident report and investigation. A detailed review and risk assessment will identify all options and associated hazards with the bird deterrent installation and will include representatives from the vendor, the helicopter charter company, as well as Jadestone. Ability to disable and enable the acoustic devices remotely. Any observation of an injured seabird is subject to an incident report and investigation. Live CCTV coverage allowing operators to observe the effectiveness of the laser devices during every start-up/ramp-up.	Maintenance: Inspection reports and workorders. Wildlife handling of any injured or dead birds encountered in the area: Incident reporting procedures Training PPE Staff trained in wildlife handling will be called upon immediately upon observation of an incident. Wildlife first aid kit including wildlife storage box for care/assessment of injured birds. Advice to be sought within 72 hours from a veterinarian or ornithologist. Two veterinarians and one ornithologist will be identified in procedures for handling of injured seabirds. Monitor the camera footage on WHP to see the effects.	1	2	**L**	OIM				
A10 - HAZ	Water Sprinklers/ Hose	Intended for use on WHP below helideck on WHP. Use on FPSO not considered an option due to excessive corrosion risk from use of seawater.	Asset corrosion risk is high and this strategy is only considered optional if other passive and active management strategies are insufficient in providing for safe helicopter operations.	Slips, trips and falls, in particular from wet walkways. Electrical equipment with water ingress could result in impact to asset. Excessive use of seawater can lead to asset damage, which in turn has personnel safety implications. Risk of asset damage from use of seawater is driving the consequence rating. Bird handling, if required, may lead to injury or harm to staff if not managed.	4	4	**H**	Safe Work Procedures - Approved work practices. Competent staff to undertake maintenance activities. Appropriate Personal Protective Equipment for task. Permit to work required for the activity. Plans and procedures in place for use of sea water to reduce corrosion risk. Minimise use of water in topside areas	Inspection reports and workorders. Incident reporting procedures. First aid facilities/resources. Medics	4	1	**M**	OIM				Water jets or sprinklers may be considered for implementation in some areas. The volume and pressure of water must be carefully considered to reduce the potential impacts such as waterlogging of bird feathers or injury due to high pressure water; water sprinklers in nesting areas could also cause death through exposure of eggs and chicks and is therefore not proposed. The control has been effective in the north sea for gannets, a brown booby sized seabird. Water logging is unlikely in roosting birds as they move off and avoid exposure.) Through implementation of a combination of control measures, the numbers of roosting and nesting birds can be reduced but are unlikely to be eliminated altogether. Prior to implementation of these active management strategies, Jadestone will work with suppliers to ensure correct placement locations and ongoing testing, maintenance and monitoring of the effectiveness of minimising impacts to birds whilst achieving a safe workplace for personnel. The performance standard related to passive and active management strategies includes zero unintentional harm to seabirds. Any observation of injured or dead birds is subject to an incident report triggering the OIM to coordinate an investigation and assessment of the cause of death. The investigation will involve contacting an independent veterinarian or ornithologist via video call for an examination of any injured bird, if it can be retrieved from its location safely. If it is considered that the injury/death of a seabird is due to a passive or active management strategy then an MOC process will be undertaken which reassesses whether the strategy continues to be acceptable. This may result in changing the mode of implementation (e.g. repositioning) of the strategy, or its complete removal. Transporting injured birds from site via helicopter for injury management is impractical and costly. This is exacerbated by a need to return any surviving birds to their nesting site for release. Likelihood of survival is dependent on severity of injury. It is considered that the impracticality of transporting injured birds off site contributes to reducing likelihood of survival. In the event that an injured seabird is observed and can be safely retrieved for on-site examination, the bird will be located and kept in a ventilated cardboard box in a shaded outdoor area away from human traffic. A video call examination with a veterinarian or ornithologist will be arranged and conducted as soon as practicable. Advice provided for ongoing care will be followed and the bird monitored.
A10 - ENV			Refer to deck cleaning above. FPSO (for BN and BT): N/A. WHP (for BB): Has potential efficacy in deterring roosting on areas accessible by BB. May lead to increasing roosting in other areas.	Refer to deck cleaning above. Bromel (2000) found this to be the most effective method of reducing seabird roosting numbers of helidecks in the North Sea, birds discouraged were gannets and gulls. Impacts considered to be similar for all bird species.	2	1	**L**	Refer to deck cleaning above.	Maintenance: Inspection reports and workorders. Wildlife handling of any injured or dead birds encountered in the area: Incident reporting procedures Training PPE Staff trained in wildlife handling will be called upon immediately upon observation of an incident. Wildlife first aid kit including wildlife storage box for care/assessment of injured birds. Advice to be sought within 72 hours from a veterinarian or ornithologist. Two veterinarians and one ornithologist will be identified in procedures for handling of injured seabirds. Monitor the camera footage on WHP to see the effects.	1	1	**L**	OIM				